

# STATEWIDE MODEL TASK FORCE MEETING SCHEDULED FOR OCTOBER 25

8:30 AM - 4:45 PM at Radisson Orlando Airport Hotel

## Model Task Force: Charting the Future

by Terrence Corkery, Systems Planning Office

When it meets October 25, the Model Task Force will continue its work toward ensuring that Florida's models are ready for the state's new and emerging transportation planning needs. The meeting will focus on existing and proposed research projects requested by the Model Task Force for improving selected modules of Florida's standard model, FSUTMS. In a related effort, the agenda addresses the formation of a "blue-ribbon panel" that will recommend additional improvements to the model.

### Blue-ribbon panel

During the last MTF meeting in March, task force members participated in a round-table discussion and formulated an extensive list of transportation planning issues they felt the model needed to address in the future. Since then, tri-chairs Danny Lamb, Dennis Hooker, and Shi-Chiang Li have strategized about how to address these needs, and have outlined the purpose and procedures of working with a blue-ribbon panel.

The tri-chairs will present the blue-ribbon panel concept to the MTF and open the discussion to issues of panel membership and duties. It is envisioned that the panel will consist of modeling experts from throughout the nation who will bring new ideas from outside Florida. The panel could aid in identifying future directions in transportation modeling and recommend strategies on how the Florida standard model should transition into the new era. The panel could also be instrumental in analyzing available software packages from other parts of the country.

### Travel Model Improvement Program

The nation's most significant innovations in transportation modeling are being developed as part of the federal government's TMIP research. Any enhancements that Florida

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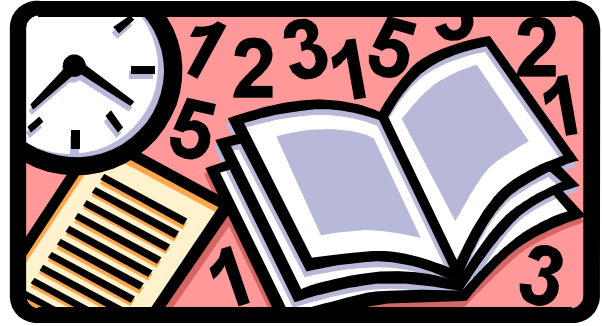
## Model Task Force: Charting the Future *Continued*

makes in its model should be made with an eye toward compatibility with TMIP products as they become available in the future. Thus, the MTF meeting will begin with a report from Ram Pendyala of the federal government's progress with TMIP's TRANSIMS model.

### Research contracts—focusing on the paradigm shift in modeling

With its time-of-day capabilities and vast data requirements, TMIP represents a paradigm shift in modeling. In preparation for a transition to the new paradigm, several research projects will be discussed at the Model Task Force meeting:

- Update trip generation model with recent trip rate surveys in Florida or other areas with relevance to Florida
- Re-examine and improve the trip attraction model considering such factors as area type, employment categories, special trip purposes etc.
- Restructure highway and transit network data in a GIS environment
- Update the LUCHECK program using a graphic interface (ULAM)
- Fully integrate ULAM and add other relevant land use analysis tools
- Re-examine the model validation standards and update as appropriate
- Transition input files from ASCII to database format
- Examine cost-benefit analysis tools and recommend the ones most suited to transportation planning needs
- Develop an interactive FSUTMS training course based on CD-ROM



### Other agenda items

Bob Romig, Director of the FDOT Office of Policy Planning, will discuss the Strategic Intermodal System (SIS) and its relationship to the 2020 Florida Transportation Plan. Currently under development, the SIS will incorporate key facilities from the Florida Intrastate Highway System (FIHS) and major water ports, airports and rail facilities. Later in the day, the MTF subcommittees (trip generation, freight, GIS, land use, transit, and trip distribution) will each present a report of their activities. Finally, Brian Fowler will lead a discussion on ethics in modeling.

Three MTF subcommittees will meet October 24, also at the Radisson. The Land Use Subcommittee will meet from 9 AM to noon. The GIS Subcommittee is scheduled from 1:30 to 5 PM. The Trip Distribution Subcommittee will hold an evening meeting, from 7 to 9 PM. For more information on the Model Task Force, call Terry Corkery at the FDOT Systems Planning Office: 850-414-4903, email: [terrence.corkery@dot.state.fl.us](mailto:terrence.corkery@dot.state.fl.us).

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**Reservation Deadline: October 23, 2001**

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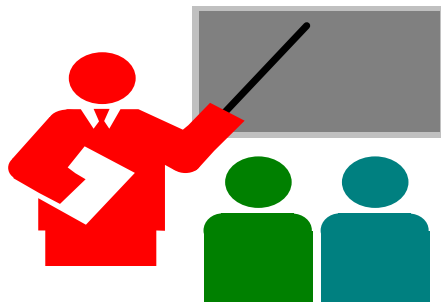
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# GIS-TM and Basic FSUTMS Modeling Workshops

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The **GIS-TM Workshop** will teach the basic functionalities of GIS-TM, including:

1. Conversions from FSUTMS to ARCVIEW environments of loaded and unloaded highway/transit networks, ZDATA files, Toll links, TCARDS, transit optional links, transit walk access zones, and transit station and production/attraction files, all of which may be displayed as GIS layers.
2. Editing spatial and attribute data for the highway and transit layers using GIS-TM tools, and then exporting back to FSUTMS format.
3. Compare highway/transit networks or ZDATA files, to identify differences in attributes, such as changes in traffic volume, speed, number of lanes, headway, dwelling units, populations and employments.
4. Learn the Level of Service calculator extension that determines the level of service from loaded highway networks.
5. Customize GIS-TM for the individual model, manage data and utilize Florida Geographic Data library (FGDL) along with the GIS-TM for transportation planning applications.

The workshop will be held at the Embassy Suites Orlando Airport located on 5835 TG Lee Boulevard, Orlando, Florida 32819. **The GIS-TM Workshop will start at 8:30 AM on Tuesday, December 11 and end at 12:00 PM on Thursday, December 13, 2001.** A block of rooms has been reserved for \$86 per night. Hotel telephone number is (407) 888-9339. Hotel reservation and workshop registration deadline is November 26, 2001.

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The **Basic FSUTMS Workshop** is designed for transportation professionals with little or no experience in travel demand modeling. The workshop gives participants an overview of the transportation planning process, travel demand forecasting methodologies, and FSUTMS modules and file formats. Participants will learn to install and execute FSUTMS, interpret output files, create standard plots, and execute the Visual Planning Environment (VIPER) to edit highway networks. An overview of the GIS-TM (GIS for Transportation Modeling) software, which bridges FSUTMS and ArcView, is also included.

The workshop will be held at the Sea Turtle Inn located on One Ocean Boulevard, Atlantic Beach, Florida 32233. **The workshop will begin at 1:00 PM on Monday, January 28, 2002 and end at 12:00 PM on Friday, February 1, 2002.** A block of rooms has been reserved for \$87 per night. Hotel telephone number is (904) 249-7402. Hotel reservation deadline is January 12, 2002.

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There is no registration fee for these workshops. However, to assist us with preparations, all participants are required to register with the FDOT Systems Planning Office. Registration forms for these workshops can also be downloaded from the FDOT web site ([www.dot.state.fl.us/planning](http://www.dot.state.fl.us/planning), select "training" from the dropdown menu). Should you have any questions, please call Terry Corkery at (850) 414-4903 SunCom 994-4903 or e-mail [terrence.corkery@dot.state.fl.us](mailto:terrence.corkery@dot.state.fl.us).

## Land Use Subcommittee adopts mission statement

By Gary Kramer, Senior Transportation Planner West Florida Regional Planning Council and Chairman of the MTF Transportation Land Use Subcommittee

A teleconference of the Model Task Force's Transportation Land Use Subcommittee was conducted on May 25, 2001. To guide the subcommittee's future direction, a mission statement and eight corresponding objectives were unanimously approved by the subcommittee on May 25, 2001. The entire Transportation Land Use Subcommittee deserves credit for reviewing the draft, providing comments, and adopting the mission statement and objectives in one meeting. Special accolades to Mr. Mike Brown, Transportation Planning Services, Inc., for developing the initial mission statement and objectives. The mission statement and objectives of the subcommittee are listed below.

### **Mission Statement:**

The mission of the Transportation Land Use Modeling Subcommittee is to assist local, regional, and state planning agencies in addressing Federal and State requirements and initiatives to integrate land use and transportation planning.

### **Objectives:**

1. To take a pro-active role to promote the application of land use visioning techniques and promote the testing and evaluation of land use alternatives as a part of the transportation planning process.
2. To promote professional development and training in the use of land use and transportation modeling techniques.

3. To promote a dialog between land use and transportation planning professionals and coordination of efforts between those two groups.
4. Help disseminate information about techniques, resources and funding for land use modeling activities.
5. To support other Model Task Force committees in such activities as the development of new trip generation techniques and in the development of the tools needed to forecast those new trip generation variables.
6. To support the research and development of enhancements to the current model and the development of new analytical tools when needed.
7. To promote review groups and the sharing of information and experiences about land use modeling techniques to reduce cost and duplication of effort by local, regional and state planning agencies.
8. To work cooperatively with other state organizations to enhance transportation and land use planning techniques and to promote a statewide land use modeling support system.

The next Model Task Force's Transportation Land Use Subcommittee Meeting will be on October 24, 2001 in Orlando. Please visit [www.ulam.org](http://www.ulam.org) for a copy of the agenda.

## Latest News from the Trip Distribution Subcommittee

By Mike Neidhart, Volusia County MPO and Chairman of the MTF Trip Distribution Subcommittee

The Model Task Force Trip Distribution Subcommittee met via teleconference on September 20, 2001 to discuss and adopt a mission statement and set of objectives. In addition, the subcommittee also reviewed the work that Dr. Fang Zhao and her research team has been working on related to an evaluation of an alternative trip distribution model. However, this article will focus on the subcommittee's mission statement and objectives.

The Trip Distribution Subcommittee discussed a draft version of the mission statement and objectives that were distributed previously to the subcommittee. After an invigorating discussion several refinements were made to a few of the objectives. The refinements were approved unanimously. Following is the final adopted mission statement and objectives:

### **Mission Statement:**

The mission of the Trip Distribution Subcommittee is to assist the Florida Model Task Force in evaluating and improving the trip distribution processes within the FSUTMS framework.

### **Objectives:**

1. To identify opportunities for improvement and to support research and development of enhancements to the current

- FSUTMS trip distribution processes for person and freight trips as well as Internal-Internal and Internal-External trips.
2. To review alternative trip distribution methodologies and provide feedback on the relative strengths and weaknesses of the reviewed methodologies.
3. To review trip length and spatial distribution variance among trip purposes and evaluate the sufficiency of trip purpose classifications.
4. To recommend enhancements to the current FSUTMS trip distribution process.
5. To work cooperatively with local and state agencies as they undertake travel characteristics studies to provide meaningful input on survey design, survey instrument development, and data analysis for enhancing existing or developing alternative trip distribution methodologies.
6. To act as a clearinghouse for trip distribution information, and as a conduit to forward such information to university or other academic research institutions.

For more information on the Trip Distribution Subcommittee, please contact Mike Neidhart, Volusia County MPO at (386) 322-5160, ext 35 or [mneidhart@co.fl.us](mailto:mneidhart@co.fl.us).

# Trip Distribution for the Mobility Impaired

By Jeffrey Bruggeman, Senior Manager AECOM Consulting Transportation Group

Travel demand model systems in Florida and many other model systems across the country typically include a trip distribution component that allocates all person trips for a given trip purpose using a single distribution function based on highway travel time and a single attraction measure. Then, the logit modal choice models increasingly in use across Florida and elsewhere typically sub-allocate these person trips according to some “wealth” variable, typically auto ownership, using parameters developed at the home (production) end of the trip. These factors thus allocate a fixed percentage of trips by household type to all interchanges determined previously by the gravity model.

This approach causes errors and difficulties in estimating the modal choice models. In most Florida cities, a significant (if not majority) part of transit ridership is made by households with limited mobility, most usually identified as the 0-car household component. For these travelers, automobile options are frequently not available (by definition), and thus their travel patterns are much more likely to be determined by the availability of transit service than is the case of the general public. The problem manifests itself when the modal choice model is calibrated against transit ridership “targets” stratified by auto ownership category, as determined from a transit onboard survey or other source of data. The model calibration process has a difficult time “finding” enough trips on interchanges with reasonable transit service to match the targets. Thus, the calibrated model is likely to end up with unrealistic modal shares on interchanges with transit service and very large and unreliable modal constants.

In a number of cities around the country, this problem is recognized and disaggregate trip distribution models have been developed with trips stratified in a similar manner to the categories used in modal choice. Although some models perform separate distributions for all “wealth” categories, others recognize that the most mobility-impaired households are the ones with by far the most significant distribution mis-matches and thus may distribute 0-car households separately from all other households.

The process is relatively simple in concept and is aided by the fact that most trip generation models stratify trip productions using a wealth variable, so that the trip productions are readily available in the correct categories. The more difficult issues are the form of the distribution function and the nature of the attraction variable, with the former being more easily dealt with than the latter. Significant improvement can be achieved just by using a distribution function that is dominated by transit service variables rather than auto travel time. In this case, a simple mechanical stratification of attractions may be used; i.e., if 10 percent of the work person trips are made by 0-car households, then 10 percent of total attractions is used as the attraction variable.

This approach can lead to some problems in areas such as Florida where the predominant transit service is radial toward the central business district, while jobs for mobility-impaired may be proportionately higher in non-CBD areas. This is a difficult issue to address in a fully adequate manner, absent a very large travel survey. It may be possible, however, to develop partial solutions from more readily available data that, while not perfect,

should lead to better results than ignoring the problem. For example, it should be possible to characterize attraction areas into some general categories, perhaps using area type or some similar measures, and then tabulating attraction trip ends by production trip end characteristics, i.e., trips to the CBD from 0-car households versus trips to the CBD from car-available households. The resulting relationships could be used to stratify total attractions in a reasonable manner.

Additional detail could be developed by some limited further stratification of the trip production end based on transit service availability and perhaps simple distance rings from the CBD or other major attractions. With this information, checks can be made against the gravity model results aggregated in a similar manner and adjustment made to the distribution function or other variables in order to ensure that mobility-limited tripmaking was being allocated to appropriate interchanges. With these inputs, much-improved modal choice models will be estimated and applied to future conditions.

A related activity being used in some models is to classify households in a more complex manner that is more directly related to trip making. Such activities are somewhat akin to the life-styles models being used in Tampa and Fort Lauderdale. With this approach, the most mobility-impaired category is usually 0-car households, although a further stratification based on the presence or absence of workers may be used as well. (In this case, the worker-less households would drop out of the work trip production model.) Other household classifications may be based on two or more variables, for example number of workers and

# Trip Distribution for the Mobility Impaired *Continued*

number of vehicles available. For example, households with more workers than vehicles are somewhat mobility-impaired, certainly as compared to households with equal or greater number of vehicles than workers. Often, cross-classified trip generation models produce trip making by a very useful categorization of

households, with much of this valuable information then discarded by excessive aggregation.

With the increased emphasis on examining transit investment options in many Florida cities, it seems imperative that an initiative be undertaken to enhance the current distribution models

with a simple mobility-impaired component and modify the structure of modal choice models and recalibrate them accordingly. At the same time, further research should be considered to identify the state-of-the-practice in this area and develop longer term improvements to the model systems.

## FSUTMS Users' Group News

The last meeting this year for the **Northeast Florida Users' Group** is set on **November 7**. Rob Schiffer with PBS&J will feature a presentation on the JUATS Year 2025 update process and the results of the newly developed alternatives that will form the future of the Jacksonville urbanized area roadway system. Other topics will focus on innovative enhancements that have been developed for use with FSUTMS. The users' group meets at the FDOT-District 2 Jacksonville Urban Office-Training Facility. The meeting starts at 2:00 PM and runs until approximately 4:00 PM. For additional information, please contact *Imran Ghani (904)360-5682*

On **November 13th** the **Tampa Bay Applications Group** will discuss a full slate of exciting new methodologies and analysis techniques:

- GIS-TM - Conversion of FSUTMS to ARCVIEW environment
- Pocket PCs - Practical applications of software: ESRI's Arc-Pad with GPS, Autodesk's On-Site View, and Syware's Visual CE Database
- VISSIM- a new traffic operations and simulation package
- CORSIM - areas of difficulty for this popular traffic analysis package
- RTFAST - Regional Transit Feasibility Analysis and Simulation Tool

This brown bag lunch meeting will be held from 12:00 PM to 2:00 PM at the FDOT-District 7 office. An Awards Banquet will be held in December (date to be announced). For more information, please contact *Danny Lamb (813) 975-6437*



The **Southwest Florida Users' Group** is back in business to provide a forum facilitating information exchange and professional interaction. This technical interchange may result in group recommendations to the FDOT District 1 or the Statewide Model Task Force. The next users' group meeting will be held on **November 1**, from 10:00 AM to noon at the Charlotte County Airport (2800 A-6 Airport Rd., Punta Gorda, FL). Presenter Richard Oujevolk of CH2MHill will be discussing "Extended Year Application of Forecast Models." Southwest Florida modelers are urged to attend this meeting, the first in quite a while for this users' group. The meeting will be an important opportunity for the group to reorganize and gather ideas about future activities. For additional information about the group, please contact *Jim Baxter (863) 519-2562*

The **November Southeast Florida Users' Group** has been postponed until a later date. For additional information, please contact *Shi-Chiang Li (954) 777-4655*

The **Central Florida Users' Group** has scheduled its next meeting on December 6th from 2:00 PM - 4:00 PM at FDOT District 5 Urban Office. For additional information about the group, please contact *John Zielinski (407) 482-7868*



## User Benefit Calculations Required for New Start Transit Projects

By Jeffrey Bruggeman, Senior Manager AECOM Consulting Transportation Group

The Federal Transit Administration (FTA) has updated their regulations for project sponsors wishing to participate in FTA's New Start program to receive federal funding support for major transit investments. Among the changes in the regulations is a requirement for all project submissions to include the calculation of "User Benefits" that will be used in calculations to replace the travel time savings measure, an essential element of project evaluation for many years. Originally, user benefits were to have been required for the fall 2001 submission of the New Starts (also known as the Section 3J) Report to Congress. However, because of various factors, 2001 will be treated as a transition year with the "old" measures still required and the user benefit measures treated as an option but strongly encouraged. All submissions in 2002 will be required to provide the user benefit calculations.

The user benefit calculation is relatively simple and is derived from the total utility computed in the regional modal choice, then converted to units of time based on the in-vehicle time coefficient used in the model. As currently being implemented, user benefits will be computed for each purpose/time period combination included within the overall model structure. For each of these applications, user benefits will be further broken down by market segmentation within the model (often auto ownership or household income for home-based trip purposes) and is computed at the zonal level for subsequent aggregation. Guidance is currently being prepared for adding user benefit calculations for special off-model procedures being used for transit planning in many urban areas.

FTA has engaged consultant support to modify the modal choice models used in various cities around the country that are currently in the New Starts program. The revised modal choice models are run for the "build" and "baseline" alternatives to be submitted for the New Starts evaluation. A general-purpose program "SUMMIT" is being distributed by FTA and will be used to make the actual user benefit calculation, which is based on the difference in utility between the baseline and build projects. SUMMIT will also perform various data aggregations and reports and will ultimately be used for other reporting in addition to user benefits.

At this time, the only project (and model system) currently included in the program is in Tampa. The Tampa Bay Regional Model is being modified to provide the user benefit calculations and will be applied to the project currently being developed. However, several other projects are in various stages of development throughout the state, using different model systems. Several of these projects may be at the point of a new or revised New Starts submission next year. Most probably, the user benefit calculation will become a de-facto standard for transit project evaluation at all levels of analysis, as was the case for past FTA evaluation measures. Such a need further strengthens the requirement to update all of the state's travel models as soon as possible.

Application of the user benefit measure within FSUTMS imposes some additional technical issues that need to be addressed. In general, it is not really desirable to perform the user benefit calculation for all model applications, since the process adds somewhat to execution times and creates extremely large data sets. These two factors become far more critical for any

## **User Benefit Calculations Required for New Start Transit Projects** *Continued*

model formulation that includes composite impedances or peak period feedback speeds in trip distribution, leading to variable person trip tables being used in modal choice. Although FTA would prefer all New Starts project be evaluated using a fixed person trip table, work is underway (mid-September, 2001) to provide capabilities within SUMMIT to deal with differing person trip tables. In this case, the modal choice model will likely need to be applied to all interchanges including those without person trips, greatly increasing running time and the size of the user benefit output table.

This need to invoke user benefit calculations as an option is somewhat more awkward with FSUTMS models than with other formulations used around the country. For most model systems, the modal choice model reads a prepared control file that includes run options, data set names, and parameters. For these models, a special file for user benefit calculations can be easily prepared with modified option flags and file names and simply executed from a command line or in a simple batch file. With FSUTMS, file naming is handled internally and options are usually invoked through parameters in PROFILE.MAS. Although a separate “dummy” alternative could be set up for the user benefit calculation, with modified PROFILE.MAS and MODE files, this approach is also wasteful of resources because of the need to duplicate impedance and trip table calculations. The interim procedure developed for the Tampa model needs to be reviewed and probably adjusted in the context of an overall statewide approach.