# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 1
## Community Involvement Strategy

Prepared for:
The Metropolitan Transportation Planning Organization

Prepared by:
The Corradino Group, Inc.

December 2005

# Foreword

This is one of several Technical Reports (TR) produced during the conduct of the Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update (LRTP) during the period January 2004 to December 2005. The document presented here is the same as used in the decision process of the LRTP. Actions taken subsequent to the production of the TR that materially affected its contents are reflected in the Final Report (three-ring binder) plus the Summary Report and Summary Poster.

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Attachment A – Summary of Analysis Issues


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# 1. Community Involvement Strategy (CIS)

Someone once said: "all politics are local." So it is with good planning/engineering; all good plans are "local." Today's planning process is designed to be shared with the public so that good analyses of creative solutions yield a plan the people can and will endorse. To do so, this Community Involvement Strategy (CIS) is based on the following objectives:

- To establish trust and credibility among all participants in the program;
- To establish an open process which is responsive to the concerns of the community and provides for timely involvement that influences the decision-making process;
- To develop a process that creates an understanding of the issues and provides participants the opportunity to be sufficiently prepared to react with confidence to a project's deliverables; and,
- To assist the decision-makers in understanding the relationship to key technical issues to the community's overall concerns.

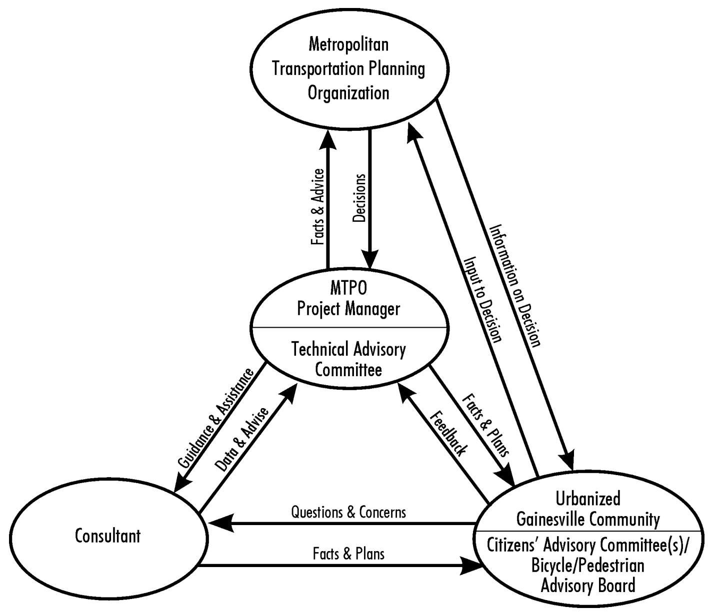
In effect then, the CIS can be viewed as a narrowing process wherein the many concerns and controversies involved in any study of transportation, land use and related issues are objectively reduced to a few so that the community, through its decision-makers, can reach a viable conclusion

The key to a successful CIS is communication. This means communicating with the Metropolitan Transportation Planning Organization (MTPO) and its various committees (CAC, TAC, BPAB) and units of local government; with the Florida Department of Transportation (FDOT) and other units of state/federal governments; with key stakeholders affected by the project; and, most importantly, communicating with the public at-large. Outreach is essential to properly involve the elderly, persons with disabilities, minorities and the low-income community who are traditionally under-represented in the planning process. In this regard, a "Rolling Bus Tour" will bring the process to the citizens. And, a project Web site will be established on which all documentation is available and e-mail communication with the public is facilitated. A monthly calendar of public events will be maintained on the Web as well. Two newsletters (summer 2004 and winter 2005) will be produced and distributed. Finally, the public communication process will include a survey of households in the Metropolitan Area scheduled to be conducted in the last quarter of 2004.

# 1.1 CIS Structure

Perhaps the single most-significant step toward successful completion of this study is the decision-making process. Figure 1-1 identifies the structure envisioned at this time. Several key "players" are depicted: the MTPO and its Technical Advisory Committee (TAC); the community, including the Citizens' Advisory Committee (CAC)/Bicycle/ Pedestrian Advisory Board (BPAB); and, the consultant. The role of each is described below.

Figure 1-1
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Study Process




The MTPO has the responsibility to make the decisions on the transportation alternative to be recommended to the Florida Department of Transportation (FDOT) for implementation in Metropolitan Gainesville. So, once the technical materials have been fully aired and the technical/political interactions have occurred, the MTPO, in cooperation with the TAC and the CAC/BPAB, will take a position on the alternative to be forwarded for final action. The consultant will support the entire communication/analysis process, and take the lead on the public engagement activities, transportation modeling and plan development.

# 1.2 Key Constituencies

Three key constituencies of the community involvement process have been identified. Each group's attitudes may influence the attitudes of the others; in some cases, individuals may be a part of more than one group.

Constituency 1—The general public with focused attention on special constituencies who are often absent from the planning process, including seniors and the disabled.

Constituency 2—Community "thought leaders," business leaders, and related interest groups such as historical and environmental organizations or neighborhood associations.

Constituency 3—Government officials such as County Commissioners, the Mayor of Gainesville, City Commission members, and appointed officials of governmental agencies.

To reach each group, direct mailings will be the first element of communication. More than 5,000 residences and businesses will be notified directly of each public meeting. Further, the members of the consultant team will visit groups/individuals with an interest in the project. This is particularly important to reach constituencies who are often not heard in the debate over government's actions.

As noted above, six public meetings will be held throughout the project (Table 1-1). The public meetings will take varied forms including workshops, roundtable discussions, formal presentations, and the like. Each will be preceded by TAC and CAC meetings (BPAB will also be invited to attend these meetings). As now contemplated, there will be 11 TAC/CAC/BPAB meetings plus 10 MTPO meetings. And, there will be monthly meetings with the MTPO's project management team.

## 1.3 Media Relations

It is very important to identify the appropriate media contacts and keep them informed about the progress of the study. Media coverage will increase the public's awareness and help gather public input regarding the analysis. The consultant will assist the MTPO in pursuing coverage by all types of media, including print, television, radio, special interest publications and magazines.

The consultant will develop basic materials to background the news media, as appropriate. The consultant will assist the MTPO in meetings with key reporters and editors to explain to them the purpose and products of the study and to answer any questions.

If deemed appropriate by the MTPO, the consultant will also assist in speaking to special interest groups, trade, civic, social and religious organizations.

## 1.4 Proposed Public Meetings

The consultant will advertise and conduct at least six public informational meetings in the planning process. Two of these public meeting events (April and September 2004) will be conducted in each quadrant of the Gainesville Metropolitan Area. The other four public meetings will be rotated among these four quadrants. Invitations to each meeting will be sent to at least 5,000 addresses (homes and businesses) at least ten days prior to each meeting. The consultant will provide key groups with postage-free invitations to be mailed to their constituencies. Upon request in advance of each public meeting, sign language interpretation will be available.

Each meeting will inform the public of the status of the LRTP update. As now contemplated, a period of each meeting will be devoted to questions and answers and the public will be asked to identify and provide information about key issues that are the focus of the meeting. The latter part of each public session will involve a "workshop" process to facilitate one-on-one discussions. Large laminated maps/graphics will be used to assist the public in identifying their needs.

The following is the tentative schedule and content of the six public meetings (Table 1-1).

Table 1-1
Gainesville Urbanized Area
2025 Long-Range Transportation Plan Update
Proposed Preliminary Schedule of Meetings

| MONTH | MTPO Date | TAC/CACs Date | Public Meeting Date | Public Hearing Date |
|---|---|---|---|---|
| January 2004 | January 28, 2004 | NA | NA | NA |
| February 2004 | NA | NA | NA | NA |
| March 2004 | March 16, 2004 | March 17, 2004 | March 18, 2004 | NA |
| April 2004 | NA | April 28, 2004 | April 19-22, 2004[1] | NA |
| May 2004 | June 3, 2004 | NA | NA | NA |
| June 2004 | NA | NA | NA | NA |
| July 2004 | NA | NA | NA | NA |
| August 2004 | NA | August 25, 2004 | NA | NA |
| September 2004 | September 2, 2004 | NA | September 20-23, 2004[2] | NA |
| October 2004 | NA | October 20, 2004 | NA | NA |
| November 2004 | November 4, 2004 | NA | November 18, 2004 | NA |
| December 2004 | NA | December 1, 2004 | NA | NA |
| January 2005 | January 2005 | January 2005 | NA | NA |
| February 2005 | NA | NA | February 17, 2005 | NA |
| March 2005 | March 2005 | March 2005 | NA | NA |
| April 2005 | NA | NA | NA | April 14, 2005 |
| May 2005 | May 2005 | May 2005 | NA | NA |
| June 2005 | NA | NA | NA | NA |
| July 2005 | NA | NA | NA | NA |
| August 2005 | August 2005 | August 2005 | August 18, 2005 | NA |
| September 2005 | NA | NA | NA | September 29, 2005 |
| October 2005 | October 2005 | October 2005 | NA | NA |

[1]Rolling bus tour on April 3 and 4, 2004.
[2]Rolling bus tour on September 11 and 12, 2004.

## Meeting 1: Introduce Project – March 18, 2004

The MTPO/consultant team will introduce the project's work program/schedule and present an overview of transportation issues (like Level of Service and use of non-motorized transportation). Goals and objectives will be reviewed and a preliminary list of evaluation factors will be discussed. At this meeting, 100 disposable cameras will be provided to attendees to provide to the project visual images of issues that make them proud of and concerned about the transportation system in Metropolitan Gainesville. These photos will be lodged on the project Web site and be input to the second public meeting.

## Meeting 2: Define Key Issues/Vision – April 19 to 22, 2004

This meeting will involve a set of four submeetings, one in each quadrant of the urbanized area. Prior to this set of meetings, a "rolling bus tour" will be conducted on a weekend. Shopping centers and centers of worship will be visited to reach out to a broad segment of the community and invite their participation in the planning process. The public will engage in a process to define those issues about their community of which they are proud <u>and</u> concerned, leading to the expression of a vision for the Gainesville transportation system.

Each meeting in a subarea will begin with a brief presentation of the area's history, the history of the long-range planning process with an emphasis on the current vision statement included in the Livable Community Reinvestment Plan, and the preliminary list of goals and objectives discussed later. Following that presentation, participants, working in small groups to which they are randomly assigned (usually no larger than eight people), will articulate those items that make them proud of the area as well as concern them. The issues articulated will be summarized for the entire meeting before moving to a discussion of a "transportation vision." Facilitators for each working group will be drawn from the consultant and the MTPO.

During the visioning portion of the meeting, participants will be asked to describe what they see in their "mind's eye" for the area's transportation system in 2025. Each person will be asked to describe what pleases them and what makes them feel good. Then, by using a simple scoring process, the group will sift through all vision issues to frame out a composite and concise vision statement. This will then be used to initiate the development of transportation alternatives and the process by which they are evaluated. The latter will be the subject of Meeting No. 3.

## Meeting 3: Explain Evaluation Process/Define Factors – September 20 to 23, 2004

This will also be a set of four meetings – one in each quadrant of the urbanized area preceded by a weekend of rolling bus tour events. Evaluation factors will be presented to the public after being confirmed by the MTPO and the TAC/CAC/BPAB. These factors will be weighted by the public participants at Meeting No. 3. Weighting of the factors through the project Web site will also be invited.

## Meeting 4: Define System Alternatives – November 18, 2004

The public will provide help in defining the alternative transportation system scenarios for the Gainesville Urbanized Area at this fourth public meeting. Large wall maps will allow "Post It" notes to define their needs. Graphics/drawings will be used to illustrate alternative transportation modes to stimulate conversations about options.

### Meeting 5: Present Evaluation Results – February 17, 2005

Preliminary evaluation results of alternatives to establish the Transportation Needs Plan will be presented to the public. Input will allow a final draft plan to be established.

### Public Hearing No. 1: Draft 2025 Needs Plan – April 14, 2005

The MTPO will conduct, with consultant assistance, the first of two public hearings in April 2005. Hearing No. 1 will address the draft 2025 Needs Plan. Upon request, the agenda for each public hearing will be available in Braille or large print, as well as a recorded (s) version of same. The results of the public hearing will allow the Needs Plan to be finalized and acted upon by the MTPO.

### Public Meeting No. 6: Present Draft Cost Feasible Plan – August 18, 2005

Upon approval by the MTPO of the Year 2025 Needs Plan, the 2025 Cost Feasible Plan will be presented to the public. Input will allow a final draft Cost Feasible Plan to be developed.

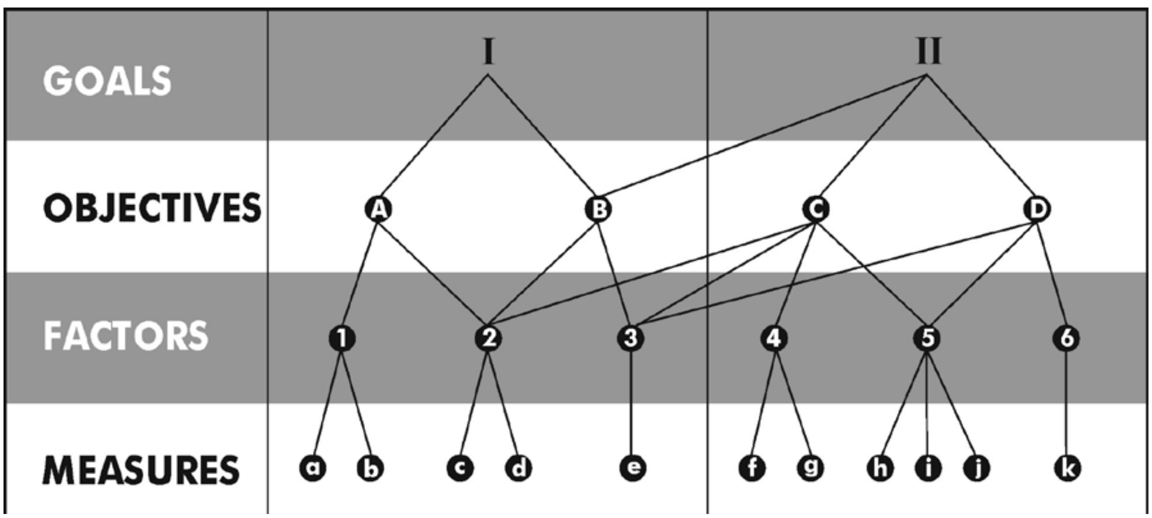
### Public Hearing No. 2: Draft 2025 Cost Feasible Plan – September 29, 2005

The MTPO will conduct, with consultant assistance, a second public hearing, this one on the draft Cost Feasible Plan. The results of the hearing will allow the MTPO to take official action on the Plan.

# 2. Evaluation Process

A community-based evaluation technique helps build consensus for projects. It begins with defining goals and objectives, evaluation factors, and performance measures and their inter-relationship (Figure 2-1).

Figure 2-1
Conceptual Relationship Among Goals, Objectives, Evaluation Factors, and Performance Measures




The following set of goals and objectives is believed to encompass these complementary efforts and represents a starting point for the Gainesville Urbanized Long-Range Transportation Plan Update.

## 2.1 Preliminary Goal Statements

In proposing a set of goals and objectives for this transportation planning process, those developed for the current 2020 Transportation Plan are believed to provide a starting point. They are cited in the following section. Those *italicized* sections are additions by the consultant after a review of the current set of goals/objectives.

## First Goal Statement

Develop and maintain a balanced transportation system that supports the economic vitality and quality of life in the Gainesville metropolitan area through expanded transportation choice, improved accessibility for motorized and non-motorized users and the preservation of environmental, cultural and historic areas.

## Objectives

1.1 Improve regional accessibility to major employment, health care, commerce and goods distribution centers.
1.2 Improve the viability of alternatives to the single-occupant automobile (bicycle, walking, public transit, carpooling and telecommuting) as options for all users of the transportation system through accessibility, convenience and comfort.
1.3 Improve access for pedestrians, bicyclists and transit users to public places and centers of activity.
1.4 Establish an interconnected and continuous system of off-road trails and greenways.
1.5 Coordinate transportation and future land use decisions to promote efficient development patterns and a choice of transportation modes.
1.6 Improve access to transportation facilities and services for elderly, children, disabled and economically disadvantaged individuals.
1.7 Reduce the adverse impacts of transportation on the environment, fragmentation of natural areas and wildlife.
1.8 Minimize the adverse impacts of transportation on established neighborhoods through development of a balanced transportation system.
1.9 Preserve the intended function of the Florida Interstate Highway System (FIHS) and other appropriate corridors for intercity travel and goods movement, but minimize adverse impacts resulting from this policy that are inconsistent with other goals and objectives.

## Second Goal Statement

Develop and maintain a sustainable transportation system that supports and preserves the existing transportation network through compact development patterns, improved system management and operations, coordination and communication.

## Objectives

2.1 Minimize travel distances for work, shopping and recreation.
2.2 Encourage infill and redevelopment in areas that have existing and adequate infrastructure in place.
2.3 Improve the interconnectivity of streets and other components of the transportation system, including sidewalks, bikeways and transit ways.
2.4 Create opportunities for access by all forms of travel at centers for jobs, services, commerce and housing through land use strategies and urban design principles that minimize travel distances and allow for a mix of uses.
2.5 Enhance connectivity between different forms of travel by creating multimodal access hubs within new development or redeveloping areas.

2.6 Implement transportation demand management and system management strategies before adding general purpose lanes to a roadway.
2.7 Improve the operational efficiency of the existing transportation system for all modes of travel based on a balance of needs within the corridor.
2.8 Phase in new vehicle fleets for public agencies that make use of alternative fuels that reduce air quality impacts.
2.9 Coordinate transportation plans and programs with all stakeholders in the transportation system, including the public, public agencies, transit, emergency management, police and fire, etc.
2.10 Develop a balanced transportation system that includes a dispersion of traffic across multiple smaller roads rather than concentrating traffic on a few major roadways.

### Third Goal Statement

Develop and maintain a safe *and secure* transportation system for all users and neighbors of transportation facilities and services.

### Objectives

3.1 Address existing and potential safety *and security* problems on or adjacent to transportation corridors through an interagency planning and prioritization process.
3.2 Implement techniques to calm traffic in residential, educational and commercial areas where walking and bicycling are common.
3.3 Establish criteria and performance standards for roadways to maintain their residential or rural character, as appropriate.
3.4 Ensure roadways are pedestrian/bicycle friendly.
3.5 Improve the pedestrian/bicycle connections between commercial centers and surrounding neighborhoods.

### *Fourth Goal Statement*

*Invest strategically in transportation infrastructure to enhance the vitality of the community.*

### *Objectives*

A. *Give priority to preservation and maintenance of the existing transportation system.*
B. *Develop a financially responsible plan that allocates available resources.*
C. *Preserve current and planned rights-of-way for transportation system improvements.*

## 2.2 Evaluation Factors

To build upon these goals and objectives, if adopted for this project, evaluation factors will be developed from a list of issues to be covered in a transportation plan that is to gain federal approval (Table 2-1). (These issues are summarized in Attachment A.) A preliminary list of evaluation factors will be formed at the fourth public meeting.

Table 2-1
Possible Evaluation Factors

1. Air Quality
2. Coastal Zone
3. Community Cohesion and Community Services
4. Construction Impacts
5. Cultural Resources
6. Development (including secondary development)
7. Energy
8. Environmental Justice
9. Floodplains
10. Geology, Soils, Utilities and Other Engineering Considerations
11. Land Acquisition and Displacements
12. Land Use and Zoning – Consistency with Planning
13. Maintenance of Traffic
14. Noise
15. Prime and Unique Farmlands
16. Socioeconomic Impacts
17. Traffic and Transportation
    - Traffic Volumes
    - Level of Service
    - Accidents/Safety
    - Pedestrians/Bicyclists
18. Water Quality
19. Wetlands
20. Wild and Scenic Rivers
21. Wildlife and Threatened and Endangered Species

Source: Federal Highway Administration (FHWA) 6640.8A and The Corradino Group

Performance measures will be developed to explain the evaluation factors quantitatively and qualitatively. Two examples are: the quantitative measure of congestion along key roadway links or at intersections; and, the qualitative assessment based on professional judgment of the degree to which a community's cohesiveness is affected. Development of the final list of performance measures will involve a trade-off of the desirability of a measure with the difficulty of obtaining data for it. This trade-off will be based on the consultant's and the MTPO's experiences.

Throughout the examination of performance measures, community participation needs will always be in focus. The following question will be asked throughout in the process: How can data, particularly graphics generated in the analysis, be designed for use in public presentations? Coordination of the collection and presentation of data will ensure efficient allocation of the study's resources.

A Michigan-based project provides an example of how this process has been used successfully in the past.

## Performance Measures

Once the evaluation factors have been established, measures of how the alternative transportation plans perform are defined. Again, Table 2-2 presents an example of performance measures by the factors listed in Figure 2-2. As the Gainesville transportation plan update proceeds, measures, such as these, will be developed for review by the TAC, CAC, B/PAB, the MTPO and the public.

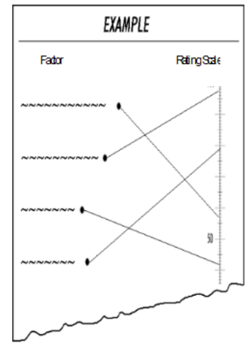
Figure 2-2

## Detroit Intermodal Freight Terminal Project
## Scoring Form – Evaluation Criteria

*How Important Are These Items?*

We want to know how you value the eight evaluation criteria/factors listed below. To provide us your opinion, please rate them on the scale of "1" through "100", with the highest rating indicating the item you believe is <u>most important</u>. Draw a line from the dot (·) following each factor on the left, to the scale on the right, to indicate your opinion. When finished, return your form to a project representative, or by email, or by fax at the addresses listed at the bottom of this form.

Your opinions will be used to evaluate the Illustrative Alternatives of the Detroit Intermodal Freight Terminal Project. Thank you.




| Factor | | Rating Scale |
|---|---|---|
| Air Quality | • | 100 |
| Community Cohesion | • | |
| Displacements | • | |
| Engineering Difficulty | • | |
| Environmental Justice | • | 50 |
| Historic Properties | • | |
| Noise | • | |
| Traffic Flow | • | 0 |

www.mdot.state.mi.us/projects/DIFT
Hotline: 313.964.4543
Fax: 313.964.1984

Table 2-2
Example Performance Measures

| Evaluation Factor | Performance Measure |
|---|---|
| Air Quality | CO concentrations at W points in the network (selected in cooperation with TAC and CAC/BPAB) and consistent with noise, community cohesion, and safety analysis. |
| Community Cohesion | Projected traffic volumes/speeds on X sensitive (environment, aesthetics, social) roadway segments. |
| Displacements | Number of residential and business properties taken. |
| Mode Choice | Percent transit, non-motorized, multiple occupant, and single occupant trips by TAZ and area total. |
| Environmental Justice | Direct (taking) and indirect (number of projects by mode) that are in areas of expected concentration of low income and/or minority populations, as defined by the U.S. Census. |
| Open Space | Number of acres of public and non-public park potentially lost.<br><br>New impervious surface. |
| Noise | Expected “significant change” in noise due to traffic volume change at Y points. |
| Traffic Flow/Level of Service by Mode | Level of service in major corridors of non-motorized, transit and motorized modes.<br><br>Change in travel time from baseline system for up to Z origin-destination pairs (selected in cooperation with TAC and CAC/BPAB). |

# 3. Next Steps

This memorandum is to be reviewed first by the MTPO and members of the TAC and CAC/BPAB. Once reviewed and refined, it will be presented at the first public meeting, now scheduled for March 18, 2004. Public input will allow further revisions in the communications strategy. Contact with the project can be made by visiting the Web site at www.ncfrpc.org and click on the "Transportation" button.

# Attachment A

## Summary of Analysis Issues

# Summary of Analysis Issues

## Introduction

A summary definition of the analysis issues presented on Table 2-1 of the main body of this report is provided here. Not all apply and others of lesser effect on developing the 2025 transportation plan for the Gainesville Urbanized Area will be screened out of the process beginning at the March 18 public meeting.

Air Quality – The US EPA sets standards to protect health and human welfare. For transportation projects, concentrations of carbon monoxide (CO) near "hot-spot" intersections, and the total annual amount of pollutants generated in an area, with and without a project, can be estimated.

Coastal Zone – Where a project is within or likely to affect land or water uses within an area covered by a state Coastal Zone Management Program, the project must be determined to be consistent with planning under the program. This is an issue that does not apply to the Gainesville situation.

Community Cohesion/Community Services – Transportation corridors can provide a focal point for a community, or divide a community by the magnitude of their presence and/or their position as a barrier to safe pedestrian movement. Emergency services need good access to those they serve and community services must be accessible. A transportation project can enhance or inhibit such access.

Construction Impacts – These impacts, generally of a short term, can include air quality (especially dust) issues, noise from construction equipment, the need to maintain traffic, and erosion from earth moving activities.

Cultural Resources – These are sites or objects that yield information about history or prehistory that are above and below ground. If they are eligible for inclusion on the National Register of Historic Places, based on established criteria, they are protected by law. They may be archaeological sites, historic sites, and architectural examples. They may be individual sites or multiple adjacent sites that together form a district.

Development (including secondary development) – There is a recognized relationship between development and transportation systems (along with other systems, especially water and sewer). Good planning develops transportation improvements in concert with expected growth.

Energy – Transportation improvements, once built, change energy consumption by making travel more or less efficient, encouraging longer trips and the like.

Environmental Justice – Consideration must be given to whether facilities are sited in a manner that does not place a disproportionate burden on low-income and minority persons.

Floodplains – Areas that flood with some frequency are mapped so that development there, including transportation facilities, is avoided to the extent possible. Filling floodplains can cause water levels to rise, putting persons and property at risk, and affect biological resources often associated with these areas.

Geology, Soils, Utilities, and Other Engineering Considerations – Special challenges are posed by natural and manmade features such as: areas where there are special groundwater considerations; the presence of peat or other soils that offer a poor foundation for roads and buildings; and, the presence of high power electrical lines. The cost-effectiveness of construction versus avoidance must be weighed.

Land Acquisition and Displacements – An important consideration when planning transportation improvements is the effects on displacing (acquiring) homes and businesses.

Land Use and Zoning – Transportation improvements need to be consistent with other planning efforts, particularly local and regional land use plans. Zoning defines the kinds of development allowed presently. Comprehensive plans (which may have a transportation element) depict a community's vision of the future and offer a means of addressing zoning change requests.

Maintenance of Traffic – Short-term changes in access due to construction can have economic effects. How access is maintained, where detours are placed, and how long construction continues are related to construction cost, convenience to the public, and business viability. Normally, these impacts are addressed in a preliminary way during planning, and then specifics are developed later during the design stage.

Noise – Noise from transportation sources increases in a perceptible way when traffic doubles or the distance to the noise source (e.g., a road) is halved. Where defined noise levels are exceeded, noise mitigation must be considered, if federal dollars are involved in a project. Where reasonable (cost-based) and feasible (can it be built?) mitigation is possible, it is implemented.

Prime and Unique Farmlands – Federal law helps protect farmland, especially flat productive land, so that alternatives to its use must be considered, if significant amounts are to be taken for a federal project.

Socioeconomic Impacts – Changes in travel patterns may affect special groups, such as the elderly and/or disabled. Such issues must be assessed in developing a transportation plan.

Traffic and Transportation – Transportation projects are designed to improve travel. The measures of these improvements include:

- changes in traffic volumes;
- changes in vehicle occupancy;
- changes in public transit usage;
- the Level of Service, meaning travel time and maneuverability;
- changes in accidents; and,
- provision of adequate facilities to serve pedestrians and bicyclists.

Water Quality – Runoff during construction is normally regulated by specifications written into construction plans. After construction, concern for water quality is related to effects on sensitive water resources such as reservoirs, ground water recharge areas, high quality streams, wetlands and lakes. Stormwater running off paved surfaces carries a variety of pollutants and is usually not discharged directly into such areas.

Wetlands – Because of their ability to improve water quality and support biological systems, state and federal laws protect wetlands. Wetlands may be used sparingly for projects, but if they are used, then a careful program of mitigation must be developed, approved and then monitored to replace the wetlands lost.

Wild and Scenic Rivers – Federal law protects certain nationally designated rivers.

Wildlife and Threatened and Endangered Species – State and federal law protect such species, and in some cases their habitat. A biological inventory may be performed during a study if, after coordination with state and federal resource agencies, there is concern that species that are threatened or endangered may be present.

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# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 2
## Mapping and Data Development

Prepared for:

The Metropolitan Transportation Planning Organization

Prepared by:

The Corradino Group, Inc.

December 2005

Technical Report 2
Mapping and Data Development

# 1. Introduction

Technical Report 2 (TR2) documents the development of mapping and data for the Long Range Plan Update. This report has two main sections: mapping and development of data.

# 2. Mapping

The maps that are part of the travel demand forecasting process are files either native to CUBE-Voyager or ArcView shape files. The tremendous detail in these files is difficult to show in this report. Thus, representative versions of the maps are presented in this report, and the full files are included as part of the mapping and model files contained on the DVD that accompanies this report. The projection for all maps developed for this study is NAD83, Florida North, feet.

Maps are:

- Alachua County Transportation Planning Boundaries from the MTPO (Figure 1).
- TAZ map (Figures 2, 3 and 4).
- Travel model highway network (Figure 5)
- Travel model transit network (Figure 6)
- Travel model screenlines (Figures 7 and 8)

The MTPO staff prepared the map of Alachua County transportation planning boundaries (Figure 1). The map depicts the Alachua County Boundary, municipalities, the 2000 Census Urban Area boundary and the expect 2025 Metropolitan area. This is the only map that is not part of the travel model.

The TAZ map (Figures 2, 3 and 4) is an ArcView shape file, and can be found on the DVD included in this report. The map can be plotted from ArcView at any scale. While TAZ numbers 1-499 are reserved for internal TAZs, the highest numbered polygon in the TAZ system is 466, and there are 453 TAZs. Including external stations, the highest TAZ number is 525. The shape file database contains year 2000 zonal data that are left over from model development, but which are not the current zonal data used in the model. The TAZ shape file is used by the model, and tells which TAZs are part of four Districts:

1 – Downtown Gainesville
2 – East Gainesville
3 – UF Campus
4 – UF southeast campus (main area)

The highway network database is in CUBE-Voyager (CV) format, and is part of the model (Figure 5). It can be opened and plotted from the model flowchart. CV also contains utilities to export the network and attributes, including assignment results, to a shape file. Figure 5 depicts the network, color-coded by one-digit facility type. As noted in Technical Report 4, the model network contains many data attributes in addition to facility type codes.

The transit network database is displayed in Figure 6. The format of the database is a CV Public Transport lines file. This file and all of the accompanying data can be accessed from the CV model flowchart. The only practical way of plotting the transit line data if from the CV software.

Maps of the screenlines (Figures 7 and 8) were developed as CV drawing files, which overlay the CV highway and transit network files in CUBE. The only practical way to display and plot these files is from the CV software. Please note that these file files do not have a function in the model other than to display the location of the screenlines.

Figure 1
Transportation Planning Boundaries

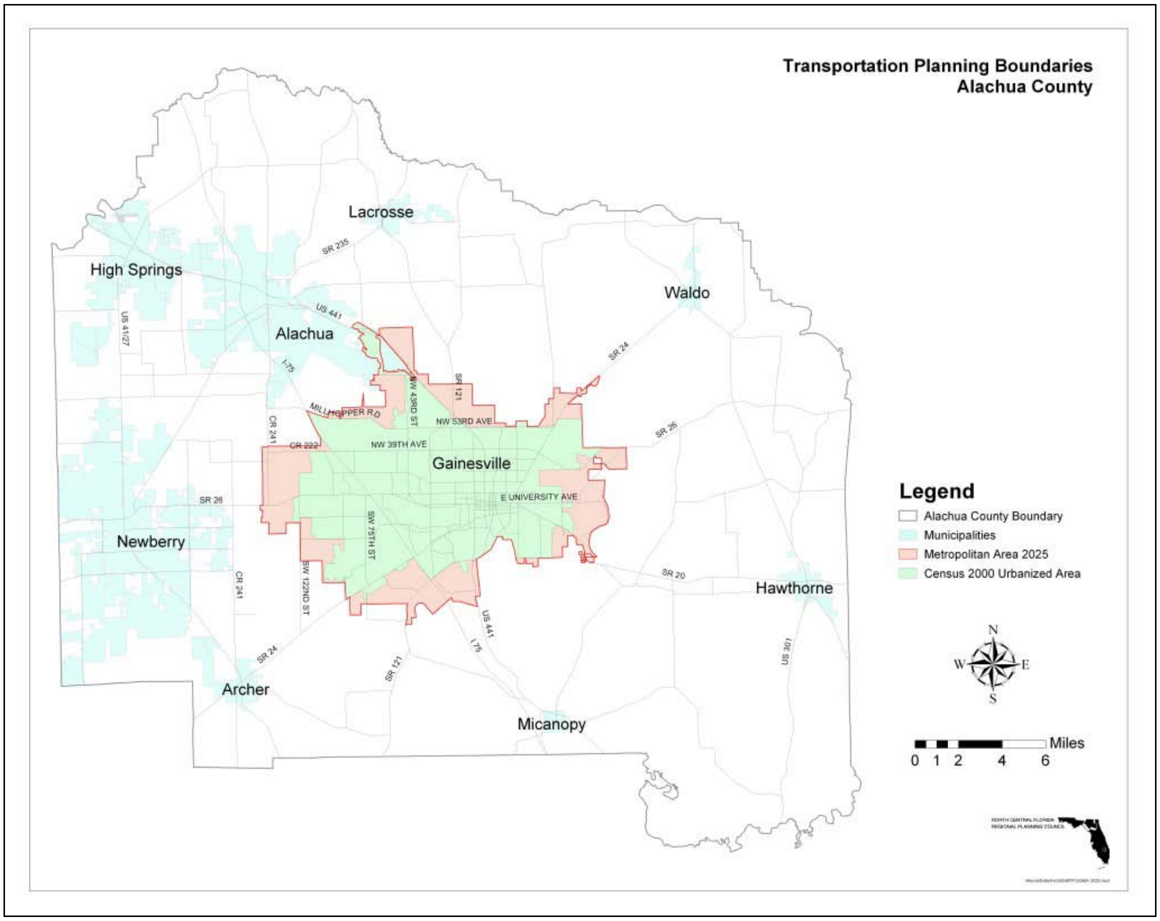


Figure 2
TAZ Map

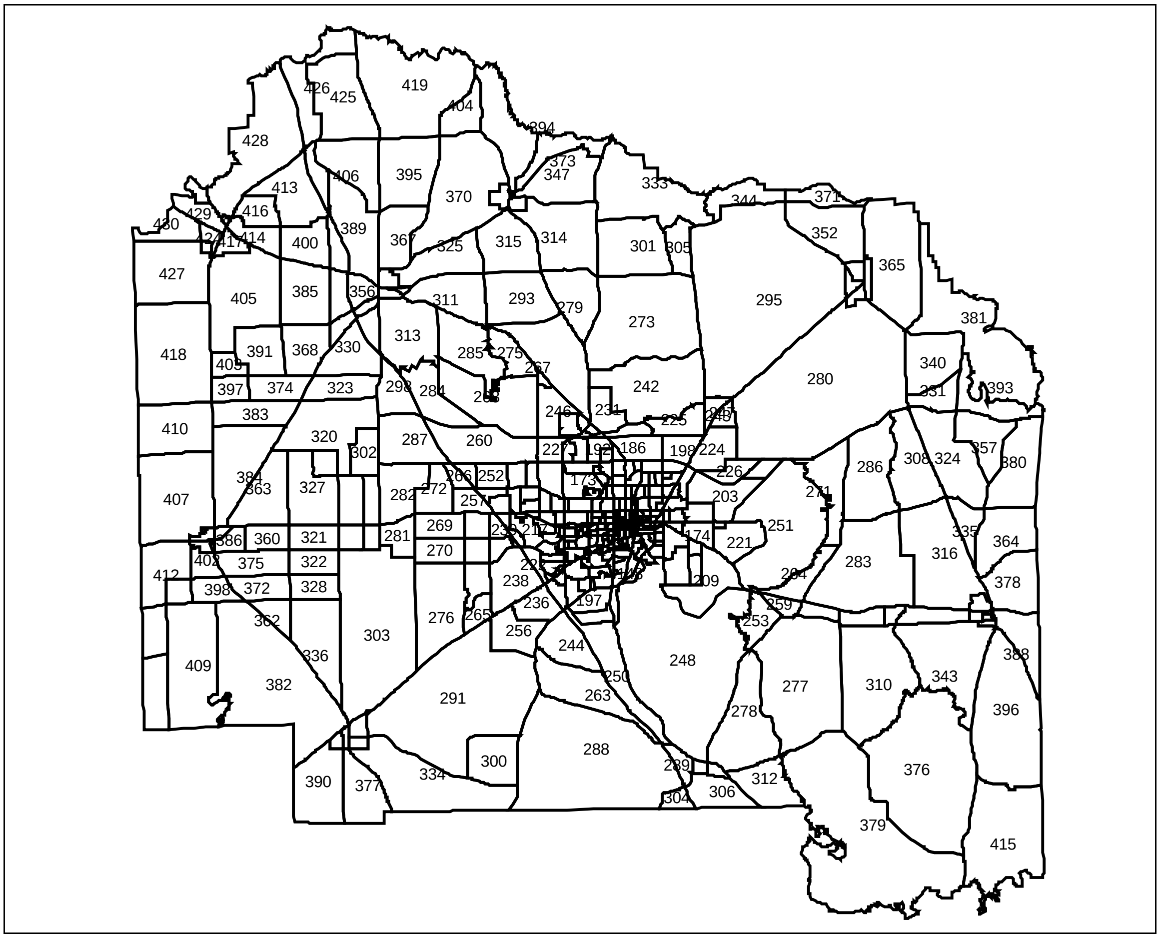


Figure 3
TAZ Map Inset

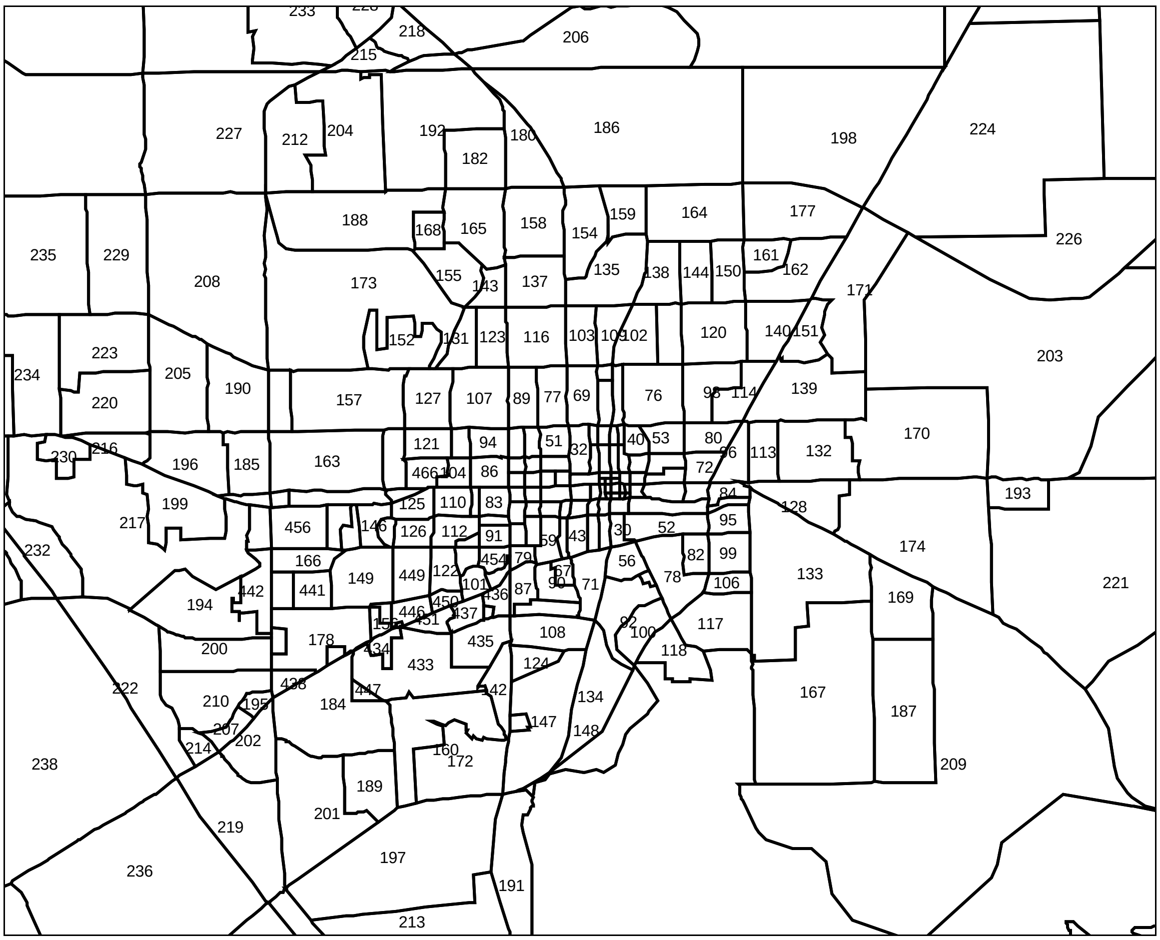


Figure 4
TAZ Map CBD

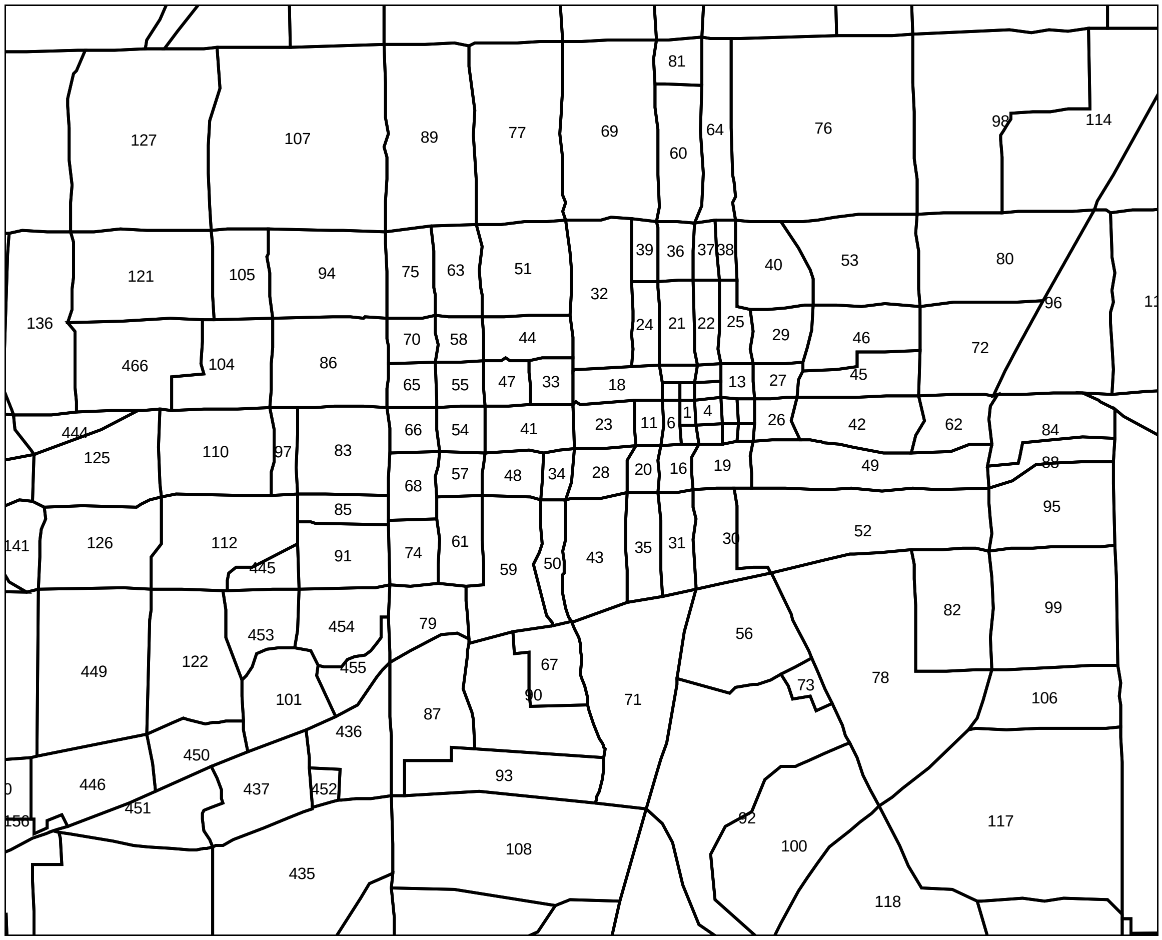


Figure 5
Highway Network

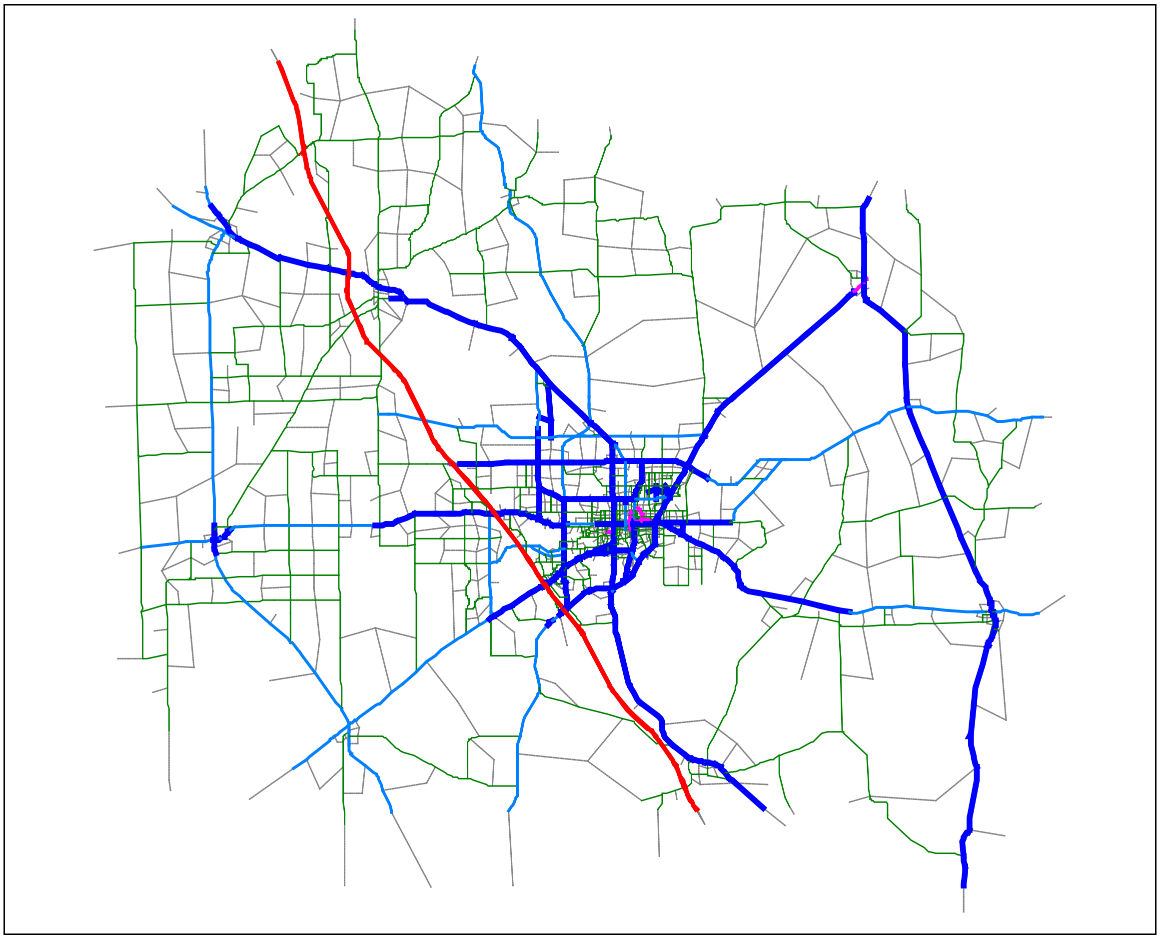


Figure 6
Transit Network

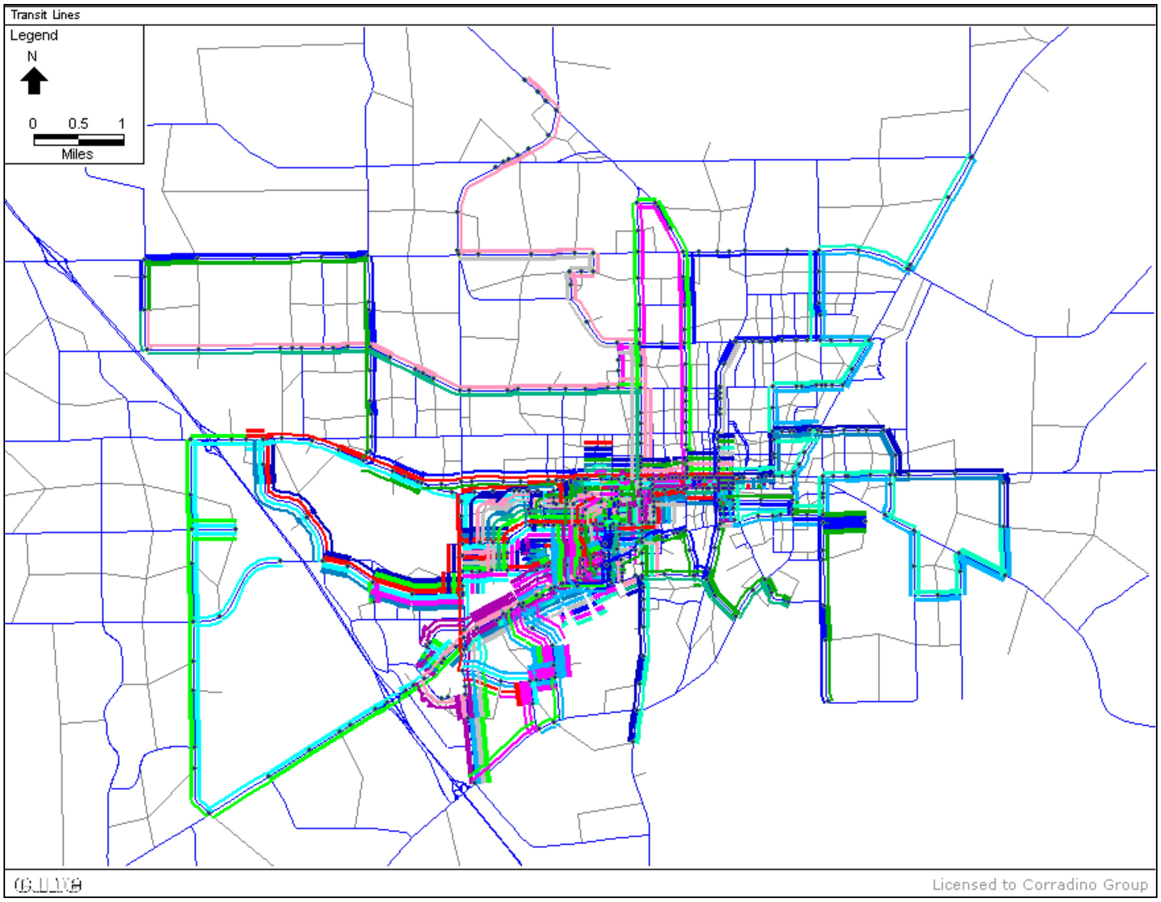


Figure 7
Screenlines

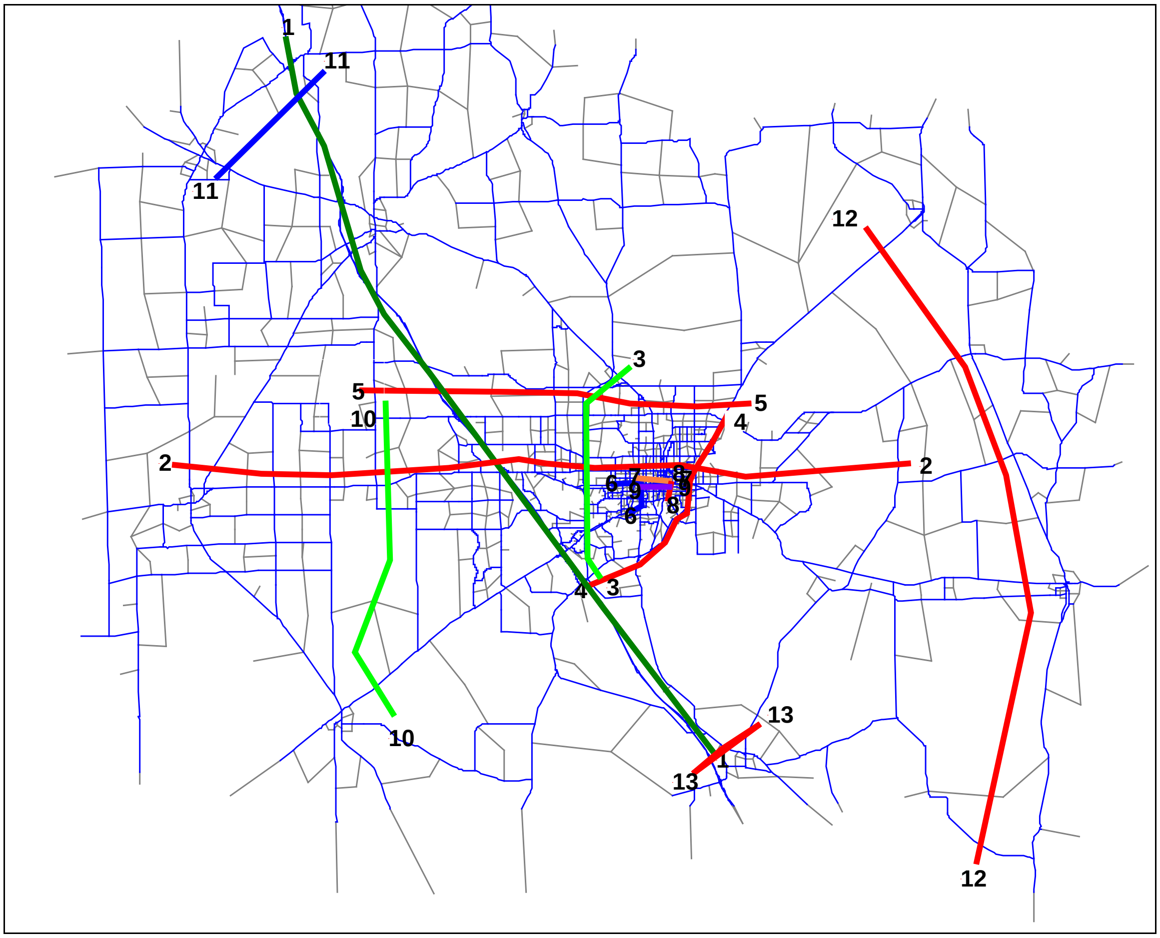
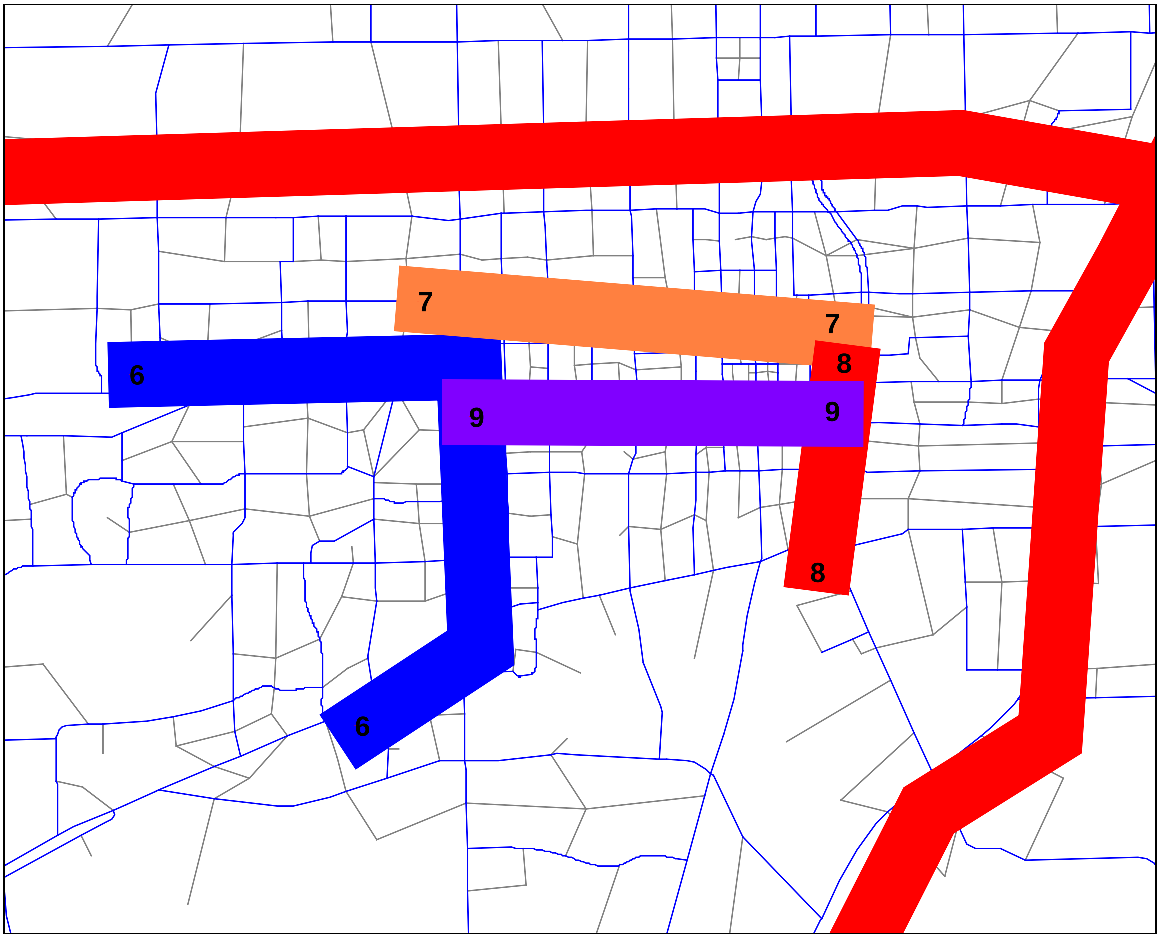


Figure 8
Screenlines – CBD Inset



# 3. Data Development

## 3.1 Zonal Data

The MTPO staff developed zonal data (ZDATA1 and ZDATA2) for the model. The MTPO's report is included as Appendix A. The zonal data files are stored as part of the model and can be accessed through the CV model flowchart. ZDATA1, household data, and ZDATA2, employment data are stored a database (DBF) files. Definitions of the data fields used in these databases appear in Technical Report 4. As noted earlier,

ZDATA3, special generators, is a standard ASCII text file. The format for this file is described in Technical Report Number 4. Data for ZDATA3, special generators, were developed in consultation with the MTPO staff during model validation activities. Examination of the model results showed that the model was underestimating travel in major shopping areas, near UF, and near the Santa Fe Community College. Special generator data are listed in Technical Report 4.

External data comprise the internal-external travel in ZDATA4, and through trips. In the absence of a current external origin-destination survey, external travel was estimated from traffic counts and the old 1990 model through trip table.

External-external trips, estimated from a base 2000 trip table (EETRIPS.DBF), were distributed with a Fratar model to a set of control totals (EETarget.dbf) with fields:

- TAZ – TAZ number
- EEO – Origin vehicle trips
- EED – Destination vehicle trips

To support these trip purposes, a UF zonal data file was developed (DBF format). Contents of the data file were:

- TAZ - Zone number
- UF-OC-ST – Number of UF off-campus student residents, estimated from student address records provided by UF.
- UF-DORM-ST – Number of on-campus UF student residents
- UF-PARKING – UF commuting parking spaces (excluding on-campus student long-term not used for commuting). This variable is also used to reallocate service employment as noted above.
- UF-EMP – Number of UF place-of-work employees by TAZ. This variable is also used to reallocate service employment as noted above.
- CLASSROOMS – Number of UF classrooms (not used by the model)
- SEATS – Number of UF classroom seats
- CLASSSQFT – Square feet of UF classrooms (not used by the model)

## 3.2 Highway Network

The base highway network has its origin in a GIS database provided to the MTPO by Caliper (when TransCAD was the adopted modeling software). While the network was still in TransCAD format, the consultant and MTPO staff and edited network attributes and geometry to ensure the network was an accurate representation of actual conditions. After the decision by FDOT/MTF to adopt CV, the consultant, working with Citilabs, converted this database to a TP+ network. The coordinate system for the TAZs and network database is NAD83, Florida North, feet. All highway network data were reviewed by the consultant, and reviewed again by the MTPO staff.

Traffic counts were obtained from several sources and were placed in the CV model networks. Counts present 2000 peak season ADTs, following the FSUTMS convention. Sources for traffic counts were the 2000 Florida Traffic Information CDROM, the FDOT Roadway Characteristics Inventory (RCI), and the MTPO's congestion management database.

## 3.3 Transit Network and Service Data

The consultant developed transit network and service data from several sources. These data were used to code the CV Public Transport model networks, and to establish mode choice and transit assignment model targets. Data that were used in the development of the transit model included:

- The 2002 Comprehensive Operational Analysis (COA) for the Gainesville Regional Transit System (RTS).
- ArcView shape file of transit routes provided by the RTS.
- Ridership profiles and monthly ridership counts provided by RTS.
- Operating data obtained from the National Transit Database.

## 3.4 Revenue Forecasts

The revenue forecast, which governs the amount of funding for the Cost Feasible Plan, was provided by the Florida Department of Transportation. It is presented in Appendix B.

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## EXECUTIVE SUMMARY

In December 2000, the Metropolitan Transportation Planning Organization (MTPO) for the Gainesville Urbanized Area adopted the Gainesville Metropolitan Area 2020 Transportation Plan: Livable Community Reinvestment Plan. Every five years, the Federal Government requires MTPOs to update their adopted transportation plan and to reassess area-wide transportation needs. This document is the first of several memorandums that will document the plan update.

The purpose of this report is to document the development of existing (2000) and future year (2025) socioeconomic data and to discuss the variables associated with the data development. As part of the plan update, the data presented in this report will be used to validate our existing Gainesville Urbanized Area Transportation (GUATS) model. The process of validation is to estimate model generated traffic volumes using existing (2000) socioeconomic data and to compare those results to known traffic counts. This provides an estimate of how well the model predicts existing traffic behaviors. Mathematic adjustments are then made to the computer model to the point where it accurately replicates known traffic counts for the base year 2000.

In addition to the base year 2000 socioeconomic data, this report includes corresponding data for the 2015 (interim) and 2025 (horizon). This data was developed under a cooperative effort between the planning staffs of Alachua County, City of Gainesville, City of Alachua, City of Newberry and the University of Florida.

The base year data for this report was obtained from the U.S. Census Bureau for the year 2000. Year 2015 and 2025 population data was developed using projections reported by the University of Florida's Bureau of Economic and Business Research. Future year economic data was estimated using growth projections provided by the State of Florida, Department of Workforce Innovation. Specific information compiled for this report includes:

1. Population;
2. Single-family dwelling units;
3. Multi-family dwelling units;
4. Vehicle ownership;
5. Hotel/Motel units
6. Employment
7. School enrollment; and
8. Population in group quarters.

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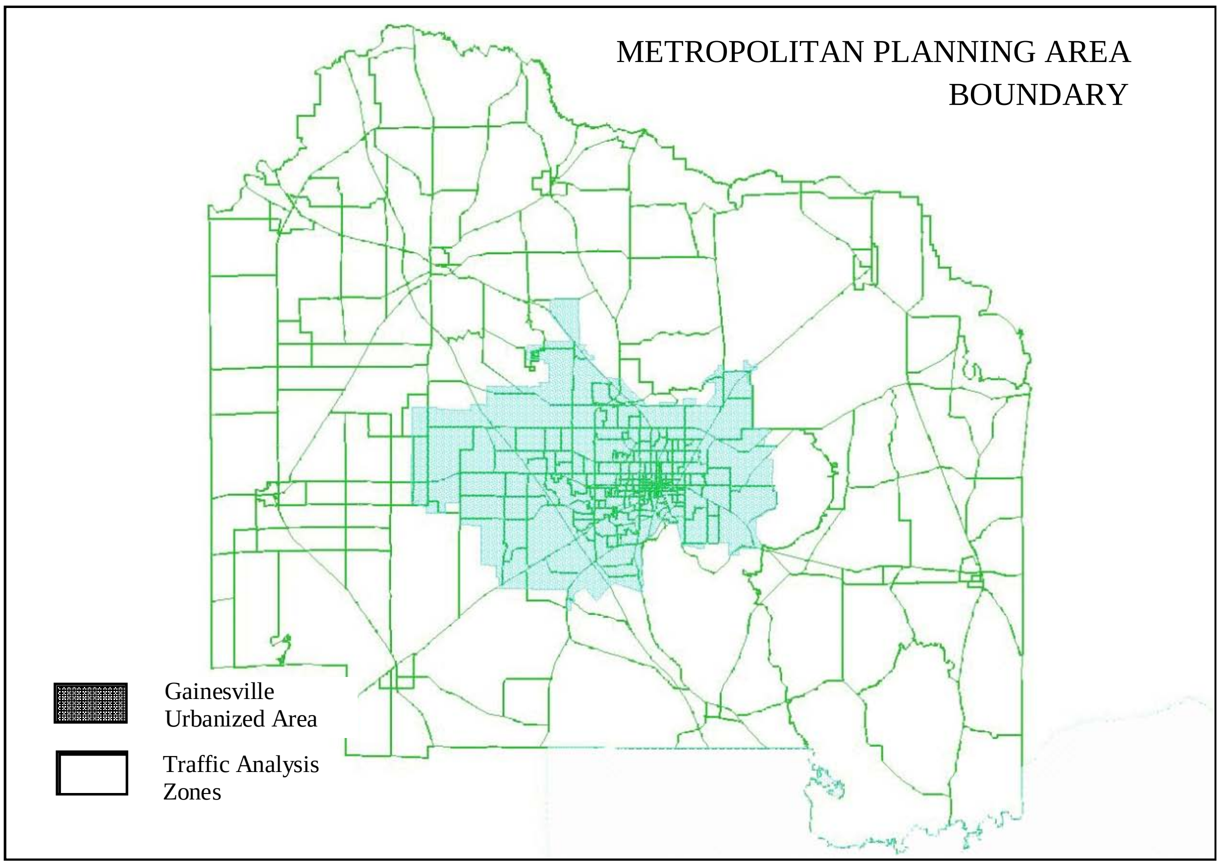
# I

## INTRODUCTION

This report provides an estimate of base year (2000), interim year (2015) and future year (2025) socioeconomic data for Alachua County. This data will be used to develop a long-range transportation plan and to estimate future year transportation needs. The boundaries of the study area and the metropolitan planning area boundary are shown in Illustration I.

**ILLUSTRATION I**




The information in this report for 2000 is used in the model validation phase of the Year 2025 update of the GUATS model. As part of the plan update, the data presented in this report will be used to validate our existing Gainesville Urbanized Area Transportation (GUATS) model. The process of validation is to estimate model generated traffic volumes using existing (2000) socioeconomic data and to compare those results to known traffic counts. This provides an estimate of how well the model predicts existing traffic behaviors. Mathematic adjustments are then made to the computer model to the point where it accurately replicates known traffic counts for the base year 2000.

The interim year and horizon year socioeconomic projections are used to predict future traffic volumes in Alachua County. This information is analyzed to identify necessary transportation network modifications in order to address future year system demands.

## FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE (FSUTMS)

Transportation planning in the state of Florida uses a standard model structure labeled the Florida Standard Urban Transportation Model Structure (FSUTMS) to perform existing and future year travel demand forecasting. The process of travel demand forecasting is an attempt to quantify the amount of travel on a given transportation system at some point in time. The following sections discuss the travel demand forecasting process and the associated socioeconomic data inputs.

Since 1978, the Florida Department of Transportation (FDOT) has developed a series of standardized modeling procedures for use in urbanized transportation studies within the state. These procedures were developed to standardize models across the state because:

1. different data requirements in each of Florida's urbanized areas made maintenance of multiple computer models cumbersome; and

2. federal funding for expensive origin-destination surveys used to update original model results was in short supply.

## TRAVEL DEMAND FORECASTING
## THE TRADITIONAL FOUR STEP PROCESS

A four step process has been developed within the transportation planning community to forecast and quantify future travel demand within a given area. A summary of the traditional travel demand forecasting process is provided in Illustration II. The four steps in this process are:

**1.** Trip Generation - forecasts of the number of trips produced in the study area.

2. Trip Distribution - mathematical calculation of where trips will go.

3. Mode Split - prediction of how trips will be divided among the available modes of travel (i.e., auto, transit, bicycle and pedestrian.)

Trip Assignment (highway and transit) - prediction of routes that trips will take based on facility congestion and projected travel times.

**ILLUSTRATION II**

## TRIP GENERATION - INPUT DATA

The first step in forecasting future travel demand using the traditional four-step process is trip generation.  This process is a forecast of the number of trips that will be made in a given geographic area.  The social and economic inputs necessary to estimate trip generation are associated with location and intensity of development.  Examples of these inputs include:

1. where people live;

2. the number and type of households;

3. the number of vehicles per household; and

4. the number of employees for service, commercial and industrial activities.

## TRAFFIC ANALYSIS ZONES (TAZs)

Trip generation information is developed for blocks of land called "traffic analysis zones" or TAZs. The boundaries of these zones are geographical areas that include relatively homogeneous land use activities and are defined, generally, by both the total number of trips produced and by the existing roadway network. These zones are the basic geographic units that define the source of travel demand. For this model update, Alachua County is defined by 446 TAZs. These zones vary in size with the smallest representing a single city block while the largest spanning several square miles. Illustrations III and IV show the TAZs that represent Alachua County and the metropolitan planning area respectively.

## ACTIVITY FORECASTS BY TAZ

The travel demand process uses current estimates and future year projections of socioeconomic information by TAZ. These estimates and projections of socioeconomic information at the TAZ level establish a foundation for the model validation process. Activity forecasts by TAZ are made using the following socioeconomic and land use information:

**1.** area population and employment forecasts;

2. expected location behavior of people and businesses; and

3. local land development policies contained in the City of Gainesville and Alachua County Comprehensive Plans.

## U.S. CENSUS BUREAU - YEAR 2000 CENSUS DATA

The population and housing data compiled for this report is based on year 2000 U.S. Census Bureau information. This data is reported by the Census at the block and block group level. For the purposes of this update, the block and block group Census data was aggregated and assigned to model TAZs using Geographic Information System (GIS) software. This data was then verified through a system-wide check performed by the planning staffs of the MTPO, Alachua County, City of Gainesville and the University of Florida. Specific area coverages were checked by the staffs of the City of Alachua and the City of Newberry for their respective jurisdictions.

## INFO USA - YEAR 2000 ECONOMIC DATA

Base year economic data was obtained from Info USA. This is a private data development company contracted by the Florida Department of Transportation to compile and report economic data for the state on a county by county basis. This data was georeferenced using GIS and assigned to a model TAZ. Similar to the population/housing data defined above, countywide economic data was verified through the staffs of each local jurisdiction.

**ILLUSTRATION III**

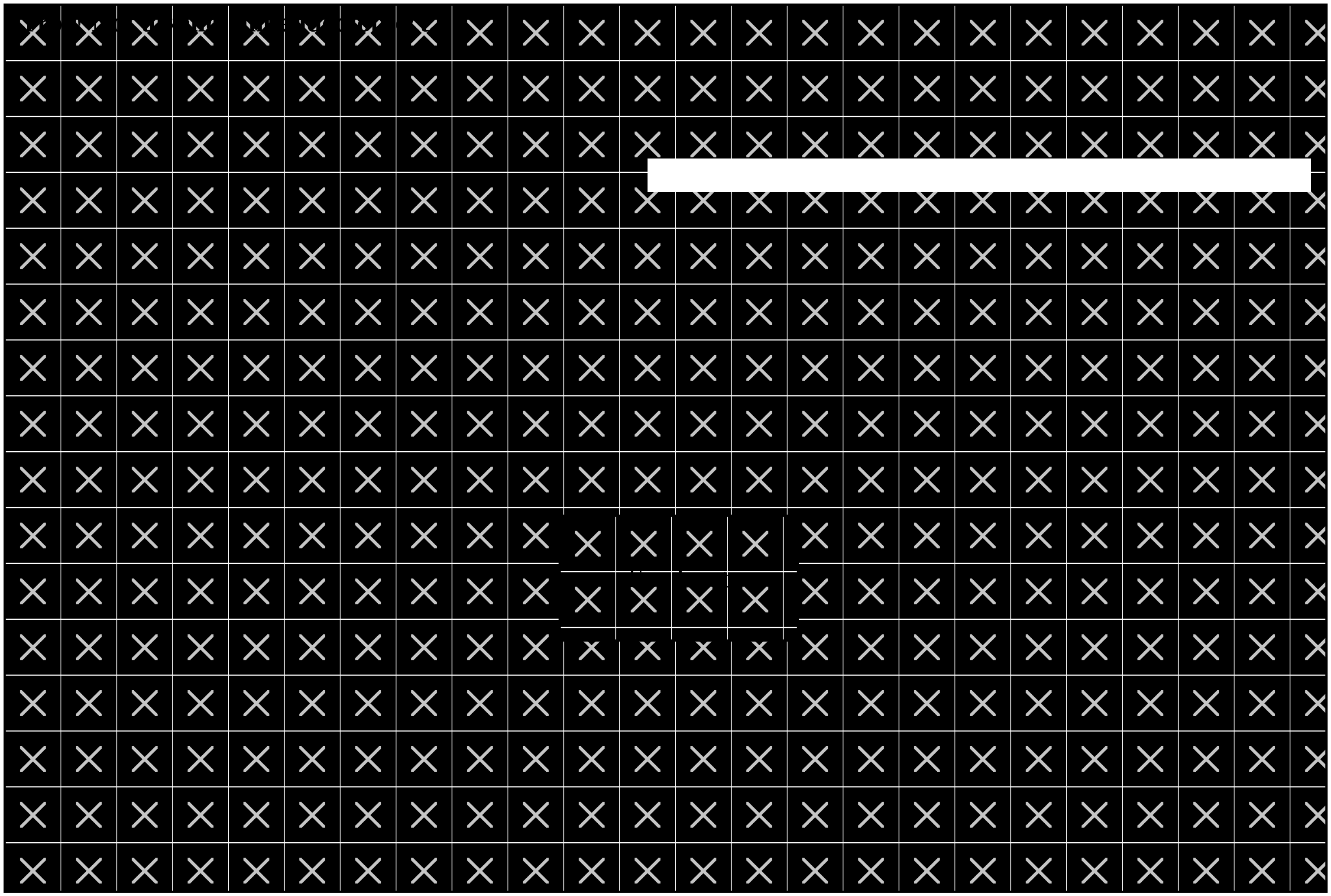


ILLUSTRATION IV

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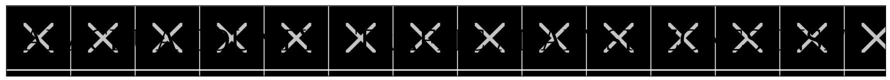

## II

## POPULATION ESTIMATES AND FORECASTS

Population estimates and forecasts for Alachua County provided in this report are summarized in Table 1 below and illustrated in Illustration V. As noted below, current countywide population projections are marginally higher than projections developed for the last plan update. The latest projections indicate a declining growth rate over time but still outpaces the projected growth rate reported in the last plan update and indicates that the expected countywide population will exceed 300,000 by 2025.

TABLE 1

POPULATION ESTIMATES AND FORECASTS
ALACHUA COUNTY, 2000 - 2025

| YEAR | 1998 FLORIDA STATISTICAL ABSTRACT | 2003 FLORIDA STATISTICAL ABSTRACT |
|---|---|---|
| 2000 | 219,800 | 217,955 |
| 2005 | 236,900 | 238,800 |
| 2010 | 253,200 | 256,100 |
| 2015 | 268,100 | 273,000 |
| 2020 | 282,400 | 287,700 |
| 2025 | Not Forecast | 301,700 |

ILLUSTRATION V

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III

## SOCIOECONOMIC VARIABLES

Measures of the amount and character of urban activity are necessary inputs to the FSUTMS software. FSUTMS uses these socioeconomic variables in the trip generation process. These variables are described in more detail below.

## SINGLE-FAMILY VARIABLES

### DWELLING UNITS

Variable# 1 - Single-Family dwelling units
Variable #2 - Percent single-family dwelling units not occupied by permanent residents
Variable #3 - Percent single-family dwelling units vacant
Variable #4 - Population in single-family dwelling units occupied by permanent residents
Variable #5 - Persons per single-family household

## MULTI-FAMILY VARIABLES

### DWELLING UNITS

Variable #9 - Multi-Family dwelling units
Variable #10 - Percent multi-family dwelling units not occupied by permanent residents
Variable #11 - Percent multi-family dwelling units vacant
Variable #12 - Population in multi-family dwelling units occupied by permanent residents
Variable # 13 - Persons per household

## VEHICLE OWNERSHIP VARIABLES

Single-family

Variable #6 - Percent households occupied by permanent residents having no vehicle
Variable #7 - Percent households occupied by permanent residents having one vehicle
Variable #8 - Percent households occupied by permanent residents having two/>vehicles

Multi-family

Variable #14- Percent households occupied by permanent residents having no vehicle
Variable #15- Percent households occupied by permanent residents having one vehicle

Variable #16- Percent households occupied by permanent residents having two/>vehicles

## HOTEL/MOTEL VARIABLES

Variable #17- Hotel/Motel units
Variable #18- Percent hotel/motel units occupied
Variable #19- Persons in occupied hotel/motel units
Variable #20- Persons per unit in occupied hotel/motel units

## EMPLOYMENT VARIABLES

Variable #21- Industrial employment by place of work
Variable #22- Commercial employment by place of work
Variable #23- Service employment by place of work
Variable #24- Total employment by place of work

## SCHOOL ENROLLMENT VARIABLES

Variable #25- School enrollment

## PARKING COST VARIABLES

Variable #26- Short-TERM parking cost- not used
Variable #27- Long-term parking cost- not used

Note: Short term and long term parking cost variables are not reported in this document. Historically, the GUATS model has not utilized these variables because they have no significant impact on model results due to the County's community size and character.

# IV

## SINGLE-FAMILY VARIABLES

FSUTMS requires information about both single-family and multi-family dwelling units by TAZ. This Section provides a more detailed discussion on single-family variables and their relationship to FSUTMS. The following five single-family zonal variables used by FSUTMS are:

Variable #1- single-family dwelling units

Variable #2- percent single-family dwelling units not occupied by permanent residents

Variable #3- percent single-family dwelling units vacant

Variable #4- population in dwelling units occupied by permanent residents

Variable #5- persons per household

## DEFINITIONS

Single-family dwelling units are defined as year-round housing units whether occupied or vacant, excluding seasonal housing units and migratory labor housing units unless occupied, made up of living quarters for only one household detached from any other house, excluding mobile homes and trailers.

## VARIABLE #1 - SINGLE-FAMILY DWELLING UNITS

### BASE YEAR ESTIMATE'S METHODOLOGY

The methodology used to estimate 2000 single-family dwelling units by TAZ within Alachua County is as follows:

4. 2000 Bureau of the Census block level information from Summary Tape File 1B for single-family dwellings units was recorded for each TAZ in the County; and

5. 2000 estimates of total dwelling units by TAZ were verified by the City of Gainesville, Department of Community Development, Planning Division, the Alachua County Office of Planning and Development, the City of Alachua Planning Department, the City of Newberry Planning Department and the University of Florida Department of Facilities and Planning Management.

FORECASTS YEARS' METHODOLOGY

The methodology used to estimate single-family dwelling units by TAZ within the County is as follows:

4. The population of each TAZ was used as a control to project single-family dwelling units for the forecast years. The increase in the total number of dwelling units by TAZ was made to balance to the total County population projections for the forecast years. The increase in total dwelling units was classified into single-family and multi-family dwelling units based, in part, upon the single-family/multi-family relationship which existed in 2000. Along with the population information, the current zoning, future land use maps and aerial photography of the County were primary sources of land use data used in this procedure. This information was used to identify areas where significant residential growth has occurred since the base year and is expected to occur in the future. This residential growth was factored into the TAZ data.

5. The increase in the number of single-family dwelling units from 2000 to the forecast years was then distributed to the appropriate TAZ. The final number of single-family dwelling units was calculated using the population of each TAZ, the persons per household (variable #5) and the vacancy rate (variable #3).

6. The distribution of single-family dwelling units was compared with the holding capacity (amount of land that can be developed) of each defined TAZ. The capacity of individual TAZ's was estimated by using information contained in the current zoning, future land use maps and aerial photography. Based upon review of that information, adjustments to the number of single-family dwelling units for appropriate TAZ's were made for the forecast years.

7. The methodology used to project ZDATA1 (population and housing) variables for all other outlying municipalities (High Springs, LaCrosse, Micanopy and Waldo) was based on existing 2000 population distributions as a percent of total county population. This distribution percentage was held constant for future year projections and applied to the estimate of countywide net growth for the year 2025. These distribution percentages were reviewed by the participating agencies and represented a percentage change in population of approximately 36 percent by municipality.

## VARIABLE #2- PERCENT SINGLE-FAMILY DWELLING UNITS NOT OCCUPIED BY PERMANENT RESIDENTS

Percent single-family dwelling units not occupied by permanent residents are defined as the percentage of single-family dwelling units that are vacant or are occupied by seasonal residents who regularly reside in a permanent residence elsewhere.

### BASE YEAR ESTIMATE'S METHODOLOGY

Seasonal residents have a permanent residence in another area and locate in Florida for only certain seasons of the year. In Florida, many seasonal residents locate in the southern parts of the state for the winter months. Alachua County does not have a significant number of seasonal residents like some parts of the state. Therefore, the information which is used for Variable #3 (the percent single-family dwelling units vacant) is assumed to accurately estimate the percent of single-family dwelling units not occupied by permanent residents.

### FORECAST YEARS' METHODOLOGY

As in the base year, it is assumed that the County will not have a significant number of seasonal residents in the forecast years. Therefore, the information which is used for Variable #3 (the percent single-family dwelling units vacant) is assumed to accurately forecast the percent of single-family dwelling units not occupied by permanent residents. Thus, information used for Variable #3 is also used for Variable #2 for the forecast years.

## VARIABLE #3- PERCENT MULTI-FAMILY DWELLING UNITS VACANT

Percent single-family dwelling units vacant- defined as the percentage of single-family dwelling units described in Variable #1 that are vacant during the peak season of the year.

### BASE YEAR ESTIMATE'S METHODOLOGY

The City and the County Planning Departments have both reviewed the census block level information for the 2000 occupancy rate for all dwelling units and have made adjustments to the data as necessary to conform with area expectations and available local data.

FORECAST YEARS' METHODOLOGY

The City of Gainesville planning division has projected that the forecast year occupancy rate for all dwelling units within the City TAZs is approximately 90 percent, with a corresponding vacancy rate of 10 percent. Similarly, the Alachua County Office of Planning and Development has also estimated that the year 2025 occupancy rate for all dwelling units with the County TAZs is approximately 90 percent, with a corresponding vacancy rate of 10 percent.

## VARIABLE #4- POPULATION IN SINGLE-FAMILY DWELLING UNITS OCCUPIED BY PERMANENT RESIDENTS

Population in single-family dwelling units occupied by permanent residents is defined as all persons of all ages, including boarders in regular residence, living in single-family dwelling units excluding all persons who regularly reside elsewhere.

BASE YEAR ESTIMATE'S METHODOLOGY

This number is estimated based upon information provided for Variables #1, #2, and #5. In other words, for each TAZ, the population in single-family dwelling units occupied by permanent residents (Variable #4) is equal to:

> the number of single-family dwelling units (Variable #1) times the percent of single-family dwelling units occupied by permanent residents (which is 100 percent minus Variable #2) times the persons per single-family household (Variable #5).

FORECAST YEARS' METHODOLOGY

As in the base year estimate, this number is also projected based upon information given for Variable #1, #2 and #5. Therefore, the forecast years' projections are derived using the same procedure discussed in the preceding section for the base year estimate.

## VARIABLE #5- PERSONS PER SINGLE-FAMILY HOUSEHOLD

Persons per single-family household is defined as the number of persons per household

## BASE YEAR ESTIMATE’S METHODOLOGY

The City of Gainesville, Department of Community Development, Planning Division, has developed 2000 person per household estimates for City TAZs. The household size estimate used is the corresponding City 2000 person per household estimate for the planning district in which the TAZ is located. This procedure is based on the assumption that the average number of persons per household is the same for both single-family and multi-family dwellings. The City estimates that the 2000 household size was 98 percent of the 1990 household size.

## FORECAST YEARS’ METHODOLOGY

Both the City and County have developed forecast years’ person per household estimates for all corresponding TAZs. These forecast percentages were considered to remain constant over time and were applied to forecast household size for the interim years.

# V

## MULTI-FAMILY VARIABLES

The FSUTMS requires information about both single-family and multi-family dwelling units by TAZ. This Section is concerned with information on multi-family variables. For the purposes of FSUTMS, group quarters are included in the multi-family housing information and therefore this information is found in Appendix A. The following five multi-family zonal variables used by FSUTMS are:

Variable #9- multi-family dwelling units

Variable #10- percent multi-family dwelling units not occupied by permanent residents

Variable #11- percent multi-family dwelling units vacant

Variable #12- population in multi-family dwelling units occupied by permanent residents

Variable #13- persons per multi-family household

## DEFINITIONS

Multi-family dwelling units are defined as all year-round housing units whether occupied or vacant, including occupied seasonal housing units and occupied migratory labor housing units, made up of one-family houses attached to one or more houses and building constructed for occupancy by two or more families (e.g., duplexes, apartments, townhouses, row houses, condominiums, and boarding and rooming houses of less than ten unrelated occupants), and all occupied mobile homes or trailers.

## VARIABLE #9 - MULTI-FAMILY DWELLING UNITS

### BASE YEAR ESTIMATE'S METHODOLOGY

The methodology used to estimate 2000 multi-family dwelling units by TAZ within Alachua County is as follows:

6. 2000 Bureau of the Census block level information from Summary Tape File 1B for

multi-family dwellings units was recorded for each TAZ in the County; and

7. 2000 estimates of total dwelling units by TAZ were verified by the City of Gainesville, Department of Community Development, Planning Division, the Alachua County Office of Planning and Development, the City of Alachua Planning Department, the City of Newberry Planning Department and the University of Florida Department of Facilities and Planning Management.

## FORECASTS YEARS' METHODOLOGY

The methodology used to estimate multi-family dwelling units by TAZ within Alachua County is as follows:

8. The population of each TAZ was used as a control to project multi-family dwelling units for the forecast years. The increase in the total number of dwelling units by TAZ was made to balance to the total County population projections for the forecast years. The increase in total dwelling units was classified into a single-family/multi-family relationship which existed in each defined 2000 TAZ. Along with the population information, the current zoning, future land use maps and aerial photography of the County were primary sources of land use data used in this procedure. This information was used to identify areas where significant residential growth is expected and was factored into the TAZ data.

9. The increase in the number of multi-family dwelling units from the base year to the forecast years was then distributed to the appropriate TAZ. The final number of multi-family dwelling units was calculated using the population of each TAZ, the persons per household (variable #13) and the vacancy rate (variable #11).

10. The distribution of multi-family dwelling units was compared with the holding capacity (amount of land that can be developed) of each defined TAZ. The capacity of individual TAZ's was estimated by using information contained in the current zoning, future land use maps and aerial photography. Based upon review of that information, adjustments to the number of single-family dwelling units for appropriate TAZ's were made for the forecast years.

11. For TAZ’s on the University of Florida campus, this report uses information provided by the University of Florida, Division of Facilities Planning. As a funding partner for this update, the University estimated and provided group quarter information for the forecast years. Based upon the updated information, the forecast years’ group quarters information was then distributed to the appropriate TAZ’s on the university campus.

## VARIABLE #10- PERCENT MULTI-FAMILY DWELLING UNITS NOT OCCUPIED BY PERMANENT RESIDENTS

BASE YEAR ESTIMATE'S METHODOLOGY

Percent multi-family dwelling units not occupied by permanent residents are defined as the percentage of multi-family dwelling units that are vacant or are occupied by seasonal residents who regularly reside in a permanent residence elsewhere.

Seasonal residents have a permanent residence in another area and locate in Florida for only certain seasons of the year. In Florida, many seasonal residents locate in the southern parts of the state for the winter months. Alachua County does not have a significant number of seasonal residents like some parts of the state. Therefore, the information which is used for Variable #11 (the percent multi-family dwelling units vacant) is assumed to accurately estimate the percent of multi-family dwelling units not occupied by permanent residents.

FORECAST YEARS' METHODOLOGY

As in the base year, it is assumed that the County will not have a significant number of seasonal residents in the forecast years. Therefore, the information which is used for Variable #3 (the percent single-family dwelling units vacant) is assumed to accurately forecast the percent of single-family dwelling units not occupied by permanent residents. Thus, information used for Variable #3 is also used for Variable #2 for the forecast years.

## VARIABLE #11- PERCENT MULTI-FAMILY DWELLING UNITS VACANT

Percent multi-family dwelling units vacant- defined as the percentage of multi-family dwelling units described in Variable #9 that are vacant during the peak season of the year.

BASE YEAR ESTIMATE'S METHODOLOGY

The City of Gainesville Department of Community Development has recently estimated that the 2000 occupancy rate for all dwelling units is 90 percent, with a corresponding vacancy rate of 10 percent. This number has been used for all TAZ's in the city where multi-family dwelling units exist.

Alachua County Office of Planning and Development has recently estimated that the 2000 occupancy rate for all multi-family dwelling units in the unincorporated area is also 90 percent, with a corresponding vacancy rate of 10 percent. Similarly, this number has been used for all TAZ's in the unincorporated area where multi-family dwelling units exist.

FORECAST YEARS' METHODOLOGY

The City of Gainesville Planning Division and the Alachua County Office of Planning and Development have recently projected that the forecast year occupancy rate for all dwelling units within the City TAZs will be 90 percent, with a corresponding vacancy rate of 10 percent.

## VARIABLE #12- POPULATION IN MULTI-FAMILY DWELLING UNITS OCCUPIED BY PERMANENT RESIDENTS

BASE YEAR ESTIMATE'S METHODOLOGY

Population in multi-family dwelling units occupied by permanent residents is defined as all persons of all ages, including boarders in regular residence, living in multi-family dwelling units as described in Variable #9 but excluding all persons who regularly reside elsewhere.

This number is calculated based upon information provided for Variables #9, #10, and #13. In other words, for each TAZ, the population in multi-family dwelling units occupied by permanent residents (Variable #12) is equal to:

> the number of multi-family dwelling units (Variable #9) times the percent of multi-family dwelling units occupied by permanent residents (which is 100 percent minus Variable #10) times the persons per multi-family household (Variable #13).

FORECAST YEARS' METHODOLOGY

Similar to the 2000 base year estimates, this projection is calculated based on information provided for Variables #9, #10, and #13 for the forecast years using the same procedure discussed in the preceding section for the 2000 base year estimate.

## VI

## HOTEL/MOTEL UNIT VARIABLES

This section contains information on the four standard zonal variables that are used in FSUTMS that quantify hotel/motel units and occupancy rates. Hotel/motel information is considered an additional element to the population and housing data defined above but is defined separately in the model due to it's unique trip generation characteristics.

### DEFINITIONS

For purposes of this Report, hotel/motel units included in the population/housing data set are units whether occupied or vacant; each room/suite with sleeping accommodations is counted as one unit.

### SOURCES

The information used to develop this chapter is based upon the following sources:

1. information provided the state of Florida, Agency for Workforce Innovation and the Florida Department of Transportation (InfoUSA); and

2. hotel/motel variables established in the prior model update.

### HOTEL/MOTEL VARIABLES

The four hotel/motel standard zonal variables used in FSUTMS are as follows:

Variable #17 - the total of all hotel and motel units by TAZ whether occupied or vacant; each room/suite with sleeping accommodations is counted as one unit.

Variable #18 - the percentage of all hotel/motel units as described in Variable #17 which are occupied on a typical peak season day regardless if occupants are seasonal guests or permanent residents.

Variable #19 - the total number of hotel/motel occupants in occupied units during the peak season.

Variable #20 - the average zonal hotel/motel occupants in occupied units during the peak season derived by dividing the total number of occupants by the total number of occupied units.

**TABLE 2**

**HOTEL/MOTEL UNITS ESTIMATES AND FORECASTS**
**ALACHUA COUNTY, FLORIDA**

| YEAR | POPULATION | TOTAL HOTEL/MOTEL UNITS | |
|---|---|---|---|
| | | NUMBER | PERCENT OF POPULATION |
| 2000 | 217,955 | 5568 | 2.55 |
| 2015 | 273,000 | 6579 | 2.41 |
| 2025 | 301,700 | 7253 | 2.40 |

Sources: Florida Department of Transportation socioeconomic data (InfoUSA)

University of Florida Bureau of Economic and Business Research

## VARIABLE #17-TOTAL HOTEL/MOTEL UNITS

Total Hotel/Motel Units - defined as the total of all hotel and motel units by TAZ whether occupied or vacant; each room/suite with sleeping accommodations is counted as one unit.

### BASE YEAR ESTIMATE’S METHODOLOGY

Base year hotel/motel data was obtained from Info USA. This is a private data development company contracted by the Florida Department of Transportation to compile and report economic data for the state on a county by county basis. Part of this data collection is the reporting of geographic locations for all hotel/motel units in Alachua County, the corresponding number of rooms and the total employment for each establishment. This data was reviewed and verified by MTPO staff for reasonableness and accuracy, located geographically using GIS software and associated to each respective TAZ.

FORECAST YEARS' METHODOLOGY

The year 2015 and 2025 hotel/motel information by TAZ is provided in Appendix B.

1. The increase in the number of hotel/motel units from the 2000 base year to 2015 and 2025 forecast years was distributed among appropriate TAZ's located within activity centers in the unincorporated area along Interstate 75. According to County planning department staff, urban activity centers are nodes of high intensity uses including commercial, institutional, industrial and office, where hotel/motel development may occur. This methodology is based on the assumption that all hotel/motel development through the forecast years will occur in TAZ's located within these activity centers.

   The future land use maps for the City of Gainesville and Alachua County were the primary sources of land use data used to distribute future year hotel/motel information.

## VARIABLE #18- PERCENT HOTEL/MOTEL UNITS OCCUPIED

**Percent Hotel/Motel Units Occupied** - defined as the percent of all hotel/motel units as described in Variable #17 which are occupied on a typical peak season day regardless if occupants are seasonal guests or permanent residents.

BASE YEAR ESTIMATE'S METHODOLOGY

The percent hotel/motel units occupied was obtained from a telephone survey conducted for the last plan update. It is estimated that occupancy rates for hotels and motels will remain somewhat static over time and do not significantly fluctuate. The following discussion on hotel/motel occupancy rates describes the methodology used to estimate occupancy rates in Alachua County and is as follows:

(1) If all hotels/motels within the TAZ responded to the 1999 telephone survey:

Percent hotel/motel units occupied = the total number of occupied units within the TAZ divided by the total number of units within the TAZ.

(2) If no hotel/motel within the TAZ responded to the survey:

Percent hotel/motel units occupied = for those that responded to the survey, the total number of occupied units within the county divided by the total number of units within the area.

(3) If some of the hotel/motels within the TAZ responded to the survey, then a TAZ average was used.

Percent hotel/motel units occupied = for those hotel/motels which responded to the survey, the total number of occupied units within the TAZ divided by the total number of units within the TAZ.

FORECAST YEARS' METHODOLOGY

This Report assumes that the 2000 percent of hotel/motel units occupied will remain constant through the forecast years. Therefore, the information which is used for the base year is assumed to accurately project the percent of hotel/motel units occupied for the forecast years. Thus, the percentages of hotel/motel units occupied given for the appropriate TAZ's in the 2000 base year were also used for the forecast years.

## VARIABLE #19- PERSONS IN OCCUPIED HOTEL/MOTEL UNITS

Persons in Occupied Hotel/Motel Units- defined as the total number of hotel/motel occupants in occupied units during the peak season.

BASE YEAR ESTIMATE'S METHODOLOGY

The 2000 estimate of persons in occupied hotel/motel units also made use of results from the telephone survey conducted for the prior plan update. Using the survey responses for a given TAZ, the total number of hotel/motel occupants was summed for those hotel/motels which responded to the survey. The number of persons in occupied hotel/motel units was calculated in the following manner:

1. If all hotels/motels within the TAZ responded to the survey:

| | | |
|---|---|---|
| Number of persons in occupied hotel/ motel units | = | the total number of persons in occupied units within the TAZ |

2. If no hotel/motel within the TAZ responded to the survey:

Using the survey responses, a factor of 1.5 persons per occupied unit was determined by dividing the total number of persons in occupied units within the County by the total number of occupied units.

| | | |
|---|---|---|
| Number of persons in occupied hotel/ | = | Step 1 - County average percent motel unitsof hotel/motel units occupied [Variable #18] multiplied by the total number of units within the TAZ to get the average number of occupied units within the TAZ.<br><br>Step 2 - Average number of occupied units within the TAZ multiplied by 1.5 get the total estimated number of persons in occupied units within the TAZ. |

3. If only some of the hotel/motels within the TAZ responded to the survey:

| | | |
|---|---|---|
| Number of persons in occupied hotel/ motel units | = | Step 1 - For those hotel/motels which did not respond to the survey, the TAZ average percent of hotel/motel units occupied [Variable #18] multiplied by the total number of units within the TAZ. These figures were multiplied by 1.5 to get estimated persons in occupied hotel/motel units. |

| | |
|---|---|
| Number of persons in occupied hotel/ = motel units | Step 2 - For those hotel/motels which did respond to the survey: The total number of persons in occupied units within the TAZ. |
| | Step 3 - Finally, the total number of persons in occupied hotel/motel units was calculated by summing all the respondents and non-respondents with the TAZ. |

FORECAST YEARS' METHODOLOGY

This report assumes that the 2000 number of persons in occupied hotel/motel units will remain constant through the forecast years. Therefore, the information which is used for the base year is assumed to accurately project the number of persons in occupied hotel/motel units occupied for the forecast years. Thus, the number of persons in occupied hotel/motel units given for the appropriate TAZ's in the 2000 base year were also used for the forecast years, except those TAZ's which did not have any hotel/motel units in the base year. For those TAZ's, the overall study area average of persons in occupied hotel/motel units was used.

## VARIABLE #20- PERSONS PER UNIT IN OCCUPIED HOTEL/MOTEL UNITS

Persons per Unit in Occupied Hotel/Motel Units - defined as the average zonal hotel/motel occupants in occupied units during the peak season.

BASE YEAR ESTIMATE'S METHODOLOGY

The 2000 estimate of persons per unit in occupied hotel/motel units made use of results from the telephone survey conducted for the prior plan update. As part of the survey, the person per unit in occupied hotel/motel units was calculated in the following manner:

1. If all hotels/motels within the TAZ responded to the survey:

| | | |
|---|---|---|
| Persons per unit in occupied hotel/ motel units | = | the total number of occupants [Variable #19] within the TAZ divided by the total unumber of occupied units within the TAZ. |

2. If no hotel/motel within the TAZ responded to the survey, a County average of 1.5 persons per unit in occupied hotel/motel units was used for those hotel/motels which did not respond to the survey.

3. If only some of the hotel/motels within the TAZ responded to the survey:

| | | |
|---|---|---|
| Persons per unit in occupied hotel/ motel units | = | The total number of occupants [Variable #19] within the TAZ divided by the total number of occupied units. |

FORECAST YEARS' METHODOLOGY

The forecasts of the number of persons per unit in occupied hotel/motel units were made for only those TAZ's which were assigned hotel/motel units in the forecast years. The methodology used to determine the number of persons per unit in occupied hotel/motel units for the base year was also used to calculate the information for the forecast years.

# VII

## EMPLOYMENT

Alachua County employment is represented by four standard zonal variables in the GUATS model. The variable defined for the model include industrial, commercial, service, and total employment categories by TAZ. Specific information by TAZ is provided in Appendix B.

## DEFINITIONS

For purposes of this report, the type of employment information required is as follows:

> "The number of all full-time and regular part-time employees, and self-employed persons by job location, whose job is in either an industrial, commercial, or service Standard Industrial Category (SIC) from 01 to 99."

## EMPLOYMENT VARIABLES

The four standard zonal variables are as follows:

Variable #21 - Industrial Employment By Place-Of-Work -

all full-time and regular part-time employees, and self-employed persons by job location, whose job is in an industry classified in Standard Industrial Category (SIC) from 01 to 39 (i.e., agriculture, forestry, fisheries, mining, contract construction, and manufacturing).

Variable #22 - Commercial Employment By Place-Of-Work -

all full-time and regular part-time employees, and self-employed persons by job location, whose job is in an industry classified in Standard Industrial Category (SIC) from 50 to 59 (i.e., retail and wholesale trade since both are commonly located in areas zoned for commercial land use activities).

Variable #23 - Service Employment By Place-Of-Work -

all full-time and regular part-time employees, and self-employed persons by job location, whose job is in an industry classified in Standard Industrial Category (SIC) from 40 to 49 and 60 to 99 (i.e., transportation, communication, and utilities service; finance, insurance, and real estate services; selected personal services; tourism and recreational services; health and educational services; government services).

Variable #24 - Total Employment By Place-Of-Work -

all full-time and regular part-time employees, and self-employed persons by job location, whose job is in an industry classified in Standard Industrial Category (SIC) from 01 to 99.

## BASE YEAR ESTIMATE'S METHODOLOGY

The methodology used to estimate base year employment activities by TAZ is as follows:

1. Employment information provided by the Florida Department of Transportation (FDOT), InfoUSA was used for all zones in which more recent employment information was not available.

2. For those zones where more recent employment information was available, such as at the University of Florida, Santa Fe community College, and area hospitals, this information was used.

3. The planning staffs for Alachua County, City of Gainesville, City of Alachua, City of Newberry and the University of Florida reviewed and corrected data prior to submission for this report.

## FORECAST YEARS' METHODOLOGY

The forecast years employment data was prepared by MTPO staff and reviewed by the planning staffs of Alachua County, City of Gainesville, City of Alachua, City of Newberry and the University of Florida. As part of the update process, MTPO staff coordinated regular meetings of the respective planning staffs to discuss and review the future year economic data.

Future year total employment was estimated by applying an average growth rate estimated by the State of Florida, Agency for Workforce Innovation. This agency is responsible for the collection and reporting of employment market information. Since the year 2000, this agency has been directed by the State of Florida to project future year growth projections by industry for each county in the State of Florida. Prior to 2000, employment data was compiled and reported by the University of Florida, Bureau of Economic and Business Research but is no longer funded by the

State of Florida to collect employment information.

Projected employment was distributed based on reported 2000 industry profiles for Alachua County and coordinated with the adopted local comprehensive plans for Alachua County, City of Gainesville, City of Alachua and City of Newberry. The distribution was then compared with the holding capacities, or available land, of the individual zones. To arrive at the TAZ holding capacity, the estimated percentage of vacant land was used to control the number of additional employees assigned to the zone for the forecast years.

## VIII

## SCHOOL ENROLLMENT VARIABLES

This Section describes the data collection for school enrollment in Alachua County. The GUATS model uses school enrollment as a variable to determine trip attraction rates to respective TAZs.

### DEFINITIONS

For purposes of this report, the type of school enrollment information required for the model is as follows:

> "All students enrolled full-time and part-time in all public and private schools (except nursery and day schools), junior and senior high schools, community colleges, colleges and universities with enrollments under 2,000. Colleges and universities with enrollments of 2,000 or more are treated separately as special traffic generators."

### UNIVERSITY OF FLORIDA AND SANTA FE COMMUNITY COLLEGE

Consistent with the definition of school enrollment, colleges and universities with enrollments of 2,000 or more are treated separately as special traffic generators. Both the University of Florida and Santa Fe Community College have student enrollments that exceed the base 2000 threshold and, as such, are treated as special generators in the GUATS model. Special generator information is further discussed in Section XI of this report and more detailed information regarding student enrollment at the University of Florida and Santa Fe Community College is included in Appendix B.

#### BASE YEAR ESTIMATE'S METHODOLOGY

The information used to develop data for school enrollment is based upon the following sources:

1. Public school enrollment information was provided by the School Board of Alachua County staff for 2003. This information was provided for all public schools located within the County. School enrollment information was then located geographically using GIS software and distributed to the appropriate TAZ. In addition to present and projected enrollment levels, information concerning individual school capacities and the

locations of existing and proposed school sites were also obtained.

2. Some private school enrollment for 2000 and other enrollment information was obtained by contacting individual schools which were not included in the Public School System. This information was then distributed to the appropriate TAZ.

Specific details regarding base year 2000 school enrollment by TAZ is provided in Appendix B.

FORECAST YEARS' METHODOLOGY

School enrollment growth rates were obtained from the Alachua County School board to develop future year forecasts of total County school enrollment. These projections were calculated by the School Board up to the year 2012 and were used by MTPO staff as a base to determine a yearly growth rate using linear regression. This rate was then applied to the School Board data for 2012 and used to project the growth trend to 2015 and 2025. A relative weighting of each school that considered school operating capacity was then used to distribute the net growth of future year enrollment projections. More detailed school enrollment information by TAZ is provided in Appendix B.

**TABLE 3**

**PUBLIC SCHOOL ENROLLMENT ESTIMATES AND FORECASTS
ALACHUA COUNTY, FLORIDA**

| | | TOTAL SCHOOL ENROLLMENT | |
|---|---|---|---|
| **YEAR** | **POPULATION** | **NUMBER** | **PERCENT OF POPULATION** |
| **2000** | **217,955** | **27,227** | **12.49** |
| **2015** | **273,000** | **30,822** | **11.29** |
| **2025** | **301,700** | **31,649** | **10.49** |

Sources: School Board of Alachua County, Gainesville, Florida.

Gainesville Urbanized Area Transportation Study, Socioeconomic Report.

# IX

## SPECIAL GENERATORS

Special generators are used in travel demand forecasting to better replicate the actual trip generation characteristics of major activity centers. In general, large-scale land uses, such as universities, regional airports, regional shopping malls and theme parks have a rate of activity significantly different from the standard rates used in the transportation modeling process. Thus, special generators are sometimes created to increase the number of trip attractions or productions for TAZs where traffic volumes assigned by the model do not conform to known characteristics. Special generators should be used as they affect the ability to accurately forecast travel demand in future years when land use and socioeconomic conditions can change.

Special generators are being applied for the Alachua County Transportation Study (ACTS) model validation effort. Historically, special generators for trip attractions have been developed for several TAZs in which commuter parking is located on the University of Florida campus and the Santa Fe Community College main campus. The number of trips added to these zones is based on the average number of vehicle trips made by the student population. Special generators for other areas such as the Gainesville Regional Airport and the Oaks Mall are being considered as a model calibration tool, but at this point, these potential special generators are represented through zonal socioeconomic data. Decisions regarding the model representation of special generators are considered during the model validation phase of the plan update.

It should be noted that the special generator input data is not yet final. The special generators currently used in the validation effort will continue to be modified in order to obtain an approved validated model suitable for making forecasts of transportation system demands and requirements.

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## APPENDIX A

**ZDATA1**

| | |
|---|---|
| 2000 | Base Year |
| 2015 | Interim Year |
| 2020 | Target Year |

## VARIABLE LEGEND

| | |
|---|---|
| **TAZ** | Traffic Analysis Zone |

**SINGLE-FAMILY AND MULTI-FAMILY**

| | |
|---|---|
| DWELLING UNITS | Housing Unit |
| % SEAS. | Seasonal Vacancy |
| % VAC. | Vacancy Total |
| POP. | Population |
| PERCENT - 0 AUTO | Household with Zero Vehicles Available |
| PERCENT - 1 AUTO | Household with One Vehicle Available |
| PERCENT - 2+ AUTO | Household with Two or More Vehicles Available |

**HOTEL/MOTEL**

| | |
|---|---|
| UNITS | Hotel/Motel Units Available |
| % VAC. | Hotel/Motel Units Occupied (expressed as a percentage) |
| POP. | Population in Hotel/Motel Units |

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# APPENDIX B

**ZDATA2**

| | |
|---|---|
| 2000 | Base Year |
| 2015 | Interim Year |
| 2025 | Target Year |

## VARIABLE LEGEND

| | |
|---|---|
| **TAZ** | Traffic Analysis Zone |
| **EMPLOYMENT** | |
| INDUSTRIAL | Industrial Employment by Place of Work |
| COMMERCIAL | Commercial Employment by Place of Work |
| SERVICE | Service Employment by Place of Work |
| TOTAL | Total Employment by Place of Work |
| **SCHOOL** | |
| ENROLLMENT | School Enrollment |

**PARKING**

| | |
|---|---|
| SHORT | Short-term Parking Cost - Not Used |
| LONG | Long-term Parking Cost - Not Used |

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## APPENDIX FOR THE METROPOLITAN LONG RANGE PLAN UPDATE

## INTERIM 2005 UPDATE
## 2020 FORECAST OF STATE AND FEDERAL REVENUES
## FOR STATEWIDE AND METROPOLITAN PLANS

# Overview

This appendix documents the current Florida Department of Transportation (FDOT) state and federal transportation revenue forecast through 2025. Funding estimates for major state programs for this metropolitan area and Florida are included.

This is an interim forecast to provide guidance to MPOs for long range transportation plans (LRTPs) until a new forecast can be developed which incorporates (1) an update of the FIHS/SIS[1] Cost Feasible Plan, (2) state Growth Management funding enacted in 2005, and (3) the impact of 2005 federal legislation entitled Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users. It is anticipated that the new forecast will be available in the Spring, 2006. MPOs may have to amend LRTPs adopted in 2004 or 2005 to reflect the new forecast.

<u>Background</u>

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21$^{st}$ Century (TEA-21) enacted in 1998 provided the impetus to enhance the cooperative relationship between FDOT and metropolitan planning organizations (MPOs) in planning for and providing transportation facilities and services. The 2020 Florida Transportation Plan (FTP), updated with the assistance of Florida's 26 MPOs and other transportation partners, established long range goals and program emphases for the expenditure of state and federal funds expected from current revenue sources.

As part of the updated FTP, the Department developed a long range revenue forecast in 2000. The forecast was based upon recent federal and state legislation (e.g., TEA-21, Mobility 2000), changes in factors affecting state revenue sources (e.g., population growth rates) and current policies. This information was used for updates of metropolitan plans and the Florida Intrastate Highway System Cost Feasible Plan.

This Interim 2005 forecast adjusts the forecast prepared in 2000 for (1) amounts contained in the Department's 2006-2010 Work Program, (2) the impact of the Department's Investment Policy to allocate 75% of Capacity funds to the SIS and the remaining 25% of Capacity funds to facilities that are not on the SIS, (3) changes in the Statutory Formula (equal parts of population and motor fuel

1 The update of the Florida Intrastate Highway System Plan (FIHS) will include all roads that are also included in the Strategic Intermodal System (SIS), including Connectors between SIS Hubs and Corridors.

tax collections) since the 2000 forecast, and a change in the base year from 2000 dollars to 2006 dollars.

## Intent

This appendix is intended to provide the public with clear documentation of the state and federal financial issues related to each MPO plan and to facilitate reconciliation of statewide and metropolitan plans. This appendix does not address financial issues related to funds that do not "flow through" the state work program. Information on financial issues related to local and regional revenue sources – what those resources are and how the metropolitan areas plan to spend them – is contained in other documentation of the metropolitan plan.

The appendix describes how the Interim 2005 Update of the statewide 2020 Revenue Forecast Update was developed. Also, metropolitan estimates are identified for major FDOT programs that expand the capacity of existing transportation systems, which are referred to as "capacity programs" in this document. "Metropolitan estimates" are the share of the state capacity programs that are planned for this metropolitan area. They can be used to fund planned improvements to the major elements of the transportation system: highways, transit, aviation, rail, and intermodal access.

This appendix also includes estimates of funds required for other FDOT programs designed to support, operate, and maintain the state transportation system. The FDOT has set aside sufficient funds in the Interim 2005 Update of the 2020 Revenue Forecast for these programs, referred to as "non-capacity programs" in this document, to meet statewide objectives and program needs in all metropolitan and non-metropolitan areas. Funding for these programs is not included in the metropolitan estimates.

## Interim 2005 Update of the 2020 Revenue Forecast Update (State and Federal Funds)

Long range revenue forecasts assist in determining which needed transportation improvements are financially feasible and identifying funding priorities. As directed by FDOT policy, the Department placed primary emphasis on safety and preservation by first providing adequate funding in the Revenue Forecast to meet established goals and objectives in these important areas. Remaining funding has then been planned for new or expanded statewide, metropolitan/regional, and local facilities and services (i.e., capacity programs). As we move into the 21st Century, safety and preservation will continue to be emphasized.

The Interim 2005 Update of the 2020 Revenue Forecast includes program estimates for the expenditure of state and federal funds expected from current revenue sources (e.g., new revenue sources were not added). The forecast estimated revenues from federal, state, and Turnpike sources that are included in the Department's 5-Year Work Program. The forecast did not estimate revenue from other sources (i.e., local government/authority taxes, fees, and bond proceeds; private sector participation; and innovative finance sources).

The Interim 2005 Update includes the funding levels contained in the 2006-2010 Adopted Work Program. The forecast of funding levels for FDOT programs for 2011-2025 was developed based on the Program and Resource Plan (PRP) for fiscal years 2001-2009, adjusted for the Department's 75%/25% Investment Policy adopted in 2004.

Revenue forecasts by FDOT typically estimate the value of money at the time it will be collected (e.g., 2010) and reflect future growth in revenue and inflation, sometimes referred to as "current" or "year of receipt" dollars. Since the costs of transportation projects increase over time, the Department inflates project costs to develop a cost-feasible Work Program. For the purpose of consistency among state and MPO plans, however, the FDOT agreed to deflate the revenue forecast. As a result, all amounts (e.g., for fiscal years 2005/06 through 2024/25) included in the Interim 2005 forecast are deflated and expressed in fiscal year 2006 dollars.

## Capacity Programs

For the revenue forecast, FDOT major programs were grouped into two general categories: capacity programs and non-capacity programs. Capacity programs include each major FDOT program that expands the capacity of existing transportation systems (e.g., highways, transit). Non-capacity programs include the remaining FDOT programs that are designed to support, operate, and maintain the state transportation system (e.g., resurfacing). Table 1 includes a brief description of each major capacity program and the linkage to the program categories used in the PRP.

The capacity programs are also grouped in relationship to the 2020 FTP goals: Economic Competitiveness; and Quality of Life. The capacity programs that support the Economic Competitiveness Goal are Florida Intrastate Highway System construction/ right-of-way, aviation, rail, intermodal access, and seaport development. The capacity programs that support the Quality of Life Goal are other arterials construction/right-of-way and transit.

Table 2 identifies the statewide estimates for the programs in the Interim 2005 Update of the 2020 Revenue Forecast. About $94 billion is forecast for the entire state transportation program from 2006 through 2025; about $49 billion (51%) is forecast for the capacity programs.

**TABLE 1**
**Description of the Major Capacity Programs Included in the Interim 2005 Update of the 2020 Revenue Forecast and Corresponding Program Categories in the Program and Resource Plan (PRP)**

| **Economic Competitiveness:** | | **Quality of Life:** | |
|---|---|---|---|
| **2020 Revenue Forecast Programs** | **PRP Program Categories** | **2020 Revenue Forecast Programs** | **PRP Program Categories** |
| SIS/Florida Intrastate Highway System (FIHS) Construction/ROW - Construction, improvements, and associated right of way on the Strategic Intermodal System and the Intrastate Highway System (e.g., Interstate, the Turnpike, other toll roads, other facilities designed to serve interstate and regional commerce). | SIS/Intrastate Construction<br>Turnpike Construction<br>Other SIS/Intrastate Construction<br>Toll Facilities Revolving Trust Fund<br>SIS/Intrastate ROW<br>SIS/Intrastate Advance Corridor Acquisition | Other Arterial Construction/ROW - Construction, improvements, and associated right of way on State Highway System roadways not designated as part of the SIS or FIHS. The program also includes funding for the Economic Development program, the County Incentive Grant Program, and the Small County Outreach Program. | Arterial Traffic Operations Construction<br>County Transportation Programs<br>Economic Development<br>Other Arterial & Bridge ROW<br>Other Arterial Advance Corridor Acquisition |
| Aviation - Financial and technical assistance to Florida's airports in the areas of safety, capacity improvements, land acquisition, planning, economic development, and preservation. | Airport Improvement<br>Land Acquisition<br>Planning<br>Discretionary Capacity Improvements | Transit - Technical and operating/capital assistance to transit, paratransit, and ridesharing systems. | Transit Systems<br>Transportation Disadvantaged - Department<br>Transportation Disadvantaged - Commission<br>Other<br>Block Grants |
| Rail - Rail safety inspections, rail-highway grade crossing safety, acquisition of rail corridors, assistance in developing intercity and commuter rail service, and rehabilitation of rail facilities. | Fixed Guideway<br>Passenger Service<br>Rail/Highway Crossings<br>Rail Capacity Improvement/Rehabilitation | | |
| Intermodal Access - Improving access to intermodal facilities and acquisition of associated rights of way. | Intermodal Access | | |
| Seaport Development - Funding for the development of eligible deep water ports, including such projects as land acquisition, dredging, construction of storage facilities and terminals, and acquisition of container cranes and other equipment used in moving cargo and passengers. | Seaport Development | | |

**TABLE 2**

**STATEWIDE REVENUE FORECAST**
**AMOUNTS AND CATEGORIES OF CAPACITY PROGRAM ESTIMATES**

**State and Federal Funds from Interim 2005 Update of the 2020 Revenue Forecast**
**(Millions, 2006 $)**
**Florida Department of Transportation**

| Capacity Program Emphasis Areas | Time Period | | | | 20 Year Total[2] |
|---|---|---|---|---|---|
| | 2006-10[1] | 2011-15 | 2016-20 | 2021-25 | |
| Economic Competitiveness | | | | | |
| SIS/FIHS Construction/ROW | 7,623 | 5,334 | 5,082 | 4,723 | 22,762 |
| Aviation | 531 | 510 | 512 | 514 | 2,068 |
| Rail | 631 | 427 | 426 | 424 | 1,909 |
| Intermodal Access | 770 | 682 | 676 | 668 | 2,795 |
| Seaport Development | 224 | 185 | 186 | 186 | 781 |
| Quality of Life | | | | | |
| Other Arterial Construction/ROW | 4,802 | 2,389 | 2,101 | 2,039 | 11,330 |
| Transit | 1,107 | 806 | 802 | 796 | 3,510 |
| Total Capacity Programs[3] | 15,688 | 10,331 | 9,785 | 9,351 | 45,155 |
| Statewide Total, All Programs | 30,632 | 21,603 | 20,973 | 20,542 | 93,750 |

[1] Based on 2006-10 Adopted Work Program (July 1, 2005). There are relatively more dollars in fiscal years 2006-2010 due to current plans for advancement of highway construction projects that are not reflected in estimates for 2011-2025 and to "carry-forwards" of funds from prior fiscal years.
[2] Columns and rows sometimes do not equal the totals due to rounding.
[3] Does not include estimates of funding from 2005 Growth Management legislation or from the impact of SAFETEA-LU.

Metropolitan Forecast for Capacity Programs

As the first step in preparing metropolitan estimates, the Department prepared district estimates for the capacity programs from the statewide forecast consistent with the provisions in state and federal law. Pursuant to federal law, the transportation management area (TMA) funds from the other arterials construction/right-of-way program were distributed based on 2000 population. District estimates for the remaining programs were developed using the current statutory formula: other arterials construction/right-of-way (net of TMA and enhancement funds); enhancements; and the transit program.[2]

Because the update of the SIS/FIHS Cost Feasible Plan is not complete, estimates for SIS/FIHS Construction and ROW were based on the current FIHS Cost Feasible Plan, or the SIS/FIHS 2011-2015 Work Program, at the discretion of the district. Because of the evolving nature of the SIS, estimates for the Rail, Aviation, Seaports and Intermodal Access programs were included only from the 2006-2010 Adopted Work Program.

FDOT districts developed the metropolitan estimates consistent with district shares of the statewide forecast, adjusted as needed to account for issues such as metropolitan area boundaries (e.g., differences between county boundaries). The estimates for this Metropolitan Area are included in Table 3.

---

[3] The statutory formula is based on 50% population and 50% motor fuel tax collections.

## TABLE 3

## AMOUNTS AND CATEGORIES OF CAPACITY PROGRAM ESTIMATES

**State and Federal Funds from Interim 2005 Update of the 2020 Revenue Forecast (Millions, 2006 $)**
**Florida Department of Transportation**

**Estimates for: _________________ Metropolitan Area**

| Capacity Program Emphasis Areas | Interim 2005 Update of the 2020 Revenue Forecast | | | |
|---|---|---|---|---|
| | FYs 11-15 Subtotal | FYs 16-20 Subtotal | FYs 21-25 Subtotal | 15 Year Total |
| Economic Competitiveness | | | | |
| SIS/FIHS Construction/ROW | | | | |
| Aviation | | | | |
| Rail | | | | |
| Intermodal Access | | | | |
| Quality of Life | | | | |
| Other Arterial Construction/ROW | | | | |
| Transit[1] | | | | |
| Total Capacity Programs | | | | |

## Non-Capacity Programs

Non-capacity programs refer to FDOT programs designed to support and maintain the state transportation system: safety; resurfacing; bridge; product support; operations and maintenance; and administration. Table 4 includes a description of each non-capacity program and the linkage to the program categories used in the PRP.

Metropolitan estimates have not been developed for these programs. Instead, the FDOT has included sufficient funding in the Interim 2005 Update of the 2020 Revenue Forecast to meet the following statewide objectives:

- **Resurfacing program:** Ensure that 80% of state highway system pavement meets Department standards;
- **Bridge program:** Ensure that 90% of FDOT-maintained bridges meet Department standards while keeping all FDOT-maintained bridges open to the public safe;
- **Operations and maintenance program:** Achieve 100% of acceptable maintenance condition standard on the state highway system;
- **Product Support:** Reserve funds for Product Support required to construct improvements (from the forecast's capacity funds) in each district and metropolitan area; and
- **Administration:** Administer the state transportation program.

The Department has reserved funds in the Interim 2005 Update of the 2020 Revenue Forecast to carry out its responsibilities and achieve its objectives for the non-capacity programs on the state highway system in each district and metropolitan area. FDOT will develop statewide noncapacity needs cooperatively with MPOs and local governments to ensure consistency, to the maximum extent feasible, with MPO plans and local government comprehensive plans.

Table 5 identifies the statewide estimates for the non-capacity programs, which are grouped in relationship to the related FTP Goals (Safe Transportation and System Management) and by the other major support and maintenance programs. About $45 billion (49% of total revenues) is forecast for the non-capacity programs.

**TABLE 4**
**Description of the Major Non-Capacity Programs Included in the Interim 2005 Update of the 2020 Revenue Forecast and Corresponding Program Categories in the Program and Resource Plan (PRP)**

| **Safe Transportation and System Management:** | | **Other Programs:** | |
|---|---|---|---|
| **2020 Revenue Forecast Programs** | **PRP Program Categories** | **2020 Revenue Forecast Programs** | **PRP Program Categories** |
| Safety - Includes the Highway Safety Improvement Program, the Traffic Safety Grant Program, Bicycle/Pedestrian Safety activities, the Industrial Safety Program, and general safety issues on a Department-wide basis. | Highway Safety<br>Grants | Product Support - Planning and engineering activities required to "produce" the Department's products and services (i.e., Capacity, Safety, Resurfacing, and Bridge programs). | Preliminary Engineering<br>Construction Engineering Inspection<br>Right of Way Support<br>Environmental Mitigation<br>Materials & Research<br>Planning<br>Public Transportation Operations |
| Resurfacing- Resurfacing of pavements on the State Highway System and local roads as provided by state law. | Interstate<br>Arterial and Freeway<br>Off-System<br>Turnpike | Operations & Maintenance - Activities to support and maintain transportation infrastructure once it is constructed and in place. | Routine Maintenance<br>Traffic Operations<br>Toll Operations<br>Motor Carrier Compliance |
| Bridge - Repair and replace deficient bridges on the state highway system. In addition, 15% of federal bridge funds must be expended off the federal highway system (i.e., on local government bridges not on the state highway system). | Repair - On System<br>Replace - On System<br>Local Bridge Replacement<br>Turnpike | Administration - Resources required to perform the fiscal, budget, personnel, executive direction, document reproduction, and contract functions. Also, includes the Fixed Capital Outlay Program, which provides for the purchase, construction, and improvement of non-highway fixed assets (e.g., offices, maintenance yards). | Administration<br>Fixed Capital Outlay<br>Office Information Systems |

**TABLE 5**
**STATEWIDE REVENUE FORECAST**
**AMOUNTS AND CATEGORIES OF NON-CAPACITY PROGRAM ESTIMATES**

**State and Federal Funds from Interim 2005 Update of the 2020 Revenue Forecast**
**(Millions, 2006 $)**
**Florida Department of Transportation**

| Non-Capacity Program Emphasis Areas | Time Period | | | | |
|---|---|---|---|---|---|
| | 2006-10[2] | 2011-15 | 2016-20 | 2021-25 | 25 Year Total[2] |
| Safe Transportation/System Management | | | | | |
| Safety | 356 | 206 | 189 | 171 | 922 |
| Resurfacing | 3,321 | 2,270 | 2,336 | 2,403 | 10,330 |
| Bridge | 805 | 844 | 815 | 782 | 3,247 |
| Product Support | 5,815 | 3,954 | 3,833 | 3,794 | 17,396 |
| Operations & Maintenance | 3,889 | 3,299 | 3,298 | 3,301 | 13,787 |
| Administration | 758 | 698 | 718 | 739 | 2,914 |
| Total Non-Capacity Programs[2] | 14,944 | 11,271 | 11,189 | 11,191 | 48,595 |
| Statewide Total, All Programs | 30,632 | 21,603 | 20,973 | 20,542 | 93,750 |

[1] Based on 2006-10 Adopted Work Program (July 1, 2005). There are relatively more dollars in fiscal years 2006-2010 due to current plans for advancement of highway construction projects that are not reflected in estimates for 2011-2025 and to "carry-forwards" of funds from prior fiscal years.
[2] Columns and rows sometimes do not equal the totals due to rounding.

# APPENDIX FOR THE xxx METROPOLITAN AREA
# LONG RANGE PLAN UPDATE

# INTERIM 2005 UPDATE OF 2020 FORECAST OF STATE AND FEDERAL REVENUES
# FOR STATEWIDE AND METROPOLITAN PLANS

# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 3
## Data Review and Verification

Prepared for:
The Metropolitan Transportation Planning Organization

Prepared by:
The Corradino Group, Inc.

December 2005

Technical Report 3
Data Review and Verification

# 1. Introduction

Technical Report 3 (TR3) documents the review of data inputs and outputs. The CUBE-Voyager (CV) model for Gainesville is an entirely new model, implemented in new software. Thus, in many respects many of the traditional procedures for data review are not applicable. Nevertheless, the consultant conducted a review of the data as part of the process of creating a 2000 model and adapting and converting the data to fit CV. This report documents those activities.

# 2. TAZ System

The consultant developed the TAZ system for the model to fit the highway network system. Developing the network system first allowed the TAZ system to be configured so that centroid connectors will properly load traffic onto the network. The TAZs were then developed as combinations of 2000 Census Blocks to allow easy and accurate estimation of 2000 household data from the Census. This process was coordinated with the MTPO staff and the University of Florida (UF). Several revisions to the TAZ system were made at the request of UF. Obviously, ZDATA files were developed after the TAZ system was completed.

# 3. Zonal Data

The MTPO staff developed an entirely new set of zonal data (ZDATA1 and ZDATA2). The ZDATA files were structured to support the NERPM trip generation model and the trip rates that were developed by FDOT District 2 from the 2000 household survey. The data requirements for NERPM are somewhat different from the standard FSUTMS GEN model. Thus, the ZDATA files were entirely new, and not just an update. The existing FSUTMS land use checking computer program would not work with the new ZDATA file format. Thus, the consultant reviewed data summaries and spot-checked the data to ensure its suitability for use in the model. Future year data forecasts were also developed by the MTPO. Forecasting methods are detailed in TR4.

The NERPM GEN ZDATA1 file is different from standard GEN in that it stratifies both single- and multi-family households by four auto ownership levels (0, 1, 2, 3+) instead of just three levels (0, 1, 2+). The MTPO staff assembled the household data from the 2000 Census STF1B file and Census special tabulation ST60 obtained by FDOT.

Differences in the NERPM GEN ZDATA2 file are more complicated as shown in Table 3-1, with four employment classifications instead of three. The source of the ZDATA2 information was the FDOT's compilation of ES-202 (unemployment insurance) data, InfoUSA, and local data from UF, Santa Fe Community College and area hospitals. Local city, county and university planning staffs reviewed all estimates. The MTPO staff used these sources to develop ZDATA2.

Table 3-1
ZDATA2 Variables

| SIC Number | SIC Name | FSUTMS (old) | NERPM |
|---|---|---|---|
| 01-19 | Ag, mining construction | IND | Other Indust. |
| 20-39 | MFG | IND | MFG |
| 40-51 | Transp, wholesale trade | Service | MFG |
| 52-59 | Retail trade | Commercial | Commercial |
| 60-67 | Finance, insurance, real estate | Service | Service |
| 68-69 | NONE | | |
| 70-89 | Services | Service | Service |
| 90-98 | Public Admin | Service | Service |
| 99 | Non-classifiable | Service | Service |

Source: The Corradino Group

The MTPO staff developed the school enrollment data from information provided by the Alachua County School Board and private schools. UF enrollment is not included in ZDATA2, because it is accounted for in the special UF trip purpose. Santa Fe Community College appears as a special generator, so its enrollment does not appear in ZDATA2.

Zonal data estimates and trip generation summaries for the 2000 base year and 2025 forecast year were compared to verify the reasonableness and suitability of the zonal data. Spot checks were also conducted, and on that bases the zonal data were judged to be reasonable. Table 3-2 presents a summary of trip generation results for these three modeling years. While population and employment increase between 2000 and 2005, rates and ratios remain relatively constant, as would be expected.

As noted in the validation report (TR4), special generators in ZDATA3 were developed by the consultant in consultation with MTPO staff, and were inserted in the model where there were known special generators, and where model validation results indicated that special generators were needed.

The consultant developed the ZDATA4 files from year 2000 FDOT traffic counts, as well as from data on through trip patterns available from the 1990 FSUTMS model. The largest through traffic movement is on I-75. Similarly, the largest internal-external traffic movements are to and from I-75. All of the external data files had to be redeveloped to fit the requirements of the CV software.

The Gainesville model has historically underestimated travel to and from the UF campus. Thus, a special UF trip purpose was developed for students living off-campus and traveling to UF. Additionally, under the traditional FSUTMS structure, there was no way to represent the on-campus trips of campus housing residents to classroom areas. A campus housing to classroom purpose was developed to account for these trips. Trip rates were developed after reviewing trip rates used in other university towns. The model is implemented as a CV matrix script.

Table 3-2
Trip Generation Summary

| DATA ITEM | 2000 | 2025 |
|---|---|---|
| Total Permanent Population | 220,241 | 298,311 |
| Total Population (Permanent + Transient) | 225,917 | 311,556 |
| Total Permanently Occupied Dwelling Units | 77,436 | 106,254 |
| Total Occupied (Permanent + Transient) Dwelling Units | 84,075 | 115,164 |
| Total Service Employment | 85,342 | 109,574 |
| Total Commercial Employment | 24,609 | 33,550 |
| Total Manufacturing Employment | 11,660 | 15,334 |
| Total Other Industrial Employment | 5,623 | 7,577 |
| Total Employment | 127,234 | 166,035 |
| Permanent Population Per Permanently Occupied Dwelling Unit | 2.840 | 2.810 |
| Total Population Per Total Occupied Dwelling Unit | 2.687 | 2.705 |
| Total Employment Per Permanent Population | 0.578 | 0.557 |
| Service To Total Employment | 0.671 | 0.660 |
| Commercial To Total Employment | 0.193 | 0.202 |
| Manufacturing To Total Employment | 0.092 | 0.092 |
| Other Industrial To Total Employment | 0.044 | 0.046 |
| Total Home-Based Productions (Person Trip Ends) | 646,204 | 872,589 |
| Total Home-Based Attractions (Person Trip Ends) | 646,213 | 872,605 |
| Total Productions | 1,094,430 | 1,494,655 |
| Total Attractions | 1,094,426 | 1,494,683 |
| Internal Person Trips Per Permanently Occupied Dwelling Unit | 12.695 | 12.396 |
| Internal Person Trips Per Total Occupied Dwelling Unit | 11.692 | 11.437 |
| Internal Person Trips Per Employee | 7.726 | 7.933 |

Source: The Corradino Group

To support the UF trip purposes, a UF zonal data file was developed (DBF format). The University of Florida provided all UF data. The consultant developed the estimate of the number of off-campus student residents from a list of home addresses of all UF students. These addresses were geocoded and assigned to model TAZs. Following is a list of UF data incorporated into the model:

- TAZ - Zone number
- UF-OC-ST – Number of UF off-campus student residents, estimated from student address records provided by UF.
- UF-DORM-ST – Number of on-campus UF student residents
- UF-PARKING – UF commuting parking spaces (excluding on-campus student long-term not used for commuting). This variable is also used to reallocate service employment as noted above.
- UF-EMP – Number of UF place-of-work employees by TAZ. This variable is also used to reallocate service employment as noted above.
- CLASSROOMS – Number of UF classrooms (not used)
- SEATS – Number of UF classroom seats
- CLASSSQFT – Square feet of UF classrooms (not used)

A summary of UF data appears in Table 3-3. As noted earlier, all data except for the off-campus student totals were provided by UF. Growth between 2000 and 2025 is based on UF estimates of changes in campus housing and enrollment. It is also understood that the off-campus students variable might not account for all off-campus students because all students did not appear in UF's list, and all addresses in the list could not be geocoded. Thus, this variable is used to proportion the home end of UF student travel.

Table 3-3
UF Data Summary

| Variable | 2000 | 2025 |
|---|---|---|
| Off-Campus Students | 16,024 | 18,760 |
| On-Campus Housing | 10,647 | 11,428 |
| UF Commuting Parking Spaces | 23,415 | 27,134 |
| UF Employment | 22,211 | 27,172 |
| Number of Classrooms | 624 | 624 |

Source: UF and The Corradino Group

## 4. Highway and Transit Networks

The highway network is not an update of the 1990 model network. It is entirely new. The base highway network has its origin in a GIS database provided to the MTPO by Caliper (when TransCAD was the adopted modeling software). While the network was still in TransCAD format, the consultant and MTPO staff reviewed and edited network attributes and geometry to ensure that it was an accurate representation of actual conditions. After the decision by FDOT/MTF to adopt CV, the consultant, working with Citilabs, converted this database to a TP+ network. The coordinate system for the TAZs and network database is NAD83, Florida North, feet. Please note that because the highway network defines the fundamental spatial geometry for all modes, some of the network attributes pertain to transit and bicycles and are not highway links. Transit and bike data fields contain 0 or blank, unless facilities are present on the link or node.

The transit network also is entirely new because the 1990 FSUTMS model did not have a transit network. The consultant developed the transit network system from ArcView shape files provided by the RTS. These files were processed to produce CUBE Public Transport (PT) line files that are compatible with the CV software. Again, because of FDOT's switch in modeling software, the networks were first developed for TransCAD and then converted to CV format.

## 5. 2000 Traffic Count and Transit Ridership Data

Again, because both highway and transit networks are entirely new, the consultant did review updated data, but developed entirely new data.

Traffic counts were obtained from FDOT's Traffic Information CDROM, data from the FDOT Roadway Characteristics Inventory (RCI), and traffic count data maintained by the MTPO was part of the Congestion Management System. Counts were coded into the model network. All counts were adjusted to represent peak season ADT. The highway evaluation program reports the percentage of links with traffic counts (Table 5-1). Sufficient counts were available for model calibration.

Table 5-1
Percentage of Links With Counts

| By Facility Type | Percent |
|---|---|
| Freeway(11-17) | 40.91 |
| Div Art(21-25) | 13.25 |
| Und Art(31-38) | 16.28 |
| Collect(41-48) | 16.6 |
| 1wy & Frntg(61-67) | 6.9 |
| Totals | 15.25 |
| | |
| By Area Type | Percent |
| CBD | 6.42 |
| Fringe | 10.12 |
| Residential | 11.26 |
| Rural | 22.77 |
| Total | 15.25 |

Source: The Corradino Group

Transit ridership data used in the calibration of the nested logit mode choice model was obtained from several sources. Target mode shares (Table 5-2) were estimated from several sources, as no single data source or survey contained all the data needed to estimate the targets. Data sources used to estimate the mode choice model calibration file include the RTS 2002 Comprehensive Operational Analysis (COA), the 2000 FDOT District 2 Home interview survey, current and past ridership data reported by RTS to the Federal Transit Administration's (FTA) National Transit Database, and typical relationships observed in other studies and published in reports such as NCHRP #365. Additionally, the mode choice model was revised during the course of the study to ensure that it did a reasonable job of replicating 2005 ridership associated with the current RTS service, which has been expanded greatly since the 2000 model base year.

Table 5-2
Target and Modeled Mode Shares

| | HBW | | | HBO | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TARGETS | No-car | With car | Student | No-car | With car | Student | NHB | HBU | Dorm |
| 1 Drive Alone | 0.00% | 88.00% | 80.30% | 0.00% | 41.05% | 32.84% | 44.50% | 52.80% | 0.00% |
| 2 Carpool 2 | 62.37% | 5.76% | 9.77% | 61.61% | 36.72% | 40.90% | 34.12% | 6.18% | 0.00% |
| 3 Carpool 3+ | 31.19% | 2.88% | 4.88% | 30.81% | 18.36% | 20.45% | 17.06% | 3.09% | 0.00% |
| 4 Walk-local bus | 0.83% | 0.56% | 0.83% | 0.43% | 0.28% | 0.43% | 0.64% | 16.55% | 21.56% |
| 5 Walk-express bus | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 6 Drive-transit | 0.00% | 0.01% | 0.02% | 0.00% | 0.01% | 0.01% | 0.02% | 0.38% | 0.00% |
| 7 Walk. | 3.66% | 1.83% | 2.75% | 6.55% | 3.27% | 4.91% | 2.66% | 11.00% | 50.43% |
| 8 Bike | 1.94% | 0.97% | 1.46% | 0.62% | 0.31% | 0.47% | 1.01% | 10.00% | 28.02% |

Source: The Corradino Group

# 6. Trip Generation Rates

The trip generation rates used in the model were developed by FDOT from the 2000 District 2 Household Survey. During model validation, the consultant determined that the model was slightly underestimating the amount of vehicle miles of travel (VMT) as indicated by traffic counts. Thus, the trip rates were increased by 10%, resulting in better overall model statistics. The consultant believes this modest increase to be reasonable, as it is common for household surveys to under report travel.

Also, as noted earlier, because of the large influence of the University of Florida on travel in Gainesville, it appeared that the standard FSUTMS trip purposes did not account for all travel in Gainesville. Thus, special UF trip purposes were developed to represent students living off-campus and travel to class, and travel on campus made by students in campus housing. Trips rates were developed after reviewing trips rates used in models developed for other university towns.

## 7. Trip Length Frequency Distribution

Because of the new trip purposes in the model, the age of the 1990 model, and the lack of new data on which to base friction factors, the consultant developed new friction factors for the model. Friction factors were developed for each trip purpose as follows:

- HBW – Home-based-work – NCHRP #365 HBW gamma function
- HBSH – Home-based-shopping – NCHRP #365 HBSHO gamma function
- HBSR – Home-based-social/recreational – NCHRP #365 HBO gamma function
- HBO – Home-based-other – NCHRP #365 HBO gamma function
- NHB – Non-home-based – NCHRP #365 NHB gamma function
- TK4 – Four-tire trucks – Quick Response Freight exponential
- TKSGL – Single unit trucks, more than four tires – Quick Response Freight exponential
- TKTRLR – Combination trucks – Quick Response Freight exponential
- SOVIE – Single occupant internal-external – 1990 Gainesville Tranplan IE
- HOVIE – Multiple occupant internal-external – 1990 Gainesville Tranplan IE
- TKLTIE – Light truck internal-external – 1990 Gainesville Tranplan IE

## 8. Auto Occupancy Rates

In the Gainesville model, auto occupancy is a result of the mode choice model. Thus, the model is sensitive to auto operating costs and parking costs. Base year target occupancy rates are as follows:

- HBW – 1.09
- HBO – 1.52
- NHB – 1.42
- HB University – 1.09
- Total – 1.40

Mode choice calibration ensured that these rates were replicated in the 2000 base year.

## 9. Transit Parameters

The mode choice model is a nested logit mode choice model implemented as a CV Matrix program. The model allocates trips, by internal trip purpose, to modes of travel. HBW trips are split using peak period travel attributes while HBO, NHB, and HBU trips are split using off-peak characteristics. UF dorm residents have a reduced mode choice set consisting of walk, bike, walk to off-peak local bus. The modes and nests (for each trip purpose) are:

- Motorized
    - Auto
        - Drive-alone
        - Shared-ride two occupants
        - Shared-ride three or more occupants

    - Transit
        - Walk to local bus
        - Walk to premium service (express bus)
        - Drive to best available service
- Non-motorized
    - Walk (entire trip)
    - Bicycle (entire trip)

Trips are allocated to modes as a function of making the trip by each of the available modes. The utility of a mode is assumed to be a function of attributes that describe the level of service (LOS) provided by the mode (called coefficients), and a mode specific constant. The mode specific constant, also known as mode bias coefficient, is an adjustment parameter that compensates the unknown effects of the variables not included in the utility computation.

The consultant implemented a self-calibrating feature into the model so it would replicate the mode share reported earlier in Table 5-2.  The model is well-calibrated.

Transit network and path-building parameters followed FSUTMS standards, as adapted to support the CV Public Transport (PT) transit model program.

# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 4

## Gainesville Urbanized Area Model Update

Prepared for:

The Metropolitan Transportation Planning Organization

Prepared by:

The Corradino Group, Inc.

December 2005

CORRADINO

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# Technical Report 4
# Gainesville Urbanized Area Model Update

## 1. Introduction

This report describes the development and validation of the travel demand model for the Gainesville Urbanized Area Transportation Study (GUATS). Corradino developed an entirely new model, and thus, Chapter 2 of this report describes the development of the model instead of an update of the model.

The model developed for the Gainesville Metropolitan Transportation Planning Organization (MTPO) breaks new ground for the Florida Standard Urban Transportation Model Structure (FSUTMS) process. The previous model was implemented in Tranplan software. At the time that the MTPO issued the request for proposals, the Model Task Force (MTF) and the Florida Department of Transportation (FDOT) had adopted TransCAD as the standard modeling software. About ten months after work on the Gainesville Urban Area 2025 Long Range Transportation Plan Update had begun, the MTF and FDOT decided to switch to CUBE/Voyager (CV) software from Citilabs, Inc. At the time the change was made from TransCAD to CV, the consultant was well along the way with the development of the TransCAD model. Shortly after the FDOT/MTF decision, the consultant began development of a CV model. Citilabs provided assistance to the consultant in the conversion of the model from TransCAD to CV.

The FSUTMS/Tranplan model that was operational before the beginning of the 2025 update had a base year of 1990. In most instances, new modeling data were developed for the 2000 model because the 1990 data were dated. However, some elements were translated between FSUTMS/Tranplan, TransCAD, and CV.

## 2. Model Development

As noted earlier, the travel demand model was developed in CV. In the development of these models, the consultant took full advantage of the features and capabilities of the software. Thus, the models are implemented as a CV “flowchart.” Additionally, CV includes a powerful scenario manager, and it was used to control and manage all model files. All alternatives appear as part of the CV catalog.

The entire model is implemented in CV with the exception of the FORTRAN-based Northeast Regional Planning Model (NERPM) trip generation model, and the standard FORTRAN-based highway evaluation program (HEVAL). Neither TransCAD nor Tranplan programs are required to run the model.

### 2.1 Highway Network

The GUATS highway networks are maintained as TP+ networks. All editing of the network must be done in CUBE. Edits must be made to the input network of the “Highway Application,” step 3. The file name is established in the “Highway Network” CUBE key called HNET.

The base highway network has its origin in a GIS database provided to the MTPO by Caliper (when TransCAD was the adopted modeling software). While the network was still in TransCAD format, the consultant and MTPO staff reviewed and edited network attributes and geometry to ensure the network was an accurate representation of actual conditions. After the decision by FDOT/MTF to adopt CV, the consultant, working with Citilabs, converted this database to a TP+ network. The coordinate system for the TAZs and network database is NAD83, Florida North, feet.

Please note that because the highway network defines the fundamental spatial geometry for all modes, some of the network attributes pertain to transit and bicycles and are not highway links. Transit and bike data fields contain 0 or blank, unless these facilities are present on the link or node. There are two types of network attributes: node and link. The input network might contain other data fields in addition to those listed below, just for information. A list of mandatory attributes and their use follows. All values are numerical unless noted.

Node attributes:

- N – Node number
- X – X coordinate (for GUATS, NAD83, Florida North, feet)
- Y – Y coordinate
- PNRDESCRIP – A 15 byte bus park-and-ride lot description (text)
- PNRSVCAREA – Maximum park-and-ride service area (highway access distance), in miles.
- PARKINGSPA – Number of park and ride lot parking spaces. This value is optional because the model does not constrain the auto access mode by the number of spaces.
- PNRTERMTIM – Park and ride terminal time (walk time from the auto to the bus stop).
- KNRTERMTIM – Kiss and ride (auto drop-off) terminal time (walk time from the auto to the bus stop).
- AMUSEFLAG – Flag to turn the lot on or off for the AM or peak network. If “1”, the lot is used, if “0”, the model ignores the lot.
- AMPNRCOST – Cost in cents to park for AM (peak) park-and-ride trips.
- MDUSEFLAG – Flag to turn the lot on or off for the MD or off-peak network. If “1”, the lot is used, if “0”, the model ignores the lot.
- MDPNRCOST – Cost in cents to park for MD (off-peak) park-and-ride trips.

Many link attributes are carried along with the model networks. The ones required as inputs to the model are in bold face and underlined in the following list. Please note that input variables must be edited only in the input network (the box is red in the flowchart); the scripts will overwrite attributes entered or changed at other locations in the flowchart. It is also important to note that CV has no practical limit on the number of attributes, so the user may add others to the network.

- <u>A</u> – Anode.
- <u>B</u> – Bnode
- <u>SCRN</u> – FSUTMS screenline code
- SECNUM – MTPO (CMS) roadway section number
- <u>DIR</u> – Direction code (0=twoway, 1=oneway)
- <u>AB_FACILIT</u> – FSUTMS two-digit facility type. It should also be noted that any link present in the network with AB_FACILIT=0 will not be carried through the model. Thus, a code of 0 effectively disables the link.
- <u>AB_AREA_TY</u> – FSUTMS two-digit area type
- <u>AB_LANES</u> – Directional number of lanes
- ROAD_NAME_ – Street name data
- ROAD_NAME1– Street name data
- ROAD_NAME2 – Street name data
- ROAD_NAME3 – Street name data
- ROUTE_NAME – Street name data
- NUMBER – Street name data
- TYPE – Street name data
- QUALIFIER – Street name data
- OLD_ROAD_N– Street name data

- RCILINK – Data to reference FDOT's Roadway Characteristics Inventory (RCI)
- ROADWAY – RCI route name (section and subsection)
- BEGIN_POST – RCI beginning milepost
- END_POST – RCI ending milepost
- RCINAME – RCI road name
- RCIURBSIZE – RCI urban area size code
- RCIFCLASS – RCI functional classification
- RCIRDTYPE – RCI road type
- RCIAADT – RCI AADT
- RCIRSPEED – RCI right direction speed
- RCILSPEED – RCI left direction speed
- RCIRLANES – RCI right direction number of lanes
- RCILLANES – RCI left direction number of lanes
- RCITLANES – RCI total (two-way) number of lanes
- RCICOSITE – RCI county and section
- RCISIGNALS – RCI number of signals
- RCISIGMILE – RCI number of signals per mile
- RCILANDUSE – RCI land use code
- EXISTING – 1 = on the ground in 2000, 0 = change in this link
- LOCAL_NAME – Street name data
- PTMS_ID – Portable traffic counter ID
- TTMS_ID – Telemetry counter ID
- STREET_NAM – Street name data
- AADT2000 – Two way average annual daily traffic estimate, only for links where the count was taken. For I-75 this is the sum of both directions
- AADT002W – Two way average annual daily traffic estimate, propagated to adjacent links where counts probably are similar. For I-75 this is the sum of both directions
- DISTANCE – Link length in miles
- TWOWAY – 1 if two-way, otherwise 0
- ONE – Contains the value 1
- BK_LNS – Bike lanes code (0 = no bike lanes, 1 = in street bike lanes, 2 = wide buffers for biking, 3 = off street multi-purpose facilities)
- EC_PROJ – Code to indicate whether this project is different in the E+C and existing (variation) networks
- LOSN – Level of service standard, expressed as a number, from the MTPO congestion management system (A=1, B-2, C=3, D=4, E=5)
- MSV – Maximum service volume (daily) at LOSN, from the MTPO congestion management system
- ANOTATE – Reserved for annotation in plots

## Traffic Count Notes

Input traffic counts appear in two fields: AADT2000 and AADT002W. AADT2000 is the best available two-way average annual daily traffic estimate, and is posted only on the link where the count was taken. Also, for I-75 double line coding, the total traffic in both directions appears in this field. AADT002W is the best estimate of the two-way count, but has been propagated to multiple links. These too are AADT's, and counts for both directions, and I-75 counts for the sum of both directions appear on both northbound and southbound links. PSAWDT is derived from AADT2000 and PSAWDT00 is derived from AADT002W. Here, the values have been converted to peak-season values by dividing by the model output conversion factor (MOCF). Additionally, the values are directional and correct for comparing A-B, and B-A loads.

## Turn Penalties/Prohibitors

The model requires a CV turn penalty file called “TCARDS.PEN” to be present in the scenario directory for each scenario. These records use the standard CV format and all are prohibitors with a value of -1. The prohibitors can be edited graphically in CUBE by first displaying the network, then from the Intersection menu, open the file (TCARDS.PEN). Then select the node to edit and press F2. The penalties can then be edited. After editing, it is important to use the “Save” option on the intersection menu to save the file.

## Facility Types and Area Types

The model follows FSUTMS standards for area types and facility type (Tables 1-1 and 1-2), and uses FSUTMS speed/capacity and VFACTORS tables. Minor adjustments were made to these tables during validation. VFACTORS appear in Appendix A, and the SPDCAP modifiers appear in Appendix B. Standard FSUTMS formats are used for the SPDCAP and VFACTORS files, but CV scripts change the format to “comma-delimited” for use in the CV Network program.

## Non-Motorized Speeds

Non-motorized speeds and travel times are calculated by the script and stored on the highway network. Walking speeds are assumed to be 2.5 mph, and travel times are based on this value.

The basic bicycle speed is assumed to be 12 mph, but this speed is reduced according to certain highway attributes. The speed calculation also considers special bicycle facilities. The assignment of bicycle speeds has the following logic:

- Speed reductions are calculated as a function of highway speed and highway number of lanes. These reductions are subtracted from the 12 mph assumed initial bicycle speed.
- No speed reduction if highway speed is less than 12 mph
- If highway speed is greater than 12 mph, the speed reduction is [(highway speed) – 12]/18.
- No lane reduction if there is only one highway lane in each travel direction.
- If there are two highway lanes in each direction, the lane reduction is 1 mph.
- If there are more than two highway lanes in each direction, the lane reduction is 2 mph.
- Centroid connector bike speeds are always 12 mph.
- If there are in-street bike lanes or off-road lanes, the speed is always 12 mph. (BK_LNS code = 1 or 3)
- If the street has wide buffers for biking, then the speed is the maximum of the speed-reduction result or 11 mph. (BK_LNS code = 2)

## Variables Added in the Highway Step

This section describes model variables that are added in the highway step.

- MOCF – This is the model output conversion factor (MOCF), which is used to convert average annual daily traffic (AADT) counts to peak season weekday average daily traffic (PSWADT) values for use in FSUTMS models. The values were provided by FDOT, and are 0.96 for I-75 and US-301 and 0.96 for all other roads.

Table 1-1
FDOT Adopted Two-Digit Facility Type
Gainesville/Alachua County

| FT 1 | Freeways and |
|---|---|
| FT 11 | Freeway Group 1 (City of 500,000+) |
| FT 12 | Other Freeway (Group 2) |
| FT 15 | Collector/Distributor Lanes |
| FT 16 | Controlled-Access Expressway |
| FT 17 | Controlled-Access Parkway |
| **FT 2** | **Divided** |
| FT 21 | Divided Arterial 55 mph |
| FT 22 | Divided Arterial 45 mph |
| FT 23 | Divided Arterial Class Ia |
| FT 24 | Divided Arterial Class Ib |
| FT 25 | Divided Arterial Class II/III |
| FT 26 | Low Speed Divided Arterial |
| **FT 3** | **Undivided** |
| FT 31 | Undivided Arterial 45 mph (TB) |
| FT 32 | Undivided Arterial Class Ia (TB) |
| FT 33 | Undivided Arterial Class Ib (TB) |
| FT 34 | Undivided Arterial Class II/III (TB) |
| FT 35 | Undivided Arterial 45 mph (NTB) |
| FT 36 | Undivided Arterial Class Ia (NTB) |
| FT 37 | Undivided Arterial Class Ib (NTB) |
| FT 38 | Undivided Arterial Class II/III (NTB) |
| **FT 4** | **Collector** |
| FT 41 | Major Divided Collector |
| FT 42 | Major Undivided Collector (TB) |
| FT 43 | Major Undivided Collector (NTB) |
| FT 44 | Other Divided Collector |
| FT 45 | Other Undivided Collector (TB) |
| FT 46 | Other Undivided Collector (NTB) |
| FT 47 | Low Speed Collector |
| FT 48 | Very Low Speed Collector |
| **FT 5** | **Centroid** |
| FT 51 | Centroid Connector |
| FT 52 | External Centroid Connector |
| FT 53 | Used as DUMMIES |
| **FT 6** | **One Way** |
| FT 61 | One-Way Street 45 mph |
| FT 62 | One-Way Street Class Ia |

| FT6 | One Way |
|---|---|
| FT 63 | One-Way Street Class Ib |
| FT 64 | One-Way Street Class II/III |
| FT 65 | Frontage Roads 45 mph |
| FT 66 | Frontage Roads Class Ia |
| FT 67 | Frontage Roads Class Ib |
| FT 68 | Frontage Roads Class II/III |
| **FT 7** | **Ramps** |
| FT 71 | Freeway On-Ramp |
| FT 72 | Freeway Loop On-Ramp |
| FT 73 | Other On-Ramp |
| FT 74 | Other Loop On-Ramp |
| FT 75 | Freeway Off-Ramp |
| FT 76 | Freeway Loop Off-Ramp |
| FT 77 | Other Off-Ramp |
| FT 78 | Other Loop Off-Ramp |
| FT 79 | Freeway – Freeway Ramp |
| **FT 8** | **Exclusive HOV** |
| FT 81 | HOV Lane Grp. 1 (Separated) |
| FT 82 | HOV Lane Grp. 2 (Separated) |
| FT 83 | HOV Lane Grp. 1 (Non-Separated) |
| FT 84 | HOV Lane Grp. 2 (Non-Separated) |
| FT 85 | Non-Freeway HOV Lane |
| FT 86 | AM & PM Peak HOV Ramp |
| FT 87 | AM Peak Only HOV Ramp |
| FT 88 | PM Peak Only HOV Ramp |
| FT 89 | All Day HOV Ramp |
| **FT 9** | **Toll** |
| FT 91 | Toll Freeway Group 1 |
| FT 92 | Other Toll Freeway |
| FT 93 | Toll Expressway/Parkway |
| FT 94 | Toll Divided Arterial |
| FT 95 | Toll Undivided Arterial |
| FT 97 | Toll On-Ramp |
| FT 98 | Toll Off-Ramp |
| FT 99 | Toll Plaza |

Table 1-2
FDOT Adopted Two-Digit Area Type
Gainesville/Alachua County

| | |
|---|---|
| **AT 1** | CBD Areas |
| AT 11 | Urbanized Area (over 500,000) Primary City Central Business District |
| AT 12 | Urbanized Area (under 500,000) Primary City Central Business District |
| AT 13 | Other Urbanized Area Central Business District & Small City Downtown |
| AT 14 | Non-Urbanized Area Small City Downtown |
| **AT 2** | CBD Fringe Areas |
| AT 21 | All Central Business District (CBD) Fringe Areas |
| **AT 3** | Residential Area |
| AT 31 | Residential Area of Urbanized Areas |
| AT 32 | Undeveloped Portions of Urbanized Areas |
| AT 33 | Transitioning Areas/Urban Areas over 5,000 Population |
| AT 34 | Beach Residential (not used) |
| AT 35 | Residential Divided Arterial with a speed limit of 35 mph (BROWARD only case) |
| **AT 4** | OBD Areas |
| AT 41 | High Density Outlying Business District |
| AT 42 | Other Outlying Business District |
| AT 43 | Beach OBD (not used) |
| AT 44 | Low Density Industrial Area |
| AT 45 | OBD Divided Arterial with a speed limit of 35 mph |
| **AT 5** | Rural Areas |
| AT 41 | Developed Rural Areas/Small Cities under 5,000 Population |
| AT 52 | Undeveloped Rural Areas |

- PSWADT – peak season weekday average daily traffic = AADT/MOCF
- UROADFACTOR – factor between LOS "C" and LOC "E" (LOSC/LOSE) capacities from the standard FSUTMS "VFACTOR" file=(LOSC/LOSE). These values are facility type-specific.
- CONFAC – percentage of daily traffic occurring in the peak hour from VFACTORS. These values are facility type-specific.
- BPRCOEFFICIENT – "BPR" coefficient for the calculation of the congested travel time from VFACTORS. These values are facility type-specific. The BPR equation is: TC[1]=T0*(1+LW.BPRCOEFFICIENT*(V/C)^LW.BPREXPONENT), where T0 is the original (free-flow) time, and T[1] is the congested time.
- BPREXPONENT – "BPR" exponent for the calculation of the congested travel time from VFACTORS. These values are facility type-specific.
- CAPACITY – Hourly link capacity from the FSUTMS Speed-Capacity table, multiplied by the number of lanes.
- DAILYCAP – Daily capacity for roadway assignment, calculated as: (CAPACITY/CONFAC)*UROADFACTOR
- SPEED – free-flow speed from the FSUTMS Speed-Capacity table.
- TIME – Free-flow travel time in minutes= TIME=60*DISTANCE/SPEED
- WALKTIME – Travel time in minutes for walk trips at 2.5 miles per hour.
- BK_SPD – Bicycle speed as calculated using the method described in the preceding section.
- BK_TIME – Bicycle travel time in minutes at the calculated bicycle speed.

## 2.2 Transit Networks

CV's Public Transport (PT) program is used to represent the transit networks. A beta version of PT (v.11/10/2004 [3.3 Dev]) is required to run the model. Although PT was designed to function much differently than the FSUTMS/Tranplan transit network programs, PT parameters were set to provide a good representation of a FSUTMS transit network. The transit network comprises several files:

- Highway network file – This is the file described in earlier sections. The modeler should always have both highway and transit networks open and displayed in CUBE when editing the highway network so that highway network changes are reflected in the transit network, and all transit node sequences can be found in the highway network. Otherwise, the networks will loose synchronization and the modeler will have to manually repair the node sequences in the transit lines – a tedious process.
- Transit lines file – This is a standard PT lines file. A typical record is:

```
LINE NAME="RTS 16 EB", ONEWAY=T, HEADWAY[1]=15, HEADWAY[2]=15,
   MODE=4, OPERATOR=1, N=2149, 2150, 2145, 2153, 2161, 2159, 2158,
   2197, 2211, 2299, 2390, 2391, 2431, 2432, 2434, 2586, 2642,
   2669, 2680, -2706, 2715
```

Important fields are as follows:

- NAME=Route name character string
- ONEWAY=T or F
- HEADWAY[1]=peak headway minutes, and HEADWAY[2]=off-peak. If the route does not operate in the time period, set to zero.
- MODE=4 for local bus, 6 for express bus and 8 for bus rapid transit.
- OPERATOR=1 (RTS)
- RUNTIME =16.21, run time in minutes if different that autos on the highway link, as might occur with BRT.
- N=list of network nodes traversed by the route. A negative number means that the node is not a stop. If this file is displayed in CUBE when the highway network is edited, CUBE will automatically maintain the node list.
- Highway turn penalty file – The transit network builder also needs the highway turn penalty file described above under highway networks.
- Transit System File (Alachua.pts) – Defines modes and waiting times (Appendix C)
- Transit Fare File (Alachua.far) – Defines transit fare systems (Appendix C)
- Walk to local bus factor file (Alachuawlb.fac) – Specify path-building parameters, fare systems by mode, run time factors and penalties for walk-to-local buses (Appendix C)
- Walk to premium service factor file (Alachuawkprem.fac) – Specify path-building parameters, fare systems by mode, run time factors and penalties for walk-to-premium service (Appendix C)
- Park-and-ride factor file (Alachuapnr.fac) – Specify path-building parameters, fare systems by mode, run time factors and penalties for park-and-ride service (Appendix C)
- Highway-transit speed curves (Spdcrv.txt) – Relates highway and transit speeds (Appendix C)

It is important to note that data for park-and-ride lots must appear as node attributes of the highway network. These data are repeated here for easy reference:
Node attributes relevant to the transit network:

- N – Node number
- X – X coordinate (for GUATS, NAD83, Florida North, feet)
- Y – Y coordinate

- PNRDESCRIP – A 15 byte bus park-and-ride lot description
- PNRSVCAREA – Maximum park-and-ride service area (highway access distance), in miles.
- PARKINGSPA – Number of park and ride lot parking spaces. This value is optional because the model does not constrain the auto access mode by the number of spaces.
- PNRTERMTIM – Park and ride terminal time (walk time from the auto to the bas stop).
- KNRTERMTIM – Kiss and ride (auto drop-off) terminal time (walk time from the auto to the bas stop).
- AMUSEFLAG – Flag to turn the lot on or off for the AM or peak network. If one, the lot is used, if 0, the model ignores the lot.
- AMPNRCOST – Cost in cents to park for AM (peak) trips.
- MDUSEFLAG – Flag to turn the lot on or off for the MD or off-peak network. If one, the lot is used, if 0, the model ignores the lot.
- MDPNRCOST – Cost in cents to park for MD (off-peak) trips.

Finally, it is important to note that the transit network model generates six sets of transit paths, skims and fares that are later used in the model choice model:

- Peak (AM) walk to local bus.
- Peak (AM) walk to premium service (express bus).
- Peak (AM) auto access to best available service (local or premium, at parking lots defined as highway node attributes).
- Off-Peak (MD) walk to local bus.
- Off-Peak (MD) walk to premium service (express bus).
- Off-Peak (MD) auto access to best available service (local or premium, at parking lots defined as highway node attributes).

## 2.3 Traffic Analysis Zones (TAZs)

The Traffic Analysis Zones (TAZ) database is maintained as an ArcView shape file. The coordinate system for the TAZs and network database is NAD83, Florida North, feet. Development of the TAZ system began with the system from the 1990 FSUTMS/Tranplan model. It was adjusted to be compatible with the 2000 highway network, ensuring that major roadways are TAZ boundaries. Additional adjustments were made at the suggestion of the University of Florida (UF) so that the TAZ system was more compatible with the campus boundary. All TAZs are combinations of 2000 Census blocks, thereby allowing Census-based zonal data to be compiled using GIS techniques. A couple of notes are appropriate:

- There are a few gaps in the TAZ numbering system, as neither TransCAD (FDOT’s modeling software when the TAZ system was developed), nor CV require consecutive TAZ numbers.
- While numbers 1-499 are reserved for internal TAZs, the highest numbered polygon in the TAZ system is 466, and there are 453 TAZs.
- Including external stations, the highest TAZ number is 525.
- The shape file database contains year 2000 zonal data that are left over from model development, but which are not used in the model.
- There are several TAZ attributes that are used in the modeling process as followed:
    - ID and TAZ2000 are identical and contain the TAZ number.
    - DISTRICT values are:

        1 – Downtown Gainesville<br>
        2 – East Gainesville<br>
        3 – UF Campus<br>
        4 – UF southeast campus (main area)

## 2.4 Trip Generation

The trip generation model is a combination of two elements: the Northeast Regional Planning Model (NERPM) NERGEN program, using trip rates from the 2000 District 2 home-interview survey, and a special UF model to support two UF trip purposes. The NERGEN program is an external Fortran program, while the UF trip purpose is implemented in CV.

The NERGEN model supports 12 trip purposes:

- HBW – Home-based-work
- HBSH – Home-based-shopping
- HBSR – Home-based-social/recreational
- HBO – Home-based-other
- NHB – Non-home-based
- TK4 – Four-tire trucks
- TKSGL – Single unit trucks, more than four tires
- TKTRLR – Combination trucks
- SOVIE – Single occupant internal-external
- HOVIE – Multiple occupant internal-external
- TKLTIE – Light truck internal-external
- TKHTIE – Heavy truck internal-external

Trip rates for the NERGEN model were taken from a paper entitled "Gainesville Trip Generation Report," delivered to the consultant by FDOT (incorporated in this report as Appendix D). These rates were coded into the GRATES.SYN file. Additionally, five CV keys were developed to allow the rates to be factored during validation before use in the model. The keys were: {HBW-TF}, {HBSHOP-TF}, {HBSR-TF}, {HBO-TF} and {NHB-TF}. The validation effort found that setting these values at 1.1, indicating an increase in the trip rate of 10% over the survey values, provided a good match with vehicle miles of travel (VMT) as calculated by counts. Please note that the revised GRATES are used in NERGEN, and thus all statistics reported by the trip generation model program are based on the factored rates. The model uses the standard DUWEIGHT.SYN file.

Several other changes were made to the usual application of NERGEN:

- ZDATA1 and ZDATA2 are kept as DBF files (see Appendix E);
- ZDATA3 and ZDATA4 were maintained as text files (see Appendices F and G);
- Vehicle trips traveling to UF locations must park at UF parking garage and lot locations. Thus, for UF TAZs, UF employment is subtracted from service employment, and commercial employment if UF employment is greater than service employment. Then, then UF employment is reallocated to the UF zones in proportion to the number of available parking spaces. The revised Zdata2 file is then used in the NERGEN program. Thus, all trips generated by UF employment are attracted to parking lot and garage zones, not to the work zone.

## 2.5 University of Florida Trip Purposes

The Gainesville model has historically underestimated travel to and from the UF campus. Thus, a special UF trip purpose was developed for student living off-campus and traveling to UF. Additionally, under the traditional FSUTMS structure, there was no way to represent the on-campus trips of campus housing residents to classroom areas. A campus housing to classroom purpose was developed to account for these trips. Trip rates were developed after reviewing trip rates used in other university towns. The model is implemented as a CV matrix script.

To support these trip purposes, a UF zonal data file was developed (DBF format). Contents of the data file were:

- TAZ - Zone number
- UF-OC-ST – Number of UF off-campus student residents, estimated from student address records provided by UF.
- UF-DORM-ST – Number of on-campus UF student residents
- UF-PARKING – UF commuting parking spaces (excluding on-campus student long-term not used for commuting). This variable is also used to reallocate service employment as noted above.
- UF-EMP – Number of UF place-of-work employees by TAZ. This variable is also used to reallocate service employment as noted above.
- CLASSROOMS – Number of UF classrooms (not used)
- SEATS – Number of UF classroom seats
- CLASSSQFT – Square feet of UF classrooms (not used)

HBU trips are produced by UF off-campus students at the rate of 2.996 productions per day. They are attracted to UF parking spaces at the rate of 1.375 trips per day, and attractions are balanced to productions. These trips are also factored by the HBO trip rate key value (1.1).

Campus housing (HDORM) trips are generated by campus residents at the rate of 2.262 trips per day. They are attracted to classroom seats at the rate of 0.7513 trips per day. Again, these attractions are balanced to productions and are also factored by the HBO trip rate key value (1.1).

The UF trip generation routine also generates by TAZ, the faction of the residents in each TAZ that are UF students, and then for the non-students, the fractions with and without access to autos. The three values sum to 1.00 for each TAZ.

## 2.6 Trip Distribution

A standard gravity model, implemented in CV, is used for trip distribution. For the standard internal trip purposes a gamma function was used to develop the friction factors. Parameters were though suggested in NCHRP #365 (Table 2-1). The 1990 Gainesville FSUTMS/Tranplan friction factors were used for internal-external trips.

$$F(I)_p = a_p * (I ** b_p) * EXP(c_p * I)$$

where

| | | |
|---|---|---|
| $a_p$, $b_p$, and $c_p$ | = | calibration coefficients for trip purpose "p", |
| $F(I)_p$ | = | friction factor for impedance value "I" and trip purpose "p", |
| I | = | impedance value, and |
| EXP | = | exponential function (the base of natural logarithm). |

For truck trips, the friction factors were exponential values as suggested in the "Quick Response Freight Manual."

*Four-tire Commercial Vehicles:* $F_{ij} = EXP(-0.08 * t_{ij})$

*Single Unit Trucks (6+ tires):* $F_{ij} = EXP(-0.10 * t_{ij})$

*Combination Trucks:* $F_{ij} = EXP(-0.03 * t_{ij})$

where, $F_{ij}$ and $t_{ij}$ are friction factors and travel time between zones "i" and "j". EXP is the exponential function.

Friction factors were developed for each trip purpose as follows:

- HBW – Home-based-work – NCHRP #365 HBW gamma function
- HBSH – Home-based-shopping – NCHRP #365 HBSHO gamma function
- HBSR – Home-based-social/recreational – NCHRP #365 HBO gamma function
- HBO – Home-based-other – NCHRP #365 HBO gamma function
- NHB – Non-home-based – NCHRP #365 NHB gamma function
- TK4 – Four-tire trucks – Quick Response Freight exponential
- TKSGL – Single unit trucks, more than four tires – Quick Response Freight exponential
- TKTRLR – Combination trucks – Quick Response Freight exponential
- SOVIE – Single occupant internal-external – 1990 Gainesville Tranplan IE
- HOVIE – Multiple occupant internal-external – 1990 Gainesville Tranplan IE
- TKLTIE – Light truck internal-external – 1990 Gainesville Tranplan IE
- TKHTIE – Heavy truck internal-external – 1990 Gainesville Tranplan IE
- HBU – Home-based-university – NCHRP #365 HBO gamma function
- HDORM – Campus housing-university – NCHRP #365 HBO gamma function

Table 2-1
Gamma Function Parameters

| | HBW | HBSHOP | HBSR | HBO | NHB |
|---|---|---|---|---|---|
| a | 28507 | 139173 | 139173 | 139173 | 219113 |
| b | -0.020 | -1.285 | -1.285 | -1.285 | -1.332 |
| c | -0.123 | -0.094 | -0.094 | -0.094 | -0.100 |

Source: NCHRP #365

External-external trips, estimated from a base 2000 trip table (EETRIPS.DBF), were distributed with a Fratar model to a set of control totals (EETarget.dbf) with fields:

- TAZ – TAZ number
- EEO – Origin vehicle trips
- EED – Destination vehicle trips

All model friction factors are displayed in Appendix H.

## 2.7 Mode Choice Model

A nested logit model was implemented as a CV Matrix program. The model allocates trips, by internal trip purpose, to modes of travel. HBW trips are split using peak period travel attributes while HBO, NHB, and HBU trips are split using off-peak characteristics. UF dorm residents have a reduced mode choice set consisting of walk, bike, walk to off-peak local bus. The modes and nests (for each trip purpose) are:

- Motorized
  - Auto
    - Drive-alone
    - Shared-ride two occupants
    - Shared-ride three or more occupants
  - Transit
    - Walk to local bus
    - Walk to premium service (express bus)
    - Drive to best available service
- Non-motorized

- Walk (entire trip)
- Bicycle (entire trip)

Trips are allocated to modes as a function of making the trip by each of the available modes. The utility of a mode is assumed to be a function of attributes that describe the level of service (LOS) provided by the mode (called coefficients), and a mode specific constant. The mode specific constant, also known as mode bias coefficient, is an adjustment parameter that compensates the unknown effects of the variables not included in the utility computation.

Utility functions are used to convert travel time and cost for each of the various modes into a generalized cost. They have the following form:

U of transit =f (walk time, in-vehicle time, wait time, transfer time, PEV, transit fare)

U of highway =f (terminal time, run time, operating cost, parking cost)

These utility values are then used to compute the probability of using a mode as follows:

$$P(m) = EXP\ (U(m)) \ /\ \sum_{k=1}^{n}(EXP(U(k))$$

where:

| | | |
|---|---|---|
| P(m) | = | Probability of using mode “m” |
| EXP | = | Exponential function |
| DU(m) | = | Disutility of using mode “m” |
| DU(k) | = | Disutility of using mode “k” |
| n | = | Number of possible modes |
| m | = | Mode (Drive Alone, 2 Person Carpool, 3+ Person Carpool, Local Bus, Line-Haul with walk or local bus access, Line-Haul with Drive Alone access, and Line-Haul with Shared Ride access) |

In all 35 trip matrices are output by the mode choice model, which are later combined for highway, transit, walk, and bicycle assignment. The 35 matrices are:

- HBWDA – HBW auto drive alone
- HBWCP – HBW 2-person auto
- HBWCX – HBW 3+person auto
- HBWWB – HBW walk-local bus
- HBWWX – HBW walk-express bus
- HBWBA – HBW drive-best transit
- HBWWK – HBW walk trip
- HBWBK – HBW bike trip
- HBODA – HBO auto drive alone

- HBOCP – HBO 2-person auto
- HBOCX – HBO 3+person auto
- HBOWB – HBO walk-local bus
- HBOWX – HBO walk-express bus
- HBOBA – HBO drive-best transit
- HBOWK – HBO walk trip
- HBOBK – HBO bike trip
- NHBDA – NHB auto drive alone
- NHBCP – NHB 2-person auto
- NHBCX – NHB 3+person auto
- NHBWB – NHB walk-local bus
- NHBWX – NHB walk-express bus
- NHBBA – NHB drive-best transit
- NHBWK – NHB walk trip
- NHBBK – NHB bike trip
- HBUDA – HBU auto drive alone
- HBUCP – HBU 2-person auto
- HBUCX – HBU 3+person auto
- HBUWB – HBU walk-local bus
- HBUWX – HBU walk-express bus
- HBUBA – HBU drive-best transit
- HBUWK – HBU walk trip
- HBUBK – HBU bike trip
- HDORMUWB – Dorm walk-bus
- HDORMUWK – Dorm walk trip
- HDORMUBK – Dorm bike trip

The choice for using each of the modes is depends on the utility for using each of the choices. The utility is a linear combination of the cost, travel time, and pedestrian conditions for making the trip by each possible mode. The utility equations constants and coefficients are listed in Appendix I.

The mode choice model has numerous input and output files as follows:

- <u>Inputs</u>
  - ZDATI[1] = Zdata2.dbf, attraction end parking long and short parking cost. The long (9 hour) parking cost is used for HBW trips. The short (3 hour) parking cost is used for all other purposes.
  - ZDATI[2] = PEV (pedestrian environment dbf), containing the sum of measures noted above in a field called "SUM".
  - ZDATI[3] = UF data (UFPANDA.DBF), containing zonal factions of household types:
    - STUPCT - Fraction of households in the TAZ occupied primarily by UF students
    - NOCARPCT – Fraction of non-student households without an auto
    - WCARPCT – Fraction of non-student households with an auto
  - LOOKUPI[1] = Comma-delimited file (MC_Coefficients.csv) of utility constants (see Appendix I)
  - LOOKUPI[2] = Comma-delimited file (MC_Constants.csv) of utility constants (see Appendix I)
  - LOOKUPI[3] = Comma-delimited file (MC_Targets.csv) of mode choice targets for calibration (see Appendix I)
  - MATI[1] = Free-flow highway and bike time and distance skims (fhskims.mat)

  - MATI[2] = Person trips by purpose (ptrips.mat), consisting of 14 purposes including trucks and internal-external purposes:
    - HBW – Home-based-work
    - HBSH – Home-based-shopping
    - HBSR – Home-based-social/recreational
    - HBO – Home-based-other
    - NHB – Non-home-based
    - TK4 – Four-tire trucks
    - TKSGL – Single unit trucks, more than four tires
    - TKTRLR – Combination trucks
    - SOVIE – Single occupant internal-external
    - HOVIE – Multiple occupant internal-external
    - TKLTIE – Light truck internal-external
    - TKHTIE – Heavy truck internal-external
    - HBU – Home-based-university
    - HDORM – Campus housing-university
  - MATI[3] = AM peak transit skims (peak trn los.mat)
  - MATI[4] = MD off-peak transit skims (op trn los.mat)
  - MATI[5] = Congested highway and bike time and distance skims (rhskims.mat)
- Outputs
  - MATO[2] = Output trip tables as listed earlier (modeout.mat). This the primary output file, used by subsequent steps of the model.
  - PRINTO[1] = Mode choice summary report (mode summary.txt)
  - PRINTO[2] = Report of targets, mode shares and constants (rev_mode_const.csv)
  - PRINTO[3] = Revised mode choice constants from automatic calibration (newk.csv)
  - PRINTO[4] = Comma delimited file of mode shares (mode sum.csv) for use in spreadsheets and reports.

As noted above, the model addresses non-motorized activity by examining a pedestrian environment variable (PEV) and the length of the trip. The longer the trip the less likely it will be made by non-motorized modes.

The PEVs were developed to provide a measure of the ease of walking between origins and destinations. This variable proved to have an influence on transit trips because of the need to access the transit system by walking. It also has an impact on bike trips because of the strong relationship between areas that are good for walking and areas that are good for bike riding.

The following four factors were considered in the development of the pedestrian environment variable:

1. Sidewalk availability;
2. Ease of street crossing;
3. Street connectivity; and
4. Building setbacks.

A rating system for each of the four factors has been derived and will be applied to each traffic analysis zone in the Gainesville Urbanized Area model. The rating system is described in the table below.

Pedestrian environment factors will be summed across the four factors to provide a single pedestrian environment factor for each traffic analysis zone that is used in the mode choice models. This work will be completed by Corradino staff working with the MTPO and UF staff as part of the regional effort for developing PEVs.

Pedestrian Environment Variable (PEV) Rating System

| | PEV = 0 | PEV = 1 | PEV = 2 | PEV = 3 |
|---|---|---|---|---|
| Sidewalk availability | No sidewalks | <10% have sidewalks | 10-90% have sidewalks | >90% have sidewalks |
| Ease of street crossing | Crossings Difficult | <10% have easy crossings | 10-90% have easy crossings | >90% have easy/well-defined crossings |
| Non-motorized connections | No connections | <10% have connections | 10-90% have connections | >90% have connections |
| Building setbacks | All large setbacks | <10% have minimum setbacks | 10-90% have minimum setbacks | >90% have minimum setbacks |

For home-based trips (HBW and HBO), the model is segmented by the household type – student, non-student with an auto available, and non-student without an auto available. The percentage of households by auto availability was taken from the 2000 Census, and the percentage of households in each TAZ was estimated from UF enrollment records.

## 2.8 Transit Assignment

Transit assignment is performed as part of the CUBE assignment application. This application assigns transit trips to the appropriate transit network, reports results, and builds summaries of transit loads that are posted on the highway network. Transit loads on the highway network show daily transit passenger flows.

CV's Public Transport (PT) program is used for transit assignment. PT is used four times in the transit assignment process:

- Peak period walk to transit
- Peak period drive to transit
- Off-peak walk to transit
- Off-peak drive to transit

Inputs to each transit assignment are:

- The transit network
- The transit route path files (*.rte)
- The transit trip tables. There is one trip table for each route file

Outputs from each assignment are:

- The program print file, which contains information on line loading by route
- Loaded network file
- Loaded legs file, which contains one record for each link and line, and the loads on each. So, if 4 lines traverse a link, there will be 4 records for the link, each showing the load due to each transit line.
- Report file containing a summary of the input data used.

The loaded legs file is process by a later step, and loads for all paths and all links are added together and append to the highway network as “TranVol,” thereby allowing the total transit flow to be displayed on the network. Various transit loading displays can be created interactively using CUBE.

## 2.9 Highway and Non-motorized Assignments

Like the transit assignment, highway assignment is performed as part of the CUBE assignment application. The assignment is a 24-hour assignment, and conforming to FSUTMS standards, the model was calibrated to replicate peak season travel. A multi-class assignment is used to allow the use of passenger car equivalents for trucks, and so that multiple classes of vehicles can be identified and reported. Vehicle classes are:

- Light vehicles with a UF trip end - For this model light vehicles are autos and all single-unit trucks. They use a PCE of 1.0.
- Heavy vehicles with a UF trip end – For this model heavy vehicles are multi-unit trucks and have a PCE of 2.0. The PCE is specified as the CUBE key “PCE_HT”.
- Light vehicles without a UF trip end.
- Heavy vehicles without a UF trip end.

After the highway assignment is complete the walk and bike (non-motorized) trips are assigned to the minimum distance paths for non-freeway links. Then link attributes are reorganized, renamed, and new attributes are calculated. Final attributes from the assignment process are:

- NONMOTORVOL – Total non-motorized volumes
- CGSPEED – Congested speed
- DISTANCE – Link length (miles)
- TIME – Free flow time (minutes)
- CGTIME – Congested travel time (minutes)
- UF_MOTOR – Light plus heavy vehicles with a UF trip end
- LIGHTVEHICLES – Total light vehicles
- HEAVYTRUCKS – Total heavy trucks
- MOTORIZEDVOL – Light vehicles plus heavy trucks
- VMT – Total motorized vehicle miles of travel.
- VHT – Total motorized vehicle hours of travel.
- PEDESTRIANS – Pedestrian volumes.
- BICYCLISTS – Bike volumes.
- VOL_COUNT – Motorized volume/2000 daily count
- VOL_CAP – Motorized volume/(FSUTMS LOS C capacity)
- VOL_MSV – Motorized volume/(MTPO maximum service volume)
- DAILYCAPE– Daily FSUTMS LOS E capacity
- VOL_CAPE – Motorized volume/(FSUTMS LOS E capacity)
- TranVol – Total transit volume (daily persons)

Additionally, all of the network attributes listed in section 2.1 are available.

## 2.10 Highway Evaluation

The highway evaluation step comprises four program steps. These steps provide summary data for the model run and are as follows:

- Percent root-mean square error, tabulated by volumes group, area type and facility type. The counts used in this tabulation are only actual count locations.

- The FSUTMS root-mean square error program. This is the standard FSUTMS RMSE program, setup to run with dBase files as output from CV. All links with counts and estimated counts are used in this summary.
- The FSUTMS Highway Evaluation program (HEVAL). This is the standard FSUTMS HEVAL program, setup to run with dBase files as output from CV. All links with counts and estimated counts are used in this summary. HEVAL is set for analysis or validation as defined by the codes in PROFILE.MAS (&ANALYSIS and &VALIDATE).
- A special CV script that was developed to produce summaries needed by the UF. It summarizes trips by mode and geographic location. Geographic codes are in defined in TAZ2000.DBF (from shape) and are as follows:
  - 1=downtown
  - 2=East Gainesville
  - 3=UF
  - 4=UF SE campus (main area)
  - 0=other

# 3. Model Validation

## 3.1 External Trips

This section presents the validation of external trips. The highway external trips are divided into external-internal productions and through (EE) vehicle trip. The external-internal trip ends are further divided by type of trip end (trip productions and trip attractions) and by vehicle type (single-occupant auto, high-occupancy vehicle, light trucks and heavy trucks).

Modeling EE trips is the first step in FSUTMS. The external trip module requires an EE trip table that contains EE vehicle trip between external stations. In the Gainesville model, this step begins with a 2000 EE vehicle trip table. Trip tables for other years are estimated using a Fratar model.

The Gainesville model covers all of Alachua County. All external stations are at the county line and are shown in Figure 3-1. Base year 2000 eternal station volumes were taken from the 2000 Florida Traffic Information CDROM (Table 3-1). Available classification counts were used to estimate the percentage of heavy and light trucks. For autos (total vehicles minus trucks), vehicles were allocated between single occupant vehicles and carpools (2 or more persons) so that the overall occupancy is 1.14 and the carpool occupancy averages 2.4. These assumptions were based on the consultant’s professional judgment and experience with common occupancy rates. It is important to note that this assumption has no effect on the model, but was included so that the structure was present to test HOV lanes if the need should arise in the future.

Validation of the external was based on extrapolation and professional judgment. Targets for EE and EI productions usually relies upon recently collected roadside or cordon line surveys to determine the proportion of the vehicle traffic that passes through the study area, but no recent survey was available, and State of Florida policies generally prohibit the collection of roadside survey data. Thus, EE travel patterns were “borrowed” from the 1990 model and updated to match estimates of through counts. The final EETRIPS file is summarized in Table 3-2. The final validation step was to compare assigned model volumes to counts (Table 3-3). As indicated, the estimated model volumes are very close to the counts.

## 3.2 Trip Generation

As noted earlier in this report, trip generation rates were obtained from the home-interview study conducted in 2000 by FDOT. The rates from this survey were used in the model, but were increase by 10 percent as indicated by the volume/count ratios reported in early validation runs. Final trip rates used in the NERGEN model are listed in Appendix J. Please note that the rates are input into the model as the "standard" rates from the survey, and then are factored by the values of the KEYS ({HBW-TF}, {HBSHOP-TF}, {HBSR-TF}, {HBO-TF} and {NHB-TF}), each of which is equal to 1.1. The values shown in Appendix J are the result after factoring. Additionally, the factoring is applied by the CV script, making it easy to make global validation adjustments. After consultation with the MTPO staff, the consultant added special generators to the NERGEN model. Special generators are listed in Appendix K. Please note that the value of "C" in column 1 means that the generator is not active and is ignored by the model.

Also, as noted earlier, the model contains a UF component for trips made from off-campus to UF, and for campus trips made by UF campus residents. HBU trips are produced by UF off-campus students at the rate of 2.996 productions per day. They are attracted to UF parking spaces at the rate of 1.375 trips per day, and attractions are balanced to productions. These trips are also factored by the HBO trip rate key value (1.1).

Campus housing (HDORM) trips are generated by campus residents at the rate of 2.262 trips per day. They are attracted to classroom seats at the rate of 0.7513 trips per day. Again, these attractions are balanced to productions and are also factored by the HBO trip rate key value (1.1).

Figure 3-1
External Station Locations
2000 Gainesville Model

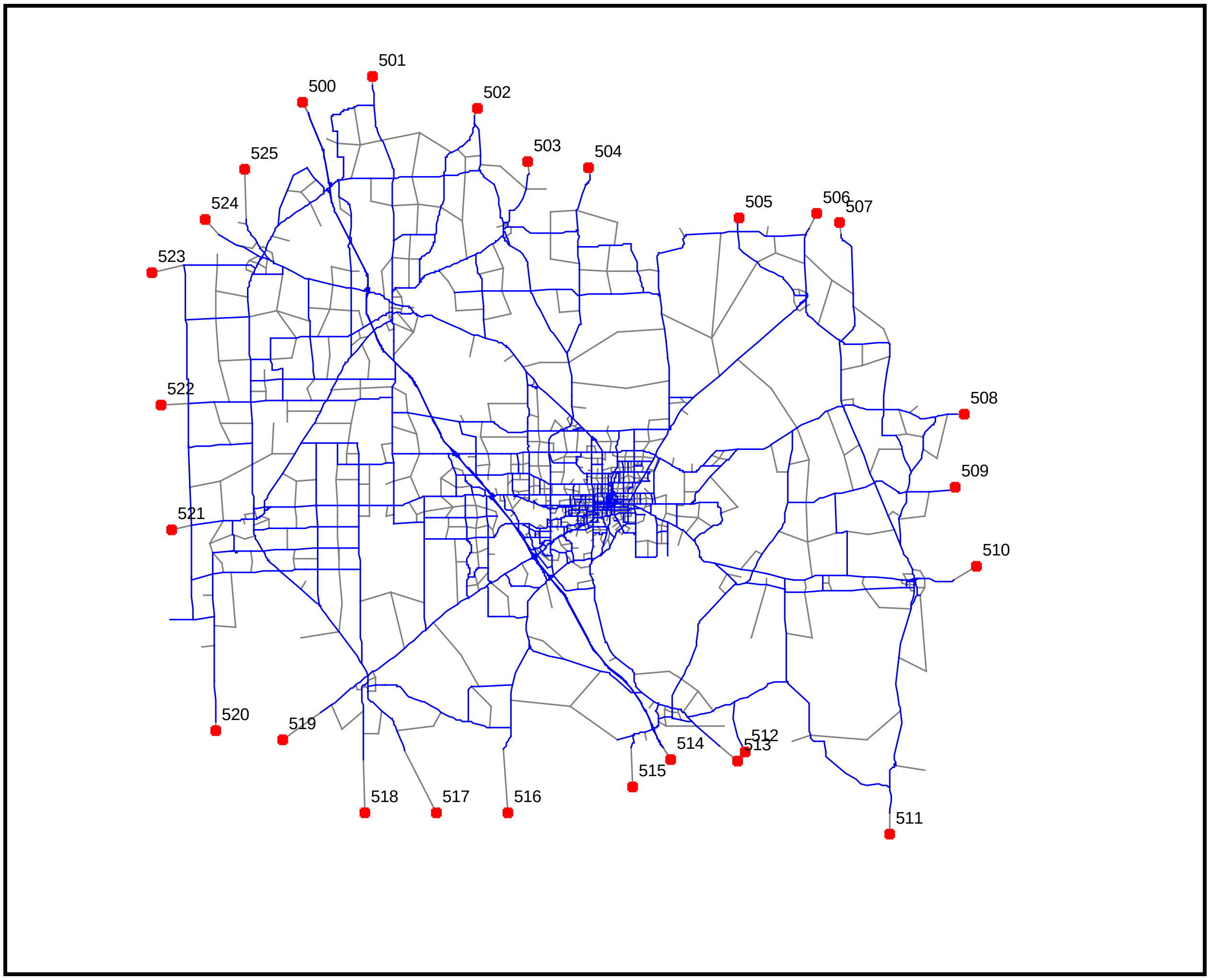


Table 3-1
External Station Volume Summary

| TAZ | Ext-Ext Productions | Percent Vehicles: Autos by Occupancy Low | Percent Vehicles: Autos by Occupancy High | Percent Vehicles: Trucks Light | Percent Vehicles: Trucks Heavy | Location | External-External Origins | External-External Dest. | Daily Volume |
|---|---|---|---|---|---|---|---|---|---|
| 500 | 10,282 | 69 | 8 | 4 | 19 | I- 75 (North) @ Columbia County Line | 13959 | 13959 | 38,200 |
| 501 | 807 | 77 | 9 | 3 | 12 | CR 241 (North) @ Union County Line | 197 | 197 | 1,201 |
| 502 | 2,242 | 77 | 9 | 3 | 12 | SR 121 (North) @ Union County Line | 529 | 529 | 3,300 |
| 503 | 66 | 77 | 9 | 3 | 12 | CR 237 (North) @ Bradford County Line | 17 | 17 | 100 |
| 504 | 1,016 | 86 | 10 | 2 | 2 | SR 235 (North) @ Bradford County Line | 592 | 592 | 2,200 |
| 505 | 266 | 77 | 9 | 3 | 12 | CR 1475 (North) @ Bradford County Line | 67 | 67 | 400 |
| 506 | 9,051 | 82 | 9 | 2 | 7 | US 301 (North) @ Bradford County Line | 7875 | 7875 | 24,801 |
| 507 | 734 | 77 | 9 | 3 | 12 | CR 325 (North) @ Bradford County Line | 183 | 183 | 1,100 |
| 508 | 6,479 | 82 | 9 | 2 | 6 | SR 26 (East) @ Putnam County Line | 1311 | 1311 | 9,101 |
| 509 | 269 | 77 | 9 | 3 | 12 | CR 1474 (East) @ Putnam County Line | 66 | 66 | 401 |
| 510 | 4,445 | 77 | 9 | 3 | 12 | SR 20 (East) @ Putnam County Line | 2628 | 2628 | 9,701 |
| 511 | 1,277 | 46 | 5 | 3 | 46 | US 301 (North) @ Marion County Line | 5512 | 5512 | 12,301 |
| 512 | 68 | 77 | 9 | 3 | 12 | CR 225 (South) @ Marion County Line | 16 | 16 | 100 |
| 513 | 5,593 | 74 | 8 | 2 | 16 | US 441 (South) @ Marion County Line | 1504 | 1504 | 8,601 |
| 514 | 16,224 | 69 | 8 | 4 | 19 | I- 75 (South) @ Marion County Line | 15088 | 15088 | 46,400 |
| 515 | 2,291 | 77 | 9 | 3 | 12 | CR 234 (South) @ Marion County Line | 555 | 555 | 3,401 |
| 516 | 6,138 | 83 | 9 | 3 | 5 | SR 121 (South) @ Levy County Line | 1581 | 1581 | 9,300 |
| 517 | 2,040 | 77 | 9 | 3 | 12 | SR 45 (South) @ Levy County Line | 480 | 480 | 3,000 |
| 518 | 892 | 77 | 9 | 3 | 12 | CR 241 (South) @ Levy County Line | 204 | 204 | 1,300 |
| 519 | 4,366 | 77 | 9 | 2 | 13 | SR 24 (Southwest) @ Levy County Line | 1067 | 1067 | 6,500 |
| 520 | 671 | 77 | 9 | 3 | 12 | CR 337 (South) @ Levy County Line | 165 | 165 | 1,001 |
| 521 | 5,770 | 81 | 9 | 3 | 7 | SR 26 (West) @ Gilchrist County Line | 1515 | 1515 | 8,800 |
| 522 | 1,823 | 77 | 9 | 3 | 12 | CR 232 (West) @ Gilchrist County Line | 439 | 439 | 2,701 |
| 523 | 2,290 | 77 | 9 | 3 | 12 | NW 182 (West) @ Gilchrist County Line | 555 | 555 | 3,400 |
| 524 | 6,000 | 84 | 9 | 2 | 5 | US 27 (Northwest) @ Gilchrist County Line | 1400 | 1400 | 8,800 |
| 525 | 3,914 | 77 | 9 | 3 | 12 | US 441 (Northwest) @ Columbia County Line | 943 | 943 | 5,800 |

Source: Florida Traffic Information 2000

# Table 3-2
## External-External Trip Table

| | 500 | 501 | 502 | 503 | 504 | 505 | 506 | 507 | 508 | 509 | 510 | 511 | 512 | 513 | 514 | 515 | 516 | 517 | 518 | 519 | 520 | 521 | 522 | 523 | 524 | 525 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500 | - | - | 25 | - | 25 | - | 6 | - | 4 | - | 93 | - | - | 400 | 12,699 | 32 | 151 | - | - | 32 | 10 | 143 | 21 | 29 | 10 | - | 13,680 |
| 501 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 17 | - | - | - | - | - | - | - | - | - | - | - | 17 |
| 502 | 24 | - | - | - | - | - | 11 | - | 3 | - | 5 | - | - | 4 | 12 | - | 4 | - | - | 1 | - | 4 | - | - | - | 11 | 79 |
| 503 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 9 | - | - | - | - | - | - | - | - | - | - | - | 9 |
| 504 | 23 | - | - | - | - | - | 10 | - | 4 | - | 5 | - | - | 3 | 639 | - | 3 | - | - | 1 | - | 4 | - | - | - | 10 | 702 |
| 505 | - | - | - | - | - | - | - | - | - | - | - | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 10 |
| 506 | 6 | - | 11 | - | 11 | - | - | - | 1,053 | - | 716 | 5,722 | - | 21 | 135 | - | 62 | - | - | 31 | - | 49 | - | - | - | 37 | 7,854 |
| 507 | - | - | - | - | - | - | - | - | - | - | - | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 20 |
| 508 | 4 | - | 3 | - | 4 | - | 1,089 | - | - | - | - | 1,076 | - | 4 | 17 | - | 9 | - | - | 7 | - | - | - | - | - | 10 | 2,223 |
| 509 | - | - | - | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4 |
| 510 | 84 | - | 5 | - | 5 | - | 643 | - | - | - | - | 623 | - | 17 | 29 | - | 2 | - | - | 27 | - | 47 | - | - | - | 42 | 1,524 |
| 511 | - | - | - | - | - | 11 | 5,722 | 22 | 1,040 | 4 | 694 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | 7,497 |
| 512 | - | - | - | - | - | - | - | - | - | - | - | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 |
| 513 | 451 | - | 5 | - | 3 | - | 23 | - | 5 | - | 22 | - | - | - | 23 | - | - | - | - | - | - | 8 | - | - | - | 13 | 553 |
| 514 | 12,699 | 18 | 12 | 10 | 707 | - | 135 | - | 17 | - | 32 | - | - | 21 | - | - | 6 | - | - | 47 | - | 96 | 21 | 31 | - | 36 | 13,888 |
| 515 | 36 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 36 |
| 516 | 165 | - | 5 | - | 3 | - | 68 | - | 9 | - | 3 | - | - | - | 6 | - | - | - | - | 2 | - | - | - | - | - | 2 | 263 |
| 517 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 26 | - | - | 53 | 3 | 82 |
| 518 | 36 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 36 |
| 519 | 35 | - | 2 | - | 2 | - | 33 | - | 8 | - | 33 | - | - | - | 51 | - | 2 | - | - | - | - | - | - | - | 18 | 2 | 186 |
| 520 | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 11 | - | 22 |
| 521 | 182 | - | 5 | - | 5 | - | 62 | - | - | - | 67 | - | - | 9 | 122 | - | - | 30 | - | - | - | - | - | - | - | 21 | 503 |
| 522 | 27 | - | - | - | - | - | - | - | - | - | - | - | - | - | 27 | - | - | - | - | - | - | - | - | - | - | - | 54 |
| 523 | 31 | - | - | - | - | - | - | - | - | - | - | - | - | - | 33 | - | - | - | - | - | - | - | - | - | - | - | 64 |
| 524 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 52 | - | 18 | 10 | 18 | - | - | - | - | 98 |
| 525 | 10 | - | 12 | - | 12 | - | 40 | - | 10 | - | 51 | - | - | 12 | 39 | - | 1 | 3 | - | 1 | - | 9 | - | - | - | - | 200 |
| TOTAL | 13,824 | 18 | 85 | 10 | 777 | 11 | 7,842 | 22 | 2,153 | 4 | 1,721 | 7,460 | 4 | 491 | 13,858 | 32 | 240 | 85 | - | 167 | 20 | 404 | 42 | 60 | 92 | 187 | 49,609 |

Source: The Corradino Group

Table 3-3
External Station Volumes and Counts

| TAZ | Location | Count Volume | Assigned Volume | Error |
|---|---|---|---|---|
| 500 | 75 (North) @ Columbia County Line | 38,200 | 38,862 | 1.73% |
| 501 | 241 (North) @ Union County Line | 1,201 | 1,209 | 0.67% |
| 502 | 121 (North) @ Union County Line | 3,300 | 3,322 | 0.67% |
| 503 | 237 (North) @ Bradford County Line | 100 | 100 | 0.00% |
| 504 | 235 (North) @ Bradford County Line | 2,200 | 2,200 | 0.00% |
| 505 | 1475 (North) @ Bradford County Line | 400 | 402 | 0.50% |
| 506 | 301 (North) @ Bradford County Line | 24,801 | 24,805 | 0.02% |
| 507 | 325 (North) @ Bradford County Line | 1,100 | 1,107 | 0.64% |
| 508 | 26 (East) @ Putnam County Line | 9,101 | 9,056 | -0.49% |
| 509 | 1474 (East) @ Putnam County Line | 401 | 402 | 0.25% |
| 510 | 20 (East) @ Putnam County Line | 9,701 | 9,744 | 0.44% |
| 511 | 301 (North) @ Marion County Line | 12,301 | 12,299 | -0.02% |
| 512 | 225 (South) @ Marion County Line | 100 | 100 | 0.00% |
| 513 | 441 (South) @ Marion County Line | 8,601 | 8,599 | -0.02% |
| 514 | 75 (South) @ Marion County Line | 46,400 | 46,368 | -0.07% |
| 515 | 234 (South) @ Marion County Line | 3,401 | 3,422 | 0.62% |
| 516 | 121 (South) @ Levy County Line | 9,300 | 9,298 | -0.02% |
| 517 | 45 (South) @ Levy County Line | 3,000 | 3,022 | 0.73% |
| 518 | 241 (South) @ Levy County Line | 1,300 | 1,104 | -15.08% |
| 519 | 24 (Southwest) @ Levy County Line | 6,500 | 6,545 | 0.69% |
| 520 | 337 (South) @ Levy County Line | 1,001 | 1,008 | 0.70% |
| 521 | 26 (West) @ Gilchrist County Line | 8,800 | 8,800 | 0.00% |
| 522 | 232 (West) @ Gilchrist County Line | 2,701 | 2,720 | 0.70% |
| 523 | 182 (West) @ Gilchrist County Line | 3,400 | 3,423 | 0.68% |
| 524 | 27 (Northwest) @ Gilchrist County Line | 8,800 | 8,795 | -0.06% |
| 525 | 441 (Northwest) @ Columbia County Line | 5,800 | 5,840 | 0.69% |

Source: The Corradino Group

It is also important to note that the trip generation model recognizes that parking on the UF campus is strictly controlled. Thus, for UF TAZs, UF employment is subtracted from service employment, and commercial employment if UF employment is greater than service employment. Then, then UF employment is reallocated to the UF zones in proportion to the number of available parking spaces. The revised Zdata2 file is then used in the NERGEN program. Thus, all trips generated by UF employment are attracted to parking lot and garage zones, not to the work zone.

Overall, the model produces 9.46 internal-internal trips per household (2000 model validation, 954,457 trips and 100,890 households, including UF dorms). This is close to the NCHRP #365 value of 9.0 for urbanized areas with populations of 200,000 to 499,999. Thus, the trip generation procedure is producing a reasonable number of trips.

## 3.3 Highway and Transit Paths

### Highway

Minimum impedance travel paths are calculated using time over the highway system. In building paths, a turning penalty file is used. Paths are not built through prohibited movements. Initial paths are built using the link free-flow speeds. Terminal times and intrazonal times are also added.

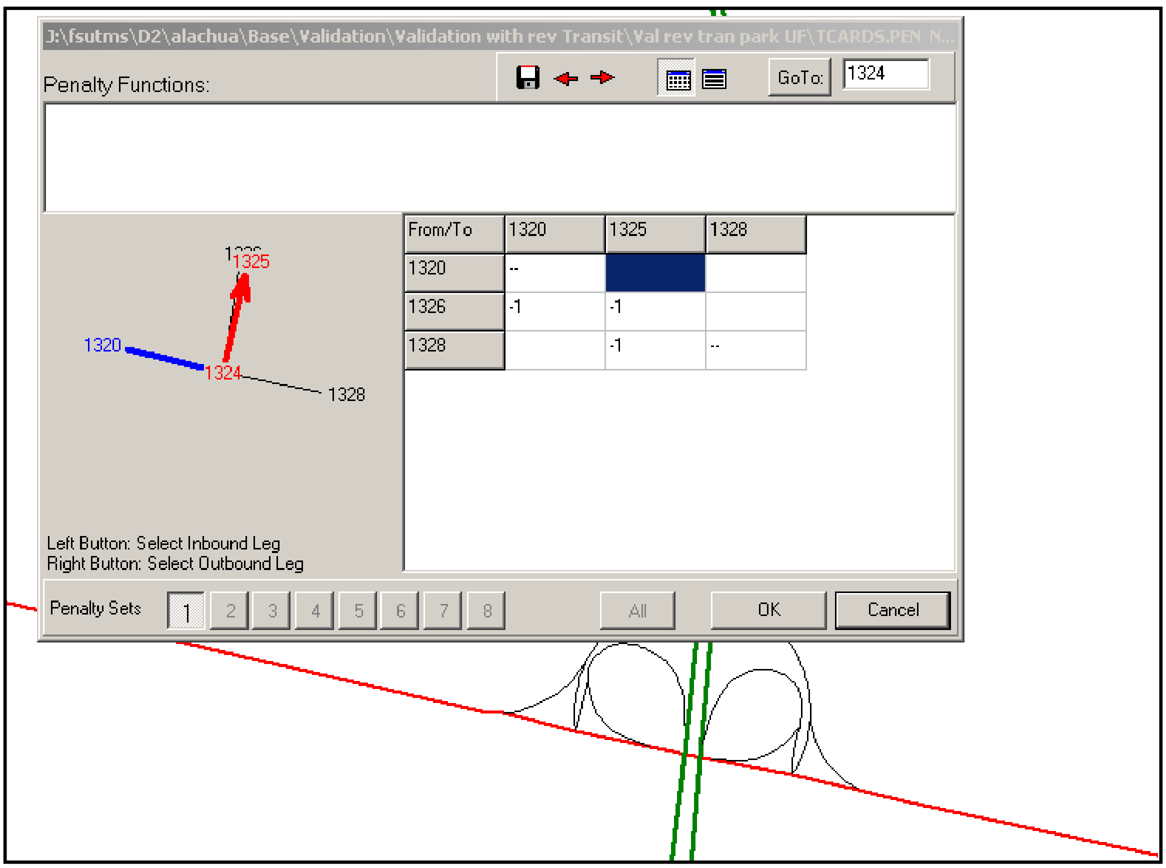
To check the network for coding errors and to ensure reasonable paths were built through the network, the Cube-Base/VIPER (Visual Planning Environment) program was used to check the path building. This program was used to display the path between several selected pairs of centroid in various locations in the network. The routines trace the shortest path using the network impedance of time or distance with the summation of link impedances computed. Numerous paths were drawn on the computer screen to make sure that paths drawn were “reasonable”.

Two variables determine the minimum paths between any given pair of zones. These variables are as follows:

1. In-Vehicle Travel (IVT) time: IVT time is the primary variable, which is determined as a function of distance and input speed.

2. Prohibited and penalized movements: Turn penalties are stored in TCARDS.PEN (Appendix L), and represent prohibited turning movements. Prohibitors are generally coded to identify those turning movements in the highway network that are not permitted. Another use of prohibitors is in the double-line coding of freeway facilities, and interchanges where they are used to route vehicles to the proper entrance and exit ramps, and to prevent U-turn or illogical movements from occurring. In CV, turn penalties can be effectively edit graphically using Viper, using the options on the Intersection Menu: “Open/Create Turn Penalty File,” and “Edit Penalties” Figure 3-2).

Figure 3-2
CV Turn Penalty Editor



## Transit

The TPATH scripts are used to obtain travel times and costs by types of transit service based on access mode. The transit path application first identifies the minimum paths between all pair of zones by all available transit modes. After paths are created and travel time skims are constructed, the transit cost for each preferred path is calculated based on boarding and transfer fares. Multiple paths are built both for AM peak and midday periods. The nested logit model requires three sets of transit paths for each peak and midday period. These are:

- Local Bus with Walk Access;
- Express Bus with Walk Access;
- Best available transit with Auto Access.

It is important to note that unlike FSUTMS/Tranplan, CV's external programs to generate walk and auto connectors are not required. Instead the Public Transport (PT) model generates the connectors from the highway network. The PT code excerpt shown below, for example, generates walk access:

```
PROCESS PHASE=DATAPREP
; WALK ACCESS
  GENERATE, COST=(LW.WALKTIME),MAXCOST=103*24.0,LIST=T,NTLEGMODE = 1,
            DIRECTION=1, FROMNODE=1-{zonesa}, TONODE=1000-99999
; WALK EGRESS
  GENERATE, COST=(LW.WALKTIME),MAXCOST=103*24.0,LIST=T,NTLEGMODE=101,
            DIRECTION=2, FROMNODE=1-{zonesa}, TONODE=1000-99999
; WALK CONNECTORS
  GENERATE, COST=(LW.WALKTIME),MAXCOST=103*12,LIST=T,NTLEGMODE =
3,DIRECTION=3,
            FROMNODE=1000-99999, TONODE=1000-99999
```

Similarly, PT generates auto access connectors from the highway network for park-and-ride lots at nodes 1855 and 3231 (please note that the script actually writes the auto-connector script after identifying park-and-ride nodes in the highway network):

```
GENERATE,COST=(li.distance),MINCOST=12*1.0,MAXCOST=12*5.00,
        EXTRACTCOST=(li.TIME_1),LIST=F,DIRECTION=1,NTLEGMODE=2,
        FROMNODE=1-525,TONODE= 1855
GENERATE,COST=(li.distance),MINCOST=12*1.0,MAXCOST=12*5.00,
        EXTRACTCOST=(li.TIME_1),LIST=F,DIRECTION=1,NTLEGMODE=2,
        FROMNODE=1-525,TONODE= 3231
```

Paths are developed using parameters intended to isolate a mode, or a submode, such as walk or auto access. Travelers tend to perceive the time they spend walking to transit, waiting to board, and waiting for transfers, as greater than it actually is. The model multiplies these times by a weighting factor to better reflect how people perceive them in choosing transit paths. Also, because travelers usually do not like to make transfers, a penalty time is added for each transfer. Transit path selection criteria for each mode thus depends on: time weighting coefficients, minimum and maximum wait times, transfer penalties, and the "spreadfactor." Values for these elements follow traditional FSUTMS practice and are listed in Appendix C.

Please note that the midday transit network is developed from free-flow highway travel times and the AM peak travel times are based on congested highway times from the highway preload process. Thus, the effect of buses operating in mixed flow is accounted for in the model. Also, as noted in "Alachua.far" listed in Appendix C, the model generates a flat fare of $1.00 for every boarding and transfer in the system. But, for the HBU and HDORM purposes, these fares are omitted from the utility expression in the mode choice model, thereby reflecting free fares for UF students.

## 3.4 Trip Distribution

As noted earlier, internal-internal and internal-external trips are distributed using a gravity model. Skims are developed from free-flow highway network travel times, and are updated using terminal and intrazonal times. Standard FSUTMS values were used in the absence of survey data.

Terminal times are applied by the single-digit area type code of the production and attractions TAZs, and are CUBE keys as follows:

- TERM10 – CBD terminal time = 5.0 minutes
- TERM20 – CBD fringe terminal time = 3.0 minutes
- TERM30 – Residential terminal time = 1.0 minute
- TERM40 – Outlying business district terminal time = 2.0 minutes
- TERM50 – Rural terminal time = 1.0 minutes

The intrazonal travel time for each TAZ is calculated as one-half of the average travel time to the two nearest centroids. All of this is implemented in the CV Highway program.

The friction factors listed in section 2.6 were used without modification. Table 3-4 lists the average trip length and intrazonal percentage by trip purpose.

## 3.5 Mode Choice

A unique feature of the Gainesville mode choice model is its ability to "self-calibrate." This means that if certain parameters are set, the model will adjust the input modal additive constants so that the model replicates input target mode shares. Most users will probably not use this feature, but it was a great help in model calibration. While the targets are used only when the model is run in calibration mode, CV requires the file (mc_targets.csv) to be present in every run. Similarly, the revised constants are output to newk.csv. The calibration mode is invoked by specifying two parameters: the "loop control" iterations must be set to a value greater than 1 (a value of 20 is recommended), and the MC_Cal key must be set to 2. Both values should be set to 1 for normal operation. Only modelers who understand the mode choice model and calibration issues thoroughly should use the self-calibration feature.

Table 3-4
Average Trip Lengths

| Purpose | Number of Trips | Intrazonal Trips | Intrazonal Percent | Average Trip Time |
|---|---|---|---|---|
| Home-based work | 150,235 | 2,872 | 1.91% | 13.92 |
| Home-based shopping | 114,552 | 3,054 | 2.67% | 13.60 |
| Home-based social-rec. | 103,996 | 9,892 | 9.51% | 11.97 |
| Home-based other | 220,197 | 10,916 | 4.96% | 12.79 |
| Non-home-based | 286,573 | 25,675 | 8.96% | 9.05 |
| Home-based university | 52,809 | 248 | 0.47% | 8.08 |
| UF Campus/Dorm | 26,492 | 532 | 2.01% | 4.19 |
| I-I Persons | 954,854 | 53,189 | 5.57% | 11.35 |
| Four-tire trucks | 50,619 | 873 | 1.72% | 13.55 |
| Single unit trucks | 13,537 | 297 | 2.19% | 13.56 |
| Tractor-trailers | 4,971 | 48 | 0.97% | 16.15 |
| I-I Trucks | 69,127 | 1,218 | 1.76% | 13.74 |
| Single-occ I-E | 70,772 | 0 | 0.00% | 25.95 |
| High-occ I-E | 8,014 | 0 | 0.00% | 25.95 |
| Light truck I-E | 2,750 | 0 | 0.00% | 24.92 |
| Heavy truck I-E | 11,763 | 0 | 0.00% | 24.81 |
| I-E | 93,299 | 0 | 0.00% | 25.78 |

Source: The Corradino Group

Calibration of the mode model consisted of adjusting the mode choice utility expression constants using the self-calibrating feature, so that the model was able to replicate observed mode shares for each mode and market segment. A major effort here was estimating the observed or target mode shares (Table 3-5). Target mode shares were estimated from several sources, as no single data source or comprehensive survey contained all the data needed to estimate the targets. Data sources used to estimate the mode choice model calibration file include the RTS 2002 Comprehensive Analysis, the 2000 FDOT District 2 Home interview survey, current and past ridership data reported by RTS to the Federal Transit Administration's (FTA) National Transit Database, and typical relationships observed in other studies and published in reports such as NCHRP #365. Additionally, the mode choice model was revised during the course of the study to ensure that it did a reasonable job of replicating ridership associated with the current RTS service, which had been expanded greatly since the 2000 model base year (Appendix M).

Table 3-5
Target and Modeled Mode Shares

| | HBW | | | HBO | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TARGETS | No-car | With car | Student | No-car | With car | Student | NHB | HBU | Dorm |
| 1 Drive Alone | 0.00% | 88.00% | 80.30% | 0.00% | 41.05% | 32.84% | 44.50% | 52.80% | 0.00% |
| 2 Carpool 2 | 62.37% | 5.76% | 9.77% | 61.61% | 36.72% | 40.90% | 34.12% | 6.18% | 0.00% |
| 3 Carpool 3+ | 31.19% | 2.88% | 4.88% | 30.81% | 18.36% | 20.45% | 17.06% | 3.09% | 0.00% |
| 4 Walk-local bus | 0.83% | 0.56% | 0.83% | 0.43% | 0.28% | 0.43% | 0.64% | 16.55% | 21.56% |
| 5 Walk-express bus | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 6 Drive-transit | 0.00% | 0.01% | 0.02% | 0.00% | 0.01% | 0.01% | 0.02% | 0.38% | 0.00% |
| 7 Walk. | 3.66% | 1.83% | 2.75% | 6.55% | 3.27% | 4.91% | 2.66% | 11.00% | 50.43% |
| 8 Bike | 1.94% | 0.97% | 1.46% | 0.62% | 0.31% | 0.47% | 1.01% | 10.00% | 28.02% |
| MODAL SHARES | | | | | | | | | |
| 1 Drive Alone | 0.00% | 87.91% | 80.15% | 0.00% | 41.28% | 33.19% | 45.29% | 49.75% | 0.00% |
| 2 Carpool 2 | 62.31% | 5.75% | 9.75% | 61.89% | 36.75% | 41.10% | 34.13% | 5.87% | 0.00% |
| 3 Carpool 3+ | 31.17% | 2.88% | 4.88% | 30.68% | 18.22% | 20.34% | 16.71% | 2.95% | 0.00% |
| 4 Walk-local bus | 1.02% | 0.68% | 1.08% | 0.43% | 0.28% | 0.46% | 0.69% | 21.15% | 25.01% |
| 5 Walk-express bus | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 6 Drive-transit | 0.00% | 0.01% | 0.01% | 0.00% | 0.01% | 0.01% | 0.02% | 0.25% | 0.00% |
| 7 Walk. | 3.54% | 1.78% | 2.63% | 6.38% | 3.15% | 4.43% | 2.12% | 10.50% | 48.36% |
| 8 Bike | 1.96% | 0.99% | 1.50% | 0.61% | 0.31% | 0.48% | 1.04% | 9.53% | 26.64% |
| Model-Target | | | | | | | | | |
| 1 Drive Alone | 0.00% | -0.09% | -0.15% | 0.00% | 0.23% | 0.35% | 0.79% | -3.05% | 0.00% |
| 2 Carpool 2 | -0.06% | 0.00% | -0.01% | 0.28% | 0.03% | 0.20% | 0.01% | -0.31% | 0.00% |
| 3 Carpool 3+ | -0.02% | 0.00% | -0.01% | -0.12% | -0.14% | -0.11% | -0.35% | -0.14% | 0.00% |
| 4 Walk-local bus | 0.19% | 0.13% | 0.25% | 0.01% | 0.00% | 0.04% | 0.05% | 4.60% | 3.44% |
| 5 Walk-express bus | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 6 Drive-transit | 0.00% | 0.00% | -0.01% | 0.00% | 0.00% | 0.00% | 0.01% | -0.13% | 0.00% |
| 7 Walk. | -0.12% | -0.05% | -0.12% | -0.17% | -0.12% | -0.48% | -0.54% | -0.50% | -2.08% |
| 8 Bike | 0.02% | 0.02% | 0.05% | -0.01% | 0.00% | 0.01% | 0.03% | -0.47% | -1.38% |

Source: The Corradino Group

## 3.6 Transit Assignment

The main validation statistic for the transit assignment model was a comparison of systemwide ridership as reported by the model and ridership reported by RTS (Table 3-6). The modeled number of total daily linked transit trips is 22,460. RTS reported a total of 34,295 boardings (unlinked trips) for September 2000, a transfer rate of about 53%, which is reasonable. It should be noted that the model validation is based on the service provided in 2000, before the extensive service expansion implemented shortly thereafter. Table 3-7 compares modeled RTS-reported transit trips by route. The level of agreement between the model and the data provided by RTS is typical of bus transit network models.

Table 3-6
Validated Mode Totals

| | HBW | HBO | NHB | HBU | DORM | Total |
|---|---|---|---|---|---|---|
| Total | 150,147 | 438,457 | 286,552 | 52,809 | 26,492 | 954,457 |
| Driver Alone | 122,692 | 167,037 | 129,768 | 26,274 | X | 445,771 |
| Carpool 2 | 14,492 | 169,427 | 97,798 | 3,098 | X | 284,815 |
| Carpool 3+ | 7,249 | 83,985 | 47,888 | 1,555 | X | 140,677 |
| Walk-Local Transit | 1,109 | 1,344 | 1,973 | 11,169 | 6,624 | 22,219 |
| Walk-Premium Transit | 0 | 0 | 0 | 0 | X | 0 |
| Drive-Transit | 16 | 31 | 60 | 134 | X | 241 |
| Non-motorized Walk | 2,947 | 15,134 | 6,085 | 5,546 | 12,810 | 42,522 |
| Non-motorized bike | 1,641 | 1,497 | 2,981 | 5,032 | 7,057 | 18,208 |
| Average Auto Occupancy | 1.09 | 1.52 | 1.42 | 1.09 | 0.00 | 1.40 |

Source: The Corradino Group

Table 3-7
Unlinked Trips By Route

| | 2000 | RTS Sep. 2000 | |
|---|---|---|---|
| NAME | Model | Monthly | Daily |
| RTS 1 | 802 | 39,740 | 1,987 |
| RTS 2 | 87 | 7,161 | 358 |
| RTS 5 | 444 | 30,439 | 1,522 |
| RTS 6 | 172 | 8,621 | 431 |
| RTS 7 | 22 | 6,962 | 348 |
| RTS 8 | 1,185 | 25,377 | 1,269 |
| RTS 9 | 1,374 | 68,108 | 3,405 |
| RTS 10 | 149 | 10,487 | 524 |
| RTS 11 | 92 | 8,162 | 408 |
| RTS 12 | 1,420 | 47,013 | 2,351 |
| RTS 13 | 887 | 36,494 | 1,825 |
| RTS 15 | 113 | 8,711 | 436 |
| RTS 16 | 2,066 | 40,764 | 2,038 |
| RTS 20 | 2,762 | 64,924 | 3,246 |
| RTS 24 | 137 | 6,965 | 348 |
| RTS 35 | 546 | 38,983 | 1,949 |
| RTS 43 | 1,422 | 16,005 | 800 |
| RTS 75 | 547 | 17,926 | 896 |
| Later Gators A | 6,729 | 9,573 | 479 |
| Park-N-Ride | 2,646 | 71,476 | 3,574 |
| Family Housing | 436 | 9,978 | 499 |
| Commuter Lot | 2,886 | 33,871 | 1,694 |
| UF Circulators | 6,744 | 78,162 | 3,908 |
| | 33,668 | 685,902 | 34,295 |

Source: The Corradino Group

## 3.7 Highway Assignment

As noted earlier, the highway assignment is a multi-class equilibrium assignment. The "BPR" equation is used as the volume-delay function, using the VFACTORS parameters listed in Appendix A. The BPR equation is:

$$T_c = T_f * \{1 + \alpha\ (v/c)^{\beta}\}$$

Where,

$T_c$ = congested link travel time
$T_f$ = link free-flow travel time
v = assigned volume
c = link capacity
$\alpha,\beta$ = BPR parameters

The FSUTMS HEVAL routine calculates system-level evaluation data. Corradino modified the FSUTMS HEVAL routines to work with CV. HEVAL operates in one of two modes (validation and analysis). The validation mode allows the user to print a variety of reports designed to assist in the validation task. The validation mode does not require any input data other than the loaded highway network file.

Validation of a traffic assignment involves an examination of several statistics, most of which are related to actual ground counts taken on various links throughout the network. The highway assignment model was validated by adjusting parameters in the VFACTORS file and the speed/capacity table. Appendix B lists the adjustments made to the speed/capacity table. Comparisons of travel statistics based on counts and model outputs are described in the Final Validation section.

## 3.8 Final Validation

The final validation of the model usually deals with adjustments throughout the model chain aimed at replicating traffic counts as closely as possible, yet maintaining the balance of other values, relationships, and parameters in the model. The adjustments to the model were very limited, and Corradino believes that this is a good thing because excessive tinkering with model parameters can result in distortions of other parts of the model. Adjustments to the model stream included the following efforts:

- Initial model runs showed the model VMT to be about ten percent low when compared to traffic counts. Thus, the adjustment factors to the trip generation rates were added to the model stream. A series of runs indicated that a ten percent increase in the trip generation rate minimized these differences.
- A review of the VMT ratio of volume/count for certain facility and area types indicated that adjustments to the speed-capacity table would be beneficial (Appendix B).
- Review of model results showed that certain links of interest to the MTPO were being underassigned, even though as judged statistically, the model results were very good. Thus, the area type and facility type codes for these links were examined closely and in some cases minor adjustments were made.
- Examination of the model results showed that the model was underestimating travel in major shopping areas, near UF, and near the Santa Fe Community College. Thus, special generators were added for these areas (Appendix K).
- Discussions with RTS staff indicated that the future year transit forecasts did not reflect the growth in ridership experienced over the past few years. Thus, the calibration was checked against 2004 ridership levels, and the transit wait time curves, reflecting sensitivity to headway, were adjusted. Then, the mode choice constant terms were recalibrated. The adjusted model maintained good agreement with 2000 and 2004 ridership levels reported by RTS.

- The University of Florida was particularly interested in the impact of the location and amount of parking provided by campus parking lots and garages. Thus, Corradino added a routine to reallocate UF employment to parking locations. This provided a small improvement in the aggregate model statistics and in link-specific estimates near campus, and allowed the model to provide information on the impact of alternative parking facility locations.

The amount of VMT, by facility type, is an important measure for evaluating the level of calibration of the model. The model matches the VMT as indicated by counts, as shown in Table 3-8. The largest level of underestimation is on collectors, where traffic enters the model network by centroid collectors. Similarly, it is important for the model to replicate VMT by area type. Here again the model performs well, with the largest underestimation in the CBD, where almost all models are unable to account for circulation traffic (Table 3-9).

TABLE 3-8
Volume/Count
By Facility Type

| Facility Type | Model/Count VMT |
|---|---|
| Freeway | 1.01 |
| Divided Arterial | 1.02 |
| Undivided Arterial | 0.92 |
| Collectors | 0.79 |
| One-way/frontage | 1.00 |
| Total | 0.98 |

Source: The Corradino Group

TABLE 3-9
Volume/Count
By Area Type

| Area Type | Model/Count VMT |
|---|---|
| CBD | 0.89 |
| Fringe | 1.01 |
| Residential | 0.93 |
| Rural | 1.01 |
| Total | 0.98 |

Source: The Corradino Group

Another measure of model validation is the ratio of volumes to counts at screenlines. Ideally, volumes across screenlines and cutlines fall within 10% of the counted volumes. A summary of screenline volumes, counts and ratios is displayed in Table 3-10. Screenline locations are shown in Figures 3-3 and 3-4. Only screenlines 4 and 11 fall outside the desirable range, indicating that the trip distribution model is working correctly, and that the model is doing a good job of replicating traffic in major corridors. Screenline 14, which is the external cordon, and Screenline 21, which is an accumulation of links in which the MTPO staff showed particular interest during model development, but which is not really a screenline, are not shown on the maps.

Table 3-10
Screenline Volumes and Ratios

| Location | | Total Volume | Total Count | V/Count |
|---|---|---|---|---|
| 1 | Crossing I-75 | 221,380 | 220,424 | 1.00 |
| 2 | Major N-S Movements | 242,067 | 241,076 | 1.00 |
| 3 | Crossing SR-121 (34th Street) | 237,320 | 250,968 | 0.95 |
| 4 | Crossing SR-24 | 12,075 | 10,392 | 1.16 |
| 5 | N-S Crossing SR-222 (39th Avenue) | 147,002 | 147,574 | 1.00 |
| 6 | Between UF and Central Gainesville | 93,188 | 89,182 | 1.04 |
| 7 | N-S Crossing 3rd Avenue downtown | 74,743 | 75,987 | 0.98 |
| 8 | E-W Crossing NE 3rd St. downtown | 37,179 | 39,700 | 0.94 |
| 9 | N-S Crossing 2nd Avenue downtown | 74,870 | 79,309 | 0.94 |
| 10 | E-W Cutline west of I-75 | 34,466 | 34,860 | 0.99 |
| 11 | N-S Cutline in NW County | 63,493 | 56,312 | 1.13 |
| 12 | E-W Crossing US-301 | 34,918 | 34,504 | 1.01 |
| 13 | N-S in I-75 Corridor South County | 61,799 | 65,020 | 0.95 |
| 14 | External Cordon | 210,675 | 211,040 | 1.00 |
| 21 | MTPO Special Links | 456,570 | 437,220 | 1.04 |

Source: The Corradino Group

Figure 3-3
Screenlines

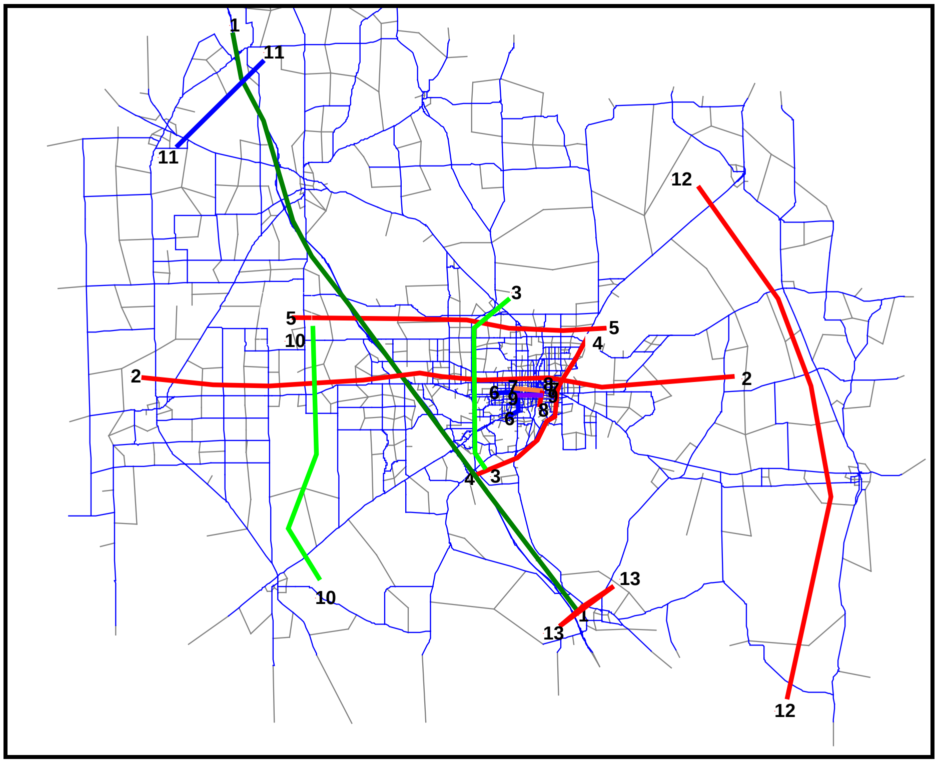
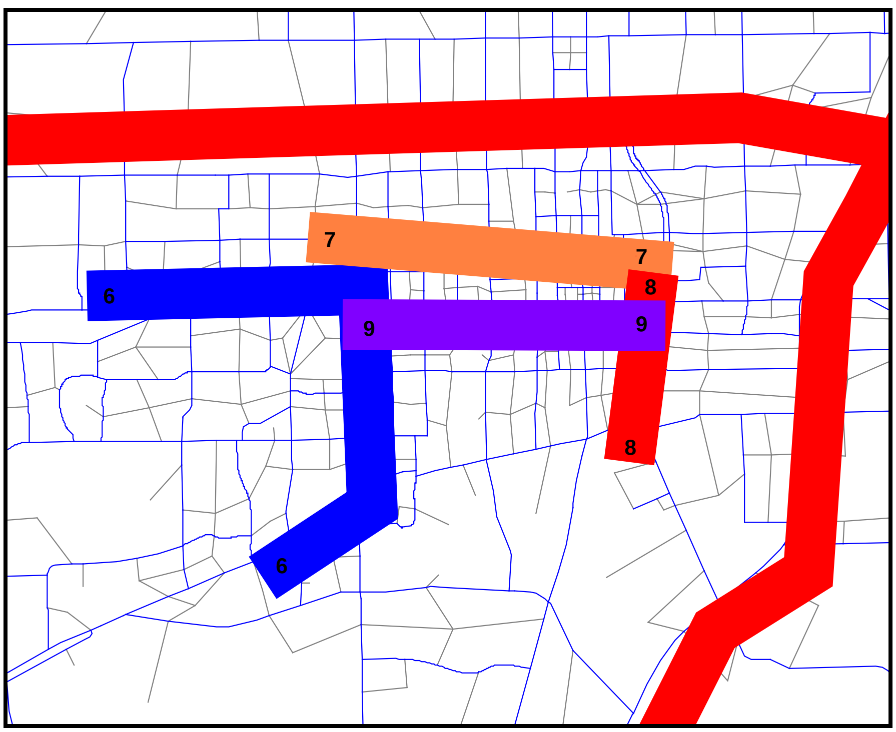



Figure 3-4
CBD Screenlines



Percent root mean square error (RMSE) is the standard way of measuring how well the model replicates traffic counts on a link-by-link basis. For the Gainesville model, RMSE is estimated by a CV script and by the FSUTMS RMSE program. Percent RMSE is an indication of the “average” error on any given link. An RMSE of 0.0 percent would indicate perfect agreement between the model and traffic counts. The Gainesville model has an RMSE value that is on the low end of the range usually seen in Florida models at 32.8 percent. Most volume groups are within the range or lower (better than the standard). The 30,000-40,000 vehicles per day range was slightly outside the range, but represented only eleven links. The permissible error percentage decreases with volume, with the goals of having the model replicate traffic with a lane of need.

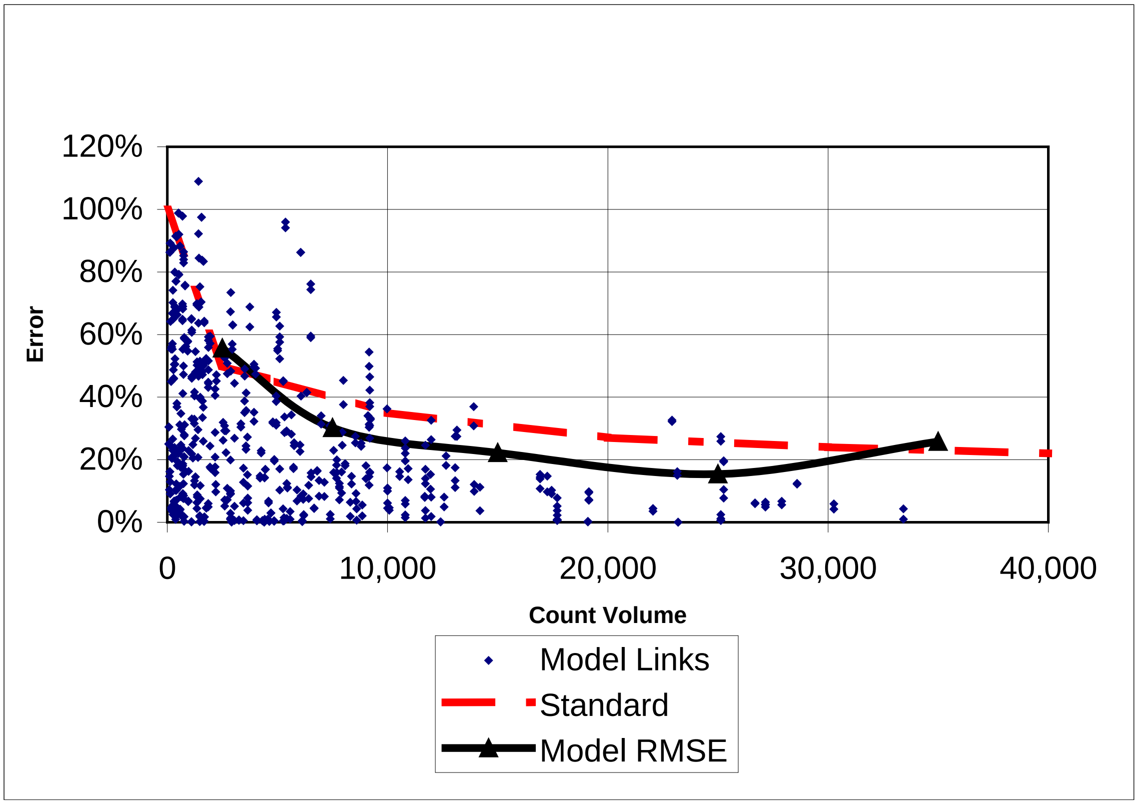
Figure 3-5 is a graphical display of the standards, the RMSE by volume group, and individual links with counts. Points represent all links with counts. The figure shows that the error for the overwhelming majority of links lies below the maximum permissible error line (the dashed line). The solid line is the RMSE by volume group from Table 3-11. This line generally lies below the standard line, indicating that the model does a good job of replicating counts on a link-by-link basis.

Table 3-11
Root Mean Square Error and Volume/Count

| Volume Group | % RMSE | Standard Range % | Number of Links |
|---|---|---|---|
| 1- 5,000 | 55.6 | 45-55 | 1,604 |
| 5,000- 10,000 | 30.2 | 35-45 | 1,034 |
| 10,000- 20,000 | 22.2 | 27-35 | 498 |
| 20,000- 30,000 | 15.4 | 24-27 | 102 |
| 30,000- 40,000 | 25.8 | 22-24 | 11 |
| 1-500,000 | 32.8 | 32-39 | 3,249 |

Source: The Corradino Group

Figure 3-5
Model Volumes and Counts



# 4. Conclusions

The Gainesville model provides the MTPO with a powerful tool for evaluating transportation needs throughout Alachua County. It is one of the first CV models developed in Florida. The model is well validated, and includes several innovations and features not found in most other Florida models:

- Use of the District 2 (NERPM) trip generation model, and trip rates based on the District 2 household survey. The model includes truck trip purposes.
- Special UF trip purposes for students commuting to UF, and students living on campus.
- Peak and off-peak transit networks.
- Walk and bicycle travel modes.
- A full nested logit mode choice model allocating trips to highway modes by auto occupancy level, transit modes including walk and auto access, and non-motorized modes. This process is implemented entirely in CV.
- A self-calibration routine for mode choice that adjusts logit constants to replicate target model shares.
- A multi-class highway assignment for cars (UF-oriented and others), trucks, walk trips, and bike trips. Transit passenger flows are also shown on the highway network.
- Assignment of types of transit trips.
- Highway evaluation routines that integrate the standard FSUTMS HEVAL and RMSE procedures.

# Appendix A
## VFACTORS

```
FT = 10, UROADF = 0.6700, CONFAC = 0.1000, BPR LOS = 0.1500, BPR EXP =  6.5000
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```

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```

Appendix B
Speed/Capacity Table Modifiers

```
30521019 1 9* 1.00 68.0
10594049 1 9* 1.00*1.20
10191099 1 9* 1.00*1.25
31312525 1 8* 1.00*1.20
10196064 1 9* 1.00*0.80
```

Appendix C
Transit-Specific Input Files

**Transit System File (Alachua.pts)** – Defines modes and waiting times

```
;;<<PT>><<SYSTEM>>;;
MODE NUMBER=1 LONGNAME="WALK ACCESS" NAME="Walk-A"
MODE NUMBER=2 LONGNAME="AUTO ACCESS" NAME="Auto-A"
MODE NUMBER=3 LONGNAME="SIDEWALK CONNECT" NAME="SIDEWALK"
MODE NUMBER=4 LONGNAME="LOCAL BUS SERVICE" NAME="BUS"
MODE NUMBER=101 LONGNAME="WALK EGRESS" NAME="Walk-E"
MODE NUMBER=102 LONGNAME="Auto Egress" NAME="Auto-E"
WAITCRVDEF NUMBER=1 LONGNAME="InitialWait" NAME="InitWait" ,
           CURVE=1-0.5,30-15,160-40
WAITCRVDEF NUMBER=2 LONGNAME="TransferWait" NAME="XferWait" ,
           CURVE=1-0.5,4-2,12-6,20-8,
           40-15,60-20
```

**Transit Fare File (Alachua.far)** – Defines transit fares systems

```
FARESYSTEM,
  NUMBER=1,
  LONGNAME="LB FARES",
  NAME="FLAT FARE",
  STRUCTURE="FLAT"  SAME="SEPARATE",
  IBOARDFARE=1.00,
  FAREFROMFS=1.00,1.00,1.00
FARESYSTEM,
  NUMBER=2,
  LONGNAME="EB FARES",
  NAME="FLAT FARE",
  STRUCTURE="FLAT"  SAME="SEPARATE",
  IBOARDFARE=1.00,
  FAREFROMFS=1.00,1.00,1.00
FARESYSTEM,
  NUMBER=3,
  LONGNAME="RAIL FARES",
  NAME="FLAT FARE",
  STRUCTURE="FLAT"  SAME="SEPARATE",
  IBOARDFARE=1.00,
  FAREFROMFS=1.00,1.00,1.00
/*
Assume 1.00 flat fare for every boarding and transfer.
UF purposes (HBU and Dorm) purposes skip the fare term in the mode choice
routine
*/
```

**Walk to local bus factor file (Alachuawlb.fac)** – Specify path-building parameters, fare systems by mode, run time factors and penalties for walk-to-local buses.

```
/*For Route Enumeration*/
MAXFERS=4
EXTRAXFERS1 = 1
EXTRAXFERS2 = 1
SPREADFACT = 1.0001
```

```
SPREADFUNC=1
SPREADCONST = 0
REWAITMIN = 3.0
REWAITMAX = 10.0
LOOKBACK=0.0

/*For Route Enumeration and Evaluation*/
BRDPEN=3*0
BRDPEN[4]=0
BRDPEN[6]=999
BRDPEN[8]=999

RUNFACTOR[1]=2.5, RUNFACTOR[101]=2.5, RUNFACTOR[3]=2.5
RUNFACTOR[2]=1.0, RUNFACTOR[102]=1.0, RUNFACTOR[4]=1.0

/*For Route Evaluation*/
ALPHA = 1.0
LAMBDAW = 0.2
LAMBDAA = 0.2
CHOICECUT=0.05
IWAITCURVE=1, NODES=1000-99999
XWAITCURVE=2, N=1000-99999
WAITFACTOR=1.4,N=1000-99999

FARESYSTEM=1, MODE=4
FARESYSTEM=2, MODE=6
FARESYSTEM=3, MODE=8

VALUEOFTIME=255*15.00
```

**Walk to premium service factor file (Alachuawkprem.fac)** – Specify path-building parameters, fare systems by mode, run time factors and penalties for walk-to-premium service.

```
/*For Route Enumeration*/
MAXFERS=4
EXTRAXFERS1 = 1
EXTRAXFERS2 = 1
SPREADFACT = 1.0001
SPREADFUNC=1
SPREADCONST = 0
REWAITMIN = 3.0
REWAITMAX = 10.0
LOOKBACK=0.0

/*For Route Enumeration and Evaluation*/
BRDPEN = 3*0.0
BRDPEN[4]=999
BRDPEN[6]=0
BRDPEN[8]=0

RUNFACTOR[1]=2.5, RUNFACTOR[101]=2.5, RUNFACTOR[3]=2.5
RUNFACTOR[2]=1.0, RUNFACTOR[102]=1.0, RUNFACTOR[4]=1.0

/*For Route Evaluation*/
ALPHA = 1.0
LAMBDAW = 0.2
```

```
LAMBDAA = 0.2
CHOICECUT=0.05
IWAITCURVE=1, NODES=2124-99999
XWAITCURVE=2, N=2124-99999
WAITFACTOR=1.4,N=2124-99999

FARESYSTEM=1, MODE=4
FARESYSTEM=2, MODE=6
FARESYSTEM=3, MODE=8

VALUEOFTIME=255*15.00
```

**Park-and-ride factor file (Alachuapnr.fac)** – Specify path-building parameters, fare systems by mode, run time factors and penalties for park-and-ride service.

```
/*For Route Enumeration*/
MAXFERS=4
EXTRAXFERS1 = 1
EXTRAXFERS2 = 1
SPREADFACT = 1.0001
SPREADFUNC=1
SPREADCONST = 0
REWAITMIN = 3.0
REWAITMAX = 10.0
LOOKBACK=0.0

/*For Route Enumeration and Evaluation*/
BRDPEN =103*0
RUNFACTOR[1]=2.5, RUNFACTOR[101]=2.5, RUNFACTOR[3]=2.5
RUNFACTOR[2]=1.0, RUNFACTOR[102]=1.0,
RUNFACTOR[4]=1.0,
RUNFACTOR[6]=1.0,
RUNFACTOR[8]=1.0

/*For Route Evaluation*/
ALPHA = 1.0
LAMBDAW = 0.2
LAMBDAA = 0.2
CHOICECUT=0.05
IWAITCURVE=1, NODES=1000-99999
XWAITCURVE=2, N=1000-99999
WAITFACTOR=2.5,N=1000-99999

FARESYSTEM=1, MODE=4
FARESYSTEM=2, MODE=6
FARESYSTEM=3, MODE=8

VALUEOFTIME=255*15.00
```

**Highway-transit speed curves (Spdcrv.txt)** – Relates highway and transit speeds.

```
; COL 1 IS THE AUTO SPEED
; WHILE COL 2/3/4 ARE THE CORRESPONDING TRANSIT SPEEDS
; COL2 IS WHERE THE AUTO/TRAN SPEEDS ARE PRETTY CLOSE TO ONE ANOTHER (LIMITED
STOPS)
; COL 3 SHOWS A SLIGHT SLOW DOWN AND COL 4 IS THE COMMON LOCAL BUS WITH
PLENTY OF STOPS
5  5  4  3
10 10 8  5
15 15 12 7
20 20 15 9
25 25 17 12
30 30 19 15
35 30 23 16
40 38 25 18
45 42 32 20
50 48 35 27
55 52 36 35
60 62 42 45
70 65 50 45
80 70 50 45
90 70 50 45
```

Appendix D
Gainesville Trip Generation Report
(provided by the Florida Department Of Transportation, District 2)

## D.1 Introduction

The Florida Department of Transportation District Two Planning Office conducted the North Florida Household Travel Survey in the year 2000. This travel behavior survey targeted the residents of the metropolitan Jacksonville area (Nassau, Duval, Clay, and St. Johns counties) and Alachua County. A report documenting the travel behavior of the metropolitan Jacksonville area was published in support of the Northeast Regional Planning Model.

Data collected in Alachua County is now being analyzed for the purpose of updating the Gainesville Urban Area Transportation Study (GUATS) model, with the primary difference in the two areas being the inclusion of the travel characteristics of University of Florida students living in apartments off campus. The purpose of this report is to evaluate the trip generation data collected as part of the North Florida Household Survey for the Alachua County and develop appropriate trip generation rates for use in the GUATS model calibration.

Information requested in the household travel survey included household type, number of persons living in the home, auto availability, and income. These characteristics are known to affect transportation decision-making and are relevant in the travel demand modeling process. Alachua County was divided into three geographic regions. Table D.1 provides descriptions of the Alachua County geographic districts.

Table D.1
Geographic District Descriptions

| No. | District Name |
|---|---|
| 1 | Alachua County Urban – Campus |
| 2 | Alachua County Urban – Non Campus |
| 3 | Alachua County – Rural |

## D.2 Development of Trip Production Rates

The trip production rates were developed in the format of the traditional Florida Standard Urban Transportation Model Structure (FSUTMS) household classification scheme. This scheme is comprised of cross-classification tables with trip rates for each trip purpose and for each combination of 'number of vehicles' and 'number of family members'. The standard FSUTMS household classification scheme requires unique trip generation rates for single and multiple family household types. However, since Gainesville is a city with a large university, it was decided to test a third household type that represented the student apartments and dormitories.

Prior to developing the trip generation rates, an analysis of the survey data was completed to determine if there was a statistically significant difference in the trip production rates of the three districts, i.e., between urban and rural designations. Also, student and multiple family households were tested to determine whether their trip generation rates are statistically significant different. These analyses helped determine if there was a need to develop separate input data sets for different districts, or students and multiple family households. Results of these analyses indicated that there is no statistically significant difference between districts, but there is a statistical difference between student and multiple family households.

Once the basic statistical analysis was completed, cross-classification tables were developed. A number of the cells in the FSUTMS scheme had sparse or no survey data from which to estimate the trip rates, and therefore the Multiple Classification Analysis (MCA) method was used to populate the tables. Some of the estimated trip rates based on the MCA analysis deviated from commonly accepted trends, due primarily to sparse data in some of the categories, and therefore, a best-fit curve-fitting method was used to smooth the deviations. This is standard practice when surveys are unable to generate enough statistical data on cells that lay outside the normal ranges of the population.

### D.2.1 Statistical Analysis

A statistical analysis was conducted to determine if the trip rate data revealed any significant differences between geographic regions.

Because the household survey responses were delineated by district, the study team wanted to determine whether there was a statistical difference in the trip rates between the different districts for single-family, multi-family, and student households.

The standard method for comparing the means is the one-way analysis of variances (ANOVA), which is based on the assumption that the data for each group (i.e., district) are normally distributed and have equal variances. To check for the assumption of normal distributions, histograms of the data were plotted for each district and trip purpose. The five trip purposes used are Home Based Work (HBW), Home Based Shopping (HBS), Home Based Social and Recreation (HBSR), Home Based Other (HBO) and Non-Home Based (NHB). It was clear from the histograms that the data was not normally distributed, violating one of the fundamental assumptions of the ANOVA analysis. The study team therefore adopted the non-parametric Kruskal-Wallis method for the analysis. Although it has less power than the ANOVA for the same sample size, it is considered more appropriate for application to non-normal data sets.

The result of the Kruskal-Wallis test for the entire Alachua County is shown in Table D.2. These tests were performed at the 90 and 95 percent confidence interval. The "Y" indicates that the means can be assumed to be equivalent, and the "N" indicates that there is evidence that the mean trip rates are different. In general, there were only three categories in the students' data in which the means may differ between districts.

Table D.2
Results of Kruskal-Wallis Test at
90 and 95 Percent Confidence Intervals

| Household Type | District | Trip Purpose | | | | |
|---|---|---|---|---|---|---|
| | | HBW | HBS | HBSR | HBO | NHB |
| Students | Rural<br>Urban-Campus<br>Urban-Non Campus | N | Y | Y | N | N |
| Single-Family | Rural<br>Urban-Campus<br>Urban-Non Campus | Y | Y | Y | Y | Y |
| Multi-Family | Rural<br>Urban-Campus<br>Urban-Non Campus | Y | Y | Y | Y | Y |

"N" indicates that means are different

Based on these results, it was concluded that it is not necessary to differentiate between geographic location for single-family and multiple-family households. Although the statistical analysis identified differences for the student households trip purposes, it was concluded that it is not necessary to differentiate between geographic location for student households.

Therefore, the single-family, multi-family, and students data was pooled over all three districts to create the cross-classification tables.

### D.2.2 Development of Cross-Classification Tables

The cross-classification tables are based on the standard FSUTMS scheme. This scheme consists of tabulating the mean trip rate for each trip purpose and further resolving the trip rates based on household characteristics. The characteristics used were the number of vehicles, including categories 0, 1, 2, and 3+ (where 3+ indicates three or more cars), and the number of family members, including categories 1, 2, 3, 4, and 5+ (where 5+ indicates 5 or more members). Additionally, three sets of tables were prepared, i.e., for multi-family households, for single-family households, and for students. The analysis was completed separately for each trip purpose.

Tables D.3 and D.5 show the cell counts for number of households in each category for all districts combined. For some categories, the sample size (number of households) is small or zero. Where there a no samples, no estimate of the mean trip rate can be made, and in the case of a small sample size, the confidence interval in the mean rate is large. The mean trip rates based on simple averages are shown in Table D.6 for single-family homes, Table D.7 for multi-family homes and Table D.8 for student homes.

Table D.3
Single-Family Cell Counts

| Number of Vehicles | Number of Household Members | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 0 | 6 | 2 | | | |
| 1 | 134 | 54 | 8 | 1 | 1 |
| 2 | 30 | 295 | 47 | 38 | 11 |
| 3 | 3 | 111 | 61 | 27 | 9 |

Table D.4
Multi-Family Cell Counts

| Number of Vehicles | Number of Household Members | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 0 | 5 | | | | |
| 1 | 75 | 14 | 2 | 2 | |
| 2 | 6 | 49 | 10 | 1 | |
| 3 | 1 | 6 | 4 | | 1 |

Table D.5
Student Cell Counts

| Number of Vehicles | Number of Household Members | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 0 | 7 | 1 | | 2 | |
| 1 | 94 | 25 | 7 | 2 | |
| 2 | 6 | 64 | 11 | 9 | |
| 3 | | 6 | 25 | 16 | 5 |

Table D.6
Single-Family Cell Averages

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.00 | 1.50 | | | |
| | 1 | 0.77 | 0.57 | 0.88 | 2.00 | 1.00 |
| | 2 | 0.63 | 1.61 | 1.91 | 1.79 | 1.36 |
| | 3+ | 1.67 | 1.63 | 2.20 | 3.30 | 3.00 |
| HBS | 0 | 0.00 | 0.50 | | | |
| | 1 | 0.51 | 1.00 | 1.13 | 4.00 | 3.00 |
| | 2 | 0.63 | 1.00 | 1.36 | 1.39 | 3.91 |
| | 3+ | 0.33 | 1.08 | 1.44 | 1.30 | 1.11 |
| HBSR | 0 | 0.00 | 0.00 | | | |
| | 1 | 0.45 | 0.81 | 1.75 | 0.00 | 0.00 |
| | 2 | 0.40 | 0.73 | 1.72 | 1.76 | 3.82 |
| | 3+ | 0.00 | 0.77 | 1.54 | 1.93 | 1.11 |
| HBO | 0 | 0.00 | 0.00 | | | |
| | 1 | 0.47 | 1.13 | 3.75 | 2.00 | 10.00 |
| | 2 | 0.50 | 1.00 | 2.83 | 6.05 | 8.00 |
| | 3+ | 0.00 | 0.98 | 2.49 | 4.26 | 4.56 |
| NHB | 0 | 0.00 | 0.50 | | | |
| | 1 | 1.36 | 1.93 | 3.63 | 2.00 | 5.00 |
| | 2 | 1.17 | 2.07 | 3.62 | 6.16 | 8.36 |
| | 3+ | 0.33 | 2.59 | 4.03 | 3.81 | 4.89 |

Table D.7
Multi-Family Cell Averages

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.00 | | | | |
| | 1 | 0.95 | 0.71 | 2.50 | 1.50 | |
| | 2 | 1.33 | 1.80 | 1.90 | 1.00 | |
| | 3+ | 0.00 | 2.33 | 3.00 | | 2.00 |
| HBS | 0 | 0.40 | | | | |
| | 1 | 0.56 | 0.93 | 3.00 | 0.50 | |
| | 2 | 0.83 | 0.73 | 1.80 | 0.00 | |
| | 3+ | 1.00 | 0.83 | 1.00 | | 2.00 |
| HBSR | 0 | 0.40 | | | | |
| | 1 | 0.35 | 0.71 | 1.50 | 1.00 | |
| | 2 | 0.33 | 0.84 | 1.00 | 1.00 | |
| | 3+ | 2.00 | 0.67 | 1.50 | | 0.00 |
| HBO | 0 | 0.00 | | | | |
| | 1 | 0.65 | 1.07 | 2.00 | 5.50 | |
| | 2 | 0.33 | 1.51 | 3.60 | 6.00 | |
| | 3+ | 2.00 | 1.33 | 1.25 | | 6.00 |
| NHB | 0 | 0.40 | | | | |
| | 1 | 1.05 | 2.07 | 9.00 | 0.50 | |
| | 2 | 1.33 | 2.22 | 4.30 | 6.00 | |
| | 3+ | 0.00 | 1.83 | 2.25 | | 2.00 |

Table D.8
Student Cell Averages

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.00 | 0.00 | | 0.00 | |
| | 1 | 0.21 | 0.68 | 0.43 | 0.00 | |
| | 2 | 0.67 | 1.05 | 0.55 | 0.89 | 0.00 |
| | 3+ | | 1.17 | 0.80 | 2.31 | 2.25 |
| HBS | 0 | 0.14 | 0.00 | | 0.00 | |
| | 1 | 0.60 | 1.12 | 1.71 | 0.50 | |
| | 2 | 0.00 | 0.91 | 0.91 | 1.89 | 0.00 |
| | 3+ | | 1.17 | 0.88 | 1.38 | 1.00 |
| HBSR | 0 | 0.14 | 0.00 | | 0.00 | |
| | 1 | 0.55 | 0.68 | 1.57 | 4.50 | |
| | 2 | 0.00 | 1.14 | 1.36 | 1.22 | 0.00 |
| | 3+ | | 1.83 | 1.16 | 1.50 | 3.25 |
| HBO | 0 | 0.57 | 2.00 | | 8.00 | |
| | 1 | 1.20 | 2.12 | 5.00 | 2.00 | |
| | 2 | 1.00 | 2.16 | 3.82 | 5.33 | 2.00 |
| | 3+ | | 0.50 | 5.20 | 5.38 | 5.50 |
| NHB | 0 | 0.14 | 0.00 | | 0.00 | |
| | 1 | 0.87 | 0.96 | 3.29 | 3.25 | |
| | 2 | 0.67 | 2.03 | 2.82 | 4.22 | 0.00 |
| | 3+ | | 4.33 | 1.84 | 1.88 | 5.25 |

A standard technique for populating null values in the tables is MCA. This method uses group means and the grand mean to develop estimates of values for all cells. The grand mean is the mean trip rate for all samples in the table. The groups correspond to table row and column headers (i.e. zero vehicles, 1 vehicle, etc, or 1 household member, 2 household members, etc.) The cell value is calculated as the grand mean plus the deviations between the group and grand means for each group representing the cell. The results from the MCA analysis are shown in Tables D.9 through D.11.

It is generally expected that the mean trip rate should increase with vehicle number and number of household members. In many cases the results in the tables are consistent with these expected trends. However, in some cases, the expected trends do not occur. An attempt was made to develop more consistent results using an adjusted MCA. The adjusted MCA calculates the group means using a least-squared best fit method, such that the predicted cell values best match the cell means based on sample averages. The method implicitly includes weighting of the cells with the largest sample sizes, and it generally improves the trends in the tabulated data. The results are shown in Tables D.12 through D.14. The adjusted MCA did improve the results, in terms of expected trends, in some case, but not universally.

Table D.9
Single Family MCA Results Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | -0.38 | 0.38 | 0.88 | 1.30 | 0.94 |
| | 1 | -0.03 | 0.73 | 1.23 | 1.65 | 1.29 |
| | 2 | 0.82 | 1.58 | 2.08 | 2.50 | 2.14 |
| | 3+ | 1.31 | 2.07 | 2.57 | 2.99 | 2.63 |
| HBS | 0 | -0.40 | 0.11 | 0.48 | 0.48 | 1.76 |
| | 1 | 0.17 | 0.68 | 1.05 | 1.05 | 2.33 |
| | 2 | 0.60 | 1.11 | 1.48 | 1.48 | 2.76 |
| | 3+ | 0.67 | 1.18 | 1.55 | 1.55 | 2.83 |
| HBSR | 0 | -0.51 | -0.18 | 0.70 | 0.89 | 1.55 |
| | 1 | 0.09 | 0.42 | 1.30 | 1.49 | 2.15 |
| | 2 | 0.48 | 0.81 | 1.69 | 1.88 | 2.54 |
| | 3+ | 0.64 | 0.97 | 1.85 | 2.04 | 2.70 |
| HBO | 0 | -1.15 | -0.59 | 1.12 | 3.66 | 5.02 |
| | 1 | -0.31 | 0.25 | 1.96 | 4.50 | 5.86 |
| | 2 | 0.66 | 1.22 | 2.93 | 5.47 | 6.83 |
| | 3+ | 0.83 | 1.39 | 3.10 | 5.64 | 7.00 |
| NHB | 0 | -1.17 | -0.26 | 1.41 | 2.71 | 4.28 |
| | 1 | 0.33 | 1.24 | 2.91 | 4.21 | 5.78 |
| | 2 | 1.41 | 2.32 | 3.99 | 5.29 | 6.86 |
| | 3+ | 1.93 | 2.84 | 4.51 | 5.81 | 7.38 |

Table D.10
Multi-Family MCA Results Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | -0.41 | 0.30 | 0.93 | 0.01 | 0.68 |
| | 1 | 0.55 | 1.26 | 1.89 | 0.97 | 1.64 |
| | 2 | 1.35 | 2.06 | 2.69 | 1.77 | 2.44 |
| | 3+ | 1.92 | 2.63 | 3.26 | 2.34 | 3.01 |
| HBS | 0 | 0.20 | 0.41 | 1.38 | -0.04 | 1.63 |
| | 1 | 0.47 | 0.68 | 1.65 | 0.23 | 1.90 |
| | 2 | 0.69 | 0.90 | 1.87 | 0.45 | 2.12 |
| | 3+ | 0.80 | 1.01 | 1.98 | 0.56 | 2.23 |
| HBSR | 0 | 0.15 | 0.58 | 0.97 | 0.78 | -0.22 |
| | 1 | 0.19 | 0.62 | 1.01 | 0.82 | -0.18 |
| | 2 | 0.57 | 1.00 | 1.39 | 1.20 | 0.20 |
| | 3+ | 0.75 | 1.18 | 1.57 | 1.38 | 0.38 |
| HBO | 0 | -0.63 | 0.17 | 1.57 | 4.43 | 4.76 |
| | 1 | 0.22 | 1.02 | 2.42 | 5.28 | 5.61 |
| | 2 | 1.16 | 1.96 | 3.36 | 6.22 | 6.55 |
| | 3+ | 1.12 | 1.92 | 3.32 | 6.18 | 6.51 |
| NHB | 0 | -0.38 | 0.76 | 2.98 | 0.93 | 0.60 |
| | 1 | 0.59 | 1.73 | 3.95 | 1.90 | 1.57 |
| | 2 | 1.74 | 2.88 | 5.10 | 3.05 | 2.72 |
| | 3+ | 1.05 | 2.19 | 4.41 | 2.36 | 2.03 |

Table D.11
Student MCA Results Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | -0.49 | 0.24 | -0.04 | 0.84 | 0.09 |
| | 1 | -0.18 | 0.55 | 0.27 | 1.15 | 1.40 |
| | 2 | 0.44 | 1.17 | 0.89 | 1.77 | 2.02 |
| | 3+ | 0.94 | 1.67 | 1.39 | 2.27 | 2.52 |
| HBS | 0 | -0.22 | 0.22 | 0.27 | 0.63 | 0.05 |
| | 1 | 0.44 | 0.88 | 0.93 | 1.29 | 0.71 |
| | 2 | 0.61 | 1.05 | 1.10 | 1.46 | 0.88 |
| | 3+ | 0.76 | 1.20 | 1.25 | 1.61 | 1.03 |
| HBSR | 0 | -0.35 | 0.20 | 0.43 | 0.67 | 1.75 |
| | 1 | 0.25 | 0.80 | 1.03 | 1.27 | 2.35 |
| | 2 | 0.64 | 1.19 | 1.42 | 1.66 | 2.74 |
| | 3+ | 1.06 | 1.61 | 1.84 | 2.08 | 3.16 |
| HBO | 0 | 0.84 | 1.73 | 4.50 | 5.00 | 4.49 |
| | 1 | 0.24 | 1.13 | 3.90 | 4.40 | 3.89 |
| | 2 | 1.23 | 2.12 | 4.89 | 5.39 | 4.88 |
| | 3+ | 3.37 | 4.26 | 7.03 | 7.53 | 7.02 |
| NHB | 0 | -0.74 | 0.33 | 0.78 | 1.04 | 2.65 |
| | 1 | 0.22 | 1.29 | 1.74 | 2.00 | 3.61 |
| | 2 | 1.39 | 2.46 | 2.91 | 3.17 | 4.78 |
| | 3+ | 1.57 | 2.64 | 3.09 | 3.35 | 4.96 |

Table D.12
Single Family Adjusted MCA Results Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.32 | 0.57 | 0.93 | 1.36 | 1.01 |
| | 1 | 0.63 | 0.88 | 1.24 | 1.67 | 1.32 |
| | 2 | 1.23 | 1.48 | 1.84 | 2.27 | 1.92 |
| | 3+ | 1.60 | 1.85 | 2.21 | 2.64 | 2.29 |
| HBS | 0 | 0.01 | 0.48 | 0.86 | 0.86 | 2.13 |
| | 1 | 0.52 | 0.99 | 1.37 | 1.37 | 2.64 |
| | 2 | 0.57 | 1.04 | 1.42 | 1.42 | 2.69 |
| | 3+ | 0.51 | 0.98 | 1.36 | 1.36 | 2.63 |
| HBSR | 0 | -0.08 | 0.25 | 1.16 | 1.34 | 2.00 |
| | 1 | 0.44 | 0.77 | 1.68 | 1.86 | 2.52 |
| | 2 | 0.44 | 0.77 | 1.68 | 1.86 | 2.52 |
| | 3+ | 0.34 | 0.67 | 1.58 | 1.76 | 2.42 |
| HBO | 0 | -0.16 | 0.52 | 2.35 | 4.85 | 6.22 |
| | 1 | 0.50 | 1.18 | 3.01 | 5.51 | 6.88 |
| | 2 | 0.44 | 1.12 | 2.95 | 5.45 | 6.82 |
| | 3+ | -0.01 | 0.67 | 2.50 | 5.00 | 6.37 |
| NHB | 0 | -0.07 | 0.70 | 2.35 | 3.64 | 5.22 |
| | 1 | 1.27 | 2.04 | 3.69 | 4.98 | 6.56 |
| | 2 | 1.44 | 2.21 | 3.86 | 5.15 | 6.73 |
| | 3+ | 1.43 | 2.20 | 3.85 | 5.14 | 6.72 |

Table D.13
Multi-Family Adjusted MCA Results Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.01 | 0.21 | 0.71 | 0.24 | 0.01 |
| | 1 | 0.91 | 1.11 | 1.61 | 1.14 | 0.91 |
| | 2 | 1.51 | 1.71 | 2.21 | 1.74 | 1.51 |
| | 3+ | 2.01 | 2.21 | 2.71 | 2.24 | 2.01 |
| HBS | 0 | 0.39 | 0.69 | 1.70 | 0.17 | 2.13 |
| | 1 | 0.59 | 0.89 | 1.90 | 0.37 | 2.33 |
| | 2 | 0.47 | 0.77 | 1.78 | 0.25 | 2.21 |
| | 3+ | 0.26 | 0.56 | 1.57 | 0.04 | 2.00 |
| HBSR | 0 | 0.40 | 0.77 | 1.12 | 1.02 | -0.23 |
| | 1 | 0.35 | 0.72 | 1.07 | 0.97 | -0.28 |
| | 2 | 0.42 | 0.79 | 1.14 | 1.04 | -0.21 |
| | 3+ | 0.63 | 1.00 | 1.35 | 1.25 | 0.00 |
| HBO | 0 | 0.00 | 0.53 | 2.02 | 4.92 | 5.66 |
| | 1 | 0.62 | 1.15 | 2.64 | 5.54 | 6.28 |
| | 2 | 1.01 | 1.54 | 3.03 | 5.93 | 6.67 |
| | 3+ | 0.34 | 0.87 | 2.36 | 5.26 | 6.00 |
| NHB | 0 | 0.40 | 1.61 | 4.03 | 1.67 | 2.56 |
| | 1 | 1.08 | 2.29 | 4.71 | 2.35 | 3.24 |
| | 2 | 1.05 | 2.26 | 4.68 | 2.32 | 3.21 |
| | 3+ | -0.16 | 1.05 | 3.47 | 1.11 | 2.00 |

Table D.14
Student Adjusted MCA Results Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | -0.19 | 0.23 | -0.41 | 0.51 | 0.52 |
| | 1 | 0.23 | 0.65 | 0.01 | 0.93 | 0.94 |
| | 2 | 0.58 | 1.00 | 0.36 | 1.28 | 1.29 |
| | 3+ | 1.21 | 1.63 | 0.99 | 1.91 | 1.92 |
| HBS | 0 | -0.17 | 0.39 | 0.48 | 0.89 | 0.30 |
| | 1 | 0.60 | 1.16 | 1.25 | 1.66 | 1.07 |
| | 2 | 0.35 | 0.91 | 1.00 | 1.41 | 0.82 |
| | 3+ | 0.33 | 0.89 | 0.98 | 1.39 | 0.80 |
| HBSR | 0 | -0.15 | 0.38 | 0.52 | 0.81 | 1.82 |
| | 1 | 0.54 | 1.07 | 1.21 | 1.50 | 2.51 |
| | 2 | 0.52 | 1.05 | 1.19 | 1.48 | 2.49 |
| | 3+ | 0.66 | 1.19 | 1.33 | 1.62 | 2.63 |
| HBO | 0 | 1.28 | 2.25 | 4.92 | 5.42 | 4.88 |
| | 1 | 1.15 | 2.12 | 4.79 | 5.29 | 4.75 |
| | 2 | 1.03 | 2.00 | 4.67 | 5.17 | 4.63 |
| | 3+ | 1.25 | 2.22 | 4.89 | 5.39 | 4.85 |
| NHB | 0 | -0.27 | 0.35 | 0.95 | 1.26 | 2.82 |
| | 1 | 0.85 | 1.47 | 2.07 | 2.38 | 3.94 |
| | 2 | 1.47 | 2.09 | 2.69 | 3.00 | 4.56 |
| | 3+ | 1.02 | 1.64 | 2.24 | 2.55 | 4.11 |

Even with the adjusted MCA, there are some instances where the trip rate for a particular cell is less than zero. In these instances, cell values were borrowed from either the cell averages or the unadjusted MCA. For example, with all other factors remaining the same, two vehicle households should produce more trips than zero vehicle households. In these cases, the cell averages or the unadjusted MCA method served as a source for generating a reasonable set of rates to replace the adjusted MCA rates. However, in some cells the adjusted MCA produced illogical rates, and their MCA and simple cell average rates produced a similar problem. A regression analysis was performed on the plotted rates and a best-fit trend-line was obtained for each curve. Then, based on the equation of the trend line a "best-fit" set of rates was recalculated for each of the cell values. Tables D.15 through D.17 present the final trip production rates developed for Gainesville Trip Generation Model.

Table D.15
Final Single Family Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.32 | 0.58 | 0.92 | 1.36 | 1.89 |
| | 1 | 0.63 | 0.89 | 1.23 | 1.67 | 2.20 |
| | 2 | 1.23 | 1.49 | 1.83 | 2.27 | 2.80 |
| | 3+ | 1.60 | 1.86 | 2.20 | 2.64 | 3.17 |
| HBS | 0 | 0.27 | 0.48 | 0.86 | 1.41 | 2.13 |
| | 1 | 0.54 | 0.93 | 1.41 | 1.98 | 2.63 |
| | 2 | 0.59 | 0.98 | 1.46 | 2.03 | 2.68 |
| | 3+ | 0.70 | 1.11 | 1.60 | 2.17 | 2.82 |
| HBSR | 0 | 0.19 | 0.25 | 1.16 | 1.34 | 2.00 |
| | 1 | 0.44 | 0.77 | 1.30 | 1.19 | 2.15 |
| | 2 | 0.48 | 0.81 | 1.68 | 1.88 | 2.52 |
| | 3+ | 0.64 | 0.97 | 1.85 | 2.04 | 2.70 |
| HBO | 0 | 0.26 | 0.58 | 1.52 | 3.07 | 5.25 |
| | 1 | 0.44 | 1.17 | 2.35 | 3.98 | 6.06 |
| | 2 | 0.56 | 1.63 | 3.04 | 4.73 | 6.66 |
| | 3+ | 0.62 | 1.76 | 3.25 | 5.08 | 7.26 |
| NHB | 0 | 0.69 | 1.17 | 2.11 | 3.49 | 5.33 |
| | 1 | 1.18 | 2.27 | 3.53 | 4.97 | 6.59 |
| | 2 | 1.35 | 2.44 | 3.70 | 5.14 | 6.76 |
| | 3+ | 1.86 | 3.04 | 4.36 | 5.81 | 7.41 |

Table D.16
Final Multi-Family Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.37 | 0.64 | 0.92 | 1.19 | 1.47 |
| | 1 | 0.86 | 1.35 | 1.84 | 2.33 | 2.82 |
| | 2 | 1.50 | 2.09 | 2.68 | 3.27 | 3.86 |
| | 3+ | 2.01 | 2.63 | 3.26 | 3.88 | 4.51 |
| HBS | 0 | 0.20 | 0.52 | 0.93 | 1.40 | 1.92 |
| | 1 | 0.45 | 0.86 | 1.27 | 1.66 | 2.06 |
| | 2 | 0.65 | 1.11 | 1.51 | 1.89 | 2.24 |
| | 3+ | 0.76 | 1.23 | 1.63 | 2.00 | 2.33 |
| HBSR | 0 | 0.16 | 0.57 | 0.98 | 1.39 | 1.80 |
| | 1 | 0.20 | 0.61 | 1.02 | 1.43 | 1.84 |
| | 2 | 0.58 | 0.99 | 1.40 | 1.81 | 2.22 |
| | 3+ | 0.76 | 1.17 | 1.58 | 1.99 | 2.40 |
| HBO | 0 | 0.32 | 0.71 | 2.07 | 3.64 | 5.66 |
| | 1 | 0.67 | 1.24 | 2.87 | 4.47 | 6.28 |
| | 2 | 1.02 | 1.70 | 3.37 | 5.08 | 6.67 |
| | 3+ | 1.06 | 1.90 | 3.68 | 5.23 | 6.87 |
| NHB | 0 | 0.40 | 1.61 | 4.03 | 4.49 | 5.19 |
| | 1 | 1.09 | 2.27 | 4.73 | 5.17 | 5.87 |
| | 2 | 1.72 | 2.95 | 5.04 | 5.53 | 6.18 |
| | 3+ | 2.20 | 3.90 | 5.23 | 6.19 | 6.77 |

Table D.17
Final Student Trip Production Rates

| Trip Purpose | Number of Vehicles | Number of Members in Household | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HBW | 0 | 0.12 | 0.24 | 0.35 | 0.46 | 0.56 |
| | 1 | 0.27 | 0.58 | 0.77 | 0.90 | 1.00 |
| | 2 | 0.62 | 0.93 | 1.12 | 1.25 | 1.35 |
| | 3+ | 1.25 | 1.56 | 1.75 | 1.88 | 1.98 |
| HBS | 0 | 0.12 | 0.20 | 0.33 | 0.57 | 0.96 |
| | 1 | 0.48 | 0.78 | 1.04 | 1.26 | 1.44 |
| | 2 | 0.65 | 0.95 | 1.21 | 1.43 | 1.61 |
| | 3+ | 0.80 | 1.10 | 1.36 | 1.58 | 1.76 |
| HBSR | 0 | 0.18 | 0.31 | 0.54 | 0.95 | 1.67 |
| | 1 | 0.65 | 0.85 | 1.21 | 1.72 | 2.40 |
| | 2 | 0.75 | 0.99 | 1.38 | 1.92 | 2.62 |
| | 3+ | 0.81 | 1.30 | 1.83 | 2.40 | 3.00 |
| HBO | 0 | 0.63 | 2.35 | 3.99 | 4.92 | 5.64 |
| | 1 | 0.96 | 2.70 | 4.21 | 5.23 | 5.94 |
| | 2 | 1.29 | 2.80 | 4.39 | 5.47 | 6.17 |
| | 3+ | 1.78 | 3.94 | 6.10 | 7.84 | 8.90 |
| NHB | 0 | 0.20 | 3.09 | 0.95 | 1.26 | 2.82 |
| | 1 | 0.85 | 1.47 | 2.07 | 2.38 | 3.94 |
| | 2 | 1.47 | 2.09 | 2.69 | 3.17 | 4.56 |
| | 3+ | 1.57 | 2.64 | 3.09 | 3.35 | 4.96 |

# Appendix E
# ZDATA1 and ZDATA2 DBASE Field Names

**ZDATA1:**

| | |
|---|---|
| SEC - | Sector number |
| TAZ - | TAZ number |
| SFDU - | Number of single-family dwellings units (SFDUS) |
| SF_SEA - | % SFDUS not occupied by permanent residents |
| SF_VAC - | % SFDUS vacant |
| SPOP - | Population in SFDUS |
| SF_0V - | % households having no vehicles in SFDUS occupied by permanent residents |
| SF_1V - | % households having 1 vehicle in SFDUS occupied by permanent residents |
| SF_2V - | % households having 2 vehicles in SFDUS occupied by permanent residents |
| SF_3V - | % households having 3 or more vehicles in SFDUS occupied by permanent residents |
| MFDU - | Number of multi-family dwellings units (MFDUS) |
| MF_SEA - | % MFDUS not occupied by permanent residents |
| MF_VAC - | % MFDUS vacant |
| MPOP - | Population in MFDUS |
| MF_0V - | % households having no vehicles in MFDUS occupied by permanent residents |
| MF_1V - | % households having 1 vehicle in MFDUS occupied by permanent residents |
| MF_2V - | % households having 2 vehicles in MFDUS occupied by permanent residents |
| MF_3V - | % households having 3 or more vehicles in MFDUS occupied by permanent residents |
| HMDU - | Total hotel – motel units |
| HM_POC - | % hotel-motel units occupied |
| HMPOP - | Total population in occupied hotel-motel units |

**ZDATA2:**

| | |
|---|---|
| SEC - | Sector number |
| TAZ - | TAZ number |
| OIEMP - | Other industrial employment by place-of-work (sic 01-19) |
| MFGEMP - | Manufacturing industrial employment by place-of-work (sic 20-51) |
| COMEMP - | Commercial employment by place-of-work (sic 52-59) |
| SERVEMP - | Service employment by place-of-work (sic 60-67, 70-89, and 99) |
| HOTEL - | Hotel employment (not used) |
| TOTEMP - | Total employment by place-of-work (sic 01-99) |
| SCHENR - | School enrollment by school location |
| SHORTPARK - | Short-term (3 hour) parking cost (cents) |
| LONGPARK - | Long-term (8 hour) parking cost (cents) |
| STUDENTPAR - | Student (8 hour) parking cost (cents) at UF |

Appendix F
ZDATA3 (Special Generators)

**ZDATA3:**

**Format for Special Generator Data (ZDATA3B)**
2000 Gainesville Model Update

| COLUMN | VARIABLE |
|---|---|
| 1 | Card Type (C=comment statement) |
| 2-4 | Planning District |
| 5-8 | Zone Number |
| 9 | Production/Attraction Indicator (P/A) |
| | Plus (+)/Minus (-)/% Increase (I)/% Reduce (R)/ |
| 10 | Total Indicator |
| 11-16 | Total Trips |
| 17-19 | Percent of HBW Trips |
| 20-22 | Percent of HBSH Trips |
| 23-25 | Percent of HBSR Trips |
| 26-28 | Percent of HBO Trips |
| 29-31 | Percent of NHB Trips |
| 32-36 | Spec. Gen. Total Employment |
| 37-41 | Spec. Gen. Commercial Employment |
| 42-46 | Spec. Gen. Service Employment |
| 47-51 | Spec. Gen. School Enrollment |
| 52-56 | Spec. Gen. Total Dwelling Units |
| 57-101 | Description of Speed Generators |

# Appendix G
# ZDATA4 File Format

(Added percent of LOV, HOV, Light-Duty Truck, and Heavy-Duty Truck categories for NERPM)

| ZDATA4 Zone Splits and IE Productions | | Standard |
|---|---|---|
| **Columns** | **Contents** | **GEN** |
| **1** | A '4' IS CODED ON EACH LINE TO INDICATE ZONAL DATA TYPE FOUR | SAME |
| **2-4** | SECTOR NUMBER (OPTIONAL) | |
| **5-8** | ZONE NUMBER | |
| **9-14** | INTERNAL-EXTERNAL PRODUCTIONS (PERCENT OF ZONE CODED IN CC 5-8 DEACTIVATED) | |
| **15-20** | PERCENT LOV INTERNAL-EXTERNAL PRODUCTIONS | |
| **21-26** | PERCENT HOV INTERNAL-EXTERNAL PRODUCTIONS | |
| **27-32** | PERCENT LIGHT-DUTY TRUCK INTERNAL-EXTERNAL PRODUCTIONS | |
| **33-38** | PERCENT HEAVY-DUTY TRUCK INTERNAL-EXTERNAL PRODUCTIONS | |
| **39-42** | NEW ZONE NUMBER (DEACTIVATED) | **15-18** |
| **43-45** | PERCENT OF ZONE CODED IN CC 39-42 (DEACTIVATED) | **19-21** |
| **46-80** | AVAILABLE TO USER (UNRESTRICTED) | **22-80** |

Notes: (1) All data must be coded, right-justified, with no leading zeros.

(2) All percentages must be in whole units (e.g. 10 = 10 Percent).

# Appendix H
## Friction Factors

| TIME | HBW | HBSH | HBSR | HBO | NHB | TK4 | TKSGL | TKTRLR | SOVIE | HOVIE | TKLTIE | TKHTIE | HBU | HDORMU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25208 | 126687 | 126687 | 126687 | 198262 | 9231 | 9048 | 9704 | 222 | 222 | 222 | 222 | 126687 | 126687 |
| 2 | 21983 | 47324 | 47324 | 47324 | 71259 | 8521 | 8187 | 9418 | 333 | 333 | 333 | 333 | 47324 | 47324 |
| 3 | 19282 | 25585 | 25585 | 25585 | 37571 | 7866 | 7408 | 9139 | 444 | 444 | 444 | 444 | 25585 | 25585 |
| 4 | 16953 | 16092 | 16092 | 16092 | 23174 | 7261 | 6703 | 8869 | 555 | 555 | 555 | 555 | 16092 | 16092 |
| 5 | 14924 | 10997 | 10997 | 10997 | 15577 | 6703 | 6065 | 8607 | 666 | 666 | 666 | 666 | 10997 | 10997 |
| 6 | 13149 | 7919 | 7919 | 7919 | 11056 | 6188 | 5488 | 8353 | 777 | 777 | 777 | 777 | 7919 | 7919 |
| 7 | 11591 | 5913 | 5913 | 5913 | 8147 | 5712 | 4966 | 8106 | 888 | 888 | 888 | 888 | 5913 | 5913 |
| 8 | 10222 | 4534 | 4534 | 4534 | 6170 | 5273 | 4493 | 7866 | 1333 | 1333 | 1333 | 1333 | 4534 | 4534 |
| 9 | 9018 | 3548 | 3548 | 3548 | 4773 | 4868 | 4066 | 7634 | 1666 | 1666 | 1666 | 1666 | 3548 | 3548 |
| 10 | 7957 | 2820 | 2820 | 2820 | 3753 | 4493 | 3679 | 7408 | 3333 | 3333 | 3333 | 3333 | 2820 | 2820 |
| 11 | 7023 | 2271 | 2271 | 2271 | 2991 | 4148 | 3329 | 7189 | 6666 | 6666 | 6666 | 6666 | 2271 | 2271 |
| 12 | 6199 | 1849 | 1849 | 1849 | 2410 | 3829 | 3012 | 6977 | 7777 | 7777 | 7777 | 7777 | 1849 | 1849 |
| 13 | 5473 | 1519 | 1519 | 1519 | 1960 | 3535 | 2725 | 6771 | 8888 | 8888 | 8888 | 8888 | 1519 | 1519 |
| 14 | 4833 | 1257 | 1257 | 1257 | 1607 | 3263 | 2466 | 6570 | 9999 | 9999 | 9999 | 9999 | 1257 | 1257 |
| 15 | 4267 | 1047 | 1047 | 1047 | 1326 | 3012 | 2231 | 6376 | 9999 | 9999 | 9999 | 9999 | 1047 | 1047 |
| 16 | 3769 | 877 | 877 | 877 | 1101 | 2780 | 2019 | 6188 | 9999 | 9999 | 9999 | 9999 | 877 | 877 |
| 17 | 3328 | 739 | 739 | 739 | 919 | 2567 | 1827 | 6005 | 9999 | 9999 | 9999 | 9999 | 739 | 739 |
| 18 | 2940 | 625 | 625 | 625 | 771 | 2369 | 1653 | 5827 | 9999 | 9999 | 9999 | 9999 | 625 | 625 |
| 19 | 2597 | 531 | 531 | 531 | 649 | 2187 | 1496 | 5655 | 9999 | 9999 | 9999 | 9999 | 531 | 531 |
| 20 | 2294 | 452 | 452 | 452 | 548 | 2019 | 1353 | 5488 | 6666 | 6666 | 6666 | 6666 | 452 | 452 |
| 21 | 2026 | 387 | 387 | 387 | 465 | 1864 | 1225 | 5326 | 3333 | 3333 | 3333 | 3333 | 387 | 387 |
| 22 | 1790 | 331 | 331 | 331 | 395 | 1720 | 1108 | 5169 | 1111 | 1111 | 1111 | 1111 | 331 | 331 |
| 23 | 1582 | 285 | 285 | 285 | 337 | 1588 | 1003 | 5016 | 444 | 444 | 444 | 444 | 285 | 285 |
| 24 | 1397 | 246 | 246 | 246 | 288 | 1466 | 907 | 4868 | 222 | 222 | 222 | 222 | 246 | 246 |
| 25 | 1235 | 212 | 212 | 212 | 247 | 1353 | 821 | 4724 | 111 | 111 | 111 | 111 | 212 | 212 |
| 26 | 1091 | 184 | 184 | 184 | 212 | 1249 | 743 | 4584 | 66 | 66 | 66 | 66 | 184 | 184 |
| 27 | 964 | 159 | 159 | 159 | 183 | 1153 | 672 | 4449 | 22 | 22 | 22 | 22 | 159 | 159 |
| 28 | 852 | 138 | 138 | 138 | 157 | 1065 | 608 | 4317 | 16 | 16 | 16 | 16 | 138 | 138 |
| 29 | 753 | 120 | 120 | 120 | 136 | 983 | 550 | 4190 | 13 | 13 | 13 | 13 | 120 | 120 |
| 30 | 665 | 105 | 105 | 105 | 118 | 907 | 498 | 4066 | 11 | 11 | 11 | 11 | 105 | 105 |
| 31 | 588 | 92 | 92 | 92 | 102 | 837 | 450 | 3946 | 16 | 16 | 16 | 16 | 92 | 92 |
| 32 | 519 | 80 | 80 | 80 | 88 | 773 | 408 | 3829 | 3 | 3 | 3 | 3 | 80 | 80 |
| 33 | 459 | 70 | 70 | 70 | 77 | 714 | 369 | 3716 | 1 | 1 | 1 | 1 | 70 | 70 |
| 34 | 406 | 61 | 61 | 61 | 67 | 659 | 334 | 3606 | 1 | 1 | 1 | 1 | 61 | 61 |
| 35 | 358 | 54 | 54 | 54 | 58 | 608 | 302 | 3499 | 1 | 1 | 1 | 1 | 54 | 54 |
| 36 | 317 | 47 | 47 | 47 | 51 | 561 | 273 | 3396 | 1 | 1 | 1 | 1 | 47 | 47 |
| 37 | 280 | 41 | 41 | 41 | 44 | 518 | 247 | 3296 | 1 | 1 | 1 | 1 | 41 | 41 |
| 38 | 247 | 36 | 36 | 36 | 39 | 478 | 224 | 3198 | 1 | 1 | 1 | 1 | 36 | 36 |
| 39 | 219 | 32 | 32 | 32 | 34 | 442 | 202 | 3104 | 1 | 1 | 1 | 1 | 32 | 32 |
| 40 | 193 | 28 | 28 | 28 | 29 | 408 | 183 | 3012 | 1 | 1 | 1 | 1 | 28 | 28 |
| 41 | 171 | 25 | 25 | 25 | 26 | 376 | 166 | 2923 | 1 | 1 | 1 | 1 | 25 | 25 |
| 42 | 151 | 22 | 22 | 22 | 23 | 347 | 150 | 2837 | 1 | 1 | 1 | 1 | 22 | 22 |
| 43 | 133 | 19 | 19 | 19 | 20 | 321 | 136 | 2753 | 1 | 1 | 1 | 1 | 19 | 19 |
| 44 | 118 | 17 | 17 | 17 | 17 | 296 | 123 | 2671 | 1 | 1 | 1 | 1 | 17 | 17 |
| 45 | 104 | 15 | 15 | 15 | 15 | 273 | 111 | 2592 | 1 | 1 | 1 | 1 | 15 | 15 |
| 46 | 92 | 13 | 13 | 13 | 13 | 252 | 101 | 2516 | 1 | 1 | 1 | 1 | 13 | 13 |
| 47 | 81 | 12 | 12 | 12 | 12 | 233 | 91 | 2441 | 1 | 1 | 1 | 1 | 12 | 12 |
| 48 | 72 | 11 | 11 | 11 | 10 | 215 | 82 | 2369 | 1 | 1 | 1 | 1 | 11 | 11 |
| 49 | 64 | 9 | 9 | 9 | 9 | 198 | 74 | 2299 | 1 | 1 | 1 | 1 | 9 | 9 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 56 | 8 | 8 | 8 | 8 | 183 | 67 | 2231 | 1 | 1 | 1 | 1 | 8 | 8 |
| 51 | 50 | 7 | 7 | 7 | 7 | 169 | 61 | 2165 | 1 | 1 | 1 | 1 | 7 | 7 |
| 52 | 44 | 7 | 7 | 7 | 6 | 156 | 55 | 2101 | 1 | 1 | 1 | 1 | 7 | 7 |
| 53 | 39 | 6 | 6 | 6 | 6 | 144 | 50 | 2039 | 1 | 1 | 1 | 1 | 6 | 6 |
| 54 | 34 | 5 | 5 | 5 | 5 | 133 | 45 | 1979 | 1 | 1 | 1 | 1 | 5 | 5 |
| 55 | 30 | 5 | 5 | 5 | 4 | 123 | 41 | 1920 | 1 | 1 | 1 | 1 | 5 | 5 |
| 56 | 27 | 4 | 4 | 4 | 4 | 113 | 37 | 1864 | 1 | 1 | 1 | 1 | 4 | 4 |
| 57 | 24 | 4 | 4 | 4 | 3 | 105 | 33 | 1809 | 1 | 1 | 1 | 1 | 4 | 4 |
| 58 | 21 | 3 | 3 | 3 | 3 | 97 | 30 | 1755 | 1 | 1 | 1 | 1 | 3 | 3 |
| 59 | 19 | 3 | 3 | 3 | 3 | 89 | 27 | 1703 | 1 | 1 | 1 | 1 | 3 | 3 |
| 60 | 16 | 3 | 3 | 3 | 2 | 82 | 25 | 1653 | 1 | 1 | 1 | 1 | 3 | 3 |
| 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Appendix I
# Mode Choice Utility Equations
# Constants and Coefficients

**LOGIT MODE CHOICE CONSTANTS**

| | HBW | | | HBO | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No-car | With car | Student | No-car | With car | Student | NHB | HBU | Dorm |
| 1 Drive Alone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 Carpool 2 | 0 | -1.55505 | -1.17723 | 0 | -0.47538 | -0.23459 | -0.77323 | -1.36289 | 0 |
| 3 Carpool 3+ | -0.41087 | -1.98856 | -1.57524 | -0.57065 | -1.12438 | -0.84504 | -1.60447 | -1.83637 | 0 |
| 4 Walk-local bus | -1.21921 | -1.57793 | -1.91411 | -0.9123 | -1.4207 | -1.80629 | -3.0995 | -0.15023 | 0 |
| 5 Walk-express bus | -1.21921 | -1.57793 | -1.91411 | -0.9123 | -1.4207 | -1.80629 | -3.0995 | -0.15023 | 0 |
| 6 Drive-transit | 0 | -2.30313 | -2.40148 | 0 | -4.82476 | -4.80694 | -4.96564 | -1.63333 | 0 |
| 7 Walk. | -1.02419 | -1.70001 | -2.13388 | 0.25822 | -0.54106 | -1.04849 | -4.72507 | 0.79332 | 1.22876 |
| 8 Bike | -1.58329 | -2.33817 | -2.5088 | -2.69285 | -3.50857 | -3.54719 | -4.89702 | -0.63975 | 0.28187 |

**LOGIT MODE CHOICE COEFFICIENTS**

| | Variable | HBW | HBO | NHB | UNIV |
|---|---|---|---|---|---|
| 1 | In-Vehicle Time | -0.025 | -0.029 | -0.024 | -0.029 |
| 2 | Out of Vehicle Time | -0.049 | -0.048 | -0.095 | -0.048 |
| 3 | Cost | -0.005 | -0.011 | -0.009 | -0.011 |
| 4 | Walk-only time | -0.042 | -0.083 | -0.052 | -0.083 |
| 5 | Bike-only time | -0.109 | -0.117 | -0.096 | -0.117 |
| 6 | Walk-to-transit PEV | 0.117 | 0.192 | 0.243 | 0.192 |
| 7 | Walk-only PEV origin | 0.206 | 0.175 | 0.22 | 0.175 |
| 8 | Walk-only destination | 0.164 | 0.164 | 0.164 | 0.164 |
| 9 | Bike-only origin | 0.093 | 0.07 | 0.066 | 0.07 |
| 10 | Bike-only destination | 0.006 | 0 | 0.006 | 0 |

Appendix J
Final Model Trip Generation Rates (GRATES)

```
c SF/MF rates for
c HBW HBS HBSR HBO
C From D2 HH Survey
cPPDU    SMH     SHP     OTH
c    ADU     WRK     SR
c--+---+---++---+---+---+---
   1   1   10.350.300.210.29
   2   1   10.640.530.280.64
   3   1   11.010.951.281.67
   4   1   11.501.551.473.38
   5   1   12.082.342.205.78
   1   2   10.690.590.480.48
   2   2   10.981.020.851.29
   3   2   11.351.551.432.59
   4   2   11.842.181.314.38
   5   2   12.422.892.376.67
   1   3   11.350.650.530.62
   2   3   11.641.080.891.79
   3   3   12.011.611.853.34
   4   3   12.502.232.075.20
   5   3   13.082.952.777.33
   1   4   11.760.770.700.68
   2   4   12.051.221.071.94
   3   4   12.421.762.043.58
   4   4   12.902.392.245.59
   5   4   13.493.102.977.99
   1   1   20.410.220.180.35
   2   1   20.700.570.630.78
   3   1   21.011.021.082.28
   4   1   21.311.541.534.00
   5   1   21.622.111.986.23
   1   2   20.950.500.220.74
   2   2   21.490.950.671.36
   3   2   22.021.401.123.16
   4   2   22.561.831.574.92
   5   2   23.102.272.026.91
   1   3   21.650.720.641.12
   2   3   22.301.221.091.87
   3   3   22.951.661.543.71
   4   3   23.602.081.995.59
   5   3   24.252.462.447.34
   1   4   22.210.840.841.17
   2   4   22.891.351.292.09
   3   4   23.591.791.744.05
   4   4   24.272.202.195.75
   5   4   24.962.562.647.56
   1   1   31.040.330.660.55
   2   1   30.721.431.821.32
   3   1   30.502.202.972.31
   4   1   30.382.754.293.63
   5   1   30.383.196.494.84
   1   2   31.040.330.660.55
   2   2   30.721.431.821.32
```

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```
   3   2   30.502.202.972.31
   4   2   30.382.754.293.63
   5   2   30.383.196.494.84
   1   3   31.040.330.660.55
   2   3   30.721.431.821.32
   3   3   30.502.202.972.31
   4   3   30.382.754.293.63
   5   3   30.383.196.494.84
   1   4   31.040.330.660.55
   2   4   30.721.431.821.32
   3   4   30.502.202.972.31
   4   4   30.382.754.293.63
   5   4   30.383.196.494.84
ATTFAC PURPOSE =  1,  0.00  0.00  0.00  0.00  1.98  0.55  0.00
ATTFAC PURPOSE =  2,  0.00  0.00  6.71  0.00  0.00  0.00  0.00
ATTFAC PURPOSE =  3,  0.00  0.00  0.55  0.55  0.00  1.77  0.00
ATTFAC PURPOSE =  4,  0.00  0.00  1.65  1.65  0.00  0.33  1.65
ATTFAC PURPOSE =  5,  0.00  0.00  3.89  1.88  0.00  0.33  0.00
ATTFAC PURPOSE =  6,  0.47  0.55  0.45  0.22  0.00  0.13  0.00
ATTFAC PURPOSE =  7,  0.12  0.15  0.13  0.04  0.00  0.05  0.00
ATTFAC PURPOSE =  8,  0.05  0.09  0.04  0.01  0.00  0.02  0.00
```

# Appendix K
## Special Generators

```
C   TAZ TOTRIPS HBWHBSHBRHBONHB_                         GENERATOR
C Garages already in HBU purpose
C    110P+  1618 10 18 18 54  0                         Group Quarters
C    125A+ 15000  2  2  2 92  2                         UF Parking Garage 5
C    126P+  1106 10 18 18 54  0                         Group Quarters
C    141P+   511 10 18 18 54  0                         Group Quarters
C    146A+  2500  2  2  2 92  2                         UF Parking Garage 3
C    146P+  1702 10 18 18 54  0                         Group Quarters
C    149A+ 12500  2  2  2 92  2                         UF Parking Garage 2
C    200P+  3300 20 13  5 60  2                         Housing
1    262A+ 27656  2  2  2 92  2                         Santa Fe Community Coll
C    438A+ 15000  2  2  2 92  2                         UF Parking Garage 4
C    438P+  1200 20 13  5 60  2                         Housing
C    441P+   498 10 18 18 54  0                         Group Quarters
C    442P+  1900 20 13  5 60  2                         Housing
C    449P+  3438 10 18 18 54  0                         Group Quarters
C    450A+  2273  2  2  2 92  2                         UF Parking Garage 1(A)
C    454P+  5351 10 18 18 54  0                         Group Quarters
C    455A+  2727  2  2  2 92  2                         UF Parking Garage 1(B)
C    456P+  1174 10 18 18 54  0                         Group Quarters
C New UF DORM INFO @ 2.27/student less HBO already in HBU purpose
C  The percentage are normalized here (e.g., divided by .48)
C  because NERGEN requires percentages to total 100
1    440P+   655 20 38 38  0  4                         UF DORM
1    441P+   576 20 38 38  0  4                         UF DORM
1    443P+   408 20 38 38  0  4                         UF DORM
1    449P+   662 20 38 38  0  4                         UF DORM
1    453P+  1816 20 38 38  0  4                         UF DORM
1    460P+   362 20 38 38  0  4                         UF DORM
C
C Malls & Shopping
1    237A+ 31442   100  0  0  0                         Oaks Mall
1    207A+  7054   100  0  0  0                         Butler Plaza
1    257A+  5209   100  0  0  0                         Retail
1    196A+  4978   100  0  0  0                         Retail
1    239A+  4072   100  0  0  0                         Retail
1    208A+  3770   100  0  0  0                         Thornbrook
```

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Appendix L
Turn Penalties

| | | | | |
|---|---|---|---|---|
| 1211 | 1207 | 1221 | 1 | -1 |
| 1207 | 1211 | 1221 | 1 | -1 |
| 1214 | 1211 | 1218 | 1 | -1 |
| 1214 | 1211 | 1221 | 1 | -1 |
| 1214 | 1218 | 1211 | 1 | -1 |
| 1240 | 1239 | 1241 | 1 | -1 |
| 1240 | 1241 | 1238 | 1 | -1 |
| 1240 | 1241 | 1239 | 1 | -1 |
| 1242 | 1241 | 1238 | 1 | -1 |
| 1241 | 1242 | 1238 | 1 | -1 |
| 1326 | 1320 | 1324 | 1 | -1 |
| 1326 | 1324 | 1320 | 1 | -1 |
| 1326 | 1324 | 1325 | 1 | -1 |
| 1328 | 1324 | 1325 | 1 | -1 |
| 1324 | 1328 | 1325 | 1 | -1 |
| 1338 | 1333 | 1337 | 1 | -1 |
| 1338 | 1337 | 1333 | 1 | -1 |
| 1338 | 1337 | 1339 | 1 | -1 |
| 1340 | 1337 | 1339 | 1 | -1 |
| 1337 | 1340 | 1339 | 1 | -1 |
| 1468 | 1467 | 1472 | 1 | -1 |
| 1468 | 1467 | 1474 | 1 | -1 |
| 1472 | 1467 | 1474 | 1 | -1 |
| 1467 | 1472 | 1474 | 1 | -1 |
| 1468 | 1472 | 1467 | 1 | -1 |
| 1468 | 1472 | 1474 | 1 | -1 |
| 1485 | 1484 | 1483 | 1 | -1 |
| 1485 | 1484 | 1486 | 1 | -1 |
| 1486 | 1484 | 1483 | 1 | -1 |
| 1484 | 1486 | 1483 | 1 | -1 |
| 1485 | 1486 | 1483 | 1 | -1 |
| 1485 | 1486 | 1484 | 1 | -1 |
| 1588 | 1581 | 1585 | 1 | -1 |
| 1581 | 1588 | 1585 | 1 | -1 |
| 1589 | 1588 | 1585 | 1 | -1 |
| 1589 | 1588 | 1593 | 1 | -1 |
| 1589 | 1593 | 1588 | 1 | -1 |
| 1599 | 1597 | 1601 | 1 | -1 |
| 1599 | 1601 | 1597 | 1 | -1 |
| 1599 | 1601 | 1602 | 1 | -1 |
| 1603 | 1601 | 1602 | 1 | -1 |
| 1601 | 1603 | 1602 | 1 | -1 |
| 1737 | 1733 | 1740 | 1 | -1 |
| 1737 | 1733 | 1744 | 1 | -1 |
| 1740 | 1733 | 1744 | 1 | -1 |
| 1733 | 1740 | 1744 | 1 | -1 |
| 1737 | 1740 | 1733 | 1 | -1 |
| 1737 | 1740 | 1744 | 1 | -1 |
| 1752 | 1750 | 1749 | 1 | -1 |
| 1752 | 1750 | 1757 | 1 | -1 |
| 1757 | 1750 | 1749 | 1 | -1 |
| 1750 | 1757 | 1749 | 1 | -1 |
| 1752 | 1757 | 1749 | 1 | -1 |
| 1752 | 1757 | 1750 | 1 | -1 |
| 1828 | 1825 | 1830 | 1 | -1 |
| 1828 | 1830 | 1825 | 1 | -1 |
| 1828 | 1830 | 1829 | 1 | -1 |
| 1831 | 1830 | 1829 | 1 | -1 |
| 1831 | 1835 | 1829 | 1 | -1 |
| 1842 | 1841 | 1846 | 1 | -1 |
| 1842 | 1846 | 1841 | 1 | -1 |
| 1842 | 1846 | 1843 | 1 | -1 |
| 1858 | 1846 | 1843 | 1 | -1 |
| 1846 | 1858 | 1843 | 1 | -1 |
| 2842 | 2841 | 2844 | 1 | -1 |
| 2842 | 2841 | 2846 | 1 | -1 |
| 2844 | 2841 | 2846 | 1 | -1 |
| 2841 | 2844 | 2846 | 1 | -1 |
| 2842 | 2844 | 2841 | 1 | -1 |
| 2842 | 2844 | 2846 | 1 | -1 |
| 2858 | 2856 | 2855 | 1 | -1 |
| 2858 | 2856 | 2859 | 1 | -1 |
| 2859 | 2856 | 2855 | 1 | -1 |
| 2856 | 2859 | 2857 | 1 | -1 |
| 2858 | 2859 | 2856 | 1 | -1 |
| 2858 | 2859 | 2857 | 1 | -1 |

Appendix M
Mode Choice Model Calibration and Revisions

## UF Adjustments

The initial 2000 model calibration as presented to the MTPO in February showed approximately 4,568 daily RTS trips for the home-based-university (HBU) trip purpose. This trip purpose represents UF student living off-campus and traveling to the university. The model estimates a total of 49,929 person trips for this trip purpose. This target was developed from the District 2 home-interview survey. Admittedly, this survey had a small sample for university students.

UF staff reports that 4,568 daily RTS trips are too low, and that 20% should be taken from drive-alone and put into the transit category. Her support for this is a 2004 survey stating the 34% of university students report traveling to campus by bus. Further support is offered because of limited parking at the university. It is important to remember that the 28,929 trips include home-university and university-home. Thus, if these trips were all drive-alone and parked all day, about 25,000 spaces would be required, which is a little more than the capacity.

RTS reports daily boardings at 24,598 for a September 2000 weekday. With a reasonable transfer rate there would be 17,440 linked trips. If 34% of the daily university trips used transit, this would total very nearly 17,000 trips, or nearly all of the ridership. This is very unlikely.

The 2002 Comprehensive Operational Analysis (COA), reports that 50% of RTS riders say that they are full time university students. This would translate to something less than 8,500 trips for the HBU purpose. Plus, many of the Dorm trips are made by RTS.

Given all of this information, Corradino revised the target number of HBU RTS trips to 8,000 daily trips. While this less than the 34% share that UF staff specified, it is also true that transit service was significantly enhanced between 2000 and 2004. This has several other implications:

- HBU auto trips (drive-alone and carpool) trips must be reduced by 8,000.
- RTS trips from the other trip purposes would be reduced to maintain the reported RTS ridership.

## RTS Service Increase Adjustments

In light of the transit ridership reported by RTS for the year 2004, which showed a 48% increase in ridership from 24,598 passengers in 2000 to 36,362 passengers in 2004, it was decided that the mode choice model should be revised to show this extraordinary increase. The RTS Acting Director, Jesus Gomez brought this to our attention. Thus, so that the model would provide a better estimate of year 2025 transit ridership, the mode choice program was recalibrated to match year 2004 transit ridership instead of year 2000 ridership.

One key reason why the model could not match the 2004 target was that in the earlier calibration the mode choice constants were estimated to match 2000 ridership targets using the year 2004 transit route system, which had more routes and improved headways for some routes. This is analogous to the supply-demand curve. So, to match year 2004 ridership, the mode choice program was recalibrated with the revised 2000 transit configuration, which only included the transit routes that were present in 2000. All the routes introduced between 2000 and 2004 were removed. The goal here was to estimate mode choice constants that would replicate the year 2000 ridership with the year 2000 transit configuration. Then, using the same set of constants and the revised transit route file with updated year 2004 headways and additional routes that were introduced between 2000 and 2004, it was hoped that the model would replicate observed ridership.

The passenger wait time curve was also revised, because the data indicated that the model needed to be more sensitive to headways. The "passenger wait time curve", which determines the waiting time for a passenger for every route based on the route headway, was revised from its earlier form where a maximum limit of waiting time was set to 20 minutes for a route with headway of 160 minutes, as shown in Figure M-1, to the form where the maximum waiting time limit was increased to 40 minutes for a route with headway of 160 minutes as shown in Figure M-2.

Figure M-1
Old Passenger Waiting Time Curve

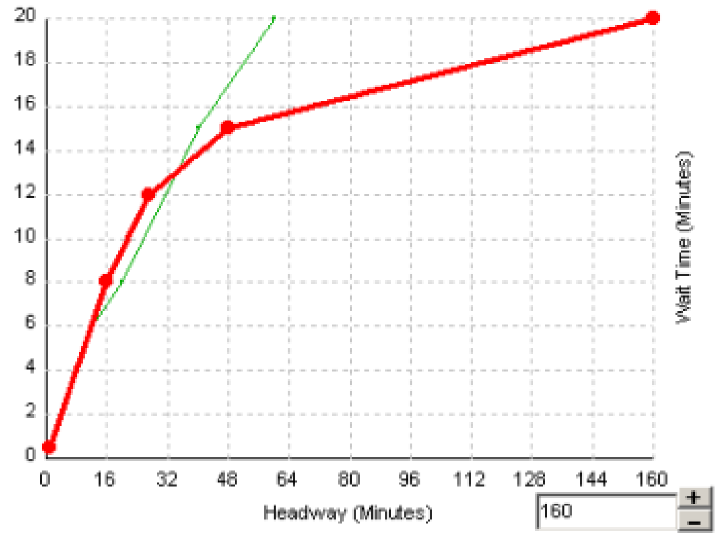
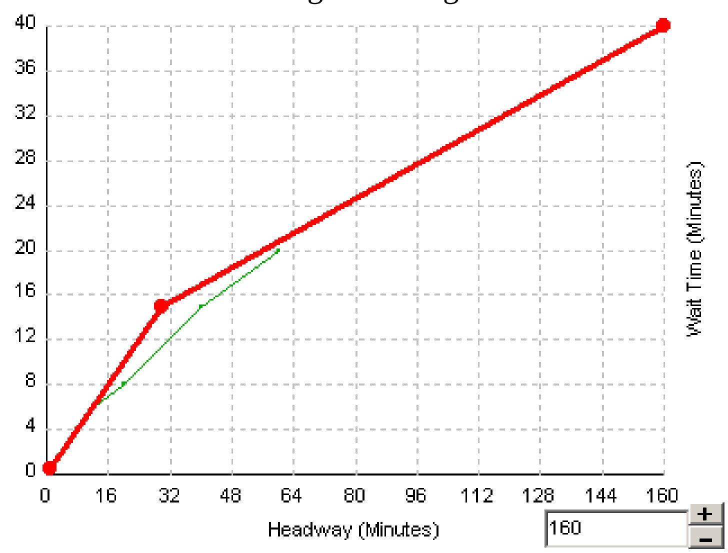



Figure M-2
Revised Passenger Waiting Time Curve



The idea here is that passenger wait time, which is how the model accounts for headway in the ridership estimate, is about ½ the headway, up to a certain wait time, and then its impact is smaller. So, without 100% schedule adherence, the average wait time is half the headway. But, beyond a certain wait time, and with some knowledge of the bus schedule, riders delay their walk to a bus stop to match the scheduled arrival time, and thus their wait time is less than ½ the headway. The change in the curve makes headways more important, assuming that in addition to wait time there is convenience factor associated headway. Thus, with the new curve, the ridership increase associated with a given reduction in headway is much larger than with the old curve. RTS data ridership supports this contention, as evidenced by the extraordinary ridership increase that occurred with the headway improvements that were made between 2000 and 2004.

After recalibration, the model transit ridership closely matched the RTS reported transit ridership for year 2004. Using the recalibrated mode choice program, model runs were also made for 2025 E+C, 2025 Alt 1 (Highway Alternative), 2025 Alt 2A (Improved transit headways, new city routes and express routes), 2025 Alt 2B (Improved transit headways, new city routes and BRT routes). The updated transit ridership for all the alternatives along with RTS reported ridership figures are shown in the table below:

Gainesville Transit Ridership

| Data Source | Transit Ridership | |
|---|---|---|
| *RTS 2000* | 24,598 | |
| *RTS 2004* | 36,362 | |
| *MODEL* | *Old* | *Re-Calibrated* |
| *Base Year 2000* | 24,598 | 36,583 |
| *2025 E+C* | 31,156 | 42,910 |
| *2025 Alt 1* | 30,883 | 41,305 |
| *2025 Alt 2A* | 42,671 | 57,632 |
| *2025 Alt 2B* | 42,578 | 57,552 |

# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 5
## Needs Plan Cost Estimates and Revenue Forecasts

Prepared for:
The Metropolitan Transportation Planning Organization

Prepared by:
The Corradino Group, Inc.

December 2005

# Technical Report 5

# GAINESVILLE URBANIZED AREA TRANSPORTATION STUDY

# 2025 LONG RANGE TRANSPORTATION PLAN

# NEEDS PLAN COST ESTIMATES

# AND REVENUE FORECASTS

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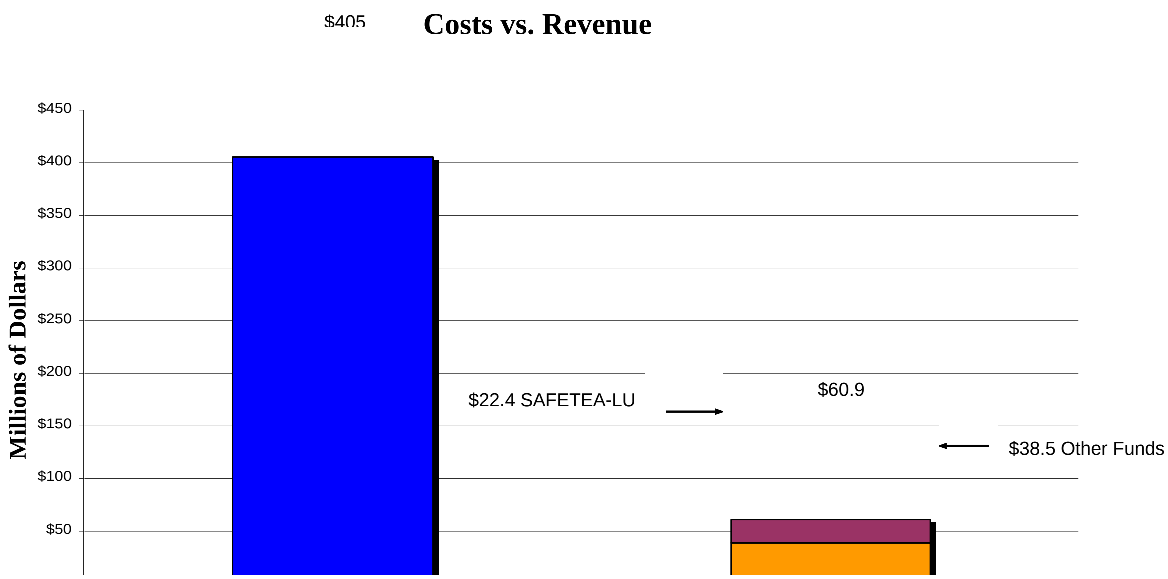
object.**




Prepared for:

Metropolitan Transportation Planning Organization
for the Gainesville Urbanized Area
2009 NW 67th Place, Suite A
Gainesville, FL 32653-1603

September 20, 2005

Revised on October 24, 2005

Approved on November 3, 2005

## Preface

The consultant developed a preliminary list of deficient roadways from the travel model assignment of year 2025 traffic to the existing plus committed highway and transit network. From this list, the MTPO developed a set of transportation needs through the year 2005. These projects are detailed in this report and illustrated in the Appendix. The Appendix also displays bicycle needs and airport projects as developed by the MTPO staff.

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# GAINESVILLE REGIONAL AIRPORT PROJECTS

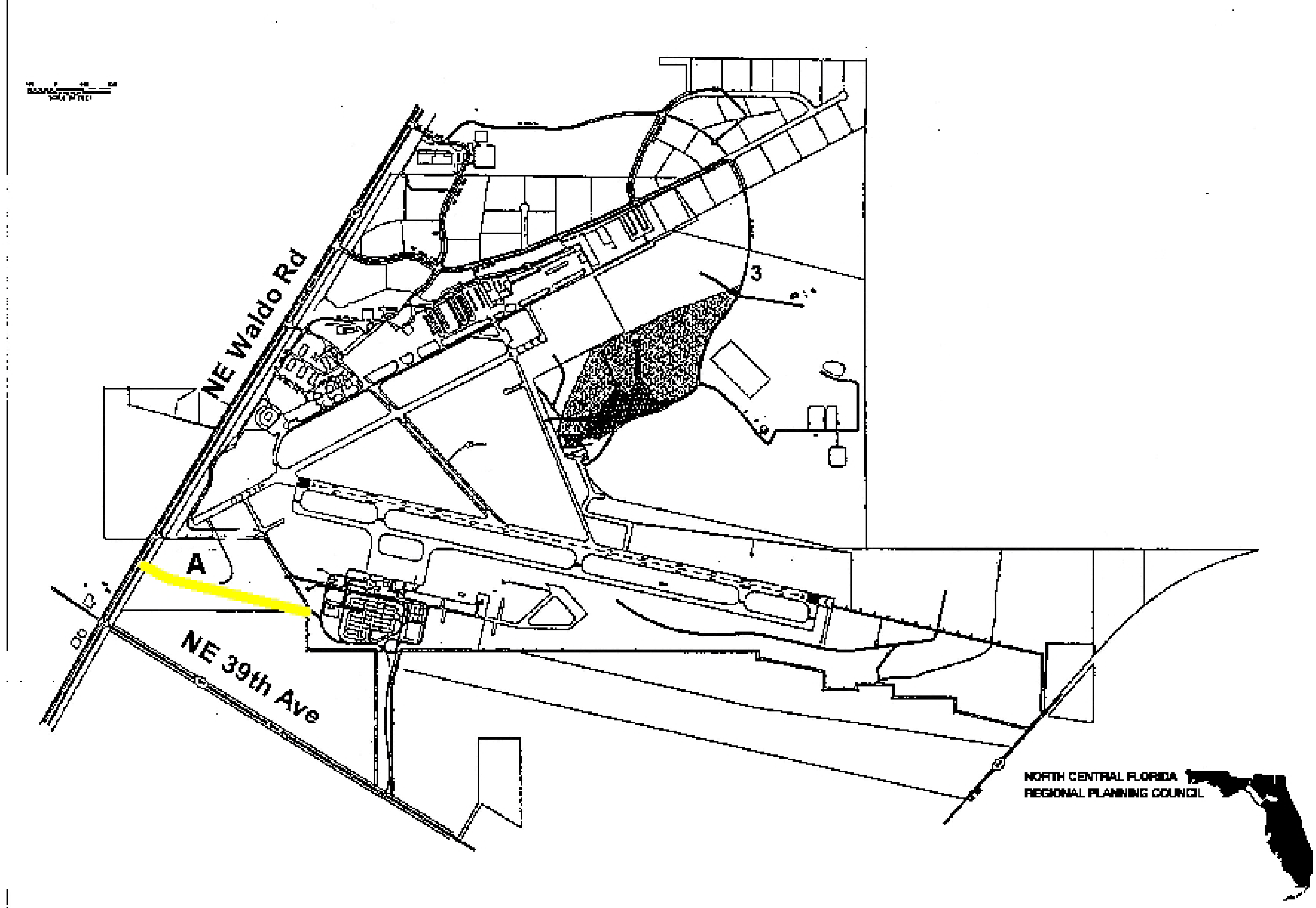
**TABLE 1**

**GAINESVILLE REGIONAL AIRPORT PROJECTS**

| Project | Description | Scope | Estimated Cost (2004 Dollars) |
|---|---|---|---|
| A | **Airport Access Road**- Construction of a two lane access road | From: Waldo Road (SR 24)<br>To: Airport<br>Length: 0.57 miles | $1,600,000* |

*Federally Funded--H.R. 3 HPP No. 1560, FL HPP No. 75- $1,600,000

# 2025 Long Range Transportation Plan
# Needs Plan--Airport Projects

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**BICYCLE/PEDESTRIAN PROJECTS**
**(WITHIN THE GAINESVILLE METROPOLITAN AREA**)

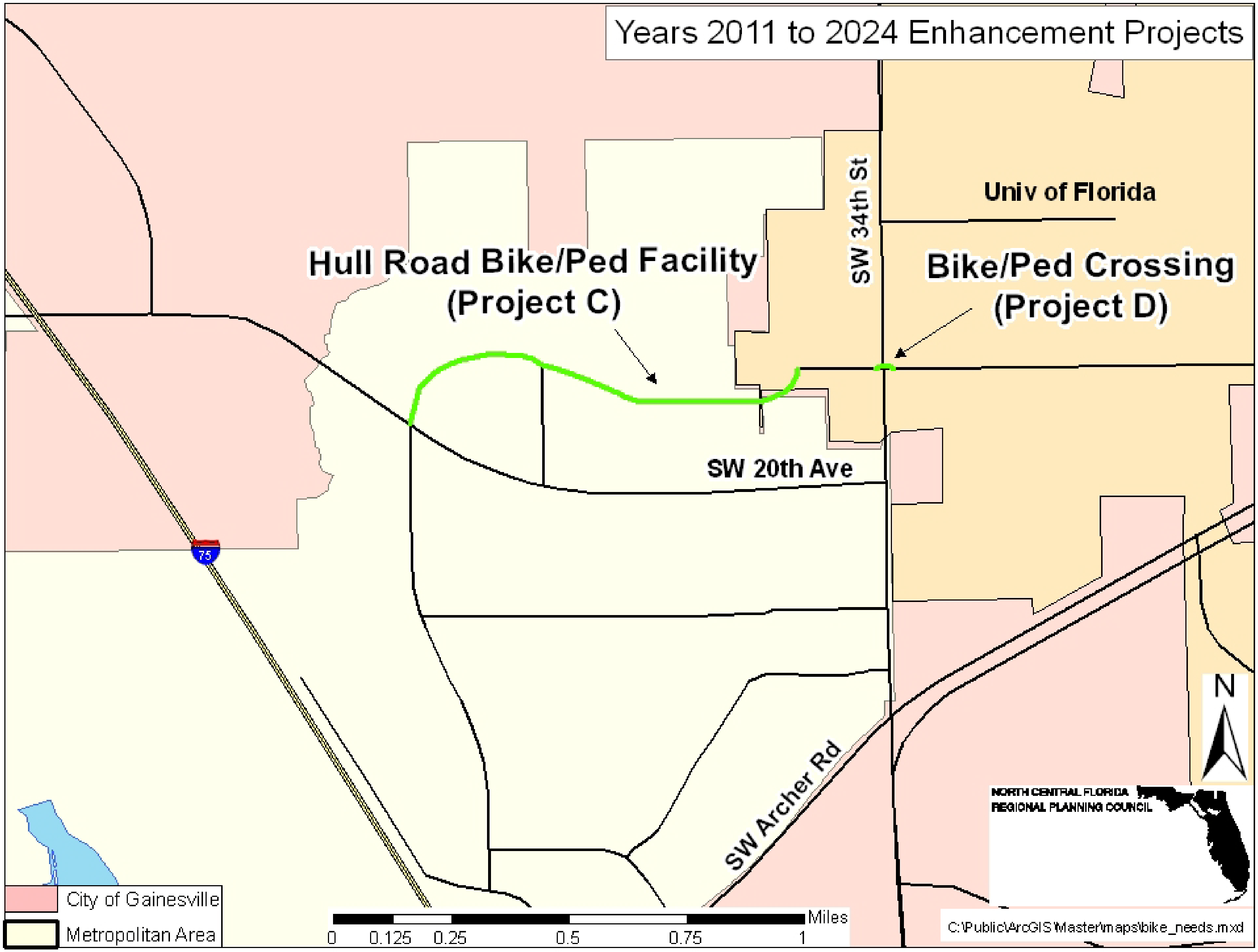
**TABLE 2**

**BICYCLE/PEDESTRIAN PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| C | **Hull Road Bicycle/Pedestrian Facility**- Separate bicycle/pedestrian trail constructed alongside the proposed Hull Road extension | From: SW 34th St (SR 121)<br>To: SW 20th Ave (CR 30)<br>Length: 0.99 miles | Total $1,043,145 | Construction | $714,483 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0* |
| | | | | Engineering | $328,662 |
| D | **Bicycle/Pedestrian Crossing**- Grade separated crossing of Hull Road. | The intersection of SW 34th Street (SR 121) | Total $4,032,000 | Construction | $2,520,000 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $352,800 |
| | | | | Engineering | $1,159,200 |

* The right of way should be acquired through the Hull Road Extension (Highway Projects - Alachua County Project J).

# FUNDED BY ENHANCEMENT FUNDS


Years 2011 to 2024 Enhancement Projects
Univ of Florida
SW 34th St
Hull Road Bike/Ped Facility
(Project C)
Bike/Ped Crossing
(Project D)
SW 20th Ave
SW Archer Rd
75
N
NORTH CENTRAL FLORIDA
REGIONAL PLANNING COUNCIL
City of Gainesville
Metropolitan Area
Miles
0
0.125
0.25
0.5
0.75
1
C:\Public\ArcGIS\Master\maps\bike_needs.mxd

## HIGHWAY PROJECTS – STATE
## (WITHIN THE GAINESVILLE METROPOLITAN AREA)

**TABLE 3**

**STATE PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| E | **SE 16th Avenue (SR 226)**- Widen the existing facility from two to four lanes with instreet bike lanes. | From: Williston Road (SR 331)<br>To: Main St (CR 329)<br>Length: 0.55 miles | Total $5,277,602 | Construction | $2,377,298 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $1,806,746 |
| | | | | Engineering | $1,093,557 |
| F | **Archer Road (SR 24)**- Reconstruct the intersection of Archer Road and SW 16th Avenue including a two-lane extension of Shealy Drive to connect to Gale Lemerand Drive and the reconstruction of Archer Road between SW 16th Avenue and Gale Lemerand Drive as a transit mall/emergency vehicle access. | From: Not Applicable<br>To: Not Applicable<br>Length: Not Applicable | Total $10,682,970 | Construction | $467,788 |
| | | | | Reconstruction | $2,500,000 |
| | | | | Intersections | $7,500,000 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $215,182 |

## TABLE 3 (Continued)

## STATE PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| G | **NW 34th Street (SR 121)**- Construction of five center turn lanes within this facility.<br>Locations for Turn Lanes<br>1. NW 34th St @ NW 19th Pl<br>2. NW 34th St @ NW 34th Pl (Rock Creek)<br>3. NW 34th St @ YMCA<br>4. NW 34th St @ NW 55th Blvd<br>5. NW 34th St @ NW Park/Conv. Store. | From: NW 16th Ave (CR 172)<br>To: NW 13th St (US 441)<br>Length: N.A. | Total $1,750,000 | Construction | $0 |
| | | | | Intersections | $1,750,000 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| H | **Archer Road (SR 24)**- Widen the existing facility from two to four lanes with instreet bike lanes. | From: Gainesville Metropolitan Area Boundary<br>To: Tower Rd<br>Length: 1.32 miles | Total $8,330,052 | Construction | $5,705,515 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $2,624,537 |

## TABLE 3 (Continued)

## STATE PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| I | **University Avenue (SR 26)**- Reduce from four-lanes to two-lanes with on-street parking. | From: Waldo Rd (SR 331)<br>To: 13$^{th}$ St (US 441)<br>Length: 1.68 miles | Total $4,050,289 | Construction | $1,463,650 |
| | | | | Intersections | $2,250,000 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $336,639 |

## HIGHWAY PROJECTS – ALACHUA COUNTY
## (WITHIN THE GAINESVILLE METROPOLITAN AREA)

(shaded projects have received federal funds)

## TABLE 4

## ALACHUA COUNTY PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| J | **Hull Road Extension**- Construction of a new two-lane road with a linear park within a 150' Right-of-Way | From: SW 34th St (SR 121)<br>To: SW 20th Ave (CR 30)<br>Length: 0.99 miles | Total $24,138,990 | Construction | $4,781,007 |
| | | | | Intersections | $275,000 |
| | | | | Right-of-Way | $16,883,720 |
| | | | | Engineering | $2,199,263 |
| K | **SW 20th Avenue**- Widening existing facility from two to four lanes with instreet bike lanes. | From: SW 43rd St<br>To: SW 62nd Blvd<br>Length: 0.62 miles | Total $15,949,296* | Construction | $2,679,863 |
| | | | | Bridge Reconstruction | $10,000,000 |
| | | | | Right-of-Way | $2,036,696 |
| | | | | Engineering | $1,232,737 |
| L | **SW 43rd Street**- Widening existing facility from two to four lanes with instreet bike lanes. | From: SW 20th Ave<br>To: SW Archer Rd (SR 24)<br>Length: 1.33 miles | Total $12,726,200* | Construction | $5,748,739 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $4,369,041 |
| | | | | Engineering | $2,644,420 |

*H.R.3 HPP No 3919 allocates $1.5 million to the construction/improvement of a North-South Corridor between Archer Road (SR 24) and Newberry Road (SR 26) to provide congestion relief to the I-75 corridor, SR 21, SR 24, and SR 26.

**TABLE 4 (Continued)**

**ALACHUA COUNTY PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| M | **NW 76$^{TH}$ Boulevard Extension**- Construction of a new two-lane road with instreet bike lanes. | From: NW 15$^{th}$ Pl<br>To: Ft. Clarke Blvd<br>Length: 0.31 miles | Total<br>$0* | Construction | $0 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| N | **NW 83$^{rd}$ Street Extension**- Construction of a new two-lane road with instreet bike lanes. | From: NW 39$^{th}$ Ave (SR 222)<br>To: Millhopper Rd (CR 232)<br>Length: 1.79 miles | Total<br>$14,970,560 | Construction | $8,644,447 |
| | | | | Intersections | $275,000 |
| | | | | Right-of-Way | $2,074,667 |
| | | | | Engineering | $3,976,466 |
| O | **SW 38$^{th}$ Terrace**- Construction of a new two-lane road with instreet bike lanes and a roundabout at the intersection with SW 24$^{th}$ Ave. | From: Hull Rd extension<br>To: Windmeadows Blvd<br>Length: 0.55 miles** | Total<br>$5,927,863 | Construction | $2,656,115 |
| | | | | Intersections | $775,000 |
| | | | | Right-of-Way | $1,274,935 |
| | | | | Engineering | $1,221,813 |

*This is a developer funded improvement.

** Excludes segment between SW 20$^{th}$ Ave and SW 24$^{th}$ Ave, which will be constructed by Alachua County Public Works.

## TABLE 4 (Continued)

## ALACHUA COUNTY PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| P | **NE 27th Street Extension**- Construction of a new two-lane road with instreet bike lanes. | From: SE Hawthorne Rd (SR 20)<br>To: NE 39th Ave<br>Length: 2.95 miles | Total<br>$28,188,084 | Construction | $14,249,435 |
| | | | | Intersections | $550,000 |
| | | | | Right-of-Way | $6,838,289 |
| | | | | Engineering | $6,553,360 |
| Q | **NW 23rd Street Extension**- Protect right-of-way (construct with private funds). | From: NW 98th St<br>To: NW 143rd St (CR 241)<br>Length: 3.24 miles | Total<br>$0 | Construction | $0 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| R | **NW 122nd Street Extension**- Protect right-of-way (construct with private funds). | From: W. Newberry Rd (SR 26)<br>To: NW 39th Ave (SR 222)<br>Length: 2.01 miles | Total<br>$0 | Construction | $0 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |

**TABLE 4 (Continued)**

**ALACHUA COUNTY PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| S | **SW 8th Avenue Extension**- Protect right-of-way (construct with private funds). | From: SW 122nd St<br>To: SW 143rd St<br>Length: 1.42 miles | Total<br>$0 | Construction | $0 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| T | **NW 83rd Street**- Widen the existing facility from two to four lanes with instreet bike lanes. | From: NW 23rd Ave<br>To: NW 39th Ave (SR 222)<br>Length: 1.00 mile | Total<br>$7,410,646 | Construction | $4,322,360 |
| | | | | Intersections | $1,100,000 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $1,988,286 |
| U | **NW 23rd Avenue**- Widen the existing facility from two to four lanes with instreet bike lanes. | From: NW 98th St<br>To: NW 55th St<br>Length: 2.70 miles | Total<br>$28,328,000 | Construction | $28,328,000* |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |

*Source: Alachua County Public Works

**TABLE 4 (Continued)**

**ALACHUA COUNTY PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| V | **SW 20th Avenue**- Reconstruction of the existing two-lane facility to include missing sidewalks, center turn lanes, raised medians, bus bays, and transit 'super stops'. | From: SW 34th St (SR 121) To: SW 43rd St Length: 1.04 miles | Total $12,000,000 | Construction | $12,000,000* |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| W | **SW 62nd Boulevard Extension**- Protect right-of-way (construct with private funds). | From: SW 20th Ave To: SW 43rd St Length: 1.03 miles | Total $0 | Construction | $0 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| X | **Tower Road (SW 75th Street)**- Reconstruction of the existing two lane facility to include nine roundabouts. | From: SW Archer Rd (SR 24) To: SW 8th Ave Length: 3.21 miles | Total $25,000,000 | Construction | $25,000,000** |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |

*Source: Alachua County Public Work
**Causseaux & Ellington, Inc. Ultimate Build Option project estimates.

## HIGHWAY PROJECTS – CITY OF GAINESVILLE (WITHIN THE GAINESVILLE METROPOLITAN AREA)

(shaded projects have received federal funds)

**TABLE 5**

**CITY OF GAINESVILLE PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| Y | **Depot Avenue**- Reconstruction of the existing facility. | From: Williston Road (SR 331) To: SW 13th St (US 441) Length: 1.75 miles | Total $15,838,306* | Construction | $8,292,307 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $5,638,769 |
| | | | | Engineering | $1,907,231 |
| Z | **W 6th Street**- Reconstruction of the existing facility to include five roundabouts ($500,000 each**). | From: SW 4th Ave To: NW 8th Ave Length: 0.77 miles | Total $5,705,569 | Construction | $2,606,154 |
| | | | | Intersections | $2,500,000 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $599,415 |
| AA | **SW 40th Boulevard Extension**- Construction of a new two-lane road with instreet bike lanes. | From: South of Archer Rd (SR 24) To: SW 34th St (SR 121) Length: 0.95 miles | Total $7,845,198 | Construction | $4,587,835 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $2,202,161 |
| | | | | Engineering | $1,055,202 |

*This project is partially funded due to the allocation of $4.8 million in federal earmark funds.

**Source: City of Gainesville Public Works

**TABLE 5 (Continued)**

**CITY OF GAINESVILLE PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| BB | **<u>NE 19th Street/NE 19th Terrace</u>**- Reconstruction of an existing two-lane facility with federal funds. | From: NE 3rd Ave<br>To: NE 8th Ave<br>Length: 0.93 miles | Total $800,000 | Construction | $800,000 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |
| CC | **<u>NE 19th Drive/NE 20th Street</u>**- Reconstruction of an existing two-lane facility with federal funds.<br><br>**<u>NE 25th Street</u>**- Reconstruction of an existing two-lane facility with federal funds. | From: NE 3rd Ave<br>To: NE 8th Ave<br>Length: 0.40 miles<br><br>From: E. University Ave (SR 26)<br>To: NE 8th St<br>Length: 0.50 miles | Total $1,600,000 | Construction | $1,600,000 |
| | | | | Intersections | $0 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $0 |

## HIGHWAY PROJECTS – UNIVERSITY OF FLORIDA
## (WITHIN THE GAINESVILLE METROPOLITAN AREA)

**TABLE 6**

**UNIVERSITY OF FLORIDA PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA**

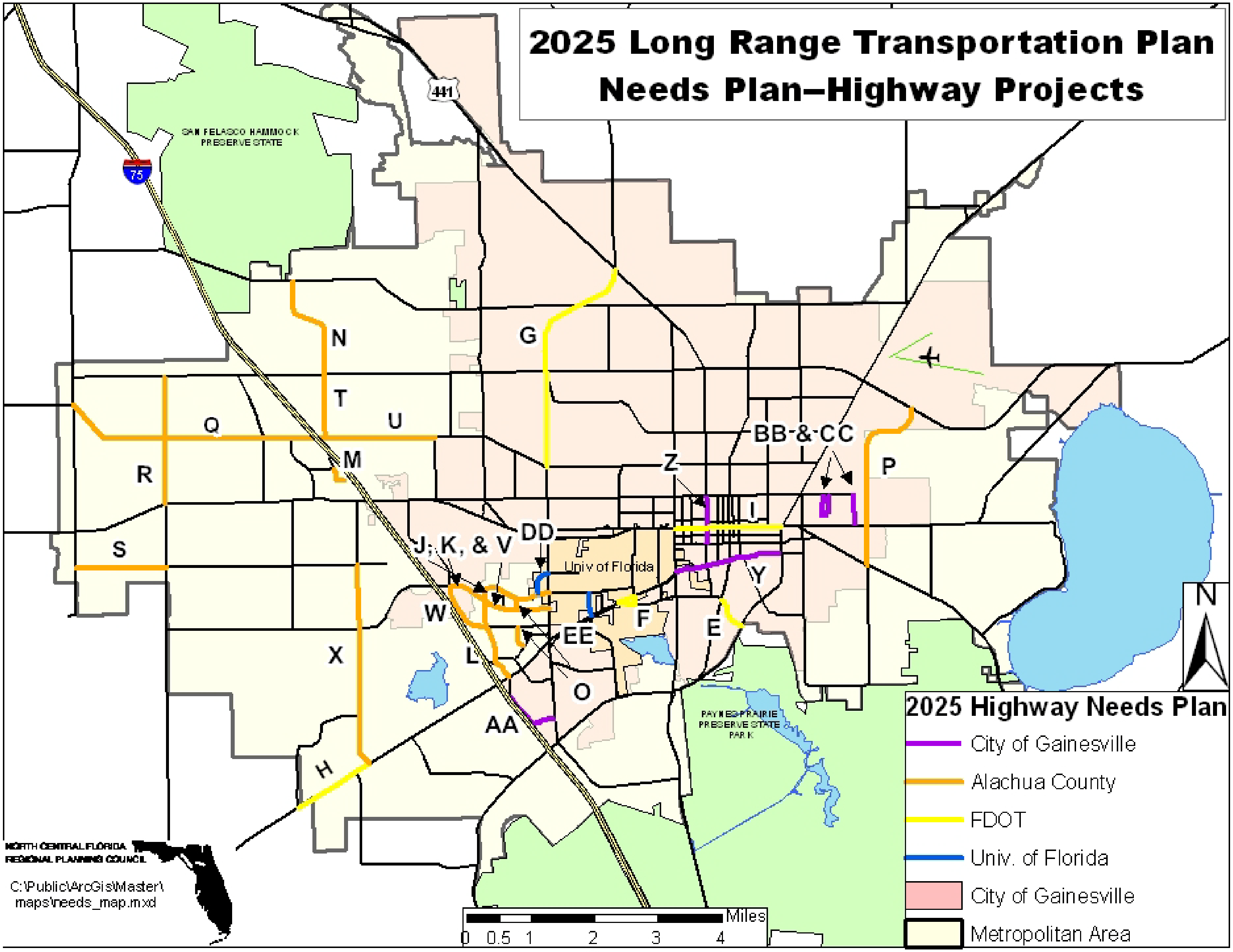
| Project | Description | Scope | Estimated Cost | | |
|---|---|---|---|---|---|
| DD | **Radio Road Extension**- Construction of a new two-lane facility with instreet bike lanes. | From: SW 34th St (SR 121)<br>To: Hull Rd<br>Length: 0.49 miles | Total $4,887,081 | Construction | $2,366,357 |
| | | | | Intersections | $1,432,200 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $1,088,524 |
| EE | **SW 23rd Terrace Extension**- Construction of a new two lane facility with instreet bike lanes. | From: SW Archer Rd (SR 24)<br>To: Hull Rd<br>Length: 0.36 miles | Total $3,254,380 | Construction | $1,738,548 |
| | | | | Intersections | $716,100 |
| | | | | Right-of-Way | $0 |
| | | | | Engineering | $799,732 |

## HIGHWAY PROJECTS – COST SUMMARY AND MAP

## TABLE 7

## COST SUMMARY OF ALL HIGHWAY PROJECTS WITHIN THE GAINESVILLE METROPOLITAN AREA

| Jurisdiction | Estimated Costs |
|---|---|
| State | $30,200,000 |
| Alachua County | $174,500,000 |
| City of Gainesville | $31,700,000 |
| University of Florida | $8,200,000 |
| **Total** | $244,600,000 |


2025 Long Range Transportation Plan
Needs Plan–Highway Projects
2025 Highway Needs Plan
City of Gainesville
Alachua County
FDOT
Univ. of Florida
City of Gainesville
Metropolitan Area
SAN FELASCO HAMMOCK PRESERVE STATE
PAYNES PRAIRIE PRESERVE STATE PARK
Univ of Florida
441
75
N
G
T
U
Q
M
R
S
P
Z
BB & CC
I
DD
J, K, & V
Y
W
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NORTH CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
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## INTELLIGENT TRANSPORTATION SYSTEM PROJECTS

## TABLE 8

## INTELLIGENT TRANSPORTATION SYSTEM PROJECTS

| Project | Description | Scope | Estimated Cost (2004 Dollars) |
|---|---|---|---|
| 1 | **Traffic Management System**- Upgrade and construction of an integrated traffic signalization system. | Systemwide. However, initial installation will be along select corridors. | Total $16,000,000 |

## REGIONAL TRANSIT SYSTEM PROJECTS

(shaded projects have received federal funds)

**TABLE 9**

**REGIONAL TRANSIT SYSTEM - MAINTAINING THE EXISTING FLEET**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| 1 | **<u>Maintain Existing Fleet</u>**- Repair and replacement of the current fleet to preserve the existing service levels. | All Routes | Total $47,161,111 | Buses Needed: 149* | $44,661,111 |
| | | | | New Infrastructure: Expanded Maintenance Facility | $2,500,000** |

*170 replacement buses are needed to maintain the existing fleet of which 21 buses are already funded through federal earmark funds.
**Total cost of this facility is $6,900,000. However, $4,400,000 is currently funded through federal earmark funds (5309 Funds - $1,100,000; HPP 344 - $3,344,000).

**TABLE 10**

**REGIONAL TRANSIT SYSTEM - ENHANCING EXISTING SERVICE ON SELECTED ROUTES**

| Project | Description | Scope | Buses Needed | Estimated Cost (2004 Dollars) |
|---|---|---|---|---|
| 2 | **Enhance Existing Fleet**- Enhanced service to decrease headways on selected routes. | 2a. Route 1 | 2 | $599,478 |
| | | 2b. Route 2 | 6 | $1,798,434 |
| | | 2c. Route 5 | 2 | $599,478 |
| | | 2d. Route 7 | 6 | $1,798,434 |
| | | 2e. Route 8 | 3 | $899,217 |
| | | 2f. Route 10 | 3 | $899,217 |
| | | 2g. Route 11 | 3 | $899,217 |
| | | 2h. Route 15 | 4 | $1,198,956 |
| | | 2i. Route 24 | 3 | $899,217 |
| | | 2j. Route 43 | 6 | $1,798,434 |
| | | 2k. Route 75 | 3 | $899,217 |
| | | 2l. Route 21 | 2 | $599,478 |
| | | 2m. Route 34 | 2 | $599,478 |
| | | 2n. Route 36 | 3 | $899,217 |
| | Continued on the next page. | 2o. Route 9 | 3 | $899,217 |

## TABLE 10 (Continued)

## REGIONAL TRANSIT SYSTEM -ENHANCED EXISTING SERVICE ON SELECTED ROUTES

| Project | Description | Scope | Buses Needed | Estimated Cost (2004 Dollars) |
|---|---|---|---|---|
| 2 | **Enhance Existing Fleet**- Enhanced service to decrease headways on selected routes. | 2p. Route 12 | 10 | $2,997,390 |
| | | 2q. Route 13 | 8 | $2,397,912 |
| | | 2r. Route 16 | 2 | $599,478 |
| | | 2s. Route 20 | 12 | $3,596,868 |
| | | 2t. Route 35 | 5 | $1,498,695 |
| | | 2u. Later Gator B | 1 | $299,739 |
| | | 2v. Later Gator F | 1 | $299,739 |
| | | Rolling Stock Total | 90 | $26,976,510 |
| | | New Infrastructure | See footnote ** | $0 |
| | | Total | | $26,976,510 |

**Any of the above projects chosen beyond the preservation of the existing fleet will require the acquisition of a new RTS Storage and Maintenance Facility for **$24,000,000.**

## TABLE 11

## REGIONAL TRANSIT SYSTEM - NEW ROUTES

| Project | Description | Scope | Buses Needed | Estimated Cost (2004 Dollars) |
|---|---|---|---|---|
| 3 | **New Routes**-Expansion of the transit system to service new areas. | 3a. Route 23 | 8 | $2,397,912 |
| | | 3b. Route 25 | 6 | $1,798,434 |
| | | 3c. Route 39 | 12 | $3,596,868 |
| | | 3d. Route 44 | 12 | $3,596,868 |
| | | 3e. Route 46 | 12 | $3,596,868 |
| | | 3f. Route 62 | 4 | $1,198,956 |
| | | Rolling Stock Total | 54 | $16,185,906 |
| | | New Infrastructure | See footnote ** | $0 |
| | | Total | | $16,185,906 |

**Any of the above projects chosen beyond the preservation of the existing fleet will require the acquisition of a new RTS Storage and Maintenance Facility for **$24,000,000.**

**TABLE 12**

**REGIONAL TRANSIT SYSTEM - PARK-N-RIDE/EXPRESS BUS**

| Project | Description | Scope | Buses Needed | Estimated Cost (2004 Dollars) |
|---|---|---|---|---|
| 4 | **Park-N-Ride/Express Bus**- Express bus from other municipalities to Gainesville | 4a. High Springs - Gainesville | 8 | $2,397,912 |
| | | 4b. Archer - Gainesville | 4 | $1,198,956 |
| | | 4c. Hawthorne - Gainesville | 3 | $899,217 |
| | | 4d. Newberry - Gainesville | 8 | $2,397,912 |
| | | 4e. Waldo - Gainesville | 6 | $1,798,434 |
| | | Rolling Stock Total | 29 | $8,692,431 |
| | | New Infrastructure: Park-N-Ride Lots (150 parking spaces at each site)** | High Springs | $500,000 |
| | | | Archer | $500,000 |
| | | | Hawthorne | $500,000 |
| | | | Newberry | $500,000 |
| | | | Waldo | $500,000 |
| | | Total | | $11,192,431 |

**Any of the above projects chosen beyond the preservation of the existing fleet will require the acquisition of a new RTS Storage and Maintenance Facility for **$24,000,000.**

**TABLE 13**

**REGIONAL TRANSIT SYSTEM - BUS RAPID TRANSIT**

| Project | Description | Scope | Buses Needed | Estimated Cost (2004 Dollars) |
|---|---|---|---|---|
| 5 | **Bus Rapid Transit**- Dedicated bus service along Archer/Waldo Road (SR 24) and Hawthorne Road (SR 20) | 5a. I-75/SR 24 Route | 2 | $599,478 |
| | | 5b. I-75/SR 20 Route | 2 | $599,478 |
| | | Rolling Stock Total | 4 | $1,198,956 |
| | | New Infrastructure: BRT Facilities** | 5 Point Station | $1,166,667 |
| | | | Archer/I-75 | $1,166,667 |
| | | | Airport | $1,166,666 |
| | | Total | | $4,698,956 |

**Any of the above projects chosen beyond the preservation of the existing fleet will require the acquisition of a new RTS Storage and Maintenance Facility for **$24,000,000.**

**TABLE 14**

**REGIONAL TRANSIT SYSTEM - OTHER TRANSIT CAPITAL INFRASTRUCTURE COSTS**

| Project | Description | Scope | Estimated Cost (2004 Dollars) | | |
|---|---|---|---|---|---|
| 6 | **Multimodal Facility**- Regional transfer hub where all modes of transportation meet. | Locations to be determined | Total $3,000,000 | New Buses: N.A. | $0 |
| | | | | New Infrastructure: | $3,000,000 |
| 7 | **Transfer Facilities**- Seven transit ‘super stops’/transfer facilities. | Locations to be determined | Total $4,500,000 | New Buses: N.A. | $0 |
| | | | | New Infrastructure: | $4,500,000 |

## REGIONAL TRANSIT SYSTEM - SUMMARY

## TABLE 15

## REGIONAL TRANSIT SYSTEM - NEW AND REPLACEMENT BUSES NEEDED THROUGH YEAR 2025

| Project | Buses Needed |
|---|---|
| Maintain Existing Fleet | 170 |
| Enhance Existing Routes | 90 |
| New Routes | 54 |
| Park-N-Ride/Express Bus | 29 |
| Bus Rapid Transit | 4 |
| Total | 347 |

## TABLE 16

## COST SUMMARY OF ALL REGIONAL TRANSIT SYSTEM PROJECTS

| Project | Estimated Costs |
|---|---|
| Maintain Existing Fleet | $47,200,000 |
| Enhance Existing Routes | $27,000,000 |
| New Routes | $16,200,000 |
| Park-n-Ride/Express Bus | $11,200,000 |
| Bus Rapid Transit | $4,700,000 |
| New RTS Operations and Maintenance Facility | $24,000,000 |
| Multimodal Facility | $3,000,000 |
| Transfer Facilities | $4,500,000 |
| **Total** | $137,800,000 |

## COST SUMMARY OF ALL PROJECTS

## TABLE 17

## COST SUMMARY OF ALL PROJECTS

| Projects | Estimated Costs |
|---|---|
| Gainesville Regional Airport | $1,600,000 |
| Bicycle/Pedestrian | $5,000,000 |
| State Highway | $30,200,000 |
| Alachua County Highway | $174,500,000 |
| City of Gainesville Highway | $31,700,000 |
| University of Florida Highway | $8,200,000 |
| Intelligent Transportation System | $16,000,000 |
| Regional Transit System | $137,800,000 |
| **Total** | $405,000,000 |

# YEAR 2025 FORECAST OF REVENUES

**TABLE 18**

**STATEWIDE REVENUE FORECAST**
**AMOUNTS AND CATEGORIES OF CAPACITY PROGRAM ESTIMATES**

**State and Federal Funds from Interim 2005 Update of the 2020 Revenue Forecast**
**(Millions, 2006 $)**
**Florida Department of Transportation**

| Capacity Program Emphasis Areas | Time Period | | | | 20 Year Total[2] |
|---|---|---|---|---|---|
| | 2006-10[1] | 2011-15 | 2016-20 | 2021-25 | |
| Economic Competitiveness | | | | | |
| SIS/FIHS Construction/ROW | 7,623 | 5,334 | 5,082 | 4,723 | 22,762 |
| Aviation | 531 | 510 | 512 | 514 | 2,068 |
| Rail | 631 | 427 | 426 | 424 | 1,909 |
| Intermodal Access | 770 | 682 | 676 | 668 | 2,795 |
| Seaport Development | 224 | 185 | 186 | 186 | 781 |
| Quality of Life | | | | | |
| Other Arterial Construction/ROW | 4,802 | 2,389 | 2,101 | 2,039 | 11,330 |
| Transit | 1,107 | 806 | 802 | 796 | 3,510 |
| Total Capacity Programs[3] | 15,688 | 10,331 | 9,785 | 9,351 | 45,155 |
| Statewide Total, All Programs | 30,632 | 21,603 | 20,973 | 20,542 | 93,750 |

[1] Based on 2006-10 Adopted Work Program (July 1, 2005). There are relatively more dollars in fiscal years 2006-2010 due to current plans for advancement of highway construction projects that are not reflected in estimates for 2011-2025 and to "carry-forwards" of funds from prior fiscal years.
[2] Columns and rows sometimes do not equal the totals due to rounding.
[3] Does not include estimates of funding from 2005 Growth Management legislation or from the impact of SAFETEA-LU.

# APPENDIX A

# EFFICIENT TRANSPORTATION DECISION MAKING SUMMARY COMMENTS

The Efficient Transportation Decision Making (ETDM) process is a mechanism developed by the Florida Department of Transportation (FDOT) that seeks to create linkages between land use, transportation, and environmental resource planning initiatives through early, interactive agency involvement. This is accomplished through effective and timely decision making without compromising environmental quality, full and early public and agency involvement, and integrating National Environmental Protection Act (NEPA) reviews with the issuance of project permitting and implementing meaningful dispute resolution mechanisms. Transportation projects subject to ETDM review are identified early in the process (usually at the planning stages) and sent out for review by the public and various government agencies through an interactive, online database. Through the implementation of GIS Buffer Analysis, issues regarding environmental, social, cultural, and economic features within the impact area of each project (up to one mile away) are identified early and analyzed to determine the degrees of effect the project would have on that feature. These comments follow the project from planning stages all the way up to five years after project completion and serve as a guide to identify significant issues that may need to be resolved prior to project implementation. This allows for post construction evaluation of the impacts to the identified features.

To be subject to ETDM review, projects must meet the following criteria:

1. Capacity improvement (road widening or new construction) of a road that is functionally classified as major or urban collector and above;
2. The project will receive or is expected to receive state/federal funds; and
3. Project has not completed a PD&E report.

Based on the above criteria, only one project from the Year 2025 Long Range Transportation Plan Adopted Cost Feasible Plan is subject to ETDM Review: Project E: SE 16th Street (SR 226) from Williston Road west to Main Street.

The following pages present the final comments from the reviewing agencies on this project. Please note, however, that this project is only in the planning stages, and these comments only provide an early warning of the issues that may need to be addressed as this project proceeds forward.

## Summary Report

# DISCLAIMER

*This Project Summary Report is still considered a draft with work in progress and should be considered as a general information publication only. The report still has several pieces missing from its final implementation.*

*These pieces are:*
*1) County Wide Analysis and Project Overview Map.*
*2) GIS Analysis Reports for each Issue in relationship to the project.*
*3) The Community Desired Project Features Report.*
*4) An overview Map of each issue.*

*As these additional features are made available, the language in this disclaimer will be updated.*

*If you have any questions about the information contained in the report, you can contact the Efficient Transportation Decision Making (ETDM) Help Desk at 850-414-5334 or email help@fla-etat.org.*

## *Project #6692 - SR 226 - SR 331 to SR 329*
## *Summary Report*

***District: District 2***

***Phase: Planning Screen***

***Planning Organization: FDOT District 2***

***Date Printed: 01/17/2006***

| | | Evaluation of Direct Effects | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Natural | | | | | | | | | | | Cultural | | | Community | | | | | | |
| | | Air Quality | Coastal and Marine | Contaminated Sites | Farmlands | Floodplains | Infrastructure | Navigation | Special Designations | Water Quality and Quantity | Wetlands | Wildlife and Habitat | Historic and Archaeological Sites | Recreation Areas | Section 4(f) Potential | Aesthetics | Economic | Land Use | Mobility | Relocation | Social | Secondary and Cumulative Effects |
| Alternative #1 | From SR 331 (Williston Rd) To: SR 329 (Main St) | 2 | 2 | 2 | | 2 | | | 2 | 3 | 2 | 3 | 2 | 2 | | 2 | 2 | 3 | 2 | 2 | 4 | 2 |

| Legend | | | |
|---|---|---|---|
| **Color Code** | **Meaning** | **ETAT** | **Public Involvement** |
| **1** | Enhanced | Project has positive effect on the ETAT resource or can reverse a previous adverse effect leading to environmental improvement. | Affected community supports the proposed project. Project has positive effect. |
| **2** | Minimal to None | Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns. | Minimum community opposition to the planned project. Minimum adverse effect on the community. |
| **3** | Moderate | Agency resources are affected by the proposed project, but avoidance and minimization options are available and can be addressed during development with a moderated amount of agency involvement and moderate cost impact. | Project has adverse effect on elements of the affected community. Public Involvement is needed to seek alternatives more acceptable to the community. Moderate community interaction will be required during project development. |
| **4** | Substantial | The project has substantial adverse effects but ETAT understands the project need and will be able to seek avoidance and minimization or mitigation options during project development. Substantial interaction will be required during project development and permitting. | Project has substantial adverse effects on the community and faces substantial community opposition. Intensive community interaction with focused Public Involvement will be required during project development to address community concerns. |
| **5** | Dispute Resolution | Project does not conform to agency statutory requirements and will not be permitted. Dispute resolution is required before the project proceeds to programming | Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community. |
| | No ETAT Consensus | ETAT members from different agencies assigned a different degree of effect to this project, and the ETDM coordinator has not assigned a summary degree of effect. | |
| | No ETAT Reviews | No ETAT members have reviewed the corresponding issue for this project, and the ETDM coordinator has not assigned a summary degree of effect. | |

## Project #6692 - SR 226 - SR 331 to SR 329

| | | | |
|---|---|---|---|
| **District:** | District 2 | **Phase:** | Planning Screen |
| **County:** | Alachua County | **From:** | SR 331 (Williston Rd) |
| **Planning Organization:** | FDOT District 2 | **To:** | SR 329 (Main St) |

# Alternatives

## Alternative #1

| Status: | From: | To: |
|---|---|---|
| ETAT Review Complete | SR 331 (Williston Rd) | SR 329 (Main St) |

## Project Effects

### Overview

| Agency | Issue | Effect | Review Date |
|---|---|---|---|
| US Environmental Protection Agency | Air Quality | Minimal to None | 10/24/05 |
| National Marine Fisheries Service | Coastal and Marine | Minimal to None | 10/03/05 |
| US Environmental Protection Agency | Contaminated Sites | Minimal to None | 11/04/05 |
| Federal Highway Administration | Contaminated Sites | Minimal to None | 11/12/05 |
| US Environmental Protection Agency | Floodplains | Minimal to None | 10/17/05 |
| US Environmental Protection Agency | Special Designations | Minimal to None | 10/17/05 |
| FL Department of Environmental Protection | Water Quality and Quantity | Minimal to None | 10/18/05 |
| US Environmental Protection Agency | Water Quality and Quantity | Moderate | 11/04/05 |
| FL Department of Environmental Protection | Wetlands | Minimal to None | 10/18/05 |
| US Army Corps of Engineers | Wetlands | Minimal to None | 11/08/05 |
| National Marine Fisheries Service | Wetlands | Minimal to None | 10/03/05 |
| US Fish and Wildlife Service | Wetlands | Minimal to None | 10/17/05 |
| US Environmental Protection Agency | Wetlands | Minimal to None | 11/11/05 |
| FL Fish and Wildlife Conservation Commission | Wildlife and Habitat | Moderate | 10/20/05 |
| FL Department of State | Historic and Archaeological Sites | Minimal to None | 11/12/05 |
| FL Department of Environmental Protection | Recreation Areas | Minimal to None | 10/18/05 |
| US Environmental Protection Agency | Recreation Areas | Minimal to None | 10/17/05 |
| Gainesville MTPO | Aesthetics | Minimal to None | 10/10/05 |
| Gainesville MTPO | Economic | Minimal to None | 10/10/05 |
| Gainesville MTPO | Land Use | Minimal to None | 10/10/05 |
| FL Department of Community Affairs | Land Use | Moderate | 11/10/05 |
| Gainesville MTPO | Mobility | Minimal to None | 10/10/05 |
| Gainesville MTPO | Relocation | Minimal to None | 10/10/05 |
| Gainesville MTPO | Social | Substantial | 10/13/05 |
| US Environmental Protection Agency | Social | Minimal to None | 11/04/05 |
| US Army Corps of Engineers | Secondary and Cumulative Effects | Minimal to None | 11/08/05 |

### Agency Review Summary

| Natural | |
|---|---|
| **Air Quality** | |
| **US Environmental Protection Agency** | |
| **Issue** | Air Quality |
| **Effect** | Minimal to None |
| **Review Date** | 10/24/2005 |
| **Identified Resources and Level of Importance:** | Resources: Air quality<br><br>Level of Importance: Low, due to minimal degree of effect |
| **Comments on Effects to Resources:** | Since the Gainesville area and Alachua County do not have any national ambient air quality standards non-attainment areas or maintenance areas at this time, EPA has no comment on air quality issues. Would like to continue agency involvement in the future, if necessary. |
| **Additional Comments:** | As population growth and vehicle volumes increase, there is the potential to have air quality non-attainment issues in the future. FDOT, MPOs, municipalities, and regional planning agencies should conduct air quality modeling as traffic forecasts increase.<br><br>If the proposed project is located directly adjacent to residential homes, there may be a potential for short-term health exposure from construction vehicles and particulates. To eliminate this potential for exposure, construction vehicles could be retrofit with diesel oxidation catalysts or particulate filters. |
| **Coastal and Marine** | |
| **National Marine Fisheries Service** | |
| **Issue** | Coastal and Marine |
| **Effect** | Minimal to None |
| **Review Date** | 10/3/2005 |
| **Identified Resources and Level of Importance:** | None. |
| **Contaminated Sites** | |
| **US Environmental Protection Agency** | |
| **Issue** | Contaminated Sites |
| **Effect** | Minimal to None |
| **Review Date** | 11/4/2005 |
| **Identified Resources and Level of Importance:** | Resources: Soils, groundwater<br><br>Level of Importance: Low to Moderate |
| **Comments on Effects to Resources:** | According to the project description, there are several car repair shops, gas stations and a water reclamation facility at the north end of the roadway segment at Main Street.<br><br>A review of contaminated sites data on the EST GIS analysis screens indicates that there is one gasoline station (CHEVRON CORPORATION, INC.) and five commercial businesses with petroleum tanks (AMOCO STATION, MERITA BREAD BOX, HENDERSON PROPERTY, SUNRISE FOOD MART #47, and RICHARDS IMPORT STORE INC) within the 500-foot buffer distance.<br>Consideration should be given to underground storage taks (specifically petroleum tanks) and their potential for leaking and resulting soil and/or groundwater contamination.<br><br>There is one hazardous waste site (CITY OF GAINESVILLE - MAIN STREET WWTP) within the 500-foot buffer distance. The water treatment plant and wastewater treatment plant may store listed hazardous wastes, such as chlorine and chlorine gas, onsite and are therefore listed as a hazardous waste site on the GIS screening data. The proposed roadway widening project should not impact this facility.<br><br>During the PD&E phase, a survey of the surrounding area may be recommended to identify all underground storage tanks at current commercial businesses and any possible out-of-service (defunct) underground storage tanks. If any tanks will be impacted or removed during construction, testing of soils should be conducted to determine whether any remediation of contaminated soils and/or groundwater is necessary prior to commencement of construction activities. Design parameters should also consider the removal or direct impact to any |

| | |
|---|---|
| | 100-foot buffer distance: 1.2 acres - 8.4% of total acres<br>200-foot buffer distance: 3.5 acres - 11.6% of total acres<br>500-foot buffer distance: 20.6 acres - 23.8% of total acres<br><br>According to the project description, SR 226 has apartment complexes on the southern end of the segment close to Williston Rd. At the north end of the segment at Main Street there are several car repair shops, gas stations and a water reclamation facility. The purpose of the project is to take traffic off of the areas around the University of Florida, Shands Hospital and the Veteran's Hospital. The project area is approximately six-tenths of a mile (3000 ft) long. This is the last segment (Main St to Williston Rd) of SR 226 that is 2 lanes.<br><br>The 100-year floodplain area is located on both the eastern and western sides of the project area. An increase in impervious surfaces, such as roadways and other development, reduce the overall floodplain storage capacity in an area. This significantly alters the flood zones and capacity for stormwater runoff during storm events. With rapid growth and development in an area such as this, it is expected that flood zones will change and may not be properly designated on FEMA flood zone maps. With the reduction of stormwater storage capacity, eventually residential and commercial areas which may not have been identified in flood zone maps, may fall within a special flood hazard area and be vulnerable to flooding.<br><br>Although the proposed widening of this section of SR 226 (SR 331 to SR 329) may not significantly affect floodplains and floodplain storage capacity, the overall corridor should be evaluated and floodplain effects considered by FDOT and the Gainesville MPO when developing traffic and development plans. |
| **Water Quality and Quantity** | |
| **FL Department of Environmental Protection** | |
| **Issue** | Water Quality and Quantity |
| **Effect** | Minimal to None |
| **Review Date** | 10/18/2005 |
| **US Environmental Protection Agency** | |
| **Issue** | Water Quality and Quantity |
| **Effect** | Moderate |
| **Review Date** | 11/4/2005 |
| **Identified Resources and Level of Importance:** | Resources: Surface water<br><br>Level of Importance: Moderate to High |
| **Comments on Effects to Resources:** | The project location is located within the Sweetwater Branch drainage basin in the Oklawaha watershed. Sweetwater Branch is listed on the Clean Water Act 303(d) list of impaired waters for exceedance of the water quality standards for nutrients and coliforms.<br><br>Total Maximum Daily Loads (TMDLs) for Sweetwater Branch for fecal coliforms were established and approved on September 30, 2003. Information on the TMDLs can be obtained from EPA Region 4 and FDEP and the regulatory agency websites.<br><br>Total Maximum Daily Loads (TMDLs) for the Oklawaha Basin fecal and total coliforms were established and approved on March 31, 2004. Information on these TMDLs can be obtained from EPA Region 4 and FDEP and the regulatory agency websites.<br><br>Further impairment to Sweetwater Branch and Oklawaha River is a concern from both point and nonpoint sources. Consideration should be given to additional construction/widening of roadways and residential and commercial development and the potential for nonpoint source runoff (stormwater) into these surface waters. Proper stormwater management controls should be designed and constructed to minimize and treat stormwater runoff from the roadway. |
| **Additional Comments:** | FDEP may want to consider additional sources of pollutants in its future assessments of Sweetwater Branch and Oklawaha River and development or reevaluation of TMDLs. |
| **Wetlands** | |
| **FL Department of Environmental Protection** | |
| **Issue** | Wetlands |
| **Effect** | Minimal to None |
| **Review Date** | 10/18/2005 |
| **US Army Corps of Engineers** | |

| | |
|---|---|
| **Wildlife and Habitat** | |
| **FL Fish and Wildlife Conservation Commission** | |
| **Issue** | Wildlife and Habitat |
| **Effect** | Moderate |
| **Review Date** | 10/20/2005 |
| **Comments on Effects to Resources:** | Project impacts could include direct loss of wetland and upland habitat due to road construction. There is also a potential for secondary impacts, including increased road kills and habitat loss or degradation resulting from new residential and commercial development in the area facilitated by improved access. |
| **Additional Comments:** | Plant community mapping and surveys for the occurrence of listed wildlife species should be conducted along the Right-of-way, and within sites proposed for Drainage Retention Areas. Depending on the results of the surveys, a plan should also be formulated for avoidance, minimization, and mitigation of project impacts to listed species. A compensatory mitigation plan should be designed to replace wetland and upland habitat lost as a result of the project; and we support land acquisition adjacent to core habitat areas on existing public lands as compensation. Replacement habitat for mitigation should be type for type, and equal to or of higher functional value.<br><br>We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Ms. Leslie Adams at (386) 758-0525 for further coordination on this project. |
| **Cultural** | |
| **Historic and Archaeological Sites** | |
| **FL Department of State** | |
| **Issue** | Historic and Archaeological Sites |
| **Effect** | Minimal to None |
| **Review Date** | 11/12/2005 |
| **Identified Resources and Level of Importance:** | Historic Standing Structures<br>* Several hundred historic structures exist within the 1-mile buffer, but beyond the 500-ft. buffer distance. These resources are unlikely to be affected by the proposed project due to their distance away from the project area.<br><br>Archaeological or Historic Sites<br><br>Buffer distance: 500 ft. (86.39 acres).<br>Site ID Site Evaluation Site Name Survey Evaluation Site Culture Site Type<br>AL00408 NOT EVALUATED BY SHPO SOUTH MAIN STREET NOT EVALUATED BY RECORDER ALACHUA A.D., 1250-A.D. 1600 ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br><br>Buffer distance: 5280 ft. (2720.15 acres).<br>Site ID Site Evaluation Site Name Survey Evaluation Site Culture Site Type<br><br>AL00008 NOT EVALUATED BY SHPO COLCLOUGH HILL NOT EVALUATED BY RECORDER PREHISTORIC WITH POTTERY ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br><br>AL00009 NOT EVALUATED BY SHPO BAIRD MOUND NOT EVALUATED BY RECORDER PREHISTORIC PREHISTORIC MOUND(S)<br><br>AL00021 NOT EVALUATED BY SHPO LITTLE GANDY NOT EVALUATED BY RECORDER ALACHUA A.D., 1250-A.D. 1600 ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br><br>AL00062 NOT EVALUATED BY SHPO PAYNES PRAIRIE 7 NOT EVALUATED BY RECORDER ALACHUA A.D., 1250-A.D. 1600 ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br><br>AL00068 NOT EVALUATED BY SHPO HERLONG NOT EVALUATED BY RECORDER ALACHUA A.D., 1250-A.D. 1600 CERAMIC SCATTER<br><br>AL00071 NOT EVALUATED BY SHPO N E BIVANS ARM INSUFFICIENT INFORMATION INDETERMINATE UNKNOWN<br><br>AL00080 NOT EVALUATED BY SHPO SWEETWATER BRANCH FLINT NOT EVALUATED BY RECORDER PREHISTORIC LITHIC SCATTER/QUARRY (PREHISTORIC: NO CERAMICS) |

| | |
|---|---|
| | As for the impact to the hospitals, they are currently located along SR 24 and already subject to the truck traffic. Completion of this improvement would not significanlty alter or minimize the impact to the hospitals.<br><br>While the points of interests are within one mile of the project, they are not expected to be significantly or adversely affected by any noise or vibrations generated by the change in truck route.<br><br>The only moderate to substantial impact that could be generated by this project is the impact to the high density residential located on the southside of the facility. The residential development may be adversely affected by the increase in noise, traffic, and vibrations generated by the increase in truck and vehicular traffic expected upon the completion of this improvement. Special consideration should be made to minimize these adverse effects to the residential population located within the impact area of the project. |
| **Economic** | |
| **Gainesville MTPO** | |
| **Issue** | Economic |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | This project is located in a relatively underdeveloped area located in the southeastern quadrant of Gainesville, connecting two major roads. While there is a significant amount of commercial activity along Main Street (northwestern side of the project boundaries) and high density residential (southeastern side of the facilitity), the area in which this area is located consists of wetlands, hardwood forest, and infrastructure related land uses (sewage treatment plant). |
| **Comments on Effects to Resources:** | The purpose of this project is not for economic redevelopment of an underdeveloped area of Gainesville, but a means to reroute truck traffic away from the University and downtown. This effect of the project should significantly affect and enhance the development of downtown Gainesville, which is an enterprise zone, by reducing or eliminating the safety issues associated with high truck traffic located within an urban core. Any economic impact that take place along this corridor as a result of this project is ancillary to the primary purpose of the improvement. |
| **Land Use** | |
| **Gainesville MTPO** | |
| **Issue** | Land Use |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | This is a largely undeveloped area in southeastern Gainesville. Within the immediate impact area of this project (>=500 ft.), there is a minor amount of high density residential properties (30%), commercial (retail & services) located along Main Street (14%), and a significant amount of undeveloped vegetated land (35-40%). |
| **Comments on Effects to Resources:** | As indicated in the review of the economic effect of this project, the proposed widening of this facilitate is not expected to significantly alter or affect the current development pattern taking place in within the project boundaries. Any additional or more intensive development that is generally associated with capacity improvements would be considered an indirect effect of the proposed project. This point is best illustrated by the fact that this segment is located within a transportation concurrency exemption area which precludes capacity constraints as a means limit development within this area. Therefore, any development or land use changes within this area is more subject to market forces or other regulations than the widening of a state road. |
| **FL Department of Community Affairs** | |
| **Issue** | Land Use |
| **Effect** | Moderate |
| **Review Date** | 11/10/2005 |
| **Mobility** | |
| **Gainesville MTPO** | |
| **Issue** | Mobility |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of** | The GIS Analysis identifies two transit routes and seven transit stops within 500 feet of the project. In addition, this project is located within |

| | |
|---|---|
| **Importance:** | the City of Gainesville Enterprise zone and within one mile of existing recreational trails, two hospitals, and a railway. |
| **Comments on Effects to Resources:** | The project has the potential to moderately to substantially affect transit routes in this area and enhance the economic development of the Gainesville Enterprise Zone. To address the transit concerns, consideration should be made to work with RTS to make provisions for safe and efficient transit services and access (sidewalks, covered transit stops, etc.) Further, construction of this improvement should be performed in such away to minimize the impact to the existing route and stops within the vicinity of the roadway.<br><br>However, the widening of this road should allow for the relocation of SR 24, which would enhance mobility for trucks and other heavy vehicle by traveling on the periphery of the urbanized area. This should decrease delay along this corridor by decreasing the number of signalized intersections the truck would have to travel through and conflict with heavy traffic and pedestrian activity that is located within downtown Gainesville. |
| **Relocation** | |
| **Gainesville MTPO** | |
| **Issue** | Relocation |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | There are some high density residential properties located along SE 16th Ave near the intersection of Williston Road (SR 331) |
| **Comments on Effects to Resources:** | ROW acquistion for this project may cause the relocation of some residential property owners adjacent to SE 16th Ave. However, the number of parcels/buildings that will be affected is yet to be determined |
| **Social** | |
| **Gainesville MTPO** | |
| **Issue** | Social |
| **Effect** | Substantial |
| **Review Date** | 10/13/2005 |
| **Identified Resources and Level of Importance:** | In the area immediately surrounding the project (up to one mile away) is comprised largely of low to high density residential development with some commercial activities that contain the following features:<br><br>Black population range is up to 96%. The county-wide % of the Black population is 19%.<br><br>Disabled population range is up to 29%. The county-wide % of the disabled population is 15%.<br><br>Hispanic population range is up to 28%. The county-wide % of the hispanic population is 8%.<br><br>The student population (18 to 29 yrs) for this area is 63%. The county-wide % is 26%.<br><br>The median income of this area is $21,483. The county-wide median is $31,426.<br><br>In addition, the GIS analysis identifies four assisted living facilities located within one mile of the project. One of these facilities, Treehouse Village Apartments, adjacent to the proposed project. |
| **Comments on Effects to Resources:** | The area immediately surrounding this project is disproportionately minority and low income and could be negatively impacted by the proposed project. The increase in truck traffic and volume could serve as a barrier to those residents living in the assisted living facilities/complexes and the community services that help them. While the relocation of the truck route is anticipated to enhance the socioeconomic conditions of downtown, this area could be left out of expected economic benefits.<br><br>Special consideration is needed to address the concerns of those residents living in the immediate vicinity of this project. Avoidance and minimization of relocations, community bisection and noise impacts should be focused upon. |
| **US Environmental Protection Agency** | |
| **Issue** | Social |
| **Effect** | Minimal to None |
| **Review Date** | 11/4/2005 |
| **Comments on Effects to Resources:** | According to the project description, SR 226 has apartment complexes on the southern end of the segment close to Williston Rd. At the north end of the segment at Main Street there are several car repair shops, gas stations and a water reclamation facility. An apartment |

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|---|---|
| | AL00081 NOT EVALUATED BY SHPO SWEETWATER BRANCH HILL INSUFFICIENT INFORMATION ALACHUA A.D., 1250-A.D. 1600 ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br><br>AL00408 NOT EVALUATED BY SHPO SOUTH MAIN STREET NOT EVALUATED BY RECORDER ALACHUA A.D., 1250-A.D. 1600 ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br><br>AL04915 INELIGIBLE FOR NRHP STOFAN'S REVENGE INELIGIBLE FOR NRHP UNSPECIFIED ON FORM BY THE RECORDER ARTIFACT SCATTER-LOW DENSITY ( < 2 PER SQ METER)<br>*These resources are unlikely to be affected by the proposed project due to their distance away from the project area.<br><br>National Register of Historic Places<br><br>Buffer distance: 5280 ft. (2720.15 acres).<br>Primary Name<br>U.S. POST OFFICE<br>COX FURNITURE WAREHOUSE<br>BAIRD HARDWARE COMPANY WAREHOUSE<br>SOUTHEAST GAINESVILLE RESIDENTIAL DISTRICT<br>YONGE, P. K., LABORATORY SCHOOL, OLD<br>OLD GAINESVILLE DEPOT<br>*These resources are unlikely to be affected by the proposed project due to their distance away from the project area. |
| **Recreation Areas** | |
| **FL Department of Environmental Protection** | |
| **Issue** | Recreation Areas |
| **Effect** | Minimal to None |
| **Review Date** | 10/18/2005 |
| **US Environmental Protection Agency** | |
| **Issue** | Recreation Areas |
| **Effect** | Minimal to None |
| **Review Date** | 10/17/2005 |
| **Identified Resources and Level of Importance:** | Resources: Recreation Areas<br><br>Level of Importance: Low, due to minimal degree of effect |
| **Comments on Effects to Resources:** | There should be no additional effect on recreation areas due to the widening of SR 226 (SR 331 to SR 329), as proposed. |
| **Community** | |
| **Aesthetics** | |
| **Gainesville MTPO** | |
| **Issue** | Aesthetics |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | This project is located within the Gainesville Enterprize Area and is within one mile of two hospitals (Alachua General & Shands) and three points of interests (Near 8th Place, Gainesville Greyhound Station, and Near SE 20th Place). This project is also adjacent to some high density residential that may be adversely affected by this project. |
| **Comments on Effects to Resources:** | It is anticipated that the widening of this facility would augment and enhance the development of the Gaineville Enterprise area by diverting much of the existing and projected truck traffic away from downtown by rerouting State Road 24. This action has the potential to open up downtown Gainesville, especially in the University Area, to more high density pedestrian oriented development that is conducive to a successful downtown. |

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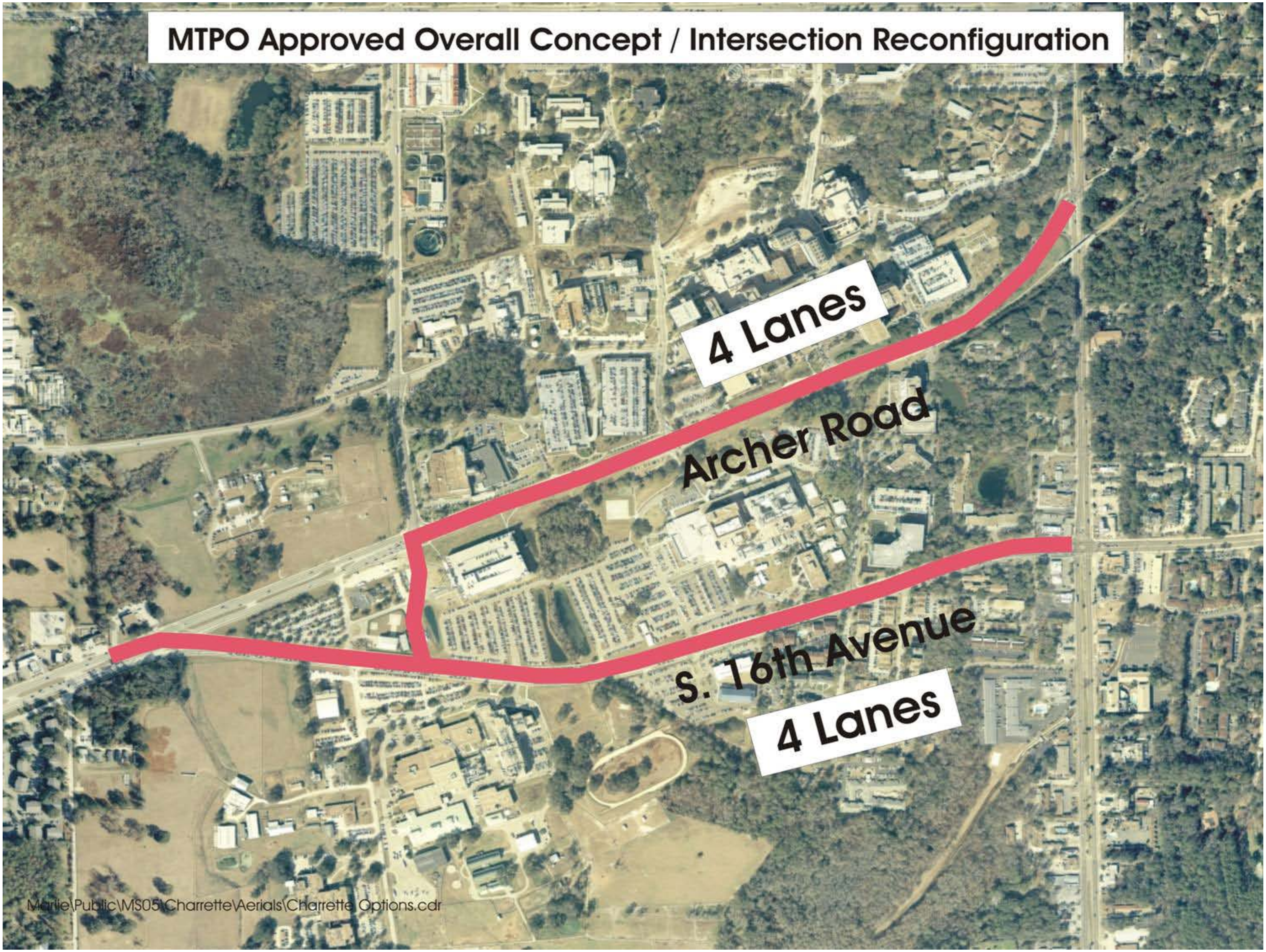
| | As for the impact to the hospitals, they are currently located along SR 24 and already subject to the truck traffic. Completion of this improvement would not significanlty alter or minimize the impact to the hospitals.<br><br>While the points of interests are within one mile of the project, they are not expected to be significantly or adversely affected by any noise or vibrations generated by the change in truck route.<br><br>The only moderate to substantial impact that could be generated by this project is the impact to the high density residential located on the southside of the facility. The residential development may be adversely affected by the increase in noise, traffic, and vibrations generated by the increase in truck and vehicular traffic expected upon the completion of this improvement. Special consideration should be made to minimize these adverse effects to the residential population located within the impact area of the project. |
| **Economic** | |
| **Gainesville MTPO** | |
| **Issue** | Economic |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | This project is located in a relatively underdeveloped area located in the southeastern quadrant of Gainesville, connecting two major roads. While there is a significant amount of commercial activity along Main Street (northwestern side of the project boundaries) and high density residential (southeastern side of the facilitity), the area in which this area is located consists of wetlands, hardwood forest, and infrastructure related land uses (sewage treatment plant). |
| **Comments on Effects to Resources:** | The purpose of this project is not for economic redevelopment of an underdeveloped area of Gainesville, but a means to reroute truck traffic away from the University and downtown. This effect of the project should significantly affect and enhance the development of downtown Gainesville, which is an enterprise zone, by reducing or eliminating the safety issues associated with high truck traffic located within an urban core. Any economic impact that take place along this corridor as a result of this project is ancillary to the primary purpose of the improvement. |
| **Land Use** | |
| **Gainesville MTPO** | |
| **Issue** | Land Use |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | This is a largely undeveloped area in southeastern Gainesville. Within the immediate impact area of this project (>=500 ft.), there is a minor amount of high density residential properties (30%), commercial (retail & services) located along Main Street (14%), and a significant amount of undeveloped vegetated land (35-40%). |
| **Comments on Effects to Resources:** | As indicated in the review of the economic effect of this project, the proposed widening of this facilitate is not expected to significantly alter or affect the current development pattern taking place in within the project boundaries. Any additional or more intensive development that is generally associated with capacity improvements would be considered an indirect effect of the proposed project. This point is best illustrated by the fact that this segment is located within a transportation concurrency exemption area which precludes capacity constraints as a means limit development within this area. Therefore, any development or land use changes within this area is more subject to market forces or other regulations than the widening of a state road. |
| **FL Department of Community Affairs** | |
| **Issue** | Land Use |
| **Effect** | Moderate |
| **Review Date** | 11/10/2005 |
| **Mobility** | |
| **Gainesville MTPO** | |
| **Issue** | Mobility |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of** | The GIS Analysis identifies two transit routes and seven transit stops within 500 feet of the project. In addition, this project is located within |

| | |
|---|---|
| **Importance:** | the City of Gainesville Enterprise zone and within one mile of existing recreational trails, two hospitals, and a railway. |
| **Comments on Effects to Resources:** | The project has the potential to moderately to substantially affect transit routes in this area and enhance the economic development of the Gainesville Enterprise Zone. To address the transit concerns, consideration should be made to work with RTS to make provisions for safe and efficient transit services and access (sidewalks, covered transit stops, etc.) Further, construction of this improvement should be performed in such away to minimize the impact to the existing route and stops within the vicinity of the roadway.<br><br>However, the widening of this road should allow for the relocation of SR 24, which would enhance mobility for trucks and other heavy vehicle by traveling on the periphery of the urbanized area. This should decrease delay along this corridor by decreasing the number of signalized intersections the truck would have to travel through and conflict with heavy traffic and pedestrian activity that is located within downtown Gainesville. |
| **Relocation** | |
| **Gainesville MTPO** | |
| **Issue** | Relocation |
| **Effect** | Minimal to None |
| **Review Date** | 10/10/2005 |
| **Identified Resources and Level of Importance:** | There are some high density residential properties located along SE 16th Ave near the intersection of Williston Road (SR 331) |
| **Comments on Effects to Resources:** | ROW acquistion for this project may cause the relocation of some residential property owners adjacent to SE 16th Ave. However, the number of parcels/buildings that will be affected is yet to be determined |
| **Social** | |
| **Gainesville MTPO** | |
| **Issue** | Social |
| **Effect** | Substantial |
| **Review Date** | 10/13/2005 |
| **Identified Resources and Level of Importance:** | In the area immediately surrounding the project (up to one mile away) is comprised largely of low to high density residential development with some commercial activities that contain the following features:<br><br>Black population range is up to 96%. The county-wide % of the Black population is 19%.<br><br>Disabled population range is up to 29%. The county-wide % of the disabled population is 15%.<br><br>Hispanic population range is up to 28%. The county-wide % of the hispanic population is 8%.<br><br>The student population (18 to 29 yrs) for this area is 63%. The county-wide % is 26%.<br><br>The median income of this area is $21,483. The county-wide median is $31,426.<br><br>In addition, the GIS analysis identifies four assisted living facilities located within one mile of the project. One of these facilities, Treehouse Village Apartments, adjacent to the proposed project. |
| **Comments on Effects to Resources:** | The area immediately surrounding this project is disproportionately minority and low income and could be negatively impacted by the proposed project. The increase in truck traffic and volume could serve as a barrier to those residents living in the assisted living facilities/complexes and the community services that help them. While the relocation of the truck route is anticipated to enhance the socioeconomic conditions of downtown, this area could be left out of expected economic benefits.<br><br>Special consideration is needed to address the concerns of those residents living in the immediate vicinity of this project. Avoidance and minimization of relocations, community bisection and noise impacts should be focused upon. |
| **US Environmental Protection Agency** | |
| **Issue** | Social |
| **Effect** | Minimal to None |
| **Review Date** | 11/4/2005 |
| **Comments on Effects to Resources:** | According to the project description, SR 226 has apartment complexes on the southern end of the segment close to Williston Rd. At the north end of the segment at Main Street there are several car repair shops, gas stations and a water reclamation facility. An apartment |

| | |
|---|---|
| | complex is under construction at the intersection of SR 331 in the SW quadrant. There is a lot of undeveloped land between the two ends of the segment with potential for development.<br><br>Factors which may affect residential and commercial populations and businesses are: increased traffic volumes, increased noise, increased vibration, temporary rerouting of traffic during construction, property acquisition needed for right-of-way, and potential air quality issues due to increased traffic and vehicle emissions.<br><br>At the planning phase of the project, these impacts are expected to be minimal. However, land use along this segment of SR 226 may change prior to the programming and PD&E phases. Additional data collection, surveys, and studies may be recommended to assess both direct and indirect impacts to businesses and residents. |
| **Secondary and Cumulative** | |
| **Secondary and Cumulative Effects** | |
| **US Army Corps of Engineers** | |
| **Issue** | Secondary and Cumulative Effects |
| **Effect** | Minimal to None |
| **Review Date** | 11/8/2005 |

# APPENDIX B

# MTPO APPROVED INTERSECTION RECONSTRUCTION OF ARCHER ROAD AND S. 16$^{TH}$ AVENUE


MTPO Approved Overall Concept / Intersection Reconfiguration
4 Lanes
Archer Road
S. 16th Avenue
4 Lanes
Marlie\Public\MS05\Charrette\Aerials\Charrette Options.cdr

# APPENDIX C

## 2020 FORECAST OF STATE AND FEDERAL REVENUES FOR STATEWIDE AND METROPOLITAN PLANS

# APPENDIX FOR THE METROPOLITAN LONG RANGE PLAN UPDATE

## INTERIM 2005 UPDATE
## 2020 FORECAST OF STATE AND FEDERAL REVENUES
## FOR STATEWIDE AND METROPOLITAN PLANS

## Overview

This appendix documents the current Florida Department of Transportation (FDOT) state and federal transportation revenue forecast through 2025. Funding estimates for major state programs for this metropolitan area and Florida are included.

This is an interim forecast to provide guidance to MPOs for long range transportation plans (LRTPs) until a new forecast can be developed which incorporates (1) an update of the FIHS/SIS[1] Cost Feasible Plan, (2) state Growth Management funding enacted in 2005, and (3) the impact of 2005 federal legislation entitled Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users. It is anticipated that the new forecast will be available in the Spring, 2006. MPOs may have to amend LRTPs adopted in 2004 or 2005 to reflect the new forecast.

<u>Background</u>

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21) enacted in 1998 provided the impetus to enhance the cooperative relationship between FDOT and metropolitan planning organizations (MPOs) in planning for and providing transportation facilities and services. The 2020 Florida Transportation Plan (FTP), updated with the assistance of Florida's 26 MPOs and other transportation partners, established long range goals and program emphases for the expenditure of state and federal funds expected from current revenue sources.

As part of the updated FTP, the Department developed a long range revenue forecast in 2000. The forecast was based upon recent federal and state legislation (e.g., TEA-21, Mobility 2000), changes in factors affecting state revenue sources (e.g., population growth rates) and current policies. This information was used for updates of metropolitan plans and the Florida Intrastate Highway System Cost Feasible Plan.

This Interim 2005 forecast adjusts the forecast prepared in 2000 for (1) amounts contained in the Department's 2006-2010 Work Program, (2) the impact of the Department's Investment Policy to allocate 75% of Capacity funds to the SIS and the remaining 25% of Capacity funds to facilities that are not on the SIS, (3) changes in the Statutory Formula (equal parts of population and motor fuel tax collections) since the 2000 forecast, and a change in the

1 The update of the Florida Intrastate Highway System Plan (FIHS) will include all roads that are also included in the Strategic Intermodal System (SIS), including Connectors between SIS Hubs and Corridors.

base year from 2000 dollars to 2006 dollars.

Intent

This appendix is intended to provide the public with clear documentation of the state and federal financial issues related to each MPO plan and to facilitate reconciliation of statewide and metropolitan plans. This appendix does not address financial issues related to funds that do not "flow through" the state work program. Information on financial issues related to local and regional revenue sources – what those resources are and how the metropolitan areas plan to spend them – is contained in other documentation of the metropolitan plan.

The appendix describes how the Interim 2005 Update of the statewide 2020 Revenue Forecast Update was developed. Also, metropolitan estimates are identified for major FDOT programs that expand the capacity of existing transportation systems, which are referred to as "capacity programs" in this document. "Metropolitan estimates" are the share of the state capacity programs that are planned for this metropolitan area. They can be used to fund planned improvements to the major elements of the transportation system: highways, transit, aviation, rail, and intermodal access.

This appendix also includes estimates of funds required for other FDOT programs designed to support, operate, and maintain the state transportation system. The FDOT has set aside sufficient funds in the Interim 2005 Update of the 2020 Revenue Forecast for these programs, referred to as "non-capacity programs" in this document, to meet statewide objectives and program needs in all metropolitan and non-metropolitan areas. Funding for these programs is not included in the metropolitan estimates.

Interim 2005 Update of the 2020 Revenue Forecast Update (State and Federal Funds)

Long range revenue forecasts assist in determining which needed transportation improvements are financially feasible and identifying funding priorities. As directed by FDOT policy, the Department placed primary emphasis on safety and preservation by first providing adequate funding in the Revenue Forecast to meet established goals and objectives in these important areas. Remaining funding has then been planned for new or expanded statewide, metropolitan/regional, and local facilities and services (i.e., capacity programs). As we move into the 21st Century, safety and preservation will continue to be emphasized.

The Interim 2005 Update of the 2020 Revenue Forecast includes program estimates for the expenditure of state and federal funds expected from current revenue sources (e.g., new revenue sources were not added). The forecast estimated revenues from federal, state, and Turnpike sources that are included in the Department's 5-Year Work Program. The forecast did not estimate revenue from other sources (i.e., local government/authority taxes, fees, and bond proceeds; private sector participation; and innovative finance sources).

The Interim 2005 Update includes the funding levels contained in the 2006-2010 Adopted Work Program. The forecast of funding levels for FDOT programs for 2011-2025 was developed based on the Program and Resource Plan (PRP) for fiscal years 2001-2009, adjusted for the Department's 75%/25% Investment Policy adopted in 2004.

Revenue forecasts by FDOT typically estimate the value of money at the time it will be collected (e.g., 2010) and reflect future growth in revenue and inflation, sometimes referred to as “current” or “year of receipt” dollars. Since the costs of transportation projects increase over time, the Department inflates project costs to develop a cost-feasible Work Program. For the purpose of consistency among state and MPO plans, however, the FDOT agreed to deflate the revenue forecast. As a result, all amounts (e.g., for fiscal years 2005/06 through 2024/25) included in the Interim 2005 forecast are deflated and expressed in fiscal year 2006 dollars.

## Capacity Programs

For the revenue forecast, FDOT major programs were grouped into two general categories: capacity programs and non-capacity programs. Capacity programs include each major FDOT program that expands the capacity of existing transportation systems (e.g., highways, transit). Non-capacity programs include the remaining FDOT programs that are designed to support, operate, and maintain the state transportation system (e.g., resurfacing). Table 1 includes a brief description of each major capacity program and the linkage to the program categories used in the PRP.

The capacity programs are also grouped in relationship to the 2020 FTP goals: Economic Competitiveness; and Quality of Life. The capacity programs that support the Economic Competitiveness Goal are Florida Intrastate Highway System construction/ right-of-way, aviation, rail, intermodal access, and seaport development. The capacity programs that support the Quality of Life Goal are other arterials construction/right-of-way and transit.

Table 2 identifies the statewide estimates for the programs in the Interim 2005 Update of the 2020 Revenue Forecast. About $94 billion is forecast for the entire state transportation program from 2006 through 2025; about $49 billion (51%) is forecast for the capacity programs.

**TABLE 1**
**Description of the Major Capacity Programs Included in the Interim 2005 Update of the 2020 Revenue Forecast and Corresponding Program Categories in the Program and Resource Plan (PRP)**

| **Economic Competitiveness:** | | **Quality of Life:** | |
|---|---|---|---|
| **2020 Revenue Forecast Programs** | **PRP Program Categories** | **2020 Revenue Forecast Programs** | **PRP Program Categories** |
| SIS/Florida Intrastate Highway System (FIHS) Construction/ROW - Construction, improvements, and associated right of way on the Strategic Intermodal System and the Intrastate Highway System (e.g., Interstate, the Turnpike, other toll roads, other facilities designed to serve interstate and regional commerce). | SIS/Intrastate Construction<br>Turnpike Construction<br>Other SIS/Intrastate Construction<br>Toll Facilities Revolving Trust Fund<br>SIS/Intrastate ROW<br>SIS/Intrastate Advance Corridor Acquisition | Other Arterial Construction/ROW - Construction, improvements, and associated right of way on State Highway System roadways not designated as part of the SIS or FIHS. The program also includes funding for the Economic Development program, the County Incentive Grant Program, and the Small County Outreach Program. | Arterial Traffic Operations<br>Construction<br>County Transportation Programs<br>Economic Development<br>Other Arterial & Bridge ROW<br>Other Arterial Advance Corridor Acquisition |
| Aviation - Financial and technical assistance to Florida's airports in the areas of safety, capacity improvements, land acquisition, planning, economic development, and preservation. | Airport Improvement<br>Land Acquisition<br>Planning<br>Discretionary Capacity Improvements | Transit - Technical and operating/capital assistance to transit, paratransit, and ridesharing systems. | Transit Systems<br>Transportation Disadvantaged - Department<br>Transportation Disadvantaged - Commission<br>Other<br>Block Grants |
| Rail - Rail safety inspections, rail-highway grade crossing safety, acquisition of rail corridors, assistance in developing intercity and commuter rail service, and rehabilitation of rail facilities. | Fixed Guideway<br>Passenger Service<br>Rail/Highway Crossings<br>Rail Capacity Improvement/Rehabilitation | | |
| Intermodal Access - Improving access to intermodal facilities and acquisition of associated rights of way. | Intermodal Access | | |

| Economic Competitiveness: | | Quality of Life: | |
|---|---|---|---|
| Seaport Development - Funding for the development of eligible deep water ports, including such projects as land acquisition, dredging, construction of storage facilities and terminals, and acquisition of container cranes and other equipment used in moving cargo and passengers. | Seaport Development | | |

## TABLE 2

## STATEWIDE REVENUE FORECAST
## AMOUNTS AND CATEGORIES OF CAPACITY PROGRAM ESTIMATES

### State and Federal Funds from Interim 2005 Update of the 2020 Revenue Forecast
### (Millions, 2006 $)
### Florida Department of Transportation

| Capacity Program Emphasis Areas | Time Period | | | | 20 Year Total[2] |
|---|---|---|---|---|---|
| | 2006-10[1] | 2011-15 | 2016-20 | 2021-25 | |
| Economic Competitiveness | | | | | |
| SIS/FIHS Construction/ROW | 7,623 | 5,334 | 5,082 | 4,723 | 22,762 |
| Aviation | 531 | 510 | 512 | 514 | 2,068 |
| Rail | 631 | 427 | 426 | 424 | 1,909 |
| Intermodal Access | 770 | 682 | 676 | 668 | 2,795 |
| Seaport Development | 224 | 185 | 186 | 186 | 781 |
| Quality of Life | | | | | |
| Other Arterial Construction/ROW | 4,802 | 2,389 | 2,101 | 2,039 | 11,330 |
| Transit | 1,107 | 806 | 802 | 796 | 3,510 |
| Total Capacity Programs[3] | 15,688 | 10,331 | 9,785 | 9,351 | 45,155 |
| Statewide Total, All Programs | 30,632 | 21,603 | 20,973 | 20,542 | 93,750 |

[1] Based on 2006-10 Adopted Work Program (July 1, 2005). There are relatively more dollars in fiscal years 2006-2010 due to current plans for advancement of highway construction projects that are not reflected in estimates for 2011-2025 and to "carry-forwards" of funds from prior fiscal years.
[2] Columns and rows sometimes do not equal the totals due to rounding.
[3] Does not include estimates of funding from 2005 Growth Management legislation or from the impact of SAFETEA-LU.

Metropolitan Forecast for Capacity Programs

As the first step in preparing metropolitan estimates, the Department prepared district estimates for the capacity programs from the statewide forecast consistent with the provisions in state and federal law. Pursuant to federal law, the transportation management area (TMA) funds from the other arterials construction/right-of-way program were distributed based on 2000 population. District estimates for the remaining programs were developed using the current statutory formula: other arterials construction/right-of-way (net of TMA and enhancement funds); enhancements; and the transit program.[2]

Because the update of the SIS/FIHS Cost Feasible Plan is not complete, estimates for SIS/FIHS Construction and ROW were based on the current FIHS Cost Feasible Plan, or the SIS/FIHS 2011-2015 Work Program, at the discretion of the district. Because of the evolving nature of the SIS, estimates for the Rail, Aviation, Seaports and Intermodal Access programs were included only from the 2006-2010 Adopted Work Program.

FDOT districts developed the metropolitan estimates consistent with district shares of the statewide forecast, adjusted as needed to account for issues such as metropolitan area boundaries (e.g., differences between county boundaries). The estimates for this Metropolitan Area are included in Table 3.

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[3] The statutory formula is based on 50% population and 50% motor fuel tax collections.

## TABLE 3

## Gainesville Metropolitan Area Revenue Estimates
## Fiscal Years 2005/06 – 2024/25

| Other Arterials Construction / ROW | | | | | | | |
|---|---|---|---|---|---|---|---|
| | FYs 06-10 from Adopted Work Program | FYs 11-15 Subtotal | FYs 16-20 Subtotal | FYs 21-25 Subtotal | | | 20 Year TOTAL |
| TMA Funds | $ 0.00 | $ 0.00 | $ 0.00 | $ 0.00 | | | $ 0.00 |
| CMAQ Funds | $ 0.00 | $ 0.0 | $ 0.0 | $ 0.0 | | | $ 0.00 |
| Enhancement Funds | $ 1.9 | $ 2.1 | $ 1.9 | $ 1.6 | | | $ 7.5 |
| Gainesville MTPO | $ 18.3 | $ 13.8 | $ 12.3 | $ 12.4 | | | $ 56.8 |
| Total MTPO Area | $ 20.2 | $ 15.9 | $ 14.2 | $ 14.0 | | | $ 64.3 |

| Transit | | | | | | | |
|---|---|---|---|---|---|---|---|
| | FYs 06-10 Subtotal | FYs 11-15 Subtotal | FYs 16-20 Subtotal | FYs 21-25 Subtotal | | | 20 Year TOTAL |
| Gainesville MTPO 5307 | $ 8.1 | $ 10.2 | $ 10.1 | $ 10.1 | | | $ 38.5 |

Estimates in 2004 dollars.

## Non-Capacity Programs

Non-capacity programs refer to FDOT programs designed to support and maintain the state transportation system: safety; resurfacing; bridge; product support; operations and maintenance; and administration. Table 4 includes a description of each non-capacity program and the linkage to the program categories used in the PRP.

Metropolitan estimates have not been developed for these programs. Instead, the FDOT has included sufficient funding in the Interim 2005 Update of the 2020 Revenue Forecast to meet the following statewide objectives:

- **Resurfacing program:** Ensure that 80% of state highway system pavement meets Department standards;
- **Bridge program:** Ensure that 90% of FDOT-maintained bridges meet Department standards while keeping all FDOT-maintained bridges open to the public safe;
- **Operations and maintenance program:** Achieve 100% of acceptable maintenance condition standard on the state highway system;
- **Product Support:** Reserve funds for Product Support required to construct improvements (from the forecast's capacity funds) in each district and metropolitan area; and
- **Administration:** Administer the state transportation program.

The Department has reserved funds in the Interim 2005 Update of the 2020 Revenue Forecast to carry out its responsibilities and achieve its objectives for the non-capacity programs on the state highway system in each district and metropolitan area. FDOT will develop statewide noncapacity needs cooperatively with MPOs and local governments to ensure consistency, to the maximum extent feasible, with MPO plans and local government comprehensive plans.

Table 5 identifies the statewide estimates for the non-capacity programs, which are grouped in relationship to the related FTP Goals (Safe Transportation and System Management) and by the other major support and maintenance programs. About $45 billion (49% of total revenues) is forecast for the non-capacity programs.

**TABLE 4**
**Description of the Major Non-Capacity Programs Included in the Interim 2005 Update of the 2020 Revenue Forecast and Corresponding Program Categories in the Program and Resource Plan (PRP)**

| **Safe Transportation and System Management:** | | **Other Programs:** | |
|---|---|---|---|
| **2020 Revenue Forecast Programs** | **PRP Program Categories** | **2020 Revenue Forecast Programs** | **PRP Program Categories** |
| Safety - Includes the Highway Safety Improvement Program, the Traffic Safety Grant Program, Bicycle/Pedestrian Safety activities, the Industrial Safety Program, and general safety issues on a Department-wide basis. | Highway Safety<br>Grants | Product Support - Planning and engineering activities required to "produce" the Department's products and services (i.e., Capacity, Safety, Resurfacing, and Bridge programs). | Preliminary Engineering<br>Construction Engineering Inspection<br>Right of Way Support<br>Environmental Mitigation<br>Materials & Research<br>Planning<br>Public Transportation Operations |
| Resurfacing- Resurfacing of pavements on the State Highway System and local roads as provided by state law. | Interstate<br>Arterial and Freeway<br>Off-System<br>Turnpike | Operations & Maintenance - Activities to support and maintain transportation infrastructure once it is constructed and in place. | Routine Maintenance<br>Traffic Operations<br>Toll Operations<br>Motor Carrier Compliance |
| Bridge - Repair and replace deficient bridges on the state highway system. In addition, 15% of federal bridge funds must be expended off the federal highway system (i.e., on local government bridges not on the state highway system). | Repair - On System<br>Replace - On System<br>Local Bridge Replacement<br>Turnpike | Administration - Resources required to perform the fiscal, budget, personnel, executive direction, document reproduction, and contract functions. Also, includes the Fixed Capital Outlay Program, which provides for the purchase, construction, and improvement of non-highway fixed assets (e.g., offices, maintenance yards). | Administration<br>Fixed Capital Outlay<br>Office Information Systems |

**TABLE 5**
**STATEWIDE REVENUE FORECAST**
**AMOUNTS AND CATEGORIES OF NON-CAPACITY PROGRAM ESTIMATES**

**State and Federal Funds from Interim 2005 Update of the 2020 Revenue Forecast**
**(Millions, 2006 $)**
**Florida Department of Transportation**

| Non-Capacity Program Emphasis Areas | Time Period | | | | |
|---|---|---|---|---|---|
| | 2006-10[2] | 2011-15 | 2016-20 | 2021-25 | 25 Year Total[2] |
| Safe Transportation/System Management | | | | | |
| Safety | 356 | 206 | 189 | 171 | 922 |
| Resurfacing | 3,321 | 2,270 | 2,336 | 2,403 | 10,330 |
| Bridge | 805 | 844 | 815 | 782 | 3,247 |
| Product Support | 5,815 | 3,954 | 3,833 | 3,794 | 17,396 |
| Operations & Maintenance | 3,889 | 3,299 | 3,298 | 3,301 | 13,787 |
| Administration | 758 | 698 | 718 | 739 | 2,914 |
| Total Non-Capacity Programs[2] | 14,944 | 11,271 | 11,189 | 11,191 | 48,595 |
| Statewide Total, All Programs | 30,632 | 21,603 | 20,973 | 20,542 | 93,750 |

[1] Based on 2006-10 Adopted Work Program (July 1, 2005). There are relatively more dollars in fiscal years 2006-2010 due to current plans for advancement of highway construction projects that are not reflected in estimates for 2011-2025 and to "carry-forwards" of funds from prior fiscal years.
[2] Columns and rows sometimes do not equal the totals due to rounding.

# APPENDIX FOR THE xxx METROPOLITAN AREA
# LONG RANGE PLAN UPDATE

# INTERIM 2005 UPDATE OF 2020 FORECAST OF STATE AND FEDERAL REVENUES
# FOR STATEWIDE AND METROPOLITAN PLANS

# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 6
## Evaluation and Ranking of the Needs Plan

Prepared for:
The Metropolitan Transportation Planning Organization

Prepared by:
The Corradino Group, Inc.

December 2005

# Foreword

This is one of several Technical Reports (TR) produced during the conduct of the Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update (LRTP) during the period January 2004 to December 2005. The document presented here is the same as used in the decision process of the LRTP. Actions taken subsequent to the production of the TR that materially affected its contents are reflected in the Final Report (three-ring binder) plus the Summary Report and Summary Poster.

CORRADINO

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Appendix Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Goals and Objectives

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# 1. Introduction

Every five years, the State of Florida requires the Metropolitan Transportation Planning Organization (MTPO) for the Gainesville Urbanized Area to update its Long-Range Transportation Plan (LRTP). The purpose of this plan is to encourage and promote a safe and efficient transportation system to serve future year transportation demands. Results of the LRTP process are intended to serve the overall mobility needs of the area while also being cost effective and consistent with state and local goals and objectives.

The Gainesville Urbanized Area is located in the center of Alachua County, Fla., and incorporates the City of Gainesville as well as the surrounding urban and transitioning areas. Census 2000 data indicate that this area is inhabited by approximately 159,000 residents and accounts for about half of the county's total population.

The MTPO manages the transportation network and mobility needs for the defined urban area and recognizes the inter-connectivity between network accessibility and land use development patterns. Prior decision-making has focused on producing a multimodal transportation network consisting of roads, bus service, bicycle/pedestrian facilities, and a regional airport. These modes of transportation provide a foundation for handling the flow of goods and services to and from the area, as well as establish a system for area residents to access jobs, shopping and recreational facilities.

## 1.1 Study Process/Goals and Objectives

The LRTP Update is a six-task effort (including documentation) that spans two years (Figure 1-1). It involves both technical tasks and a communication program that are knit together to produce a 2025 transportation plan that serves the project's goals and objectives and the community-based vision for the future.

Those goals are summarized on Table 1-1. The complete set of objectives is presented in the appendix.

## 1.2 Vision Statement

To extend the goals into a community-based dialogue, a number of public workshops were conducted. Those held in the spring of 2004 produced a list of transportation issues to be addressed, in part, by the LRTP. These are summarized on Table 1-2.

Figure 1-1
Gainesville Urbanized Area
2025 Long Range Transportation Plan Update
Schedule

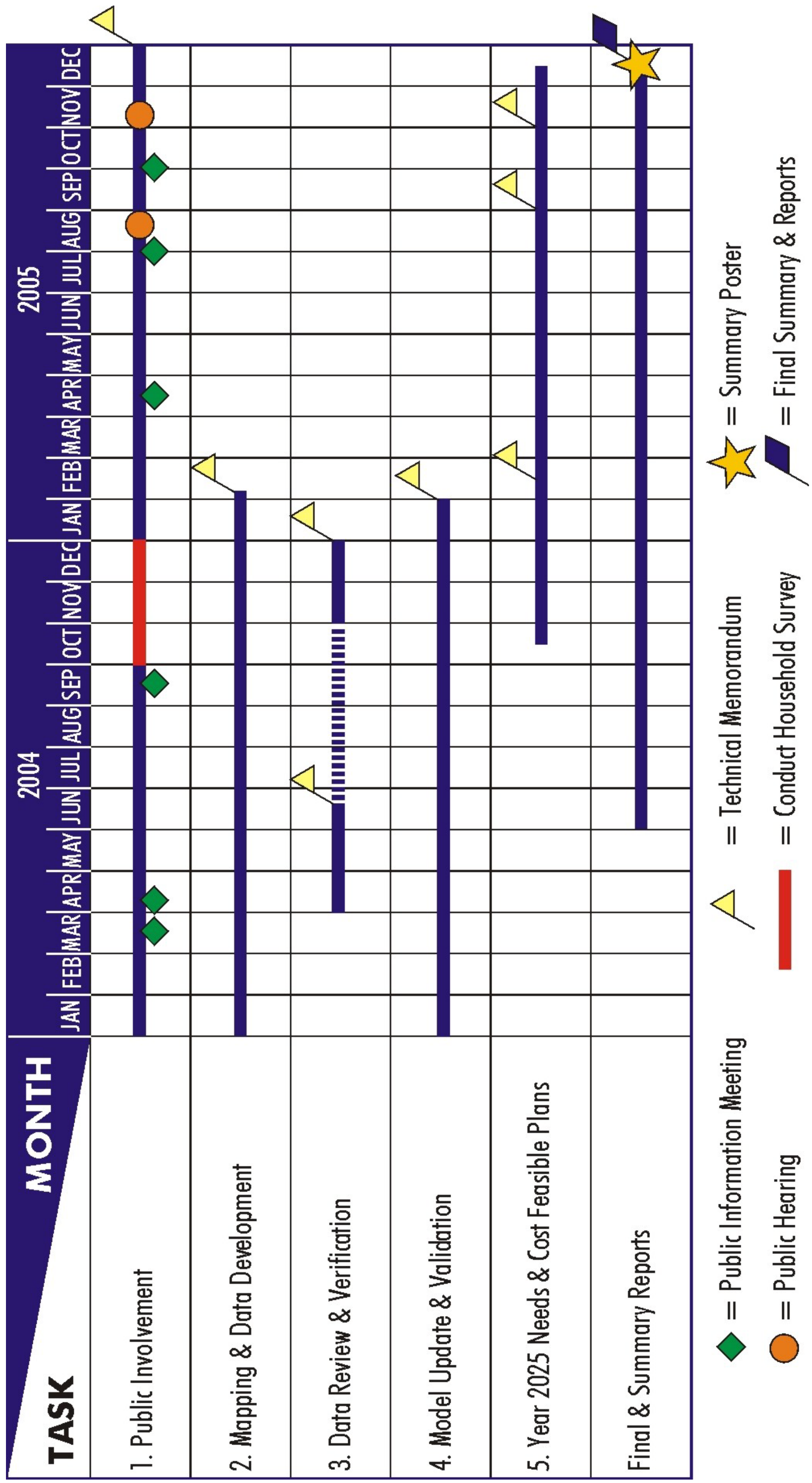


Table 1-1
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Project Goals

| First Goal Statement |
| --- |
| Develop and maintain a balanced transportation system that supports the economic vitality and quality of life in the Gainesville metropolitan area through expanded transportation choice, improved accessibility for motorized and non-motorized users and the preservation of environmental, cultural and historic areas. |
| Second Goal Statement |
| Develop and maintain a sustainable transportation system that supports and preserves the existing transportation network compact development patterns, improved system management and operations, coordination and communication. |
| Third Goal Statement |
| Develop and maintain a safe and secure transportation system for all users and neighbors of transportation facilities and services. |
| Fourth Goal Statement |
| Invest strategically in transportation infrastructure to enhance the vitality of the community. |

Source: Gainesville Urbanized Area MTPO

Table 1-2
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Public Workshops, Spring 2004
Issues Raised by Community Participants

### Non-motorized

- Provide bike paths/ pedestrian paths that are not within high speed roads.
- Provide a traffic signal cycle for pedestrian movement, where needed.
- Address pedestrian traffic needs at West University and NW 13th Street.
- Provide better pedestrian signal phase at NW 16th Avenue and NW 34th Street near Westwood School.
- Install Rails-Trails bridge over Sweet Water Branch.
- Improve east side of Waldo Road for wheelchair users (too many curbs/not enough ramps).
- Follow "Plan East Gainesville" by purchasing land for conservation and spur trail to Rail-Trails system.

### Transit

- Establish dedicated transit corridors.
- Provide transit that will enable people to go anywhere in Gainesville in one hour.
- Provide more transit service to Santa Fe College.
- Provide transit service, like the ElectroWave system of Miami Beach.
- Cluster development to make transit work.
- Provide transportation on Saturdays for all working people.
- Provide park-and-ride service for city-county employees.
- Provide bus bays.
- Provide direct transit service between east Gainesville & Santa Fe College.
- Connect with regional bus service the Gainesville, Tampa and Orlando airports.
- Extend hours of transit service.
- Provide more east/west bus service. Use buses suitable to neighborhoods (smaller buses).
- Provide more frequent bus service on 34th Street.
- Provide bus service to Turkey Creek Forest senior village.
- Offer owner of Butler Plaza and owners of shopping centers along Archer Road corridor incentives to operate shuttle system.

### Roadways

- Failure to move forward on one-way pair (University Avenue).
- Build Hull Road extension.
- Connect SW 16th or Main Street to Hawthorne Road.
- Make Archer Road four lanes.
- Provide more connections in the west area of Gainesville:
  - To the airport.
  - An overpass at Archer Road/34th Street.
- Don't ignore roadway congestion.
- Create east/west expressway or beltway around Gainesville.
- Eliminate "prestige" parking spaces downtown.
- Employ speed humps.
- Eliminate parallel parking on Main Street.
- Recognize the University of Florida burden (wear & tear) on local streets.
- Synchronize Main Street traffic signals.
- Provide narrow median on University Avenue (13th St. east to West 12th St).
- Address the transition from 4 to 2 lanes at NW 13th Street/NW 16th Ave.
- Synchronize traffic signal on Newberry Road at Newberry Square with rest of signals on Newberry Rd.
- Design/use roundabouts for traffic flow, not traffic "blocks."
- Use more roundabouts to keep traffic moving at safe speeds.
- Apply "traffic calming" on Tower Road (lots of schools).
- Address the Butler Plaza parking lot.
- Improve condition of Williston Road
- Address the traffic conditions at SW 13th Street and Archer Road.
- Narrow 6th Street.
- Install traffic signal at SE 16th Avenue and Williston Road.

### All Modes

- Need a transportation system that is less costly.
- Address urban sprawl.
- Address the overall lack of connectivity.
- Create balanced/ multimodal transportation system.
- Connect infill neighborhoods.
- Balance infill needs with wetlands.
- Precede infill with infrastructure.
- Facility GRU Eastside "Operations Center" consistent with "Plan East Gainesville."

Source: The Corradino Group, Inc.

The workshops and additional community meetings also helped establish a statement for the vision of the transportation system of the future as follows:

"Land use developed with intensity and density that creates more balance in east-west Gainesville area growth, connects a limited number of highly developed mixed use centers, and is served by a highly-efficient multimodal transportation system, which allows for mode choice. The transportation system is safely used by people of all ages and income classes, supported by a dedicated transportation funding source and provides for:

a. walkable University and town centers;
b. improved and affordable transit service;
c. improved bikeway/trail system; and,
d. better road connectivity."

## 1.3 Telephone Survey

A telephone survey was conducted in the Gainesville Urbanized Area in the spring of 2005 to address a series of transportation issues. Highlights of the survey indicate that the respondents (more than 450 completed interviews) are most interested in investing in maintaining existing facilities (Figure 1-2). They prefer that more than half that investment be in roads, with about one quarter spent on transit and the remaining 24 percent divided between sidewalks for pedestrians and paths for bicyclists (Figure 1-3). However, the respondents are not interested in paying additional taxes for funding transportation improvements (Figure 1-4). This latter position echoes the results of the November 2004 countywide referendum on transportation funding.

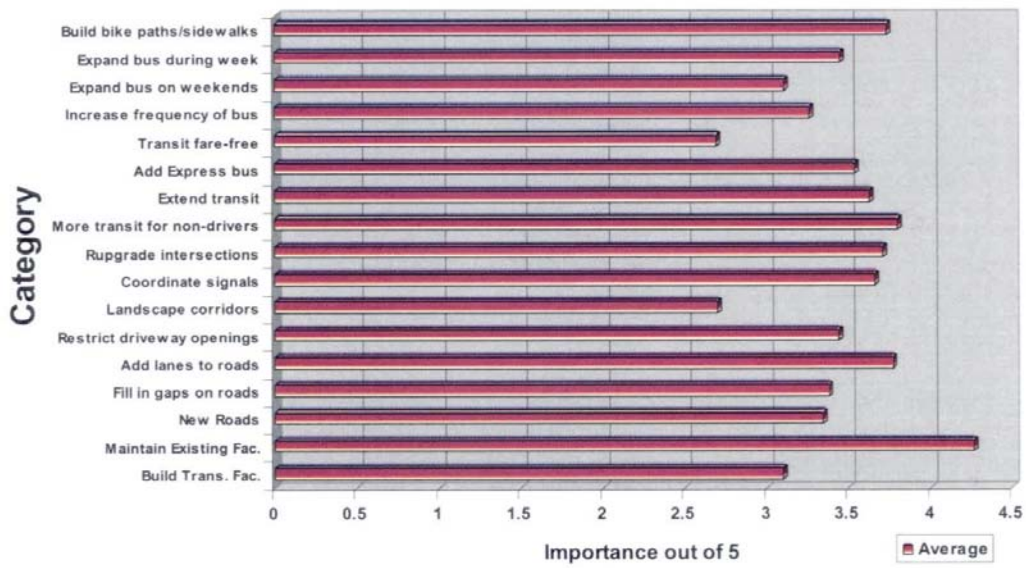
## 1.4 Evaluation Process

The MTPO YEAR 2025 Long Range Transportation Plan (LRTP) Update has developed a list of Year 2025 transit, non-motorized and highway system projects to be tested. Nine evaluation factors have been developed to evaluate proposals for these elements of the plan (Table 1-3). The data elements to be generated by which transportation system performance can be measured by the nine factors are also included in Table 1-3. A brief explanation of each evaluation factor is presented here.

<u>Provide Multiple Choices in Ways to Travel</u> – The different transportation elements tested to form the Year 2025 LRTP will allow shifts among modes – transit/non-motorized/roadway. The change in use will be measured to evaluate the alternatives. The weight of this factor will influence the emphasis in the LRTP of shifting highway users to other modes.

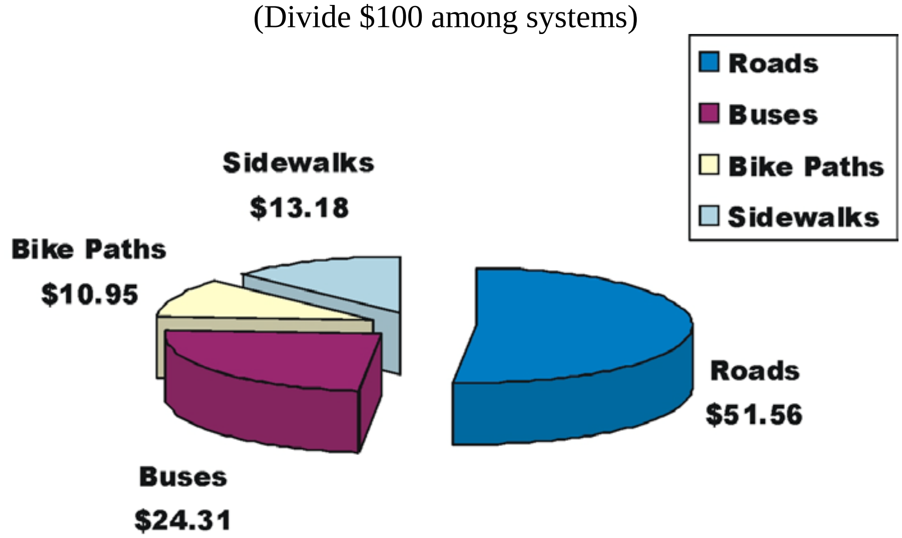
<u>Prevent Unequal Impacts to Low-Income and Minority Communities</u> – Federal regulations exist to minimize the <u>disproportionate</u> effect on the following population groups: African-Americans, Asian-Americans, American Indians, Alaskan Natives and Hispanics. Additionally, low-income households of all population groups are covered. By examining the level of transit and highway services and the extent to which public and/or private properties are used for these transportation elements in areas where these populations exist, a measure of the impact on them can be established.

Figure 1-2
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Telephone Survey Responses
Importance of Spending for Services



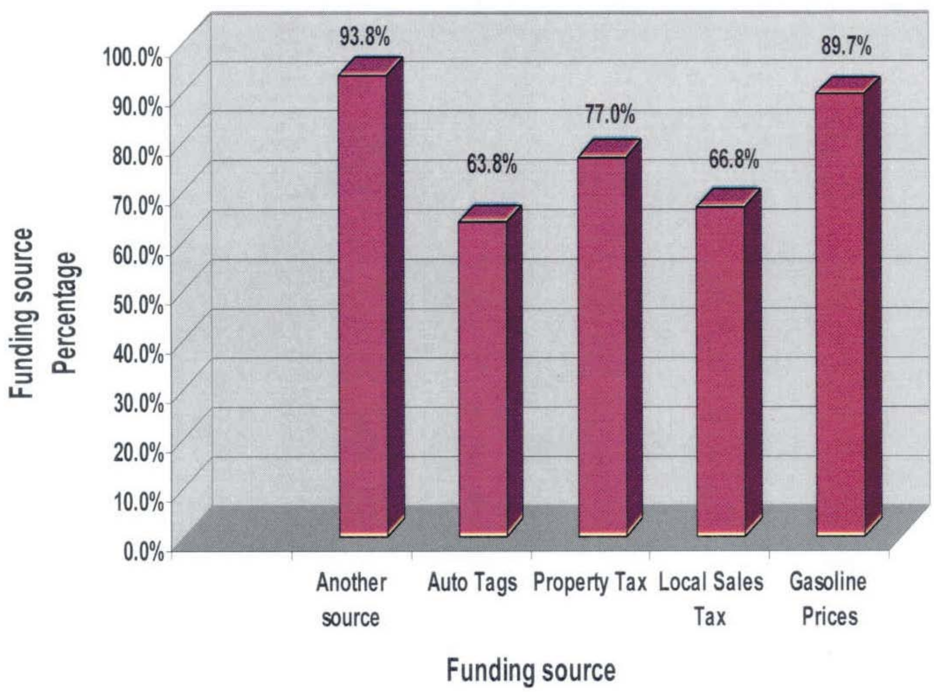

SOURCE: The Corradino Group, Inc.

Figure 1-3
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Telephone Survey Responses
Allocation of Funding
(Divide $100 among systems)




SOURCE: The Corradino Group, Inc.

Figure 1-4
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Telephone Survey Responses
Percentage Answering No




SOURCE: The Corradino Group, Inc

Table 1-3
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Evaluation Factors and Performance Measures

| Evaluation Factor | Performance Measure |
|---|---|
| Provide Multiple Choices in Ways to Travel | Percent transit, non-motorized, multiple occupant, and single occupant trips by TAZ and area total. |
| Prevent Unequal Impacts to Low-Income and Minority Communities | Direct (taking) and indirect (number of projects by mode) that are in areas of expected concentration of low income and/or minority populations, as defined by the U.S. Census. |
| Better Connect Links in the Transit and Road Networks | Change in travel time from baseline system for up to 30 origin-destination pairs (selected in cooperation with MTPO Committees). |
| Minimize Neighborhood Disruption | Projected traffic volumes/speeds on 20 sensitive (environment, aesthetics, social) roadway segments (selected in cooperation with MTPO Committees). |
| Maintain Good Air Quality | CO concentrations at 20 points in the network (selected in cooperation with MTPO Committees) and consistent with noise, community cohesion, and safety factors analysis. |
| Minimize Purchase of Private Property to Build Transportation Facilities | Number of residential and business properties potentially taken. |
| Protect Open Spaces/Parks | Number of acres of public and non-public park potentially lost. |
| Control Noise at Sensitive Locations. (e.g., homes, schools, hospitals, etc.) | Expected "significant change" in noise due to traffic volume change at 20 points (selected in cooperation with MTPO Committees). |
| Maximize Safe Travel | Change in crashes compared to baseline system in vehicle miles of travel on 20 roadway segments (selected in cooperation with MTPO Committees). |
| Minimize Road Congestion | Determine volume/capacity of key roadway links |

Source: The Corradino Group, Inc.

Connect Links in Transit and Road Networks – Public involvement meetings in the spring of 2004 indicated some concern about the lack of “connectivity” in the transit and roadway networks. To measure the degree to which different connections affect overall travel, the movements between thirty pairs of connected zones (origins to destinations) will be examined.

Minimize Neighborhood Displacements – The transportation network of the future will have traffic volumes on roadway links that are likely to be different from those of today based upon the use of transit, non-motorized modes (walking/bicycling) and how the roadway links are connected. To measure the effects of various transportation systems on/near neighborhood areas, the forecast volumes and speeds on 20 roadway segments will be computed.

Maintain Good Air Quality – The Gainesville Urbanized Area now maintains satisfactory levels of all mobile source pollutants defined by EPA in its National Ambient Air Quality Standards. That condition is expected to continue in the future as EPA has issued regulations on fuels and the performance of diesel engines for both on-road and non-road equipment that will only improve air quality. Nevertheless, to assess the relative performance of alternative transportation elements tested to develop the Year 2025 LRTP, concentrations will be calculated of carbon monoxide (a gas that can cause health impacts) at 20 locations along the roadway system where people congregate.

Minimize Purchase of Private Property to Build Transportation Facilities – Concepts for modifying the transit/non-motorized/roadway elements of the transportation system to develop the Year 2025 LRTP could involve property acquisition. The extent to which this could occur will be measured.

Control Noise at Sensitive Locations – Homes, schools, and hospitals are among land uses considered sensitive to noise. The expected change in noise at 20 sensitive locations will be measured.

Protect Open Space/Parks – This issue is very much like that of private property taking. The acres of potential parkland/open space possibly needed to develop various transportation elements tested for inclusion in the LRTP will be measured.

Maximize Safe Travel – Each alternative transportation system proposed will be related to the resultant vehicle miles of roadway travel (after accounting for transit and non-motorized travel). Vehicle miles of roadway travel can be related to crashes. Calculating the fatal and property damage incidents expected with each alternative will define this evaluation factor.

Minimize Traffic Congestion – The level of congestion on the roadway system will be defined by measuring the volume-to-capacity ratio on key roadway links in the transportation system.

To engage the general public, members of MTPO Technical, Citizens and Bicycle/Pedestrian Committees and the MTPO Commissioners in the evaluation process, a simple weighting process was employed. It involves each participant ranking (Table 1-4) and then rating (Table 1-5) each of the nine evaluation factors. The factor weightings of the MTPO Commissioners and the combined citizens and MTPO Committee members are presented on Table 1-6. The consultant's weightings are also shown on this table. Overall, the three groups indicate the first or second most important factor is to "Provide Multiple Choices in Ways to Travel." The three groups all place in either second or third place the factor "Maximize Safe Travel;" and, each group places either in last or next to the last place the factors "Minimize Purchase of Private Property to Build Transportation Facilities" and "Control Noise at Sensitive Locations." Variations among the groups' weightings that are most noteworthy are "Prevent Unequal Impacts to Low-Income and Minority Communities" and "Better Connect Links in the Highway Networks."

Table 1-4
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Example Ranking Form

***How Important Are These Factors?***

We want to know how important you believe the following factors are in developing the Year 2025 Transportation Plan for the Gainesville Urbanized Area. These factors will be used to help determine which changes should be made to the highway, transit and non-motorized elements of the transportation system in the urbanized portion of Alachua County.

To provide us your opinion, please rank the following factors "1" through "10," with "1" indicating the factor you believe is most important and "10" indicating the factor you believe is least important. Use each number only once. When finished, return your form to a project representative or by email using the Web site address or fax to the number listed at the bottom of the sheet.

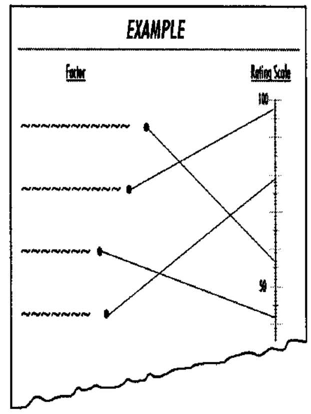
Your opinions will be used to evaluate the long range transportation plan alternatives. Thank you.

| Factor | Rank |
|---|---|
| Provide Multiple Choices in Ways to Travel | 4 |
| Prevent Unequal Impacts to Low-Income and Minority Communities | 8 |
| Better Connect Links in the Transit and Road Networks | 10 |
| Minimize Neighborhood Disruption | 1 |
| Maintain Good Air Quality | 5 |
| Minimize Purchase of Private Property to Build Transportation Facilities | 9 |
| Protect Open Spaces/Parks | 3 |
| Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.) | 7 |
| Maximize Safe Travel | 2 |
| Minimize Road Congestion | 6 |

SOURCE: The Corradino Group, Inc.

Table 1-5
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Example Rating Form

## *How Important Are These Factors?*




We want to know how important you believe the following factors are in developing the Year 2025 Transportation Plan for the Gainesville Urbanized Area. These factors will be used to help determine which changes should be made to the highway, transit and non-motorized elements of the transportation system in the urbanized portion of Alachua County.

To provide us your opinion, please rate the following factors "0" through "100," with the highest rating indicating the factor you believe is <u>most important</u>. To do this, draw a line from the dot (•) following the factor name to the scale to indicate your opinion. An example is shown to the right. When finished, return your form to a project representative or by email using the Web site address or fax to the number listed at the bottom of the sheet.

Your opinions will be used to evaluate the long range transportation plan alternatives. Thank you.

**<u>Factor</u>** — **<u>Rating Scale</u>** (100 – 50 – 0)

- Provide Multiple Choices in Ways to Travel •
- Prevent Unequal Impacts to Low-Income or Minority Communities •
- Better Connect Links in the Transit and Road Networks •
- Minimize Neighborhood Disruption •
- Maintain Good Air Quality •
- Minimize Purchase of Private Property to Build Transportation Facilities •
- Protect Open Spaces/Parks •
- Control Noise at Sensitive Locations (e.g., homes, schools, hospitals, etc.) •
- Maximize Safe Travel •
- Minimize Road Congestion •

SOURCE: The Corradino Group, Inc.

Table 1-6
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Weighting of Evaluation Factors

| Factor / Weight | MTPO Commissioners | | Citizens/MTPO Committees | | Consultant | |
|---|---|---|---|---|---|---|
| | Weight | Rank | Weight | Rank | Weight | Rank |
| Provide multiple choices in ways to travel | 14.7% | 1 | 13.8% | 1 | 13.1% | 2 |
| Prevent unequal impacts for low-income and minority communities | 12.4% | 3 | 8.4% | 7 | 7.3% | 8 |
| Better connect links in the transit and road networks | 9.6% | 6 | 13.0% | 2 | 13.4% | 1 |
| Minimize neighborhood disruption | 9.5% | 7 | 7.7% | 8 | 11.2% | 5 |
| Maintain good air quality | 9.5% | 7 | 11.9% | 4 | 7.8% | 7 |
| Minimize purchase of private property to build transportation facilities | 2.4% | 10 | 5.1% | 10 | 6.5% | 9 |
| Protect open space/parks | 10.7% | 4 | 10.4% | 6 | 9.7% | 6 |
| Control noise at sensitive locations | 6.0% | 9 | 6.5% | 9 | 6.0% | 10 |
| Maximize safe travel | 14.5% | 2 | 13.0% | 3 | 13.0% | 3 |
| Minimize road congestion | 10.7% | 4 | 10.4% | 5 | 12.0% | 4 |

Source: The Corradino Group, Inc.

# 2. The Transportation System Alternatives

Based on the development and calibration of the CUBE/Voyager model to replace the TranPlan model (used in previous long-range transportation planning in Florida's urbanized areas), tests were made to determine those roads in Alachua County which operate today (Figure 2-1) and in 2025 (Figure 2-2) at a Level of Service lower than C. These data were used to inform the development of two basic plans to address 2025 traffic: Alternative 1 – Highways (Figure 2-3 and Table 2-1); Alternative 2 – Transit (Figure 2-4 and Table 2-2).

## 2.1 System Performance

Consistent with the evaluation process described in Section 1, the following performance measures were calculated for each alternative.

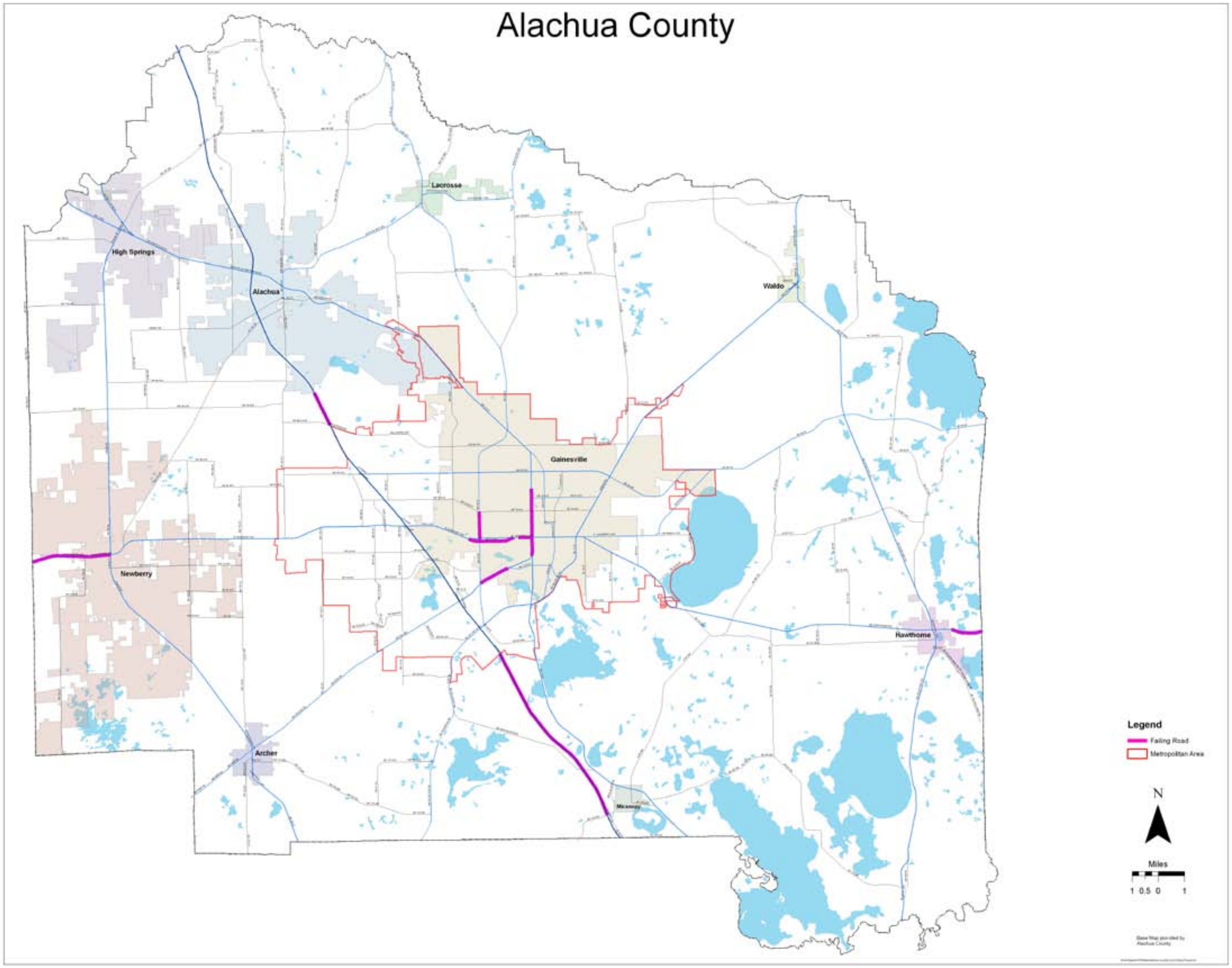
- Modal Split – Table 2-3 presents by alternative, as well as the E+C system, data on the split of 2025 person trips among various modes: drive-alone auto; shared-ride auto; transit; and, non-motorized (walk and bike). It is important to note the CUBE/Voyager model allows the latter modes to be simulated as part of the overall systemwide analysis process. To do so, a "pedestrian environment" index was established by city, county, and University of Florida planners (Figure 2-5). The data for this performance measure indicate in 2025 there is very little difference areawide in the use of transit from the system made up of the current transit routes plus the existing-and-committed highways to Alternative 2 which includes a number of proposed transit improvements (Table 2-3).

  Transit use increases slightly in downtown Gainesville under Alternative 2 and more so in East Gainesville and at the University of Florida main campus. It is noteworthy that the increased transit share is drawn from auto users, not pedestrians/bicyclists.

- Impacts to Low-income and Minority Communities – A number of proposed road improvements (not the transit proposals) will require acquisition of property in communities that have minorities and/or low-income people (i.e., those below the poverty level as established by the federal government) (Figure 2-6). Thirteen new or widened roadway projects will be in these sensitive areas under Alternative 1. No sensitive areas would be similarly affected by the transit option (Alternative 2).

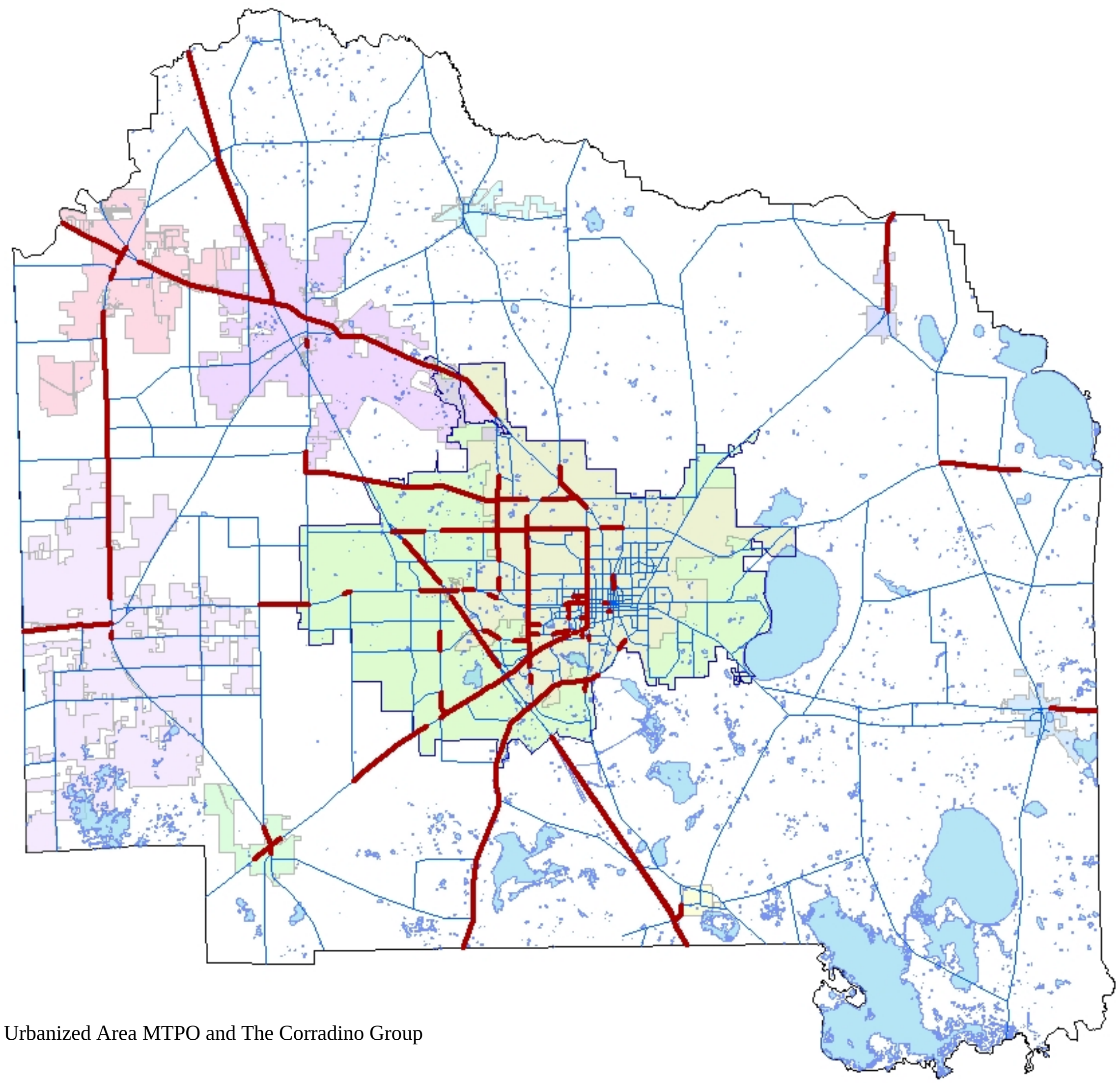
- Change in Travel Time – The MTPO selected 30 pairs of origins-destinations to compare the travel time under various conditions (Figure 2-7). Overall, compared to the E+C system in 2025, Alternative 1 decreases travel times between 13 origin-destination pairs and increases travel times between five O-D pairs. A substantial change is considered a difference of five percent (Table 2-4). Alternative 2 has a much smaller positive effect and a greater negative impact on these travel times.

Figure 2-1
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Failing Roads Today




Source: Gainesville Urbanized Area MTPO and The Corradino Group

Figure 2-2
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Failing Roads 2025



Source: Gainesville Urbanized Area MTPO and The Corradino Group

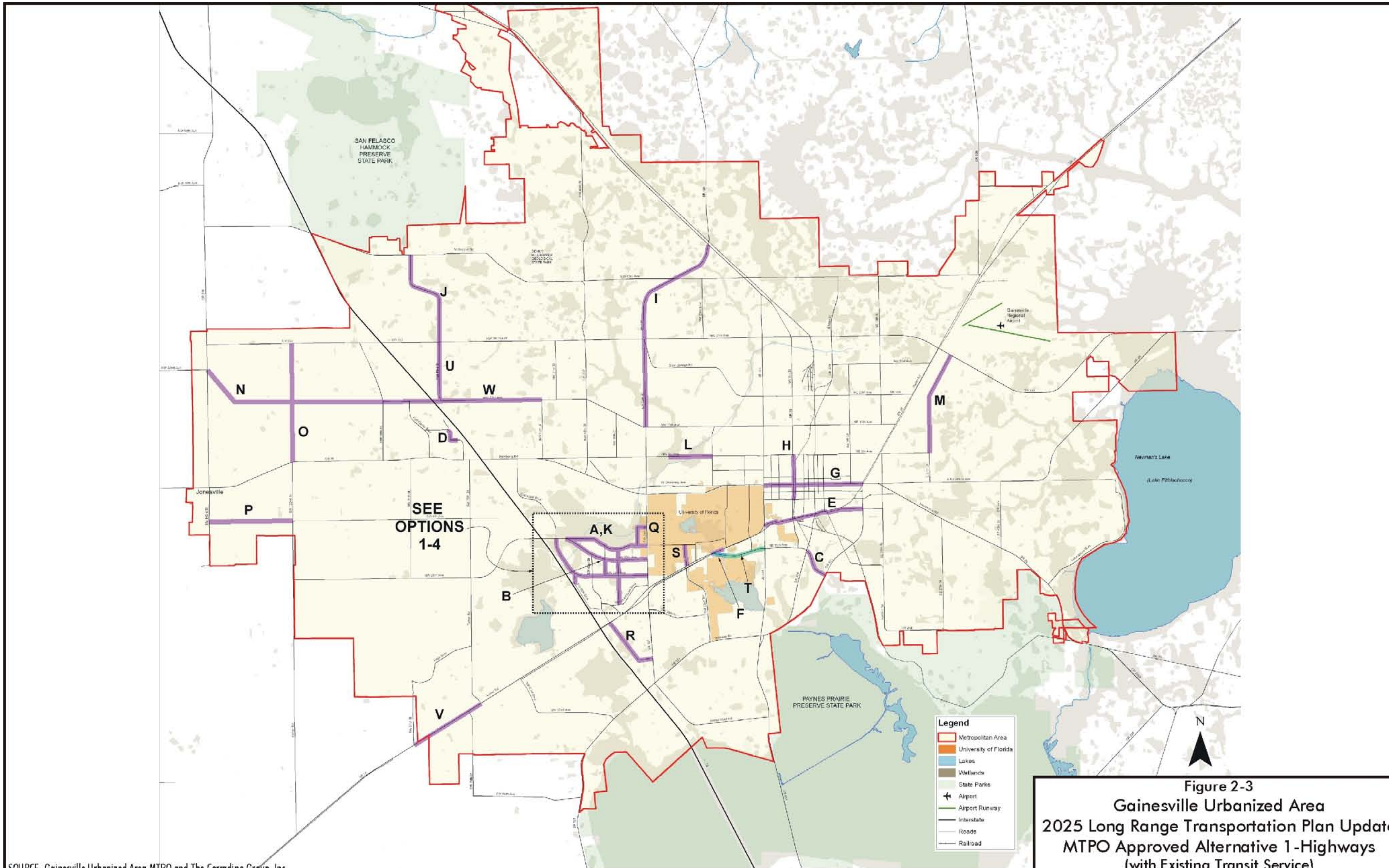



Figure 2-3
Gainesville Urbanized Area
2025 Long Range Transportation Plan Update
MTPO Approved Alternative 1-Highways
(with Existing Transit Service)

SOURCE: Gainesville Urbanized Area MTPO and The Corradino Group, Inc.

Table 2-1
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
MTPO-approved Alternative 1 – Highways
(with Existing Transit Service)

| Project | Roadway | Description |
|---|---|---|
| A | Hull Road right-of-way – SW 34th Street west to SW 62nd Boulevard | Acquire right-of-way wide enough for four lanes |
| B | SW 20th Avenue from SW 34th Street west to SW 62nd Boulevard | Reconstruct with sidewalks, roundabouts, turn lanes, raised medians, bus bays and transit super stops |
| C | SE 16th Avenue from Williston Road west to Main Street | Widen from two to four lanes |
| D | NW 76th Boulevard extension | New two-lane to Fort Clarke Boulevard |
| E | Depot Avenue from Williston Road west to U.S. 441 | Reconstruct existing two lanes |
| F | Archer Road at SW 16th Avenue | Reconstruct intersection |
| G | University Avenue from Waldo Road west to U.S. 441 | Reduce from four lanes to two lanes with on-street parking |
| $H_1$ | West 6th Street from SW 4th Avenue north to NW 8th Avenue | Reconstruct to include roundabouts |
| $H_2$ | West 6th Street from SW 4th Avenue north to NW 8th Avenue | Widen to four lanes |
| I | NW 34th Street from NW 16th Avenue north to U.S. 441 | Widen to add center turn lane |
| J | NW 83rd Street extension from NW 39th Avenue north to Millhopper Road | New two-lane road |
| K | Hull Road extension from SW 34th Street west to SW 62nd Boulevard<br><br>Eliminate section of SW 20th Avenue just east of Hogtown Creek | New two-lane<br><br>East/west trips now load on Hull Road extension |
| L | NW 8th Avenue from NW 23rd Street to NW 31st Drive | Reduce from four lanes to two lanes |
| M | NE 27th Street extension from NE 8th Avenue north to NW 39th Avenue | New two-lane |
| N | NE 23rd Avenue extension from NW 98th Street to west County Road 241 | Protect right-of-way |
| O | NW 122nd Street extension from State Road 26 north to NW 39th Avenue | Protect right-of-way |
| P | NW 8th Avenue extension from SW 122nd Street west to SW 143rd Street | Protect right-of-way |
| Q | Radio Road extension west and south to Hull Road | New two-lane |
| R | SW 40th Boulevard extension south of Archer Road to SW 34th Street | New two-lane |
| S | SW 23rd Terrace extension north to Hull Road | New two-lane |
| T | SW 16th Avenue from Archer Road east to U.S. 441 | Widen to six lanes (may only need to be restriped) |
| U | NW 83rd Street from NW 23rd Avenue to NW 39th Avenue | Widen to four lanes |
| V | Archer Road from GMA Boundary to Tower Road | Widen to four lanes |
| W | NW 23rd Avenue from NW 98th Street to NW 43rd Street | Widen to four lanes |

Source: Gainesville Urban Area MTPO

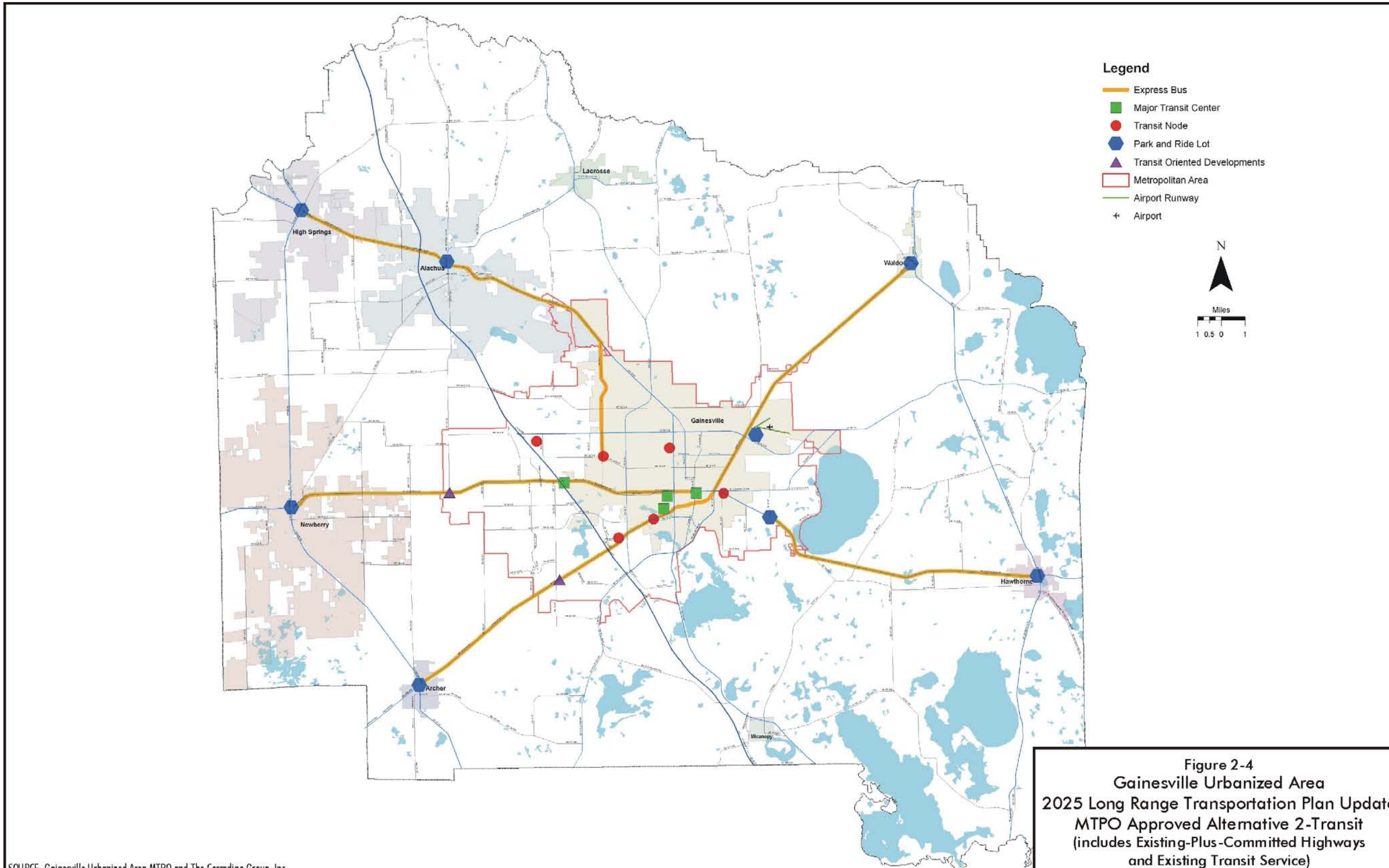



Figure 2-4
Gainesville Urbanized Area
2025 Long Range Transportation Plan Update
MTPO Approved Alternative 2-Transit
(includes Existing-Plus-Committed Highways
and Existing Transit Service)

Table 2-2
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Alternative 2 – Transit
(Includes Existing-Plus-Committed Highways)

| Routes | Weekday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|
| | Headways (minutes) | Hours of Operation[a] | Headways (minutes) | Hours of Operation[a] | Headways (minutes) | Hours of Operation[a] |
| Existing Fixed-Route Bus System | | | | | | |
| 1, 2, 5, 7, 8, 10, 11, 15, 24, 43, 75 | 15 | 74 | 30 | 44 | 30 | 24 |
| 21, 34, 36 | 10 | 111 | 30 | 44 | 30 | 24 |
| 9, 12, 13, 16, 20, 35 | 5 | 222 | 30 | 44 | 30 | 24 |
| Proposed Additional Bus Routes | | | | | | |
| 23, 25, 39, 44, 46, 62 | 15 | 74 | 30 | 44 | 30 | 24 |
| BRT – I-75/SR 24 Route | 15 | 74 | 30 | 44 | 30 | 24 |
| BRT – I-75/SR 20 Route | 15 | 74 | 30 | 44 | 30 | 24 |
| Proposed Park-N-Ride | | | | | | |
| SE 43rd Street – Gainesville | 15 | 8 | -- | -- | -- | -- |
| Airport – Gainesville | 15 | 8 | -- | -- | -- | -- |
| Alachua – Gainesville | 15 | 8 | -- | -- | -- | -- |
| Archer – Gainesville | 15 | 8 | -- | -- | -- | -- |
| Hawthorne – Gainesville | 15 | 8 | -- | -- | -- | -- |
| High Springs – Gainesville | 15 | 8 | -- | -- | -- | -- |
| Newberry – Gainesville | 15 | 8 | -- | -- | -- | -- |
| Waldo – Gainesville | 15 | 8 | -- | -- | -- | -- |

[a]Fixed-Route – Weekday, 5:00 a.m. – 3:00 a.m.; Saturday 5:00 a.m. – 3:00 a.m.; and Sunday 7:00 a.m. – 7:00 p.m.
Park-N-Ride – Weekday, 5:30 a.m. – 9:30 a.m. and 2:30 p.m. – 6:30 p.m. Numbers are daily hours for each identified route.

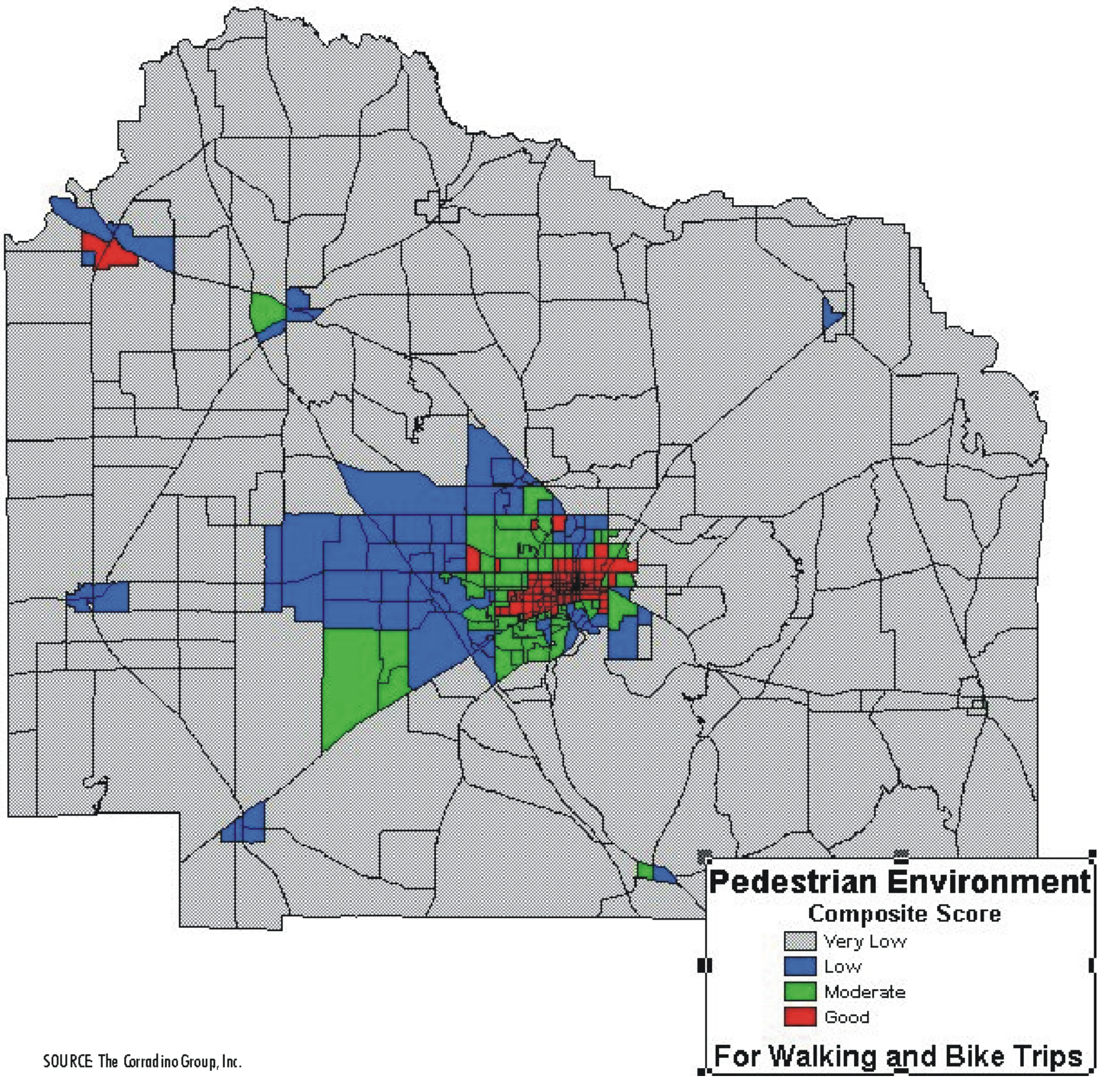
Source: Gainesville Urbanized Area MTPO

Table 2-3
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Modal Shares (Percent of All Person-Trips)

| | | 2025 Trips | | | | | Percent of 2025 Trips | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| System | Mode / Area | Drive Alone | Shared Ride | Transit | Walk | Bike | Drive Alone | Shared Ride | Transit | Walk | Bike |
| E+C | Systemwide | 605,631 | 567,084 | 21,742 | 55,183 | 22,761 | 47.60% | 44.57% | 1.71% | 4.34% | 1.79% |
| | Downtown | 13,057 | 4,112 | 229 | 707 | 253 | 71.12% | 22.40% | 1.25% | 3.85% | 1.38% |
| | East | 113,163 | 60,038 | 6,630 | 20,051 | 6,634 | 54.80% | 29.07% | 3.21% | 9.71% | 3.21% |
| | University | 37,903 | 30,827 | 6,564 | 17,411 | 7,816 | 37.71% | 30.67% | 6.53% | 17.32% | 7.78% |
| Alternative 1 – Highway | Systemwide | 605,077 | 568,388 | 21,458 | 54,916 | 22,564 | 47.55% | 44.67% | 1.69% | 4.32% | 1.77% |
| | Downtown | 13,086 | 4,112 | 229 | 686 | 250 | 71.26% | 22.39% | 1.25% | 3.74% | 1.36% |
| | East | 113,299 | 60,091 | 6,606 | 19,896 | 6,612 | 54.87% | 29.10% | 3.20% | 9.63% | 3.20% |
| | University | 37,968 | 30,858 | 6,552 | 17,362 | 7,806 | 37.76% | 30.69% | 6.52% | 17.27% | 7.76% |
| Alternative 2 – Transit | Systemwide | 602,810 | 565,765 | 26,343 | 54,958 | 22,313 | 47.38% | 44.46% | 2.07% | 4.32% | 1.75% |
| | Downtown | 13,031 | 4,108 | 276 | 708 | 249 | 70.93% | 22.36% | 1.50% | 3.86% | 1.35% |
| | East | 112,259 | 59,796 | 7,884 | 19,898 | 6,484 | 54.41% | 28.98% | 3.82% | 9.64% | 3.14% |
| | University | 37,293 | 30,691 | 7,065 | 17,278 | 7,721 | 37.28% | 30.68% | 7.06% | 17.27% | 7.72% |

Source: The Corradino Group, Inc.

Figure 2-5
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Pedestrian Environment



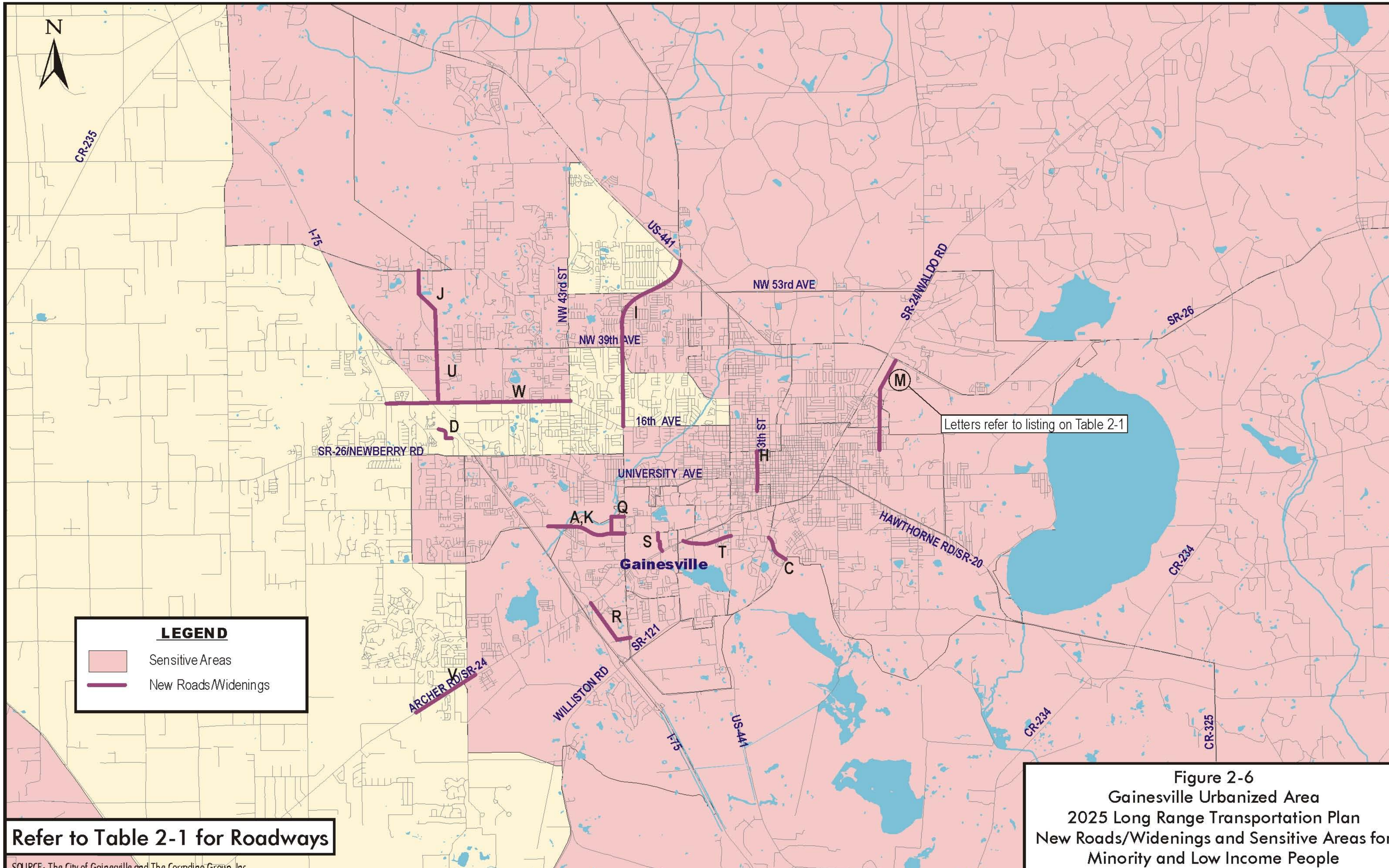



Figure 2-6
Gainesville Urbanized Area
2025 Long Range Transportation Plan
New Roads/Widenings and Sensitive Areas for
Minority and Low Income People

| Origin | Destination | From TAZ | To TAZ |
|---|---|---|---|
| High Springs | Shands | 424 | 101 |
| Newberry | Shands | 401 | 101 |
| Archer | Shands | 355 | 101 |
| Hawthorn | Shands | 366 | 101 |
| Waldo | Shands | 326 | 101 |
| LaCross | Shands | 349 | 101 |
| Micanopy | Shands | 292 | 101 |
| Oaks Mall | Downtown | 237 | 4 |
| Santa Fe CC | Butler Plaza | 262 | 207 |
| Butler Plaza | Downtown | 207 | 4 |
| Haile | Shands/UF | 258 | 101 |
| Haile | Oaks Mall | 258 | 237 |
| Haile | Butler Plaza | 258 | 207 |
| Hunters Crossing NW 54th Ave/NW 43rd St | Shands/UF | 268 | 101 |
| Hunters Crossing | Oaks Mall | 268 | 237 |
| Hunters Crossing | Butler Plaza | 268 | 207 |
| Five Points | Shands/UF | 113 | 101 |
| Five Points | Oaks Mall | 113 | 237 |
| Five Points | NW 13th St. Shp Dist. | 113 | 143 |
| Jonesville (CR241/SR26) | Shands/UF | 282 | 101 |
| Northwood (SR 121/ NW 123rd Terrace) | Shands/UF | 233 | 101 |
| Millhopper (NW23rd Ave /NW 43rd St) | Downtown | 229 | 4 |
| UF TAZ 141 | Airport | 141 | 224 |
| Five Points | Santa Fe Comm College | 113 | 262 |
| Forest Ridge (TAZ 152) | SR 331 a SR 121 | 152 | 152 |
| Highland Court (TAZ 162) | Shands/UF | 162 | 101 |
| Highland Court (TAZ 162) | Oaks Mall | 162 | 237 |
| I-75/SR 222 | I-75/SR 24 | 287 | 219 |
| Tower Rd North | Tower Road South | 257 | 256 |
| Haile | Airport | 258 | 224 |

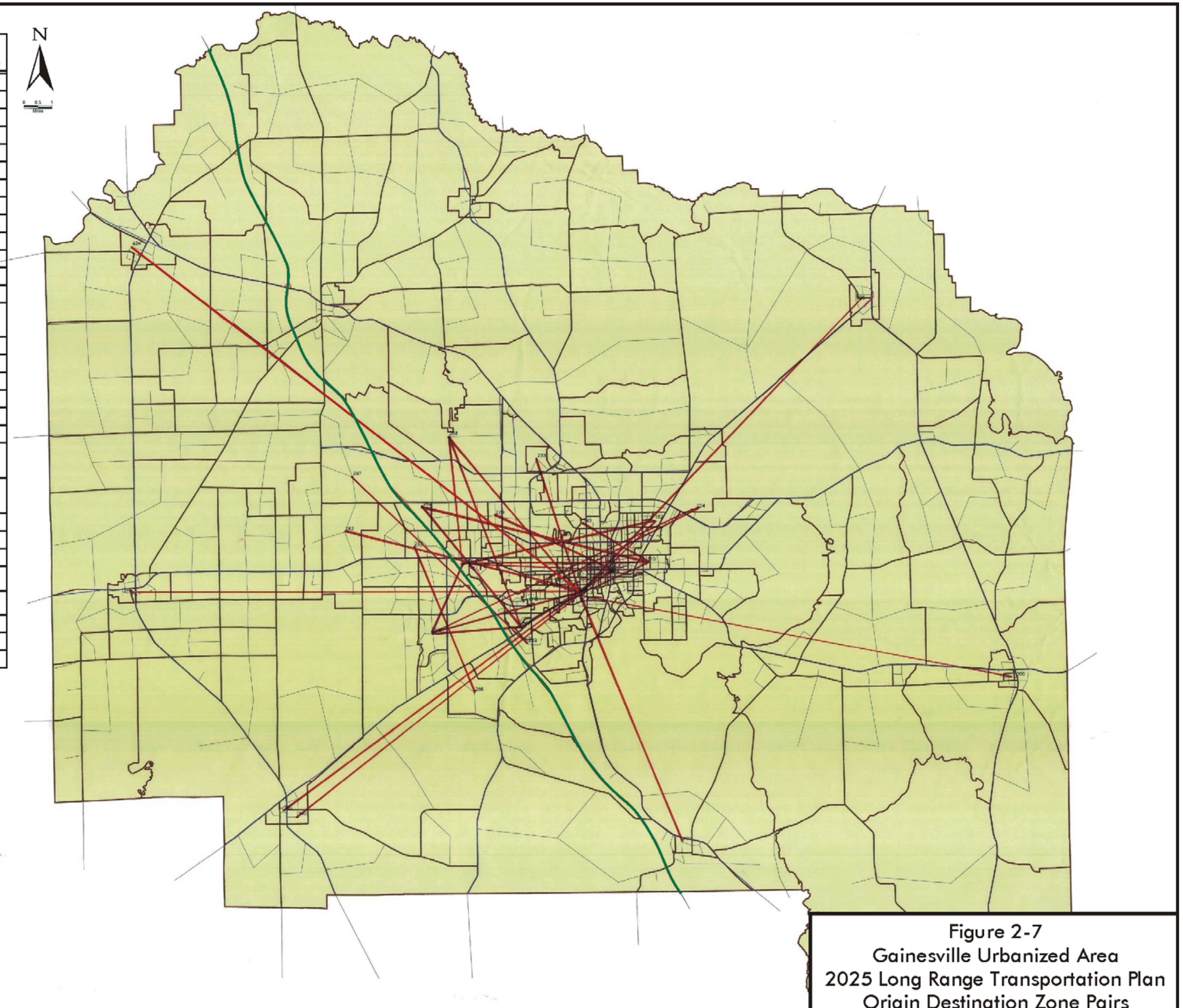



Figure 2-7
Gainesville Urbanized Area
2025 Long Range Transportation Plan
Origin Destination Zone Pairs

Table 2-4
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Travel Times Between Origin-Destination Pairs

| Origin | Destination | From TAZ | To TAZ | E+C | Alternative 1 | | | Alternative 2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Travel Time | Change | Change % | Travel Time | Change | Change % |
| High Springs | Shands | 424 | 101 | 56.51 | 57.69 | 1.18 | 2.1% | 57.60 | 1.09 | 1.9% |
| Newberry | Shands | 401 | 101 | 57.79 | 57.93 | 0.14 | 0.2% | 60.66 | 2.87 | 5.0% |
| Archer | Shands | 355 | 101 | 45.57 | 42.45 | -3.12 | -6.8% | 45.49 | -0.08 | -0.2% |
| Hawthorne | Shands | 366 | 101 | 36.68 | 35.72 | -0.96 | -2.6% | 36.38 | -0.30 | -0.8% |
| Waldo | Shands | 326 | 101 | 30.02 | 30.61 | 0.59 | 2.0% | 33.67 | 3.65 | 12.2% |
| LaCross | Shands | 349 | 101 | 46.56 | 43.42 | -3.14 | -6.7% | 46.47 | -0.09 | -0.2% |
| Micanopy | Shands | 292 | 101 | 27.30 | 23.66 | -3.64 | -13.3% | 23.61 | -3.69 | -13.5% |
| Oaks Mall | Downtown | 237 | 4 | 25.86 | 23.79 | -2.07 | -8.0% | 26.31 | 0.45 | 1.7% |
| Santa Fe CC | Butler Plaza | 262 | 207 | 42.78 | 22.10 | -20.68 | -48.3% | 41.78 | -1.00 | -2.3% |
| Butler Plaza | Downtown | 207 | 4 | 25.37 | 26.66 | 1.29 | 5.1% | 26.08 | 0.71 | 2.8% |
| Haile | Shands/UF | 258 | 101 | 36.30 | 36.52 | 0.22 | 0.6% | 37.97 | 1.67 | 4.6% |
| Haile | Oaks Mall | 258 | 237 | 21.43 | 20.93 | -0.50 | -2.3% | 21.65 | 0.22 | 1.0% |
| Haile | Butler Plaza | 258 | 207 | 15.80 | 17.07 | 1.27 | 8.0% | 15.75 | -0.05 | -0.3% |
| Hunters Crossing<br>NW 54th Ave/NW 43rd St. | Shands/UF | 268 | 101 | 38.02 | 35.56 | -2.46 | -6.5% | 38.68 | 0.66 | 1.7% |
| Hunters Crossing | Oaks Mall | 268 | 237 | 24.08 | 22.78 | -1.30 | -5.4% | 23.84 | -0.24 | -1.0% |
| Hunters Crossing | Butler Plaza | 268 | 207 | 28.88 | 28.02 | -0.86 | -3.0% | 28.11 | -0.77 | -2.7% |
| Five Points | Shands/UF | 113 | 101 | 13.29 | 14.02 | 0.73 | 5.5% | 16.93 | 3.64 | 27.4% |
| Five Points | Oaks Mall | 113 | 237 | 28.71 | 26.15 | -2.56 | -8.9% | 33.07 | 4.36 | 15.2% |
| Five Points | NW 13th St. Shp Dist. | 113 | 143 | 10.26 | 10.08 | -0.18 | -1.8% | 10.63 | 0.37 | 3.6% |
| Jonesville (CR 241/SR 26) | Shands/UF | 282 | 101 | 44.92 | 45.20 | 0.28 | 0.6% | 47.48 | 2.56 | 5.7% |
| Northwood (SR 121/NW 123rd Ter.) | Shands/UF | 233 | 101 | 21.15 | 30.64 | 9.49 | 44.9% | 24.37 | 3.22 | 15.2% |
| Millhopper (NW 23rd Ave/NW 43rd St.) | Downtown | 229 | 4 | 21.55 | 22.73 | 1.18 | 5.5% | 21.00 | -0.55 | -2.6% |
| UF TAZ 141 | Airport | 141 | 224 | 21.48 | 20.72 | -0.76 | -3.5% | 20.94 | -0.54 | -2.5% |
| Five Points | Santa Fe Comm. College | 113 | 262 | 47.72 | 33.60 | -14.12 | -29.6% | 48.09 | 0.37 | 0.8% |
| Forest Ridge (TAZ 152) | SR 331 at SR 121 | 152 | 152 | 1.66 | 1.70 | 0.04 | 2.4% | 1.64 | -0.02 | -1.2% |
| Highland Court (TAZ 162) | Shands/UF | 162 | 101 | 17.54 | 17.89 | 0.35 | 2.0% | 20.82 | 3.28 | 18.7% |
| Highland Court (TAZ 162) | Oaks Mall | 162 | 237 | 30.00 | 28.46 | -1.54 | -5.1% | 27.74 | -2.26 | -7.5% |
| I-75/SR 222 | I-75/SR 24 | 287 | 219 | 29.30 | 26.53 | -2.77 | -9.5% | 28.75 | -0.55 | -1.9% |
| Tower Rd North | Tower Road South | 257 | 256 | 28.67 | 25.00 | -3.67 | -12.8% | 30.80 | -2.13 | 7.4% |
| Haile | Airport | 258 | 224 | 54.07 | 44.82 | -9.25 | -17.1% | 53.57 | -0.50 | -0.9% |

Source: The Corradino Group, Inc.

| Summary | | |
|---|---|---|
| Links that decrease by at least 5% | 13 | 2 |
| Links that increase by at least 5% | 5 | 7 |
| No Change | 12 | 21 |

- Neighborhood Disruption – Roadway segments were chosen by the MTPO staff in 20 neighborhoods or other sensitive areas (Figure 2-8). For each of these segments of road, speed and congestion (Table 2-5) changes were calculated. Alternative 1 is associated with a decrease (by at least five percent) in speed on two of the 20 key links and increases on six. Alternative 2 is associated with a decrease in speed on five links and increases on four.

  In terms of congestion, defined as a ratio of volume-to-capacity, Alternative 1 is forecast to experience a decrease in congestion on four of the 20 key links and an increase on five, compared to the E+C system. Alternative 2 is associated with no decrease in congestion on any of the 20 key links and influences an increase on three of these roadway segments.

- Carbon Monoxide Concentrations – Twenty locations were selected by the MTPO staff as sensitive from an air quality standpoint (refer to Figure 2-8). Using travel volumes and vehicle mix as input to the models accepted for use by the U.S. Environmental Protection Agency (EPA), known as MOBILE 6.2 and CALQHC, carbon monoxide concentrations were calculated at these 20 locations. The standards for various conditions, as established by EPA, are not exceeded at any location for either Alternative 1 or 2 (Table 2-6).

- Property Acquisition – The roadway proposals shown on Figure 2-6 will require acquisition of about 90 acres. The largest needs for additional land are related to the NW 23rd Avenue proposed widening from NW 98th Street to NW 43rd Street (16.8 acres) (Project W on Table 2-7) and the proposed improvements to Hull Road (14 acres) (Projects A and K on Table 2-7).

  No property acquisition is required for Alternative 2.

- Need for Parkland – The proposed road projects and those considered for widening are shown on Figure 2-9 in relation to parks and recreation areas. No park property will be required for either Alternatives 1 or 2.

- Noise – Noise from roadway traffic was calculated at each of the locations shown on Figure 2-8. Noise at or below 66 dBA (decibels on the A scale) is considered acceptable at these locations. Under E+C conditions each is expected to be exceeded in six of the 20 locations (Table 2-8). Alternative 1 would be associated with noise that exceeds 66 dBA at five of the 20 key locations. But, there will be no perceptible change in noise (a 3 dBA change) at any location compared to the E+C conditions.

  Alternative 2 would also be associated with noise at five of the 20 key locations which exceed 66 dBA. But, again, there would be no perceptible change in noise at any of these locations compared to E+C conditions or Alternative 1.

- Crash Experience – The potential for crashes associated with traffic in 2025 was calculated for 20 key links on the roadway system shown on Figure 2-8 (Table 2-9). Alternative 2 is expected to be associated with a decrease in crashes of at least five percent at five of the 20 key locations and an increase at two, compared to E+C conditions. Alternative 2 is expected to be related to a decrease in crashes at four of the 20 key locations and an increase at three.

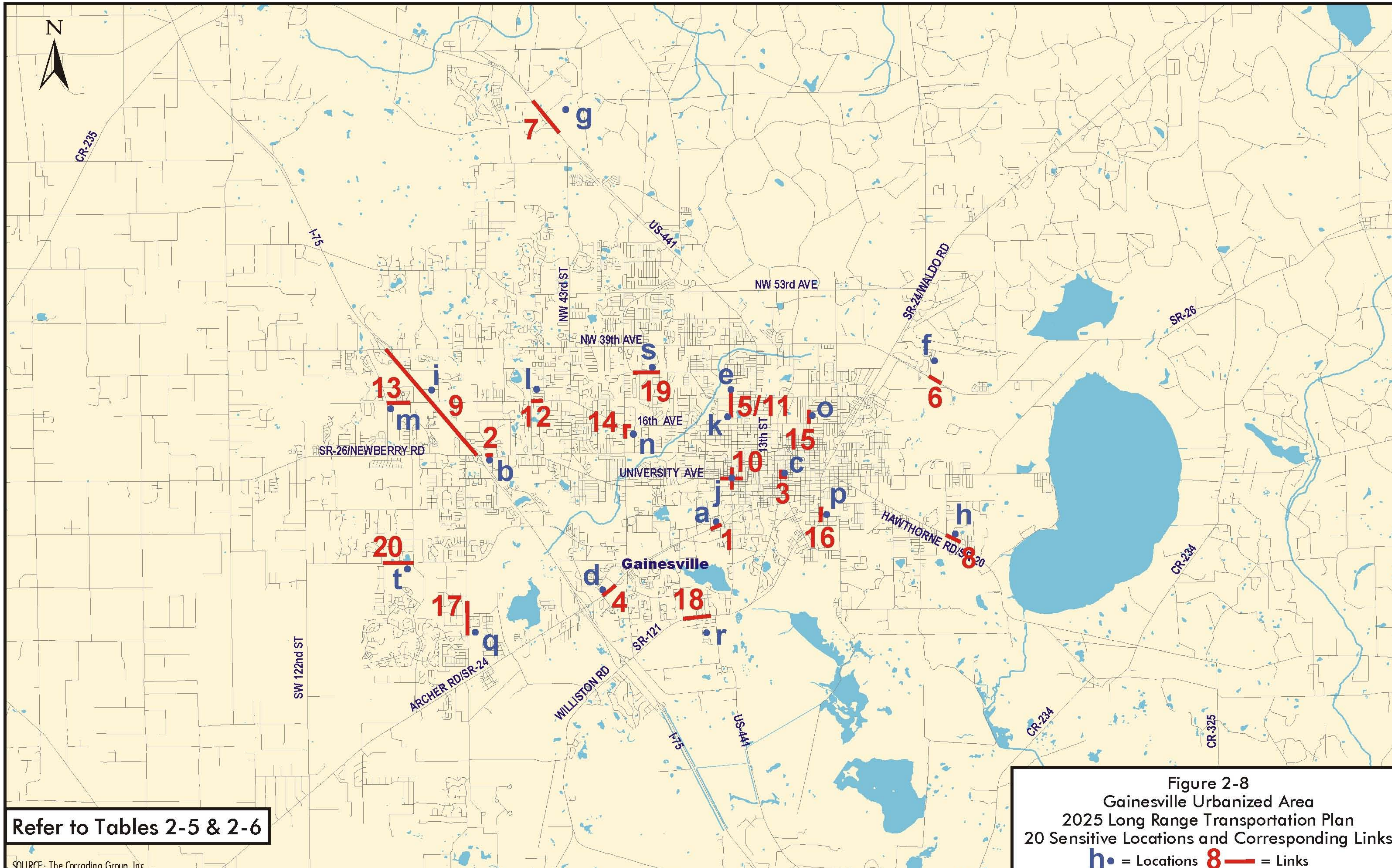



Figure 2-8
Gainesville Urbanized Area
2025 Long Range Transportation Plan
20 Sensitive Locations and Corresponding Links

Table 2-5
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Neighborhood Disruption Increase from E+C

| | | | E + C | | Alternative 1 | | | Alternative 2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Link No.[a] | Location | Sub-Location[b] | Average Speed | V/C | Average Speed | Speed Change % from E+C | V/C Change % from E+C | Average Speed | Speed Change % from E+C | V/C Change % from E+C |
| 1 | Shands Hospital | 1 | 15.67 | 0.75 | 25.93 | 65.5% | -5.3% | 19.94 | 27.2% | 9.3% |
| 2 | North Florida Regional Hospital | 2 | 5.57 | 1.15 | 5.47 | -1.8% | -3.5% | 4.84 | -13.1% | -0.9% |
| 3 | City Hall | 31 | 23.75 | 0.67 | 17.87 | -24.8% | 50.7% | 25.26 | 6.4% | -4.5% |
| 3 | | 32 | | 0.53 | | | 20.8% | | | 5.7% |
| 4 | Butler Plaza | 4 | 30.93 | 1.25 | 31.56 | 2.0% | -0.8% | 30.65 | -0.9% | 1.6% |
| 5 | North 13th Street Shopping District | 5 | 23.22 | 1.22 | 23.43 | 0.9% | -1.6% | 23.48 | 1.1% | -1.6% |
| 6 | Airport | 6 | 40.78 | 0.48 | 40.23 | -1.3% | 0.0% | 40.34 | -1.1% | -2.1% |
| 7 | Deerhaven | 71 | 38.98 | 1.17 | 38.87 | -0.3% | -2.6% | 37.76 | -3.1% | 0.0% |
| 8 | Eastside High School | 8 | 42.74 | 0.68 | 42.73 | 0.0% | -1.5% | 42.70 | -0.1% | 0.0% |
| 9 | Santa Fe Community College | 91 | 52.24 | 0.85 | 51.44 | -1.5% | 0.0% | 51.58 | -1.3% | 1.2% |
| 9 | | 92 | | 0.85 | | | 1.2% | | | 0.0% |
| 10 | University Blvd and US 441 (13th Street) | 101 | 14.78 | 1.08 | 14.53 | -1.7% | 16.7% | 17.27 | 16.9% | 3.7% |
| 10 | | 102 | | 2.06 | | | -1.0% | | | -1.0% |
| 11 | Gainesville High School | 11 | 23.94 | 1.17 | 25.24 | 5.4% | -0.9% | 24.53 | 2.5% | 0.9% |
| 12 | Buchholz High School | 121 | 13.79 | 0.50 | 20.46 | 48.4% | -28.0% | 11.13 | -19.3% | 4.0% |
| 13 | Ft Clark Middle School | 13 | 37.93 | 0.94 | 38.56 | 1.7% | -4.3% | 37.76 | -0.4% | -2.1% |
| 14 | Westwood Middle School | 141 | 17.31 | 0.75 | 19.58 | 13.1% | -4.0% | 16.15 | -6.7% | -1.3% |
| 14 | | 142 | | 0.97 | | | -1.0% | | | 15.5% |
| 15 | Bishop Middle School | 15 | 28.08 | 0.44 | 31.22 | 11.2% | -9.1% | 30.73 | 9.4% | -4.5% |
| 16 | Lincoln Middle School | 16 | 34.84 | 0.75 | 34.42 | -1.2% | 2.7% | 34.45 | -1.1% | 1.3% |
| 17 | Kanapaha Middle School | 17 | 21.93 | 0.92 | 21.94 | 0.0% | -3.3% | 19.95 | -9.0% | 1.1% |
| 18 | Idylwild Elementary School | 18 | 23.15 | 1.10 | 27.43 | 18.5% | -8.2% | 23.58 | 1.9% | 0.0% |
| 19 | Glen Springs Elementary School | 19 | 29.73 | 0.34 | 29.71 | -0.1% | 5.9% | 30.11 | 1.3% | 2.9% |
| 20 | Chiles Elementary School | 20 | 21.75 | 0.59 | 15.94 | -26.7% | 6.8% | 19.01 | -12.6% | -3.4% |

| Summary | | | | | |
|---|---|---|---|---|---|
| Links that Decrease by at least 5% | 2 | 4 | | 5 | 0 |
| Links that Increase by at least 5% | 6 | 5 | | 4 | 3 |
| No Change | 12 | 11 | | 11 | 17 |

[a] Refer to Figure 2-8 for Roadway Link by number.
[b] Sub-location is different for main location number in some cases because some locations are defined by more than one link.

Table 2-6
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Air Quality Analysis

| Location No. | Location | CALQHC CO Model Results (ppm) | | | | Estimated 1-hr CO Concentrations (ppm)[b,c] | | | | | | Estimated 8-hr CO Concentrations (ppm)[a,b] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing 2000 | E+C 2025 | Alt 1A 2025 | Alt. 2A 2025 | Background 1-hr CO | Existing 2000 | E+C 2025 | Alt 1A 2025 | Alt 2A 2025 | Standard | Background 8-hr CO | Existing 2000 | E+C 2025 | Alt 1A 2025 | Alt 2A 2025 | Standard |
| a | Shands Hospital | 1.8 | 0.7 | 0.5 | 0.6 | 3.6 | 5.4 | 4.3 | 4.1 | 4.2 | 35.5 | 2.0 | 3.0 | 2.4 | 2.4 | 2.3 | 9.5 |
| b | North Florida Regional Hospital | 0.5 | 0.2 | 0.2 | 0.2 | 3.6 | 4.1 | 3.8 | 3.8 | 3.8 | 35.5 | 2.0 | 2.3 | 2.1 | 2.1 | 2.1 | 9.5 |
| c | City Hall | 4.6 | 3.3 | 3.3 | 3.3 | 3.6 | 8.2 | 6.9 | 6.9 | 6.9 | 35.5 | 2.0 | 4.5 | 3.8 | 3.8 | 3.8 | 9.5 |
| d | Butler Plaza | 0.4 | 0.2 | 0.2 | 0.2 | 3.6 | 4.0 | 3.8 | 3.8 | 3.8 | 35.5 | 2.0 | 2.2 | 2.1 | 2.1 | 2.1 | 9.5 |
| e | North 13th Street Shopping District | 2.5 | 1.1 | 1.2 | 1.2 | 3.6 | 6.1 | 4.7 | 4.8 | 4.8 | 35.5 | 2.0 | 3.4 | 2.6 | 2.6 | 2.6 | 9.5 |
| f | Airport | 0.9 | 0.4 | 0.4 | 0.4 | 3.6 | 4.5 | 4.0 | 4.0 | 4.0 | 35.5 | 2.0 | 2.5 | 2.2 | 2.2 | 2.2 | 9.5 |
| g | Deerhaven | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 3.6 | 3.8 | 3.6 | 3.6 | 35.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 9.5 |
| h | Eastside High School | 0.2 | 0.0 | 0.0 | 0.0 | 3.6 | 3.8 | 3.8 | 3.6 | 3.6 | 35.5 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 9.5 |
| i | Santa Fe Community College | 1.3 | 0.6 | 0.6 | 0.6 | 3.6 | 4.9 | 4.2 | 4.2 | 4.2 | 35.5 | 2.0 | 2.7 | 2.3 | 2.3 | 2.3 | 9.5 |
| j | University Blvd. and U.S. 441 (13th Street) | 7.0 | 2.7 | 2.6 | 2.6 | 3.6 | 10.6 | 6.3 | 6.2 | 6.2 | 35.5 | 2.0 | 5.8 | 3.5 | 3.4 | 3.4 | 9.5 |
| k | Gainesville High School | 0.9 | 0.4 | 0.4 | 0.4 | 3.6 | 4.5 | 4.0 | 4.0 | 4.0 | 35.5 | 2.0 | 2.5 | 2.2 | 2.2 | 2.2 | 9.5 |
| l | Buchholz High School | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 3.6 | 3.8 | 3.6 | 3.6 | 35.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 9.5 |
| m | Ft. Clark Middle School | 0.6 | 0.4 | 0.4 | 0.4 | 3.6 | 4.2 | 4.0 | 4.0 | 4.0 | 35.5 | 2.0 | 2.3 | 2.2 | 2.2 | 2.2 | 9.5 |
| n | Westwood Middle School | 0.4 | 0.2 | 0.2 | 0.2 | 3.6 | 4.0 | 3.8 | 3.8 | 3.8 | 35.5 | 2.0 | 2.2 | 2.1 | 2.1 | 2.1 | 9.5 |
| o | Bishop Middle School | 0.2 | 0.0 | 0.0 | 0.0 | 3.6 | 3.8 | 3.6 | 3.6 | 3.6 | 35.5 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 9.5 |
| p | Lincoln Middle School | 0.7 | 0.5 | 0.5 | 0.5 | 3.6 | 4.3 | 4.1 | 4.1 | 4.1 | 35.5 | 2.0 | 2.4 | 2.3 | 2.3 | 2.3 | 9.5 |
| q | Kanapaha Middle School | 0.2 | 0.0 | 0.0 | 0.0 | 3.6 | 3.8 | 3.6 | 3.6 | 3.6 | 35.5 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 9.5 |
| r | Idylwild Elementary | 0.2 | 0.2 | 0.2 | 0.2 | 3.6 | 3.8 | 3.8 | 3.8 | 3.8 | 35.5 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 9.5 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School | | | | | | | | | | | | | | | | |
| s | Glen Springs Elementary School | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 3.6 | 3.6 | 3.8 | 3.6 | 35.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 9.5 |
| t | Chiles Elementary School | 0.1 | 0.0 | 0.2 | 0.2 | 3.6 | 3.7 | 3.8 | 3.8 | 3.8 | 35.5 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 9.5 |

[a] Refer to Figure 2-8.
[b] Emission factors were generated using MOBILE 6.2.
[c] ppm = parts per million.

Source: The Corradino Group, Inc.

Table 2-7
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Right-of-Way for New Roads and Widenings

| Project[a] | Roadway | Additional Lanes | Length (feet) | Width (feet)[b] | Acres |
|---|---|---|---|---|---|
| J | NW 83rd Street extension from NW 39th Avenue north to Millhopper Road | 2 | 9,765 | 40 | 9.0 |
| U | NW 83rd Street from NW 23rd Avenue to NW 39th Avenue | 2 | 5,285 | 40 | 4.9 |
| W | NW 23rd Avenue from NW 98th Street to NW 43rd Street | 2 | 18,300 | 40 | 16.8 |
| I | NW 34th Street from NW 16th Avenue north to U.S. 441 | 1 | 19,635 | 20 | 9.0 |
| D | NW 76th Boulevard extension | 2 | 1,550 | 40 | 1.4 |
| A/K | Hull Road right-of-way – SW 34th Street west to SW 62nd Boulevard<br><br>Eliminate section of SW 20th Avenue just east of Hogtown Creek | 4 | 7,643 | 80 | 14.0 |
| Q | Radio Road extension west and south to Hull Road | 2 | 2,418 | 40 | 2.2 |
| V | Archer Road from GMA boundary to Tower Road | 2 | 7,116 | 40 | 6.5 |
| R | SW 40th Boulevard extension south of Archer Road to SW 34th Street | 2 | 5,835 | 40 | 5.4 |
| S | SW 23rd Terrace extension north to Hull Road | 2 | 2,120 | 40 | 1.9 |
| T | SW 16th Avenue from Archer Road east to U.S. 441 | 2 | 4,701 | 40 | 4.3 |
| H | W. 6th Street from SW 4th Avenue north to NW 8th Avenue | 2 | 3,987 | 40 | 3.7 |
| M | NE 27th Street extension from NW 8th Avenue north to NW 39th Avenue | 2 | 9,243 | 40 | 8.5 |
| C | SE 16th Avenue from Williston Road west to Main Street | 2 | 2,840 | 40 | 2.6 |
| | | | | Total | 90.2 |

[a] Refers to Figure 2-3 for roadway location.
[b] Assumes 20 feet of ROW for each new lane.

Source: The Corradino Group, Inc.

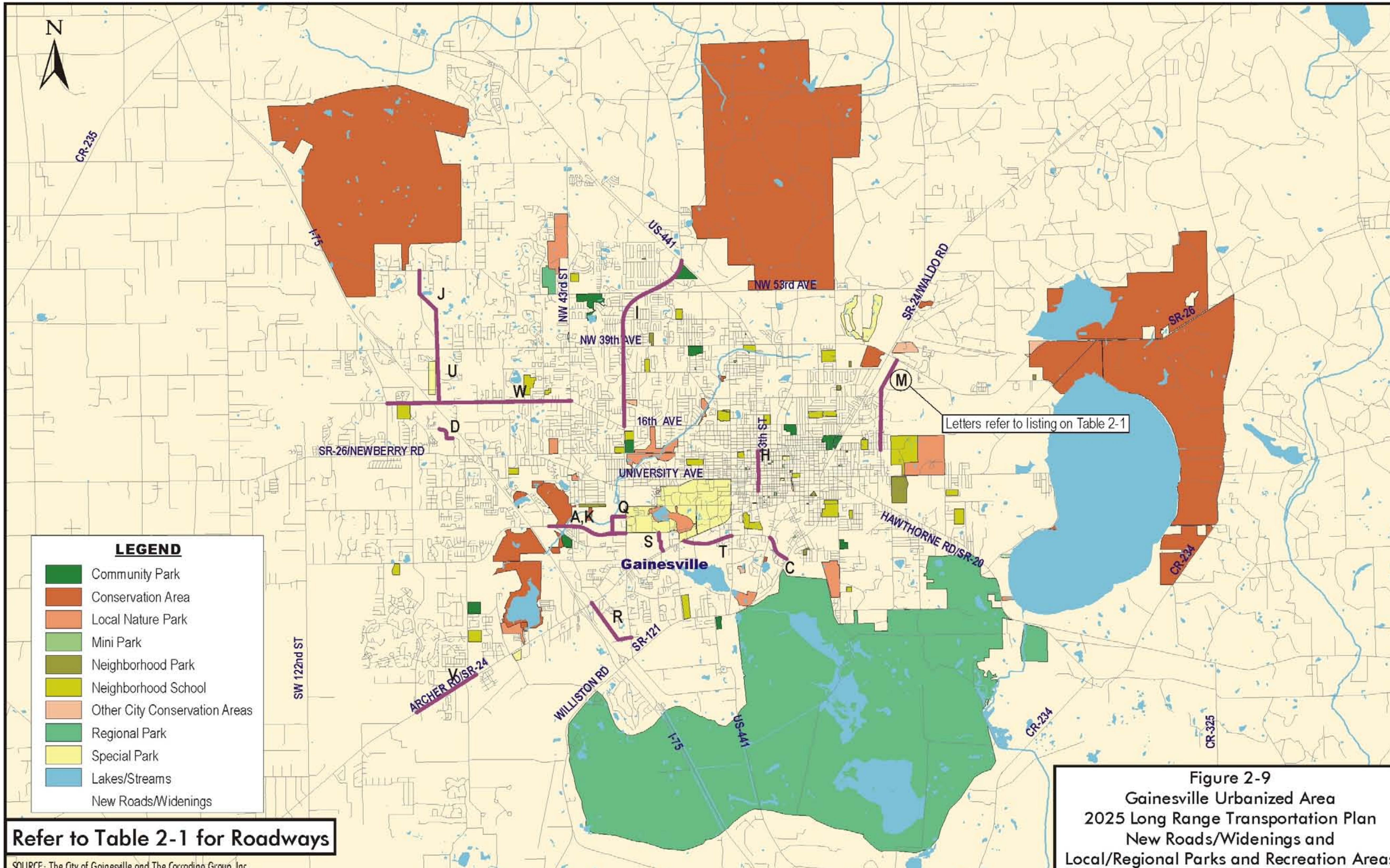



Figure 2-9
Gainesville Urbanized Area
2025 Long Range Transportation Plan
New Roads/Widenings and
Local/Regional Parks and Recreation Areas

Table 2-8
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Peak Hour Noise (expressed in dBA)

| Location[a] | Location | E+C | Alternative 1 Highway | Alternative 2 Transit |
|---|---|---|---|---|
| a | Shands Hospital | 69.8 | 69.0 | 69.6 |
| b | North Florida Regional Hospital | 63.1 | 63.0 | 63.1 |
| c | City Hall | 67.1 | 65.2 | 66.8 |
| d | Butler Plaza | 66.8 | 66.8 | 66.9 |
| e | North 13th Street Shopping District | 72.6 | 72.6 | 69.8 |
| f | Airport | N/A | N/A | N/A |
| g | Deerhaven | N/A | N/A | N/A |
| h | Eastside High School | N/A | N/A | N/A |
| i | Santa Fe Community College | 69.8 | 69.8 | 72.6 |
| j | University Blvd. and U.S. 441 (13th Street) | 72.5 | 72.5 | 72.4 |
| k | Gainesville High School | 62.1 | 62.2 | 62.2 |
| l | Buchholz High School | 52.4 | 54.7 | 52.8 |
| m | Ft. Clark Middle School | 62.9 | 62.8 | 62.9 |
| n | Westwood Middle School | 59.8 | 59.6 | 59.6 |
| o | Bishop Middle School | 59.1 | 58.4 | 58.9 |
| p | Lincoln Middle School | 64.7 | 64.7 | 64.7 |
| q | Kanapaha Middle School | 55.7 | 55.7 | 55.8 |
| r | Idylwild Elementary School | N/A | N/A | N/A |
| s | Glen Springs Elementary School | 52.3 | 51.9 | 52.1 |
| t | Chiles Elementary School | 58.2 | 58.7 | 58.2 |

[a] Refer to Figure 2-8 for location by letter.

N/A – Receptor location too distant from network roadway to model (>934 feet).

Source:  The Corradino Group, Inc.

Table 2-9
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Crash Analysis

| Link No.[a] | Location | Sub-Location[b] | Crash Rate[c] | E+C Number of Crashes/Mile Annually | Alternative 1 Number of Crashes/Mile Annually | Alternative 1 Change in Number of Crashes | Alternative 1 % Change in Crashes | Alternative 2 Number of Crashes/Mile Annually | Alternative 2 Change in Number of Crashes | Alternative 2 % Change in Crashes |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Shands Hospital | 1 | 5.8 | 69.30 | 56.15 | -13.15 | -19.0% | 61.26 | -8.04 | -11.6% |
| 2 | North Florida Regional Hospital | 2 | 5.8 | 125.89 | 128.13 | 2.24 | 1.8% | 130.19 | 4.30 | 3.4% |
| 3 | City Hall | 31 | 5.8 | 36.19 | 27.11 | -9.08 | -25.1% | 33.62 | -2.57 | -7.1% |
| 3 | | 32 | | | | | | | | |
| 4 | Butler Plaza | 4 | 5.8 | 155.25 | 152.69 | -2.55 | -1.6% | 157.14 | 1.89 | 1.2% |
| 5 | North 13th Street Shopping District | 5 | 5.8 | 81.88 | 82.32 | 0.45 | 0.5% | 81.98 | 0.10 | 0.1% |
| 6 | Airport | 6 | 5.8 | 34.62 | 36.10 | 1.48 | 4.3% | 35.90 | 1.27 | 3.7% |
| 7 | Deerhaven | 71 | 5.8 | 85.00 | 85.01 | 0.01 | 0.0% | 88.06 | 3.06 | 3.6% |
| 8 | Eastside High School | 8 | 5.8 | 45.80 | 46.60 | 0.80 | 1.7% | 46.67 | 0.87 | 1.9% |
| 9 | Santa Fe Community College | 91 | 1.06 | 14.01 | 14.14 | 0.14 | 1.0% | 14.12 | 0.12 | 0.8% |
| 9 | | 92 | | | | | | | | |
| 10 | University Blvd and U.S. 441 (13th Street) | 101 | 5.8 | 77.45 | 76.64 | -0.81 | -1.0% | 72.04 | -5.41 | -7.0% |
| 10 | | 102 | | | | | | | | |
| 11 | Gainesville High School | 11 | 5.8 | 80.29 | 79.56 | -0.72 | -0.9% | 79.84 | -0.45 | -0.6% |
| 12 | Buchholz High School | 121 | 8.63 | 31.40 | 50.56 | 19.16 | 61.0% | 33.57 | 2.17 | 6.9% |
| 13 | Ft. Clark Middle School | 13 | 5.8 | 93.21 | 91.77 | -1.44 | -1.5% | 94.49 | 1.28 | 1.4% |
| 14 | Westwood Middle School | 141 | 5.8 | 43.60 | 40.52 | -3.08 | -7.1% | 42.96 | -0.64 | -1.5% |
| 14 | | 142 | | | | | | | | |
| 15 | Bishop Middle School | 15 | 8.63 | 18.71 | 16.02 | -2.69 | -14.4% | 18.19 | -0.52 | -2.8% |
| 16 | Lincoln Middle School | 16 | 5.8 | 54.88 | 56.67 | 1.79 | 3.3% | 55.93 | 1.06 | 1.9% |
| 17 | Kanapaha Middle School | 17 | 5.29 | 42.89 | 43.15 | 0.26 | 0.6% | 45.07 | 2.18 | 5.1% |
| 18 | Idylwild Elementary School | 18 | 5.8 | 85.13 | 75.14 | -10.00 | -11.7% | 83.05 | -2.08 | -2.4% |
| 19 | Glen Springs Elementary School | 19 | 8.63 | 18.19 | 17.49 | -0.70 | -3.8% | 17.02 | -1.17 | -6.4% |
| 20 | Chiles Elementary School | 20 | 8.63 | 23.81 | 29.28 | 5.47 | 23.0% | 25.46 | 1.65 | 6.9% |

[a] Refers to Figure 2-8 for roadway link by number.
[b] Sub-Location is different from the main location number in some cases because some locations defined by more than one link.
[c] Rates, expressed in crashes per million vehicle miles of travel on a link, have been taken from Table 4-18 of "Characteristics of Urban Transportation Systems Revised Edition (Sep 1992)."

Source: The Corradino Group, Inc.

| Summary | Alternative 1 | Alternative 2 |
|---|---|---|
| Links that decrease by at least 5% | 5 | 4 |
| Links that increase by at least 5% | 2 | 3 |
| No Change | 13 | 13 |

- Roadway Congestion – Consistent with the discussion of “neighborhood disruption” issues, the congestion at 20 key roadway links is presented on Table 2-3. Alternative 1 is associated with an expected decrease in congestion on four of the 20 key links and an increase on five, compared to the E+C system. Alternative 2 would be associated with no decrease in congestion on any of the 20 key links and an increase on three.

# 3. Alternatives Evaluation

The data presented in Section 2, and summarized on Table 3-1, was studied by the consultant to "score" the performance of each alternative (Table 3-2). Realizing that changes in the transportation system will always have some effect, a score lower than 50 is considered a poor performance.

The results indicate the consultant believes Alternative 1 – Highway outperforms the transit option in the areas of: "Better Connecting Links in the Transit and Road Networks;" "Minimizing Neighborhood Disruption;" "Maximizing Safe Travel;" and, "Minimizing Road Congestion." But, the Highway option performs poorly in its effects on low-income and minority people and in its acquisition of property due to proposals for new and widened roads. The Transit option – Alternative 2 – performs much higher in each of these areas. But, these two evaluation factors have very low weights so they do have a lesser effect on the overall performance score of an alternative than the other factors. The transit alternative also performs better than the highway option in the highly weighted factor of "Providing Multiple Choices in Ways to Travel."

The combination of these performance scores and the evaluation factor weights assigned by the MTPO Commissioners, the Citizens/MTPO Committee members and the consultant are shown on Table 3-2. While the results of applying each group's evaluation factor weights shows a slight edge for one alternative over the other, the practical conclusion is that the two alternatives perform at virtually the same level across all three groups of evaluation weights. The challenge now is to blend elements of each plan to create a third alternative which will optimize the transportation system proposed for 2025. This will be done in concert with the MTPO staff/committees and Commissioners based on the detailed examination of data on key links/locations provided in Section 2 of this report.

Table 3-1
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Summary of Evaluation Data

| Evaluation Factor | E + C | Alternative 1 – Highway | Alternative 2 – Transit |
|---|---|---|---|
| Provide Multiple Choices in Ways to Travel | Systemwide<br>Drive Alone: 47.6%<br>Shared Ride: 44.6%<br>Transit: 1.7%<br>Non-Motorized: 6.1%<br>Downtown<br>Drive Alone: 72.0%<br>Shared Ride: 22.3%<br>Transit: 1.3%<br>Non-Motorized: 4.4%<br>University<br>Drive Alone: 39.6%<br>Shared Ride: 34.6%<br>Transit: 5.0%<br>Non-Motorized: 20.8%<br>East<br>Drive Alone: 54.8%<br>Shared Ride: 29.1%<br>Transit: 3.2%<br>Non-Motorized: 12.9% | Systemwide<br>Drive Alone: 47.6%<br>Shared Ride: 44.7%<br>Transit: 1.7%<br>Non-Motorized: 6.0%<br>Downtown<br>Drive Alone: 72.1%<br>Shared Ride: 22.3%<br>Transit: 1.3%<br>Non-Motorized: 4.3%<br>University<br>Drive Alone: 39.7%<br>Shared Ride: 34.6%<br>Transit: 5.0%<br>Non-Motorized: 20.7%<br>East<br>Drive Alone: 54.9%<br>Shared Ride: 29.1%<br>Transit: 3.2%<br>Non-Motorized: 12.8% | Systemwide<br>Drive Alone: 47.4%<br>Shared Ride: 44.5%<br>Transit: 2.0%<br>Non-Motorized: 6.1.%<br>Downtown<br>Drive Alone: 71.9%<br>Shared Ride: 22.2%<br>Transit: 1.5%<br>Non-Motorized: 4.4%<br>University<br>Drive Alone: 39.1%<br>Shared Ride: 34.6%<br>Transit: 5.6%<br>Non-Motorized: 20.7%<br>East<br>Drive Alone: 54.4%<br>Shared Ride: 29.0%<br>Transit: 3.8%<br>Non-Motorized: 12.8% |
| Prevent Unequal Impacts to Low-Income and Minority Communities | -- | 13 new or widened roadway projects in EJ sensitive areas. | Transit projects do not require property takings and will have beneficial impacts on EJ sensitive areas. |
| Better Connect Links in the Transit and Roadway Networks | -- | Travel times decrease for 13 of the 30 O-D pairs, increase for 5 O-D pairs, and remain unchanged for 12 O-D pairs. | Travel times decrease for 2 of the 30 O-D pairs, increase for 7 O-D pairs, and remain unchanged for 21 O-D pairs. |

Table 3-1 (continued)
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Summary of Evaluation Data

| Evaluation Factor | E + C | Alternative 1 – Highway | Alternative 2 – Transit |
|---|---|---|---|
| Minimize Neighborhood Disruption | -- | Traffic volume decreases at 5 of 20 locations, increases at 2 of the locations and remains unchanged at 13 locations. Speed decreases at 2 of 20 locations, increases at 6 of the locations and remains unchanged at 12 locations. | Traffic volume decreases at 4 of 20 locations, increases at 4 of the locations and remains unchanged at 12 locations. Speed decreases at 5 of 20 locations, increases at 4 of the locations and remains unchanged at 11 locations. |
| Maintain Good Air Quality | Maximum 1-Hour CO Concentration (ppm) at the 20 locations[a]<br>6.9<br>8-Hour CO Concentration (ppm) at the 20 Locations[b]<br>3.8 | Maximum 1-Hour CO Concentration (ppm) at the 20 locations[a]<br>6.9<br>8-Hour CO Concentration (ppm) at the 20 Locations[b]<br>3.8 | Maximum 1-Hour CO Concentration (ppm) at the 20 locations[a]<br>6.9<br>8-Hour CO Concentration (ppm) at the 20 Locations[b]<br>3.8 |
| Minimize Purchase of Private Property to Build Transportation Facilities | -- | Requires approximately 90 acres of ROW. | No ROW purchase required for improved transit. |
| Protect Open Spaces/Parks | -- | No acres of Open Spaces/Parks taken | No acres of Open Spaces/Parks taken |
| Control Noise at Sensitive Locations | 6 of 20 locations with noise levels at or above 66 dBa. | 5 of 20 locations with noise levels at or above 66 dBa. No locations with a perceptible change in noise levels. | 5 of 20 locations with noise levels at or above 66 dBa. No locations with a perceptible change in noise levels. |
| Maximize Safe Travel | -- | The annual crashes per mile on 5 of the 20 links decreases, 2 links experience an increase and 13 of the links remain unchanged. | The annual crashes per mile on 4 of the 20 links decreases, 3 links experience an increase and 13 of the links remain unchanged. |
| Minimize Road Congestion | -- | The V/C ratio was reduced on 4 of the 20 links, increased on 5 links and remained unchanged on 11 links. | The V/C ratio was reduced on none of the 20 links, increased on 3 links and remained unchanged on 17 links. |

[a]Standard = 35.5 ppm
[b]Standard = 9.5 ppm

Source: The Corradino Group, Inc.

Table 3-2
Gainesville Urbanized Area
Year 2025 Long-Range Transportation Plan Update
Evaluation of Alternatives

| Evaluation Factor | Performance Score | | MTPO Commissioners[a] | | | Citizens | | | Consultant | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alt. 1 | Alt. 2 | Weight | Alt. 1 | Alt. 2 | Weight | Alt. 1 | Alt. 2 | Weight | Alt. 1 | Alt. 2 |
| Provide multiple choices in ways to travel | 63.8 | 77.0 | 14.7% | 9.4 | 11.3 | 13.8% | 8.8 | 10.6 | 13.1% | 8.4 | 10.1 |
| Prevent unequal impacts to low-income and minority communities | 42.5 | 82.5 | 12.4% | 5.3 | 10.2 | 8.4% | 3.6 | 6.9 | 7.3% | 3.1 | 6.1 |
| Better connect links in the transit and road networks | 86.8 | 70.0 | 9.6% | 8.3 | 6.7 | 13.0% | 11.3 | 9.1 | 13.4% | 11.7 | 9.4 |
| Minimize neighborhood disruption | 78.3 | 68.8 | 9.5% | 7.4 | 6.5 | 7.7% | 6.0 | 5.3 | 11.2% | 8.8 | 7.7 |
| Maintain good air quality | 72.5 | 72.5 | 9.5% | 6.9 | 6.9 | 11.9% | 8.6 | 8.6 | 7.8% | 5.7 | 5.7 |
| Minimize purchase of private property to build transportation facilities | 48.8 | 78.8 | 2.4% | 1.2 | 1.9 | 5.1% | 2.5 | 4.0 | 6.5% | 3.2 | 5.1 |
| Protect open space/parks | 77.5 | 77.5 | 10.7% | 8.3 | 8.3 | 10.4% | 8.0 | 8.0 | 9.7% | 7.5 | 7.5 |
| Control noise at sensitive locations | 71.3 | 71.3 | 6.0% | 4.3 | 4.3 | 6.5% | 4.6 | 4.6 | 6.0% | 4.2 | 4.2 |
| Maximize safe travel | 77.0 | 66.3 | 14.5% | 11.2 | 9.6 | 13.0% | 10.0 | 8.6 | 13.0% | 10.0 | 8.6 |
| Minimize road congestion | 78.0 | 55.0 | 10.7% | 8.3 | 5.9 | 10.4% | 8.1 | 5.7 | 12.0% | 9.3 | 6.6 |
| Total Score | | | -- | 70.6 | 71.6 | -- | 71.5 | 71.4 | -- | 71.9 | 71.0 |

[a]MTPO rank and weight based only on ranking forms.

Source: The Corradino Group, Inc.

# 4. Project Ranking

The consultant ranked the projects in the Needs Plan, following the project scope of work and the evaluation method described in the Community Involvement Strategy. Projects were evaluated with respect to ten evaluation factors, which were scored by the MTPO, the Citizens Committee, and the consultant (see Table 1-6). The average value weighting scores were used in the evaluation.

At the time that the consultant was asked to evaluate the projects in the Needs Plan, the MTPO had compiled an initial set of projects (Table 4-1). The consultant evaluated the projects in this list. The MPO staff prepared the project cost estimates.

Corradino staff members familiar with the Needs Plan and evaluation factors scored the individual projects, based on:

- Estimated existing and future traffic (model results) and the Congestion Management System (CMS)
- Locations of environmentally sensitive areas (noise and air)
- Crash data from the Florida Department of Transportation
- Locations of low income and minority households (environmental justice)
- Costs
- Estimated right of way requirements

The sum of the evaluation scores is shown in Table 4-2. The score is the sum of the average values from the three evaluators multiplied by the weighting factor from Table 1-6.

The ranking of the projects was then based on the evaluation scores (benefits) from Table 4-2, divided by the costs shown in Table 4-1, with the exception of the first 4 projects, which were included as high priorities to ensure that earmarked funds can be used, and to upgrade the traffic management system. The projects included in the ranking on the basis of factors other than benefit/cost are:

- Hull Road Extension west from SW 34th Street (SR 121) to SW 43rd St: right-of-way acquisition only. This project was included to ensure that programmed state funds are not lost.
- Hull Road Bicycle/Pedestrian Trail – Earmarked “enhancements Funds”
- Bicycle/Pedestrian Crossing – Earmarked “enhancements Funds”
- Traffic Management System Upgrade - This (ITS) project would provide better traffic flow throughout the urbanized area by upgrading the computerized traffic control system hardware and software.
- Over the plan life (2006 –2025), and estimated $53,500,000 would be required for bus replacements for the existing service. The consultant believes that replacement buses should be programmed before service expansion.

Table 4-1
Projects and Costs

| Project | Facility | Description | Estimated Costs |
|---|---|---|---|
| A | Airport Access Road | new two lane access road off of Airport Road | $1,600,000 |
| C | SE 16th Avenue SE 11th St/SR 331 west to Main Street (CR 329) | widen from two to four lanes, including bike lanes | $5,277,602 |
| F | Archer Road (SR 24) at SW 16th Avenue | reconstruct intersection | $10,682,970 |
| G | NW 34th Street (SR 121) from NW 16th Avenue (CR 172) north to NW 13th Street (US 441) | widen to add center turn lane | $1,750,000 |
| H | Archer Road (SR 26) from GMA Boundary to Tower Road | widen to four lanes with bicycle lanes | $8,330,052 |
| I | University Avenue (SR 26) from Waldo Road (SR 331) west to 13th Street (US 441) | reduce from four lanes to two lanes with on-street parking | $4,050,289 |
| J | Hull Road Extension west from SW 34th Street (SR 121) to SW 20th Avenue (CR 30) | new two lane with a linear park within a 150ft ROW | $0 * |
| K/L | SW 43rd Street from SW 62nd Boulevard to SW Archer Road (SR 24) | widen to four lanes with in-street bike lanes | $18,675,496 |
| N | NW 83rd Street Extension from NW 39th Avenue (SR 222) north to Millhopper Road (CR 232) | new two lane road with bicycle lanes | $14,970,560 |
| O | SW 38th Terrace extension south from Hull Road extension to Windmeadows Boulevard with a roundabout at SW 24th Avenue | new two lane with in-street bike lanes | $5,927,863 |
| P | NE 27th Street Extension (CR 2043) from SE Hawthorne Road (SR 20) north to NE 39th Avenue (SR 222) | new two lane with bicycle lanes | $28,188,084 |
| T | NW 83rd Street from NW 23rd Avenue to NW 39th Avenue (SR 222) | widen to four lanes with bicycle lanes | $7,410,646 |
| U | NW 23rd Avenue from NW 98th Street to NW 55th Street | widen to four lanes with bicycle lanes | $28,328,000 |
| V | SW 20th Avenue west from SW 34th Street (SR 121) to SW 43rd St | reconstruct to include missing sidewalks, turn lanes, raised medians, bus bays, and transit "super stops" | $12,000,000 |
| X | Tower Road from Archer Road to SW 8th Avenue | Reconstruct with roundabouts | $25,000,000 |
| Y | Depot Avenue from Williston Road west to US 441 | reconstruct existing two lanes, including bicycle lanes | $15,838,306 |
| Z | W 6th Street from SW 4th Avenue north to NW 8th Avenue | reconstruct to include roundabouts | $5,705,569 |
| AA | SW 40th Boulevard Extension south of Archer Road (SR 24) to SW 34th Street (SR 121) | new two lane with bicycle lanes | $7,845,198 |
| BB | NE 19th Street/NE 19th Terrace from NE 3rd Avenue to NE 8th Avenue | reconstruct existing two lanes | $800,000 |
| CC | NE 19th Drive/NE 20 St from NE 3rd Ave to NE 8 Ave; NE25 St from E. Univ. to NE 8 St | reconstruct existing two lanes | $1,600,000 |
| DD | Radio Road Extension west and south to Hull Road | new two lane (subject to PD&E study) with bicycle lanes | $4,887,081 |
| EE | SW 23rd Terrace Extension north to Hull Road | new two lane with bicycle lanes | $3,254380 |

* Estimated costs for right-of-way acquisition only
Source: Gainesville MTPO and The Corradino Group

Table 4-2
Composite Project Evaluation Scores
Evaluation Factors

| Project | Length | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0.57 | 60 | 50 | 52 | 55 | 54 | 48 | 50 | 50 | 50 | 52 | 5274 |
| E | 0.55 | 67 | 48 | 75 | 53 | 60 | 47 | 50 | 50 | 50 | 52 | 5661 |
| F | 0.15 | 58 | 50 | 48 | 62 | 58 | 50 | 50 | 60 | 65 | 73 | 5819 |
| G | 3.68 | 50 | 52 | 50 | 42 | 58 | 42 | 45 | 50 | 80 | 67 | 5525 |
| H | 1.32 | 65 | 57 | 51 | 45 | 78 | 42 | 50 | 50 | 58 | 66 | 5766 |
| I | 1.68 | 58 | 58 | 57 | 72 | 40 | 50 | 50 | 50 | 65 | 45 | 5536 |
| J | 0.99 | 52 | 53 | 77 | 50 | 63 | 42 | 50 | 50 | 50 | 65 | 5640 |
| K/L | 1.95 | 67 | 50 | 68 | 50 | 67 | 42 | 50 | 50 | 50 | 63 | 5731 |
| N | 1.79 | 65 | 53 | 80 | 57 | 58 | 40 | 50 | 50 | 50 | 62 | 5839 |
| O | 0.87 | 63 | 50 | 68 | 57 | 55 | 44 | 50 | 50 | 58 | 57 | 5686 |
| P | 2.95 | 60 | 41 | 82 | 40 | 57 | 37 | 50 | 50 | 57 | 63 | 5593 |
| T | 1.00 | 63 | 53 | 75 | 50 | 82 | 42 | 50 | 42 | 50 | 61 | 5864 |
| U | 2.70 | 65 | 50 | 54 | 43 | 80 | 37 | 50 | 40 | 50 | 50 | 5370 |
| V | 1.04 | 60 | 50 | 75 | 50 | 55 | 50 | 50 | 50 | 50 | 60 | 5608 |
| X | 4.23 | 50 | 50 | 50 | 45 | 50 | 45 | 50 | 50 | 50 | 55 | 4994 |
| Y | 1.75 | 67 | 43 | 77 | 40 | 62 | 42 | 50 | 50 | 50 | 60 | 5588 |
| Z | 0.77 | 50 | 50 | 50 | 43 | 40 | 43 | 50 | 50 | 60 | 56 | 5019 |
| AA | 0.95 | 63 | 53 | 80 | 58 | 63 | 45 | 50 | 50 | 50 | 57 | 5849 |
| BB | 0.93 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 5010 |
| CC | 0.90 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 5010 |
| DD | 0.49 | 67 | 55 | 77 | 57 | 62 | 45 | 50 | 50 | 58 | 80 | 6204 |
| EE | 0.36 | 67 | 48 | 80 | 58 | 63 | 50 | 50 | 50 | 50 | 80 | 6125 |

Source: The Corradino Group

A list of projects and calculated priorities, based on the benefit/cost is shown in Table 4-3. This table also lists the estimated costs for each project and the cumulative cost for the projects, by priority order.

It is important to note that the MTPO estimates that only $38.5 million will be available for new construction between 2011 and 2025. Note also, that New Projects C and D would receive funding outside of this amount, and should be excluded from the totals.

The MTPO staff also developed a list of project priorities, based on their staff evaluation, which did not follow the consultant’s evaluation procedure. The MTPO staff evaluation as well as the consultant’s evaluation and evaluation from MTPO committees was presented to the MTPO. The MTPO used this information to define the cost-feasible plan.

## Table 4-3
## Consultant Project Priorities

| Rank | Project | Facility | Description | Dist. | Estimated Costs | Benefit/Cost | Cumulative Cost |
|---|---|---|---|---|---|---|---|
| 1 | J | Hull Road Extension west from SW 34th Street (SR 121) to SW 43rd St (ROW only) | new two lane with a linear park within a 150 ft ROW | 0.99 | $0 | | $0 |
| 2 | C | Hull Road Bicycle/Pedestrian Trail | to be added later | 0.99 | a | | $0 |
| 3 | D | Bicycle/Pedestrian Crossing | Grade Separated Crossing at Hull Road and SW 34th Street | 0.04 | a | | $0 |
| 4 | ITS-1 | Traffic Management System Upgrade | Systemwide | | $16,000,000 | | $16,000,000 |
| 5 | BB | NE 19th Street/NE 19th Terrace from NE 3rd Avenue to NE 8th Avenue | reconstruct existing two lanes | 0.93 | $800,000 | 22.2427 | $16,800,000 |
| 6 | A | Airport Access Road | new two lane access road off of Airport Road | 0.57 | $1,600,000 | 11.7070 | $18,400,000 |
| 7 | G | NW 34th Street (SR 121) from NW 16th Avenue (CR 172) north to NW 13th Street (US 441) | add center turn lanes | 3.68 | $1,750,000 | 11.2133 | $20,150,000 |
| 8 | CC | NE 19th Drive/NE 20 St from NE 3rd Ave to NE 8 Ave; NE25 St from E. Univ. to to NE 8 St | reconstruct existing two lanes | 0.90 | $1,600,000 | 11.1214 | $21,750,000 |
| 9 | EE | SW 23rd Terrace Extension north to Hull Road | new two lane with bicycle lanes | 0.36 | $3,254,380 | 6.6841 | $25,004,380 |
| 10 | I | University Avenue (SR 26) from Waldo Road (SR 331) west to 13th Street (US 441) | reduce from four lanes to two lanes with on-street parking | 1.68 | $4,050,289 | 4.8545 | $29,054,669 |
| 11 | RTS-1 | Bus replacement | Systemwide | | $9,445,331 | | $38,500,000 |
| 12 | DD | Radio Road Extension west and south to Hull Road | new two lane (subject to PD&E study) with bicycle lanes | 0.49 | $4,887,081 | 4.5089 | $43,387,081 |
| 13 | E | SE 16th Avenue SE 11th St/SR 331 west to Main Street (CR 329) | widen from two to four lanes, including bike lanes | 0.55 | $5,277,602 | 3.8098 | $48,664,683 |
| 14 | O | SW 38th Terrace extension south from Hull Road extension to Windmeadows Boulevard with a roundabout at SW 24th Avenue | new two lane with in-street bike lanes (excludes SW 20 Ave - SW 24 Ave by Alachua Co PW) | 0.55 | $5,927,863 | 3.4070 | $54,592,546 |

## Table 4-3 (continued)
## Consultant Project Priorities

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | Z | W 6th Street from SW 4th Avenue north to NW 8th Avenue | reconstruct to include roundabouts | 0.77 | $5,705,569 | 3.1246 | $60,298,115 |
| 16 | T | NW 83rd Street from NW 23rd Avenue to NW 39th Avenue (SR 222) | widen to four lanes with bicycle lanes | 1.00 | $7,410,646 | 2.8105 | $67,708,761 |
| 17 | AA | SW 40th Boulevard Extension south of Archer Road (SR 24) to SW 34th Street (SR 121) | new two lane with bicycle lanes | 0.95 | $7,845,198 | 2.6479 | $75,553,959 |
| 18 | H | Archer Road (SR 26) from GMA Boundary to Tower Road | widen to four lanes with bicycle lanes | 1.32 | $8,330,052 | 2.4584 | $83,884,011 |
| 19 | F | Archer Road (SR 24) at SW 16th Avenue | reconstruct intersection | 0.15 | $10,682,970 | 1.9345 | $94,566,981 |
| 20 | V | SW 20th Avenue west from SW 34th Street (SR 121) to SW 43rd St | reconstruct to include missing sidewalks, turn lanes, raised medians, bus bays, and transit "super stops" | 1.04 | $12,000,000 | 1.6597 | $106,566,981 |
| 21 | N | NW 83rd Street Extension from NW 39th Avenue (SR 222) north to Millhopper Road (CR 232) | new two lane road with bicycle lanes | 1.79 | $14,970,560 | 1.3853 | $121,537,541 |
| 22 | Y | Depot Avenue from Williston Road west to US 441 | reconstruct existing two lanes, including bicycle lanes | 1.75 | $15,838,306 | 1.2531 | $137,375,847 |
| 23 | K | SW 20 Ave from SW 43 St to SW 62 Blvd | widen to four lanes with in-street bike lanes | 0.62 | $5,949,296 | 1.0899 | $143,325,143 |
| 24 | L | SW 43rd Street from Sw 20th Ave to SW Archer Road (SR 24) | widen to four lanes with in-street bike lanes | 1.33 | $12,726,200 | 1.0899 | $156,051,343 |
| 25 | X | Tower Road from Archer Road to SW 8th Avenue | Reconstruct with roundabouts | 4.23 | $25,000,000 | 0.7095 | $181,051,343 |
| 26 | P | NE 27th Street Extension (CR 2043) from SE Hawthorne Road (SR 20) north to NE 39th Avenue (SR 222) | new two lane with bicycle lanes | 2.95 | $28,188,084 | 0.7048 | $209,239,427 |
| 27 | U | NW 23rd Avenue from NW 98th Street to NW 55th Street | widen to four lanes with bicycle lanes | 2.70 | $28,328,000 | 0.6732 | $237,567,427 |
| 28 | RTS-1 | Bus replacement | Systemwide | | $44,054,669 | | $281,622,096 |

a = Funded from other sources.

Source: The Corradino Group

Table 4-4
Project Priorities
MTPO Staff Recommendation (9/27/05)

| PRIORITY | NEEDS PLAN PROJECT | DESCRIPTION | TYPE WORK | ESTIMATED COSTS ($MILLIONS) [2004 DOLLARS] |
|---|---|---|---|---|
| 1 | J | **Hull Road Extension Right-Of-Way (ROW)**<br>FROM: SW 43rd Street<br>TO: SW 34th Street | $17 million ROW costs of which $4 million is currently funded in the FDOT 2006-2011 Work Program | $0.0<br>(Remaining $13 million needed for ROW to be donated) |
| - | C | **Hull Road Bike/Ped Facility**<br>FROM: SW 43rd Street<br>TO: SW 34th Street | Construct bike/ped trail with dedicated enhancement funds | $1.0 |
| - | D | **Hull Road Bike/Ped Facility Grade-Separated Crossing**<br>AT: SW 34th Street | Construct grade-separated crossing | $4.0 |
| 2 | ITS-1 | **Traffic Management System-Phase II**<br>AT: Systemwide | Install modernized traffic-control system (Phase I funded by City of Gainesville revenue bond) | $5.0 |
| 3 | V | **SW 20th Avenue**<br>FROM: SW 43rd Street<br>TO: SW 34th Street | Reconstruct as a two-lane divided road with instreet bikelanes, sidewalks and bus "Super Stops" | $12.0 |
| 4 | E | **SE 16th Avenue**<br>FROM: Main Street<br>TO: Williston Road | Widen existing facility from two to four lanes with instreet bikelanes | $5.3 |
| 5 | F | **SW 16th Avenue**<br>AT: Archer Road | Reconstruct intersection | $10.1 |
| 6 | RTS-1 | **Main Bus Replacement**<br>AT: Systemwide | Purchase replacement busses | $6.1 |
| | | | **TOTAL** | **$38.5** |

Shaded projects are funded with enhancement funds.

Source: Gainesville MTPO

# Appendix

## Gainesville Urbanized Area
## Year 2025 Long-Range Transportation
## Plan Update
## Goals and Objectives

# First Goal Statement

Develop and maintain a balanced transportation system that supports the economic vitality and quality of life in the Gainesville metropolitan area through expanded transportation choice, improved accessibility for motorized and non-motorized users and the preservation of environmental, cultural and historic areas.

# Objectives

1.1 Improve regional accessibility to major employment, health care, commerce and goods distribution centers.

1.2 Improve the viability of alternatives to the single-occupant automobile (bicycle, walking, public transit, carpooling and telecommuting) as options for all users of the transportation system through accessibility, convenience and comfort.

1.3 Improve access for pedestrians, bicyclists and transit users to public places and centers of activity.

1.4 Establish an interconnected and continuous system of off-road trails and greenways.

1.5 Coordinate transportation and future land use decisions to promote efficient development patterns and a choice of transportation modes.

1.6 Improve access to transportation facilities and services for elderly, children, disabled and economically disadvantaged individuals.

1.7 Reduce the adverse impacts of transportation on the environment, fragmentation of natural areas and wildlife.

1.8 Minimize the adverse impacts of transportation on established neighborhoods through development of a balanced transportation system.

1.9 Preserve the intended function of the Florid Interstate Highway System (FIHS) and other appropriate corridors for intercity travel and goods movement, but minimize adverse impacts resulting from this policy that are inconsistent with other goals and objectives.

## Second Goal Statement

Develop and maintain a sustainable transportation system that supports and preserves the existing transportation network through compact development patterns, improved system management and operations, coordination and communication.

## Objectives

2.1 Minimize travel distances for work, shopping and recreation.

2.2 Encourage infill and redevelopment in areas that have existing and adequate infrastructure in place.

2.3 Improve the interconnectivity of streets and other components of the transportation system, including sidewalks, bikeways and transit ways.

2.4 Create opportunities for access by all forms of travel at centers for jobs, services, commerce and housing through land use strategies and urban design principles that minimize travel distances and allow for a mix of uses.

2.5 Enhance connectivity between different forms of travel by creating multimodal access hubs within new development or redeveloping areas.

2.6 Implement transportation demand management and system management strategies before adding general purpose lanes to a roadway.

2.7 Improve the operational efficiency of the existing transportation system for all modes of travel based on a balance of needs within the corridor.

2.8 Phase in new vehicle fleets for public agencies that make use of alternative fuels that reduce air quality impacts.

2.9 Coordinate transportation plans and programs with all stakeholders in the transportation system, including the public, public agencies, transit, emergency management, police and fire, etc.

2.10 Develop a balanced transportation system that includes a dispersion of traffic across multiple smaller roads rather than concentrating traffic on a few major roadways.

# Third Goal Statement

Develop and maintain a safe and secure transportation system for all users and neighbors of transportation facilities and services.

# Objectives

3.1 Address existing and potential safety and security problems on or adjacent to transportation corridors through an interagency planning and prioritization process.
3.2 Implement techniques to calm traffic in residential, educational and commercial areas where walking and bicycling are common.
3.3 Establish criteria and performance standards for roadways to maintain their residential or rural character, as appropriate.
3.4 Ensure that roadways are safe for pedestrians/bicyclists.
3.5 Improve the pedestrian/bicycle connections between commercial centers and surrounding neighborhoods.

# Fourth Goal Statement

Invest strategically in transportation infrastructure to enhance the vitality of the community.

# Objectives

4.1 Give priority to preservation and maintenance of the existing transportation system.
4.2 Develop a financially responsible plan that allocates available resources and seeks out additional funding sources.
4.3 Preserve current and planned rights-of-way for transportation system improvements.

CORRADINO

# Gainesville Urbanized Area Year 2025 Long-Range Transportation Plan Update

## Technical Report 7

Prepared for:

The Metropolitan Transportation Planning Organization

Prepared by:

The Corradino Group, Inc.

December 2005

# 1. Introduction

On August 10, 2005, the President signed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. This is the act that provides federal funding for transportation projects.

One of the requirements of SAFETEA-LU, is that the plan be cost-feasible. Based on estimates prepared by the MTPO staff and the Florida Department of Transportation of available funding, and information on the ranking of projects in the Needs Plan, the MTPO established the Cost Feasible Plan, termed the "Year 2025 Livable Community Reinvestment Plan." This report details the projects in the Plan.

The Cost Feasible Plan was adopted by the MTPO, November 3, 2005.

# 2. Projects

The Cost Feasible Plan consists of three classes of projects:

- Committed Projects – These projects are programmed to be implemented from 2006 through 2010. Funding for these projects has already been identified and committed, and is not included in the estimate of available revenue. Improvement and enhancement projects listed in Tables 1 and 2 are in this class.
- Earmarked Projects – SAFETEA-LU legislation included earmarked high priority projects. Funding can be spent only on these projects. Funds for "ear-marked" projects are not included in the estimate of available funding because the MTPO does not have to compete for other areas for these funds. However, to be eligible to receive these funds, the MTPO must put these projects in the Plan. The earmarked projects are programmed for the years of 2007 through 2011, and are listed in Table 3.
- The remaining projects are those that must be within the estimated $38.5 million expected to be available for transportation improvements between 2011 and 2025. These are the projects that were developed from the Plan Update study and come from the Needs Plan, with one exception. They are listed in Table 4. The Traffic Management System is the exception. Generally, improvements of traffic signal systems are not identified from FSUTMS travel demand modeling. The request for the update and construction of an integrated traffic signal system was initiated by the City of Gainesville Public Works Department. The MTPO staff and most other participants agreed that this was an effective and low-cost project that should receive high priority.

# Year 2025 Livable Community Reinvestment Plan
**(Gainesville Metropolitan Area)**

**Table 1**
**Years 2006 to 2010 Committed Projects**
**(For Enhancement Projects- see Table 2)**

| Fiscal Year | Project Description | Amount Programmed (in Millions) |
|---|---|---|
| 2006 | Airport Intermodal Facility | $0.30 |
| | SW 24th Avenue- Reconstruct as two-lane divided | $10.00 |
| | University of Florida Pedestrian and Service Access Improvements (Section 117 Earmark) | $1.00 |
| 2007 | - | - |
| 2008 | Main Street- Reconstruct as 2-lane divided (Depot Avenue to N. 8th Avenue) | $14.20 |
| 2009 | Hull Road Right-OF-Way | $2.23 |
| 2010 | Hull Road Right-Of-Way | $1.93 |

**Table 2**
**Years 2006 to 2010 Committed Enhancement Projects**

| Fiscal Year | Project Description | Amount Programmed (in Millions) |
|---|---|---|
| 2006 | Gainesville Train Depot Restoration | $0.750 |
| | Gainesville-Hawthorne Trail Urban Connector | $0.480 |
| 2007 | W. 6$^{th}$ Street Rail/Trail | $0.665 |
| 2008 | - | - |
| 2009 | Hull Road Extension Bicycle/Pedestrian Trail | $0.002 |
| 2010 | - | - |

**Table 3**
**Years 2007 To 2011 SAFETEA-LU High Priority Projects**

| Project Description | Amount (in Millions) |
|---|---|
| Airport Access Road Construction | $1.60 |
| SW 62nd - 24th Avenue | $1.60 |
| Improve North-South Corridor between Archer Road and Newberry Road to provide congestion relief to Interstate 75 corridor, State Road 121, State Road 24 and State Road 26 | $2.40<br>$1.50 |
| Depot Avenue Reconstruction- (total project cost is $15.8) | $4.80 |
| NW 19th Street/NE 19th Terrace | $0.80 |
| NE 19th Drive/NE 20th Street and NE 25th Street | $1.60 |
| Regional Transit System (RTS) Bus Facility Expansion | $3.34 |
| RTS Facility Expansion | $1.00 |
| RTS Bus Rapid Transit Study | $0.42 |
| RTS Bus Replacement | $3.30 |

**Table 4**
**Years 2011 to 2025 Cost Feasible Plan**
**(For Enhancement Projects- see Table 5)**

| Fiscal Year | Cumulative Revenue (in millions) | Project Description | Cost (in Millions) |
|---|---|---|---|
| 2011 | $2.76 | Traffic Management System- Update and construction of an integrated traffic signalization system | $16.00 |
| 2012 | $5.52 | | |
| 2013 | $8.28 | | |
| 2014 | $11.04 | | |
| 2015 | $13.80 | | |
| 2016 | $16.26 | | |
| 2017 | $18.72 | SE 16th Avenue- widen to four lane divided | $5.28 |
| 2018 | $21.18 | | |
| 2019 | $23.64 | SW 20th Avenue Reconstruction | $12.00 |
| 2020 | $26.10 | | |
| 2021 | $28.58 | | |
| 2022 | $31.06 | | |
| 2023 | $33.54 | | |
| 2024 | $36.02 | NW 34th Street Turnlanes | $1.75 |
| 2025 | $38.50 | Depot Avenue Corridor Reconstruction (total project cost is $15.84 million, of which $4.8 million is funded with SAFETEA-LU High Priority Project funds) | $3.47 |
| TOTAL | $38.50 | - | $38.50 |

**Table 5**
**Years 2011 to 2024 Enhancement Projects**

| Fiscal Year | Cumulative Revenue (in Millions) | Project Description | Cost (in Millions) |
|---|---|---|---|
| 2011 | $0.42 | Hull Road Bicycle/Pedestrian Facility | $1.04 |
| 2012 | $0.84 | | |
| 2013 | $1.26 | | |
| 2014 | $1.68 | Bicycle/Pedestrian Crossing at Hull Road and SW 34th Street | $4.03 |
| 2015 | $2.10 | | |
| 2016 | $2.48 | | |
| 2017 | $2.86 | | |
| 2018 | $3.24 | | |
| 2019 | $3.62 | | |
| 2020 | $4.00 | | |
| 2021 | $4.32 | | |
| 2022 | $4.64 | | |
| 2023 | $4.96 | | |
| 2024 | $5.28 | | |
| 2025 | $5.60 | | |
| TOTAL | $5.60 | - | $5.07 |

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