Central Office planning staff relocated

New phone numbers accompany move back to headquarters building

by Terrence Corkery, Systems Planning Office

After years of exile in leased office space, the FDOT-Central planning offices in Tallahassee are now reunited with the rest of Central Office in the Haydon Burns Building. All three planning offices—Systems Planning, Policy Planning, and Transportation Statistics—are in new cubicles on the same second floor they left five years ago at the beginning of the building renovation project.

Since Systems Planning had maintained a Burns Building mailing address while in leased space, the mailing address will not be affected. However, all planning staff have been assigned new phone numbers. Please keep the attached list of new phone numbers handy to call any Systems Planning Office staff. Note that fax numbers have not changed.

Terry Corkery lives the life of "Dilbert" in his new cubicle-type office environment.

SYSTEMS PLANNING OFFICE **Mail Station 19**

RECEPTIONIST: (850) 414-4900 (Suncom 994-4900)   **FAX: (850) 921-6361 (Suncom: 291-6361)**

Adams, Gary	414-4919
Colson, Sandy	414-4937
Corkery, Terry	414-4903
Draughon, Don	414-4920
Eichin, Kurt	414-4904
Fang, Paul	414-4905
Golden, James	414-4926
Gramling, Harry	414-4928
Guttenplan, Martin	414-4906
Hendershot, Bob	414-4914
Henderson, Clyde	414-4929
Kantameni, Sivani	414-4921
Krueger, Lorin	414-4922
Krzeminski, Bob	414-4930
Lancaster, Margaret	414-4936
Lou, Yongyao	414-4908
McCullough, Bob	414-4931
MeLeod, Doug	414-4932
Merrell, Warren	414-4900
Mysore, Vidya	414-4924
Santos, Joe	414-4909
Shen, Huiwei	414-4911
Sklute, Steve	414-4933
Sokolow. Gary	414-4912
Tyndall, Pete	414-4913
Waldrop, Alicia	414-4934
Youmans, John	414-4925

Ask Harry…

by Harry Gramling, FDOT Systems Planning Office

This column will appear in Florida Transportation Modeling regularly and will be dedicated to providing information on new features and releases of FSUTMS, along with users' questions and answers that may be of general interest.

FSUTMS Version 5.40, originally scheduled for a November-December 1999 release, has been delayed. The main reason being that the Systems Planning Office (SPO) decided to construct an "in-house" capability to compile FSUTMS/TRANPLAN source code as a backup to the current practice of Fennessy Associates performing all compilation efforts. Executable programs distributed as Version 5.40 will be compiled on Department computers. Yongyao Lou of the SPO will serve as coordinator in this effort and will be responsible for maintaining the Department's copy of FSUTMS/TRANPLAN source code.

Transportation Planning Services (TPS, a.k.a. Mike Brown) is finalizing updates to the Urban Land Use Allocation Model (ULAM 98) software to develop ULAM 99 which will be distributed with FSUTMS.V54. Contact Huiwei Shen of the SPO if you need to attend one of the upcoming ULAM Workshops. Huiwei may be reached at 850-414-4911, SUNCOM 994-4911 or huiwei.shen@dot.state.fl.us

Tech Tip

The "SAVE TURNS = list" feature of HASSIGN, by default, saves only purpose (mode) 1 volumes. The user may optionally save all purposes by adding an **additional** parameter to the HASSIGN script file, i.e., "SAVE ALL TURNS". This is useful when running models that include both drive-alone and carpool trips.

Fennessy Associates and the Urban Analysis Group will continue to work together during 2000 to provide maintenance and support for FSUTMS/TRANPLAN.

Be safe and enjoy the holiday season.

Please Email your comments or questions to harry.gramling@dot.state.fl.us or call (850)414-4928, SUNCOM 994-4928.

Improving the accuracy of demand forecast models

Shi-Chiang Li and Annette Lapkowski, FDOT District 4 Planning

To many newer model users, the most frustrating predicament in applying transportation demand forecasting models is getting model-forecasted future year link volumes less than a reasonably expected growth or even less than existing counts. A typical reaction is to identify whether or not new facilities or other capacity improvements, such as road widening projects, are planned nearby the under-forecasted links, in order to justify the undesired model forecasts. The purpose of this article is to explain that the cause of model under- and over-forecasting can be inherited from model validations and the inherent inaccuracy should be addressed in all the model applications.

FSUTMS models are typically validated and calibrated pursuant to the criteria specified in FDOT's *Urban Transportation Planning Model Update - Phase II, Task C, Develop Standard Distribution and Assignment Models.* Models are validated and calibrated in a top-down manner. At the top level, variables that affect systemwide performance, such as trip rates and trip length distributions are adjusted first to bring the systemwide performance measures within acceptable ranges. At the bottom level, speed-capacity tables are adjusted to ensure that each facility type/area type/ number of lane combination attains proper shares of traffic loadings for a highway network. The validation and calibration of the model is an iterative process, since adjustment of a variable at the bottom level could affect the performance of variables adjusted in higher levels.

The *Task C* report specifies that the systemwide model accuracy measures for a highway network should be "5% for the ratios of Areawide Assigned VMT/Count VMT and Areawide Assigned VHT/Count VHT. In fact, most FSUTMS models can be calibrated to within "1% of these two measures. As a result of balancing the systemwide measures to the specified level, each network will have some individual link VMT and VHT V/C ratios above 1.0 and some others below 1.0. In other words, it is a nature of the model to over-assign trips on some links and under-assign on some others, so the model reaches a systemwide average of V/C ratios near 1.0. The Task C report further specifies the accuracy limits for individual links as shown in Table 1. As shown in the table, individual links are allowed to have wider variances than the systemwide measures.

A well calibrated model usually can have the majority of individual links reach the acceptable range. Also if needed, individual TAZ zonal data, centroid ties and/or link attributes may warrant localized adjustments to improve the V/C ratio of individual links. However, it is not uncommon to find individual links that still fall outside the acceptable limits where no adjustments can be justified. The solid line on Figure 1 shows the distribution of link V/C ratios for a validated 1996 model. The curve is normally distributed with about equal numbers of links under- and over-assigned. The distribution curve also shows clearly that some of the links are outside the acceptable ranges as defined in Table 1.

Table1. Acceptable Percent Error in Assignment Results

Facility Type	Number of Lanes	ADT Range (x 1,000)	% Error
Freeway	8	80 ~ 105	13
	6	55 ~ 80	18
	4	30 ~ 55	29
Arterial	8 Divided	37 ~ 47	13
	6 Divided	27 ~ 37	17
	4 Divided	16 ~27	25
	4 Undivided	9 ~ 18	34
	2 Undivided	2 ~ 8	56
	4 One-way	18 ~ 24	13
	3 One-way	13 ~ 18	17
	2 One-way	8 ~ 13	25

Source: *Task C. Develop Standard Distribution and Assignment Models, Urban Transportation Planning Model Update - Phase II, FDOT, October 1981*

Improving the accuracy of demand forecast models *Cont'd*

This validated model was later used for a 2020 Long Range Transportation Plan Update with an estimated population growth of about 30% from the validation year. A comparison was then made for the 2020 link loads to the 1996 counts. This comparison is shown as the dashed line on Figure 1. As expected, the distribution curve shifted to the right with more of the 2020 link volume/1996 counts greater than 1.0. However, there is a noticeable percentage of the links that still have 2020 volumes below their respective 1996 counts. Apparently, for these links, the increase of the traffic in the future year is not large enough to compensate for the inaccuracy of the base year model validation. Many of those who incidentally use the model may hastily judge that the model is not valid since it is unable to project traffic growth above the existing ground counts. On the other hand, many would take the high model outputs as granted without questioning whether or not a high V/C ratio in the base year validation is a contributing factor to a high traffic projection. Both would

be inappropriate since the inherent nature of the model's inaccuracy is being ignored. For this reason, the Department dedicates substantial resources to develop design traffic, which processes model outputs for application to roadway projects. Further, additional resources are dedicated to FSUTMS refinements targeted to narrow the spread of model inaccuracy.

In conclusion, all users are urged to recognize the importance of taking the model validation inaccuracy into consideration while applying the model. In particular, using the model for Long Range Transportation Plans, which, due to their complexity, apply raw model outputs directly for needs assessments, as demonstrated here, could lead to omitting truly needed projects and including unneeded others.

Figure 1
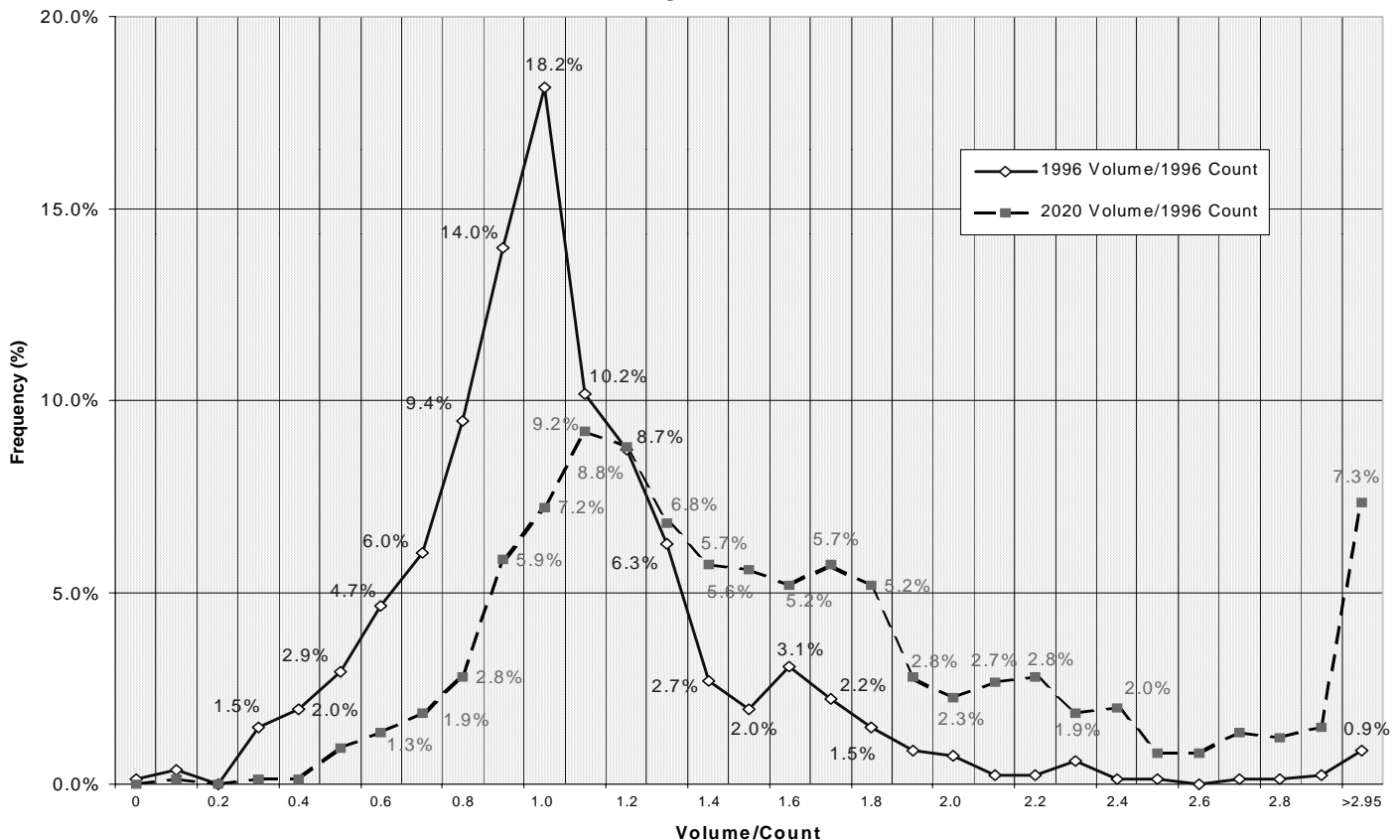
HNET study recommends procedural enhancements

Robert G. Schiffer, AICP, PBS&J/Tallahassee

In March 1998, a series of reports on the HNET Procedural Enhancements Study were published by the FDOT Systems Planning Office, with input from the Florida Model Task Force and technical assistance by PBS&J staff. The HNET Study reports established a set of recommendations for coding, editing, and validating FSUTMS highway networks using two-digit area types and facility types.

Since that time, procedures established during the HNET Study have been incorporated into a number of MPO and regional models throughout Florida. In addition, the FDOT Systems Planning Office has published an updated 1998 Level of Service Handbook containing new information to be used as a basis for FSUTMS capacities. A reassessment of base input speeds, capacities, and UROAD factors may be appropriate at this time to make use of new capacity information and broader experience in validating two-digit networks.

In response to these issues, we have updated the base default SPDCAP, VFACTORS, and HELABELS files used in FSUTMS. Capacity values have been updated to reflect maximum LOS "E" values found in the 1998 LOS Handbook. The definitions of some facility types had to be revised slightly in accordance with the 1998 Handbook. This was necessary to convert from the previous Arterial Classes Ia, Ib, II, and III to the new Arterial Classes I, II, III, and IV. This new classification reflects the same number of classes/facility types with a slight change in signal density ranges for the first two classes.

Base input speed values have been updated by evaluating average validated speeds from several two-digit models in different areas of Florida. New base speeds are presently being tested and refined using each two-digit model to ensure that model validity improves when compared with the previously recommended base set of speeds. It is envisioned that a single set of recommended speeds can be developed that would be applicable to all two-digit models in Florida, thus eliminating the need for two alternate sets of input speeds.

With the advent of a new LOS Handbook, the ratios between LOS "C" and LOS "E" maximum volumes have changed. This has necessitated a change in the UROAD factors (contained in the VFACTORS file) that convert absolute capacity values from the SPDCAP file to practical capacity values for the BPR process during highway assignment. In recommending these changes, we evaluated the result of applying UROAD factors for each facility type and compared new practical capacities with those resulting from the previous set of HNET recommendations as well as the original Model Update

capacities at a UROAD setting of 0.75.

The two-digit HELABELS.SYN file has also been updated to reflect the new arterial classes established in the 1998 LOS Handbook. We have also recommended that a separate facility type 53 be established to distinguish "dummy" centroid connectors from other centroid facility types.

With the increased popularity of using VIPER as a tool for network editing, we developed a new default project file with color and line weight/type settings for each two-digit facility type and area type. By making use of this new project file as input to VIPER, the user will not have to waste any time customizing color settings to display two-digit facility types and area types. This replaces the previously recommended two-digit UPF files used as input to HNIS.

Having reviewed the data sets in several two-digit models, it would seem appropriate to point out two common mistakes in applying the recommendations from the original HNET Study:

First, we have noticed some models have continued to make use of the old Model Update recommended 0.75 UROAD factors for all facility types. This original recommendation was based on calculations within the 1965 Highway Capacity Manual that assumed LOS "C" service volumes were always 75 percent of LOS "E" capacities, no matter what type of facility. This is not the assumption used in current versions of the Highway Capacity Manual or the LOS Handbook.

Second, we have noticed some models have made use of area type/facility type categories listed as "not applicable" (N/A) in the HNET Study recommendations approved by the Model Task Force. The rationale behind these "N/A" statements was that some combinations of area type and facility type are mutually exclusive. One example of this would be the FT 11/AT 33 combination where the facility type definition implies a location within a large urbanized area and the area type denotes a transitioning area outside the urbanized area.

Should any questions arise in the proper application of the HNET Study recommendations, help is available through the FDOT Systems Planning Office.

It is anticipated that the new HNET input files will be provided in the /FSUTMS.V54 /NEWFILES directory as part of the scheduled release of FSUTMS version 5.4 in early 2000. For further information, please contact Huiwei Shen at (850) 414-4911 or Rob Schiffer at (850) 575-1800.

Integrated Transit Demand and Supply Model (ITSUP1.0) available

Ram M. Pendyala, Civil and Environmental Engineering, University of South Florida & Ike Ubaka, Public Transit Office, Florida Department of Transportation

The development of the first version of the Integrated Transit Demand and Supply Model (ITSUP 1.0) has been completed. ITSUP is an integrated transit demand and supply model that explicitly incorporates the two-way feedback relationship between transit demand and service. The model system consists of an econometric simultaneous equations system that is estimated on commonly available socio-economic and transit system data. The model has been implemented within a user-friendly menu-driven software architecture that provides the user flexibility with respect to input variables and model specification and parameters. In addition, the model has been interfaced with the ArcView GIS to provide visual and database management capabilities.

The model is capable of serving as a short-term transit demand forecasting model as well as a short-term operations planning tool. Given a set of input variables, the model will predict ridership at the level of the individual route. Also, through a series of iterative feedback computations, the model will suggest alternative service parameters (e.g., headway values) based on the socio-economic market potential of the buffer areas surrounding the routes. The model predicts transit supply as a function of demand in order to generate improved service configurations that enhance overall route- and system-wide performance measures.

ITSUP has been developed such that its data requirements are not substantial. The only restriction is that ITSUP requires all databases to be in dBase (*.dbf) format. Most of the data used by ITSUP is already available from various sources including local and state transportation agencies, the Bureau of the Census, and federal agencies.

ITSUP is also beginning to receive national attention. A paper describing ITSUP has been accepted for presentation at the upcoming Transportation Research Board (TRB) Annual Meeting in Washington D.C. The presentation is scheduled in a session titled "Transit Planning Techniques and Methods" (TRB Session #397) to be held on Wednesday, January 12 at 10:15 AM in the Washington Hilton Hotel.

A first ITSUP training workshop was held at the University of South Florida in August of this year. A second ITSUP training workshop is planned for March 2000 and invitations will be sent out in early February 2000. To obtain a copy of ITSUP 1.0 or the TRB paper, contact Ram M. Pendyala at the University of South Florida, Ph: 813-974-1084, Email: pendyala@eng.usf.edu or Ike Ubaka at FDOT, Ph: 850-414-4532, Email: ike.ubaka@dot.state.fl.us. In the near future, the software will be available for download from the FDOT Public Transit Office website.

Introduction to Urban Transportation Planning course to be offered in March

by Jon Ausman, FDOT Public Transit Office

Governor Bush signed into law the Growth Policy Act. This law states local government planning efforts shall address transportation, mass transit and multi-modal linkages. It requires local governments to use professionally accepted techniques for measuring levels of service for transit. Under this new law, FDOT is tasked with developing specific methodologies to help local governments in implementing multi-modal level-of-service analysis.

Next March FDOT is offering a course entitled "Urban Transportation Planning: Challenges, Emerging Methods and New Solutions." This course, which has been taught to full houses for four years, will address methods and techniques to measure transit level of service. This course provides a solid introduction and refresher to urban transportation planning. It is also an opportunity to network with planning, transit, MPO and FDOT staff.

The weeklong seminar will run from March 20-24, 2000

and will be taught at the Best Western All Suites Hotel near USF behind Busch Gardens (rooms are $89 a night plus tax). All rooms are suites. There is a course registration fee of $95.00. The registration fee covers course handouts, four lunches and one dinner. The hotel will provide a full and free breakfast to those staying there.

This course will cover the following topics:
* The four-step urban transportation process
* Approaches to urban transportation planning
* Travel demand forecasting
* Trip generation and trip distribution
* Transit planning
* Mode splits and auto occupancy
* Traffic assignment
* FSUTMS transit modeling and demand forecasting
* Innovative approaches in transit modeling
* Future directions

If interested in attending, please contact Jon Ausman at 850-414-4519. This course is limited to 26 attendees and will not be taught again this year.

Report comparing model validation statistics to be released

Huiwei Shen, FDOT Systems Planning Office,Tallahassee

At the FSUTMS Special Update Workshop, held on June 21-22, 1999 in Tampa, the FDOT Systems Planning Office distributed a report entitled Status Report to Florida Model Task Force on Transportation Modeling in Florida. This report included revisions to an earlier draft report distributed at the Model Task Force meeting held in February at Kissimmee.

FDOT Systems Planning staff, with the assistance of PBS&J staff, are preparing an appendix to this report containing a series of comparative statistics from model validation studies, FSUTMS base year models, travel characteristics surveys, and national projects such as the Travel Model Improvement Program (TMIP). This appendix will include statistics on trip generation, trip distribution, mode choice, and trip assignment for use in assessing the validity of future model validation efforts in Florida.

A revised version of the Status Report, including revisions from comments on earlier versions and the statistical appendix, will be released in a CD-readable format by the Systems Planning Office in February 2000. For further information, please contact Huiwei Shen at (850) 414-4911.

FSUTMS training workshops scheduled

Land Use Modeling Workshop
January 24, 2000 1:00 PM to January 26, 2000 12:00 PM
Location: FDOT District 2 Jacksonville Urban Office
2250 Irene Street, Jacksonville
D-2 phone: 904-381-8600

This workshop will provide details on how to prepare input files, execute model runs, and interpret model results using the Urban Land-use Allocation Model (ULAM), which will be relased with FSUTMS Version 5.4. The developer of ULAM will teach this course.

A block of rooms has been reserved for $70 per night at the Radisson Hotel/Marina at 1515 Prudential Drive, Jacksonville. Hotel phone number is 904-396-5100.

Fundamentals of Transit Modeling Workshop
February 7, 2000 9:00 AM to February 9, 2000 4:30 PM
Location: Ramada Plaza Hotel & Inn Gateway,
        Kissimmee, FL
Hotel rate: $77 single or double (all reserved in tower)
Hotel phone: 407-396-4400

TMIP Seminar: Vehicle Availability Forecasting
As part of a nationwide series of nine one-day seminars, the Travel Model Improvement Program (TMIP) will conduct a Vehicle Availability Forecasting seminar February 10, 2000, following FDOT's Fundamentals of Transit Modeling Workshop at the same Kissimmee location. **To register for this TMIP seminar** contact Lisa Day, Texas Transportation Institute (TTI) at 817.462.0530 or email: Lday @tamu.edu. Other seminars later in the TMIP series will be Travel Model Calibration and Validation, and Forecasting Land Use Activities (dates and locations to be announced).

Future FSUTMS Workshops:

TENTATIVE Schedule

Freight Modeling Workshop
March 2000, Orlando

Advanced FSUTMS Transit Modeling Workshop
April 2000, Daytona

Florida Modeling Application Conference
May 2000, Clearwater

Basic FSUTMS Workshop
June 2000, Tallahassee

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. FDOT employees should register via TRESS (contact your training coordinator). For more information and registration, please contact:

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IMPORTANT NOTICE:

Newsletter mailing list currently undergoing update

If you received this copy of the *Florida Transportation Modeling* newsletter in the mail, then you should have received a blue postcard in the mail during the month of November. If you want to continue receiving this newsletter, it is important that you check the information listed on the blue card, make all necessary corrections, and return the card before the end of December 1999. If you did not receive a blue card and want to continue receiving the newsletter, please contact Terry Corkery or Jeanette Berk.

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