Transportation Mobility Element

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9J-5.019 Transportation Element

(1) APPLICATION AND PURPOSE. A local government which has all or part of its jurisdiction included within the urban area of a Metropolitan Planning Organization (MPO) pursuant to Section 339.175, F.S., shall prepare and adopt a transportation element consistent with the provisions of this Rule and Chapter 163, Part II, F.S. Local governments that are not located within the urban area of a MPO shall adopt traffic circulation, mass transit, and ports, aviation and related facilities elements consistent with the provisions of this rule and Chapter 163, F.S., Part II, F.S., except that local governments with a population of 50,000 or less, as determined under Section 186.901, F.S., shall not be required to prepare mass transit or ports, aviation and related facilities elements.

Within a designated MPO area, the transportation elements of the local plans shall be coordinated with the long range transportation plan of the MPO. The purpose of the transportation element shall be to plan for a multimodal transportation system that places emphasis on public transportation systems.

(2) EXISTING TRANSPORTATION DATA REQUIREMENTS.
The element shall be based upon the following data requirements pursuant to Subsection 9J-5.005(2) of this Chapter.

(a) The general location of the following transportation system features shall be shown on an existing transportation map or map series:

1. Road System:
a. Collector roads;
[See Figure 20]

b. Arterial roads;
[See Figure 20]

c. Limited and controlled access facilities;
[See Figure 21]

d. Significant Parking facilities, as determined by the local government.
[See Figure 9, 10]

2. Public Transit System:

a. Public transit routes or service areas;
[See Figure 7, 8]

b. Public transit terminals and transfer stations;
[See Figure 13]

c. Public transit rights-of-way and exclusive public transit corridors;
[None]

3. Significant bicycle and pedestrian ways, as determined by the local government.
[See Figure 14. See Figure 18 for off-street trails]

4. Port facilities;
[not applicable]

5. Airport facilities including clear zones and obstructions;
[See Figure 28, 32]

6. Freight and passenger rail lines and terminals; and
[See Figure 28]

7. Intermodal terminals and access to intermodal facilities;
[Put on Figure 9, 13,]

8. The existing functional classification and maintenance responsibility for all roads;
[Functional: Figure 20. Maintenance: Figure 23]

9. The number of through lanes for each roadway;
[See Figure 22]

10. The major public transit trip generators and attractors based upon the existing land use map or map series; **[See Figure 11, 13]**

11. Designated local and regional transportation facilities, critical to the evacuation of the coastal population prior to an impending natural disaster.
[See Figure 34]

(b) The existing transportation map or map series shall identify the following:

1. Existing peak hour, peak direction levels of service for roads and mass transit facilities and corridors or routes; and
[See Figure 24. The City has hired a consultant to prepare a 2020 transportation plan update that will contain the transit levels of service.]

2. Capacity of significant parking facilities and duration limitations (long-term or short-term), where applicable.
[See Figure 9, 10]

(3) TRANSPORTATION ANALYSIS REQUIREMENTS.
The element shall be based upon the following analyses which address all modes of transportation and support the comprehensive plan pursuant to Subsection 9J-5.005(2).

(a) An analysis of the existing transportation system levels of service and system needs based upon existing design and operating capacities; most recently available estimates for average daily and peak hour vehicle trips; existing modal split and vehicle occupancy rates; existing public transit facilities, including ridership by route, peak hour capacities and headways; population characteristics, including transportation disadvantaged; and the existing characteristics of the major trip generators and attractors within the community.
[Levels of service and system needs: See "Peak Hour Level of Service for Street Network," "Projected Level of Service for Cars," "Street Needs for Cars," "Need for New Facilities for Transportation," and "Exception Areas and Level of Service Analysis"; Average daily and peak hour vehicle trips: See Table 15; Existing modal split and vehicle occupancy: See "Percentage of Trips by Transit and Other Forms of Travel"; Transit facilities, including ridership by route, peak hour capacities and headways: See Table 5, 6, 8; Population characteristics, including transportation disadvantaged: See: "Existing System and Analysis for Transit System;" Generators and attractors: See "Major Trip Generators and Attractors"]

(b) An analysis of the availability of transportation facilities and services to serve existing land uses.
[availability of transportation facilities and services: See "Exception Areas & LOS Analysis," "Projected Level of Service for Cars," and "Land Use."]

(c) An analysis of the adequacy of the existing and projected transportation system to evacuate the coastal population prior to an impending natural disaster**. [According to Alachua County Emergency Management Office on 7/15/99, no analysis has been done. See "Emergency Management" section.]**

(d) An analysis of the growth trends and travel patterns and interactions between land use and transportation, and the compatibility between the future land use and transportation elements, including land use compatibility around airports.
[Growth trends and travel patterns and interactions between land use and transportation: See "Exception Areas and Level of Service Analysis," "Adoption of a Transportation Concurrency Exception Area". Compatibility: See the "Land Use" portion of the airport section.]

(e) An analysis of existing and projected intermodal deficiencies and needs such as terminals, connections, high occupancy vehicle lanes, park-and-ride lots and other facilities.
[Intermodal deficiencies, terminals, connections, high occupancy vehicle lanes, park-and-ride lots: See "Integration Between Forms of Travel," "Transit System Capital Needs."]

(f) An analysis of the projected transportation system levels of service and system needs based upon the future land use categories, including their densities or intensities of use as shown on the future land use map or map series, and the projected integrated transportation system. The analysis shall demonstrate integration and coordination among the various modes of transportation, including rail, airport and seaport facilities. The analysis shall address the need for new facilities and expansions of alternative transportation modes to provide a safe and efficient transportation network and enhance mobility. The methodologies used in the analysis, including the assumptions used, modeling applications, and alternatives considered shall be included in the plan support document. The analysis shall address the effect of transportation concurrency management areas, if any, pursuant to Rule 9J-5.0055(5), F.A.C., and the effect of transportation concurrency exceptions, if any, pursuant to Rule 9J-5.0055(6) and (7).
[Levels of service and system needs and need for new facilities and expansions of alternative transportation modes: See "Street Network and Existing System for Car Travel" and "Exception Areas and Level of Service Analysis;" Integration and coordination among the various modes of transportation: See "Integration Between Forms of Travel"]

(g) The analysis shall consider the projects planned for in the Florida Department of Transportation's Adopted Work Program, long range transportation plan and transportation improvement program of the metropolitan planning organization, and the local transportation authority(ies), if any, and compatibility with the policies and guidelines of such plans.
[Adopted Work Program, long range transportation plan and transportation improvement program of the metropolitan planning organization, and the local transportation authority(ies), if any, and compatibility: See "Street Needs for Cars" and "Need for New Facilities for Transportation"]

(h) The analysis shall demonstrate how the local government will maintain its adopted level of service standards for roads and transit facilities within its jurisdiction and how the level of service standards reflect and advance the purpose of this section and the goals, objectives, and policies of the future land use element and other elements of the comprehensive plan.
[How the local government will maintain its adopted level of service standards for roads and transit facilities and how the level of service standards reflect and advance the purpose of this section of the future land use element: See "Peak Hour Level of Service for the Street Network," "Exception Areas and Level of Service Analysis," "Adoption of a Transportation Concurrency Exception Area," "Projection of Level of Service for Cars," "Street Needs for Cars," "Maintenance of Level of Service for Car Travel", "Need for New Facilities for Transportation," and "Transportation Demand Management."]

(i) The analysis shall explicitly address and document the internal consistency of the plan, especially its provisions addressing transportation, land use, and availability of facilities and services.
[Internal consistency: See "Peak Hour Level of Service for the Street Network," "Exception Areas and Level of Service Analysis," "Adoption of a Transportation Concurrency Exception Area," "Land Use," "Maintenance of Level of Service Standards for Car Travel," "Widening Streets Does Not Reduce Traffic Congestion", "Too Much Street and Car Parking Capacity Creates More Air Pollution and Fuel Consumption", and "Sustainability Indicators for Car Travel."]

(j) An analysis which identifies land uses and transportation management programs necessary to promote and support public transportation systems in designated public transportation corridors.
[There are currently no "designated public transportation corridors."]

(4) REQUIREMENTS FOR TRANSPORTATION GOALS, OBJECTIVES AND POLICIES.

(a) The element shall contain one or more goal statements which establish the long-term end toward which transportation programs and activities are ultimately directed.
[See Goals 1-9]

(b) The element shall contain one or more specific objectives for each goal statement which address the requirements of subsections 163.3177(6)(b), (6)(j), (7)(a), and (7)(b), F.S., and which:

1. Provide for a safe, convenient, and energy efficient multimodal transportation system;
[See Objectives 1.1, 1.2, 2.1, 3.1-2, 4.1-2, 5.1, 6.1, 7.1-2, 8.1]

2. Coordinate the transportation system with the future land use map or map series and ensure that existing and proposed population densities, housing and employment patterns, and land uses are consistent with the transportation modes and services proposed to serve these areas;
[See Objective 1.2]

3. Coordinate the transportation system with the plans and programs of any applicable metropolitan planning organization, transportation authority, Florida Transportation Plan and Florida Department of Transportation's Adopted Work Program; and
[See Objective 1.3]

4. Address the provision of efficient public transit services based upon existing and proposed major trip generators and attractors, safe and convenient public transit terminals, land uses and accommodation of the special needs of the transportation disadvantaged.
[See Objectives 3.1-2]

5. Provide for the protection of existing and future rights-of-way from building encroachment.
[See Objective 1.4]

6. Coordinate the siting of new, or expansion of existing, ports, airports, or related facilities with the future land use, coastal management, and conservation elements;
[See Objective 9.2]

7. Coordinate the surface transportation access to ports, airports, or related facilities with the traffic circulation system shown on the traffic circulation maps or map series.
[See Objective 9.3]

8. Coordinate with any ports, airports, or related facilities plans of the appropriate ports, airports or related facilities provider. United States Army corps of Engineers, Federal Aviation Administration, metropolitan planning organization, military services, or resource planning and management plan prepared pursuant to Chapter 380.F.S., and approved by the Governor and Cabinet, the Florida Department of Transportation 5-Year Transportation Plan, and the Continuing Florida Aviation System Planning Process as adopted; and
[See Objective 9.4]

9. Ensure that access routes to ports, airports, or related facilities are properly integrated with other modes of surface or water transportation.

[See Objective 9.3]

(c) The element shall contain one or more policies for each objective which address implementation activities for the:

1. Establishment of level of service standards at peak hour for roads and public transit facilities within the local government's jurisdiction. For facilities on the Florida Intrastate Highway System as defined in Section 338.001, F.S., the local governments shall adopt the level of service standards established by the Department of Transportation by rule. For all other facilities on the future traffic circulation map, local governments shall adopt adequate level of service standards. These level of service standards shall be adopted to ensure that adequate facility capacity will be provided to serve the existing and future land uses as demonstrated by the supporting data and analysis in the comprehensive plan;
[See Policies 7.1.7-9]

2. Control of the connections and access points of driveways and roads to roadways;
[See Policies 7.1.12, 7.1.10]

3. Establishment of parking strategies that will promote transportation goals and objectives;
[See Policies 1.1.1, 1.1.3, 1.1.8, 1.3.1, 2.1.4, 2.1.11, 3.1.3, 4.1.11-12, 4.2.1, 6.1.1, 6.1.3, 6.1.6, 7.1.3, 7.1.4, 7.1.10, 7.1.13, 8.1.3]

4. For existing or future transportation rights-of-way and corridors designated in the local government comprehensive plan, establish measures for their acquisition, preservation, or protection;
[See Policy 1.4.1]

5. Establishment of land use and other strategies to promote the use of bicycles and walking;
[See Policies 1.1.1-5, 1.1.9-11, 1.3.1, 1.4.1, 2.1.1-16, 3.1.2, 3.2.1, 3..2.3, 4.1.1-13, 4.2.1, 5.1.1-7, 6.1.1-8, 7.1.1-6, 7.1.13, 7.2.1-4]

6. Establishment of transportation demand management programs to modify peak hour travel demand and reduce the number of vehicle miles traveled per capita within the community and region;
[See Policies 1.1.1, 1.1.3, 1.1.5, 1.3.1, 2.1.6-12, 3.2.3, 6.1.1, 6.1.3, 7.1.1-6, 7.1.13, 7.2.3-4]

7. Establishment of transportation system management strategies as appropriate to improve system efficiency and enhance safety;
[See Policies 1.3.2, 1.3.4, 6.1.1-3]

8. Coordination of roadway and transit service improvements with the future needs of seaports, airports, and other related public transportation facilities;
[See Policy 9.3.1]

9. Establishment of land use, site and building design guidelines for development in exclusive public transit corridors to assure the accessibility of new development to public transit;
[N.A.]

10. Establishment of numerical indicators against which the achievement of the mobility goals of the community can be measured, such as modal split, annual transit trips per capita, automobile occupancy rates;
[See Policies 1.1.9, 2.1.2, 7.2.1]

11. Establishment of strategies, agreements and other mechanisms with applicable local governments and regional and state agencies that demonstrate the areawide coordination necessary to implement the transportation, land use, parking and other provisions of the transportation element;
[See Policy 1.3.1]

12. A coordinated and consistent policy with the future land use element to encourage land uses which promote public transportation in designated public transportation corridors;
[See Policies 1.2.1, 3.1.1-2, 3.2.1, 3.2.3]

13. Establishment of strategies to facilitate local traffic to use alternatives to the Florida Intrastate Highway System to protect its interregional and intrastate functions;
[See Policy 7.1.7. The City will continue to use such strategies as the Transportation Concurrency Management Area, bicycle lane and sidewalk installation, transit enhancements, increased land use densities, and more mixed land uses to remove local motor vehicle trips from the Florida Intrastate Highway System to protect its interregional and intrastate functions.]

14. Development of strategies to address intermodal terminals and access to airport, rail and seaport facilities;
[See Policies 9.1.1, 9.3.1]

15. Provision of safe and convenient on-site traffic flow, considering needed motorized and non-motorized vehicle parking;
[See Policies 1.1.8, 1.1.10-11, 2.1.12, 2.1.16, 7.1.10]

16. Establishment of measures for the acquisition and preservation of existing and future public transit rights-of-way and exclusive public transit corridors;
[See Policies 1.4.1]

17. Promotion of ports, airports, and related facilities development and expansion consistent with the future land use, coastal management, and conservation elements;
[See Policies 9.1.2, 9.1.3, 9.2.1-3]

18. Mitigation of adverse structural and non-structural impacts from ports, airports, or related facilities upon adjacent natural resources and land uses;
[See Policies 9.2.1-3]

19. Protection and conservation of natural resources within ports, airports and related facilities;
[See Policy 9.1.3]

20. Coordinated intermodal management of surface and water transportation within ports, airports and related facilities; and
[See Policies 9.1.1, 9.3.1, 9.4.2]

21. Protection of ports, airports, or related facilities from the encroachment of incompatible land uses.
[See Policies 9.1.2, 9.2.1-3]

(5) FUTURE TRANSPORTATION MAP.

(a) The general location of the following transportation system proposed features shall be shown on the future transportation map or map series:

1. Road System:

a. Collector roads;
[See Figure 20]

b. Arterial roads;
[See Figure 20]

c. Limited and controlled access facilities;
[See Figure 21]

d. Local roads, if being used to achieve mobility goals;
[None]

e. Parking facilities that are required to achieve mobility goals;
[See Figure 9, 10]

2. Public transit system:

a. Public transit routes or services areas;
[See Figure 7, 8]

b. Public transit terminals and transfer stations;
[See Figure 13]

c. Public transit rights-of-way and exclusive public transit corridors;
[None]

3. Transportation concurrency management areas pursuant to Rule 9J-5.0055(5), F.A.C., if any;
[None]

4. Transportation concurrency exception areas pursuant to Rule 9J-5.0055(6), F.A.C., if any;
[See Figure 19]

5. Significant bicycle and pedestrian facilities;
[See Figure 14. See Figure 18 for off-street trails]

6. Port facilities;
[N.A.]

7. Airport facilities including clear zones and obstructions;
[See Figure 28, 32]

8. Freight and passenger rail lines; and
[See Figure 48]

9. Intermodal terminals and access to such facilities.
[Put on Figure 9, 13]

(b) The future transportation map or map series shall identify the following:

1. The functional classification and maintenance responsibility for all roads;
[Functional: Figure 20. Maintenance: Figure 23]

2. The number of proposed through lanes for each roadway;
[See Figure 22]

3. The major public transit trip generators and attractors based upon the future land use map or map series;
[See Figure 11, 13]

4. Projected peak hour levels of service for all transportation facilities for which level of service standards are established; and
[See Figure 24]

5. Designated local and regional transportation facilities critical to the evacuation of coastal population prior to an impending natural disaster.
[See Figure 34]

Specific Authority 163.3177 FS.
Law Implemented 163.3177, 163.3178 FS.
History—New 3-23-94, Amended 3-21-99.

Data and Analysis

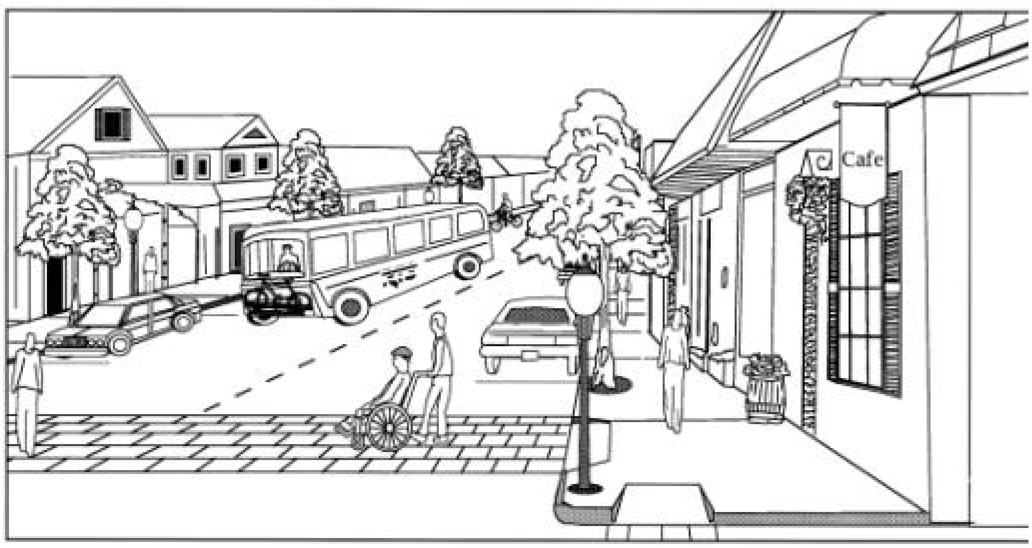
Introduction: The Transportation-Land Use Connection

"Mobility" and "access" should be defined as the freedom to safely, conveniently, and pleasantly get from one place to another with any form of transportation; be it car, bus, bicycle, wheelchair, or on foot. In order to accomplish this, travel distances should be as short as possible.

A "livable" and "sustainable" city is one where citizens are free from extreme levels of danger, noise, air pollution, and water pollution. A place where pleasure, safety, comfort, civic pride, a pleasant ambience, a sense of belonging, and a sense of community can be experienced.

Communities that use the above definitions for "mobility," "access," "livable" and "sustainable" are striving to encourage **transportation choice** (see box and Figure 1 below), in which it is possible and pleasant to travel by foot, bus, or bicycle instead of being forced by the design and layout of the community to travel only by car. Encouraging higher levels of transportation choice by these sustainable means requires compact, higher-density, mixed-use development patterns. It is for these reasons, among others, that the primary theme of the Comprehensive Plan is compact urban development within the Town/Village Center Concept, along with high-quality, pedestrian- and transit-oriented urban design.

Figure 1. A street designed for transportation choice



In the past, transportation planning has mostly been focused on optimizing street performance for cars based on minimum level of service standards for free-flowing car travel. Development impacts on streets have mostly been measured by how much available street capacity will be consumed as a result of the car trips expected to be generated by the development.

Yet this conventional approach does not take into account the close connection between transportation and land use, quality-of-life impacts, or problems associated with "induced" car travel. Nor does it consider the capacity that is added to the streets when people travel by carpool, bus, bicycle, or walking.

An important goal of the Gainesville Comprehensive Plan is to reduce the rate, pressures, and incentives to urban sprawl. Nevertheless, using the Plan to strive to retain street capacity for free-flowing car travel (through street level-of-service standards) has created strong incentives for more sprawl. Generally, transportation concurrency (street level-of-service standards) encourages new development to seek out development sites in places where there is available street capacity for car travel, and such capacity is inherently found in outlying areas.

Our in-town development locations are the most appropriate places to encourage further development, in part because they feature efficient use of transportation facilities and services, and a healthy level of transportation choice. Yet the conventional approach to level-of-service for streets encourages new development to find locations where people are forced to make more and longer trips by car, thus degrading our overall transportation and access goals throughout the urban area. It is at least in part for these reasons that our area has seen a dramatic increase in motor vehicle registration, percentage of trips made by car, gasoline consumption, and vehicle miles traveled over the past several years.

An important way to reduce these undesirable trends is to emphasize the movement of people instead of the movement of cars. This element adopts this philosophy, and is consistent with the overriding intent to design our community more for the needs of people.

The City recognizes that it is primarily transportation that determines land use in this county. We cannot "build our way out of congestion" because widening streets inherently attracts car trips that would not have occurred without the widening (known as "induced traffic"). Designing streets exclusively for free-flowing car traffic reduces residential and commercial viability for "in town" locations, shifts a higher percentage of trips to car trips, encourages strip commercial development, and conversion of residences to businesses. Urban sprawl inevitably results from these factors.

An important reason why freer flowing car travel encourages land use sprawl is that cross-culturally and throughout time, humans have maintained, on average, a "fixed travel budget" of approximately 1.1 hours of commuting travel time per day. Changes that speed travel will, over time, disperse land uses as this time budget equilibrium is re-established. Conversely, slowing travel (for example, with traffic calming or transportation choice strategies) will, over time, result in more compact land use patterns.

Transportation does not merely respond to land use patterns and plans. Our transportation system largely determines what those patterns and plans will be. It is only by recognizing that street widenings and abundant car parking enables and encourages urban sprawl that we can successfully discourage sprawl and build a more livable, safe, sustainable community rich in transportation choice, environmental conservation, economic health, and civic pride.

Important Components for Retaining and Creating Transportation Choices

Streets & Travel

- Modest street dimensions.
- Connected sidewalks of ample width on both sides of street, shaded with trees and awnings.
- Modest number of street travel lanes (no more than 4).
- Connected streets (rather than cul-de-sacs or dead ends) with modest block sizes (no more than 500 feet long).
- Modest supply of parking for cars, and surface parking and storm basins at the side or rear of buildings.
- Pedestrian- and bicycle-friendly connections from neighborhoods to neighborhood centers.
- Pricing that encourages sustainable travel and discourages single-occupant vehicle travel.
- Frequent, clean, easy-to-use buses coupled with transit passes and bicycle racks.
- Alleys.
- Formally aligned street trees.
- On-street parking.
- Pedestrian short-cuts (cross-access sidewalks, diagonal sidewalk alignment, no walled/gated subdivisions).
- A connected, citywide trail system.

Buildings & Land Use

- Mixed use (vertical, or horizontal within ¼ mile walking distance).
- Buildings at least 2 stories high.
- Mixed housing types.
- In-town development instead of development remote from downtown or neighborhood centers.
- Daily needs (residence, office, retail, recreation, civic) within ¼ mile walking distance, and less frequent needs within 3-mile bicycle/transit range.
- Residential density of at least 7 du/acre and commercial intensity of at least 1.00 FAR (floor area ratio).
- Modest front yard setbacks. For example, building facades aligned at streetside sidewalks.
- Building entrances facing the street.
- Front porches.
- Buildings, lighting, parking scaled for people instead of cars.
- Car-oriented uses designed to be scaled for, and compatible with, neighborhoods.

The street system in Gainesville is the fundamental driving force in shaping the character of the city. "They [streets] enliven daily life or deaden it. They foster human contact or frustrate it. They broaden people's choices or limit them to a narrow range of experiences."[1]

A prominent Florida transportation planner[2] agrees that transportation drives land use and makes this point about a street designed for 50 miles per hour and 50,000 car trips per day: "The 50/50 arterial is a gift-wrapped, gold-plated, gift to strip development. Once in place, almost no power on earth will stop its march toward strip commercial."

By recognizing that transportation drives land use, and that car-focused level-of-service standards encourage sprawl into outlying areas, the City has established a Transportation Concurrency Exception Area (TCEA), the details of which are described later below.

Some Problems Associated with a Lack of Transportation Choices

Excessive Car Dependency Bad for Gainesville's Economy. If cities such as Gainesville invest too much in street widenings, they become less efficient and ultimately less competitive than cities with transportation choices.[3] Cities with the most substantial investments in widening major arterials and other streets, and the highest levels of per capita motor vehicle use, show no corresponding economic advantages. Their "gross regional product" (GRP) is no better than cities with more modest streets.

The world's most car-dependent cities are in the United States and Australia, and devote, by far, the highest share of their GRP to expenditures for transportation (for all forms of travel, private and public). The more money a city puts into street widenings and cars, the less healthy the city transportation systems become. In the United States, on average, 12.4 per cent of a city's GRP is spent getting around. In Toronto, with significantly greater transit capacity and correspondingly lower levels of car use, the equivalent figure is 7.4 per cent.

High Financial Costs. High levels of car travel are extremely costly for households. The average car now costs approximately $4,500 each year to operate,[4] which is equivalent to a $45,000 home mortgage, at 10 percent interest.[5] The average family spends 25 percent of its total income to own and operate cars, compared to 20 percent for housing, 19 percent for food and alcohol, and 1 percent for education. In 1960, only 13 percent of family income went to cars.[6]

Car travel is also expensive for businesses, which spend $85 billion each year to provide free parking for employees. Vehicle crashes in 1992 cost the U.S. $137 billion.

Large Subsidy. The social costs of driving that are not paid by the driver amount to a $300 billion subsidy each year.[7] The EPA (Lowe, 1988) found that if employees were directly handed this subsidy, transit and bicycle use would go up and motor vehicle traffic would go down by 25 percent. A Seattle study found that society pays a $792 subsidy to each motorist each year (excluding a $1,920 annual free parking subsidy).[8] In New York City, the metro area loses $55 billion each year in hidden car costs associated with safety and environmental damage.[9] More than 90 percent of all commuters park for free at work.[10]

Urban Sprawl and Strip Commercial Development. Car infrastructure promotes urban sprawl and reduces the viability and livability of downtown Gainesville.[11] Increasing street capacity (by widening streets, synchronizing signals, or adding turn lanes) reduces travel costs, which in turn reduces the need for citizens to live close to their day-to-day travel destinations, which therefore encourages citizens to locate in remote, dispersed areas. Sprawl also reduces the viability of bicycling and walking by increasing trip distances.[12]

Summary

The key objective is for the City to establish an environment which balances the various forms of travel – an environment rich in transportation choices. By achieving and maintaining such an environment, the City will ensure a high quality of life, a healthy local economy, a healthy natural environment, attractive streets promoting civic pride, transportation equity, independence of travel for those without access to a car, affordable costs for households and local governments, and minimization of costly urban sprawl.

Pedestrians

The 3 keys for establishing a pedestrian-friendly community are:

1. Convenience
2. Comfort
3. Safety

One fundamental yardstick of life within a city is the quality of the walking environment. Walkable cities are livable cities.

Advantages of Walking as a Form of Travel

- Walking is the most reliable form of travel, and is cost-free. It is an "equal opportunity" form of travel because, more so than with other forms of travel, walking can be done by nearly anyone -- regardless of income and without need for athletic physical ability.
- Walking requires none of the enormous space requirements demanded by motor vehicles for parking and driving.
- The maximum field of vision is obtained when walking. As a result, when there are reasonable numbers of pedestrians, buildings along the street tend to be more detailed and interesting -- because it is only at the speed of the pedestrian that such detailing can be seen and appreciated.
- A quality walking environment promotes a healthy transit system.
- Walking is good for retail health.
- Walkable cities tend to be attractive to tourists.

Existing System and Analysis for Walking

Levels of Travel by Pedestrians

Gainesville has a relatively high level of citizens who are active and outdoors-oriented. The community is also the youngest in Florida. For these reasons, a relatively high number of city residents either walk or have the potential to walk regularly.

In 1990, over 10 percent of all trips to work in Gainesville were by foot (including those who worked at home), according to the 1990 U.S. Census.

Pedestrian Facilities and Programs

As of 1999, there are approximately 116 miles of arterial and collector streets within the Gainesville urban area. Of this, approximately 14 miles lacked sidewalk on both sides, and an additional 14 miles lacked sidewalk on one side. Therefore, approximately 28 miles of major streets in the urban area lack sidewalk on at least one side. This represents 24 percent of all major streets in the urban area (see Figures 2 & 3).

The citywide Trail Network is, in general, not associated with the city street system. The Network provides off-street travel for pedestrians, bicyclists, and, when the trail is paved, the disabled (see Figure 17).

However, it should be noted that in 1998, city residents voted to amend the City charter to prevent the City from constructing impervious [paved] trail surfaces within the Hogtown Creek watershed in the western portion of the city.

From 1983 to 1989, and from 1992 to 1997, the City employed a full-time bicycle/pedestrian coordinator. Since 1999, the bicycle/pedestrian coordinator position has been replaced by two new positions. A transportation planning analyst manages the planning, development, and design for bicycle and pedestrian facilities integrated with overall transportation planning. Additionally, a bicycle/pedestrian program assistant manages special events and marketing efforts to improve safety awareness and encourage the use of non-car travel. The program encompasses long- and short-range facility planning, development review, safety education, and publicity to promote bicycling and walking.

The City Land Development Code was amended in 1998 to include “Traditional City” and “Central Corridors” ordinances. These ordinances are intended to dramatically improve the safety, comfort and convenience of pedestrians. Through these ordinances, new developments in the central areas of the city must abide by such objectives. In addition, throughout the city, the Code (Sec. 30-188) has recently adopted new requirements for the installation of sidewalks on nearly all new streets, all of which must be at least 5 feet wide, and have a clear width of at least 5 feet.

As noted above, the City has also designated a Trail Network (see Figure 17). Over time, the City is incrementally developing trails available for use by pedestrians to complete the Network. When completed, this Network will provide pedestrian links from neighborhoods to public schools, jobs, parks, other neighborhoods, civic and cultural facilities, shopping areas, and outlying towns. For areas outside of the Hogtown Creek watershed, the trails can also provide travel for bicyclists and those in wheelchairs.

Pedestrian Safety

The Surface Transportation Policy Project[13] reports that walking is more dangerous than driving, flying, or riding a bus or train. This group notes that this is primarily because our streets are designed for cars instead of people -- essentially high-speed freeways. The group also notes that most pedestrian fatalities occur on neighborhood streets.

Research shows that car/pedestrian crashes are expensive:[14]

- The average economic cost of a vehicle/pedestrian crash is $42,340. This includes medical, legal, emergency, vehicle repair, and administrative services, lost productivity, travel delay and workplace disruption.

- The vehicle/pedestrian crash cost is second only to “head-on” crashes at $50,770, and almost twice as much as the third most expensive crash type: those occurring at a signalized intersection with perpendicular movements ($21,690). In other words, if one concentrates on preventing or lessening the impact of vehicle/pedestrian and “head on” crashes, they are getting good value.

- The average “comprehensive” cost of a vehicle/pedestrian crash is $141,480. This includes economic costs plus pain and suffering. The latter is based on willingness-to-pay studies.

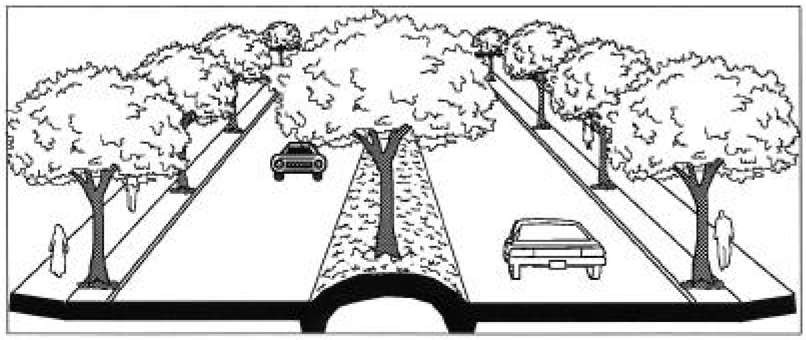
It is important for pedestrian safety that the following pedestrian safety principles be adopted:

- **Modest turning radii** at intersections, which slows motor vehicle turning movements, and reduces the exposure time of a pedestrian within motor vehicle travel lanes.
- **Traffic calming**. Research shows that slower motor vehicle traffic dramatically enhances pedestrian safety. Features include speed humps; speed tables; landscaped bulb-outs; on-street parking; crosswalks with special textures, materials, or colors; and narrower streets and travel lanes. Ewing[15] recommends that local streets use a speed limit no higher than 20 mph, and that arterials and collectors be no higher than 35 mph.
- **Modest travel lanes, crosswalks, and street widths**. In general, travel lanes should not exceed 11 feet in width, and the number of travel lanes should not exceed 4. More excessive widths dramatically endanger the safety of a pedestrian because it increases both the exposure time of a pedestrian within motor vehicle travel lanes, and increases average motor vehicle speeds. Another dangerous feature is a turn lane -- particularly when there is more than one. Such lanes can dramatically increase vehicle speeds and the width of street that must be crossed. They also tend to make the motorist less attentive to pedestrians and bicyclists. Traffic signal cycles should be no more than 60 seconds.
- **Modestly-sized parking lots at the side or rear of buildings**. Large parking lots, or lots in front of the building, decrease pedestrian safety because they increase the amount of interaction between pedestrians and moving vehicles. Pulling buildings relatively closely to the street and installing an entrance that faces the street greatly improves pedestrian safety, comfort, and convenience.
- **Adequate sidewalk widths**. Ample sidewalk width promotes pedestrian safety by providing additional separation between a pedestrian and moving vehicles on the street. Adequate width also enhances the pedestrian experience because pedestrians can walk side-by-side. Adequate width is achieved both by ensuring that sidewalks are wide enough to accommodate pedestrian volumes expected by the nearby land uses, as well as keeping the needed width free of obstructions such as sign poles, light poles, and utility structures.
- **Modest driveway widths**. Driveways that are wide enough to accommodate the infrequent turning movement of large trucks tend to reduce pedestrian safety because such excessive widths encourage high-speed turning movements by the frequent, smaller car and truck. Excessive widths also increase the exposure time the pedestrian experiences in the motor vehicle movement zone along the sidewalk.
- **Minimized walking distances**. The most effective ways to minimize walking distance -- an important means of encouraging walking -- is to establish relatively high residential and commercial densities, mixed land use, creating non-street pedestrian access points between adjoining properties (especially schools and retail areas) and modest building setbacks. Other techniques include modest block face lengths (no more than 400-500 feet),[16] diagonally aligned sidewalks, pedestrian connections at dead-ends or cul-de-sacs, straight instead of curvilinear sidewalks along streets, provisions for mid-block crossings, streets with narrow travel lane widths or a modest number of lanes, and building entrances facing the primary pedestrian street.
- **No Superelevations**. Low speed streets in traditional neighborhoods never superelevate street curves. Superelevation makes the driver feel safer driving at higher speeds (the reason for banked curves at race car tracks). Therefore, such design encourages motorist speeding. Superelevation also makes drainage, intersection and pedestrian crossing design more difficult.[17]
- **Modest Centerline Radii**. Like excessive turning radii, a large centerline radius encourages high vehicle speeds, which tend to be dangerous and otherwise inappropriate within the city. The residential subdivision ordinance should not allow a centerline radius in excess of 150 feet (appropriate for a design speed of 25 mph). Preferably, residential streets would not have a centerline radius in excess of 90 to 120 feet.[18]

Pedestrian-friendly streets and intersections

Streets should be more than public utilities, more than the equivalent of water and sewer lines, more than just a conduit for cars. Streets in cities must also provide places for casual socializing, business transactions, and leisurely strolling. Great streets are places where you can comfortably and safely walk, where you find clearly defined boundaries and qualities that engage your eye, where buildings complement each other and work together to provide a quality public realm.[19]

Raised medians provide a safe refuge area in the middle of the street for crossing pedestrians. Pedestrian safety and convenience is promoted because pedestrians only need to look in one direction when moving to or from the refuge to cross the street, can wait in a safe area in the middle of the street, and do not need as large a gap in the motor vehicle traffic flow, as is required when no raised median is present.



In areas designed to promote the pedestrian, intersection crosswalk lengths should be minimized by minimizing turning radii, so that motor vehicle turning speeds are less than 20 miles per hour on left turns and less than 10 miles per hour on right turns, and so that the length of the crosswalk is no more than 48 feet. Left turns should be minimized or eliminated in downtowns and neighborhood (activity) centers. Sidewalk extensions can also be used to reduce crossing lengths and slow motor vehicle speeds.[20]

Definition of "A" Streets. It is important that the City identify those streets that demonstrate – or have the potential to demonstrate – exceptionally high pedestrian qualities. "A" streets provide quality comfort, safety and convenience for pedestrians.

"A" street: A street which is designed with, or otherwise characterized by features that promote the safety, comfort, and convenience of pedestrians, and does so in a relatively exceptional way, as determined by the city manager or designee. Such streets typically feature sidewalks at least 5 feet wide (higher for commercial, mixed-use, in-town locations), narrow streets, buildings pulled up close to the street, no front yard off-street parking, pedestrian-scaled lighting, on-street parking, landscaped medians, articulated building walls, aligned building facades, a building entrance on the street, modest turning radii, trash receptacles remote from the sidewalk, and outdoor mechanical equipment on the side, rear or roof of buildings.

"A" streets are the streets where the City should focus its regulatory and pedestrian enhancement efforts. Striving to make all streets quality pedestrian streets leads to mediocrity, because "anti-pedestrian" features must be placed somewhere, and "A" street designation establishes a clear distinction about where such features should not be located.

Obstructions. Sidewalks should, to the extent possible and appropriate, remain free of obstructions such as poles. When installation of obstructions is necessary, at least 5 feet should remain unobstructed, with larger unobstructed areas for relatively major streets or higher-density areas.

Disordered and Messy. Because of their unsightly, noisy, smelly nature, dumpsters, outdoor mechanical equipment, and long expanses of blank walls (including a lack of street-level and transparent windows) should be remote from, or screened from, streetside sidewalks to promote a more pleasant pedestrian experience.

Street trees. Formally aligned, consistently-sized street trees provide a means of "narrowing down" a street where the facing buildings are too far apart to create the pleasant "outdoor room" ambience. They provide shade, reduce the "heat island" effect of heat radiating from asphalt and concrete, provide habitat for urban wildlife, enhance nearby property values, and create a memorable, picturesque, inviting place to walk.

Gated Subdivisions. A residential development practice being used over the past decade or so is to develop a gated residential subdivision, or to place a wall around the residences. Such a practice can be detrimental to the "inclusive" sense of community objectives of the City, and the desire to ensure transportation choice. Gates and walls usually reduce travel choice because they significantly increase walking or bicycling distance (which, thereby, also harms transit use).

Sidewalks on streets. Portland, Oregon has established a "pedestrian friendliness" index. The index measures the quality of the pedestrian environment based on the following criteria: (1) ease of street crossing; (2) sidewalk continuity; and (3) street characteristics (grid being better than cul-de-sac).[21] Portland has been restricting or removing vehicle parking in downtown (a permanent cap on such parking was imposed in 1972), has stopped widening downtown streets, has converted about one mile of streets into people-oriented transit areas, has widened sidewalks, and prohibits large blank walls along sidewalks. The downtown is now widely recognized for being economically healthy, vibrant, and livable. Carbon monoxide violations have dropped from 100 per year to zero.[22]

An increase in pedestrian-friendly designs (such as ease of street-crossing, sidewalk continuity, and grid street patterns) in Portland was found to reduce car ownership and increase travel by means other than a car. The average number of cars per household in areas that were hostile to pedestrians was 32 percent higher than in pedestrian-friendly areas.[23]

Existing and Future Pedestrian Needs

While Gainesville has made significant progress in providing an environment conducive to pedestrian transportation, there is much that needs to be done.

For example, traffic signals should be evaluated to determine if sufficient time is provided for pedestrians to cross at crosswalks, and if certain street segments – such as East University Avenue – require additional, specially-designed crossing locations.

The City Public Works Department and Community Development Department have identified needed sidewalk projects as shown in Table 1. Many of these projects are needed to complete sidewalks that are discontinuous (sidewalk gaps), or where sidewalks only serve one side of the street.

As can be seen in Figures 2 & 3, important sidewalk gaps currently exist on city arterials and collectors. The most serious gaps that need to be filled are those where pedestrian travel is most likely:

- Arterial or collector street
- Areas of relatively high residential density or commercial intensity
- Areas with a compact, mixed land use pattern (residential and non-residential within a ¼ mile walking distance)
- Proximity to a public school
- Proximity to a public park

Using these criteria, the most important sidewalk gaps that need to be filled include (see Figure 2):

1. North Main Street between NE 8th Avenue and N 23rd Avenue.
2. NW 2nd Street between NW 4th Avenue and NW 8th Avenue.
3. NW 6th Street between University Avenue and NW 7th Avenue.
4. SE 4th Avenue between SE 3rd Street and Williston Road.
5. NW 10th Street between University Avenue and NW 3rd Avenue.
6. NW 12th Street between University Avenue and NW 5th Avenue.
7. NW 17th Street between NW 3rd Place and NW 8th Avenue

Table 1. sidewa lk gaps

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Table 1. Important Sidewalk Gaps Within City

Project	From	To	Priority Source	Estimated Cost	Funding Status	Funding Source
NE 10 Ave.	NE 6 St.	NE 12 Terr.	MTPO LRTP/Public Works		Unfunded	City
NE 15 St.	NE 39 Ave.	NE 53 Ave.	Public Works		Unfunded	City
NE 18 Ave.	NE 12 St.	NE 15 St.	Public Works (school)		Unfunded	City
NE 19 Place	NE 9 St.	NE 15 St.	Public Works (school)		Unfunded	City
NE 24 St.	NE 8 Ave.	NE 1000 block	Public Works (school)		Unfunded	City
NE 31 Ave.	Main St.	NE 9 St.	Public Works		Unfunded	City
NE 31 Ave.	NE 9 St.	Waldo Rd.	Public Works (school)		Unfunded	City
NE 31 Ave.	NE 19 Dr.	Waldo Rd.	Public Works (school)		Unfunded	City
NE 8 Ave.	NE 22 Terr.	NE 25 St.	Public Works (school)		Unfunded	City
NE 9 St.	NE 23 Ave.	NE 31 Ave.	Public Works		Unfunded	City
NW 10 Ave.	NW 18 Terr.	NW 13 St.	Public Works		Unfunded	City
NW 10 Ave.	1208 & NW 10 St.	NW 6 St.	Public Works		Unfunded	City
NW 10 Ave.	NW 6 St.	Rail ROW	MTPO LRTP/Public Works		Unfunded	City
NW 17 St.	NW 5 Ave.	NW 8 Ave.	Corridors To Campus/ Public Works *		Unfunded	City
NW 18 Terr.	NW 7 Ave.	NW 8 Ave.	Public Works (school)		Unfunded	City
NW 18 Terr.	NW 5 Ave.	NW 7 Ave.	Public Works (school)		Unfunded	City
NW 19 St.	NW 5 Ave.	NW 7 Ave.	Corridors To Campus/ Public Works *		Unfunded	City
NW 2 St.	NW 8 Ave.	NW 16 Ave.	Public Works		Unfunded	City
NW 2 St.	NW 4 Ave.	NW 8 Ave.	Public Works		Unfunded	City
NW 2 St.	NW 16 Ave.	NW 23 Ave.	Public Works		Unfunded	City
NW 2 St.	1600 block & NW 19 Ave.	NW 19 Lane	Public Works		Unfunded	City
NW 20 St.	NW 7 Ave.	NW 8 Ave.	Public Works (school)		Unfunded	City
NW 22 St.	NW 9 Ave.	NW 16 Ave.	Public Works		Unfunded	City
NW 24 Blvd.	NW 41 Ave.	NW 44 Place	Public Works (school)		Unfunded	City
NW 3 St.	NW 3 Ave.	NW 8 Ave.	Public Works		Unfunded	City
NW 34 St.	NW 23 Terrace	NW 13 St.	Public Works		Unfunded	Federal, State
NW 36 St.	SW 2 Ave.	NW 8 Ave.	Public Works		Unfunded	City
NW 39 Rd.	Newberry Rd.	NW 8 Ave.	Public Works		Unfunded	City
NW 43 St.	NW 65 Ave.	NW 13 St.	Public Works		Unfunded	Fed, State, Local
NW 5 Ave.	NW 19 St.	NW 17 St.	Corridors To Campus/ Public Works *		Unfunded	City
NW 53 Ave.	NW 13 St.	East City Limit	Public Works		Unfunded	Fed, State, Local
NW 7 Ave.	NW 10 St.	NW 8 St.	Corridors To Campus/ Public Works *		Unfunded	City
SE 13 St.	SE 7 Ave.	SE 3 Ave.	Public Works (school)		Unfunded	City
SE 13 St.	SE 3 Ave.	E. University Ave.	Public Works (school)		Unfunded	City
SE 15 St.	Hawthorne Rd.	E. University Ave.	Public Works (school)		Unfunded	City
SE 15 St.	SE 14 Ave.	South City Limit	Public Works (school)		Unfunded	City
SE 22 Ave.	SE 10 Terr.	SE 15 St.	Public Works (school)		Unfunded	City
SE 25 St.	E. University Ave.	NE 8 Ave.	Public Works		Unfunded	City

Source: Gainesville Public Works Dept., 3/23/00

*In the course of reviewing the Corridors to Campus study, the Public Works Dept has assigned these projects a low priority due to right-of-way constraints.

3/27/00

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Table 1. Important Sidewalk Gaps Within City

Project	From	To	Priority Source	Estimated Cost	Funding Status	Funding Source
SE 4 Ave.	SE 3 St.	Williston Rd.	Public Works		Unfunded	City
SE 4 St.	Williston Rd.	SE 22 Ave.	Public Works		Unfunded	City
SE 4 St.	Depot Ave.	Williston Rd.	Public Works		Unfunded	City
SE 9 St.	SE 4 Ave.	SE 2 Ave.	Public Works		Unfunded	City
SW 10 St.	SW 8 Ave.	SW 2 Ave.	Corridors To Campus/ Public Works *		Unfunded	City
SW 3 St.	SW 8 Ave.	SW 5 Ave.	Public Works		Unfunded	City
SW 3 St.	SW 5 Ave.	SW 4 Ave.	Public Works		Unfunded	City
SW 4 Ave.	SW 6 St.	SW 3 St.	Public Works		Unfunded	City
Depot Ave.	SW 11 St.	Williston Rd.	MTPO LRTP & 1999 List of Priority Projects		Unfunded	Fed, State, Local
N Main St.	N 8 Ave.	N 23 Ave.	MTPO Long Range Trans Plan & 1999 List of Priority Projects		Unfunded	Fed, State, Local
NW 34 St.	NW 39 Ave.	Buck Bay	MTPO LRTP		Unfunded	Fed, State, Local
NW 37 St.	NW 53 Ave.	end	MTPO LRTP (school)		Unfunded	Federal, City
NW 41 St.	NW 16 Ave.	NW 28 Lane	MTPO LRTP		Unfunded	Federal, City
NW 43 St.	6000 block	NW 13 St.	MTPO LRTP		Unfunded	Fed, State, Local
NW 6 St.	W. University Ave.	NW 7 Ave.	MTPO LRTP		Unfunded	Fed, State, City
NW 6 St.	End of C&G	NW 13 St.	MTPO LRTP		Unfunded	Fed, State, City
SE 16 Ave.	Main St.	Williston Rd.	MTPO LRTP & 1999 List of Priority Projects		Unfunded	Federal, State
SW 13 St.	Williston Rd.	SW 16 Ave.	MTPO LRTP		Unfunded	Federal, State
SW 2 Ave.	Firestation	Univ Ave/ President's house	MTPO LRTP		Unfunded	Federal State
SW 2 Ave.	Firestation	W. 36 St.	MTPO LTRP		Unfunded	Federal, State
SW 20 Ave.	SW 75 St.	SW 34 St.	MTPO LRTP & 1999 List of Priority Projects		Unfunded	Fed, State, Local
SW 62 Blvd.	SW 20 Ave.	Newberry Rd.	MTPO LRTP (school)		Unfunded	Fed, State, City
Univ. Ave.	W 6 St.	E 9 St.	MTPO LRTP		Unfunded	Federal, State
W 13 St.	SW 14 Dr.	NW 8 Ave.	MTPO LRTP		Unfunded	Federal, State

Source: Gainesville Public Works Dept., 3/23/00

*In the course of reviewing the Corridors to Campus study, the Public Works Dept has assigned these projects a low priority due to right-of-way constraints.

7/27/00

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Table 1. Important Sidewalk Gaps Within City

Project	From	To	Priority Source	Estimated Cost	Funding Status	Funding Source
NW 10 St.	W University Ave.	NW 3 Ave.	CRA	$1,000	Funded	CRA
NW 12 St.	W University Ave.	NW 3 Ave.	CRA	$10,000	Funded	CRA
NW 3 Ave.	NW 10 St.	NW 12 St.	CRA	$10,000	Funded	CRA
NW 3 Ave.	NW 14 St.	NW 15 St.	CRA	$5,000	Funded	CRA
NW 5 Ave.	NW 13 St.	NW 17 St.	CRA	$32,000	Funded	CRA
SW 8 Ave.	SW 12 St.	SW 8 St.	CRA	$16,000	Funded	Challenge Grant
SW 9 St.	SW 6 Ave.	Depot Ave.	CRA	$41,000	Funded	Challenge Grant
NW 1 Ave.	NW 14 St.	NW 20 St.	Corridors To Campus	$78,000	Funded	Campus Dev Agreemt
NW 12 St.	NW 3 Ave.	NW 5 Ave.	Corridors To Campus	$20,000	Funded	Campus Dev Agreemt
NW 17 St.	NW 3 Place	NW 5 Ave.	Corridors To Campus	$16,000	Funded	Campus Dev Agreemt
NW 18 St.	NW 1 Ave.	NW 2 Ave.	Corridors To Campus	$9,000	Funded	Campus Dev Agreemt
SW 12 St.	SW 8 Ave.	SW 2 Ave.	Corridors To Campus	$20,000	Funded	Campus Dev Agreemt
SW 4 Ave.	SW 12 St.	SW 13 St.	Corridors To Campus	$9,000	Funded	Campus Dev Agreemt
SW 5 Ave.	SW 13 St.	SW 10 St.	Corridors To Campus	$24,000	Funded	Campus Dev Agreemt
SW 6 Ave.	SW 12 St.	SW 10 St.	Corridors To Campus	$5,491	Funded	Campus Dev Agreemt
NW 14 St.	NW 1 Ave.	NW 5 Ave.	Public Works	$19,000	Funded	CIP
NW 15 St.	NW 2 Ave.	NW 5 Ave.	Corridors To Campus	$25,000	Funded	CIP
NW 2 Ave.	NW 13 St.	NW 20 St.	Public Works	$37,000	Funded	CIP
NW 3 Ave.	NW 16 St.	NW 17 St.	Corridors To Campus	$18,000	Funded	CIP
NW 3 Ave.	NW 15 St.	NW 13 St.	Corridors To Campus	$10,000	Funded	CIP
NW 7 Ave.	NW 10 St.	NW 12 St.	Public Works	$4,000	Funded	CIP
SW 1 Ave.	SW 8 St.	SW 10 St.	Corridors To Campus	$9,000	Funded	CIP
SW 10 St.	SW 6 Ave.	SW 7 Ave.	Public Works	$6,000	Funded	CIP
SW 3 Ave.	SW 10 St.	SW 13 St.	Corridors To Campus	$28,000	Funded	CIP
SW 6 Ave.	SW 12 St.	SW 9 St.	Corridors To Campus	$21,509	Funded	CIP
SW 7 Ave.	SW 9 St.	SW 10 St.	Corridors To Campus	$18,000	Funded	CIP
SW 8 St.	Depot Ave.	SW 8 Ave.	Corridors To Campus	$16,000	Funded	CIP
NW 28 Lane	NW 43 St.	NW 41 St.	MTPO LRTP	$10,080	Funded	Federal, City
NW 25 Pl.	NW 43 St.	NW 41 St.	Public Works	$8,820	Funded	CIP
NW 19 St.	NW 29 Rd.	NW 45 Ave.	MTPO LRTP (school)/Public Works	Not yet available	Funded	CIP/Rd. Reconst.
NW 29 Rd.	NW 19 St.	NW 13 St.	Public Works	Not yet available	Funded	CIP/Rd. Reconst.
NW 38 St.	NW 8 Ave.	900 block	Public Works (school)	Not yet available	Funded	CIP/Rd. Reconst.
NW 45 Ave.	NW 24 Blvd.	NW 13 St.	MTPO LRTP (school)/Public Works	Not yet available	Funded	CIP/Rd. Reconst.
NW 55 St.	NW 9 Place	NW 23 Ave.	2000-2004 TIP	$177,000	Funded	Fed. ENH
W University Ave.	SR 26A (firestation)	W. 36 St.	2000-2004 TIP	Not yet available	Funded	State, Local
SW 2 Ave	SR 26 (firestation)	2300 block	2000-2004 TIP	Not yet available	Funded	State, Local
SW 2 Ave	SW 34 St.	SW 25 St.	2000-2004 TIP	Not yet available	Funded	State, Local
NE 1 Blvd.	Main St.	Main St.	Public Works		Unfunded	City

Source: Gainesville Public Works Dept., 3/23/00

*In the course of reviewing the Corridors to Campus study, the Public Works Dept has assigned these projects a low priority due to right-of-way constraints.

7/27/00

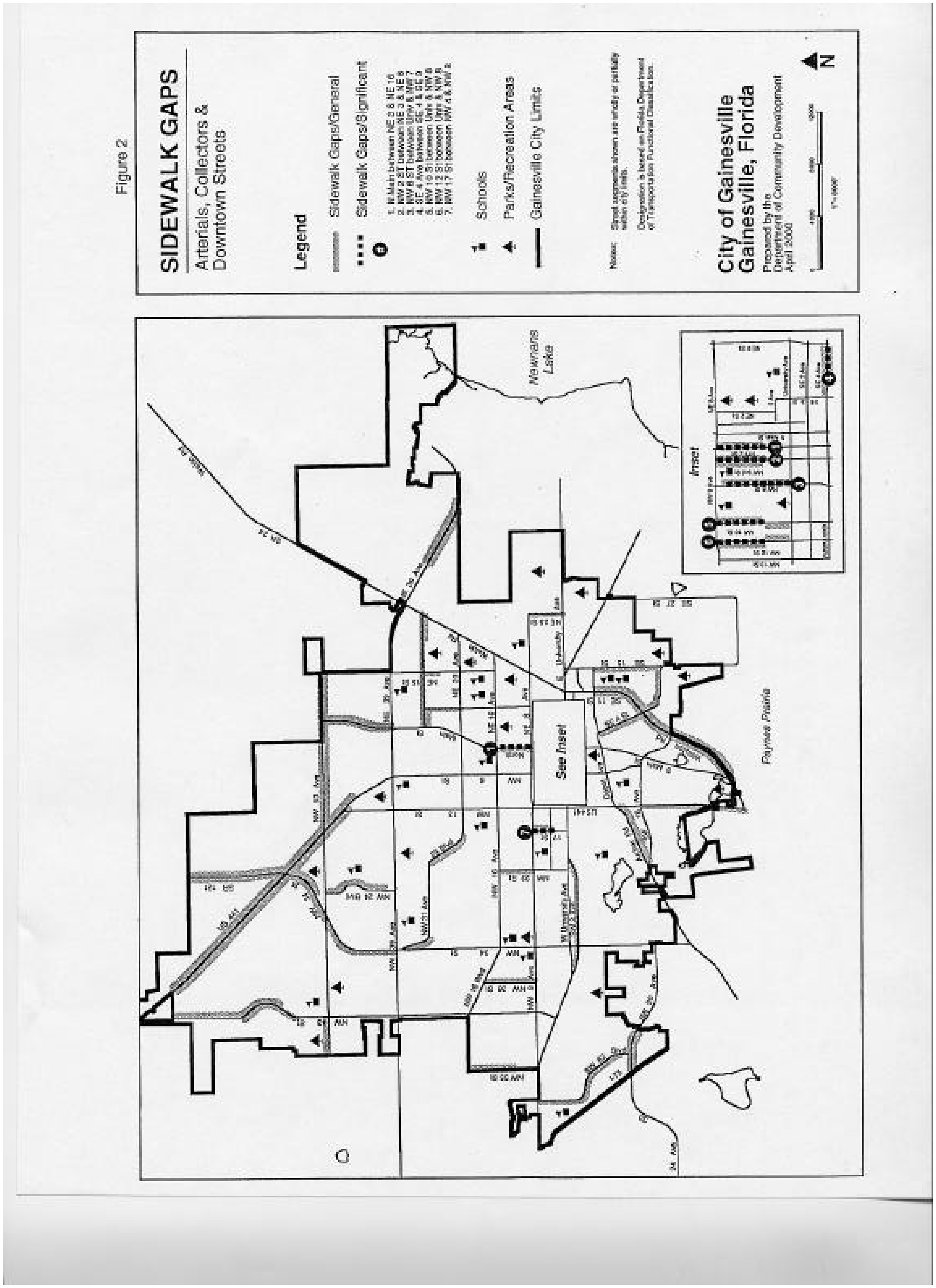


Figure 2
SIDEWALK GAPS
Arterials, Collectors & Downtown Streets
Legend
Sidewalk Gaps/General
Sidewalk Gaps/Significant
Schools
Parks/Recreation Areas
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Newnans Lake
Paynes Prairie
See Inset
Inset

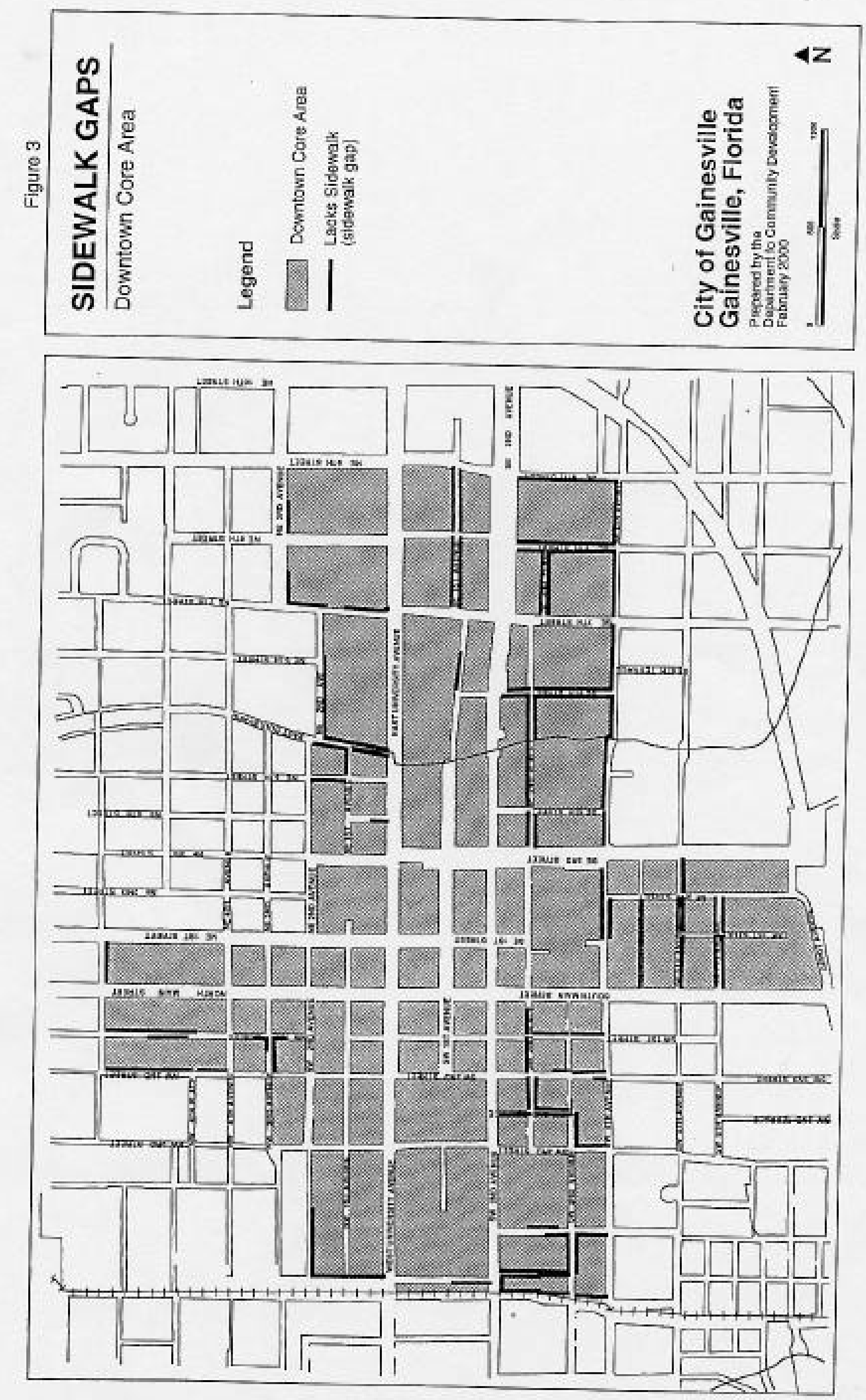


Figure 3
SIDEWALK GAPS
Downtown Core Area
Legend
Downtown Core Area
Lacks Sidewalk
(sidewalk gap)
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
February 2000

Sustainability Indicators for Walking

- Miles of sidewalks on arterials and collectors over time

This indicator chart shows the progress being made by the City to provide important travel corridors in the city with more transportation choices. An increase in sidewalk mileage over time indicates progress in improving the environment for pedestrians and transit users.

- Percentage of arterials and collectors w/ sidewalks over time

Like the "miles of sidewalks on arterials and collectors" chart, this indicator shows progress being made in making the city environment more accommodating for transportation choice. A percentage indicator shows whether progress is being made in making the sidewalk system comprehensive. An absolute mileage increase indicator does not necessarily show this, since it could be the result of additional streets being built, rather than a more comprehensive coverage.

Transit

Introduction

The Regional Transit System (RTS) has recently been successful in reversing several years of bad service design principles. Unlike in the past, ridership is growing, fares are stable instead of increasing, more transit passes are now made available, and public support is growing. Now, instead of assuming that the only people who are forced to use the bus will, in fact, use the bus, the system is being designed for people who have other travel choices, as well as for those with special needs. A new ridership market being sought (people with a choice) means that RTS must work hard to be competitive with other forms of travel. This new attitude can result in improved bus service. By contrast, a system designed to carry people without a choice lacks this incentive to provide improved service, since the small "no choice" market will use the bus regardless of quality.

By also targeting the larger market of those who have travel choices, RTS is able to attract a much larger number of riders, since most licensed drivers can choose to drive a car.

Also, by targeting the "choice" market, RTS is now successfully avoiding the "empty bus syndrome." Full buses create more public support for transit. By contrast, empty buses create a negative public image of transit and reduces support for more buses. It is clear that a healthy number of passengers is the way to create a healthy transit system. If the RTS assumes that the only passengers will be the few people who have no choice but to ride the bus, then RTS will, indeed, have very few passengers on the buses. The RTS would be planning for failure. The "choice" and "no choice" market strategy is bringing success. This is evident in the case of service to UF, which, in recent years, has increased substantially – as has ridership on the routes serving UF.

The City is committed to striking a balance between the transit needs of those who are forced to use a bus, and the large percentage who have the choice to drive a motor vehicle instead of ride a bus.

Advantages of the Bus as a Form of Travel

- An increase in bus travel reduces air pollution, noise pollution, and water pollution.
- An increase in bus travel reduces the need for surface parking lots.
- An increase in bus travel reduces local consumption of gasoline.
- Buses provide mobility for those who do not have access to a motor vehicle.
- Bus travel costs individual passengers less money than private motor vehicle travel.
- An increase in bus travel can reduce motor vehicle traffic volumes on city streets.

- Bus travel is much safer than car travel.
- Buses require substantially less space, overall, than cars, for the number of people carried.
- Designing the street network to accommodate buses creates an environment that is more conducive to bicycling and walking.

Dramatic Recent Increases in Bus Ridership[24]

From 1985 through 1989, ridership fell every year (see Figure 6). Buses operating on the streets were cut every year during this period. Bus fares were raised from 50 cents to 75 cents to $1.00. Transfers that were free increased to 10 cents, then 25 cents. RTS was just barely surviving.

Since 1998, major changes have been made to RTS to better serve the University of Florida (UF) campus. A partnership between the City, Alachua County, UF, the Florida Department of Transportation (FDOT), and the Federal Transit Administration has directed that the transit system focus on the UF campus more so than ever before. Over 60,000 faculty, staff, employees, visitors, and students, make their way each day to UF and Shands. UF has enormous transit ridership potential. As a result, the City believes that even with the substantial increase in ridership in recent years (in large part due to the students voting to increase their fees to obtain a transit pass), we have just scratched the surface in terms of ridership levels.

In 1998, RTS completed its best year ever, as measured by ridership on city bus routes. RTS carried 2,314,384 passengers. That number is up from 1,303,463 in 1997 and 1,148,568 passengers in 1996 (See Figure 6). That represents a 102-percent increase in ridership in just two years. The best previous year for city route ridership was 1985 when transit carried 1,535,737 passengers in Gainesville. After adding in campus shuttle services, overall ridership was 3,355,341 for 1998.

Ridership for the month of September 1998 was up 184 percent from the two prior Septembers. City bus routes boarded 325,855 passengers in September 1998, compared to 154,881 passengers during September 1997 and 114,883 passengers during September 1996. These ridership gains came because public transit is now being provided, directly and frequently, to the UF campus. UF students have responded by using the redesigned bus routes at record levels. UF students now comprise over 70 percent of transit ridership. Overall ridership, including campus shuttles, for the month of September was 478,463 passengers. This is an impressive increase, considering the fact that RTS, not long ago, carried around 2 million passengers for an entire year.

There are several reasons for the recent success of the City RTS as it applies to UF ridership growth:

- **Limiting Growth in UF Parking**. The most important reason there has been a significant growth in people choosing to ride transit to UF is the limiting of the growth in parking spaces on campus. If the campus provided over-abundant parking, too many trips to the campus would be by car. The only exception would be people who don't have access to a car. Therefore, as the number of people wanting to commute to campus has increased and the parking supply has not increased, RTS has benefited from an important opportunity to generate ridership. There is no place in the city that is more pedestrian- and bicycle-friendly than the UF campus – an environment that effectively promotes transit ridership. However, as shown in Figure 25, the increase in UF parking supply has only stabilized in recent years.

- **Direct, Frequent Service to UF**. If bus service were indirect and infrequent, as it was for many years in the city, few people could be encouraged to leave their car at home to use the bus. Therefore, the second most important reason that people are choosing to ride the bus to UF is that RTS is providing, for the first time, direct, frequent service to campus. The City believes that even more people would ride the bus to campus, beyond the recent growth in ridership, if the City had the capacity to accommodate more riders.

- **Gator One UF Bus Pass Card**. Third, the City does not believe the impact the Gator One Bus Pass Card has had on UF students use of the bus can be overestimated. Every UF student is now a "member of the bus riders club," not just a passenger. This new "membership" concept is making bus riding socially acceptable for the students. The City recently expanded this membership to include all faculty, staff, and employees of UF. In the near future, plans are to extend the Pass Card to Shands. This expanded membership will add another 20,000 potential riders to the RTS market to campus.

- **RTS Staff**. Finally, the City recognizes the staff at RTS who are rising to meet the challenge everyday to get the buses out on the street. If the buses aren't there on time, if they aren't safe, reliable, clean, and comfortable, if the bus drivers don't care, then all of the best laid plans would be for naught.

The City has the opportunity to either move forward, or retreat to the days of serving few passengers on a bus at a time. The City has shown the community that public transit can work, if given an appropriate mission. The City Commission has approved a new vision statement for public transit: "To become a premiere university community transportation system which provides a variety of flexible transportation services that promote accessibility, comfort, a sense of fun, and community pride."

The future will require a major investment in vehicles and services to realize the full potential that public transit has to be a viable alternative to the car. The City intends to work even harder to cement relationships with our partners: Alachua County, the Florida Department of Transportation, the University of Florida, UF Student Government, and the Federal Transit Administration.

City Transit Priorities[25]

Obtain additional local funding for public transit operations. Currently, the County has the ability to increase the local option gas tax by 5 cents. The Alachua County Transportation Funding Advisory Committee has recommended the County increase the tax by 5 cents, as well as dedicate a portion of the increase in County ad valorum revenue to transportation over the next 5 years. These actions would make available an additional $7 million per year in funding for all transportation. The committee recommended that approximately $1 million per year of the total $7 million should be allocated to public transit. The City should work with the County to implement the recommended increase in transportation funding.

Pursue on-going Congressional earmarks of transit capital funds. The City obtained 21 used buses from two other Florida transit systems in 1998. These buses were needed to sustain a substantial increase in ridership being experienced by the transit system. All of these buses were already eligible for replacement under federal regulations. They need to be immediately replaced. The City obtained a Congressional earmark of federal transit capital funds for FY 1999 in the amount of $1.5 million. This amount will allow the purchase of 5 buses and related equipment. An earmark of $5.5 million to purchase another 19 buses will be made for FY 2001. Congressional earmark requests for transit should be made regularly.

Obtain additional FDOT funding for transit operations. The City, working with the County through the Metropolitan Transportation Planning Organization (MTPO), successfully encouraged FDOT to include the purchase of buses with Federal Surface Transportation Program (STP) funds in the FDOT work program in 1998. Through the MTPO, the City should pursue the allocation of FDOT state highway funds to transit operating expenses. All FDOT state funds are flexible and may be used for either transit operating or transit capital projects. Many local transit routes serve state corridors, such as US 441, SR 20, and SR 24. FDOT needs to be encouraged to share in the operating expenses of transit that serves state corridors.

A multi-jurisdictional transit authority. Since the City acquired the Regional Transit System from Alachua County in the early 1980s, the City has been the primary local funding agency for transit in the Gainesville urbanized area. At the time the transit system was acquired there was much more federal operating assistance available than is now the case. As a result, the City's financial commitment to the transit system (which serves the entire urbanized area) has increased to the point that almost all of the City's share of the local option gas tax is now devoted to the transit system. On the other hand, the County's financial commitment has remained modest and not connected to the amount of bus service provided to unincorporated areas.

Recently, UF has made a major commitment to funding transit service through its Campus Development Plan and a new Student Government transit fee paid by each student.

Effective Tools to Increase Transit Ridership

In general, transit is seen as a more attractive form of travel when it is perceived as...

- Accessible and convenient
- Frequent
- On Time (reliable)
- Safe

...in comparison to using a car.

Tools for a Healthy Transit System

- Develop strong, walkable, mixed use **areas & neighborhood (activity) centers.**
- **Restrict the supply of parking** for cars -- especially free surface parking.
- **Increase the cost** of parking with, for example, cash-out.

- Develop more **frequent** and more **reliable bus service**, with expanded weekday evening service.
- Develop a **transportation demand management** ordinance that requires employers to achieve non-single-occupant-vehicle (SOV) commute targets.
- Have employers and neighborhoods purchase **transit passes.**
- Make using the bus **easier to understand** with a highly visible theme logo, and understandable schedules and routes.
- **Bus stops close** to offices, residences, retail, schools, workplaces, or parks.
- **Street capacity is not increased** for cars.

Transit stop enhancements (see Figure 4)

Comfortable seating
Roof protection from sun and rain
Easy-to-read route maps and schedules
Lighting
Bicycle parking
Easily recognizable as a city RTS bus stop

Bicycle Carriers on Buses

This effective example of a "modal link" expands the service area of a bus stop. For example, the RTS service area is approximately 38 square miles if ridership is drawn from a one-quarter mile walking distance from bus routes, but expands to approximately 84 square miles if ridership is drawn from a one-mile bicycling distance. In addition, bicycle carriers help expand the area that a bicyclist can bicycle. Each of these factors thereby increase both bus and bicycle trips (see Figure 8).

In Portland, Oregon, 14,300 bicyclists used city buses in 1993 after front-mounted bike carriers were installed.[26] In Santa Barbara, bikes on buses were estimated to add over 40,000 new passengers -- 30 percent of whom were formerly using a car. Between November 1978 and November 1979, ridership rose 218 percent. At Connecticut and Chicago rail stations, five to seven percent of all passengers are bike-and-ride patrons.[27]

Figure 4

The City should continue to install bicycle carriers on newly-acquired buses to realize these benefits. Currently, all City RTS buses are equipped with carriers.

Provide bus fare reductions and subsidized transit passes

In October 1985, the North Central Florida

Regional Planning Council cited a study finding that fare-free service improves service for existing transit users but has limited impact on car use. Most of those who are recruited to the bus by a free fare are low-income and without a car. In addition, for fare-free service to encourage people to live in central locations and reduce car ownership, high-quality, fare-free bus service must be assured and coupled with motor vehicle parking restrictions. The study also found that both merchants and apartment owners served by buses benefited from fare-free service.[28]

Greg Dubois, UF Parking Administrator, indicated in 1994 that the biggest obstacle to attracting UF students and staff to ride a bus is that the buses are too inconvenient. In 1994, a UF math professor found that a free bus pass for UF students would cost UF $235 per year for each student given a pass, compared to $550 that UF pays per year (for 20 years) for a parking space (including maintenance, and not including land, lighting, security, and parking enforcement).[29] The University has, since 1998, instituted a Gator One Bus Pass Card that provides a pre-paid bus service for students. This program was expanded to include faculty and staff in 2000.

Bus ridership in Boulder, Colorado rose 14 percent in 1993 due to incentive programs such as free student bus passes.[30] The $18,000 start-up cost in 1989 was less than what it costs to build one downtown parking space. The City expected a 10 percent participation rate in the first year. It turned out to be 25 percent. The program also includes a free package delivery service for downtown shoppers that use the bus, which discourages people from driving to work on days when they need to shop.[31] New shuttle buses and discounted transit passes have helped increase bus ridership in that city by 24 percent from 1992 to 1994. Another program at that time reimbursed 350 businesses up to a quarter the cost of purchasing annual bus passes for their employees. The program encourages businesses to subsidize transit instead of parking. In 1992, during "Alternative Transportation Month," a local hospital saved 35,000 car commuter miles using the program. Like the University of Florida, where students now pay $6 per semester, University of Colorado students voted to increase their student activity fee (by $10 at Colorado) and are now able to use their student ID card for pre-paid bus rides.[32] Other cities providing free employee bus passes include San Francisco, Milwaukee, and Denver.[33]

Unfortunately, IRS rules state that employers can only provide $22 per month tax free to employees who commute by bus. Free parking, on the other hand, is fully tax free.[34]

Increase bus frequency

In October 1985, the North Central Florida Regional Planning Council[35] cited a study calling for 10-minute frequency (headways) during peak periods and 20-minute frequency off-peak. Calthorpe[36] calls for 15-minute frequency throughout the day. See Table 5 for current frequencies for RTS buses.

Bus traffic signal pre-emption/priority

These devices allow bus drivers to trigger a green light at traffic signals. They are currently available to the City Fire Department.

Light rail

The feasibility of light rail is based on sufficient non-residential square footage downtown (at least 20 million square feet) and high residential densities along the rail corridors. Weissman &

Corbett[37] report that the minimum residential density needed within 1/8 mile of a station is 43 dwelling units per acre and 10 dwelling units per acre in the next 1/8 mile. Even though Gainesville is currently well below the minimum densities needed to make rail feasible, it may be wise to pursue rail regardless, since, in the long run, a rail line will encourage the higher, mixed-use densities needed to make the rail feasible. In the short run, of course, such a strategy would require heavy subsidies, which perhaps can be justified by the significant quality-of-life improvements the rail would provide. Portland, Oregon, for example, is taking this approach.[38]

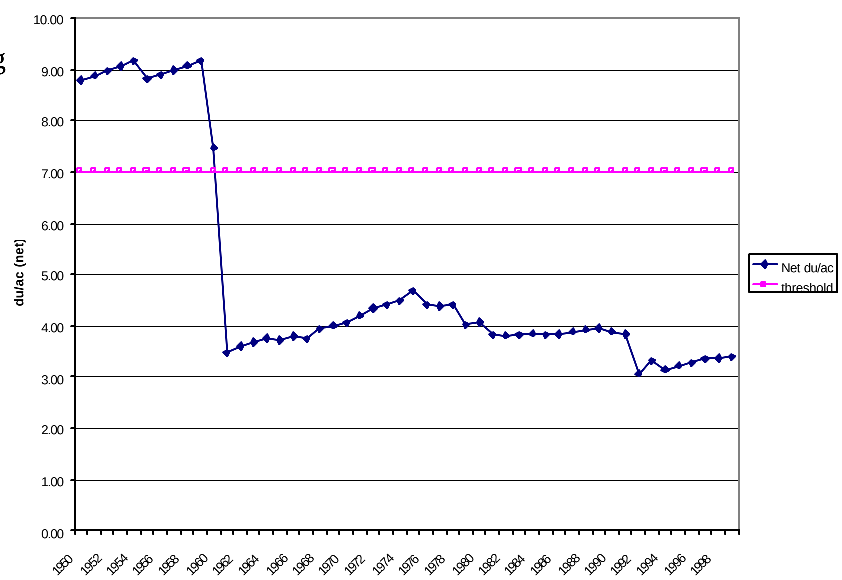
Light rail is considered more effective than bus systems in encouraging more dense, mixed-use development along the transit route, primarily because rail infrastructure is more permanent than bus infrastructure -- due to cost -- and investors can therefore better rely on the rail line to remain well into the future.[39] It is much easier to move a bus route than a transit route, which makes an investment that assumes the existence of transit a safer investment.

Because of substantial highway infrastructure, large subsidies for car travel, and dispersed, low-density development patterns in cities such as Gainesville, "rubber-tire" transit (including decentralized bus and van service) appears to be the only viable transit option in cities such as Gainesville.[40]

Sustainability Indicators for Using Transit

It is generally recognized that for bus transit to be viable and healthy – that is, free of unsustainably high public subsidies and freedom from the "empty bus syndrome" – an average net residential density of at least 7 dwelling units per acre is necessary. As can be seen in Figure 5, from 1960 through current times, the density has been nearly 2 times less than this threshold density. The decreases in overall density is largely due to the City annexing low-density areas over time.

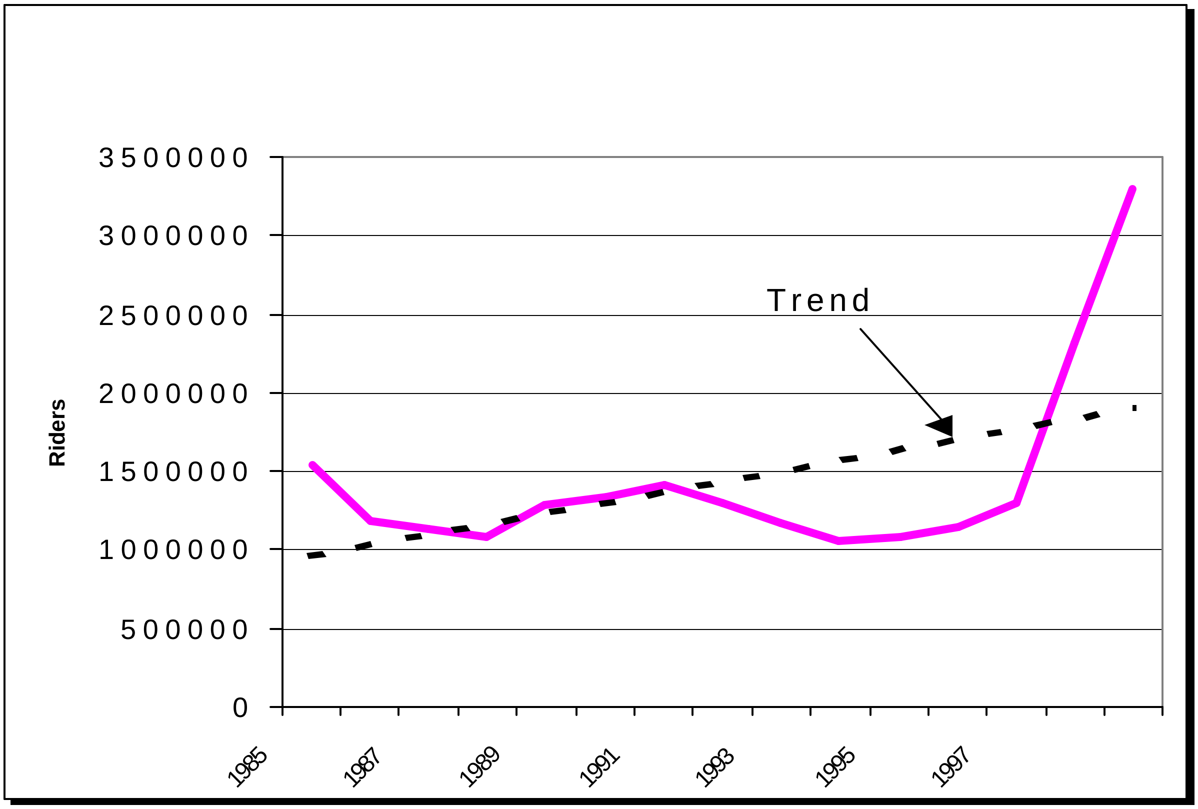
Figure 5. Gainesville Density and Transit Threshold (1950-1999)



Source: Gainesville Dept of Community Development, 4/8/99.

As noted above, there has been a substantial increase in bus ridership over the past few years (see Figure 6 and Table 2) due to a number of important bus enhancements. The City should set a goal of at least 5.5 million annual riders by 2005, and 8 million riders by 2010.

Figure 6. Gainesville Citywide Bus Ridership (1985-1998)



Source: Gainesville RTS.

Existing System and Analysis for Transit System

Existing Transit Services. The City owns and operates the RTS. Four types of transit services are offered by RTS:

1. A fixed route, "main bus" service serving the urban area.
2. Contractual service with the University of Florida (UF) to provide on-campus bus service.
3. A demand-responsive system serves ADA paratransit eligible individuals who are travelling in the service area (within ¾ mile of a fixed bus route).
4. Service for special events provided upon request, at cost.

More specialized transit services are provided by private and non-profit transit providers including taxi companies and emergency transport agencies.

Table 2: Annual Main and UF Campus Bus Ridership

Calendar Year	Citywide Riders	UF Campus Riders
1985	1,535,737	
1986	1,188,733	
1987	1,127,753	
1988	1,080,546	
1989	1,286,739	
1990	1,336,899	
1991	1,407,016	
1992	1,297,534	
1993	1,165,005	
1994	1,062,354	
1995	1,084,862	
1996	1,148,568	1,001,225
1997	1,303,463	941,355
1998	2,314,384	1,040,957
1999	3,299,933	1,196,787

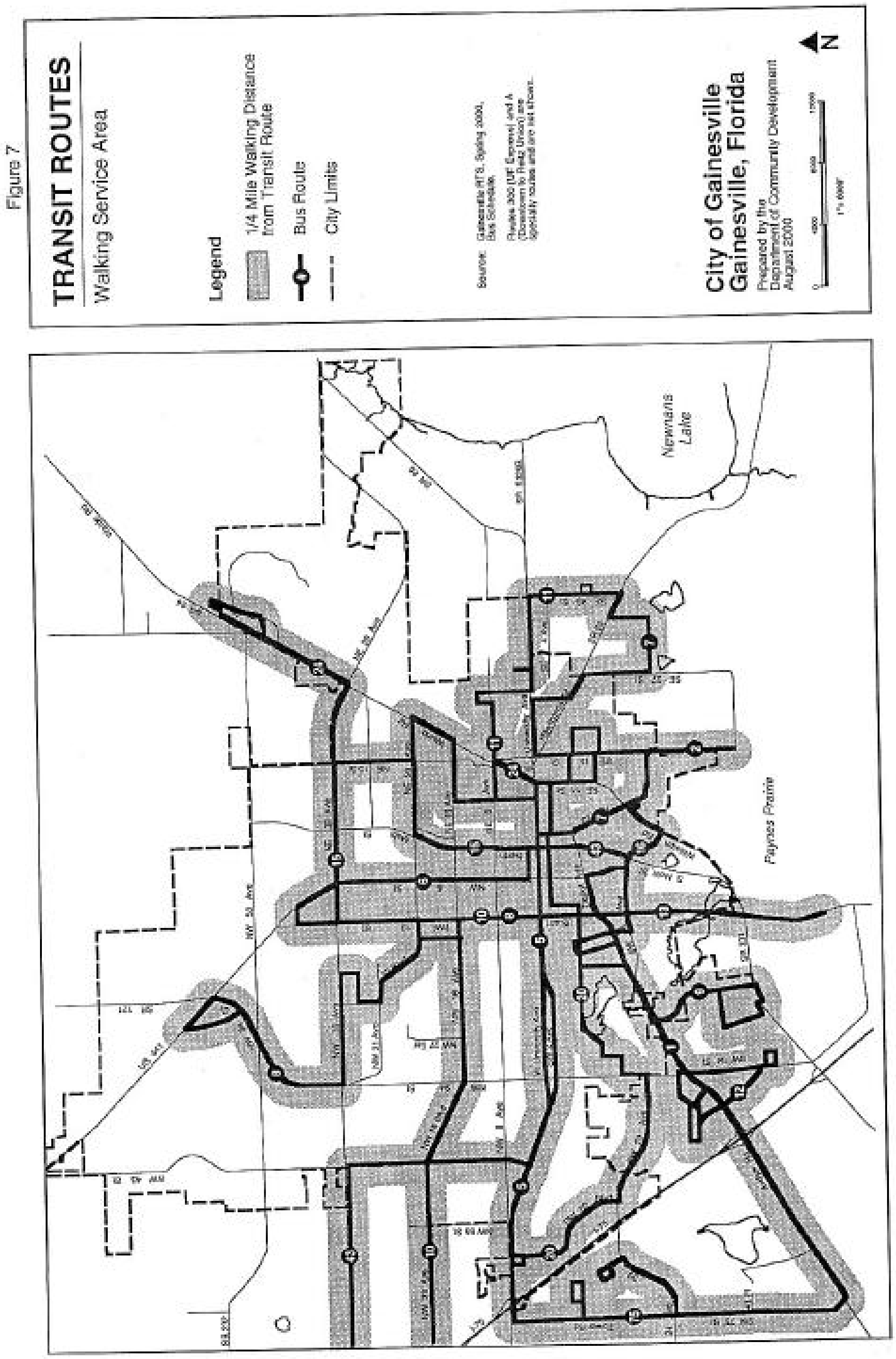
"Riders" include anyone who gets on a bus for a ride.
Source: Gainesville RTS, March 1999.

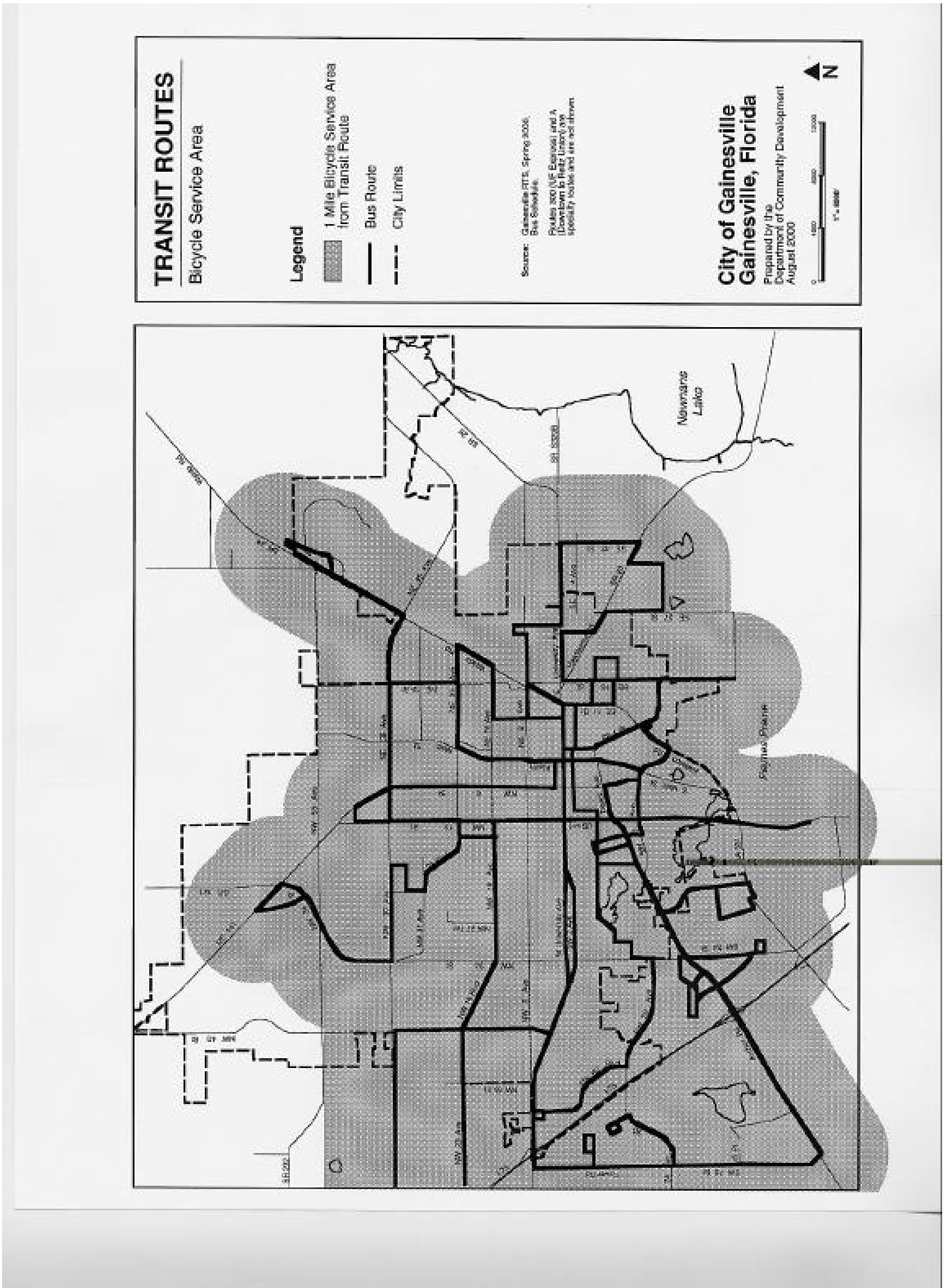
Main Bus Service. The main bus service has 18 routes. These routes, as noted above, create an RTS service area of approximately 38 square miles if ridership is drawn from a one-quarter mile walking distance from bus routes, and approximately 84 square miles if ridership is drawn from a one-mile bicycling distance. This service area reaches outside of city limits, but for comparison purposes, the City currently is 49 square miles in size, and including the unincorporated Gainesville urban area, the urban area is 148 square miles in size. Figure 7 compares the service area of the main bus system to the area within the city limits. Several of the routes have common bus stops, but the only transfer station is the main bus terminal in the downtown plaza. Figure 8 shows the transit service area if bicycle access is assumed.

Each of the fixed bus routes has a wheelchair-accessible bus assigned to it. For routes with more than one bus providing service, at least one of the buses is wheelchair-accessible. Currently, 28 of the 72 buses in the fleet, or 39 percent, are wheelchair-accessible.

Demand-Response System Service. The City transit system operates a demand-responsive, curb-to-curb paratransit service. RTS determines if applicants are eligible for Americans with Disabilities Act (ADA) paratransit service and certifies eligible applicants. Coordinated Transportation Systems (CTS) administers "demand-responsive" service in Alachua County. RTS contracts with CTS to provide this service for ADA paratransit eligible individuals who are travelling in the service area (within ¾ of a mile from a fixed bus route). Persons using this service must request transportation from CTS at least one day in advance. CTS notifies RTS of the request.

Paratransit service is provided on the same days and with similar hours as the RTS fixed route service. The current price for a paratransit trip is $2.00 each way. As of March 1999, RTS had a total of 233 certified ADA paratransit recipients of which 196 are fully eligible and 37 are conditionally eligible.


TRANSIT ROUTES
Walking Service Area
Legend
1/4 Mile Walking Distance from Transit Route
Bus Route
City Limits
Source: Gainesville RTS, Spring 2000, Bus Schedule.
Routes 300 (UF Express) and A (Downtown to Reitz Union) are specialty routes and are not shown.
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development
August 2000
N
Newnans Lake
Paynes Prairie
Figure 7


TRANSIT ROUTES
Bicycle Service Area
Legend
1 Mile Bicycle Service Area from Transit Route
Bus Route
City Limits
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development August 2000
N
Newnans Lake
Paynes Prairie

Chapter 427 Florida Statutes (enacted in 1979 and amended 1989) requires that all federal, state and local moneys used to transport elderly and low income persons be coordinated through one transportation system to avoid duplication of services and costs. The City currently contracts for this service with CTS.

The provider (CTS as of 9/29/99) arranges transportation for the transportation disadvantaged population of the city and Alachua County. The clients include persons who, because of physical or mental disability, income status, age or remoteness from other public transit are unable to transport themselves.

The provider coordinates 5 types of transportation services:

1. 24 hour, non-emergency medical transportation to non-ambulatory (wheelchair and stretcher) clients.

2. 24 hour, ambulatory transportation in Alachua County supplementing RTS demand-responsive routes.

3. Transportation for clients of Mental Health Services (MHS) to and from MHS facilities, and Developmental Service clients to and from their training facilities.

4. School Board sponsored transportation of residents from public housing communities. School buses are used to transport primarily elderly residents of 4 Gainesville communities and one Alachua County community for medical appointments and personal shopping.

5. "Meals on Wheels" and "Gainesville Meals Transport" by contract with MHS.

The provider requests proposals to meet various transportation demands from sub-providers. This procedure is carried out every one to two years. Currently, there are 4 sub-providers under contract with the provider: RTS (paratransit service), Medicoach, Inc., North Central Florida Mental Health Services and the School Board of Alachua County.

The provider also provides itemized bills to agencies and programs such as Medicaid Transportation Disadvantaged Commission, Developmental Services (HRS), the Division of Blind Services (HRS), Foster Grandparents and Retired Senior Volunteer Program, whose clients use the RTS demand-responsive system and other services.

Campus Shuttle and other Campus Services. UF contracts with RTS to provide on-campus shuttles. Nine buses shuttle students and university personnel between classes and from commuter lots. The shuttle system operates between 7:00 a.m. and 5:30 p.m., 7:15 p.m., and 7:30 p.m. on Family Housing and Fraternity Row, Commuter Lot, and Park-n-Ride, respectively. Shuttles service only operates on weekdays. Shuttle service does not run during semester breaks, and only four buses run during summer session. The Park-n-Ride shuttle does not operate in the summer.

Transit routes 1, 4, 5, 8, 9, 10, 12, 13, 16, 20, and 43 serve the UF campus. Santa Fe Community College (SFCC) main campus is served by routes 10 and 43. Routes 5, 6, and 10 serve the SFCC downtown campus. Demand-responsive services are available to disabled students on the same basis as the general public. UF student government also finances and provides transportation for disabled and temporarily disabled students.

The students approved a referendum in March, 1997 to authorize up to $1 a credit hour of their Activity and Service Fee be allocated to transit. In return for these funds, the City has authorized the "Gator One" card as a bus pass, systemwide, at all times. The card provides the student with free use of RTS buses. As of Spring 1999, UF Student Government collected 15 cents a credit hour and intends to collect 50 cents a credit hour in the fall of 2000. These funds will be used to enhance bus service to campus.

Private Transit Systems. Additional transit for non-emergency patient transportation is available through the private sector. These systems currently include Accent Medi-Van, Medicoach Incorporated and Southern Comfort. Area hospitals and nursing care facilities broker services from these sources for their patients. Many of these firms also provide limousine and charter bus service.

Private carriers such as cab companies and limousines also provide transportation opportunities on a demand-responsive basis. Limousine and taxi services tend to provide specialized services such as transportation to airports and area tours. Table 3 shows these privately available transit services, including several bus lines that offer regular long-distance service from Gainesville.

Table 3: Private Transit Services

Bus Companies	Limousine Services	Taxi Services
Boca Bus Company	A Candies Coaches	Gainesville Cab Company
Breakaway Tours	Modern Age Limousine	Gator Cab
GMG Transportation	Airport Passenger Express	Safety Cabs
Greyhound Bus Lines		Santa Fe Cab Company
		Yellow Cab

Source: City of Gainesville, Department of Community Development. Staff survey, April, 1999.

There are a number of companies located outside the county that provide charter services in the Gainesville area. The list of providers shown above often changes. The list simply indicates the variety of transportation alternatives available at a recent point in time.

Exclusive Transit Rights-of-Way or Corridors. Currently, there are no exclusive transit rights-of-way or corridors in the RTS service area.

Transit Service and Frequency

Table 4 shows the main bus service (the "fixed route" service) by route as of Spring 1999. Included are the route numbers and names, the route attractors/generators served, round trip mileage on route per hour and number of buses by route that are wheelchair accessible. Table 5 shows the bus frequency and service span as of Spring 1999. The number of buses used on each route and the frequency are shown for both peak and off peak hours. Also included in Table 5 is the weekday service span of each route.

Table 4: Main Bus Service, by Route, September 2000

Route Name and No.	Attractor/generator served	Round trip mileage on route per hour	No. of buses that are wheelchair accessible
1. Butler Plaza to Downtown	Butler Plaza Alachua General Hospital Downtown Plaza University of Florida Shands at UF VA Medical Center	9.5	1
2. Downtown to Robinson Heights	Downtown Williams Elementary Lincoln Middle Prairie View Elementary	8.2	1
5. Oaks Mall to Downtown via University Ave.	N. Fl Regional Medial Ctr. Oaks Mall University of Florida Westgate Plaza SFCC, downtown campus Downtown	10.9	1
6. Downtown to Gainesville Mall via 6th Street	Downtown SFCC, downtown campus Stephen Foster Elementary Gainesville Mall	12.2	1
7. Downtown to Eastwood Meadows	Downtown Eastside High School	15.9	1
8. Pine Ridge to Shands at UF via NW 13th Street	Gainesville Mall Shands at UF Gainesville High School University of Florida	17.9	1
9. Lexington Crossing to McCarty Hall	University of Florida	7.4	1
10. SFCC to Downtown via NW 16th Avenue/University Avenue	SFCC Millhopper Square University of Florida SFCC, downtown campus Downtown	16.7	1
11. Eastwood Meadows to Downtown via University Ave.	Downtown Health Department Duval Elementary Loften High School Lake Forest Elementary	11.7	1
12. Campus Club to McCarty Hall via Archer Rd.	Butler Plaza University of Florida	7.9	1
13. One Stop Career Center to Museum Rd./ Newell Dr. via SW 13th St.	University of Florida Shands at UF City College	6.0	1

	Mental Health/One Stop		
15. Downtown to NW 23rd Ave & NW 6th St	Center for Independent Living Stephen Foster Elementary Family Service Rawlings Elementary Downtown	14.7	1
16. Newell Dr./Museum Rd. to Sugar Hill via SW 16th Ave.	University of Florida Shands at UF Winn Dixie on Main	5.6	1
20. Oaks Mall to McCarty Hall via SW 20th Ave.	Oaks Mall N. Fl Regional Medial Ctr. Kash & Karry Plaza University of Florida	13.2	1
24. Downtown to Job Corps	Downtown Health Department HRS Rawlings Elemntary Family Service Gainesville Regional Airport Job Corps	17.1	1
43. SFCC to Downtown via NW 43rd Street	SFCC Timber Village Shops Millhopper Square Westgate Plaza University of Florida Shands at UF P.K. Yonge Downtown	26.7	1
75. Butler Plaza Oaks Mall via 75th Street	N. Fl Regional Medial Ctr. Oaks Mall Tower Center Tower Hill Office Park Butler Plaza	26.2	1

Source: Gainesville RTS, September 2000.

Table 5: Main Bus Frequency and Service Span, March 1999

Route #	Route Description	Revenue Mi.	Revenue Hrs	Operating Cost	Vehicles Req. (W)		Frequency		Service Span (Weekdays)
					Peak	Off Peak	Peak	Off Peak	
1	Vet Mem. Pk to Newell Dr./Mus. Rd.	32,422	2,176	$83,776	2	1	30	60	5:45 am - 9:44 pm
2	Downtown to Robinson Heights	22,089	1,364	$52,495	1	1	30	30	6:30 am - 7:57 pm
4	Shands to Downtown (Shuttle)	13,761	1,529	$58,867	1	1	30	30	6:00 am - 9:28 pm
5	Oaks Mall to Downtown	30,947	2,691	$103,604	2	2	30	30	6:00 am - 9:27 pm
6	Gainesville Mall to Downtown	14,244	1,261	$48,529	1	1	60	60	6:30 am- 6:57 pm
7	Downtown to Eastwood Meadows	22,640	1,415	$54,478	1	1	60	60	6:00 am - 7:57pm
8	Pine Ridge to Shands	43,700	2,526	$97,251	2	2	30	30	6:12 am - 8:13 pm
9	Lexington Crossing to McCarty Hall	35,392	3,291	$126,704	3	2	15	20	6:45 am - 9:12 pm
10	SFCC to Downtown	21,328	1,270	$48,876	1	1	60	60	7:00 am - 6:58pm
11	Eastwood Meadows to Downtown	16,281	1,346	$51,802	1	1	60	60	6:30 am - 7:57 pm
12	Campus Club to McCarty Hall	39,577	3,423	$131,786	3	2	15	20	6:30 am - 9:17 pm
13	Job Serv to Newell Dr./Musuem Rd.	22,590	2,017	$77,655	2	1	15	30	6:28 am - 8:45 pm
15	Downtown to Gainesville Mall	19,178	1,279	$49,222	1	1	60	60	6:30 am - 6:58 pm
16	Newell Dr./Museum Rd. to Sugar Hill	23,502	2,026	$78,001	2	1	15	30	6:45 am - 8:45 pm
20	Oaks Mall to McCarty Hall	44,369	3,729	$143,547	4	2	15	30	6:15 am - 9:15 pm
24	Downtown to Job Corps	23,631	1,415	$54,478	1	1	60	60	6:00 am - 7:57 pm
43	SFCC to Downtown	30,440	2,230	$85,855	2	2	60	60	6:00 am - 7:58pm
75	Vet. Mem. Park to Oaks Mall	37,878	2,140	$82,390	2	1	30	60	5:45 am - 8:43 pm
101	Lexington Express to Reitz Union	8,330	595	$22,908	1	-	30	30	7:10-11:30,2:24-5:08
Subtotal		**502,296**	**37,720**	**1,452,220**	**33**	**25**			
118,119,127,128	Park-N-Ride	33,600	3,360	$129,360	3	3	10	10	7:00 am -7:30 pm
120	Family Housing	8,232	840	$32,340	1	1	30	30	7:00 am - 5:30 pm
121, 122	Fraternity Row	15,392	1,480	$56,980	1	1	15	15	7:00 am - 5:30 pm
123, 124, 126	Commuter Lot	16,120	2,600	$100,100	3	3	10	10	7:00 am - 7:15 pm
100	UF Express. Oaks Mall to The Hub	12,760	1,160	$44,660	3	-	15	15	6:20-9:15a-3:08-6:16p
Subtotal		**86,104**	**9,440**	**$363,440**	**11**	**8**			
300	Later Gator A (Reitz Union to DT)	7,742	842	$32,398		3	10	10	9:30pm-3:20am
301	Later Gator B (Lex Pk to Reitz Union)	-	-	-		2	15	15	9:30pm-3:00am
302	Later Gator C (Cps Club-Reitz Union)	-	-	-		2	20	20	9:30pm-3:00am
303	Later Gator D (Oaks Mall-Reitz)	-	-	-		2	20	20	9:30pm-3:00am
Subtotal		**7,742**	**842**	**$32,398**	**-**	**9**			
61, 62, 63	ADA Complemt Paratransit Service				2	1			
Totals		**596,142**	**48,002**	**$1,848,058**	**46**	**43**	-	-	-

Regular Service:

Number of Weekday Service = **80**
Number of Saturday Service = **18**
Number of Holiday Service = **5**
Total Number of Days = **103**

Night Service

Number of Weekday Service = **32**
Number of Saturday Service = **17**
Number of Holiday Service = **2**
Total Number of Days = **51**

Peak Hrs:

Route 1: 5:45–10:42 a.m. & 2:45 – 6:42 p.m.
Route 9: 6:45–11:30 a.m. & 2:20 – 6:30 p.m.
Route 12: 6:30–11:30 a.m. & 2:15 – 6:30 p.m.
Route 13: 7:45–11:40 a.m. & 2:30 – 6:10 p.m.
Route 16: 7:45 – 11:40 a.m. and 2:30 – 6:10 p.m.
Route 20: 7:15 – 10:30 a.m. and 2:15 – 6:30 p.m.
Route 75: 6:15 – 10:45 a.m. and 2:45 – 6:45 p.m.

Notes:

PNR, CL (1 Bus After 6:00 pm)
Operating Costs are based on a rate of $38.5/Rev. Hour

Source: Gainesville RTS, March 1999.

UF Campus Shuttle Bus Service Area and Frequency

Frequency of the shuttle service is determined by contract between the City and UF. The nature of a campus shuttle requires frequent bus service. Current frequency is 10 minutes from commuter parking lots, 15 minutes on Fraternity Row, and 30 minutes for service to on-campus married student housing. Shuttle bus service does not extend to the School of Veterinary Medicine.

Inventory of Bus Facilities and Vehicles

Table 6 shows the bus vehicle inventory for the Main Bus System and the Campus Shuttles. There are 56 buses in the Main Bus/Campus Shuttle Fleet. Table 7 shows the bus vehicle inventory for the Demand Response paratransit service. There are 6 buses in the Demand Response paratransit service fleet.

Table 6: RTS Inventory: Main Bus and Campus Shuttles

Year Built	Status	Seats	Length (feet)	Width (inches)	Type of Power	Total	Active	with Wheelchair Access
87	A	33	30	96	DF	7	Y	N
89	A	33	30	96	DF	9	Y	N
89	A	37	35	96	DF	5	Y	N
89	A	43	35	96	DF	5	Y	N
95	A	42	40	96	DF	12	Y	Y
85	A	46	40	96	DF	6	Y	N
85	A	38	35	96	DF	4	Y	N
82	A	37	35	96	DF	2	Y	N
82	A	45	40	96	DF	5	Y	N
83	A	37	35	96	DF	1	Y	N
81	A	40	40	102	DF	10	Y	Y
2000	P	38	40	102	AF	6	N	NA

Notes:

AF = Alternative Fuel
DF= Diesel Fuel
Y= Yes
N= No
A= Available
P= Procurement

Source: Gainesville RTS, March 1999.

Table 7: Demand Response Fleet

Year Built	Status	Model	Seats	Length (feet)	Width (inches)	Type of Power	Total	Active	with Wchair Access
96	A	CS 2000	25	28	96	DF	6	Y	Y

Notes:

DF= Diesel Fuel

Y= Yes

A= Available

Source: Gainesville RTS, March 1999.

Bus Ridership

Main Bus and Campus Shuttle Bus Ridership

Ridership is based on RTS Monthly Reports and is shown in Table 8. Overall annual ridership since 1985 is shown in Figure 6.

Route 12 began running in January 1998. Route 39 only ran May-August 1998. Route 43 began running in August 1998. The following routes began running in May 1998: 13, 15, 16, 20, 24, 39, 75.

Most of the routes were re-routed in May 1998.

ADA Complementary Paratransit Service Ridership

Table 9 presents the average daily ridership for the RTS ADA Complimentary Paratransit Service. Currently, there appears to be adequate capacity to meet demand.

Table 9: ADA Complementary Paratransit Service Ridership, by Fiscal Year

Fiscal Year	Ridership	Change Since Prior Year
1985/86	67,266	NA
1986/87	62,900	-6%
1987/88	61,700	-2%
1988/89	63,529	+3%
1989/90	NA	NA
1990/91	65,576	NA
1991/92	65,576	0%
1992/93	54,100	-18%
1993/94	54,100	0%
1994/95	74,547	38%
1995/96	98,400	32%
1996/97	6,005	NA
1997/98	11,156	NA
1998/99	7,769	-30%
Total	**692,622**	

Source: Gainesville RTS, April 2000.

Table 8. RTS Calendar Year Ridership by Route

Route	1997	1998	1999
9	81,988	242,904	414,831
20	NA	100,124	361,317
12	NA	126,616	296,303
5	207,248	192,696	279,794
16	NA	41,813	253,544
13	NA	53,316	240,226
1	149,976	158,213	208,669
8	128,303	150,163	183,131
75	NA	48,335	171,266
43	NA	22,953	130,355
15	NA	33,297	102,586
6	83,408	88,770	88,438
10	92,920	82,659	88,205
11	18,920	50,541	81,808
24	NA	31,408	77,885
7	85,855	88,834	77,773
2	68,838	88,139	74,817
4	183,650	196,954	72,112
300 (Later Gator)	NA	2,561	58,870
100 (UF Express)	NA	5,259	21,608
101 (Lexington Express)	NA	NA	11,115
3	117,491	94,361	NA
39	NA	10,997	NA
Total	**1,101,106**	**1,805,555**	**3,294,653**
Campus			
Park-N-Ride	360,070	400,387	379,621
Park-N-Ride2			28,864
Frat Row	260,252	250,348	315,222
Commuter Lot	230,563	250,809	314,539
Commuter Reverse			16,501
UF Circulator			22,899
Additional Frat Row			26,137
Family Housing	96,791	83,505	93,004
Total	**947,676**	**985,049**	**1,196,787**
Other Services			
Gator Aider	NA	12,360	36,808
Basketball Game Service	NA	1,119	7,666
Special Services	NA	17,993	36,967
ADA Paratransit Service	6,005	11,154	10,011
Van Pool			3,032
Total	6,005	42,626	94,484
Grand Total	**2,048,782**	**2,833,230**	**4,585,924**

Park-n-Ride does not run May – July
Routes that began running 8/17/98: 43, UF Express
Later Gator started 9/98. Route 11 began 5/97. Lexington Express began 1/99.
Several routes changed substantially in 1998. Therefore, ridership by route in prior years is not comparable.

Integration Between Forms of Travel

A number of initiatives have been undertaken to improve pedestrian and bicycle integration with the bus system:

- The **Campus Shuttle Bus** is well-integrated with pedestrians and bicyclists at UF. The 9-bus system circulates with frequency ranging between 10 and 30 minutes, depending on the destination. This system provides car-to-bus integration for commuters from the **park-n-ride** lot at SW 34th Street, commuters who park their cars in the various commuter lots on Campus (Norman Hall, North/South Drive and O'Connell Center), and it also serves pedestrians who would otherwise need a car to travel to distant locations on campus.

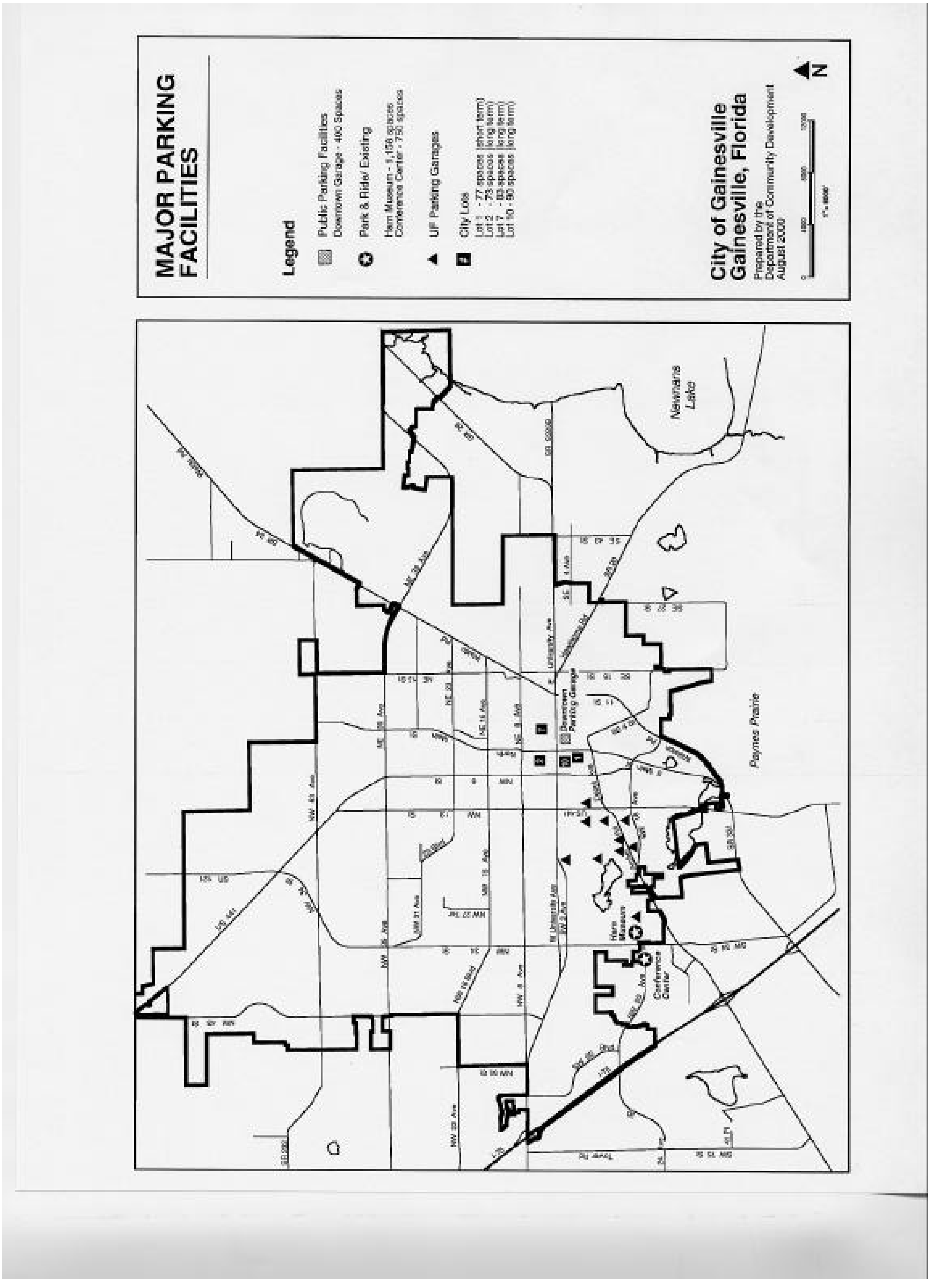
- RTS provides special **park-n-ride services for major events** such as UF football games (Gator Aider), UF basketball games (Fastbreak Shuttle), and concerts at the O'Connell Center. Temporary services have been provided for several years. Figures 9 and 10 show major parking facilities – some of which currently provide park-n-ride, and some of which have potential to serve as park-n-ride.

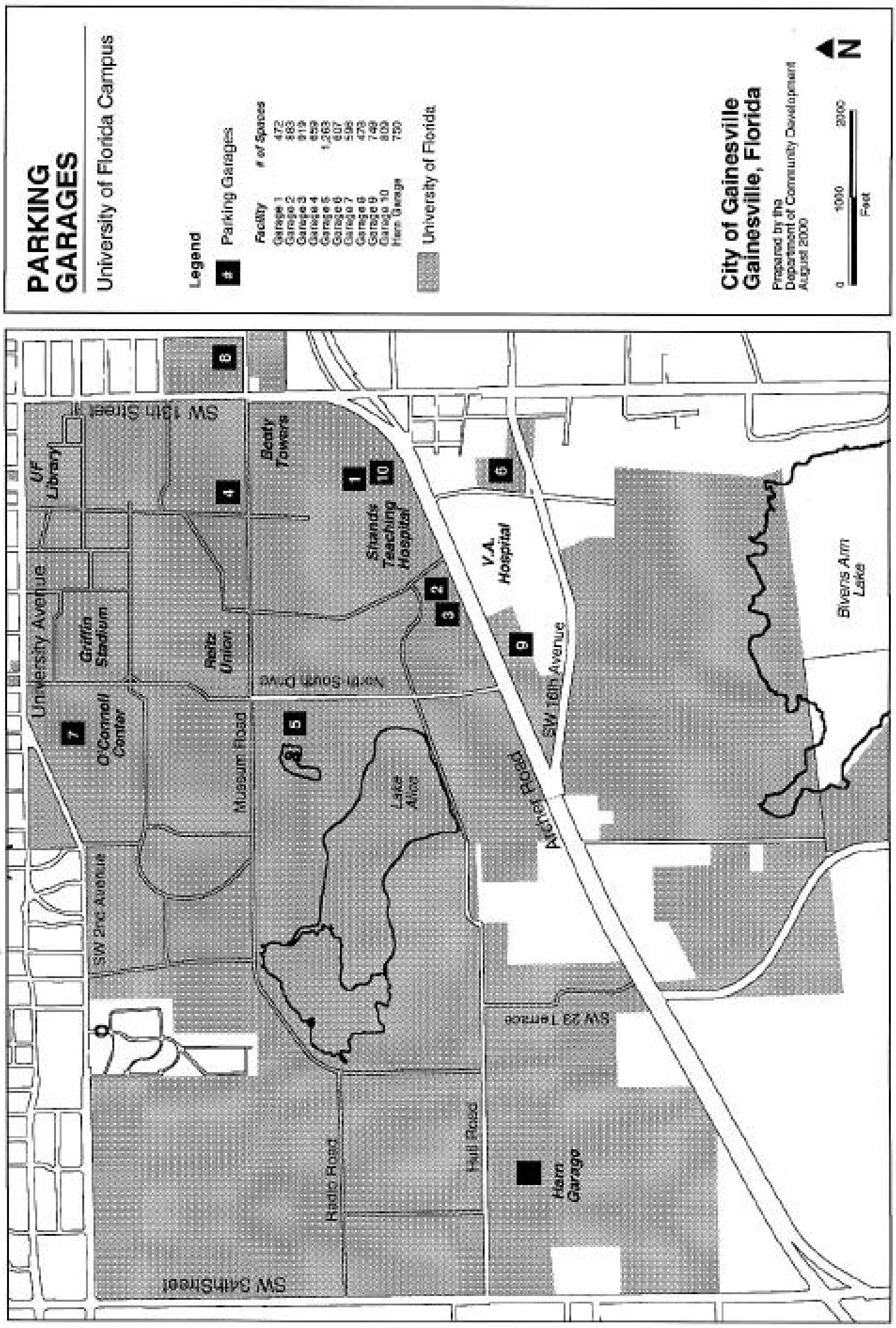
- In addition to these programs, there is now a **park-n-ride** service available from the Oaks Mall to the UF campus (UF Express), and at Harn Museum on the UF campus. A new park-n-ride has recently been built on SW 34th Street near SW 20th Avenue. (see Figure 9)

- In the late 1980s and early 1990s, the Central Business District of the downtown underwent **streetscape and street lighting improvements** as part of downtown revitalization efforts which were started in 1985. The Community Redevelopment Agency has completed a downtown design plan which is designed to enhance the pedestrian environment, and improvements to encourage more vibrant street activity. The bus system benefits because the downtown is a bus system hub, and the system gains more riders in this location because a larger set of pedestrians have safer and more convenient access to the plentiful downtown buses.

- Coordinated with downtown improvements, the City's Cultural Affairs Department schedules **events for the downtown** throughout the year. The bus system benefits in the same way as described above.

- **New investment in the downtown** area includes the recent completion of the Matheson Historical Museum, downtown multi-family residential development, the mixed use, multi-story Union Street Station, and the main branch of the Public Library. Soon-to-be-completed projects include the Commerce building, which includes conversion of a surface parking lot to townhouses, construction of a new county courthouse, and renovation of older buildings for restaurants, retail, services, and offices. The City and County have taken a very active role in maintaining the concentration of cultural, residential and government facilities in the central business district and proceeding with a pedestrian streetscape system. The bus system benefits in the same way as described above.


MAJOR PARKING FACILITIES
Legend
Public Parking Facilities
Park & Ride/ Existing
UF Parking Garages
City Lots
Newnans Lake
Paynes Prairie
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development
August 2000


PARKING GARAGES
University of Florida Campus
Legend
Parking Garages
Facility
# of Spaces
Garage 1 472
Garage 2 383
Garage 3 919
Garage 4 859
Garage 5 1,263
Garage 6 607
Garage 7 598
Garage 8 478
Garage 9 749
Garage 10 809
Harn Garage 750
University of Florida
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
August 2000
0
1000
2000
Feet
N
SW 13th Street
UF Library
University Avenue
Griffin Stadium
Reitz Union
North-South Drive
O'Connell Center
Museum Road
SW 2nd Avenue
Beaty Towers
Shands Teaching Hospital
V.A. Hospital
SW 16th Avenue
Archer Road
Lake Alice
Bivens Arm Lake
SW 23 Terrace
Radio Road
Hull Road
Harn Garage
SW 34th Street

In 1998, the City adopted the **Traditional City** and **Central Corridors** ordinances, which promote a more safe, convenient, and pleasant pedestrian environment in the core area of city and the main streets leading into the core. The bus system benefits in the same way as described above.

- The downtown has a number of **parks** and **public spaces**. The city-wide bicycle, pedestrian, and disabled person-carrying **Trail Network** has several trails that converge at the southern fringe of downtown. By doing so, the Trail Network and bus system enjoy a symbiotic relationship.

- RTS has equipped all of its main **buses with bicycle carriers** . These carriers greatly expand the service area of the bus system, and increases ridership. See Figures 7 & 8.

- The **in-street bicycle system** provides facilities for the commuting cyclist. All new arterials and collector streets include bicycle lanes. Bicycle lanes or wide curb lanes are also installed whenever feasible when existing streets are resurfaced. Like bicycle carriers on buses, the in-street bicycle system expands the bus service area. In addition, new development is required to provide **bicycle parking** as a part of the on-site traffic circulation plan.

- RTS is currently seeking the following to correct **deficiencies in transferring** from another form of travel to the bus. For example, funding is needed to construct the new transfer facility at in the Depot Area downtown, as well as a terminal or transfer station near or on the UF campus. "Busways" may be needed along University Avenue and Archer Road. Park-n-Ride lots are needed at Gainesville Mall, Haile Plantation, Winn Dixie on NW 13th Street, and the Winn Dixie on South Main Street.

There are no passenger rail or seaport facilities in Gainesville. However, a bus shuttle is provided from the Downtown Plaza to the Amtrak station in Palatka. The Gainesville Regional Airport is not currently served by bus because ridership was too low to sustain that service. There is taxi service and van service from some hotels to the airport. Bike lanes on NE 39th Avenue and the Waldo Road Rail-Trail provide bicycle access to the vicinity of the airport.

Population Served by RTS

The estimated walking distance (1/4-mile from routes) transit service area population for the year 2000 is approximately 107,300. For the year 2020, it is approximately 130,000. It is important to note that over time, there is a declining percentage of the Gainesville Urban Area population located within the transit service area due to the fact that most new homes that are built are located outside of the service area.

Persons with Transit-Related Disabilities

RTS provides two services to disabled riders.

- The demand response paratransit service provides service to ADA paratransit eligible individuals.

- The main bus service includes limited handicapped-accessible buses serving the urban area. CTS and other private providers supplement this service.

Table 10 shows estimates of persons with transit-related disabilities for the city and the unincorporated portion of the urban area.

Table 10: Persons with Transit-Related Disabilities

Group	1980	1996	2001	2005	96-01 Change	Total Change
City 16-64	843	993	1,050	1,098	57	207
City 65+	1,040	1,314	1,419	1,509	105	379
Unincorp. 16-64	336	585	647	701	62	311
Unincop. 65+	330	1,200	1,391	1,565	191	1,061
Total	**2,549**	**4,092**	**4,507**	**4,873**	**415**	**1,958**

Source: Bureau of the Census, July 1983; Department of Community Development staff calculations, April 2000. Numbers do not always total due to the use of samples and rounding error. Data for 2005 are extrapolated forward from 1996-2001 annual percentage increases for each age group. 2000 Census data are not available at this time.

Special Needs Populations

The population groups considered to have special transportation needs include seniors, low income persons and persons with transit-related disabilities. Each of these groups have been discussed in the preceding sections. Studies by the FDOT (July 1984) and the Gainesville Urbanized Area MTPO (February 1990) estimate the total of these groups to comprise 34 percent of Alachua County's population. Analysis by City staff indicates that this total could be above 50 percent for the City and unincorporated urban area.

Transit Trip Generation and Future Bus System Capacity

The location of future primary trip generators and attractors for the city is discussed in the "Major Trip Generators and Attractors" section. That discussion showed that almost all antic ipated attractors and generators are served by the city transit system.

According to Gainesville RTS in February 2000, the number of RTS person trips at full capacity is 21,200,000, and existing transit demand is 4,413,198 person trips.

The distribution of trips is expected to change by the year 2005 as development intensifies in some areas and peaks or declines in other areas. Changes in the distribution of trips may lead to a change of transit route configurations in the future. The overall capacity of the RTS system is, in most cases, adequate to handle trips in the year 2000. However, additional capacity is required in particular areas – particularly in Southwest Gainesville and nearby southwestern unincorporated urban areas, where people are being left at bus stops because buses are full on weekday mornings. In 1985, 78 percent of all main bus trips were in the City. By the year 2000, this percentage is expected to decline to 65 percent. The largest single trip generator is UF for each of these two years, with 16 percent of all trips in 1985 and a projected 65 percent in the year 2000.

Transit System Capital Needs

The Florida Department of Transportation 5-Year Work Program, dated February 14, 2000, contains the following committed capital projects for the transit system:

- Passenger amenities (benches, shelters, and related)
- Expansion of the bus fleet to include "Alternate Fuel" buses (15 in FY 00'-01' & 4 in FY 01'-02')
- Land acquisition and design funding for new transfer center

The Gainesville RTS prepared a Capital Improvement Program in 1999 that, in addition to the above, included the following:

- 25 40-foot, ADA-compliant replacement buses over the next 5 years.
- 7 expansion buses (40-foot, ADA-compliant) to carry the increased passenger loads experienced in recent years. These buses will be used to provide new RTS routes, including more routes to the UF campus, a route to the Gainesville Regional Airport, and additional late night service.
- 5 lift-equipped vans leased to a local operator providing the ADA-required complementary paratransit service.
- 5 vans to be used to start a new vanpool and commuter assistance program in the county.

Major Trip Generators and Attractors

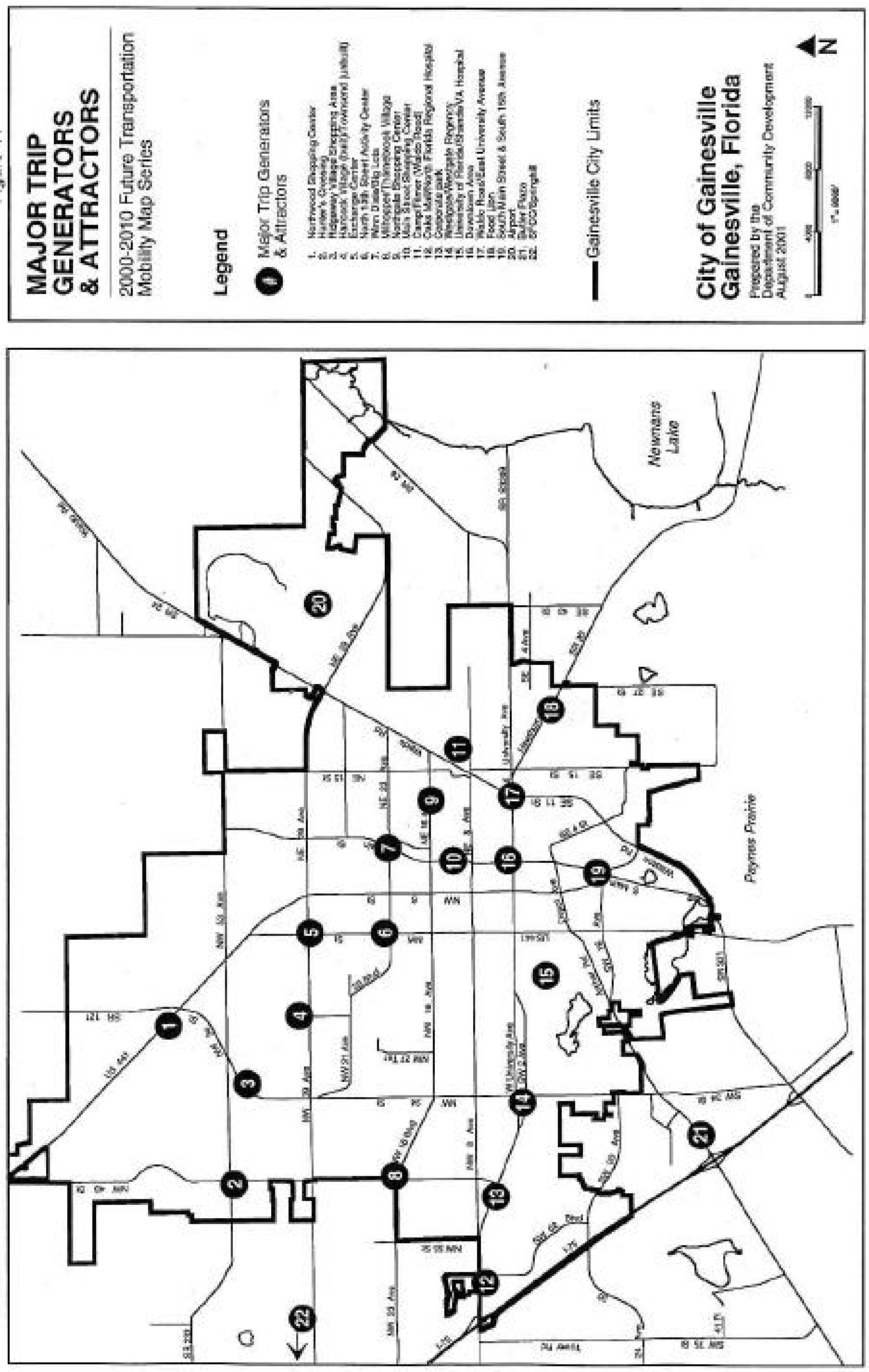
Existing Major Trip Generators And Attractors. There are 23 areas identified as major trip "generators" or "attractors" (see Figure 11). These areas are identified based on the existing and future land use map series. These include neighborhood (activity) centers within the city and those identified by the County in the Gainesville Urban Reserve Area. Figure 12 shows existing and future industrial concentrations. Table 12 lists these areas, and the main bus routes which serve them. Major trip generators and attractors contain the vast majority of jobs, shopping, government offices and other essential services needed by city residents. The only existing trip generators and attractors not served by transit are Northwood Village, the Gainesville Regional Airport and the Airport Industrial Park. These are developing neighborhood (activity) centers and RTS will assess the need for service to these areas as they develop. (RTS provided service to the airport in the 1980's, but service was discontinued upon evaluation of the ridership generated and attracted by the airport.)

Table 12: Bus Service to Major City Generators and Attractors

Generator/Attractor	Bus Route
Santa Fe Community College	6, 10
Oaks Mall	4, 5
Archer Road/Butler Plaza	1, 12
Westgate Regency	5, 6
Millhopper	6, 10
Ridgeway Village	8
Northwood Village	8
NW 13th Street at 39th Avenue	2
Gainesville Mall	2, 8
University of Florida and Alachua Gen. Hospital	1, 3, 4, 5, 6, 8, 9, 10, 12
Shands and Veteran's Hospital	1, 3, 4, 6, 8, 9, 12
SW 13th Street	3
Downtown Gainesville	1, 2, 3, 4, 5, 10, 11
Gainesville Shopping Center	3
Winn-Dixie Shopping Center at North Main Street	7
Airport	None
Tacachale (Sunland Center)	7
University Avenue at Waldo Road	7
SE Hawthorne Road at SE 27th Street	7
39th Avenue and North Main Street	None
Industrial	
South Main Street	4, 8
NW 6th Street	2
Koppers at North Main Street	None
Hugh Edwards	7
Airport Park	None
Outside City Limits	
Springhill	10
Nationwide Insurance on Williston Road	12
North Central Florida Mental Health	3

The Land Use Element of the County Comprehensive Plan lists a number of urban activity centers, rural activity centers and rural employment centers located outside the Gainesville Urban Reserve Area. Currently, these are outside the RTS main bus service area, but within the Demand-Response System Zone 3 service area. Improvements within the existing main bus service area would have a higher priority than would extension of main bus service to these areas. Through adoption of a Transportation Concurrency Exception Area (TCEA), the City identified “existing and potential transit hubs (see Figure 13).

Figure 11


MAJOR TRIP GENERATORS & ATTRACTORS
2000-2010 Future Transportation Mobility Map Series
Legend
Major Trip Generators & Attractors
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development August 2001
Newmans Lake
Paynes Prairie

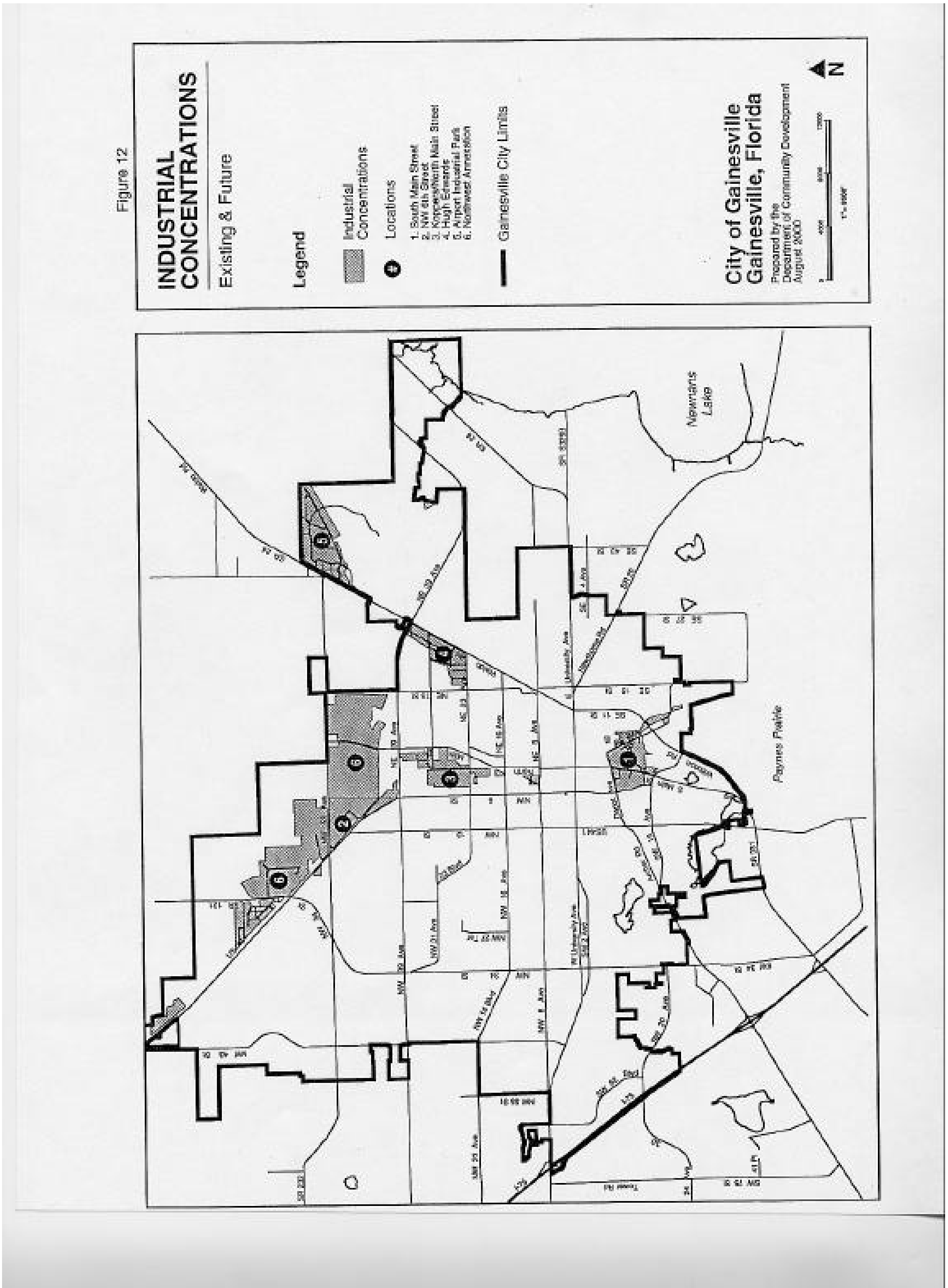


Figure 12
INDUSTRIAL CONCENTRATIONS
Existing & Future
Legend
Industrial Concentrations
Locations
1. South Main Street
2. NW 6th Street
3. Koppers/North Main Street
4. Hugh Edwards
5. Airport Industrial Park
6. Northwest Annexation
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development August 2000
Newnans Lake
Paynes Prairie

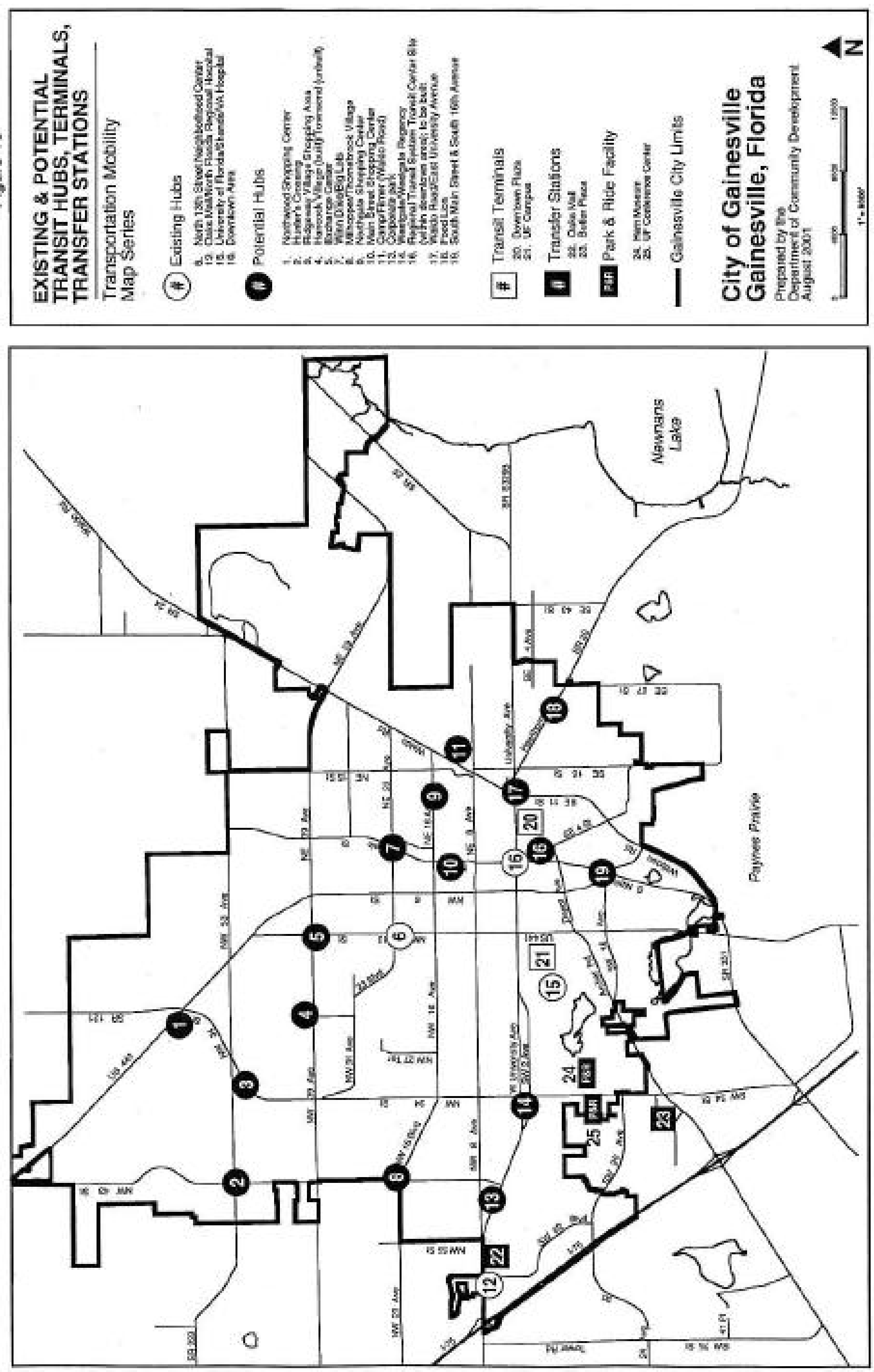


Figure 13
EXISTING & POTENTIAL TRANSIT HUBS, TERMINALS, TRANSFER STATIONS
Transportation Mobility Map Series
Existing Hubs
Potential Hubs
Transit Terminals
Transfer Stations
Park & Ride Facility
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development
August 2001
Newnans Lake
Paynes Prairie
University Ave

Significant City-Owned Parking Facilities. Table 11 is an inventory of major city-owned parking facilities.

Table 11: Significant City-Owned Parking Facilities

Lot	Spaces	Type of Parking	Time Restriction	Duration Limitations
1	77	Permit, Reserved, Meters	2-hour	Short-term
2	73	Permit, Meters	10-hour	Long-term
7	83	Reserved	None	Long-term
10	90	Permit	None	Long-term

Source: Gainesville Public Works Department, March 22, 2000. "Significant" defined as a facility with at least 50 parking spaces for cars.

Percentage of Trips by Transit and Other Forms of Travel (Modal Split)

In 1985, the GUA MTPO adopted a long range modal split goal that 5 percent of all trips in the area would be transit trips in the year 2005. This goal was to be met incrementally:

Transit "Percentage of Trips" Goals

Year	Percent Transit
1990	1.02
1995	1.73
2000	2.93
2005	5.00

The percentage of non-car trips (modal split), as reported in the 1991 Transportation Mobility Element as follows:

Non-Car Percentage of Trips

Form of Travel	% of Areawide Vehicle Trips
Fixed Route Transit	1.1%
UF Shuttle Bus	0.7%
Bicycle	0.8%

The percentage of trips by various forms of travel varies throughout the city, with the concentration of bicycle and transit trips being highest on the UF Campus and in surrounding areas. The average motor vehicle occupancy, as reported in the 1991 Mobility Element, is 1.36 persons per vehicle.

The City should establish an objective that at least 6 percent of all trips within the city be made by a means other by car: by bus, by foot, or by bicycle.

Bicycling

The 3 keys for establishing a bicycle-friendly community are:

1. Convenience
2. Comfort
3. Safety

Advantages of Bicycling as a Form of Travel[41]

- Bicycling can be the quickest way to travel for most short urban trips, especially during rush hour, or in more congested, high-density areas.
- Bicycles require only one-sixteenth of the parking space needed for cars. As a result, more bicyclists mean a smaller need for land-consumptive parking facilities. The small bicycle space needs also offer the bicyclist the convenience of parking closer to the entranceways of his or her destination.
- An increase in bicyclists would reduce wear and tear on streets, thereby reducing on-going operation and maintenance costs for the street network.

Existing System and Analysis for Bicycling

Levels of Bicycle Transportation

Gainesville has long been recognized as a community with a high level of bicycle transportation. For example, it was once estimated that approximately 28,000 daily trips are made by bicycle in Gainesville, and that over 70 percent of these trips were for utilitarian purposes such as commuting to work, school, or shopping.[42]

A 1990 modal split estimate[43] showed that 2.4 percent of the person trips in the Gainesville urban area were made by bicycle in 1990.

However, while the number of trips made by bicycle have remained relatively high, bicycle counts by the MTPO and the Urban Area Bicycle Advisory Board showed a steady decline in the number of trips made by bicycle from 1984 through 1997.[44] See Figure 16.

Existing Bicycle Facilities and Programs

As of December 1998, there are approximately 70 miles of arterial and collector streets within the Gainesville urban area designed to accommodate bicycle transportation.[45] See Figure 14. Nevertheless, 39 percent of the arterial and collector street system mileage has not yet been retrofitted to accommodate bicycle transportation (see Figure 15).

The citywide Trail Network is, in general, not associated with the city street system, and provides off-street travel for pedestrians, physically-adept bicyclists, and, where the trail is paved, less-abled bicyclists and the disabled (see Figure 17).

Figure 14, Bicycle Facility Types does not insert into document. Call 334-5022 or come to the Dept. of Community Devleopment to see the map.

Figure 15, Bicycle Route Gaps does not insert into document. Call 334-5022 or come to the Dept. of Community Devleopment to see the map.

The City Land Development Code requires that a certain percentage of off-street parking consist of bicycle parking facilities. In addition, the Traditional City ordinance has removed the bicycle parking exemption for the downtown area. As a result, most recent developments within city limits now provide bicycle parking. There remain several existing developments, however, that were not required to provide such parking, because the development occurred before the City had bicycle parking requirements in place.

Over time, the City is incrementally developing trails to complete the Trail Network. In recent years, the Depot Rail-Trail and the Waldo Rail-Trail have been constructed. The City is attempting to acquire the 6th Street railroad corridor in anticipation of developing a rail-trail for use by pedestrians and bicyclists. The City also anticipates developing a "Downtown Connector Trail" that will link downtown Gainesville with the Gainesville-Hawthorne Trail and the overall citywide Trail Network.

When completed, this Network will provide links from neighborhoods to public schools, jobs, parks, other neighborhoods, civic and cultural facilities, shopping areas, and outlying towns.

Bicycle Safety

A leading cause of motor vehicle crashes with bicycles is the lack of bicyclist predictability, or awareness by bicyclists of motorists. A second and related cause is the failure of motorists to see bicyclists while driving.

For example, studies of bicycle crashes in the Gainesville urban area have found that most reported crashes occur at intersections. The three actions by bicyclists that cause most crashes are: (1) riding a bicycle against the flow of motor vehicle traffic; (2) failure to obey traffic signals and signs; and (3) riding at night without proper lights.[46]

A study of Gainesville bicycle crashes from 1973-1981[47] found that almost 50 percent of all bicycle crashes involved college-age individuals (18 to 25 age group), and that 35 percent of all bicycle crashes within city limits occurred on West 13th Street or University Avenue. This study also found that the 3 leading causes of crashes over this time period were: (1) a bicyclist travelling on a main street colliding with a motorist turning onto or crossing through the main street on a street controlled by a stop sign; (2) a bicyclist travelling through an intersection colliding with a motorist making a left turn in the path of the bicyclist; and (3) a bicyclist travelling in the same direction or opposing direction of traffic colliding with a motorist making an unexpected right turn.

It is clear from the above that most car crashes with bicycles result from bicyclists not observing cars, or motorists not being able to observe or predict the behavior of bicyclists. Therefore, a bicycle crash reduction program must focus on engineering, education, and enforcement practices which increase bicyclist visibility and predictability. For these reasons (and others), the focus of bicycle planning has shifted from an emphasis on separating bicyclists from motor vehicle traffic to an emphasis on integrating bicyclists with motor vehicle traffic. This largely translates into recognizing the bicycle as a vehicle, providing in-street bicycle lanes, and assigning to the bicyclist all of the responsibilities and benefits associated with vehicular travel.

Existing and Future Needs

There are 5 types of bicycle travel facilities: (1) an in-street bicycle lane; (2) a paved shoulder; (3) a wide curb lane; (4) a bicycle path physically separated from the street; and (5) a sidewalk with ramps. In general, the first 3 types are considered safest for bicycle travel.

Bicycle paths (type #4) should only be constructed for routes not served by streets and where there is little or no cross flow by motor vehicles. Paths should be designed for exclusive or preferential use by bicyclists. Sidewalks (type #5) are generally unsuitable for bicycle transportation. Sidewalks for bicycle transportation should only be considered for a very special circumstances where other forms of bicycle route design are not feasible.[48]

One of the best ways to encourage bicycle use is to remove the conditions, costs, and barriers which limit bicycle use or make it unsafe. The barriers to commuting to work (or other utilitarian trips) by bicycle continue to be significant and widespread. Bicyclists are often faced with:

- A lack of street designs which accommodate bicycle transportation.
- Street hazards such as storm sewer grates, debris, rough pavement, high motor vehicle speeds, shoulder rumble strips, narrow traffic lanes on streets with high average vehicle speeds and excessive driveways.
- Traffic signals which ignore bicyclists.
- Workplace destinations without showers or lockers for a change of clothes.
- A lack of choice to live in housing that is close enough to destinations to allow convenient bicycling.

Key Engineering Strategies to Promote Bicycling in Gainesville

Street Design. Because of the increased speed and convenience it provides, utilitarian bicyclists (those making shopping trips, or commute trips to work or school) generally prefer to travel to destinations by using the same street network found most popular by motorists; namely, arterial and collector streets. As noted earlier, Figure 15 shows that 39 percent of arterial and collector street mileage within the Gainesville urban area are not currently designed to accommodate bicycle transportation.

Bicycle lanes on streets. Up to 95 percent of the public will not bicycle to work, to shopping, or to a park unless they are provided with bike lanes or separate bike paths. On local neighborhood streets, in downtown, and other neighborhood (activity) centers, there is a reduced need for bike lanes when vehicle speed is 20 to 25 miles per hour, and the need is minimal when speeds are 15 to 20 miles per hour. One study has found that cities with substantial bicycle lane mileage have three times more bicycle commuters than cities without such facilities. No significant bicycling occurs in any industrialized area without dedicated bicycle facilities.[49] Of people who biked at least once in the past year, 46 percent would occasionally commute to work by bicycle if safe bike lanes were available.[50]

In Gainesville, bicycling facilities are relatively prevalent and a large number of trips to the UF campus are made by bicycle. Over 75 miles of lanes were built in the 1980s, at the same time in which a significant increase in bicycling activity occurred, and an 80-percent reduction in bicyclist fatalities were observed from 1980 to 1984.[51] Nevertheless, as noted above, approximately 39 percent of all arterial and collector street mileage within city limits is not designed to accommodate bicycle travel. Priority retrofitting should be assigned to those routes that link important local destinations such as shopping areas, schools, and parks.

Bike lanes allow more motorist swing-turning width onto and off of side streets, which enables turning radii at intersections to be smaller. This, in turn, reduces pedestrian crossing time and distance by 60 to 100 percent.[52]

Cities with higher levels of bicycle commuting have 70 percent more bikeways per street mile and 6 times more bike lanes per arterial mile than average.[53]

Strategic gaps. In most cities, the most effective way to use bicycle funds is to concentrate on projects that fill strategic gaps in the bicycle system or provide connections between major trip generators. These improvements complete bicycling corridors that would probably be used more often except for a critical missing section or the presence of a barrier. For prospective bicyclists, gaps in a corridor could mean the difference between riding a bicycle or driving a car. An example of a successful gap-filling project occurred in Eugene, Oregon. There, a "Greenway Bicycle Bridge" resulted in a reduction of at least 665 motor vehicle trips per week. Approximately 30 percent of all bicyclists surveyed would not have made the trip by bicycle if the bridge had not been built.[54]

Prioritizing Street Improvements for Bicycle Travel. As can be seen in Figure 15, important bicycle route gaps currently exist on city arterial and collector streets. Currently, 39 percent of arterial and collector street mileage within the city is not designed to accommodate bicycle travel. The most serious gaps that need to be filled are those where bicycle travel is most likely:

- Areas of relatively high residential density or commercial intensity
- Areas with a compact, mixed land use pattern (residential and non-residential within a 3-mile bicycling distance
- Arterial or collector street
- Proximity to a public school
- Proximity to a major public park or cultural facility
- Lack of alternative parallel routes
- Street segments that link existing bicycle routes
- Street segments displaying a high incidence of motor vehicle crashes with bicycles
- Streets serving major transit stops such as park-n-ride

Using these criteria, the most important bicycle route gaps that need to be filled are (see Table 13 for gaps identified by the MTPO):

1. NW 6th Street between University Avenue and NW 50th Avenue.
2. N 8th Avenue between NW 14th Street and Waldo Road.
3. NW 16th Avenue between NW 43rd Street and N Main Street.
4. Archer Road between SW 34th Street and SW 13th Street.
5. SW 16th Avenue between Depot Avenue and SW 13th Street.
6. NW 31st and 23rd Avenues between NW 34th Street and Waldo Road.
7. NE 15th Street between NE 16th Avenue and NW 53rd Avenue.
8. University Avenue between NW 21st Street and NW 23rd Street.

Table 13: Important Bike Lane Gaps Within Gainesville Urban Area

Priority	Street Segment	From	To	Type of Bicycle Improvement	Implementing Agency
MTPO '95	W. 75th St.	Archer Rd	University Ave	Bicycle lanes	County
MTPO '95	SW 2nd Ave	Newberry Rd	University Ave	Bicycle lanes	State
MTPO '95	Newberry Rd	I-75	NW 8th Ave	Bicycle lanes	State
MTPO '95	W. Univ. Ave	NW 23rd St	North/South Dr	Bicycle lanes	State
MTPO '95	W. Univ. Ave	NW 13th St	North/South Dr	Bicycle lanes	State
MTPO '95	N. Main St	N. 16th Ave	N. 23rd Ave	Bicycle lanes	County
MTPO '95	N. Main St	N. 8th Ave	N. 16th Ave	Bicycle lanes	County
MTPO '95	S. Main St	SW 16th Ave	Williston Rd	Bicycle lanes	State
MTPO '95	Depot Ave	PD&E start pt	PD&E end pt	Bicycle lanes	City
MTPO '95	NE 2nd St	NE 16th Ave	NE 10th Ave	Bicycle lanes	City
MTPO '95	NW 2nd St	NW 23rd Ave	NW 16th Ave	Bicycle lanes	City
MTPO '95	NW 6th St	NW 13th St	NW 8th Ave	Bicycle lanes	State
MTPO '95	NW 23rd Ave	I-75	N.W. 55th St	Bicycle lanes	County
MTPO '95	NW 23rd Ave	NW 13th St	Waldo Rd	Bicycle lanes	County
MTPO '95	SW 16th Ave	Archer Rd	SW 13th St	Bicycle lanes	State
MTPO '95	NW 19th St	NW 45th Ave	NW 31st Ave	Bicycle lanes	City
MTPO '95	NW 53rd Ave	U.S. 441	Waldo Rd	Bicycle lanes	County
MTPO '95	SE 15th St	SE 41st Ave	SE 14th Ave	Bicycle lanes	County
MTPO '95	NW 31st Ave	NW 16th Terr	NW 34th St	Bicycle lanes	County
MTPO '95	NW 34th St	University Ave	NW 1th Ave	Bicycle lanes	State
MTPO '95	NW 38th St	NW 16th Ave	NW 8th Ave	Bicycle lanes	City
MTPO '95	SE 43rd St	Hawthorne Rd	University Ave	Bicycle lanes	County
MTPO '95	E. 18th St	NE 8th Ave	Hawthorne Rd	Bicycle lanes	City
MTPO '95	Archer Rd	I-75	SW 13th St	Bicycle lanes	State
MTPO '95	NW 45th Ave	NW 24th Blvd	NW 13th St	Bicycle lanes	City
MTPO '95	SW 62nd Blvd	Newberry Rd	SW 20th Ave	Bicycle lanes	City
MTPO '95	NW 143rd St	Newberry Rd	CR 235	Bicycle lanes	County
MTPO '95	SW 63rd Blvd	SW 41st Pl	Archer Rd	Bicycle lanes	County
MTPO '95	Williston Rd	I-75	SW 13th St	Bicycle lanes	State
MTPO '95	University Ave	Hawthorne Rd	Lakeshore Dr	Bicycle lanes	County
MTPO '95	Lakeshore Dr	University Ave	Hawthorne Rd	Bicycle lanes	County
MTPO '95	SW 25th St	University Ave	SW 2nd Ave	Wide curb lanes	City
	Millhopper Rd	The Hammock	NW 43rd St	Bicycle lanes	County

Source: North Florida Regional Planning Council. (12/14/95) "Year 2020 Long Range Transportation Plan Update: Bicycle/Pedestrian Element."

Bicycle Parking. The City requires that most new developments provide bicycle parking. The result has been that the City now has a relatively large amount of parking suitable for bicycles. Nevertheless, important bicycle parking problems persist.

Within the City, bicycle parking inadequacies are found at most older developments which were constructed before adoption of the current parking ordinance. Also, many recently installed bicycle parking facilities are incorrectly designed or installed.

One bicycle parking strategy which can result in significant increases in both bicycle and bus commuting is the installation of bicycle parking adjacent to transit stops. (The University of Florida campus provides at least one example of such a facility.) In certain communities in California, Connecticut, Illinois, and New Jersey, such bike-and-ride lots allow 5 to 10 percent of all park-and-ride commuters to arrive at the lot by bicycle.[55] Such success is probably attributed to the fact that bicycling is in many ways well suited to trip distances often found between suburban homes and park-and-ride lots. However, because bicycles must be parked for long periods of time at such relatively unsupervised lots, bicycle parking facilities at such lots should provide a relatively high degree of bicycle protection from weather, theft, and vandalism. Prioritizing the installation of bicycle parking at park-and-ride lots should be based on the expected demand for such parking.

Top-of-the-line bicycle parking costs approximately $100 per space for racks to $1,000 per space for bicycle lockers as a fixed, one-time expense. Motor vehicle parking, by contrast, costs $1,450 to $3,820 per year at Stanford University.[56]

Encouraging Bicycling as a Form of Travel

"Encouragement" is the promotion of increased bicycle transportation through the creation of incentives for bicycling. While incentives should be offered to all citizens, it is most important that employers and school officials provide incentives to the two largest groups of potential utilitarian bicyclists: employees and students.

Both employers and employees benefit when employees commute to work on a bicycle. Employers benefit from lower parking costs, lower employee health costs and lower absenteeism, and increased employee morale. Employees benefit by enjoying increased physical fitness and lower transportation costs.

Employers can encourage employees to be bicycle commuters by:

- Providing adequate, sheltered, secure, convenient bicycle parking.
- Offering employees a transportation allowance (or “parking cash-out”) that can be used to pay for motor vehicle parking, bicycle equipment, bus passes, or walking shoes.
- Providing a flex-time option.
- Providing showers and clothing lockers.
- Offering bicycle riding information through an employee newsletter.
- Purchasing a fleet of bicycles for employee errands.
- Sponsoring encouragement campaigns such as bike-to-work days and public service announcements.
- Offering rewards and other recognition to employees who bicycle.
- Sponsoring community-wide bicycle recreation events, such as "Prairie Day" at the rail-trail.
- Reimbursing employees for trips made by bicycle, usually through use of a car trip reduction policy/ordinance.
- Sponsorship of employee bicycle clubs and outings.

Similar strategies are available to school officials for the encouragement of student bicycling.

An essential education tool and encouragement strategy in Gainesville is the development of the Trail Network. Trails are a critical gateway or “training ground” for novice bicyclists -- those just starting to ride and who are uncomfortable and unsure about bicycling. Trails are seen by the novice as a safe, pleasant, sociable, recreational place to bicycle. Because they safely and conveniently link homes to jobs, shopping, schools, offices, and parks, they encourage high levels of travel by bicycle and foot. As has been shown in other communities with extensive trails, such off-street paths attract large numbers of novice bicyclists who, after bicycling on the trails, develop the skills, enjoyment and confidence to "graduate" to bicycling on streets, where it is more appropriate for "utilitarian" (as opposed to recreational) bicycle trips. By being such powerful gateways for beginners, trails educate large numbers of citizens about the feasibility and enjoyment of bicycling -- resulting in dramatic increases in bicycle travel throughout the community. There are currently 27.6 miles of designated Trail Network in the city (see Figure 17).

Bicycle Capital Improvements Needed

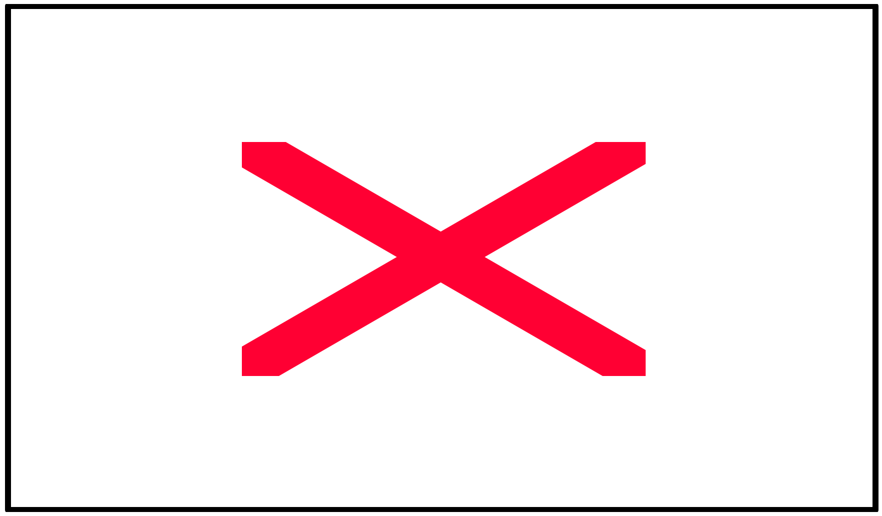
The 1995 Bicycle/Pedestrian Element of the MTPO "Year 2020 Long Range Transportation Plan Update" identified the following independent bicycle capital improvement priorities as needed in the urban area (see Table 13). By adopted policy, bicycle lanes or wide curb lanes are planned as an integral part of each street construction project. Therefore, many projects that are bicycle capital improvements are not listed below because they will be included as part of a street modification project.

Sustainability Indicators for Bicycling

An important indicator for how "bicycle friendly" the city has become is the annual bicycle counts trend. As can be seen in Figure 16, the trends in bicycle counts have steadily declined since 1984. This decline may be attributed to:

- Free and abundant surface parking for cars throughout most of the city.
- The cost of gasoline, adjusted for inflation, remaining the lowest it has ever been.
- The growing dispersal of residences, retail and office establishments, and community-serving facilities.
- An increase in per capita car ownership.

Figure 16. Bicycle Counts for Gainesville Urban Area



Source: Gainesville Traffic Engineering, 1999.

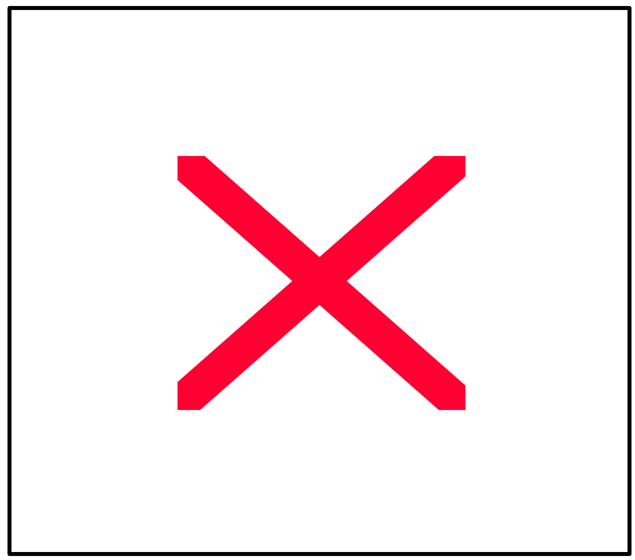
Another important sustainability indicator for bicycling is the percent of major street mileage (arterials and collectors) within the city that are designed for safe bicycling (wide curb lane, shared parking lane, paved shoulder, or in-street bicycle lane). Arterials and collectors are the most important streets for bicycle commuters, since, like for motorists, these routes are the fastest for bicycle travel and are therefore preferred by the bicycle commuter. Without safe bicycle access to major streets, bicycle commuting is unlikely to occur at meaningful levels.

Figure 17 shows historical trends in the percentage of major streets within city limits that are designed for safe bicycling.

The Trail Network

The Trail Network is a set of paths serving bicyclists, pedestrians, and people in wheelchairs that are separate from the street and sidewalk system -- usually following a creek or abandoned railroad right-of-way. Trails are a cost-effective way to provide a popular transportation system for pedestrians and bicyclists. (Note that because of the low-density, suburban character of American cities such as Gainesville, most trails and rail trails have higher levels of bicycle use than pedestrian use.)[57] Gainesville's 1991 Comprehensive Plan designated 28 miles of trails as part of the Trail Network (see Figure 18). The trails run through each of the four quadrants of the urban area.

The 3 keys to making such trails useful for transportation are accessibility to the trail (including convenience of the trail to major destinations and a large number of access points along the trail), an active maintenance program, and trail safety.[58]

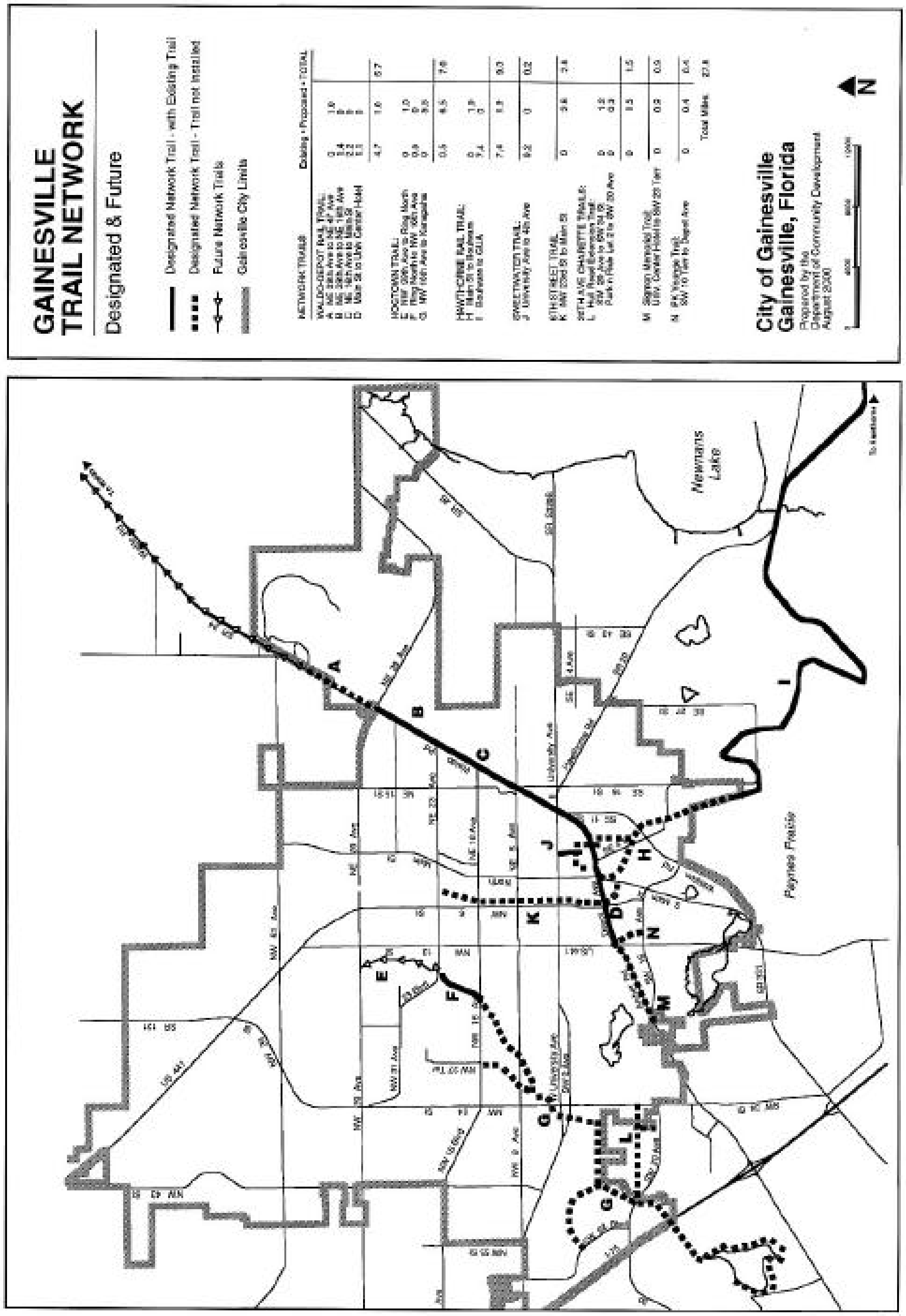


The importance of trails as a safe alternative for bicyclists and pedestrians is shown by studies indicating that the main disincentives to bicycling, besides weather, is motor vehicle traffic safety hazards and lack of bicycle routes.[59] Also important are travel time and travel distance, secure parking, and destination facilities such as showers and lockers.[60]

Of the people who have bicycled at least once in the past year, 53 percent would commute by bicycle if safe, separate paths were available.[61]

A recent survey along the urban-oriented Pinellas Rail Trail (Pinellas County, Florida) found that 30 percent of the trips were for utilitarian purposes such as shopping or commuting to work. Most or all of these trips would have been motor vehicle trips had it not been for the trail.[62]

The City is incrementally establishing a citywide Trail Network consisting of creekside trails, rail-trails, and utility easements and right-of-way corridors. The intent is that these trails accommodate pedestrians, bicyclists and people using wheelchairs in the interest of maximizing transportation choice for all ages and skill levels, and promoting the most efficient use of public transportation expenditures. Therefore, to the extent possible, the trails should be designed to safely and conveniently provide access for all forms of non-motorized travel.


GAINESVILLE TRAIL NETWORK
Designated & Future
Designated Network Trail - with Existing Trail
Designated Network Trail - Trail not Installed
Future Network Trails
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Newnans Lake
Paynes Prairie

Trail Network gaps

A number of "gaps" in the Trail Network need to be filled to make the Network significantly more effective and popular. The most important gaps needing to be filled include:

- The **6th Street Rail-Trail Gap**. This gap is an abandoned rail corridor that runs from NW 23rd Avenue to Depot Avenue, and would provide trail network access from north and northeast Gainesville.
- The **Downtown Connector**, which would link the Waldo, Depot, 6th Street and Sweetwater Trails (which connect in the downtown area on Depot Avenue) to the highly popular and scenic 17-mile Gainesville-Hawthorne Rail-Trail.
- The **Waldo/University Avenue Gap**. This gap occurs at the intersection of East University Avenue and Waldo Road, where a major street intersection creates a significant barrier to the convenient and safe use of the Waldo Rail-Trail.
- The **Matheson Center Gap**. This gap occurs just west of the Matheson Historical Center, where the Sweetwater Trail crosses E. University Avenue.
- The **UF Campus Gap**. This gap occurs just west of the Depot Rail-Trail bridge crossing SW 13th Street, where the Depot Trail must cross the very dangerous Archer Road in order to reach the UF campus. There is no clear trail route from this point to SW 34th Street.

Cars

Widening Streets Does Not Reduce Traffic Congestion

An analysis by The Surface Transportation Policy Project, a respected transportation research organization, shows that the most common way to ease congestion has had little effect on the growth of motor vehicle traffic congestion in major urban areas in the last 15 years.[63] The analysis compared urban areas that have added extensive new street capacity with those that have not, and found no significant difference in the rise in motor vehicle traffic congestion.

Extravagant spending by various urban areas did not help drivers avoid the costs of being stuck in traffic, compared to those areas that did not spend large amounts of money to add capacity. The analysis found that between the two groups, the urban areas that added more new lanes spent roughly $22 billion more on construction, but their drivers are still paying high costs due to congestion delays, and these delays are not made up for by time savings due to the widenings, since the savings are either small in comparison to the delays, or result in *more* lost time due to the “triple convergence” (or “induced traffic”) problem. Therefore, widening streets is not only ineffective, but it is expensive as well.

The report noted that part of the problem may be what is known as "induced traffic." Several recent studies have documented that widened streets actually encourage more driving and more motor vehicle trips than would have occurred had the street not been widened. A University of California study of 30 urban counties in the state found that every 1 percent increase in lane miles generates a 0.9 percent increase in motor vehicle traffic within five years, negating the congestion-easing effect of wider streets. The Federal Highway Administration found in a recent study in Milwaukee that induced traffic accounted for 11-22 percent of the area's increased motor vehicle traffic from 1963 to 1991.

When drivers perceive an increase in either travel time or cost, they typically respond by changing their travel routes, traveling at a different time, or traveling less by car. When street capacity is expanded near congested routes the opposite happens -- drivers throughout the region flock to the new facility hoping for reduced travel times, thereby increasing the total amount of motor vehicle traffic in the region. Anthony Downs[64] calls this the “Triple Convergence.”

Almost all car drivers normally hunt for the fastest route, according to Downs. Since most drivers know where the fastest routes are, they converge on the fastest routes from many points of origin.

Downs notes that unfortunately, during rush hour on weekdays, so many drivers converge on these fastest routes that the routes quickly become congested, particularly in urban areas. Car travel on these routes eventually slows to the point where they have no advantage over the alternative routes. In other words, a “route speed” equilibrium is reached on the various routes. Sometimes the direct street may become even slower than alternative streets, and some drivers eager to save time will switch to these indirect streets. Soon, travel times on both types of route is approximately the same. The opposite happens if travel becomes slower on alternative streets than on the direct arterial or collector route.

If the more direct and major urban street is widened to have more travel lanes, the drivers using it move much faster than those using alternative routes. But this faster movement condition only lasts briefly because other drivers soon learn that this newly widened street is faster. Once they learn, they converge on this faster route and soon congest it.

Therefore, 3 types of convergence inevitably occur on the widened street:

(1) Many drivers who formerly used alternative routes during rush hour switch to the widened street (spatial convergence);
(2) Many drivers who formerly traveled just before or after rush hour start traveling during rush hour (time convergence); and
(3) Some commuters who used to take transit during rush hour now switch to driving, since driving a car has become faster (modal convergence).

Conventional transportation models typically ignore human reactions to time costs and prices. They also assume that land uses won't change, regardless of what transportation infrastructure is built. In using these conventional models for transportation planning, land use is only an input to the models. That is, the models claim, unrealistically, that if you build a freeway out into the cornfields, the farmers won't sell out to developers.

Finally, the models assume that levels of bicycling and walking remain the same, regardless of the quality of the bicycle and pedestrian space provided. This is clearly untrue, since contemporary transportation facility construction is a “zero-sum” game. In other words, any modification that improves conditions for motor vehicle travel will result in a less safe, less convenient, and less pleasant trip for all other forms of travel -- thereby discouraging such trips.

Therefore, the conventional models overestimate the congestion produced by removing travel lanes; and they fail to predict that new lanes added to a congested system will quickly generate new motor vehicle traffic, and become congested.

Evidence of induced traffic is rarely used in travel modeling, where it would have a big impact on deciding whether a street modification project gets built. The City position is that travel modeling used for street analysis in the Gainesville area shall incorporate induced traffic impacts in the traffic models used.

In the early 1990s, the City Commission adopted a resolution stating that streets within the city shall not be widened beyond 6 travel lanes. However, Reid Ewing[65] states that “...the concept of human scale implies two or four travel lanes, no more. It is hard to find a 6-lane street that is easy to cross, pleasant to walk along, or comfortable to wait along when using transit.”

Too Much Street and Car Parking Capacity Creates More Air Pollution and Fuel Consumption

According to researchers in Australia,[66] cities that

- Increase residential and job density;
- Increase transportation choices by designing for all forms of travel and not just single-mindedly for cars;
- Rarely or never widen streets;
- Focus on the core area downtown; and
- Have healthy transit

are cities where gasoline consumption diminishes. In addition, cities with a very high percent of total trips made by motor vehicle have 2.5 times more central area parking per 1,000 Central Business District (CBD) jobs than cities where trips are more balanced between the car and other forms of travel. These researchers recommend no more than 200 parking spaces per 1,000 CBD jobs. A 1995 analysis found that Gainesville's CBD has more than 4 times this threshold: approximately 840 parking spaces per 1,000 CBD jobs.

In addition, the research points out that even though congestion diminishes significantly from central to outlying areas and vehicle fuel efficiency improves, actual per capita gasoline use increases significantly in outlying areas. Vehicles in central areas have lower fuel efficiency than the average for a city due to congestion, but the central area residents use approximately 25 percent less gasoline.

Essentially, the better fuel efficiency and lower air pollution emissions that individual cars experience in outlying areas are negated because in the congested but denser and more compact central area, travel distances are shorter and people are more likely to use transit, walk or bicycle. Widening streets tends to disperse the city and create greater levels of car dependence. Both gasoline consumption and air pollution are higher overall in a more dispersed, car-dependent community.

The objective, therefore, is to "level the playing field" so that there is less car dependence and car subsidy, and a reallocation of available transportation funds toward more transportation choice. So for example, less effort should be devoted to widening streets and increasing car parking supply, and more spent buying buses, building sidewalks and bike routes, and more effort directed toward developing compact, in-town development.

Existing System and Analysis for Cars

We are now 15 years into implementation of the 1985 Florida Growth Management Act, which was billed as the solution to Florida's uncontrolled and explosive population growth problems. Yet the state is more plagued than ever with sprawling low-density suburban growth, a proliferation of citizen opposition to such growth, the emergence of a "property rights" movement, an escalation of taxes, a decline in services, the creation of seas of asphalt, the construction of miles of commercial strips, and near-gridlock motor vehicle traffic congestion.[67]

Why has the Act not succeeded in controlling sprawl? The answer, it seems, lies in our approach to transportation problems.

For the past several decades, our response to motor vehicle traffic congestion has been directed toward measures which increase street capacity (primarily by adding travel lanes and turn lanes). However, because this increased capacity has created a positive feedback loop (increased street capacity creates incentives for more low-density suburban development and disincentives for bicycling, walking, and transit, which, in turn, creates incentives for more street capacity, ad infinitum), street capacity increases have not been able to keep pace with the demand (a substantial increase in the numbers of cars on streets, the distance traveled by car, and the number of car trips per household since the street widening sprees of the 1950s and 1960s).

The demand by motorists for more street capacity has become so great that a growing number of transportation agencies (such as the California and New Jersey Departments of Transportation and the US DOT) can no longer justify the astronomical costs necessary to widen streets. The response to motor vehicle traffic congestion is increasingly shifting from increasing street capacity to a much cheaper and socially beneficial strategy of "managing demand."[68]

Unfortunately, this fundamental shift in perspective regarding transportation solutions has still not made much headway in Florida. An important reason why this shift has not yet occurred here is the transportation concurrency requirements of the Growth Management Act.

It is widely acknowledged that the "teeth" of this legislation was to force local governments to establish level-of-service (concurrency) standards that cannot be degraded or lowered by new development. The standards came in response to rapid growth over the past few decades -- growth that often led to congested streets; overcrowded schools and parks; excessive, environmentally destructive demands for water, electric and sewer service; higher taxes; and overflowing landfills throughout the state.

In theory, the level-of-service standards are laudable. They establish a "truth in planning" requirement which gives local governments a choice: either certify that the new shopping center or subdivision will not lower service standards, or prohibit the development.

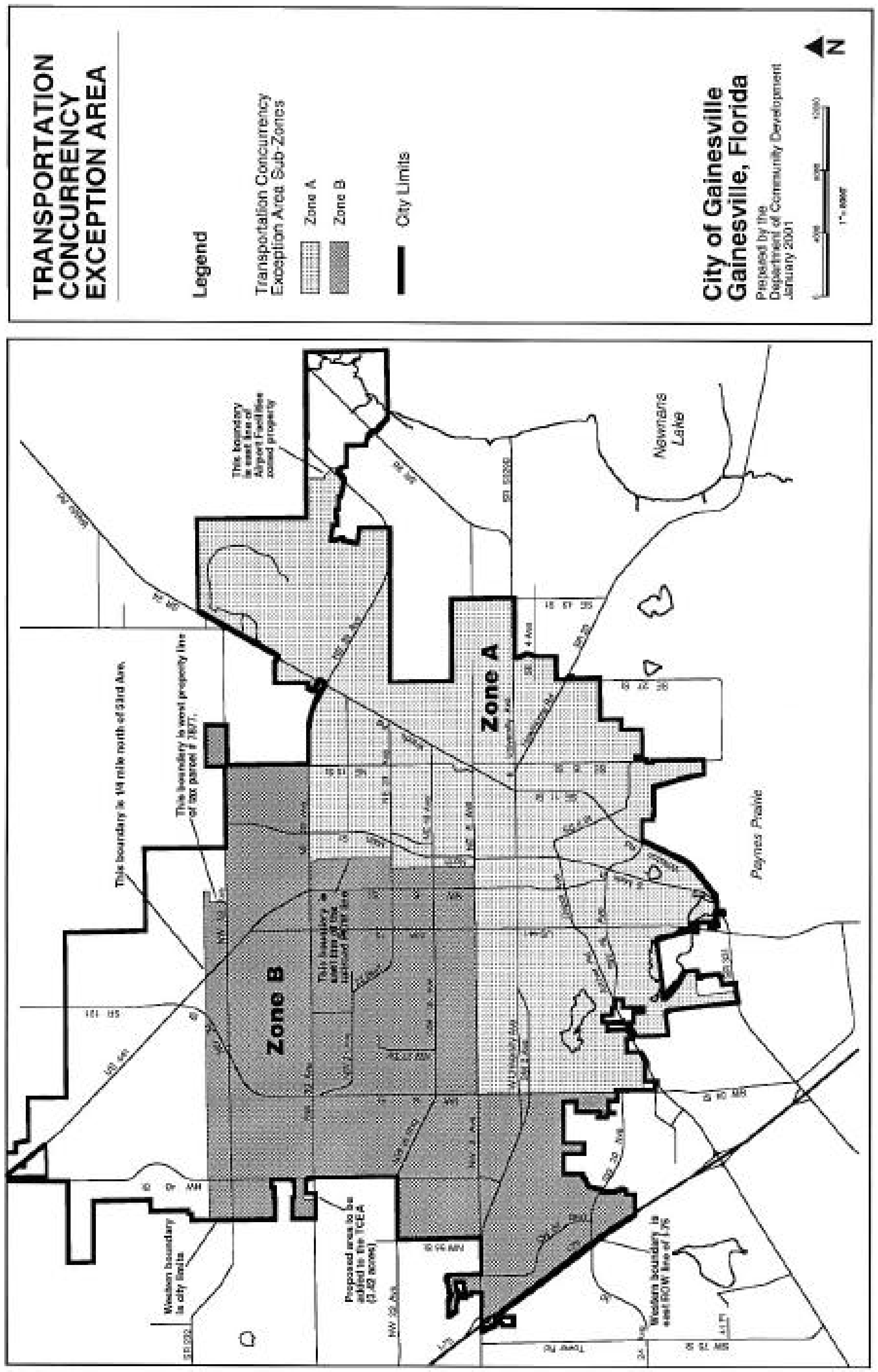
In general, the standards seek to ensure that enough capacity exists to absorb the new development -- enough landfill space, enough park space, enough drinking water supply. However, while this "capacity" approach makes sense for most services, it is counter to sustainable community improvement objectives when it is applied to maintaining capacity for car travel.[69]

This is true for at least 2 reasons: The first is that most available street capacity typically exists in the places that are least appropriate for new development -- the remote, dispersed locations that, when developed, cause environmental and social problems, excessive dependence on cars for travel, and place excessive service demands on local governments. Meanwhile, lack of street capacity is typical in those parts of the community that are most appropriate for development -- the closer-in locations near or within our existing commercial and residential neighborhood (activity) centers. The result of applying a capacity (concurrency) standard to streets is that we create a plan which, when implemented, will create strong incentives for developing in outlying areas. And such a development pattern is counter to the objectives of our Plan for a more compact, sustainable, livable city with transportation choices. Therefore, street concurrency standards, when they encourage more dispersed development, are clearly an internal contradiction within a Plan that calls for such land use and transportation objectives.

The second reason that a capacity standard is flawed when applied to streets is that it erroneously assumes that maintaining or increasing street capacity in cities is beneficial for cities. But this is simply untrue. The reason that maintaining or increasing street capacity is considered beneficial is that most of us have come to think that the sole purpose of streets is to move the maximum number of cars (and to allow them to move as fast as possible). In fact, the purpose of streets (and other parts of our transportation system) is actually to move *people and goods* (as well as to allow people to congregate along streets for socializing, business, and politics). It has become abundantly clear that increasing street capacity cannot, in the long run, keep up with the demand for capacity (as already noted above).

Because of such factors as "induced traffic" and "triple convergence" (see "Widening Streets Doesn't Reduce Traffic Congestion" below), the fact that higher levels of street vehicle congestion promotes many community livability and sustainability objectives, and the fact that area-wide level-of-service concurrency requirements promote urban sprawl, the City has recently established a "Transportation Concurrency Exception Area" (see Figure 19).

If transportation level of service is to accommodate the City objectives of transportation choice and livability, it must, as a concurrency measure, go beyond simply using the capacity of streets to carry large numbers of high-speed cars.[70] Transportation concurrency must be revised to include additional measures of quality of life: How well the streets create livable neighborhoods, healthy retail, economic efficiency, and a sustainable future, for example.


TRANSPORTATION CONCURRENCY EXCEPTION AREA
Legend
Transportation Concurrency Exception Area Sub-Zones
Zone A
Zone B
City Limits
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development January 2001
Zone A
Zone B
Newnans Lake
Paynes Prairie
This boundary is 1/4 mile north of 53rd Ave.
Proposed area to be added to the TCEA
Western boundary is city limits
Western boundary is east ROW line of I-75

Street Classification

Arterials, collectors and limited access streets. Figures 20 and 21 show arterial streets, collector streets, and limited and controlled access streets that are at least partially within city limits. The classifications are based on state "functional classification." The number of travel lanes is shown on Figure 22. The number of travel lanes is based on the number of "through" lanes, in both directions, passing through the "terminal intersection" of a particular street segment. The number of travel lanes therefore does not include turn lanes. None of the city arterials are one-way streets. Figure 23 shows maintenance responsibility for all functionally classified streets.

Peak Hour Level of Service for the Street Network

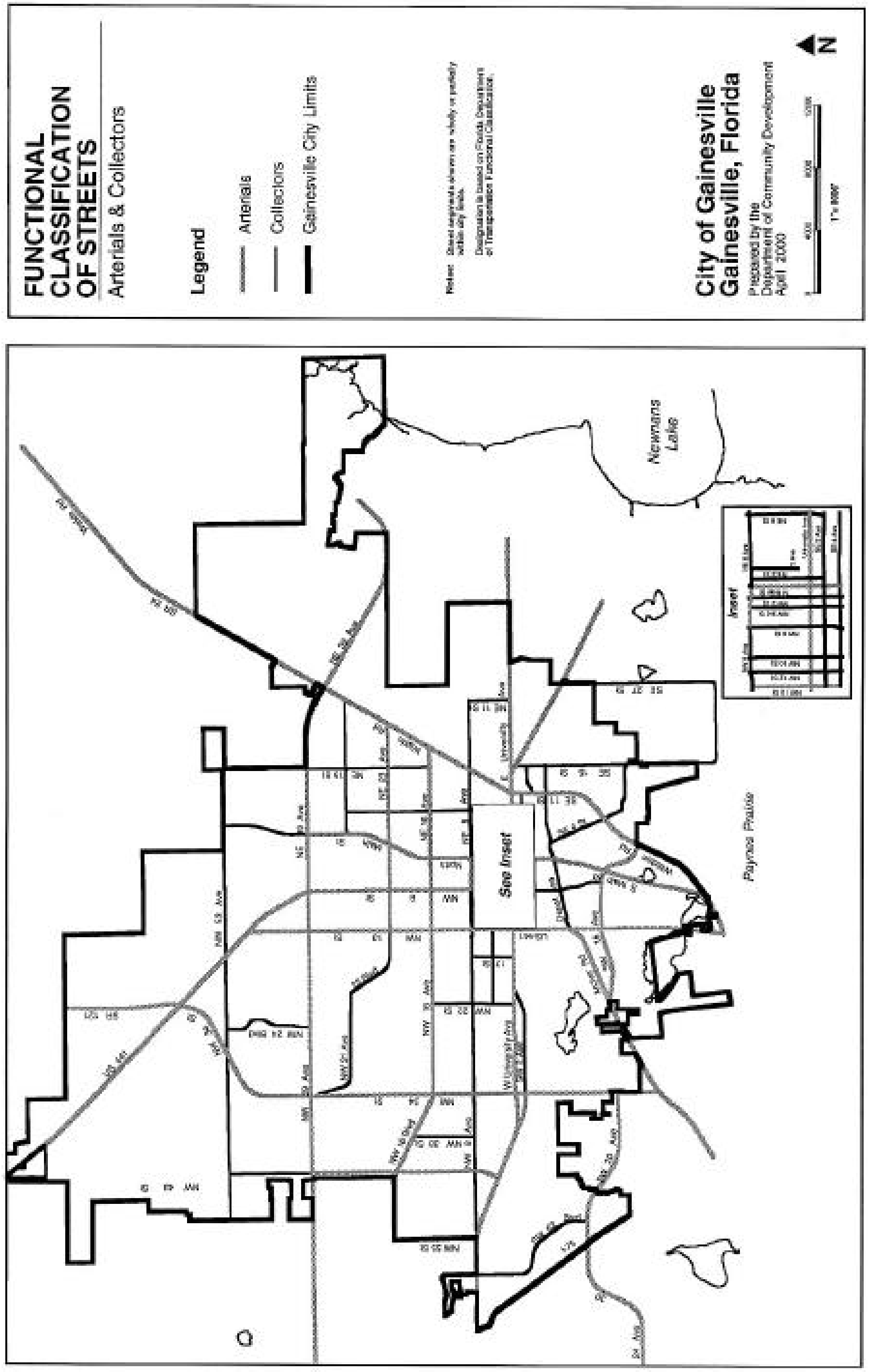
Peak hour level of service for the city street network is shown in Figure 24. Note that this figure does not include trips "reserved" on various streets by future development. However, the City is de-emphasizing the use of level of service standards for cars, and the concern for maintaining car street capacity that these standards imply. This de-emphasis is, in part, demonstrated by the Transportation Concurrency Exception Area (TCEA – see "Exception Areas" section below) recently adopted by the City.

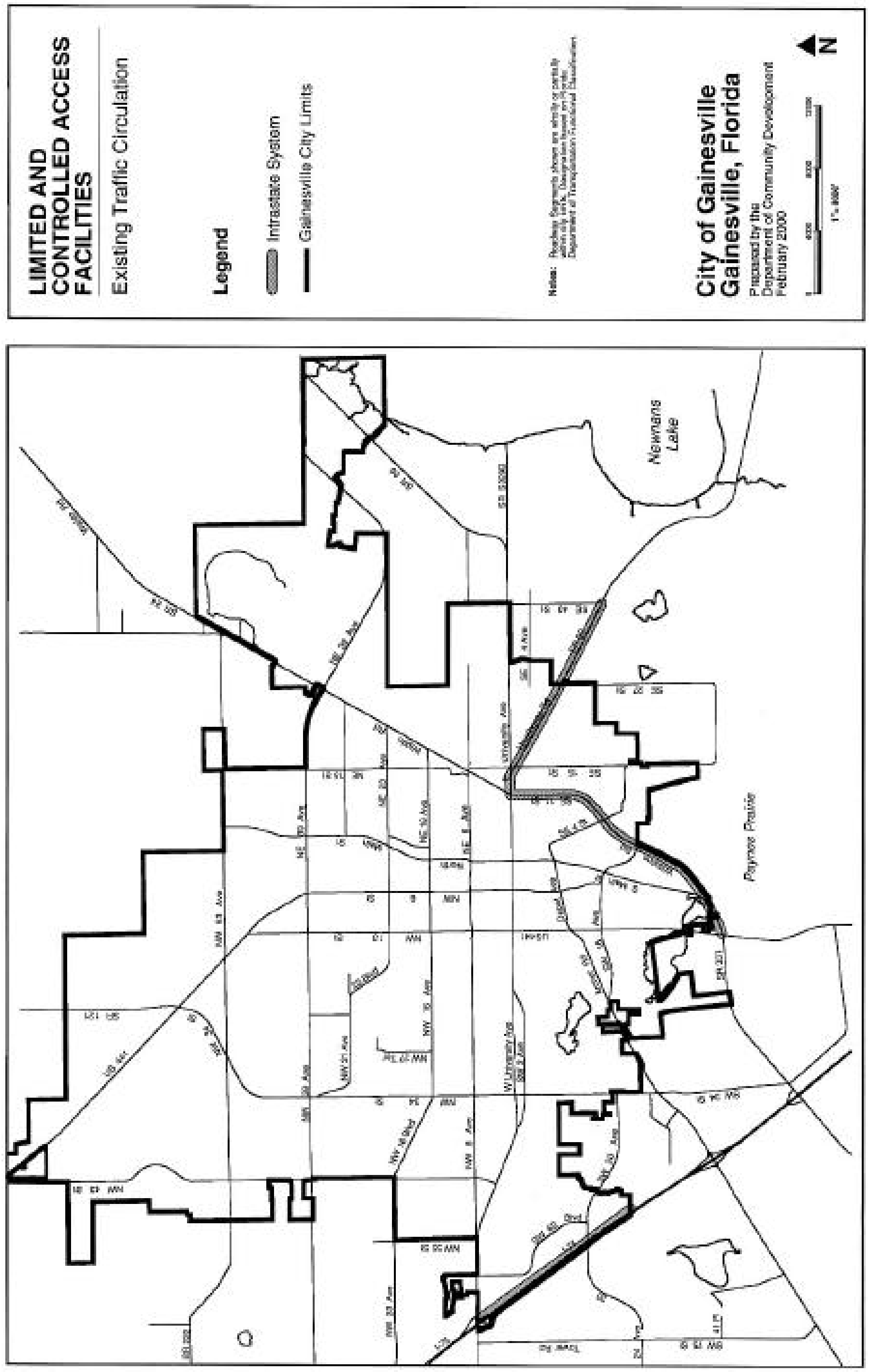
This de-emphasis is driven by the intent to create more transportation choice in the city, and discourage urban sprawl. Maintaining street capacity for cars through level-of-service standards required by the State of Florida works against this intent, since it discourages transportation choice and encourages sprawl. Sprawl is encouraged partly by street level of service standards. When such standards compel the creation or maintenance of free-flowing, high-speed car traffic, residents find it easier to live in remote locations, as commute time by car is more tolerable when living in remote areas. Consequently, such standards make in-town areas less hospitable to residences (which also encourages people to leave the city), as the streets near the in-town areas are little more than "escape routes" for residents in remote locations.

Furthermore, as noted elsewhere in this report, adding capacity to overburdened urban streets is ineffective and counterproductive because of the "triple convergence," wherein traffic problems are worsened due to "induced traffic" that would not have occurred in the absence of the capacity increase. It is simply a recognition that the City cannot, even in theory, build its way out of congestion, and the City hurts attainment of a number of important community objectives when trying to do so (such as quality of life, reduction of auto dependence, financial health, and discouragement of sprawl). In addition, the City recognizes that there are a number of benefits of traffic congestion in attaining those objectives.

Congestion is now less seen as a "problem" so much as it is more often seen as a solution.

Travel by various forms of transportation is self-regulating. That is, since adding street capacity encourages more car travel than would have occurred had there not been an increase in capacity, the converse is also true. Because people value their time, money, and quality of life, they adjust their travel and lifestyle behavior so that they are less dependent on car travel in the face of increased congestion. Over time, more people will choose to live closer to their destinations, and increasingly walk, use transit, bicycle or carpool.


FUNCTIONAL CLASSIFICATION OF STREETS
Arterials & Collectors
Legend
Arterials
Collectors
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
April 2000
N
Newnans Lake
Paynes Prairie
See Inset
Inset


LIMITED AND
CONTROLLED ACCESS
FACILITIES
Existing Traffic Circulation
Legend
Intrastate System
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
February 2000
Newnans Lake
Paynes Prairie
N

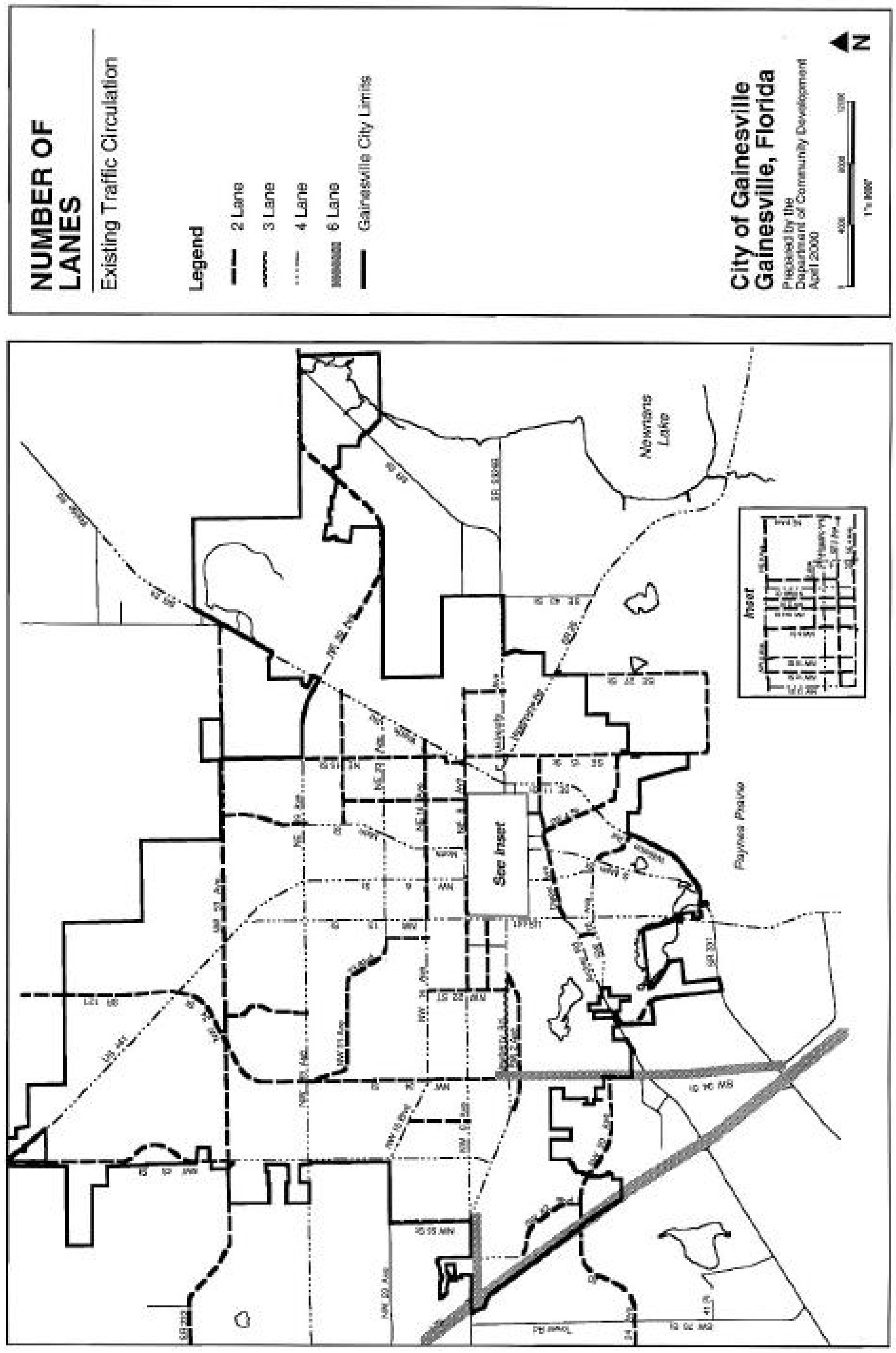
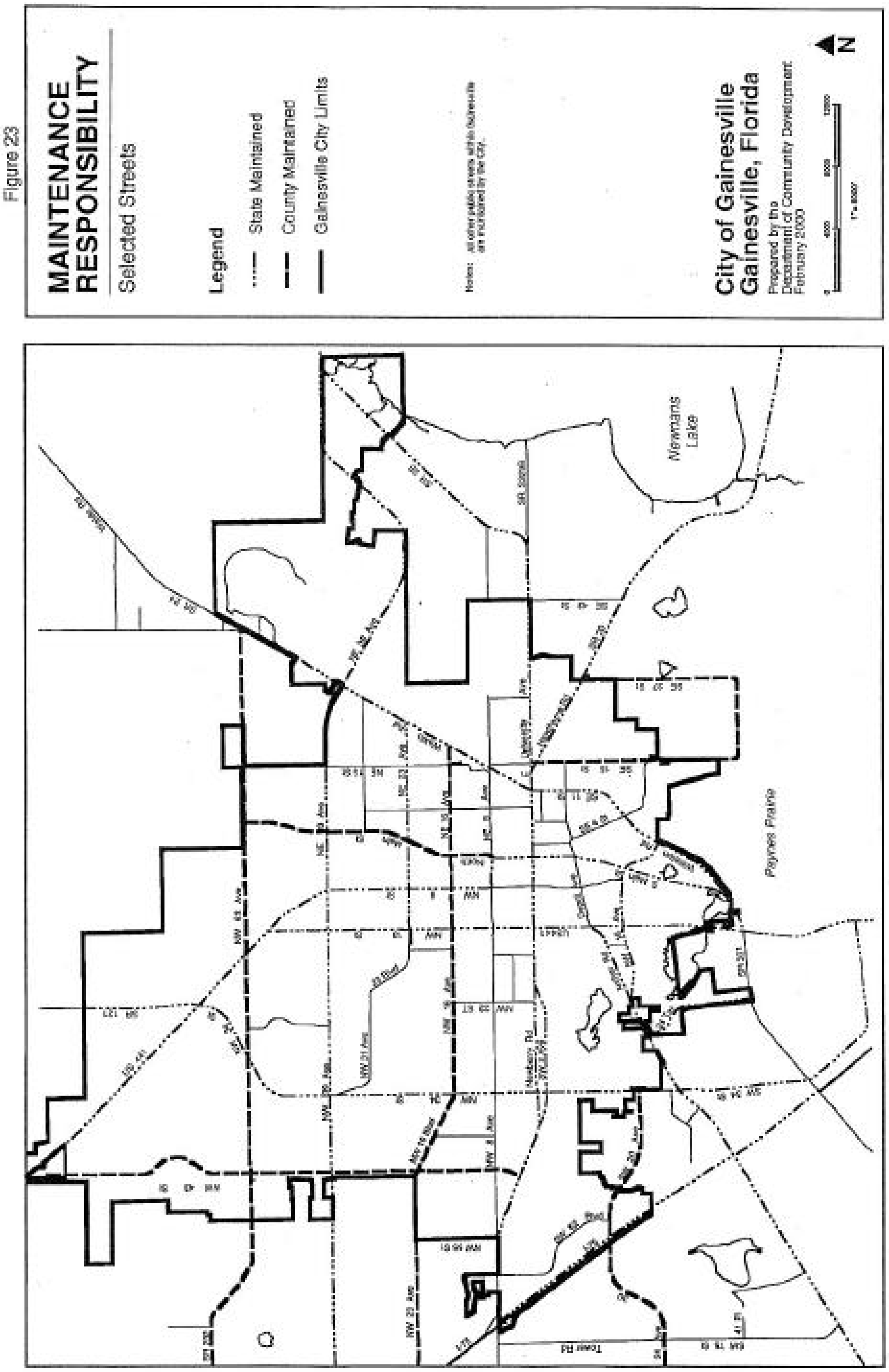
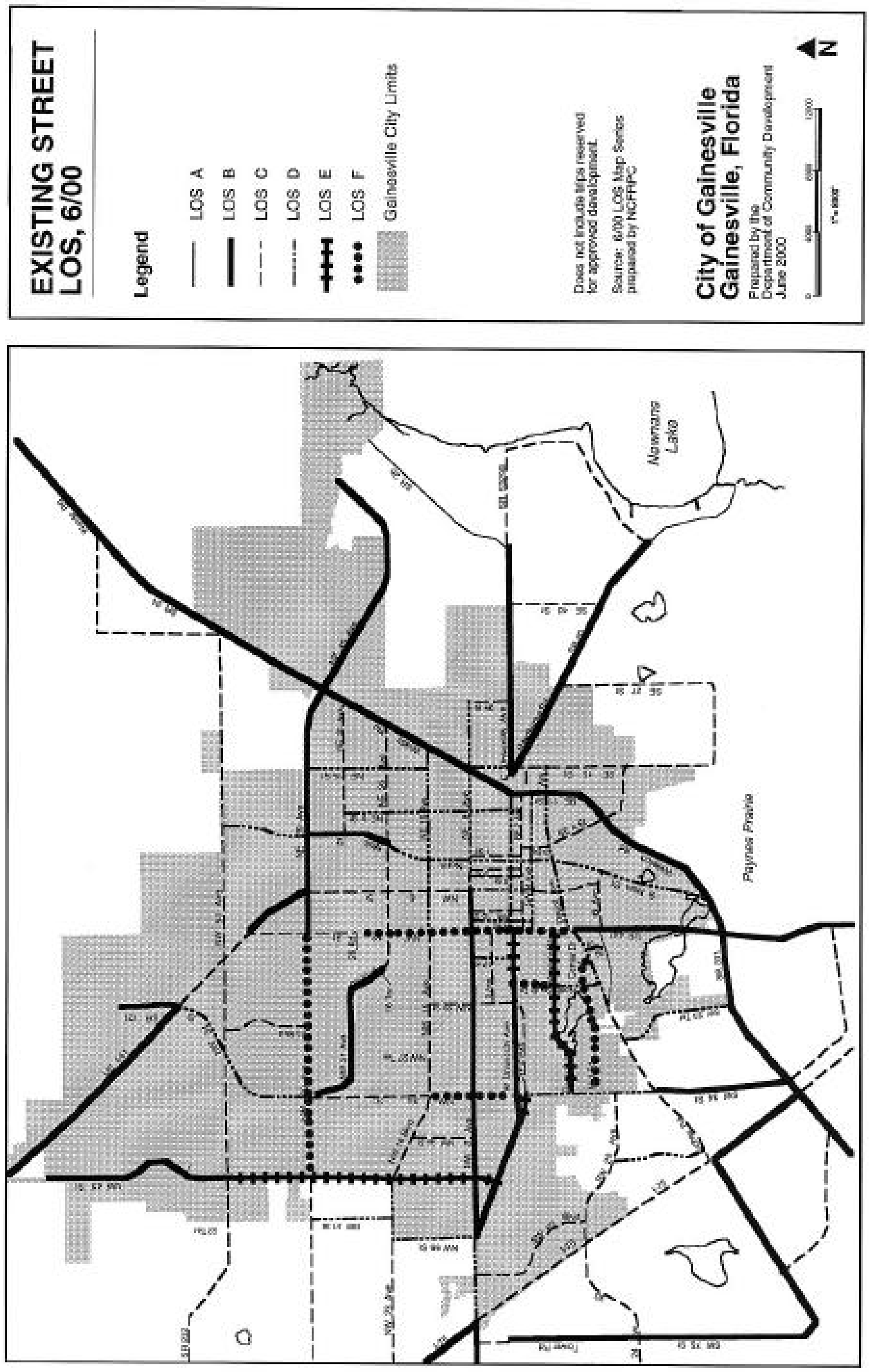

NUMBER OF LANES
Existing Traffic Circulation
Legend
2 Lane
3 Lane
4 Lane
6 Lane
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
April 2000
N
Newnans Lake
Paynes Prairie
See Inset
Inset

Figure 23


MAINTENANCE RESPONSIBILITY
Selected Streets
Legend
State Maintained
County Maintained
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
February 2000
Newnans Lake
Paynes Prairie


EXISTING STREET
LOS, 6/00
Legend
LOS A
LOS B
LOS C
LOS D
LOS E
LOS F
Gainesville City Limits
Does not include trips reserved for approved development.
Source: 6/00 LOS Map Series prepared by NCFRPC
City of Gainesville
Gainesville, Florida
Prepared by the Department of Community Development
June 2000
N
Newnans Lake
Paynes Prairie

In addition to the above, conventional level-of-service standards for streets suffer from the fact that they do not take into account street conditions that would protect and promote healthy conditions for adjacent land uses, the needs of forms of travel other than by motor vehicle, and the many potential uses of the street (access, aesthetics, celebration, shopping, socializing, etc.). In other words, the condition of streets within the city goes far beyond evaluating average motor vehicle speeds, average motor vehicle delays, and average travel time for motorists.

Examples of this theoretical and policy shift away from free-flowing, higher speed motor vehicle travel are plans to redesign a portion of University Avenue from West 34th Street to Waldo Road, the adoption of a transportation concurrency exception area (TCEA), and citywide efforts to install traffic calming features.

To balance this de-emphasis on conventional level-of-service street concurrency measures, the City has established a TCEA for nearly all of the city. The City will nevertheless continue to monitor motor vehicle traffic volumes and level of service for motor vehicles on streets within the city as one way to evaluate the effectiveness of the TCEA measures, to keep track of levels of service for car travel, to satisfy state requirements, and as a way to require motor vehicle traffic reduction measures from proposed new developments within the city.

For the small portions of city that are outside of the TCEA, the City intends to establish a relatively low level-of-service (LOS E). At a minimum, the standard must be lower than those adopted in the unincorporated urban area.

The Transportation Concurrency Exception Area (TCEA – see "Exception Areas" section below) requires the City to annually monitor and evaluate the impacts of developments in the TCEA on the Florida Intrastate Highway System (FIHS) and share that information with FDOT. The Intrastate System serving Gainesville consists of 3 routes:

Intrastate Street	**Existing Level of Service**	**Maximum Service Volume**
I-75	B	73,400
Hawthorne Road	B	33,300
Williston Road	B	33,300

None of the Intrastate (FIHS) streets are projected to exceed the maximum service volume (LOS C) for the adopted level of service standard within the TCEA. Since there are no major land use amendments, which potentially would change development density, being considered or proposed for these street segments, the TCEA will have a minimal impact on these streets. The City will engage in an annual review and monitoring of these street segments. Thus, an early warning system has been instituted to evaluate potential level of service problems on these streets.

Land Use

The transportation system has a profound influence on future land use patterns. The City recognizes that transportation drives land use and the feasibility of transportation choice. Street modifications in the city should therefore support land use, housing choice, and transportation choice objectives.

For example, transportation system modifications that promote free-flowing motor vehicle traffic encourage longer motor vehicle trip distances and more frequent motor vehicle trips. This tends, over time, to make it more feasible to live in more remote, outlying residential areas, and to separate land uses into single-use pods. Therefore, the following modifications effectively promote urban sprawl:

Transportation Modifications and Attributes that Promote Urban Sprawl:

- Adding travel lanes (street widening)
- Adding turn lanes
- Adding free and abundant parking for cars
- Removal of on-street parking for cars, or removal of raised medians
- Installation of one-way streets, unless doing so is necessary to create more space for on-street parking or sidewalk widening.

The Future Land Use Map Series (see FLUE) shows a multi-centered land use pattern based on a network of neighborhood (activity) centers throughout the city. This contrasts with a "single downtown center" land use pattern. Figure 3 (see FLUE) shows the existing neighborhood (activity) center pattern. The intent of the City, to achieve several transportation and livability objectives, is to increase the density and intensity of the neighborhood (activity) centers through redevelopment and other forms of in-town development. Table 14 shows designated future land use by acreage and percentage of the city.

Table 14 shows acreages and percent of total city acreage for each land use category. Since 1991, due to annexation, there is now 9 times more agriculture land within city limits, and more than twice as much conservation land (only the single family, industrial, and public facilities land use categories have greater proportions of land within the city than conservation land). Industrial land nearly tripled since 1991, office land nearly doubled, and the amount of planned unit development land is now 7 times greater than in 1991.

Table 14: Acreage and Percent of Total for City Land Uses

Land Use	Acreage	Percent of Total
Single Family	7,952	29
Public Facilities	4,157	15
Industrial	2,496	9
Conservation	2,468	9
Education	2,263	8
Residential Low Density	1,617	6
Agriculture	1,486	5
Residential Medium Density	1,231	4
Planned Use District	982	4
Commercial	591	2
Recreation	556	2
Mixed Use Low	537	2
Mixed Use Medium	427	2
Office	422	2
Residential High Density	294	1
Mixed Use High	131	<1
Mixed Use Residential	36	<1
Total	**27,647**	**100**

Source: Gainesville Department of Community Development, March 1999.

Housing and Employment Patterns

The City designates land for single- and multi-family residential development, and mixed use (residential and non-residential) development. Office designations also allow multi-family development.

The City seeks to have the highest residential density in the areas immediately surrounding the UF campus and the downtown area, which is an effective way to reduce trip lengths and increase transportation choice, but in a manner that preserves single-family neighborhood stability and quality of life. This land use objective is reflected in land use designations. Additional multi-family designations are found along arterial streets and surrounding neighborhood (activity) centers. Nearly all neighborhood (activity) centers contain land which has been designated for mixed use development. The existing mixed use designated lands are primarily commercial, retail, and office. These mixed use lands are significant employers that could have a positive impact on reducing car trips if residential development were incorporated into them. The largest employment concentrations, however, are found in the downtown/UF area, which contains the main UF campus, Shands Hospital, Veterans Administration Hospital, Alachua General Hospital and various City, County and other government offices. Each of these significant employment areas can have a beneficial impact on reducing car trips if various tools (such as parking management, site design, or transportation demand management) are incorporated.

Projected Levels of Service for Cars

Methodology. Projected service volumes for 2020 are based on the Gainesville 2020 Long-Range Transportation Plan (see Table 15).

Projected Transportation System Needs for Cars. Several factors shape the City's need for future transportation facilities for motor vehicle traffic with regard to the Future Land Uses shown on the Future Land Use Map. These factors are:

1. **Amount of vacant land**. As of April 1999, 93 percent of the land area of the City was developed. Only 3,569 acres of unimproved land remains. Most of the vacant land is limited in its development potential by site constraints, such as floodplains, creeks, wetlands, uplands and irregular shape. It is unreasonable to expect any significant change in the current pace of development. The 1980-2000 plan also included land use designations at greater density than the actual built condition. While the 1991-2001 Plan provided some incentive for redevelopment as result of the relatively high allowable densities, it is not expected that the amount of redevelopment will significantly alter the straight line projections used in the current 2020 Gainesville Long Range Plan to predict level of service conditions for motor vehicle traffic circulation in 2020.

2. **Rate of growth**. The population projections indicate a 1.18 percent annual growth rate from 2000-2010. In the 1980s, the growth rate in the City was less than 1.00 percent per year.

3. **Development areas**. The Future Land Use Map is similar to the 1980-2000 Land Use Map. The differences between the two can be summarized as increased flexibility in non-residential areas (mixed use) and greater allowable densities in the central city core (including College Park & University Heights). A Transportation Concurrency Exception Area is included in this plan to promote City land use and transportation objectives.

4. **Existing Capacity**. There is existing capacity to put more motor vehicle trips on many of the streets serving the city. However, City land use and transportation objectives, as expressed through such mechanisms as the TCEA, makes available capacity for motor vehicle trips less necessary to achieving the goals of this Plan. Sufficient developable area, which allow a variety of land uses, can be accessed by streets with capacity for more motor vehicle trips. Table 15 provides an assessment of motor vehicle trip volumes expected in year 2020 if current trends continue.

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Table 15. Street Segment Car Traffic Volume

Street	From	To	2020 Projected Traffic Volume (ADT)	2020 Projected Volume/Capacity Ratio*
Center Dr.	Archer Rd.	Museum Rd.	7,100	0.60
Depot Ave./SE 7th Ave.	Main St.	SE 15th St.	6,100	0.52
Depot Ave./SE 7th Ave.	SW 13th St.	6th St.	9,500	0.81
Depot Ave./SE 7th Ave.	6th St.	Main St.	5,300	0.45
E 1st St.	SE 2nd Pl.	NE 8th Ave.	1,400	0.12
E 3rd St.	SE Depot Ave.	NE 2nd Ave.	1,600	0.14
Hull Rd.	Mowry Rd.	SW 34th St.	4,600	0.18
Hull Rd. extention	SW 62nd Blvd.	SW 34th St.	18000 (1)	0.61
Hull Rd. extention	Mowry Rd.	SW 16th Ave.	2,600	0.11
Inner Rd.	NW 13th St.	Newell Dr.	400	0.04
Interstate 75	Archer Rd.	Newberry Rd.	46,200	0.57
Mowry Rd.	Center Dr.	Hull Rd.	1,000	0.10
Mowry Rd.	Hull Rd.	Archer Rd.	1,200	0.12
Museum Rd.	Radio Rd.	Hull Rd.	1,000	0.10
Museum Rd./Radio Rd.	S 34th St.	S 13th St.	6,600	0.45
N 53rd Ave.	W 13th St.	Waldo Rd.	3,800	0.20
N 8th Ave	Waldo Road	NE 25th St.	3,900	0.34
N 8th Ave.	NW 34th St.	W 22nd St.	16,900	0.56
N 8th Ave.	Newberry Rd.	NW 43rd St.	20,200	0.67
N 8th Ave.	NW 43rd St.	NW 34th St.	17,000	0.56
N 8th Ave.	NW 22nd St.	NW 6th St.	12,700	0.57
N 8th Ave.	N Main St.	Waldo Rd.	8,200	0.53
N Main St.	NW 16th Ave.	NW 23rd Ave.	12,400	0.55
N Main St.	NW 8th Ave.	NW 16th Ave.	17,000	0.76
N Main St.	NW 23rd Ave.	N 39th Ave.	8,100	0.26
N Main St.	NW 39th Ave.	NW 53rd Ave.	2,800	0.23
NE 11th Terr.	NE 23rd Ave.	NE 39th Ave.	800	0.08
NE 15th St.	E University Ave.	NE 8th Ave.	7,600	0.77
NE 15th St.	NE 16th Ave.	NE 39th Ave.	3,800	0.33
NE 15th St.	NE 8th Ave.	SE 16th Ave.	900	0.09
NE 15th St.	NE 39th Ave.	NE 53rd Ave.	400	0.04
NE 25th St.	E University Ave.	NE 8th Ave.	600	0.06
NE 2nd St.	NE 2nd Ave.	NE 16th Ave.	1,300	0.13
NE 2nd St.	NE 23rd Ave.	NE 16th Ave.	200	0.02
NE 31st Ave.	N Main St.	Waldo Road	4,500	0.45
NE 5th Ave.	NE 2nd St.	Waldo Rd.	400	0.04
NE 6th Ave.	NE Blvd.	NE 9th St.	3,000	0.30
NE 6th Terr.	NW 16th St.	NW 23rd Blvd.	1,600	0.16
NE 9th St.	SE 2nd Ave.	NE 31st Ave.	5,900	0.50
NE Blvd.	NE 8th Ave.	NE 10th Ave.	900	0.09
NE Blvd.	NE 2nd Ave.	NE 4th Blvd.	2,800	0.29
NW 10th Ave.	NW 13th Ave.	NE 9th St.	1,300	0.11
NW 10th St.	NW 8th Ave.	NW 16th Ave.	3,400	0.34
NW 14th Ave.	NW 2nd St.	Main St.	8,700	0.42
NW 16th Ave.	NW 34th St.	W 13th St.	22,500	0.69
NW 16th Ave.	NW 34th St.	NW 43rd St.	21,200	0.65

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Table 15. Street Segment Car Traffic Volume

Street	From	To	2020 Projected Traffic Volume (ADT)	2020 Projected Volume/Capacity Ratio*
NW 16th Ave.	W. 13th St.	Main St.	19,800	1.23
NW 16th Ave.	Main St.	Waldo Rd.	10,200	0.64
NW 16th Terr.	NW 16th Ave.	NW 23rd Ave.	10,800	0.92
NW 17th St.	University Ave.	NW 16th Ave.	9,000	0.77
NW 17th St.	W University Ave.	NW 8th Ave.	9,800	0.98
NW 21st St.	NW 31st Ave.	NW 39th Ave.	1,700	0.17
NW 22nd St	University Ave.	NW 16th Ave.	10,900	0.74
NW 23rd Ave.	NW 55th St.	NW 43rd St.	12,700	0.45
NW 23rd Blvd.	NW 16th Terr.	W 13th St.	11,200	0.42
NW 23rd St.	University Ave.	NW 8th Ave.	1,400	0.14
NW 24th Blvd.	NW 39th Ave.	NW 53rd Ave.	4,300	0.43
NW 2nd Ave.	NW 6th St.	NE Blvd.	6,900	0.70
NW 2nd Ave.	NW 2nd St.	Main St.	0	0.09
NW 2nd St.	NW 8th Ave.	NW 23rd Blvd.	5,500	0.55
NW 30th Ave.	NW 13th St.	Main St.	1,700	0.17
NW 31st Ave/Glen Spgs Rd	W 34th St.	NW 16th Terr.	10,100	0.53
NW 38th St.	NW 8th Ave.	NW 16th Ave	4,500	0.38
NW 3rd Ave.	NW 6th St.	NW 13th St.	5,300	0.53
NW 43rd St.	NW 39th Ave.	NW 53rd Ave.	24,500	0.75
NW 43rd St.	Newberry Rd.	NW 8th Ave.	25,300	0.78
NW 43rd St.	NW 8th Ave.	NW 23rd Ave.	18,200	0.56
NW 43rd St.	NW 23rd Ave.	NW 39th Ave.	14,800	0.46
NW 43rd St.	NW 53rd Ave.	NW 13th St.	9,300	0.49
NW 51st St.	NW 23rd Ave.	NW 39th Ave.	9,400	0.70
NW 53rd Ave.	NW 52nd Terr.	W 13th St.	12,100	0.79
NW 55th Ave.	NW 53rd Ave	NW 13th St.	600	0.06
NW 5th Ave.	NW 6th St.	NW 13th St.	5,100	0.51
NW 5th Ave.	NW 22nd St.	NW 13th St.	8,600	0.87
Newell Dr.	Archer Rd.	Museum Rd.	10,400	0.89
Newell Dr.	Museum Rd.	University Ave.	5,800	0.49
North-South Dr.	Museum Rd.	Archer Rd.	6,500	0.25
North/South Dr.	University Ave.	Museum Rd.	11,300	0.77
S 2nd Ave.	SE 7th St.	Williston Rd.	4,500	0.18
S 2nd Ave.	W 13th St.	SE 7th St.	7,100	0.46
S 4th Ave.	SW 13th St.	SE 15th St.	2,400	0.20
SE 11th Ave./SE 9th St.	Depot Ave.	SE 15th St.	3,600	0.36
SE 15th St.	Hawthorne Rd	University Ave.	8,600	0.86
SE 21st Ave.	SE 27th St.	SE 35th Ave.	200	0.02
SE 3rd St.	Depot Ave.	SE 1st Ave.	900	0.09
SE 4th St./SE 22nd Ave.	Depot Ave.	Williston Rd.	3,900	0.39
SE 4th St./SE 22nd Ave.	Williston Rd.	SE 15th St.	1,400	0.14
N 23rd Ave.	W 13th St.	Waldo Rd.	15,100	0.55
W 34th St.	Archer Rd.	University Ave.	40,400	0.83
W 34th St.	University Ave.	NW 16th Ave.	19,000	0.87
W 34th St.	NW 16th Ave.	W 39th Ave.	10,600	0.47
W 34th St.	W 39th Ave.	W 13th St.	12,600	0.84

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Table 15. Street Segment Car Traffic Volume

Street	From	To	2020 Projected Traffic Volume (ADT)	2020 Projected Volume/Capacity Ratio*
Hawthorne Rd.	Waldo Rd.	SE 43rd St.	20,100	0.63
NW 6th St.	N.W. 8th Ave.	N 39th Ave.	16,300	0.50
NW 6th St.	N 39th Ave.	W. 13th St.	12,700	0.39
NW 8th Ave.	NW 6th St.	N Main St.	9,800	0.39
N 39th Ave.	Interstate 75 (East)	NW 43rd St.	18,500	0.54
N 39th Ave.	NW 43rd St.	NW 34th St.	25,500	0.78
N 39th Ave.	NW 34th St.	NW 13th St.	20,500	0.60
N 39th Ave.	NW 13th St.	Waldo Rd.	14,700	0.43
S 16th Ave	Archer Rd.	W 13th St.	23,600	0.52
S 16th Ave	W 13th St.	Main St.	16,500	0.56
S 16th Ave	Main St.	Williston Rd.	7,000	0.44
Archer Rd.	SW 34th St.	SW 16th Ave.	53,500	1.05
Archer Rd.	SW 16th Ave.	W 13th St.	32,500	1.02
Waldo Rd.	University Ave.	E 39th Ave.	18,900	0.56
Waldo Rd.	E 39th Ave.	NE 77th Ave.	22,200	0.52
Newberry Rd.	Interstate 75	NW 8th Ave.	56,900	1.11
Newberry Rd.	NW 8th Ave.	W 34th St.	27,100	0.75
University Ave.	W 34th St.	North/South Dr.	19,400	0.86
University Ave.	North/South Dr.	W 13th St.	21,800	0.88
University Ave.	W 13th St.	Waldo Rd.	24,400	0.76
University Ave.	Hawthorne Rd.	Lakeshore Dr.	9,700	0.28
University Ave.	Lake Shore Dr	N.E. 27th Ave.	4,500	0.23
SW 2nd Ave.	Newberry Rd.	W 34th St.	17,700	0.30
SW 2nd Ave.	W 34th St.	University Ave.	12,400	0.55
Main St.	Williston Rd.	Depot Ave.	18,200	0.70
Main St.	Depot Ave.	N. 8th Ave.	13,700	0.53
Williston Rd.	Interstate 75 (south)	SW 13th St.	25,200	0.53
Williston Rd.	SW 13th St.	University Ave.	11,300	0.36
SW 11th St./SW 11th Ave.	SW 13th St.	Archer Rd.	2,200	0.22
SW 12th St.	SW 8th Ave.	SW 4th Ave.	11,200	1.13
SW 16th St.	SW 16th Ave.	Archer Rd.	12,100	0.98
SW 20th Ave.	SW 62nd Blvd.	W 34th St.	23,900	0.70
SW 21st Ave.	SW 13th St.	Main St.	2,200	0.22
SW 23rd Terr.	Williston Rd.	Archer Rd.	3,700	0.27
SW 27th St.	Williston Rd.	SW 35th Pl.	2,700	0.20
SW 2nd Ave.	SW 1st St.	SE Blvd.	1,900	0.19
SW 33rd Pl./SW 37th St.	SW 42nd St.	SR 24	3,000	0.22
SW 62nd Blvd.	End of 4 lanes	SW 20th Ave.	18,800	0.55
SW 62nd Blvd.	Newberry Rd.	End of 4 lanes	19,400	0.57
SW 8th Ave./SW 9th Ave.	SW 13th St.	Depot Ave.	7,900	0.80
SW 9th/10th St.	SW 8th Ave.	SW 4th Ave.	5,400	0.54
Stadium Rd.	Museum Rd.	University Rd.	5,000	0.43
Stadium Rd.	Buchman Dr.	Newell Dr.	5,400	0.55
NW 13th St.	Williston Rd.	SW 16th Ave.	25,100	0.73
NW 13th St.	SW 16th Ave.	Archer Rd.	28,800	0.56
NW 13th St.	Archer Rd.	University Ave.	42,300	1.29

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Table 15. Street Segment Car Traffic Volume

Street	From	To	2020 Projected Traffic Volume (ADT)	2020 Projected Volume/Capacity Ratio*
NW 13th St.	NW 16th Ave.	NW 23rd Ave.	28,900	0.84
NW 13th St.	NW 23rd Ave.	NW 39th Ave.	20,200	0.59
NW 13th St.	NW 39th Ave.	NW 6th St.	32,400	0.95
NW 13th St.	NW 6th St.	NW 53rd Ave.	25,100	0.74
NW 13th St.	NW 53rd Ave.	NW 34th St.	24,600	0.72
NW 13th St.	NW 34th St.	Buck Bay	14,600	0.43
Village Dr.	Stadium Rd.	University Ave.	3,300	0.28
W 10th St.	SW 4th Ave.	NW 8th Ave.	3,600	0.31
W 12th St.	SW 4th Ave.	NW 8th Ave.	4,700	0.47
W 6th St.	SW 16th Ave.	SW 4th Ave.	9,200	0.36
W 6th St.	SW 4th Ave.	NW 8th Ave.	20,700	0.82
W 6th St.	University Ave.	SW 4th Ave.	14,300	1.22
W. 2nd St.	SW 4th Ave.	NW 8th Ave.	300	0.02
W. 3rd St.	SW 4th Ave.	NW 8th Ave.	700	0.06
Windmeadows Blvd.	SW 33rd Pl.	SW 34th St.	3,700	0.27
Woodlawn Dr.	University Ave.	Museum Rd.	1,300	

Notes:

(1) Volume on Hull Road extension taken from the Technical Advisory Committee Alternative 1.
The Hull Road extension was not included in the Needs Plan model run; instead, SW 20th Avenue was shown as having four lanes.

*A Ratio that exceeds 1.00 shows that the volume is projected to exceed the street capacity in 2020.

Source: Gainesville 2020 Transportation Plan, North Central Florida Regional Planning Council, 11/30/95

7/31/00

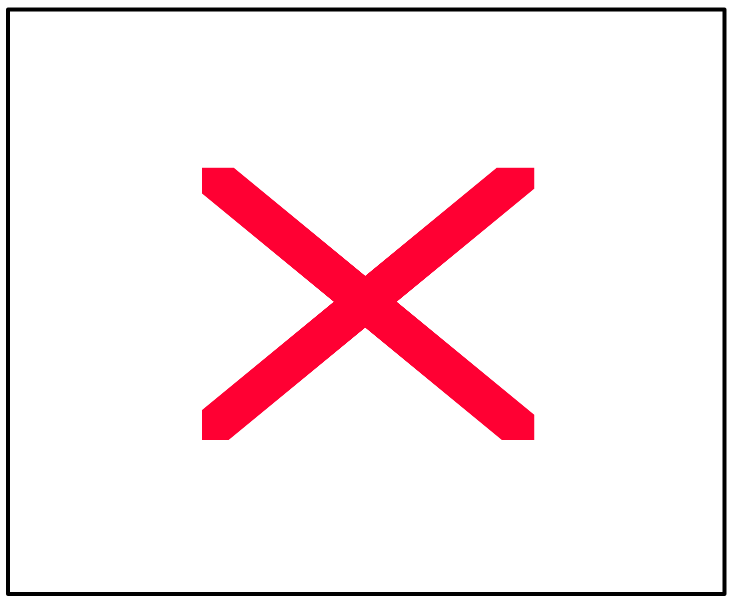
Street Needs for Cars

The MTPO's FY 99/00-03/04 Transportation Improvement Program (TIP) indicates those streets that are consistent with the Gainesville Metropolitan Area Year 2020 Transportation Plan.

Outside the TCEA, state streets designated by FDOT as backlogged or constrained and functioning below the adopted level of service for cars must maintain current operating conditions for car travel. The City intends to reduce or moderate the negative impacts of car travel, or reduce the number of car trips when new development is proposed. These moderation efforts are necessary to return the facility to acceptable (as defined by FDOT) operating standards for free-flowing car travel. Moderation efforts can include closing poorly located curb cuts, installation of pedestrian and bicycle access to the site, and transportation demand management strategies for employees and clients if significant impacts are expected.

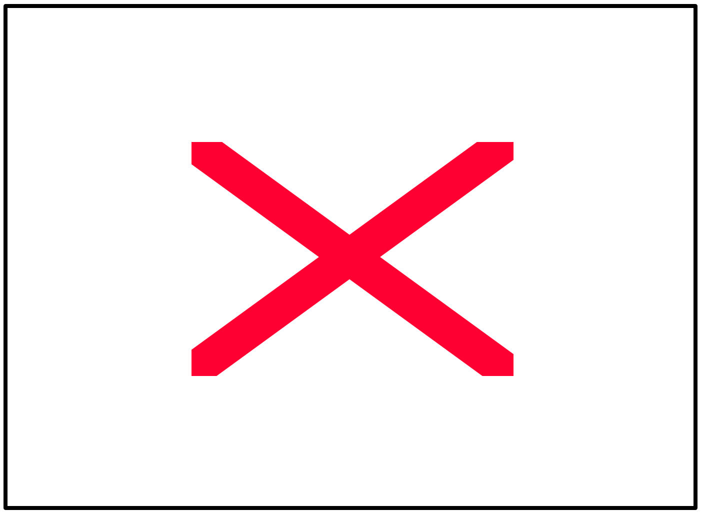
Traffic calming

Traffic calming uses street design strategies to reduce the dominance and speed of motor vehicles. Traffic calming makes streets mixed use rather than single [car]-use.[71] When done effectively, traffic calming reduces average vehicle speed, noise, crashes, and air pollution.[72] It can also make neighborhoods and commercial areas more livable.



"The right-of-way width for a residential subdivision street as specified by the Institute of Transportation Engineers has remained at 50 to 60 feet for the last 30 years. Constructing relatively wide cross sections in residential streets where there is little motor vehicle traffic (fewer than 1,000 trips per day) permits and even encourages high speeds. High speeds are also encouraged by…good sight distance called for by street standards. These relationships between design speed and sight distance, curve radius, and width were established for vehicular efficiency, but are incompatible with residential livability. The function of a residential area street as a facilitator of social interaction has often been diminished by the priority accorded to traffic performance…'It is often forgotten that residential streets become part of the neighborhood and are eventually used for a variety of purposes for which they were not designed. Residential streets do not only provide direct auto access for the occupants to their homes, but they also provide a visual setting; an entryway for each house; a pedestrian circulation system; a meeting place for residents; a play area (whether one likes it or not) for children, etc. To design and engineer residential streets solely for the convenience of easy automobile movement overlooks the many overlapping uses of residential streets.'"[73]

In Europe, the beneficial effects of traffic calming have been astounding. A study of 30 German neighborhoods found that traffic injuries declined by 44 percent and serious injuries and deaths declined by 53 percent. In another German study,[74] fatalities fell by 43 to 53 percent and injuries by 60 percent. Air pollution declined by 10 to 50 percent, noise pollution fell by 14 decibels, fuel use was cut by 10 percent, pedestrian crashes fell by 43 percent, bicycle crashes fell by 16 percent, motor vehicle crash costs fell by 16 percent, child crashes fell by 66 percent, and bicycle use doubled. And whereas 27 percent of motorists and 39 percent of the neighbors approved of the changes before installation, 67 percent and 75 percent approved of the changes after they were installed.



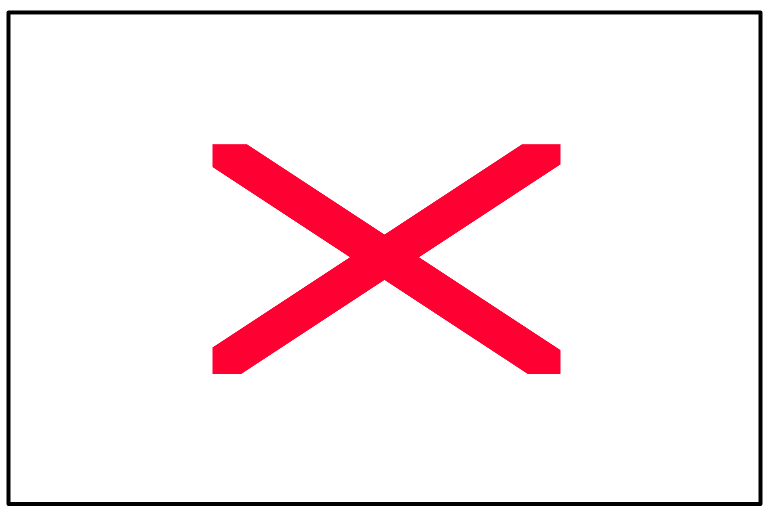
Conventional streets

These substantial benefits, in addition, were achieved by increasing motorist trip time by an average of only 33 seconds. Motorists who found the 18 mile-per-hour speed limit acceptable grew from 27 percent before the streets were calmed to 67 percent after the program began. Receptive residents along the streets grew from 30 percent before to 75 percent after.[75]

Similar results have been found in Denmark, Japan, Sweden, Italy, and France.

Motorists are more likely to collide with pedestrians at higher speeds. At 60 miles per hour, the field of vision of the motorist is two-thirds less than at 30 miles per hour. In addition, the probability of a pedestrian being killed is only 3.5 percent when a vehicle is traveling at 15 miles per hour, but jumps to 37 percent at 31 miles per hour and 83 percent at 44 miles per hour.[76]

Traditional Connected Streets



Street geometry in safety-sensitive areas, such as schools, should keep motor vehicle speeds within 15 to 20 miles per hour.[77]

A German study found that traffic calming reduces vehicle idling time by 15 percent, gear changing by 12 percent, brake use by 14 percent, and gasoline use by 12 percent.[78] Similarly, a study in Portland, Oregon found that a pedestrian-friendly environment can reduce vehicle miles traveled by 10 percent.[79] Other studies show up to a 114-percent increase in non-motorized travel on traffic-calmed streets.[80]

Calming also helps reduce neighborhood noise pollution. From a distance of 48 feet, a motor vehicle traveling at 56 miles per hour makes 10 times more noise than a motor vehicle traveling at 31 miles per hour. Reducing average speed from 25 miles per hour to 12 miles per hour reduces noise levels by 14 decibels (ten times quieter). At higher speeds, every 12 to 15 miles per hour in speed increases results in a 4 to 5 decibel noise increase.[81]

The City of Oakland CA recently budgeted $1 million to install traffic calming measures throughout the city in response to citizen petitions for safer streets. The City has already installed speed humps and is pursuing street narrowing and barriers to through traffic. A similar strategy in Menlo Park CA has reduced through traffic by 66 percent, has reduced top speeds by 40 percent, and has reduced average speed by 20 percent.[82]

Traffic calming in Gainesville.

The City has been involved in traffic calming since the mid-1980s. Since that time, traffic calming strategies have been used nearly always on local residential streets. The City has used traffic diverters, roundabouts, street closings, mini traffic circles and speed humps to reduce traffic problems in neighborhoods.

Traffic calming is distinguished from other measures such as route modification, traffic control devices such as "stop" and "speed limit" signs, and streetscaping. These devices require enforcement while traffic calming devices are intended to be self-enforcing. Traffic calming devices rely on the laws of physics rather than human psychology to slow traffic. Items such as street furniture, street trees, etc., complement traffic calming, but do not by themselves compel drivers to slow down.

The Public Works Department uses the following traffic calming devices on city-maintained streets:

Traffic Diverter. Only one diverter location has been constructed. Traffic is forced to turn left or right at the diverter. Diverters are intended and designed to reduce motor vehicle volumes and speeds.

Mini Traffic Circle. Mini traffic circles are installed at intersections in conjunction with 4-way stop control. They are used only on local streets because vehicles are allowed to turn left in front of the mini traffic circle. The curb radius at the intersection is not modified. Mini traffic circles are most effective when used in conjunction with curb and gutter streets. The City landscapes the mini traffic circle provided a sponsor agrees to perform regular maintenance Mini circles are intended and designed to reduce motor vehicle speeds. Numerous mini circles have been installed in the City.

Speed Hump. Speed humps are installed at mid-block locations (between intersections) to reduce motor vehicle speeds. To be effective, speed humps are spaced at intervals of approximately 600 feet. Numerous speed humps have been installed. The City Commission has adopted a formal policy relating to speed humps.

Speed Table. Speed tables are flat-topped speed humps often constructed with concrete or textured materials on the flat portion. Speed tables are typically long enough for the wheelbase of a passenger car to rest on the flat section. The speed table used by the City is 22 feet long with a 10 foot flat top. Speed tables can be located mid-block or at intersections.

Choker. Chokers are curb extensions placed at mid-block locations that achieve speed reductions by reducing the width of the street. The street curb is extended into the street to create the choker. Chokers are typically 20 feet in length and can be landscaped or constructed with bricks or other hard surface materials. Chokers at intersections are called "intersection bulbouts." The intersection of SE 1st Avenue and 1st Street is a good example of an intersection bulbout. Chokers work very well with on-street parking because the choker "shadows" the on-street parking, provided the choker is at least six feet in width. Chokers with on-street parking have been installed on the north side of NE 13th Avenue, 500 block (on the south side of Northeast Park).

Choker with Speed Table. A choker and speed table can be constructed at the same location. The choker is normally the same length as the speed table. The choker provides a convenient location for traffic control signs and it can be landscaped.

Center Island Narrowing. A center island narrowing achieves a reduction in vehicle speeds by constructing an island in the center of the street to reduce the width of the travel lanes. The center island can either be short (20 feet) or long in length. The center islands constructed on NE 8th Avenue just east of Northeast Boulevard is an example of this device. The islands can be landscaped or constructed with bricks or other hard surfaced material. On-street parking is prohibited at and near the center island because the travel lanes are deflected from the center of the street to adjacent to the curb line of the street.

Center Island Narrowing with Speed Table. A center island narrowing and a speed table can be constructed at the same location. The center island is normally longer than the speed table. The center island provides a convenient location for traffic control signs and it can be landscaped.

Street Narrowing with Pavement Markings Only. Changing the pavement markings can narrow the street. Typically bike lanes, parking lanes, or both are added to reduce the width of the travel lanes. Examples of this technique in the City are NW 55th Street between Newberry Road and NW 23rd Avenue and NE 9th Street between NE 3rd Avenue and NE 23rd Avenue.

Chicane. Chicanes are curb extensions that alternate from one side of the street to the other, forming 'S' shaped curves in the street. They can improve the ability to provide on-street parking. With a chicane, the on-street parking would alternate on each side of the street. A major problem with a chicane is if only one vehicle is passing through the chicane, the vehicle can follow a straight line with little reduction in speed. Chicanes can also be more expensive than other devices due to the amount of curb required. Another major problem with chicanes is that it is sometimes difficult to locate a section of street that does not have driveways and intersecting streets that will conflict with the chicane.

Lateral Shift. Lateral shifts are curb extensions on straight streets that cause travel lanes to bend one way and then bend back to the original direction of travel. Lateral shifts work best with a center island that prevents motorists from passing straight through the device. Lateral shifts require 200 to 300 linear feet of street with no intersecting streets or driveways. This distance can be difficult to find on most urban streets due to driveways. Lateral shifts also require 300 to 400 linear feet of curbing, which significantly increases the cost of the device.

Traffic Circle. Traffic circles are rotary intersections that require traffic to drive counterclockwise around the circle. They have a circular raised island that is normally landscaped. In order for the design vehicle to negotiate the traffic circle, the outside diameter should be a minimum of 90 feet, with 100 feet desired. Traffic circles require significant construction and frequently require purchase of right-of-way. This results in significant costs compared to other traffic calming devices. The rotary intersection on NW 31st Drive east of Westside Park is a good example of a traffic circle. Traffic circles are typically controlled by stop signs and can be either all-way stop or two-way stop controlled.

Modern Roundabout. Modern roundabouts are installed at major intersections instead of traffic signals. Like traffic circles, traffic flows counterclockwise in the roundabout. The features that distinguish roundabouts from traffic circles are yield upon entry, splinter islands on the approaches that separate traffic flows from each other and pedestrians and geometric features to slow traffic. The outside diameter of the roundabout should be a minimum of 90 feet, with 100 feet desired. Roundabouts require significant construction and frequently require purchase of right-of-way. This results in significant costs compared to other traffic calming devices.

Combination of Strategies. It is not uncommon to install several devices to calm traffic in neighborhoods. The City has used a combination of speed humps and mini traffic circles in several neighborhoods. When traffic calming is installed either on a single street or in a neighborhood, more than one type of device is frequently used. In the Duval Neighborhood (NE 10th Avenue, 2300 block), Libby Heights (NW 10th Avenue, 3400 block) and Northwood Pines Subdivision (NW 34th Street, 5500 block), speed humps and mini traffic circles were used. The streets in these neighborhoods are all local streets. On NE 8th Avenue between Northeast Boulevard and Waldo Road, center islands and a modern roundabout were used. The preference of the neighborhood and the cost of the various devices ultimately determine the types of traffic calming devices used.

Recently and for the first time, traffic calming was used to calm motor vehicle traffic on a collector street. This was done on NE 8th Ave between NE Blvd and Waldo Road. Medians were installed to reduce travel lane width and a modern roundabout was installed at the intersection of NE 8th Avenue and 9th Street. Additional projects on collector streets are anticipated.

Turn Lanes

Like adding travel lanes, turn lanes (particularly additional turn lanes) can have undesirable land use and transportation impacts. The undesirable impacts of turn lanes often include:

- Increasing the exposure time of pedestrians crossing the street to moving motor vehicles when no refuge island is provided.
- Increasing the average speed of motor vehicles, which endangers pedestrians, bicyclists and transit users.
- By adding motor vehicle traffic volume capacity, turn lanes can indirectly promote land use sprawl.
- Often, the turn lane is installed in situations where there is not enough right-of-way to retain sidewalks or bicycle lanes along the segment (which results in such features being removed), or installation of the turn lane prevents future installation of such features due to lack of right-of-way.
- By adding motor vehicle traffic volume capacity, turning lanes encourage trips by motor vehicle, which increases the motor vehicle traffic volume in the area.

For these reasons, the City should not install a turn lane, unless:

1. It is possible to do so without discouraging pedestrian, bicycle, or transit trips;
2. Special pedestrian safety features are installed; and/or
3. If a turn lane is needed to allow travel lane removal or to avoid adding travel lanes.

In addition, the City should evaluate existing turn lanes within the City to determine the feasibility of removing lanes that, on balance, discourage transportation choice.

Narrow Streets

One recent study[83] has determined that the safest residential street width is 24 feet wide -- curbface to curbface. Streets that were 36 feet wide had 400 percent more crashes -- especially those with low motor vehicle traffic volumes. The study suggested that the wider streets often called for by fire and emergency service personnel provide only minimal public safety benefits in comparison to the significant public safety benefits provided by relatively narrow residential streets. The "life safety" benefits delivered by more narrow streets provide a more substantial health and safety payoff than the more narrow "fire safety" objective delivered by faster fire truck response times to fires.[84]

Transportation Demand Management

Demand management strategies are now being used for transportation, where rising demand cannot be met (or sustained) through continued construction of new and very costly street capacity supply increases such as widenings.

An important reason for the need to use Transportation Demand Management (TDM) is that the demand for travel by motor vehicle is quite distorted by the significant public subsidies for motor vehicles. TDM is therefore a way to at least partly correct this distortion.

TDM is a program, usually involving a partnership of local employers and local government, to reduce single-occupant vehicle (SOV) trips. Local governments around the nation have adopted a TDM ordinance that requires the employer to meet SOV trip reduction targets, and usually includes a menu of strategies to reach the targets, such as:

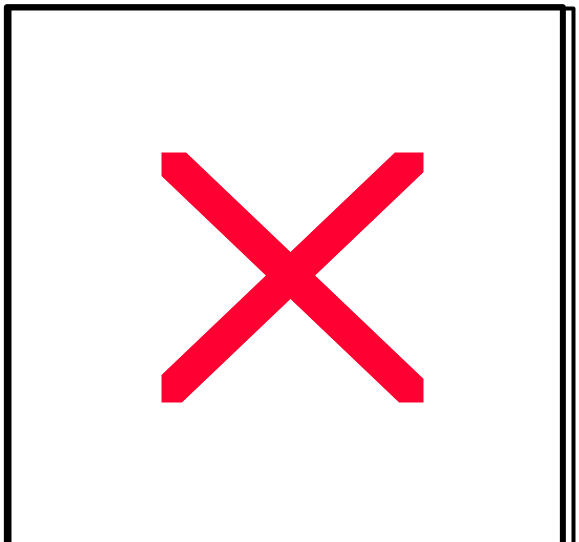
- Flexible work hours or other modification of the work schedule
- Establishment of a trip reduction coordinator for the employer
- Telecommuting
- Increased fees for SOV parking
- Monetary incentives for van pooling, use of public transit (usually with transit passes), bicycling, and walking
- Parking cash-out to encourage non-SOV trips by removing the large subsidy for free employee parking, while still allowing the option of making such trips
- Institution of shuttle services
- Provide showers and lockers at job sites
- Provide a "guaranteed ride home" program
- Park-n-ride services
- Restrictions on number of travel lanes or number of parking spaces provided

On-Street Parking

Curb-side, on-street parking downtown is preferred to off-street parking because it:

- minimizes pedestrian-motor vehicle conflicts;
- minimizes the need for off-street parking (off-street parking reduces the compactness of the downtown);
- acts as a buffer, or physical barrier, between pedestrians and moving motor vehicle traffic;
- increases usable sidewalk space; and
- provides "friction" that reduces the speed of moving motor vehicles.

Each of these benefits of on-street parking promote a safe, convenient, and pleasant environment downtown for the pedestrian and the emerging trend toward sustainable, smart transportation.



On-Street Parking:

- Creates a buffer between pedestrians and moving cars.
- Provides convenient public parking.
- Reduces need for parking lots.
- Slows cars.
- Makes it easier for pedestrians to cross street.
- Improves health of retail shops.

Non-street access points

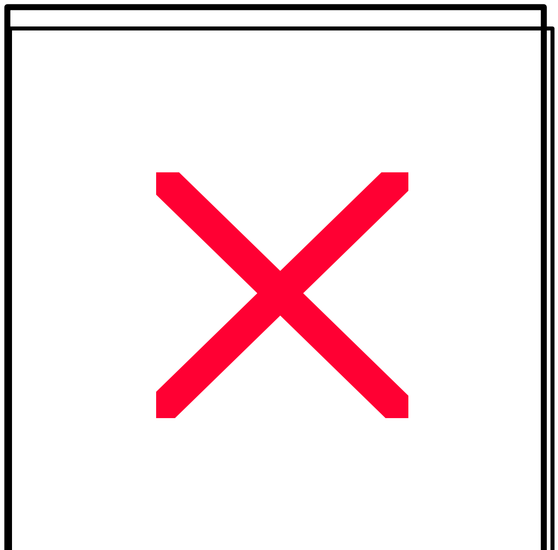
Often, development patterns are compact enough to allow convenient travel by bicycle or on foot. However, travel by bicycle or on foot is often not possible due to barriers. Examples of barriers are fences, walls, and ditches that separate a school or shopping center from nearby neighborhoods -- which force bicyclists and pedestrians to travel significant distances to get around the barrier in order to get to the school or center via a major street.

This site design problem illustrates importance of allowing non-car movement between adjacent land uses so that smart travel can be encouraged. In fact, Ewing[85] defines sprawl as "any development pattern with poor accessibility among related land uses." Development with barriers separating it from nearby land uses, in other words, represent sprawl even if the development is within the urban core. Cul-de-sacs similarly create such inconvenient barriers. Barriers created by cul-de-sacs increase the number of trips made by motor vehicle and concentrates them all on a few arterial streets.[86]

Creating side and rear pedestrian and bicycle path connections between land uses such as schools, shopping centers, parks, and neighborhoods (as well as at the end of cul-de-sacs) encourages such smart forms of travel as bicycling and walking by significantly reducing travel distances and increasing convenience.[87]

Connected Streets

Traditionally, at a time when motor vehicles were less dominant, our street network was, typically, designed so all streets were connected to other streets. Today, however, because the motor vehicle makes distance nearly irrelevant, cul-de-sacs, dead-ends, and large block face lengths are built. Unfortunately, such street network design reduces transportation choice, because trip distances are often significantly longer when streets are disconnected in such a way, which makes it necessary to make a much larger number of trips by motor vehicle. A common, related problem in Gainesville is the construction of new subdivisions, and commercial areas near residential areas. Usually, there are not any interconnections between such land uses except by major streets, which are hostile, inconvenient and dangerous except by motor vehicle.



A Network of Connected Streets:

- Creates pedestrian-scaled block sizes.
- Gives pedestrians, cyclists, and drivers more route choices, and reduces response time for emergency vehicles.
- Discourages speeding in neighborhoods.

Without adequate street connections, there is not only a discouragement of sustainable forms of travel. The lack of connections also reduces "real time" trip choices. Adequate street connectivity offers a positive alternative. For example, if an emergency vehicle or passenger car comes upon a street where there are obstructions, a connected street network provides immediate choices of alternative routes to travel to the desired destination.

In addition, there is more dispersal of motor vehicle traffic when the streets are connected, because there are a number of ways to travel -- not all trips are forced to use one or a couple of collectors or arterials. As a result, connected street networks are better "ventilated" (or more "permeable") and less prone to motor vehicle traffic problems.

Connected street networks are make services such as transit, garbage, school bus and postal service more efficient, since there is less need to "backtrack." Connected streets also provide transit users with more convenient access to transit stops.

Finally, a connected street pattern, by offering more direct routes to destinations, is able to reduce vehicle miles traveled. Such a pattern reduces average vehicle speed while reducing average trip time.

There are various ways to determine how "connected" a street network is.[88] The most common and objective method is through use of a "connectivity index."

Over the past several decades, Gainesville's street network has become less connected. A number of local streets are disconnected cul-de-sacs, which creates substantial increases in travel distances for all forms of travel. The density of disconnected, cul-de-sac'd streets is particularly high in the more recently developed northwest quadrant of the city.

Adoption of the Transportation Concurrency Exception Area

Sec. 163.3180, F.S., and Rule 9J-5.0055, F.A.C., require that jurisdictions establish a concurrency management system throughout the city to ensure that public facilities and services needed to support development are available concurrent with the impacts of such development. To comply with this provision, level of service standards are adopted. In practice, past transportation concurrency requirements for cars encouraged development to locate in outlying areas. These concurrency requirements have resulted in urban sprawl and have often prevented development in close proximity to existing government, employment, and shopping facilities.

Sec. 163.3180, F.S. and Rule 9J-5, F.A.C. also provide guidelines for establishing Transportation Concurrency Exception Areas (TCEAs). This option allows exceptions to the transportation concurrency requirements for all types of development within specifically defined areas. The TCEA regulations are intended to reduce the adverse impact that transportation concurrency requirements had on several city goals and objectives, such as development, redevelopment, and transportation choice.

The following criteria were used to designate the TCEA in the city:

- A specific geographic area delineated in the local government comprehensive plan for urban redevelopment
- The redevelopment area is within an urban infill area within an existing urban service area
- The specific geographic area does not contain more than 40 percent developable vacant land

The TCEA establishes a set of pedestrian- and transit-friendly design features based on magnitude of motor vehicle traffic impact and of development which have the intent of creating transportation choices – choices that enable those living in the TCEA to have a choice about how to travel, instead of being forced to make every trip – no matter how trivial – by car.

The design features are implemented through a flexible, menu-driven system which allows the developer to select those design features which are most feasible and appropriate for the site. The features include such elements as bus shelters, transit payments, enhanced landscaping to increase pedestrian and transit appeal, improved sidewalks and crosswalks, and bicycle lanes.

The TCEA also temporarily applies pre-existing overlay regulations that currently apply to the "Central Corridors" – main entryway streets to the traditional city core – which similarly have a "transportation choice" intent by reducing off-street car parking requirements, pulling buildings closer to the street, and ensuring that buildings face the street, among other things. These temporary regulations will be supplanted by implementing regulations in the future.

The portions of the city which comply with the TCEA criteria are shown in Figure 19 above. This area has been adopted by the City as a TCEA and approved by the state. Level of service standards for transit, bicycle and pedestrian travel continue to apply both inside and outside the TCEA. This transportation concurrency exception will not relieve UF from meeting requirements of 240.155 F.S. and the levels of service established for streets within the UF transportation impact area.

In Zone A, the City would provide the funding for certain components of the needed motor vehicle traffic moderation efforts as a means of further encouraging development in downtown and east Gainesville. The developer will continue to be responsible for moderation efforts in Zone B.

Maintenance of Level of Service Standards for Car Travel

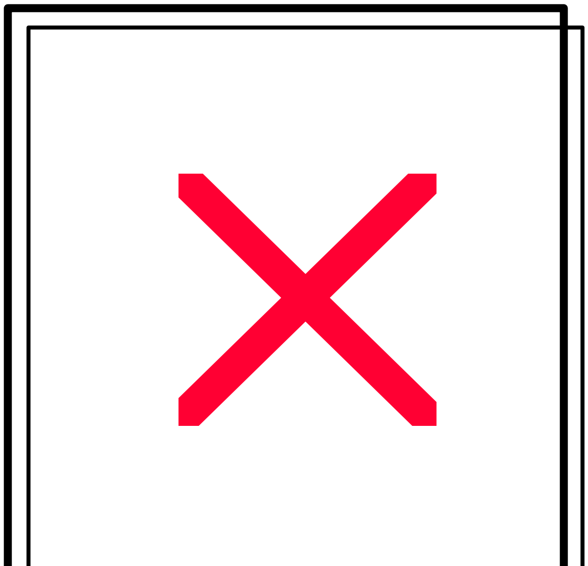
As noted elsewhere, the City seeks the maximum amount of relief from transportation concurrency requirements, and therefore adopted a TCEA for most of the city. Maintenance of level-of-service standards for single-occupant car travel is inconsistent with several City transportation objectives because maintaining street capacity for car travel promotes:

- Low-density residential and non-residential sprawl
- Increased air pollution, noise pollution and wildlife habitat loss
- Increased vehicle trips due to increased dependence on car travel
- Strip commercial development
- Higher public infrastructure and public service costs
- Less affordable housing (due to the costs of owning more cars than might otherwise be needed)
- Less development and redevelopment within the city
- Higher average motor vehicle speeds
- Less transportation choice since transit, walking and bicycling are less viable

Nevertheless, despite moving away from standards which narrowly strive to promote free-flowing traffic, in TCEA Zone A the City is requiring new development to maintain levels-of-service that promote transportation choices, such as providing sidewalk connections, cross-access when feasible, bus shelters, and closure of curb cuts.

Outside Transportation Concurrency Exception Areas, streets will be maintained at the adopted Level of Service standard (set in the Comprehensive Plan) for car travel. This will be accomplished through the City transportation concurrency management system. The City should also explore the following strategies that discourage car trips, such as:

- Parking cash-out
- A trip reduction ordinance (TDM)
- The City transit enhancement program, as described elsewhere
- The City pedestrian and bicycle enhancement programs, as described elsewhere, and including such strategies as construction of sidewalks, non-car and non-major street connections to adjacent land uses, mixed uses, higher densities, development and redevelopment, construction of a trail network, and new land development regulations (such as the Traditional City and TND ordinances, and the City Buildings Design Manual) that promote transportation choices
- Construction of in-street bicycle lanes
- Parking space maximums and fees
- Restrictions on drive-through's
- Revised, more modest street design specifications
- Enhancement of the downtown to make it more of a destination, in part by building more downtown residential units
- Revised, more modest building setbacks
- Restrictions and prohibitions on cul-de-sacs
- Promotion of a connected street pattern
- Maintenance of alternative, by-pass routes for drive-through, non-local trips on the Intrastate Highway System, such as Williston Road and North 39th Avenue
- Acceptance of a modest level of congestion for transportation and land use

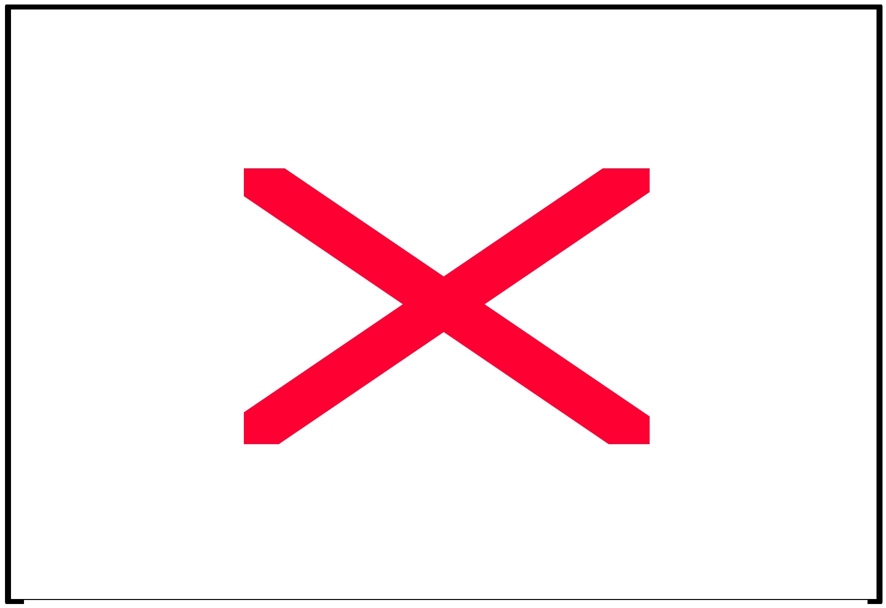


Transportation Choices:
- Makes it easy to travel without driving.
- Creates enjoyable, quick and safe ways for residents, commuters, shoppers and tourists to travel to and within the neighborhood centers by bus, foot, bicycle and car.
- Creates a "park once" environment.

Sustainability Indicators for Car Travel

An important indicator of how dependent this City is on car travel, and the overall trend in car use, is a chart showing gasoline consumption over time. Since cars are the leading source of air pollution in the city, a key indicator of city air quality is the amount of gasoline burned by car trips. As can be seen in Figure 25, there is an upward trend in gasoline consumption since 1982. This trend is especially noteworthy in light of the fact that the fuel efficiency of cars has improved dramatically during that time period. Clearly, gasoline consumption increases show that city drivers (households) are following the national trend of making substantially more trips by car than previously, and driving longer distances.

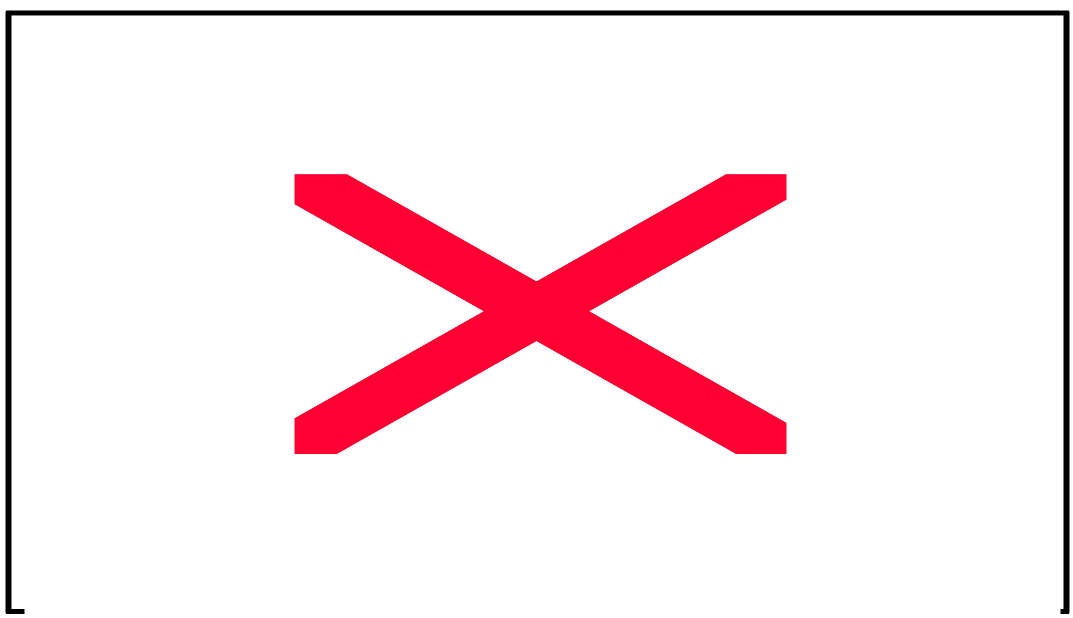
Figure 25. Estimated Gas Consumption in Gainesville (1982-1985)



Source: UF Bureau of Economic & Business Research. Florida Statistical Abstract. Table 15.67. Assumes proportional consumption within city is same as city population as a proportion of county.

Another important indicator for how much the city has developed transportation choices is the trend in motor vehicle traffic volume on major city streets. Like gasoline consumption, motor vehicle traffic volume trends can show how dependent the City is on car travel, and the overall trend in motor vehicle use. As can be seen in Figure 26, motor vehicle traffic volume on NW 43rd Street – a major north-south arterial in the city -- has risen substantially

Figure 26. NW 43rd St Traffic Volume (1980-1997)
(NW 8th Ave to NW 39th Ave)



Source: City of Gainesville Traffic Engineering since 1980. It should be noted that a significant increase in volume corresponds to the time at which this street was widened from 2 to 4 travel lanes – indicating that this widening has created "induced traffic," as described previously. In addition, the new development at Blues Creek, Millhopper Station, and other projects along 43rd Street indicate an example of transportation driving land use and development along this corridor. As traffic engineer Walter Kulash recently noted,[89] Gainesville must make a choice about whether it will accept streets and congestion on its own terms. Which "flavor" is preferred? A congested 2-lane street, a congested 4-lane, congested 6-lane, or a congested 8-lane street? In other words, as noted above, adding lanes will not eliminate congestion. It therefore becomes a choice about how wide of a congested street is preferred.

At high motor vehicle traffic volumes, residential land uses become unviable and incrementally are abandoned, rented, or converted to retail or office uses. As indicated by Kulash, it is important to avoid creating a street that is designed for and accommodates high-volume, high-speed car trips, since to do so inevitably creates a "sellscape" of garish signs, glaring lights, car-oriented architecture, drive-throughs, and other "anywhere USA" strip commercial, "parking lot architecture" features. It is inevitable because the large number of cars passing by on the street each day are potential customers that most retailers have a strong desire to "shout" to in order to attract their business.

Figure 27. UF Campus Parking Spaces

Source: UF Transportation & Parking Services. 1999.

A critically important sustainability, compact development, and livability indicator for Gainesville is the trend in the number of parking spaces on the UF campus. A declining trend is essential for healthy transit, walking, and bicycling, a healthy number of students and staff living reasonably close to campus, and reduced political pressure to widen streets. As can be seen in Figure 27, the upward trend over the past decade is a negative trend for the City that must be stabilized or reversed.

Attributes of Sustainable, "Smart" Transportation

Sustainable, "smart" transportation is characterized by the following:

- Low fuel or energy consumption
- Low harmful air emissions

- Low water pollution impacts
- Affordable, modest costs for households, governments
- Safe for the traveler and those near the travel route
- Benign for wildlife and wildlife habitat
- Quiet
- Promotes interaction with fellow citizens and with buildings
- Available for use regardless of age, skill, physical condition, financial status

Given such attributes, the following constitute sustainable, "smart" forms of travel, in order of decreasing desirability:

1. walking
2. bicycling
3. bus
4. carpool
5. single-occupant car

Biased Transportation Terminology

The City, through the MTPO, recently (8/17/99) adopted a policy that removes the biases inherent in some of the current transportation language used for street projects associated with the city.[90] This change is consistent with the shift in philosophy as the City works towards becoming a sustainable community. Objective language should be used for all correspondences, resolutions, ordinances, plans, language at meetings, etc. and when updating past work.

Background. Much of the current transportation language was developed several decades ago at a time when the car was the major priority in the city. However, an important contemporary City objective is creating a balanced, equitable, and sustainable transportation system characterized by freedom of travel choice. Unfortunately, transportation language has not evolved to comply with this objective, and much of it still carries a pro-car bias. Continued use of biased language is not in keeping with the objective of a balanced, equitable, sustainable, "smart" transportation system.

Language Changes. There are several biased words and phrases that are still commonly used, and which should be phased out as a way to achieve this objective.

The word *improvements* is often used when referring to the addition of through lanes, turn lanes, channelization, or other means of increasing motor vehicle capacity, speeds or both. Though these changes may indeed be improvements from the perspective of those driving a car, they would not be considered improvements by those using a sustainable form of travel. For example, a resident may not think that adding more lanes in front of the resident's house is an improvement. A parent may not think that a channelized right turn lane is an improvement on their child's pedestrian route to school. By City staff referring to these changes as improvements, it indicates that the City is biased in favor of one group at the expense of others. Suggested objective language includes being descriptive (e.g., use through lanes, turn lanes, etc.) or using language such as *modifications* or *changes*.

Examples:

Biased --
The following street *improvements* are recommended.
The intersection *improvement* will cost $5,000.00.
The motor vehicle capacity will be *improved*.

Objective--
The following street *modifications* are recommended.
The *right turn channel* will cost $5,000,00.
The motor vehicle capacity will be *changed*.

Like improved and improvement, there are similarly biased words such as *enhance*, *enhancement*, and *deteriorate*. Suggested objective language is shown in the examples below.

Examples:

Biased --
The level of service was *enhanced*.
The level of service *deteriorated*.
The capacity *enhancements* will cost $40,000.00.

Objective --
The level of service for cars was *changed*.
The level of service for cars was *decreased*.
The level of service for cars was *increased*.
The *increases* to car capacity will cost $40,000.00.

Upgrade is a term that is currently used to describe what happens when a local street is reconstructed as a collector, or when a two-lane street is expanded to four lanes. *Upgrade* implies a change for the better. Though this may be the case for one constituent, others may disagree. Again, using upgrade in this way indicates that the City has a bias that favors one group over other groups. Objective language includes *expansion*, *reconstruction*, *widened*, or *changed*.

Examples:

Biased --
Upgrading the street will require a wider right of way.
The *upgrades* will lengthen sight distances.

Objective --
Widening the street will require a wider right of way.
The *changes* will lengthen sight distances.

Promoting *alternative* modes of transportation is generally considered a good thing at the City. However, the word alternative begs the question "*Alternative* to what?" The assumption is alternative to cars. *Alternative* also implies that these *alternative* modes are nontraditional or nonconventional, which is not the case with the pedestrian, bicycle, nor transit forms of travel. In addition, the term *alternative* disparagingly implies that it is a form of travel only used by undesirable or unusual people, and will therefore never be a form of mainstream transportation used by us "normal" people.

If we are discussing *alternative* modes of transportation in the City, direct and objective language or modifiers such as "non-automobile" or “sustainable” forms of transportation should be used.

Examples:

Biased --
Alternative modes of transportation are important to downtown.

Objective --
Non-automobile forms of transportation are important to the downtown.
Non-motorized forms of transportation are important to the downtown.
Alternative forms of transportation *to the car* are important to the downtown.
Sustainable forms of transportation are important to the downtown.

Accidents are events during which something harmful or unlucky happens unexpectedly or by chance. Accident implies no fault. It is well known that the vast majority of accidents are preventable and that fault can be assigned. The use of *accident* also reduces the degree of responsibility and severity associated with the situation and invokes a inherent degree of sympathy for the person responsible. Objective language includes *collision* and *crash*.

Examples:

Biased --
Motor vehicle *accidents* kill 200 people every year in the County.
He had an *accident* with a light pole.
Here is the *accident* report.

Objective --
Motor vehicle *collisions* kill 200 people every year in the County.
He *crashed* into a light pole.
Here is the *collision* report.

Everyone at the City should strive to make the transportation systems operate as *efficiently* as possible. However, we must be careful how we use efficient because that word is frequently confused with the word “faster.” Typically, efficiency issues are raised when dealing with motor vehicles operating at slow speeds. The assumption is that if changes were made that increase the speeds of the motor vehicles, then efficiency rises. However, this assumption is highly debatable. For example, high motor vehicle speeds lead to urban sprawl, motor vehicle dependence, and high resource use (land, metal, rubber, etc.) which reduces efficiency. Motor vehicles burn the least fuel at about 30 miles per hour, and the capacity of a street to carry cars is maximized at this modest speed; speeds above this result in inefficiencies. In urban areas, accelerating and decelerating from stopped conditions to high speeds results in inefficiencies when compared to slow and steady speeds. There are also efficiency debates about people's travel time and other issues as well. Therefore, it is important that if the intent is “faster,” the term faster should be used. Faster is not necessarily more efficient. Similarly, if slower is meant, the term slower should be used.

Examples:

Biased --
The traffic signal timings were adjusted to increase motor vehicle *efficiency*.
Let us widen the street so that cars operate more *efficiently*.

Objective --
The traffic signal timings were adjusted to *increase* motor vehicle speeds.
Let us widen the street so that it cars operate *faster*.

Summary

Biased Terms	**Objective Terms**
Improve	change, modify
Enhance, deteriorate	change, increase, decrease
Upgrade	change, redesignate, expand, widen, replace
Alternative	[bus, bicycle, and walking] sustainable, non-car
level of service	level of service for …
Traffic	motor vehicles
traffic demand	motor vehicles use
Accident	collision, crash
Protect	purchase, designate
Efficient	Fast

Need for New Facilities for All Forms of Transportation

The Gainesville Metropolitan Area Year 2020 ("Livable Community Reinvestment Plan") Transportation Plan identified long-range transportation needs throughout the urban area that are anticipated to be needed by 2020 and that can be funded over the next 20 years (see Table 16). This Metropolitan Planning Organization (MTPO) adopted the Plan on December 14, 2000.

The projects in the 2020 Plan were identified by the Gainesville MTPO as the major transportation network modifications needed by the year 2020 to address projected patterns and volumes of travel. The vision statement adopted by the MPTO states that the Livable Community Reinvestment Plan would "make transportation investments that support livable community centers and neighborhoods by:

1. re-investing in the traditional core areas of Gainesville and the towns of Alachua County to develop walkable downtown centers;
2. connecting a limited number of highly developed mixed use centers, and
3. providing a high level of premium transit service in a linear Archer Road corridor."

The Transportation Improvements Program (TIP) for Fiscal Years 2001/2 – 2005/6 was adopted by the MTPO on June 7, 2001. As with the 2020 Plan, the TIP is for the Gainesville Metropolitan Area, not just the City of Gainesville, so projects outside of Gainesville's city limits are included. Table 16A shows the funded road construction projects in the adopted TIP.

Both the TIP and the 2020 Plan are subject to revision by the MTPO, so the projects listed in Tables 16 and 16A are subject to change. The TIP is subject to revision by the MTPO at a regular business meeting, whereas the 2020 Plan can only be amended after an advertised public hearing.

Table 16: Adopted 2020 Cost Feasible Plan for the Gainesville Urban Area

Long-Range Transportation Needs for which Funding has been Identified

[shaded areas of table are not currently funded]

riority Rank	Project	From	To	Description	Estimated Cost (millions)
1	SW 20th Avenue Charrette Projects (excluding committed projects and priorities 2 and 22)				$12.1
2	SW 24th Avenue Extension	SW 34th Street	Archer Road	new 2-lane divided road (2LD)	$1.8
3	SE 16th Avenue	Main Street	Williston Road	corridor capacity enhancements	$2.1
4	SE Connector	Williston Road	SE 27th Street	corridor planning study and charrette	$0.3
5	Depot Avenue Corridor	SW 13th Street	Williston Road	reconstruct 2LD w/ bikelanes & sidewalks	$6.0
6	Archer Road	AT: SW 16th Avenue		realign intersection	$1.4
		SW 16th Avenue	Shands Hospital	limit vehicular access at SW 16th Avenue and create dedicated bus lanes	
7	University Avenue	W 13th Street	Waldo Road	reduce to 2-lane divided with bus bays	$0.8
8	W 6th Street	SW 4th Avenue	NW 8th Avenue	enhanced multimodal capacity	$2.8
9	Archer Rd / SW 23rd Tr Rail-Trail	SR 121-Depot Ave Trail / SR 331-SR 24		offroad bike / pedestrian trail	$0.5
10	Bicycle Master Plan	AT: Countywide		placeholder for $3.7 million in dedicated bike / pedestrian projects	$3.7
11	Intermodal Center	Archer Road @ Interstate 75		transit transfer facility with park-n-ride lot	$0.1
12	Archer Road Enhanced Transit	Interstate 75	Shands / VA area	increased transit headways	$6.2
13	NW 34th Street	NW 16th Avenue	US 441	widen to add center turnlane	$10.7
14	Park-and-Ride / Express Bus-Alachua	City of Alachua	NW 43rd Street	express bus to transfer facilities in GMA	$7.7
15	Park-and-Ride / Express Bus- Archer	City of Archer	Tower Square IC	express bus to transfer facilities in GMA	$6.5
16	NW 83rd Street	NW 23rd Avenue	NW 39th Avenue	corridor capacity enhancements	$0.4
17	NW 83rd Street Extension	NW 39th Avenue	Millhopper Road	new 2-lane divided road	$3.6
18	Park-n-Ride / Express Bus-Hawthorne	City of Hawthorne	SE 50th Street	express bus to transfer facilities in GMA	$8.0
19	Park-n-Ride / Express Bus- Newberry	City of Newberry	Jonesville	express bus to transfer facilities in GMA	$6.2
20	Park-n-Ride / Express Bus- Waldo	City of Waldo	NE 50th Avenue	express bus to transfer facilities in GMA	$8.0
21	Tower Road Enhanced Transit	Archer Road	Newberry Road	increased transit headways	$6.0
22	Hull Road Extension	SW 62nd Boulevard	SW 34th Street	new 2-lane divided road (IF NEEDED)	$5.3

23	SW 40th Boulevard Extension	Archer Road	SW 62nd Boulevard	new 2-lane divided road	$1.8
24	Transit - Town / Village Center (TV) Transit Projects (excluding priorities 11, 14, 15, 18, 19, 20 and 21)				$123.0
25	Tower Road Charrette Projects (except for the Tower Road enhanced transit service)				$22.7
26	NW 24th Boulevard Extension	NW 31st Avenue	NW 39th Avenue	new 2-lane divided road	$1.8
27	NW 8th Avenue	NW 31st Drive	NW 23rd Street	reduce to 2-lane divided road	$0.4
28	E 27th Street Extension	Hawthorne Road	NW 39th Avenue	new 2-lane divided road	$10.7
				TOTAL	$260.6

Source: Year 2020 Liveable Communities Reinvestment Cost Feasible Plan, December 2000.

Table 16A: Five-Year Federal, State and Local Funded Road Construction Projects

Adopted FY 2001/2—FY 2005/6 Transportation Improvement Program

(Page 112a and b in Transportation Data & Analysis)

Airports and Freight Rail Lines

Introduction

Figure 28 shows the freight rail lines and the location of the airport. The Gainesville Regional Airport is operated by the Gainesville-Alachua County Airport Authority.

The Airport serves a vital role in the City. It encourages industrial growth, promotes trade, expands travel opportunities, and provides employment. The viability of the Airport directly affects the health of the community. It is therefore in the interest of the City to maintain a healthy airport and to be able to expand airport facilities when necessary.

In an effort to achieve this objective in the long term, the "Gainesville Regional Airport Master Plan Update 1987"[91] and the "FAR Part 150 Study 1986" were both prepared for the Gainesville-Alachua County Regional Airport Authority by CH2M Hill consultants.

Background

The Gainesville Regional Airport is located in the northeast quadrant of the city (see Figure 28). The airport served as an Army base during World War II, after which it became City property. The Gainesville Regional Airport was later established by the State as a dependent special district operated by the Gainesville-Alachua County Regional Airport Authority. The Authority is comprised of 9 members--5 from the City, 3 appointed by the Governor and one from the County. The City owns the land and airport improvements and the Authority leases and operates the airport facilities.

The Airport is defined as a primary commercial service facility by the Federal Aviation Administration (FAA) and as a commercial service airport by the FDOT. The Airport also attracts a sizable number of general aviation aircraft and is one of several airports for general aviation in north central Florida.

Existing Airport Facilities

Gainesville Regional Airport (GNV) is located in northeast Gainesville. The Airport is operated and maintained by the Gainesville-Alachua County Regional Airport Authority (GACRAA). The airport has a primary 7,503-foot long runway and a secondary 4,147-foot long runway. All runways and taxiways are lighted. The Airport has a category I Instrument Landing System, and several non-precision approaches. GNV's Airport Surveillance Radar (ASR-9) was commissioned in August 1996.

The principal terminal area facilities at the Airport include a passenger terminal complex at 3880 NE 39th Avenue on the south side and general aviation facilities on the north side. The passenger terminal complex includes a passenger building and supporting airline apron and motor vehicle parking facilities. GACRAA is currently involved in a phased, multi-year expansion of the passenger terminal complex to meet current and projected facility requirements. The general aviation fixed base operator areas include hangars and apron areas for aircraft storage and tiedown and support facilities located on approximately 48 acres of land.

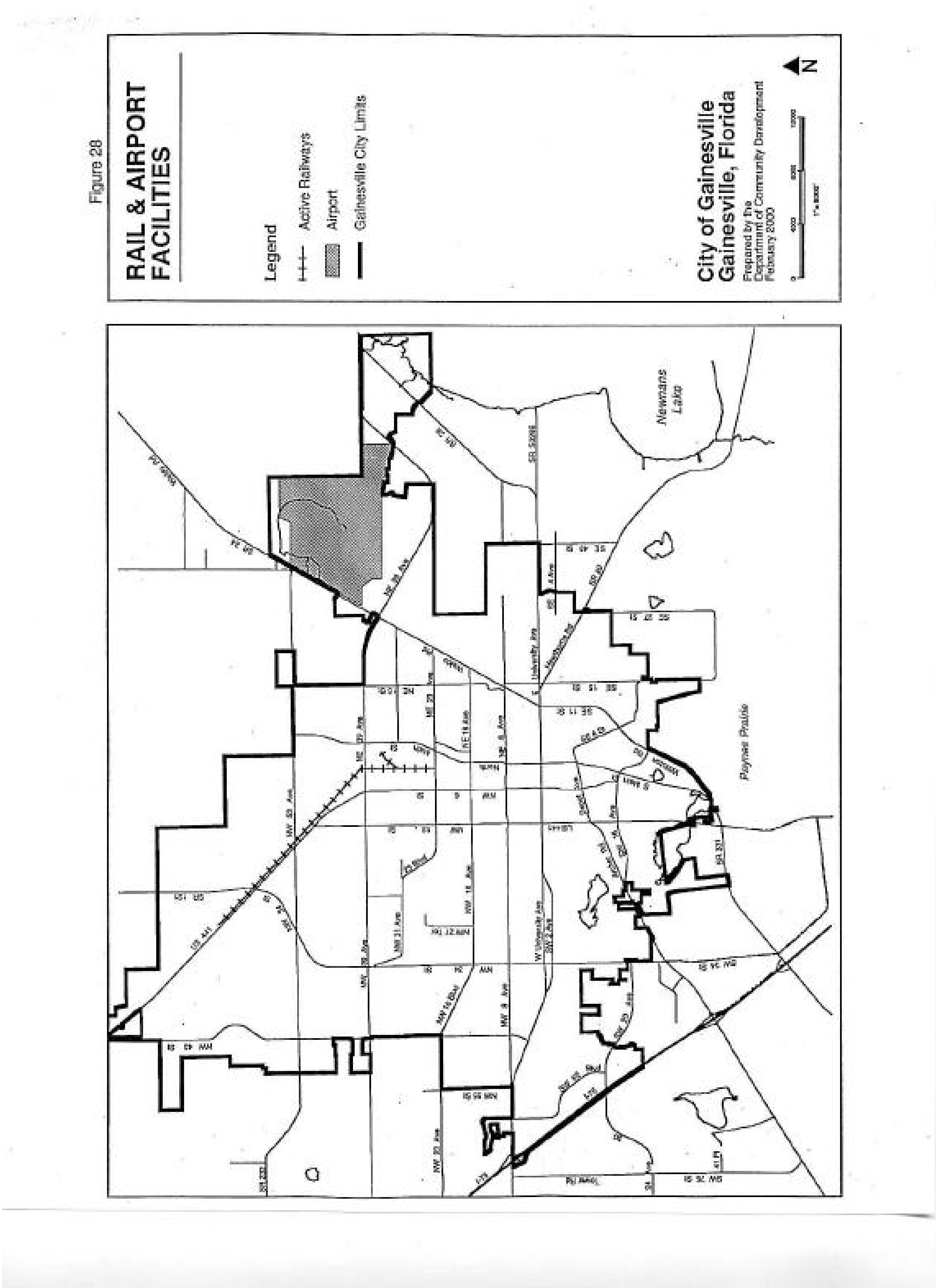


Figure 28
RAIL & AIRPORT FACILITIES
Legend
Active Railways
Airport
Gainesville City Limits
City of Gainesville
Gainesville, Florida
Prepared by the
Department of Community Development
February 2000
N
Newnans Lake
Paynes Prairie

Other key facilities at the Airport include an air traffic control tower and an FAA Automated Flight Service Station. The control tower is in operation from 6:45 a.m. to 10:30 p.m. while the flight service station is operated around the clock. FAA also operates an airways facilities office at the Airport.

The Airport occupies a total of about 2,000 acres of land. Of this, 1,715 acres are designated for aeronautical purposes such as runways, terminal facilities, and clear zones, and 285 acres are designated for the development of the Gainesville Regional Airport Industrial Park.

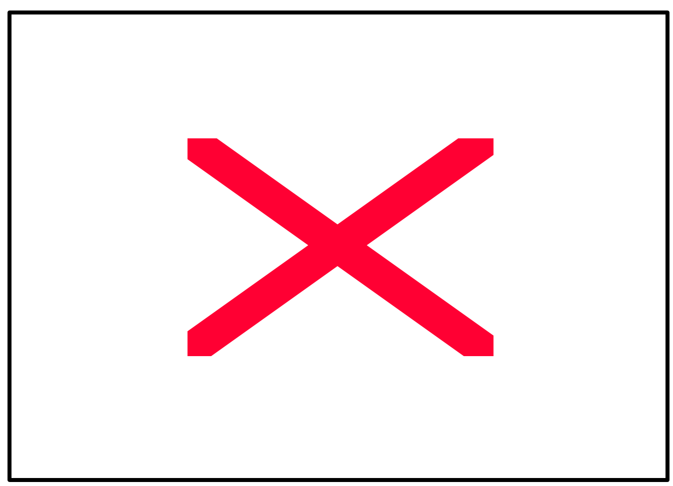
Other Aviation Facilities

Flying Ten Airport is located about 12.5 nautical miles away from GNV. Low Altitude Airways will pass over GNV when new VORTAC is commissioned. The nearest public-use airport is located in Keystone Heights, about 15.5 nautical miles to the northeast. The relatively low amount of activity at that facility offers no constraint to operations at the Gainesville Regional Airport. However, 3 hospitals within the city have helicopter flight pads (Shands, the Veterans Administration, and Shands at AGH), which add to aviation activity. North Florida Regional Medical Center has been granted City approval to install a new helistop within the Center.

Airport Operations

Aircraft Operations and Passengers. All aircraft operations are classified by functional activity into one of the following categories: air carrier, air taxi, general aviation and military. General aviation operations at the Airport are the most dominant and account for between 85 percent and 94 percent of total operations. General aviation consists of both business and personal aircraft which includes air taxi service and charter air service. This includes everything other than military or scheduled commercial airline traffic.

Figure 29. GNV Airport Passengers, 1961-1998



Source: Gainesville Regional Airport Records, 8/99.

The Airport does not contain a base for military aircraft. The military aircraft activity which does occur at the Airport consists of pilot proficiency training flights from neighboring military installations and accounts for less than 2 percent of total activity in recent years.

The remaining aircraft activity comes from commercial air carriers and commuter air carriers consisting of the following: Comair, Atlantic Southeast Airlines, Continental Connection (Gulfstream International Airlines), and US Airways Express (CCAIR).

Table 19 and Figure 29 show total annual enplaned and deplaned passengers at GNV from 1961-1998.

By 1993, the Airport hoped to achieve a 300,000 annual passenger enplanement level with annual growth rates of 14 percent. This could only have been attained with an aggressive and strong marketing program. Table 17 provides a forecast of passenger demand on both air carriers and air commuters to the year 2003.

Table 17: Enplaned Passenger Demand Forecast for 2003

Year	Air Carrier	Air Commuters	Total
2003	338,000	85,000	423,000

Source: The Gainesville Regional Airport Master Plan, 1987.

The forecast for general aviation (Table 18) was based on an average ratio of about 630 general aviation operations per based aircraft and increasing to about 700 by the year 2003. The forecast reflects the increased use of based multi-engine aircraft for business, and the Airport's continued ability to attract general aviation engaged in transient activity.

Table 18: General Aviation Operations Forecast

Year	Local	Itinerant	Total
2003	65,200	121,000	186,200

Source: The Gainesville Regional Airport Master Plan, 1987.

Table 19: Gainesville Airport Deplanements and Emplanements

Year	Deplaned and Enplaned Passengers	Year	Deplaned and Enplaned Passengers
1961	12,623	1980	363,910
1962	7,225	1981	325,421
1963	9,397	1982	283,244
1964	5,630	1983	248,066
1965	8,848	1984	272,077
1966	10,701	1985	313,723
1967	13,738	1986	373,197
1968	19,129	1987	393,829
1969	39,764	1988	395,425
1970	66,912	1989	349,172
1971	90,998	1990	437,219
1972	116,639	1991	349,850
1973	130,916	1992	396,207
1974	183,101	1993	368,564
1975	206,998	1994	385,655
1976	240,259	1995	362,588
1977	276,439	1996	328,076
1978	352,814	1997	358,044
1979	404,363	1998	300,707

Air Cargo. Cargo volumes for mail has been steadily decreasing in recent years (see Table 20). Mail has plummeted from a high of 549 tons in 1987 to a low of 13 tons in 1997 due to the loss of mail contracts. Express cargo, on the other hand, has risen from 12 tons in 1983 to 113 tons in 1997. Freight has experienced a constant decrease from 1980. Much of the problem is attributable to the lack of industries to form the "critical mass" needed to make cargo transport viable. In addition, the lack of cargo space on passenger aircraft serving the Airport is limiting volumes being served. Until Gainesville and Alachua County attract more industry, designated space for cargo aircraft will not be needed at the Airport.

Table 20: Total Airport Freight, Mail and Express Cargo, in Tons, (1983-1997)

Year	Mail	Freight	Express	Total
1983	46	337	12	395
1984	101	340	11	451
1985	295	266	11	572
1986	173	226	16	415
1987	549	186	20	755
1988	69	180	19	269
1989	40	102	21	163
1990	58	190	28	276
1991	11	248	25	284
1992	18	408	25	451
1993	16	441	26	484
1994	8	369	96	473
1995	14	313	81	409
1996	16	319	84	419
1997	13	243	133	389

Source: City of Gainesville Regional Airport records, August 1999.

Local Factors Affecting Airport Growth and Operations

Population. The demand for aviation facilities and services depends on the number of people using them. In this case, the Gainesville Regional Airport marketing program has identified 3 counties (Alachua, Bradford, and Marion) that account for the majority of population which use air carrier services. The Airport is in direct competition with Jacksonville, Orlando, and Tampa Airports, which offer a variety of services. According to a 1984 Gainesville passenger traffic survey, 55 percent of travel was for pleasure purposes by passengers who could afford to wait for the cheaper fares for flights from larger airports.

Alachua County is the general aviation service area for the Airport. Almost all of the owners of aircraft based at the Airport reside in the City limits, with remaining owners residing in Alachua County.

The Airport is expected to experience a growth in passengers due to the population growth in the air service area shown in Table 21. Marion County is one of the fastest population growth areas in the country and Alachua County is expected to keep pace with the State and exceed that of the nation. The trend for Alachua County is expected to continue into the future. Table 21 compares projected population growth between Alachua County, the Tri-County air service area, and the State of Florida.

Table 21: Projected Population (2000-2010)

Year	Alachua County	Alachua, Marion, Bradford Countys	Florida
2000	218,000	498,000	15,524,000
2005	234,000	543,000	16,773,000
2010	249,000	586,000	17,942,000

(rounded to nearest 1,000)
Source: Population Projections Table 1.40, 1999 Florida Statistical Abstract.

Local Economy. Gainesville is the largest city in Alachua County and the center of economic activity. The City's population comprises about half of the County's population. The Alachua County labor force is heavily employed in the service industry due to the presence of UF, Santa Fe Community College, and 4 major hospitals (Shands, Veterans Administration, Shands at AGH, and North Florida Regional). Many of the employment positions provided by these employers are filled by professional and skilled workers whose disposable incomes provide them with the opportunity to travel. Unemployment is lower in Alachua County than state and national levels due to the stability of these major employers.

Socioeconomic factors, such as population and employment characteristics indicate that the economy of the region will continue to grow at a moderate rate. Thus, demand for commercial and private air transportation is also expected to grow moderately in relation to this growth.

Natural Features. The Airport and surroundings have natural areas which must be protected. More specifically, the airport area contains several environmentally important features (see Figure 30) including Little Hatchet Creek, wetlands, and Gum Root Swamp east of the airport. The airport also lies partially within the floodplain zone and falls within the Murphree Wellfield designated secondary and tertiary management zones.

All of these conditions may make certain types of development inappropriate for environmentally sensitive areas surrounding the Airport. Alachua County has adopted a Murphree Well Field Management Code to protect the community water supply. Development in the Airport Industrial Park must be in compliance with the code's requirements and restrictions. The City's "Regulation of Development Near Creeks" Ordinance provides standards for development along Little Hatchet Creek. It prohibits any activity within 35 feet of the centerline and requires prior approval for construction within 150 feet. Floodplain characteristics place further restrictions on development activity by limiting density and requiring sometimes costly moderation measures.

Land Use. All designated existing and proposed future land uses within city boundaries are compatible with the airport (see Future Land Use Map and Figure 31). There are no residential land uses that fall within the airport noise contours. Future land use designations within city limits near the airport are industrial, transportation, public service, residential, agriculture and unimproved. The City's revised Airport Hazard Zoning regulations creates 3 "airport zones of influence" regulating height limitations, permits for development, noise zones, prohibited uses, bird strike hazard zone, visual and electrical interference zone, education restrictions, and nonconforming uses.

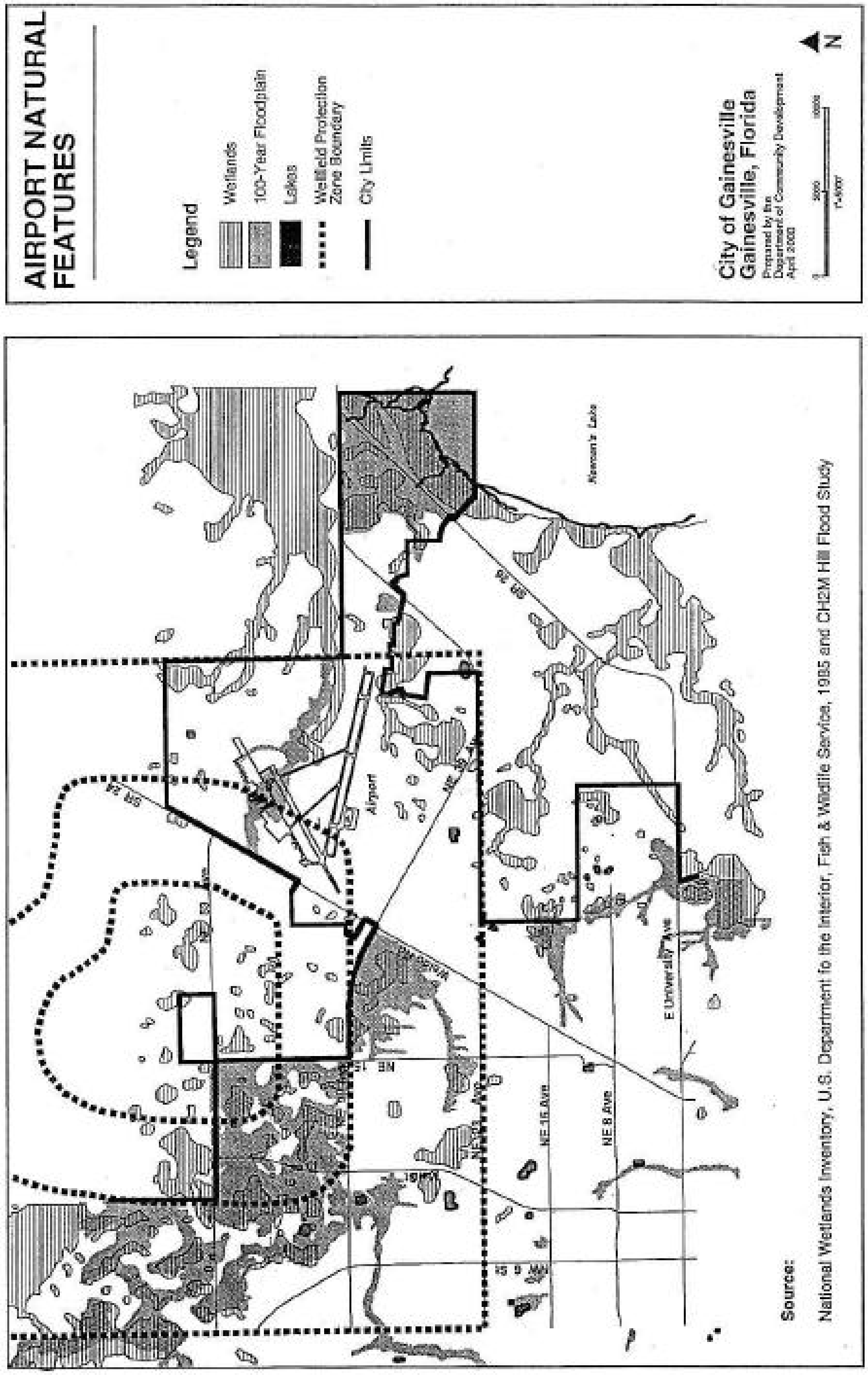
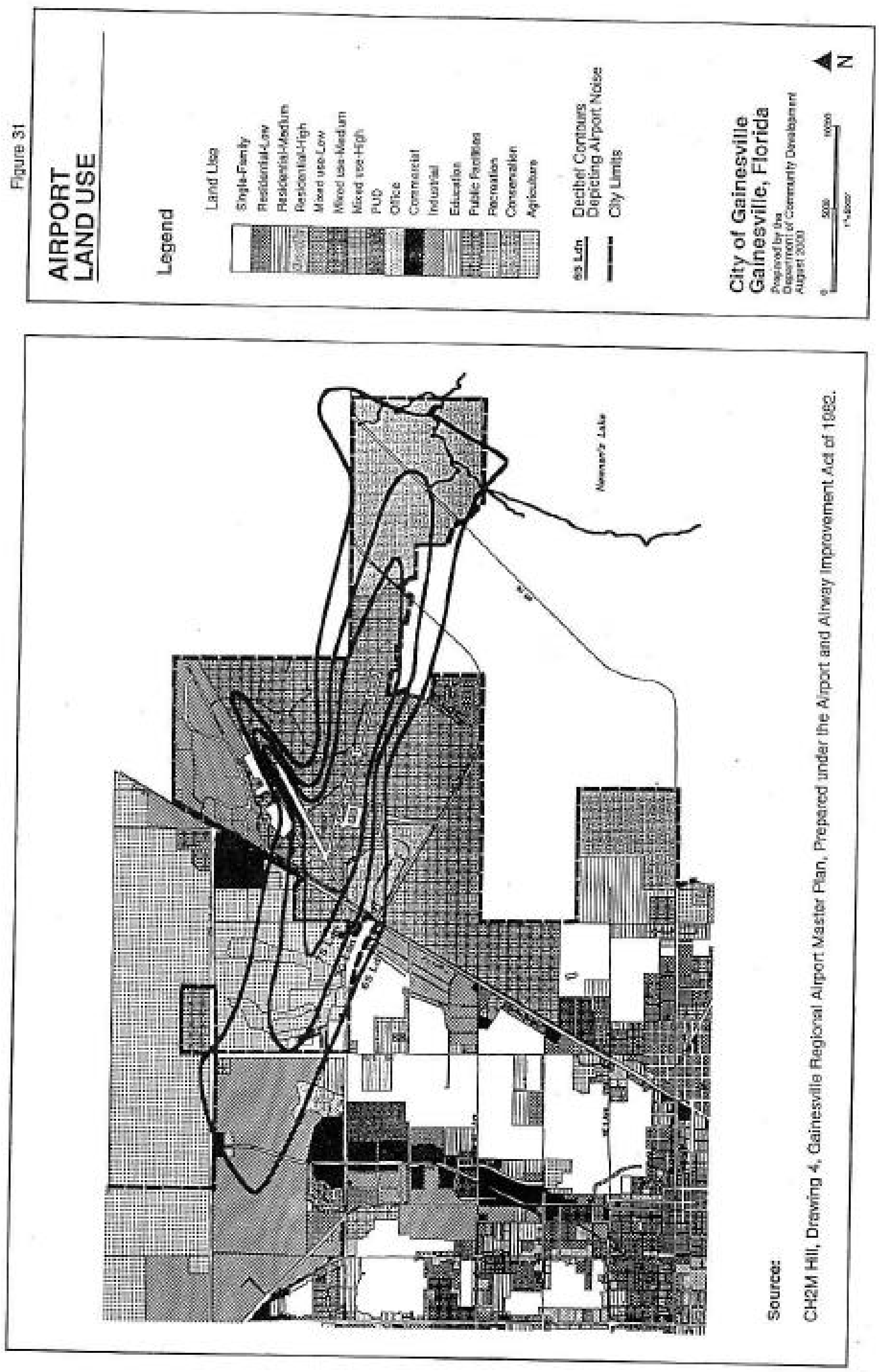


Figure 30
AIRPORT NATURAL FEATURES
Legend
Wetlands
100-Year Floodplain
Lakes
Wellfield Protection Zone Boundary
City Limits
City of Gainesville
Gainesville, Florida
N
Airport
Newnan's Lake
SR 26
SR 24
NE 16 Ave
NE 8 Ave
E University Ave
Source:
National Wetlands Inventory, U.S. Department fo the Interior, Fish & Wildlife Service, 1985 and CH2M Hill Flood Study

Figure 31. Airport land use



The Gainesville Land Development Code, Sec. 30-76, establishes the AF (airport facility) zoning district. This section makes provisions for airport growth, development and management, in accordance with environmental concerns and public safety. An airport layout zoning map designating permitted uses has not yet been adopted and amended by ordinance. The future intent is to adopt the Gainesville Regional Airport Master Plan as the guide for future development in and around the airport. Included in the Master Plan is the Off-Airport Land Use Plan 2003 which indicates future land uses within and near the noise contours. For this element, the figure has been renamed Airport Land Use (Figure 31). This figure illustrates future land uses in Alachua County, which include industrial, warehouse, tourist/entertainment, hotel, and recreation, to the west and north of the Airport, and residential to the east and south.

Essentially, all the land uses beyond the airport boundary affected by aircraft noise are within the jurisdiction of Alachua County. No residential land uses are located within the airport noise contours. Industrial uses in the vicinity of the airport fall within the 65 Ldn sound contour. Much of the land area east and west of the airport is unsuitable for significant development due to its flood prone characteristics.

The Gainesville Regional Airport Master Plan identifies land targeted for acquisition to eliminate incompatible land uses and to allow airfield and terminal improvements. Land acquisitions are planned for parcels south of the airport. Alachua County has cooperated with the City to minimize the potential for the development of incompatible land uses in the vicinity of the airport. The County has defined a noise attenuation area and a noise sensitive district to preclude detrimental noise impact on land uses and to protect the public's investment in the airport. These provisions are contained in Sec. 392.91.d of the Alachua County Unified Land Development Code.

Airport Noise Impacts. The subject of aircraft noise impact, noise reduction actions, and surrounding land use was evaluated in detail in a Federal Aviation regulations (FAR) Part 150 Study, conducted in March 1986 for Airport. The existing and projected Ldn noise contours (year 2001) can be found on Figure 31. By the year 2001, the size of the Ldn contours will have increased.

The Part 150 study indicated that the City has implemented appropriate noise abatement procedures to reduce aircraft noise. Airplane pilots are cooperating by modifying their flight tracks using Newnans Lake and Gum Root Swamp as a noise buffer when operating east of the Airport. The Airport has implemented a preferential runway system, and has purchased most of the land with incompatible uses. The County discourages housing and building east and west of the Airport due to floodplain characteristics. Sewer and water are not available in that location and any potential landowner in this flood plain is required to have at least 5 acres per housing unit.

Airport Clear Zones and Obstructions. FAA regulations in Part 77, Subpart C (Objects Affecting Navigable Airspace), provides standards for determining obstructions to air navigation. These regulations were utilized by the Gainesville-Alachua County Regional Airport Authority to define and provide for the establishment of various zones and the prescribed height limitations within them. The City and Alachua County have both adopted ordinances to provide height regulations in and around the airport.

The zones designated in the Gainesville Land Development Code, Appendix F, Airport Hazard Zoning ordinance, includes the following:

- Airport Height Notification Zone
- Airport Runway Clear Zone
- Airport Noise Zone

Obstructions to Local Air Traffic. There are 15 human-built obstructions within the "Horizontal Zone" of the Gainesville Regional Airport (see Figure 32). All are lighted.

Traffic Circulation. Two principal arterials provide access to the airport, Waldo Road (SR 24), and NE 39th Avenue (SR 222). NE 39th Avenue serves as the main terminal entrance (see Figure 33). Waldo Road primarily services General Aviation and the Airport Industrial Park from the following three points: NE 40th Terrace, NE 49th Avenue, and NE 54th Avenue. Both Waldo Road and NE 39th Avenue are 4-lane streets and have a level of service of B.

No motor vehicle travel modifications are proposed by the City for this area through the year 2001. In 1989, the widening of 39th Avenue, a major east-west corridor to the airport, was completed.

Future Airport Needs

Table 22 provides the Airport Capital Improvements Plan.

Table 22: Gainesville Regional Airport Capital Improvements Plan, 1999-2000

Project	Cost
General aviation terminal building renovations	$500,000
General aviation terminal. Reconstruction of vehicle parking lots	$119,694
Corporate hanger project	$500,000
"T" hanger project	$450,000
Airfield painting	$218,850
Recondition baggage conveyor	$25,000
Passenger terminal. Mobile passenger walkway	$80,000
General aviation aprons. Pavement rehabilitation & installation of airport wash rack	$500,000

Source: Gene Clerkin, Gainesville-Alachua County Regional Airport Authority, 1999.

Figure 32. Airport clear zones

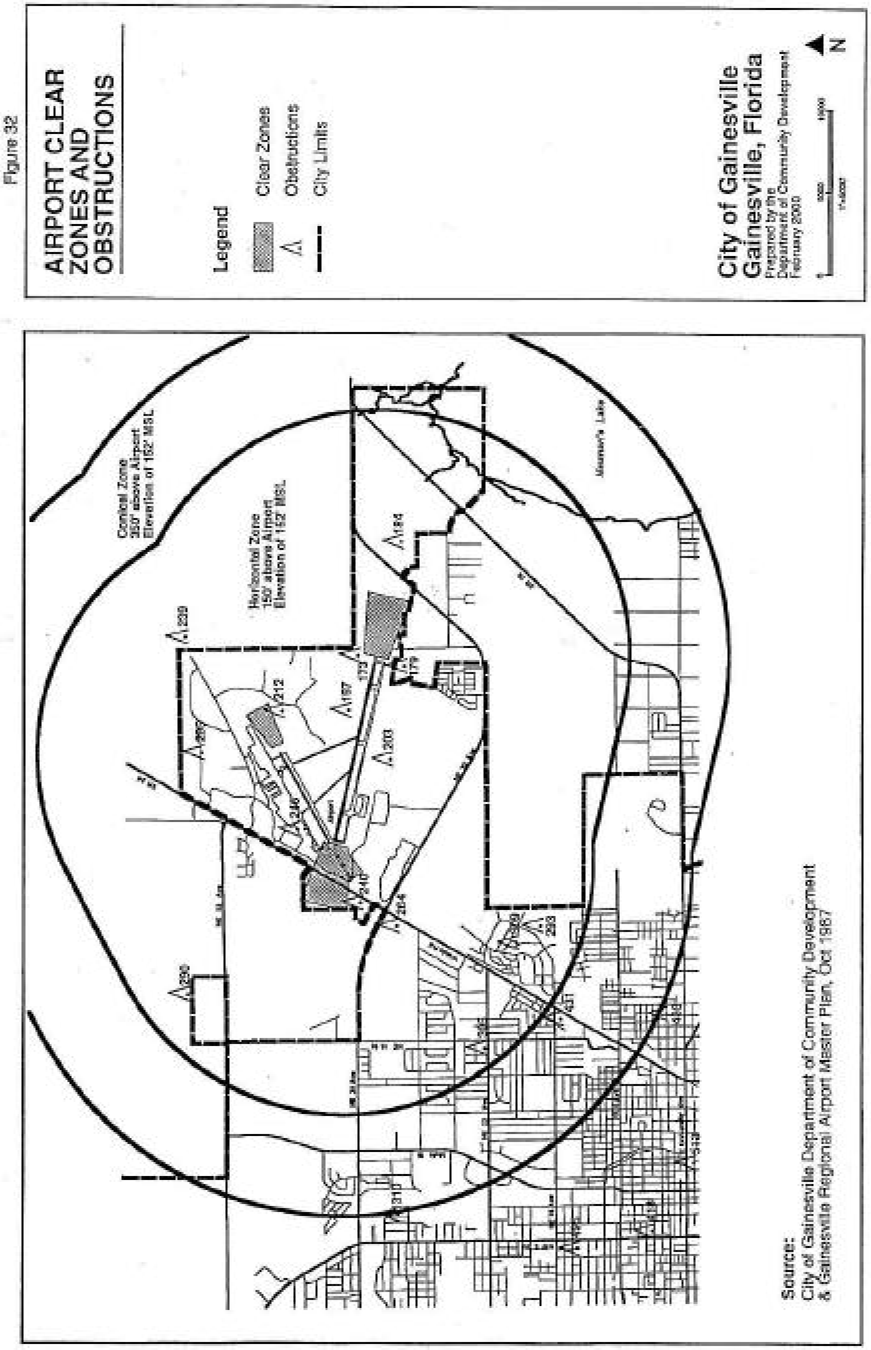
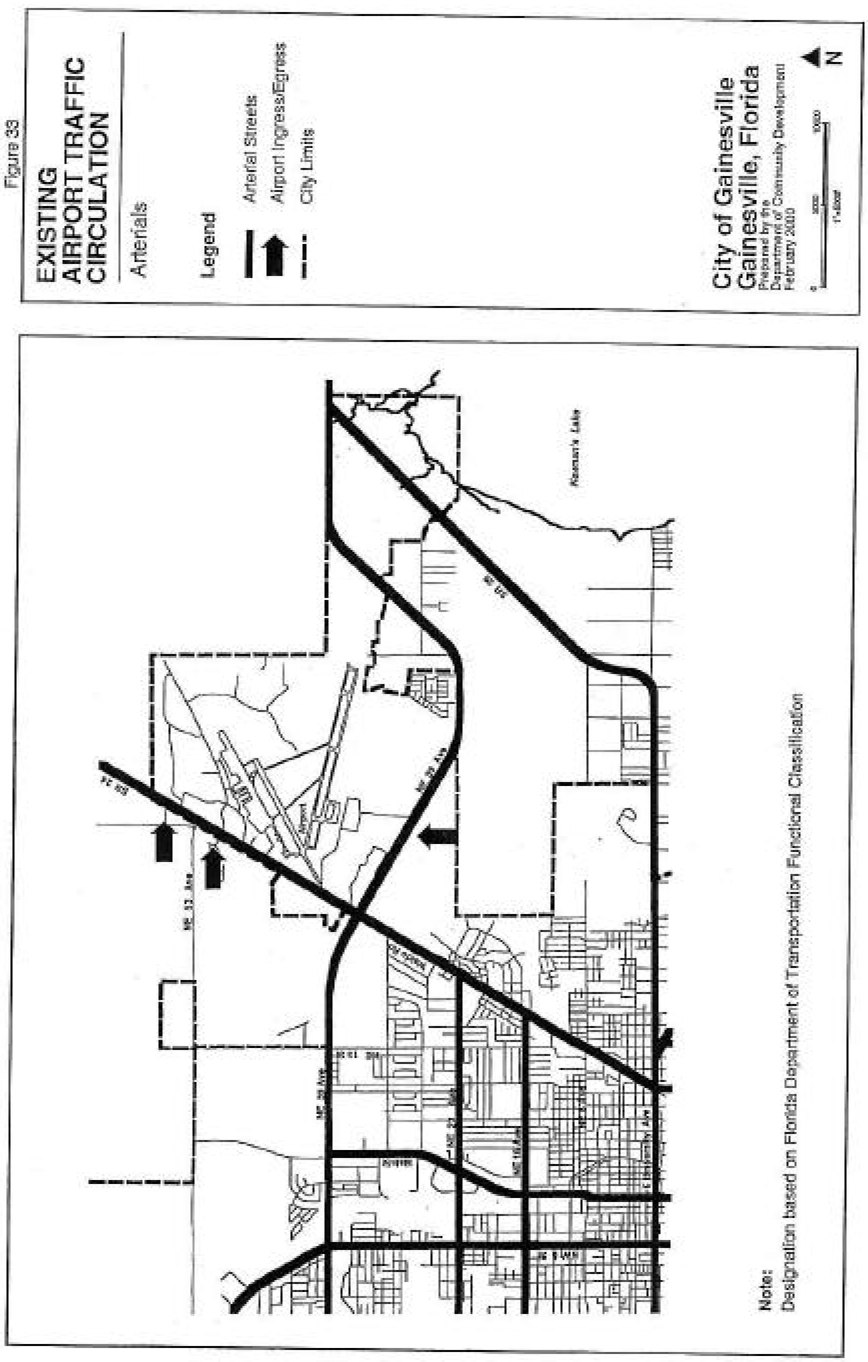


Figure 33. Existing traffic circulation



Emergency Management

Evacuation for Impending Natural Disasters. The city contains emergency evacuation routes in the event of an impending natural disaster, as designated by the Florida Division of Emergency Management (see Figure 34).

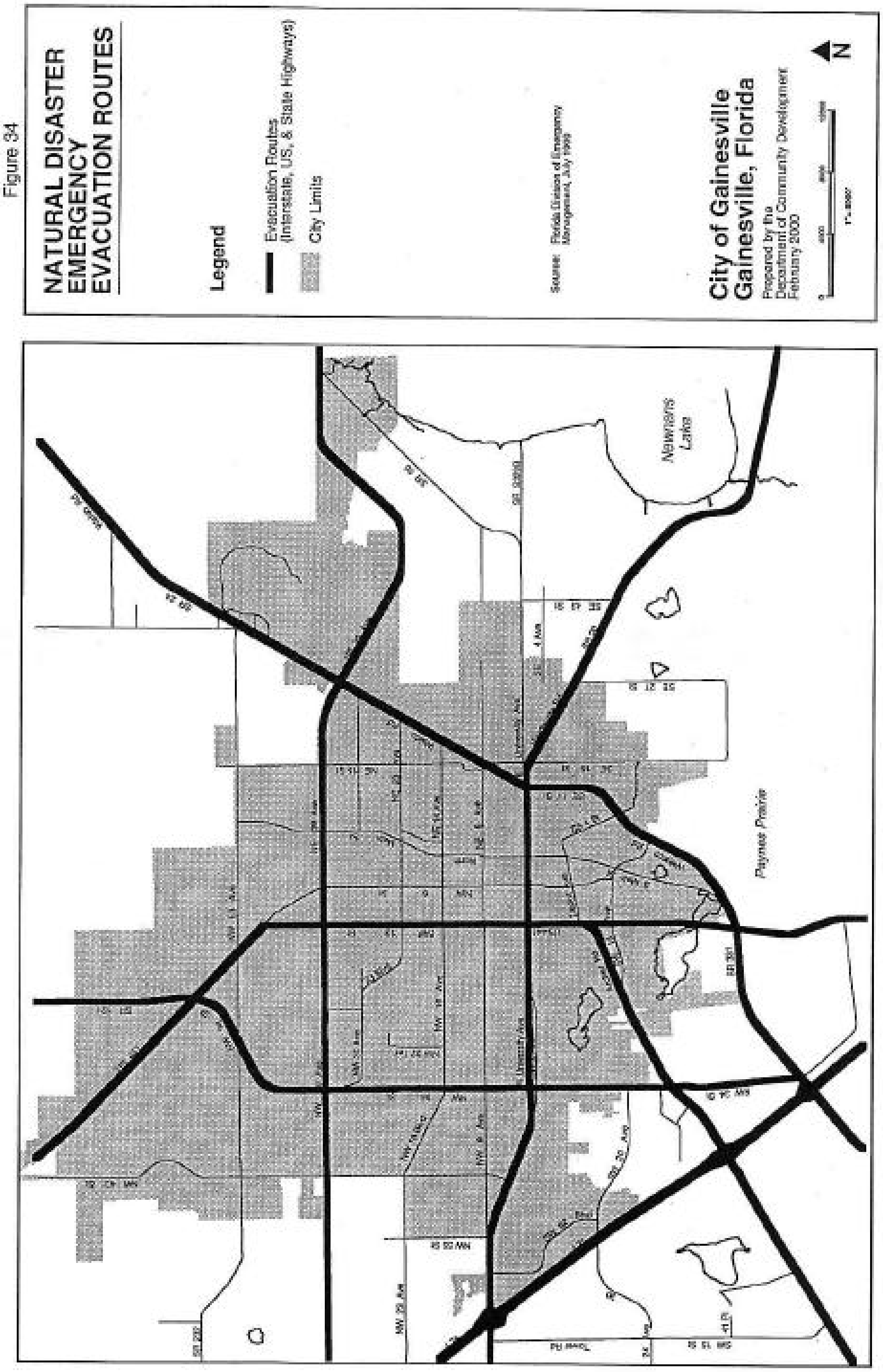
According to Michelle Pope of the Florida Division of Emergency Management, there are no "critical intersections or roadways" that are found within the city. However, Gainesville is heavily used by evacuees, whether it be in designated shelters or in hotels and motels.

According to Lt. Donnie Love of the Alachua County Sheriff's Office, and Eddie Williams, Director of Communications for the Gainesville Police Department (GPD), the Florida Highway Patrol staffs the four I-75 intersections in the Gainesville Urban Area to guide traffic movement during an evacuation. Under the "Florida Emergency Management Act," the Sheriff's Office becomes the "Central Service Functions" agency (the "Emergency Operations Center) to coordinate deployment of law enforcement officers to street intersections during an evacuation. Typically, deputies are deployed to intersections outside the city and GPD officers are deployed to intersections within the city.

Officers also provide shelter site security.

Currently, evacuation capabilities are deemed by GPD and the Sheriff's Office to be adequate.

Figure 34. Evac Routes



Funding

The long term strategies discussed in the Data and Analysis portion of the Transportation Mobility Element have a number of funding sources.

(1) TEA-21 enhancement dollars are available for pedestrian and bicycle improvements. Many of the improvements needed to complete the sidewalk system have been identified and can be scheduled as funds become available. The concepts proposed for University Avenue would need to be presented through the MTPO planning process and placed in the 5-year Transportation Plan. TEA-21 is also the major Federal funding source for other local transportation projects.

(2) Existing gasoline tax revenue is used for RTS and other transportation projects.

(3) Sidewalk improvements and construction and maintenance on City streets is the responsibility of the City. The City will need to reconsider its present allocation of general fund dollars in this area.

(4) A state committee has recommended use of a transportation impact fee with "variable rates that encourage urban infill and redevelopment, discourage urban sprawl, and reward transit oriented developments and developments with low vehicle miles of travel (VMT) generation characteristics." The City should support this recommendation.

(5) Public-Private (developer financed) funding is occasionally available for various local transportation projects.

(6) The Campus Development Agreement between UF and the City of Gainesville has provided funding for various transportation projects.

(7) Interlocal agreements between Gainesville and Alachua County sometimes provides funding for City transportation projects.

(8) The Transportation Funding Advisory Committee (TFAC) was convened to identify funding sources for transportation modifications. In 1999, TFAC recommended that Alachua County adopt a 5-cent local option gasoline tax increase and transportation impact fees.

Evaluation and Appraisal Report—Major Issues

The evaluation and appraisal process for the City's Comprehensive Plan, as required by Florida Statutes, offers an opportunity to identify major issues affecting the community as they relate to the Plan. These major issues inform the City and its citizens of what the most important challenges are that must be handled in the update of the Plan to ensure a better future for the community. Identification of these major issues came through the interactive process of presentation of element evaluations at public hearings and board meetings.

Major issues identified:

- The loss of the street should not foreclose the future installation of bicycle/pedestrian trails, non-car connections to adjacent land uses, or a transit line.
- Site plans for new developments should be required to show any existing bicycle and pedestrian access to adjacent properties and transit stops, and not show a design which forecloses future links for bicycle and pedestrian access to adjacent property.
- Modify University Avenue between downtown and UF to enhance the connection between these two neighborhood (activity) centers – including consideration of taking west University Avenue to 2 travel lanes. The City should also encourage additional residential units near University Avenue. This project should include identification of alternative routes that can be used for non-local, non-destination trips along S.R. 26 (University Avenue).
- The City should coordinate with the University of Florida to ensure that the Campus Master Plan is consistent with the goals, objectives and policies of the Transportation Element of the City Comprehensive Plan.
- The City should request that the Metropolitan Transportation Planning Organization (MTPO) boundaries be adjusted to include all street segments within city limits.
- The City should request that Archer Road be re-routed to reduce through trips, especially trips by large trucks.
- The City should request that the threshold for requiring Art-Plan analysis be lowered so that it is consistent with the lower threshold for requiring transportation moderation strategies.
- The City should encourage the installation of structured parking garages and shared parking lots within neighborhood (activity) centers, employment centers, and the downtown/UF area. The Gainesville Land Development Code should be amended to require a special use permit to ensure that such parking meets performance objectives when near multi-family housing.
- The Future Land Use Map should continue to show areas for housing which serve the needs of employees and students within walking distance of the University and the downtown.
- The City should inventory and prioritize street segments with sidewalk gaps.
- The City should complete an inventory of sidewalks on all arterial, collector and local streets, and place such an inventory on the city Geographic Information System to assist in the identification of gaps and priorities.
- All new streets within the city should include sidewalks on both sides.

- The City should increase the amount of land designated for multi-family development on the Future Land Use Map along arterials and collectors – especially when near important transit stops.
- Establish retail, office, civic, recreation, school, and higher density residential near transit stops.
- The City should evaluate the citywide bus stops to identify needs for bus stop improvements – especially ADA improvements.
- Higher density residential (at least 8 du/ac) should be located close to a transit stop, carpooling and park-n-ride should be promoted, and bus service should be enhanced -- especially in the southwest -- to increase the frequency of service.
- To reduce reliance on major streets, and promote transportation choice, the City should encourage street connectivity, gridded streets, and trails.
- Establish exception flexibility from transportation levels of service. Such an exception approach will promote infill and discourage sprawl.
- Increase funding for better service and facilities for travel by bus, walking, and bicycling. A higher level-of-service standard should be adopted for transit.

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areas of new development. ..More congestion would make it easier to implement mass transit in an area. Mass transit could improve levels of service without direct roadway improvements...Economic principles suggest that people should pay for the infrastructure they use. This imposes costs on users, causing them to take account of the costs of their own actions...One implication is that gasoline taxes are a better source of revenue for roadway improvements than other sources such as sales (or income) taxes...the last development built that adds traffic to a road is not the development that causes the congestion. All traffic on the road, whether from new or old developments, are equally responsible for the congestion on roads...If this principle is not adhered to, it creates a common pool problem (with the arterial road being the common pool). Everyone has an incentive to develop property too fast so as not to be the one who is charged for congestion on the roads. Thus, a policy of taxing new development more than existing developments for common infrastructure will lead to overly rapid development, helping to cause congestion problems that the policy is intended to solve...This will make it impossible in some areas to alleviate congestion by enlarging capacity. There is a fallacy that sometimes creeps into highway planning that a given amount of development will create a given amount of traffic. In fact, the amount of traffic created by a given development depends upon how costly it is to use the roads. The mere act of enlarging capacity will create congestion without additional development by reducing the incentive to avoid peak hour travel, creating the incentive to take more trips, and reducing the incentive to live close to work. Congestion is a cost that rations roadway use, and it follows that unless tolls are charged, congestion cannot be eliminated from intensely populated areas by enlarging roads." See also: Remak, R. & S. Rosenbloom. (1976). "Peak Period Traffic Congestion. Transportation Research Board Special Report 169, p. 62; American Association of State Highway and Transportation Officials. (1978). "A Manual on User Benefit Analysis of Highway and Bus-Transit Improvements." Washington DC pp. 18-19; Dowling. R.G. (1994). "A Framework for Understanding the Demand Inducing Effects of Highway Capacity;" Pells, S.R. (1989). "User Response to New Road Capacity: A Review of Published Evidence." Institute for Transport Studies, Univ. of Leeds; Standing Advisory Committee on Trunk Road Assessment. (1994). "Trunk Roads and the Generation of Traffic." p. 47; Moore, Terry and Paul Thorsnes. (1994). "The Transportation-Land Use Connection." Planners Advisory Service Report No. 448/449. American Planning Association, pg. 23; Surface Transportation Policy Project. 1998. "An Analysis of the Relationship Between Highway Expansion and Congestion in Metropolitan Areas." Pg. 5, Washington DC; Hansen, Mark. (1995). "Do New Highways Generate Traffic?". Access No. 7, at 16, 19-20; Transportation Research Board, National Research Council. (1995). "Expanding Metropolitan Highways: Implications for Air Quality and Energy Use." Special Report 245, pg 162.

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