EXECUTIVE SUMMARY

Introduction

The purpose of the Regional Study on Tourism/Commuter Trips is to develop procedures, data, and models that will provide more accurate and policy-sensitive forecasts for non-resident travel. These procedures will be integrated into the Florida Standard Urban Transportation Model Structure (FSUTMS) models for Orlando, Volusia County, Brevard County, Marion County, and Lake County. The models are designed to work in smaller areas, such as Lake County, as well as in larger areas, such as Orlando.

Objective

The main focus of the Regional Study on Tourism/Commuter trips is to collect travel data that will allow the FSUTMS model to be calibrated and validated more accurately than the current structure. This is to be achieved by reviewing the current travel demand forecasting models, identifying the travel survey needed, conducting travel surveys, and applying the findings to the models.

Study Methodology

The study is being conducted in two (2) Phases. Phase I assesses current methods used in Florida, performs a search of the literature, and solicits information from other urban areas in other states. Based on the information gathered during these efforts, a detailed modeling framework for the refined non-resident models has been developed and reviewed by modelers in Florida. The Consultant has collected the data necessary to develop and validate appropriate models. Phase I is concluding with the distribution of the Phase I Report.

The non-resident models will be implemented in Phase II. The first task will be a refinement of the scope, if necessary, based on the findings of Phase I activities. Next, the non-resident models will be validated for one of the smaller urban areas in Central Florida. The specific area will be selected as part of the study. After the model has been implemented and validated for the smaller area, it will be implemented and validated for the Orlando area. When the Orlando validation is complete, the model will be implemented for the remaining urbanized areas. Thorough documentation will conclude this task.

The remainder of this Executive Summary will detail Phase I – Development of Methodologies and Collection of Data.

A. Task 1 - Modeling Non-Resident Travel in Florida

The first task of the Florida Department of Transportation District 5’s (FDOT’s) Regional Study on Tourism/Commuter Trips was to inventory the methods followed to model non-resident travel in Florida. Non-resident travel is defined as the trips made by people who are not residing in the study area. In the FSUTMS, External-Internal and Internal-External (EI) trips include trips made by both residents of the study area and non-residents which occur within the study area and
outside the study area. Therefore, non-resident travel is included as a segment of the EI trips of the FSUTMS. Non-resident travel includes the following three (3) categories of trips:

1. Trips made by visitors and tourists to the study area which may be one-day trips or several days of stay within the study area residing in hotels/motels, recreational vehicles, and homes of friends and relatives.

2. Daily or frequent trips taken to the study area, by people residing in the region surrounding the study area, to: work, business, shop, school, social/recreational, and other purposes. These trips are usually one-day trips and do not require overnight stay.

3. Trips made by the people who claim permanent residence outside the study area but live in transient housing within the study area during certain periods or seasons of a year.

FDOT Districts 1, 4, 5 (Orlando), 6, and 7 were requested to provide the methods used to perform the steps relevant to non-resident travel in their regional FSUTMS in the following applications. The Phase I Report describes the traditional methods of the these steps in the FSUTMS, and the enhancements made by FDOT Districts 4, 5, and 7 using these methods. Recommendations for this Regional Study on Tourism/Commuter Trips are as follows:

- **Estimating EI trip ends at the external stations** - District 7’s enhancements enable better simulation of non-resident travel. It is recommended to follow the TBRPM’s procedure of classifying the EI truck trips into light and heavy truck trips, and EI auto trips into occasional and routine trips. In addition, for District 5, it is recommended to add recreational vehicles (RVs) as another non-resident passenger mode because these vehicles park in specifically designated RV areas in the study area. The RV users are likely to stay for longer periods in the study area than typical visitors/tourists.

- **Estimating EI trip ends at the internal zones** - It was recommended earlier to classify the EI trips into Occasional and Routine External Trips as in the TBRPM. However, the TBRPM’s method of distributing occasional external trips, which includes significant tourist/visitor trips to all TAZs in proportion to internal trip attractions, is not suitable to the District 5 model because the tourist/visitor trips are basically oriented to the zones containing hotels/motels, such as International Drive and US 192. It is recommended that occasional external trips are to be further classified into different purposes such as tourist trips, convention and visitor trips, business trips, and other related purposes. Instead of distributing the occasional external trips to all zones, they should be assigned to the zones with attractions for appropriate trip purposes.

The TBRPM’s method of distributing the Routine External Trips should be adopted. As the school trips made by auto are less than 1% of total trip making in the region, TBRPM excluded school trips as a unique purpose. If school trips are found to be of significant percentage in the EI trips of the study area, it is recommended to include Home-Based School Trips as an additional purpose to accommodate exclusively school trips.
It should be noted that this Regional Study on Tourism/Commuter Trips is interested in the EI trips attracted to the study area as tourist/visitor trips and commuter trips, but not in the EI trips produced in the study area and attracted by the areas outside the study area.

- **Estimating EI truck trips** - The EI heavy truck trips are not a great concern for this Regional Study on Tourism/Commuter Trips. The EI light trucks have limited relevance to this study because light trucks could be used for commuting as well as for delivering goods and other services, which can be considered as work related trips under routine external trips. Hence, it is recommended that differentiating the EI truck trips into heavy and light trucks of the TBRPM should be adopted with appropriate attraction equations suitable to the study area.

As taxi trips in Districts 4 and 7 are very minimal, no significant importance was given to the taxi trips not only in EI trips but also in internal trips. With a large convention center and several conventional hotels in the study area, if taxi trips are found significant, a taxi survey to understand the use of taxis by the tourists and visitors should be considered.

- **Estimating EI car-pool trips** - The procedure followed in the TBRPM in dividing the EI auto trips into occasional and routine EI auto trips and treating the routine EI auto trips as internal trips is recommended.

- **Distributing EI trips** - The distribution of EI trips in the traditional method, enhancements made in the EI trip distribution, and recommendations have been discussed in the above items.

- **Considering special tourist and visitor trip purposes** - The TBRPM’s classification of EI auto trips and hotel/motel rooms, and OUATS model’s incorporation of tourist oriented special generators, such as Walt Disney World and Universal Studios, have positive contributions to the non-resident travel modeling. It is recommended to explore the opportunities to incorporate these positive aspects in the tourist trips forecasting model without double counting any trips.

- **Trip generation, distribution, and assignment methods for tourist and visitor trip purposes** - The OUATS model has pioneered in bringing major attractions into the model by introducing new trip purposes. The enhancement will account for one-day trips to the major attractions such as WDW from hotel/motels, residences, and external stations. It should be researched as to how this procedure fits in replicating the travel patterns of typical tourists and visitors who stay in the study area for more than one day. In addition, this procedure should be compatible with the recommended procedures of the TBRPM in the areas of external trips and hotel/motel trip productions.
• **Generating non-resident and transient household or hotel/motel rooms** - It is recommended that the TBRPM’s hotel/motel categories be used to account for the trip generation characteristics of different types of hotel/motel rooms.

**Conclusions and Recommendations**

All of the recommendations made earlier are oriented to utilize the enhancements already made in the FSUTMS to the maximum use of non-resident travel modeling. The TBRPM’s classification of EI trips into occasional and routine trips has enabled separation of the regional tourist trips under occasional trips, and regional commuter trips under routine trips. The treatment of routine trips in the TBRPM model is sufficiently detailed because external stations are treated as TAZs, and the routine EI trips are considered as internal trips using the distribution, mode choice, and assignment models. The OAUTS model introduces attraction-oriented additional trip purposes to model the tourist trips. All these enhancements are made under the constraints of the FSUTMS framework.

In order to model the tourist travel in the Orlando area, which is the world’s number one tourist destination, a comprehensive tourist model has to be developed. Without constraining to the FSUTMS format, data should be collected from tourist surveys to establish comprehensive travel patterns of typical tourists in the study area. Once the patterns are established in detail, the tourist trips forecasting model can be developed and then, incorporated into the FSUTMS with minimal adjustments in the input and output formats and script of the traditional FSUTMS. Life style trip generation model was introduced in the same fashion in the FSUTMS.

**B. Task 2 - Literature Review and Survey of Methods**

The purpose of the second task of the study was to conduct a literature review and survey of methods used to model non-resident travel throughout the United States. Non-resident travel is defined as through trips (external-to-external) trips, trips with one end outside the modeling area (external-internal trips), and trips made by transients. External-internal trips, which include commuters, business travelers, and tourists, are an important subject of Regional Study on Tourism/Commuter Trips (the study). Transients are persons who stop in the urban area for tourist and/or recreational purposes and business travelers. Transients include those who spend the night within the modeling study area as well as those who may spend several hours in the area on what is considered a “day trip.” Transients may arrive and depart the area by auto, bus, train, airplane and boat (coastal areas only).

A few urbanized areas outside the State of Florida have modeling experience that is relevant to modeling non-resident travel. Therefore, a number of federal agencies as well as a number of Planning Organizations, outside the State of Florida, were contacted via a postcard survey to request information on methods that they have used to model non-resident travel. The results of the federal agency methods were summarized and the results of the Planning Organization surveys were addressed.
Summary and Recommendations

The review of practices across the United States resulted in several key findings:

- Most urban areas have identified deficiencies in their existing modeling framework.
- Most areas have spent considerable effort to address the deficiencies they have by performing travel characteristic surveys which are used to validate their transportation models.
- Areas with unique destinations such as tourist areas, convention centers, recreational facilities, etc. have sought to deal with the travel characteristics of transient trips.

All of these areas used survey instruments to develop a database of information for addressing the trip generation and distribution modules of their respective models.

Based on these findings, it is clearly appropriate for the unique trip characteristics of Central Florida tourists be addressed in some manner. It is also appropriate that traveler surveys be the instrument/tool for developing characteristic data for enhancement of the local models.

C. Task 3 – Modeling Framework for Non-Residential Travel

The purpose the third task of the study was to develop the modeling framework. The Phase I Final Report contains information relating to the review of non-residential components of current District Five models, proposed enhancements to address non-residential model issues, the prioritized travel surveys associated with proposed model enhancements, and the model script file adjustments related to these modifications. The information is presented with respect to three different model regions. These regions encompass the following areas:

- Coastal Region (Brevard, Flagler, and Volusia)
- Central Region (Lake, Orange, Osceola, and Seminole)
- Internal Region (Marion and Sumter)

To address the issues identified for the District Five Coastal, Central, and Internal region models, possible enhancements for refining the model structure need to be reviewed. The table on the following page includes a summary of some of the recommended adjustments to the models which can be incorporated either for individual models, as needed, or for all of the District Five models. The information is presented relative to all of the FSUTMS modules and includes the addition of the HPATH and MODE modules.
## SUMMARY OF CURRENT ISSUES AND POSSIBLE ENHANCEMENTS

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(a) VCUATS model includes VOLEI model to address loading between East and West Volusia
(b) Includes attractions to external stations via airport external (AE), beachside external (BE), or theme park external (TE) trip purposes
(c) Proposed new trip purposes address major special generators; others may remain (eg. regional malls, universities)
(d) Airport model incorporates an airport influence area (eg. 40 miles) and requires input of trip lengths from HPATH
(e) Includes new friction factor curves for new trip purposes
The different model enhancements were identified and reviewed with respect to the types of surveys which provide the most benefit to the District Five urban area models from a travel demand forecasting perspective. The following provides the order of prioritization identified relative to the surveys.

- Roadside Surveys
- Attractions Surveys
- Hotel/Motel Surveys
- Airport Surveys
- Seaport Survey

Each of the survey types has been reviewed and offers a further prioritization relative to specific survey sites in Task 3 of the Phase I Final Report.

D. Task 4 - Public Awareness Plan

One of the goals of the Regional Study on Tourism/Commuter Trips project is to better understand the travel habits and patterns in Central Florida. A series of surveys will be conducted to provide the study team with data that accurately reflects these travel habits and patterns. A Public Awareness Plan prepared by Herbert Halback, Inc., in cooperation with TEI Engineers and Planners, in October 1999, describes the activities needed to promote the participation in the survey process as well as encourage accurate responses. This Public Awareness Plan is included in Task 4 of the Phase I Final Report, and serves as the blueprint for the entire survey process.

To facilitate planning, the public awareness process has been divided into two (2) tiers, or phases. During the first tier, the study team will identify potential survey sites, encourage sites to participate, initiate media contact and further define strategies to encourage people to participate in taking a survey. In the second tier of the public awareness campaign or program the collateral materials needed for the survey sites as well as the media outreach and public notification will be prepared, the surveys will be conducted, and then followed-up with individuals and organizations which allowed the surveys to be held at their facilities.

Five (5) different survey types will be used to identify travel habits and patterns. The survey types are based on trip purpose and/or destinations. The five types are:

- Hotel/Motel
- Major Attractions
- Airports
- Rental Car Agencies
- Roadside Surveys Designed to Collect Information on Commuter/External traffic

The Public Awareness Plan identifies the activities needed to ensure participation for each survey type and details geographic and site sample information for each survey type. The actual sample quantities for each survey type are addressed in Task 5, Travel Survey Plan, of the Phase I Final Report.
E. Task 5 - Travel Survey Plan

One of the major purposes of the Regional Study on Tourism/Commuter Trips is to collect information that will allow for a better understanding of the travel habits and patterns of visitors and tourists in central Florida. Visitors and tourists, or non-resident trips, have a tremendous impact on the transportation system in the Central Florida area. To understand the travel behavior characteristics of these trips, a data collection program that consists of external, visitor and tourist surveys is being proposed.

Another objective is to evaluate the travel behavior of local commuters as they cross county boundaries. The information collected in the surveys will provide general demographic information, travel patterns, travel information, and generation rates for tourists and visitors within the Florida Department of Transportation District Five boundaries. The surveys will be conducted during the peak visitor/tourist seasons in the Orlando area (summer season) and the peak season for the beach communities (Volusia and Brevard Counties), which occur during the spring season (January to April) and during the summer season for Marion County. The travel data collected will be used to enhance and calibrate the non-resident portions of the travel demand models currently being used in the Orlando metropolitan area (Orange, Seminole and Osceola counties), as well as Volusia, Brevard, Lake and Marion Counties.

The surveys will be closely coordinated with the overall the Public Awareness Plan as described above.

The first step taken in the development of the travel survey plan was to prepare a set of survey objectives. The objectives clearly define the purpose of the survey and assist in the development of the correct questions to be asked. By having a well-defined set of objectives, the usefulness of the survey is maximized. The survey objectives are presented below:

- To provide travel data for the enhancement of Florida Department of Transportation District Five’s (FDOT’s) Florida Standard Urban Transportation Model Structure (FSUTMS) models as defined in the Modeling Framework document.
- To obtain data necessary for the development of generation rates, trip length determination and distribution patterns for tourists, visitors, and commuter trips.
- To obtain statistics necessary for the development of the following external station data: External-External (E-E), External-Internal (E-I), and Internal-External (I-E) traffic volumes and percentages.
- To develop data that can be used for other purposes such as: tourist/visitor demographic profiles, travel characteristic information, summarize traffic problems that are provided as a result of the survey, and specific origin and destination patterns.
A. Survey Questionnaires

The survey questions were designed to produce travel information necessary to fulfill the data requirements of the Project Objectives. Coordination with FDOT and the Project Review Committee (PRC), resulted in the development of the survey questionnaire. The surveyor will approach an individual or group, state the purpose of the study, and ask a couple of qualifying questions (for example: Where do you live? When did you arrive in the area? Have you been asked to participate in this study previously?). The potential interviewees will then be asked to participate in this very important study for FDOT. After the individuals agree to participate, the surveyors will proceed with the questions.

B. Survey Instrument

The pen-based computer will be used as the survey instrument. The computer weighs less than two (2) pounds and, therefore, is light enough to carry around all day. They are powered by three AA batteries, and are composed of a screen and a few keys which are pressed with a pen to enter data. The survey questions will be “built” into each computer. And the computers will “know” what to do after a particular response. The computer surveys require a minimum number of fields to be entered before a record can be considered “complete” and then saved. The computer will signal the surveyor if a survey is incomplete. The most cost saving feature of the computer field-data entry is the storage of responses in an electronic database at the time of the survey. This greatly reduces post-processing and speeds up analysis.

C. Staffing

The TEI team will evaluate appropriate personnel to serve as interviewers. The balance of the needed staff (if additional staff is required) will be drawn from the University of Central Florida (UCF). The TEI team will make the initial contacts and requests for qualified personnel, the survey team supervisor will then do the interviewing and staffing, and the TEI team will train all surveyors. Senior team leaders will supervise all surveyors. A TEI survey team will consist of a supervisor and up to six (6) surveyors.

A spreadsheet style staffing requirement chart will be developed for each day and for the overall project so each person knows exactly where to report at each time of day. The chart will include location, time, number of surveyors and names of those assigned, and scheduled breaks. It will also include the name of the supervisor in charge and the relief personnel schedule.

D. Types of Surveys

Basically, two (2) types of surveys will be conducted: Non-Roadside Survey and Roadside Survey. The Non-Roadside Surveys will include Hotel/Motel Survey, Airport Survey, and Attraction Survey. Task 5, Travel Survey Plan, in the Phase I Report details targeted locations and the way in which each of these surveys will be accomplished. Copies of the survey questionnaires are included in Appendix IV of the Phase I Report.
The roadside interview origin-destination survey has long been a data collection procedure for refining urban transportation planning models and providing information on inter-city travel. Roadside surveys are generally conducted to collect profiles of vehicle trips that utilize a specific roadway segment and to develop External-External and External-Internal vehicle trip tables for the model. Key objectives for accomplishing this task are safety and accuracy. All appropriate FDOT safety standards will be strictly followed. In addition, all field data collection efforts will be coordinated with FDOT, Sheriff’s Departments, Florida Highway Patrol, or City Police Departments, as required. The accuracy of data is affected by several factors, the most important of which is the selection of survey personnel and their training.

Significant preparation must take place before a final selection of the external traffic survey locations can be made. Initially, potential roadside survey locations must be field-reviewed to determine if the site location is feasible. The selection of survey locations requires the application of engineering judgment to assure adequate stopping sight distances can be achieved and proper notification of motorists is provided. A detailed description of these surveys as well as targeted locations are also detailed in Task 5 of the Phase I report.

E. Post Survey/Interview Tasks

Data

After the survey effort is complete, the supervisor will review all of the data collected and ensure the information is useable. One way to make the data useable is to compile all of the data files from each survey day or machine into one database file. After all of the data files are entered into one database, a new ID field can be created with a unique number 1 to n, where n is the number of total records created. Once the data is in the file, a mass examination and cleanup can be performed that will eliminate global mistakes, common coding abbreviations and confusing entries. In addition, the number of surveys will be expanded to represent the universal population for that survey day.

Products

The database files, with the expansion information, will be provided for further use in the modeling process. A technical memorandum will be prepared that describes the full process used, the questionnaire and sample answers, the statistics on the data collected, geographical displays as appropriate, and relevant summaries and conclusions.

Quality Assurance

Quality assurance is a vital part of the success of the overall project and the TEI team has a thorough understanding of what it takes to produce a quality product/document. These quality control measures will ensure that the data collected during the surveys and the information presented in the final document are accurate.

END OF EXECUTIVE SUMMARY