SOUTHEAST REGIONAL PLANNING MODEL 6.5
2005 and 2030 Models

TECHNICAL REPORT 3

Model Application Guidelines

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Submitted by:
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Commonly Used Abbreviations

AADT	Annual Average Daily Traffic
AM	Peak Period (for reference to Transit model)
BO	Broward
BRT/LRT	Bus Rapid Transit/Light Rail Transit
CBD	Central Business District
CV	Cube-Voyager
CTPP	Census Transportation Planning Package
DA	Drive Alone
EE	External-External
EI/IE	Internal-External
FDLES	Department of Labor and Employment Security, State of Florida
FTA	Federal Transit Administration
HBNW/HBO	Home-Based-Non-Work/Home-Based-Other
HBSCH	Home-Based-School
HBUNV	Home-Based-College and University
HBShop	Home-Based-Shopping
HBSocRec/HBSR	Home-Based-Social-Recreation
HBW	Home-Based Work
HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
IVT	In-Vehicle Time
LOS	Level of Service
MD/MI	Miami-Dade
MD/MIDDAY	Off-peak period (for reference to Transit model)
MPO	Metropolitan Planning Organization
NCHRP	National Cooperative Highway Research Program
NHB	Non-Home-Based
NHBO	Non-Home-Based-Other
NHBW	Non-Home-Based-Work
OBD	Outer Business District
OD	Origin-Destination
PB	Palm Beach
PT	Public Transportation
QRFM	Quick Response Freight Manual
RMSE	Root Mean Square Error
SERPM	Southeast Regional Planning Model
SR	Shared Ride
TAZ	Traffic Analysis Zone
TOD	Time-of-Day
TMIP	Travel Model Improvement Program
VMT	Vehicle Miles of Travel
VHT	Vehicle Hours of Travel

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1. INTRODUCTION

The Southeast Regional Planning Model (SERPM) is a multimodal travel demand model covering the three urban areas of Southeast Florida – Palm Beach, Broward and Miami-Dade Counties. Version 6.5 of SERPM (SERPM6.5) is the latest version and uses Cube-Voyager (CV) and TRNBUILD as the new FSUTMS modeling platform for highway and transit travel estimation. The same is true for version 6 (SERPM6). SERPM6 is a time-of-day only model. On the other hand, SERPM6.5 includes time-of-day and all-day (24-hour) models. The SERPM6.5 models have been implemented using Cube version 4.2.2 (Dec 12th, 2007). It has been structured to utilize Cube's parallel-processing capability, Cube Cluster, and runs optimally on a computer with a quad-core processor.

Like SERPM6, SERPM6.5 takes advantage of many Cube-Voyager features. For example, SERPM6 and SERPM6.5 use floating-point arithmetic and data tables, both of which are standard with the CUBE-Voyager platform. Both SERPM6 and SERPM6.5 include "true" time of day modeling, with a peak and off-peak period modeled for all three main trip purposes (HBW, HBNW and NHB). Previous versions of SERPM applied peak skims to all HBW trips and off-peak skims to non-work purposes.

The SERPM6 and SERPM6.5 transit models include many features not seen in previous models. The most noticeable new feature is the use of two distinct transit-modeling packages, PT and TRNBUILD. Public Transport (PT) is Cube-Voyager's public transportation module. Like SERPM6, SERPM6.5 transit model uses PT for network coding and generating access connectors and TRNBUILD for path building, skimming and assignment. A process within the model stream converts the PT-formatted network and access connectors to TRNBUILD format; the user should not have to convert any data.

A varying level of time-of-day modeling was implemented for its distribution, transit paths and skimming, mode choice and assignments. Right after trip generation, trips are distributed as peak and off-peak trips. Separate distributions are also made with trips with and without vehicles. Transit peak and off-peak periods are modeled separately. After mode choice, the highway peak period trips are subdivided again to AM- and PM-peak periods. The assignments from all periods are then combined to compare the assigned trips to 24-hour traffic counts and ridership counts. To evaluate the period model, period specific traffic counts also were assembled and entered into the network database. This report describes the model and its key elements in detail. The three periods modeled in time-of-day version are as follows:

1. **AM-Peak Period (6:30-9:30 am)**
2. **PM-Peak Period (3:30-6:30 pm)**
3. **Off-peak Period (9:30 am – 3:30 pm, 6:30 pm – 6:30 am)**

SERPM6.5's TOD model includes managed lane features. The term managed and High Occupancy Toll (HOT) is used interchangeably throughout this report. The process incorporates tolls on the basis of congestion. The toll rate (tolls per mile) increases with increase of congestion. Also, 3-or-more person carpoolers do not need to pay the toll. This process was tried first in a version of SERPM6 model only at the assignment step. The process implemented completely in SERPM6.5 and considers the managed lane toll costs at every steps of the model (path, distribution, mode-choice and assignment).

This technical report assumes that reader is familiar with standard modeling techniques used in Florida, FSUTMS, and Cube Voyager. This application guide is intended to supplement general modeling knowledge by focusing specifically on elements that are unique to SERPM. For the sake of providing a comprehensive reference to modeling with SERPM, some basic information on modeling in CV is presented in this application guide. For a more detailed treatment on modeling with CV, the user is referred to the software documentation provided by Citilabs, Inc., the developer of Cube.

1.1 Report Organization

This report (TR 3 – Model Application Guidelines) is the last of two technical reports developed for the SERPM6.5 model. A companion document (TR 1&2 – Model Data, Calibration and Validation) deals with the key model data and calibration and validation results of the model. This report provides instruction on the application of the model. The model chain and all required inputs are described in detail. The application guide assumes that the users have working knowledge of FSUTMS and Cube-Voyager. This document provides instructions on applying the model and background on how the model works. This report contains six chapters and seven appendices.

- Chapter 1, **INTRODUCTION**, contains an overview of this technical report, model enhancements and then describes the model structure and operation. It presents the flowchart of the model chains.

- Chapter 2, **MODEL DESCRIPTION**, contains a description of the SERPM6.5 model. All user written programs and input files are discussed in this chapter. The PROFILE.MAS, CV keys and the script files referenced in Chapters 2 and 3 are described in the appendices.

- Chapter 3, **MODEL GUIDELINES**, provides guidelines for each of the main modules. It explains how the SERPM is different from standard FSUTMS. The scripts, input and output files for each module and sub-module are described.

- Chapter 4, **MODEL APPLICATION AND ADJUSTMENTS**, discusses issues related to important changes in model input files and parameters.

- Chapter 5, **SUMMARY AND CONCLUSION**, provides highlights of the model application guideline report.

- Chapter 6, **LIST OF REFERENCES**, provides a list of references on SERPM, other Florida and other national resources referenced in technical reports of SERPM6.5.

- The **PROFILE.MAS** files and **CV keys**, which control model operation and provide many input parameters, are presented in Appendix A. Some of the key model data and other model parameters are entered in PROFILE.MAS file and CV keys. Comments are provided for each of the parameters to explain their use. Screenshots of SERPM6.5 base and scenario keys are also presented in Appendix A.

- The formats and contents of the input files are documented in Appendix B (**FORMAT AND LISTING OF USER INPUT FILES**). Users should find this information very useful for model application because it includes the format for all fixed-format files and description of fields of all other files. **Tables B-12** and **B-18** have description of the fields of unloaded network and zonal database files, respectively. The CV scripts write out the fixed format zonal data files (ZDATA1B, ZDATA2 and SCHOOL) from the zonal database.

- Appendix C (**CUBE VOYAGER SCRIPTS**) is a compilation of scripts of twelve appendices C1-C12, one for each main model module. These voluminous appendices (C1-C12) are documented separately. This main report only lists the scripts used in each of the module. The module and step numbers of the CV application precedes the scripts listed in these appendices.

The last hyphenated number is the step number of the preceding module or sub-modules number, which is also hyphenated.

- Appendix D (**CUSTOM-WRITTEN PROGRAM SOURCE CODES**) presents the source code of all custom written SERPM6.5 programs. Appendix D is also compilation of four appendices (D1-D2). Appendices D1 and D2 present the source code of trip generation and mode choice, respectively. The source codes of other highway and transit related models are presented in Appendices D3 and D4, respectively. These voluminous appendices (D1-D4) are documented separately. Appendix D only lists the main program and subroutine names.

- Appendix E (**ARCVIEW BASED PCWALK ROUTINE**) describes the process for developing the percentage walk (PCWALK) file that is used by the transit model in building walk connectors and in mode choice.

- Appendix F (**CUBE-VOYAGER FLOWCHARTS**) presents the CV's flowcharts of each of the main module and the sub-module, if any. These flow diagrams are presented as 36 figures and show the flows of model input and output files.

- Appendix G (**SELECTED OUTPUT FILE INFORMATION**) presents the formats and descriptions of selected important output files. **Tables G-5** and **G-6** of this appendix have the description of the loaded network attribute fields of TOD and 24-hour models, respectively.

1.2 Model Enhancement Summary

The development of the 2005 and 2030 Southeast Regional Planning Models represents a new updated modeling platform for the southeast region. SERPM6.5 is an outgrowth of SERPM6 and includes new 2005 base year and more coverage of the study region and has refined zonal boundaries. SERPM6.5 includes the modifications of SERPM6 that respond to issues raised by the Federal Transit Administration. Their transit models contain some new elements resulting from conversations with the FTA throughout the SERPM6 model development process.

Both SERPM6.5 and SERPM6 adopt the mode choice structure of the revised SERPM5 model. The original SERPM5 transit model restructured the modes and reduced the number of logit constants. FTA has stated that some models are "over specified," and prefers a model that reacts logically to provide reasonable forecasts, rather than one that is calibrated to detailed access/modes and market segments. Revisions to mode structure of the transit model were made to follow good transit modeling practice. Highlights of the changes in the mode structure follow:

- All buses are grouped and assigned TRNBUILD mode codes to distinguish premium and limited stop routes.
- The Metromover mode is separated from Metrorail. Metromover is then assigned to the bus mode.
- A new mode (BRT/LRT) was added.
- Both Park-N-Ride and Kiss-N-Ride nests allow bus and Metromover modes.

Both SERPM6.5 and SERPM6 contain a time-of-day model, are implemented in the Cube/Voyager (CV) platform and use floating point matrices. All other earlier versions of SERPM were FSUTMS/Tranplan based models and used integer matrices. Separate distributions are made for peak and off-peak periods. The transit part of the model estimates peak and off-peak travel. Later, for highway assignments, the trip tables are further partitioned into AM peak period, off-peak and PM-peak period travel. For the 24-hour SERPM6.5, an

all day OD highway trip table is composed right after two periods (peak and off-peak) mode choice for an all day assignment. Both versions (24-hour and TOD) include a feedback loop. It includes many of the improvements that were implemented in earlier versions of SERPM. Both 2000 and 2030 SERPM6 models were used to develop the 2005 and 2030 SERPM6.5 models. Many of the improvements that were implemented in the 2000 based MPO models were also carried into the regional model. Following is a list of the improvements that were implemented in SERPM6 and/or SERPM6.5:

- SERPM6.5 has two versions (24-hour and TOD) of model. The TOD version includes managed lane modeling process. The 24-hour version does not include managed lanes because period specific travel speeds are an integral part of estimating managed landes.
- SERPM6.5's zonal related data reside on its TAZ shapefile database. All zonal data (for example, production, attraction and school) are written from this database for use in the model specific program and other model steps.
- Both SERPM6 & SERPM6.5 include a new process to estimate the free-flow speeds based on posted speed limits and signalization data. The lookup tables for speeds are completely eliminated.
- The new capacity estimator process emulates the capacities published in the *2000 Florida Qualiy and LOS Manual*, which is based on the *2000 Highway Capacity Manual*.
- SERPM6 & SERPM6.5 use the lifestyle trip generation process. A regional version of this model was developed for SERPM5 and numerous revisions were made to fit into the CV process and to read the area types estimated dynamically through CV scripts. Separate production structures were used for the work and non-work purposes. The trip generation model implements (1) revised trip attraction rates based on area types and employment categories; and, (2) revised trip attraction rates calibrated from the 1999 Southeast Florida Travel Characteristics Survey.
- The SERPM6 trip generation model has 11 trip purposes. A new trip purpose (college and university trips) was added in SERPM6.5 to make 12 trip purposes.
- The Non-Home-Based purpose was divided into Non-Home-Based Work (NHBW) and Non-Home-Based Other (NHBO) purposes. For both SERPM6 and SERPM6.5, an airport purpose was added.
- The trip production rates of visitors were updated from the 1999 Southeast Florida Visitor Survey.
- The regional trip generation routine separates the zero auto household trips from trips by households with autos. Households with and without autos have different distribution patterns.
- The trip generation process employs time-of-day factors to estimate the peak and off-peak trips by purpose. The initial time-of-day diurnal factors were developed from the 1999 South Florida travel characteristics surveys.
- Both SERPM6 and SERPM6.5 implement a new truck model with a structure similar to the one recommended in the Quick Response Freight Manual (QRFM). The truck model includes three truck purposes (four-tired, Single Unit and Combination), treating trucks as a separate mode from generation through assignment.
- Both SERPM6 and SERPM6.5 treat internal-external trips as internal trips. It improves the modeling of these trips by eliminating the internal-external purpose. The distribution of internal-external trips for several selected external zones (Turnpike, I95 and I75) was modified to have spread these trips further. This was based on survey information on turnpike external stations.

- The model includes school trips as a separate trip purpose and uses a refined methodology for school trip distribution.
- The final trip tables were distributed twice; once with free-flow skims and once with congested skims for the peak and off-peak period distribution. Multiple feedback distributions were used for simulation of peak period distribution and for equilibrium of speeds in the peak period pre-assignment.
- Trips for households with autos were distributed using highway skims, while zero-auto households were distributed with transit skims.
- The model implements an automated turning routine that manages the traditional turn penalties and prohibitors and generates new penalty records for right, through and left turns.
- Both SERPM6 and SERPM6.5 implement a logit model to separate the non-motorized trips from the motorized trips. The motorized trips are then used in the analysis of highways and transit. Thus, the number of highway and transit (motorized) trips is sensitive to "walkability" characteristics of the TAZs.
- The model implements a policy sensitive highway-only model by restricting the mode-choice set to the auto modes for peak period pre-assignments.
- The model uses new transit period models to estimate transit ridership for the peak and off-peak periods.
- The TOD version of model uses three periods (AM peak, PM peak and off-peak) and estimates the delays expected at freeway and ramp merges. This process of estimation of delays was also implemented in the 24-hour version of the SERPM6.5.
- SERPM (staring version 4) implements the facility specific volume-delay functions. Separate CONFAC factors were used for each period model. These factors are also facility specific for peak-hour to peak-period ratios. The UROAD factors are used to estimate LOS-E capacity from LOS-C capacity.
- The model generates an external truck trip table that is used in a separate truck assignment. The external vehicle trip tables also are subdivided into drive-alone and shared-ride for the High Occupancy Vehicle (HOV) assignment.
- The toll model data and parameters were rigorously examined and revised for the highway assignments. In SERPM6.5, the toll link data file is written from the network for use in other model steps. All toll related data and network were carefully examined and updated in SERPM6.5.
- For the regional model, the MPO's employment data were indexed to a common data source (Florida Department of Labor and Economic Security - FDLES).
- All versions have an HOV model, where access to the HOV links is controlled using access links. The SERPM6.5 includes the managed lane modeling process. The HOV model has capability to have 2-and-more and 3-and-more carpoolers in the same scenario/alternative for different parts of the networks and regions.
- The model explicitly evaluates delays that are expected to occur at freeway-ramp merges.
- SERPM6 & SERPM6.5 has a built-in mode choice constant update process, which adjusts constants to match observed modal targets.
- Starting revised SERPM5, all SERPM models include "Grouped/Incremental" mode structure. It has significantly fewer constants to validate. The user has the option to use expanded

geographical constants that provide user more control of over origin-destination of transit trips, if necessary.

- Many of the SERPM5 user-written programs were converted to Voyager programs.

The transit models of SERPM6 and SERPM6.5 are very similar. However, new ridership data were assembled for the 2005 based SERPM6.5 model. The SERPM6.5 transit network was carefully coded and reviewed for accuracy. The 24-hour version of SERPM6.5 uses the SERPM6 AUTOCON program. However, the new AUTOCON program from FDOT's new transit model framework was used in the TOD version of SERPM6.5.

Both SERPM6 and SERPM6.5 transit models include many improvements over the previous SERPM5 edition. Revisions were made to follow good transit modeling practice and the latest FTA New Starts requirements. The changes made to the mode choice programs revolved mainly around the changes made to the transit network, path and assignment steps. However, some of the changes to SERPM6 and SERPM6.5 are comprehensive rather than "piece-meal" adjustments. Some notable changes to the transit model are as follows:

- Reviewing and modifying transit networks, including…
    - Maintaining a single transit route file for peak and off-peak periods in PT format,
    - Restructuring the mode definitions, and
    - Separating out the rail platform of the fixed-guideway systems (Tri-Rail and Metrorail) from the bus platform on the street layer to take into account the time it take to move up the escalator ("escalator time") from the street to the rail platform (microcoding);
- Reviewing and adjusting to auto-to-transit speed curves;
- Reviewing transit paths, including…
    - Revising the AUTOCON program to include the station cost on the access paths,
    - Building walk and transfer non-transit connectors using PT in FSUTMS-Voyager,
    - Modifying transit path parameters ("favorable/unfavorable" run time factors, maximum run time, number of transfer, and transit path "cliffs", etc.), and
    - Building transit paths and skims in TRNBUILD;
- Revising the mode choice module, including…
    - Modifying trip distribution process for zero-auto households slightly,
    - Revising the mode choice and non-motorized programs according to the changes in the model structure;
- In transit assignment,
    - Developing a new user-written program to summarize the transit assignment results and
    - Performing time-of-day transit assignment; and
- Converting some SERPM5 user-written programs to the native Voyager environment.
- The model implements Tri-Rail fares based on the number of fare zones traveled.

The initial Southeast Regional Planning Model Version 6 (SERPM6) was updated to address concerns that were identified in the face-to-face meeting with FTA. In the updated version of SERPM6

(SERPM602) and SERPM6.5, the "spline function" was removed. The transit nesting logit coefficients in the lowest nest were flipped to ensure that the nesting coefficients decrease at each of the lower nest compared to higher level nests.

In the SERPM6.5, a CV key (FARESTRUC) was added to handle the transit fares in a file not embedded in the script. The values of this new key for 2005 and 2030 models are set as BASE and FUTURE, respectively. For any interim year model run, the value of this key should be FUTURE. Transit fares for the 2030 model used 2007 transit fares and an INFL1 (Transit fare inflation) parameter from PROFILE.MAS (a value of 0.97), which converts the 2007$ fares to 2005$. If the FARESTRUC key is set to FUTURE, users should not change the value of INFL1 for interim years.

1.3 Model Operation

The SERPM6.5 CV model organizes the model files in folders at several levels. **Figure 1-1** describes the folder tree. A SERPM6.5 model run uses the input files from the working directory/folder as well as several other subdirectories/subfolders (namely, PBIN, BOIN, MIIN and TRANSIT). It should be noted that the terms directory and folder, as well as subdirectory and subfolder, are used interchangeably throughout this report.

Within the SERPM65MDL (24-hour version) and S65TODMDL (TOD version) folders itself, the subdirectories are classified according to five general categories (see Level 4 of **Figure 1-1**). These are the scenario folder, the CUBE folder, the input folder, the output folder, and the model-specific user program folder. Although the scenario could be used to facilitate the file management for a variety of scenarios and alternatives, they were not promoted in SERPM. The users **must** use the following catalog keys to define their inputs and outputs for scenarios/alternatives.

Catalog Key	Value (for example)	Comment
DATADIR	E:\fsutms\d4\S65TODMDL\input\IN-05R	Main Input Folder
OUTDIR	E:\fsutms\d4\S65TODMDL\output\OUT-05R	Main Output Folder

The use of these catalog keys had increased the ease and efficiency of file management. It is believed to a good modeling practice.

1.3.1 Folder Structure and File Naming Conventions

The naming of the input/output files is based largely on the FSUTMS standard file-naming convention for the new CUBE-Voyager platform. Voyager offers attractive ways of maintaining the alternatives. Voyager uses the same script files for all the alternatives. Alternative-specific input and output folders are specified. The script files and the application files are maintained in a folder called CUBE. The set up of the model in Voyager is also highly dependant on the folder set up.

The SERPM6.5 CV model includes a directory structure (**Figure 1-1**) likely to be representative of other regional models in Florida. The file naming convention generally follows the name used in predecessor models in South Florida. However, it implements the Central Office suggested naming procedure where that is more applicable. Newer conventions oriented towards CV were adopted whenever possible. It is not possible to comply fully the naming convention that is proposed by the Central Office. It is expected that the naming conventions used for this multi-period and multi-region will be transparent to the users of this model. Similar to how other Cube FSUTMS models had been structured, the folders specific to SERPM are located under a model-specific folder called SERPM65MDL or S65TODMDL (see Level 3

of **Figure 1-1**). This folder, in turn, is a subdirectory of the "D4" or District 4 folder, which is a subdirectory of the FSUTMS folder.

The input files are in the folder named **INPUT**. Input files can reside wherever the user wishes. The input folder has been provided as a convenient location to place model inputs. The INPUT folder has a subfolder for each alternative named **IN-{YEAR}{ALT},** which contains the main user inputs of each scenario. The transit specific files are in the folder named 'transit'. The county specific files are in the folder MPOIN with a subfolder for each of the three counties. The files within the input folder (IN-{YEAR}{ALT}) and its subfolders make up the all user supplied input files used in SERPM. Copies of these files must be made when designing a new scenario. These copies must then be placed in a separate input folder (IN-{YEAR}{ALT}) created specifically for the new scenario.

The structure of the output folder is similar to the input folder. The temporary/intermediate files are stored in a subfolder called **'TEMFILES'**. This folder can be deleted at the end of each model run. The user-written programs are in the folder "**USER.PRG**". These programs are called by the CV scripts.

The model's **CUBE** folder is located at the same level as the INPUT and OUTPUT folders. It is the working folder for SERPM Cube. It contains the model scripts and applications related to the running of the model. The script files (*.S) govern the various CV programs and parameter settings that drive the model. The application files (*.APP) keep track of the essential features governing a model application, such as the execution order of the programs found within a given application. These applications correspond with the interactive flowcharts accessible in the CV application manager. Also, various inputs are copied into this folder and various outputs are copied out of this folder in order to run the several custom/Fortran programs that are used in SERPM. These programs specifically are the trip generation and mode choice programs. Efforts were made to clean the copied/generated files of the custom-written programs from this folder. Most of the files in this folder will not be of interest to most users and should not be modified.

Three input subfolders (**PBIN/BOIN/MIIN**) are located under the MPOIN folder, which itself is a subfolder of the **IN-{YEAR}{ALT}** folder. Each of the three subfolders (XXIN) contains corresponding MPO model zonal data (ZDATA1B, ZDATA2, ZDATA3B, ZDATA4B), STP60XX file and SCHOOL file. **It should be noted that ZDATA1B, ZDATA2 and SCHOOL files in these subfolders are written from the TAZ database file. So, any changes to zonal data should be made to the shape database file. Each run of the model will replace ZDATA1B, ZDATA2 and SCHOOL files.** **TRANSIT** is an input subfolder of the **IN-{YEAR}{ALT} folder**. All transit-related input files in terms of the regional node and zone systems are kept in this folder.

The output files are created in the folder named **OUTPUT**. The OUTPUT folder has a subfolder for each alternative named **OUT-{YEAR}{ALT},** which contains the main model generated outputs of each scenario run. The files found within the output folder (OUT-{YEAR}{ALT}) and its subfolders for each of the scenarios make up the relevant output files for SERPM. Three output subfolders (**PBOUT/BOOUT/MIOUT**) are located under the MPOOUT folder, which itself is a subfolder of the **OUT-{YEAR}{ALT}** folder. Each of the three subfolders (XXOUT) will contain trip generation output files for the corresponding MPO.

The **RGENOUT** subfolder of the **OUT-{YEAR}{ALT}** will have selected regional trip generation output files. Users will seldom need the files of this folder. It is mainly used to debug the regional trip generation process. After a successful trip generation run, this folder also will contain the zonal data files in terms of the regional zonal system. These data will be helpful to relate many other zonal-based model outputs. The folder should also contain an EMPSMRY.CHK file generated through ZDATA2 program. The regional unadjusted production and attractions are also saved in this folder.

Figure 1-1: **Model File Folder Tree and Description**
Southeast Regional Planning Model 6.5

	Directory Level							Description
Level0	Level1	Level2	Level3	**Level4**	*Level5*	Level6	Level7	
{Drive}								
	FSUTMS							
		D4						
			SERPM65MDL					**SERPM65 Main Model Folder. It has the model catalog file.**
			(24-Hour Version)	**BASE**				**4.1 Base Scenario Folder**
					FUTURE-CF			*Future "child" Scenario Folder*
			S65TODMDL	**CUBE**				**4.2 Cube scripts and applications Folder**
			(TOD Version)	**INPUT**				**4.3 Input Data Folder**
					IN-05R			*Year 2005 Main Input Folder*
						MPOIN		MPO's T/G Input Data Folder
							PBIN	Palm Beach Input Data Folder
							BOIN	Broward Input Data Folder
							MIIN	Miami-Dade Input Data Folder
						TRANSIT		Transit Input Data Folder
					IN-30R			*Year 2030 Main Input Folder*
						MPOIN		MPO's T/G Input Data Folder
							PBIN	Palm Beach Input Data Folder
							BOIN	Broward Input Data Folder
							MIIN	Miami-Dade Input Data Folder
						TRANSIT		Transit Input Data Folder
				OUTPUT				**4.4 Output Folder**
					OUT-05R			*Year 2005 Main Output Folder*
						MPOOUT		MPO's T/G Output Folder
							PBOUT	Palm Beach Output Folder
							BOOUT	Broward Output Folder
							MIOUT	Miami-Dade Output Folder
						RGENOUT		Regional T/G Output Folder
						TEMFILES		Temporary Output Folder
					OUT-30R			*Year 2030 Main Output Folder*
						MPOOUT		MPO's T/G Output Folder
							PBOUT	Palm Beach Output Folder
							BOOUT	Broward Output Folder
							MIOUT	Miami-Dade Output Folder
						RGENOUT		Regional T/G Output Folder
						TEMFILES		Temporary Output Folder
				USER.PRG				**4.5 User-Written Program Folder**

All user-specified files (see **Table 2-28** of Chapter 2) generally follow the CV compatible extensions such as *.NET for network files, *.MAT for matrix files. The files used by the standard programs (such as trip generation, highway evaluation) are designated by the FILENAME.{YEAR}{ALT} where the filename extension {YEAR}{ALT} (or YYA)denotes the year and alternative. For the 2005 base year model YY or {Year}=05 and A or {ALT}=T result in the user supplied file extension of 05T. Parameter data files usually have extensions of MAS, SYN and CTL. The CV program generated model output files are identified by the standard CV filename extensions.

1.3.2 Model Modules and Catalog Keys

The overall structure of the model is shown in the form of a flowchart in **Figure 1-2**. It has 12 component modules. The macro flowchart identifies all the user-supplied input files that are used by each of the modules. It also shows all the SERPM6.5 specific programs used in these modules. Sections 2.4 and 2.6 provide detailed descriptions of the input files and customized programs.

Appendix F presents the CV model flow diagrams of the main modules and their sub-modules. A brief description of the 12 main modeling modules is presented below. These components are processed in a serial fashion to complete the travel demand simulation.

1. **PILOT** – Creates CONTROL.MAS, TITLE.MAS files and error reporting files
2. **EXTERNAL** – Creates EE matrices by time periods (24-hour, peak-AM/PM and off-peak)
   Figure F-1 presents the model flow diagram of this module.

3. **TRIP GENERATION**
   1. Writes zonal data (ZDATA1B, ZDATA2 and SCHOOL) files from TAZ database
   2. Creates P/As by trip purposes (12) and HH car categories (all cars, 0-car, 1+cars)
   3. Separates trips by periods (peak, off-peak)
   4. Computes/Uses density based area types

   Figure F-2 presents the model flow diagram of this module.

4. **HIGHWAY NETWORK** - Computes
   1. Free-Flow speeds and
   2. Capacities

   Figure F-3 presents the main model flow diagram of this module. The sub-modules are shown in **Figures F-4 and F-5.**

5. **HIGHWAY PATHS AND SKIMS** – Develops …
   1. Automated turning penalties, and
   2. Low and High Occupancy (LOV/HOV) Free-Flow (FF) Skims for GM and Mode Choice (Highway-Only & Full Version)

   Figure F-6 presents the model flow diagram of this module.

Figure 1-2: **Model Macro Flow Chart**
Southeast Regional Planning Model 6.5

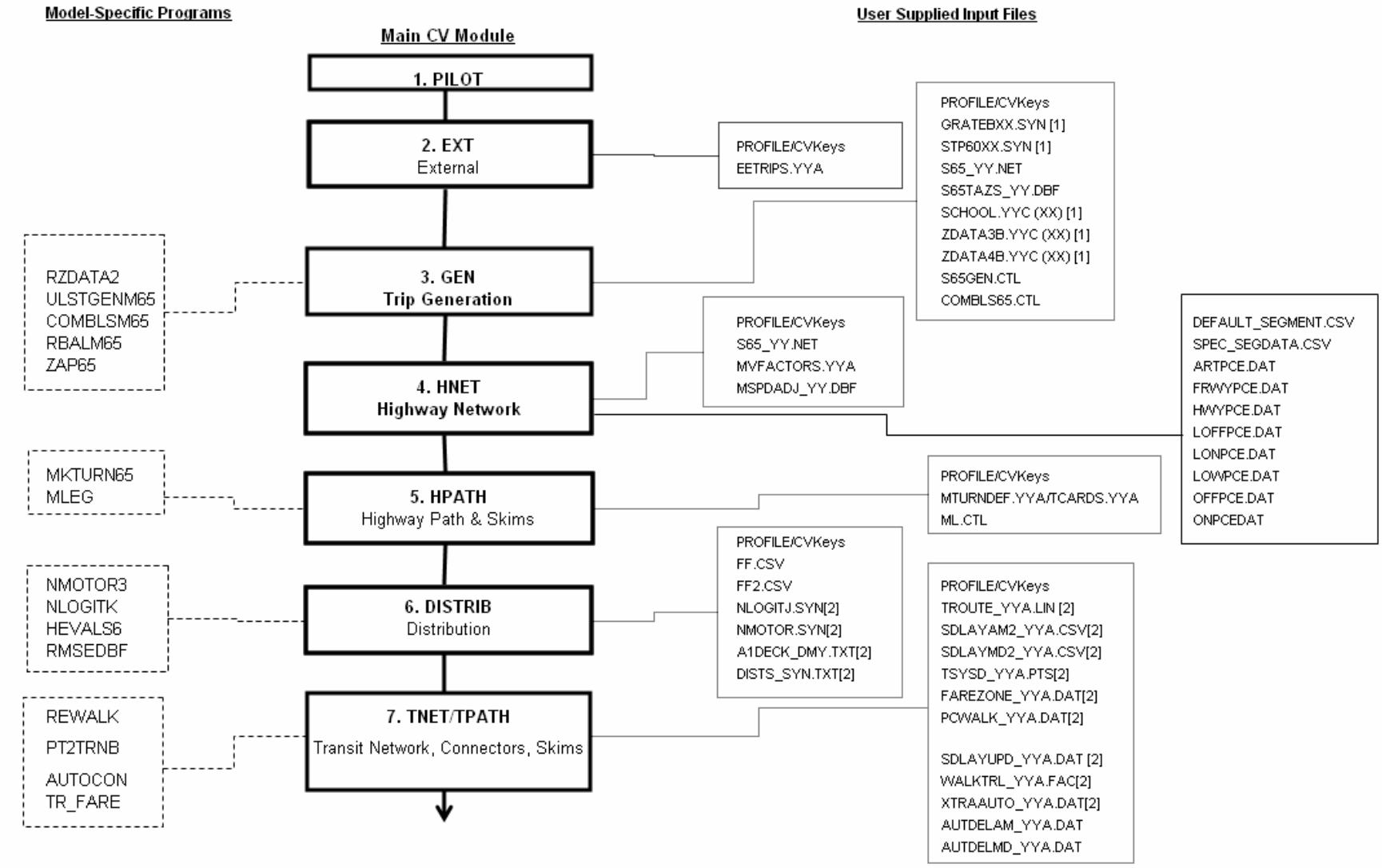
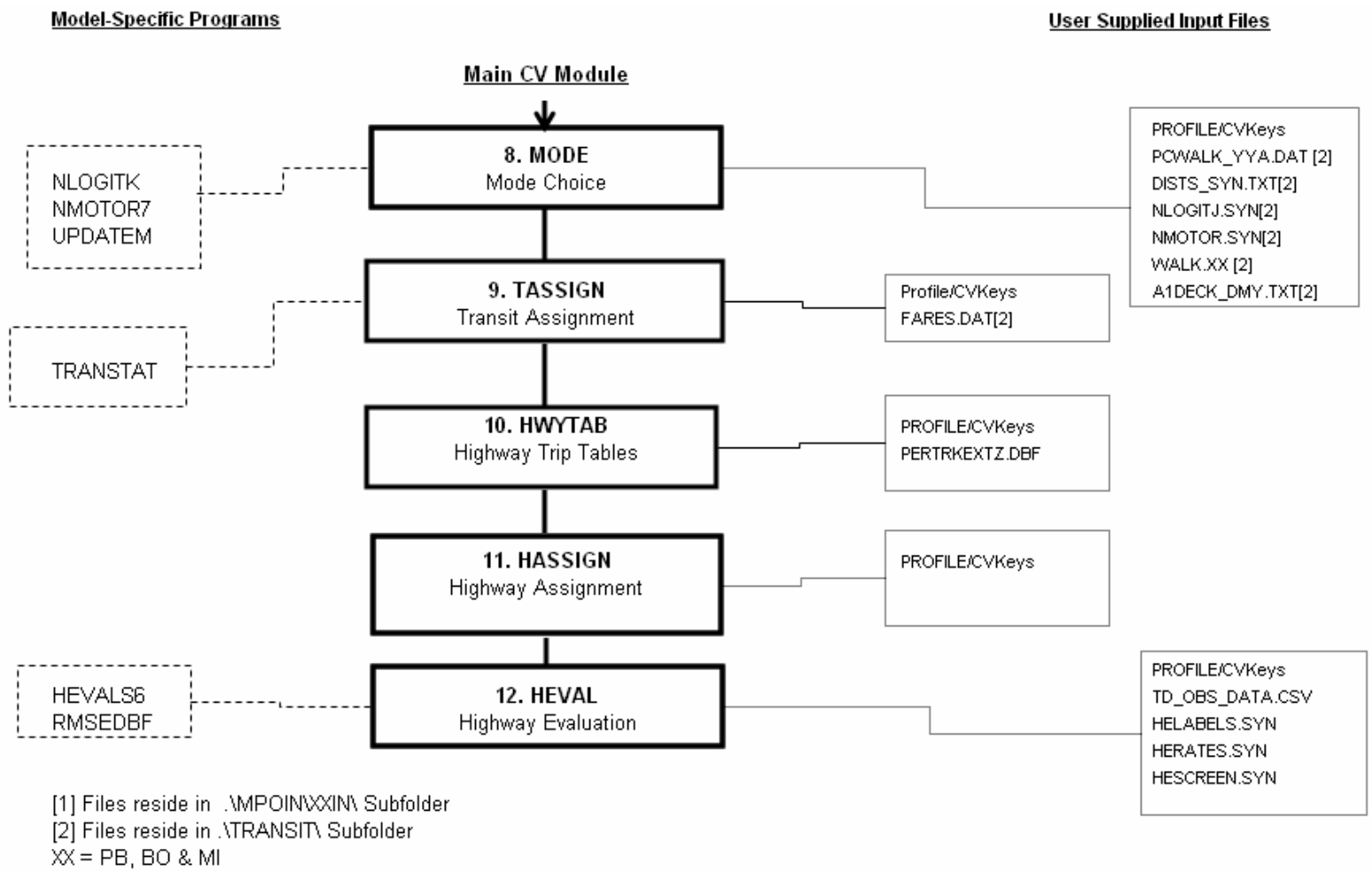


Figure 1-2 (continued): **Model Macro Flow Chart**
Southeast Regional Planning Model 6.5



6. **DISTRIBUTION**

A. Peak Period – Implements two feedback loops of distribution, motorized trips, highway-only (HO) mode-choice; pre-assignment and congested skims as follows:

1. Performs a free-flow distribution of AM peak period trips
2. Separates motorized trips from non-motorized trips
3. Runs the HO mode choice model
4. Performs an AM peak period pre-assignment
5. Develops (LOV/HOV) congested skims for the gravity model and mode-choice run
6. Performs congested flow distribution for peak period trips
7. Develops trip tables for final mode-choice
8. Develops combined loaded network for use in congested transit path and skimming

B. Off-Peak Period

9. Performs FF Distribution of off-peak period trips
10. Develops trip tables for final mode-choice

Figure F-7 presents the main model flow diagram of this module. The sub-modules are shown in **Figures F-8 to F-11.**

7. **TRANSIT NETWORK, CONNECTORS, PATHS AND SKIMS** – Develops
   1. Network and Connectors by period (peak and off-peak) – PT based
   2. Transit Path and Skims by mode, access and period – TRNBUILD based

Figures F-12 to F-15 present the model flow diagrams of this module.

8. **MODE CHOICE**
   1. Performs zero-car household trip distribution for peak- and off-peak periods
   2. Separates motorized and non-motorized trips for each period
   3. Combines peak and off-peak motorized trips
   4. Runs full seven-purpose mode choice program
   5. Develops peak and off-peak transit trip tables
   6. Summarizes trips tables to districts

Figure F-16 presents the main model flow diagram of this module. The sub-modules are shown in **Figures F-17 to F-20.**

9. **TRANSIT ASSIGNMENT**
   1. Performs peak and off-peak transit assignments by access and path – TRNBUILD based
   2. Develops line and link summaries

Figure F-21 presents the model flow diagram of this module.

10. **HIGHWAY TRIP TABLES** – Develops three (AM, PM and midday) highway trip tables by level of auto occupancy, and truck trips for the TOD model. All day trip tables are produced for the 24-hour model.

Figure F-22 presents the main model flow diagram of this module. The sub-modules are shown in **Figures F-23** and **F-24** for TOD and 24-hour models, respectively. It should be noted that the applications of the respective model are active for their run. The inactive applications are turned off.

11. **HIGHWAY ASSIGNMENT**
    1. Performs multi-class highway assignments (warm-up and final) for each of three periods for the TOD and for 24-hour for all day models
    2. Computes freeway and ramp merging delays
    3. Renames period loaded attributes and apply correction for truck units
    4. Combines period specific loads for 24-hour loading

    Figure F-25 presents the main model flow diagram of this module for the assignment process, which has two sub-modules (24-hour and TOD). The 24-hour model assignment flow diagram is presented in **Figure F-26**. The TOD model assignment flow diagrams are shown in **Figures F-27** to **F-30**. It should be noted that the applications of the respective model are active for their run. The inactive applications are turned off.

12. **HIGHWAY EVALUATION** – Performs
    1. Period-specific HEVAL/RMSE summaries,
    2. 24-hour HEVAL/RMSE summaries by region and counties,
    3. Truck summaries, and,
    4. Additional tabulations

    Figure F-31 presents the main model flow diagram of this module, which has two sub-modules (24-hour and TOD). The sub-modules for 24-four model are shown in **Figures F-32** and **F-33.** The sub-modules for TOD model are shown in **Figures F-34** to **F-36.** It should be noted that the applications of the respective model are active for their run. The inactive applications are turned off.

Chapter 3 has a detailed description of each of these modules. Appendix C provides a listing of the script files used by the SERPM6.5.

Catalog keys are a series of variables universal to the model. These variables can specify file names and paths, computational factors, parameters and coefficients, and switches that turn on and off specific portions of the model. The catalog keys that are of greatest significance to the modeler can be entered and changed through the scenario manager. Keys appear in scripts and file paths within the model embedded in curly brackets. Thus, a reference to a file in the model incorporating keys in the file name may appear like this: TCARDS.{**Year**}{**ALT**}. This would refer to whichever file is named TCARD and ending in an extension consisting of a combination of the values for the catalog keys **Year** and **ALT**. In this way, catalog keys behave in a manner similar to PROFILE.MAS replacement items used in FSUTMS/Tranplan. The SERPM6.5 catalog keys have different values for the base 2005 (validation) and 2030 cost-feasible model runs. **Appendix A** has complete description of each of the catalog keys and two scenarios.

SERPM6.5's PROFILE.MAS file, which now only controls operations for the trip generation and a few mode-choice parameters, is presented in Appendix A. The following catalog keys **should** also be checked to make sure that they are appropriate for the scenario/alternative under study.

Catalog Key	Value (for example)	Comment
Year	05	Last 2-digit of Year 2005
ALT	R	Alternative Name, "R" stands for Regional
CUBE	E:\fsutms\d4\S65TODMDL\cube	Cube Script and Application Folder
PATH1	E:\fsutms\d4\S54TODMDL\user.prg	Cube Script and Application Folder
ANALYSIS	NO	"YES/NO" for HEVAL Analysis run
VALIDATE	YES	"YES/NO" for HEVAL Validation run

The other ASCII title-related keys that should be modified are DESCR, NAME, FARESTRUC and TITLE. Users interested in select link highway analysis should enter the links in SELLINK key. Other keys should not be modified as they were used for the model validation process. In addition, the model application uses selected parameters from the "profile.mas" file of input folder. The users **must not change** the values of the following "profile.mas" parameters: **ZAPZERO, SCENARIO and BALATTR.**

1.3.3 Model Operation and Run Instruction

The SERPM6.5 model includes several new and refined modeling procedures. It has two model versions – 24-hour and TOD. Both 24-hour and TOD models have separate distribution and mode-choice for the peak and off-peak periods. The TOD model then follows three separate period assignments, one for each periods (AM, PM and off peak periods). For the 24-hour model, all-day assignment is made by combining the period tables after the mode choice. The TOD model stream includes changes in the model path, skim, mode choice and assignments to have the capability of managed lane modeling. Both versions of the models also include select link analysis process. Once the input data have been established, the model simulation procedure begins. A typical application of the SERPM6.5 model is to choose a single module, a group of modules, or a complete area simulation. There are separate catalogs to run the 24-hour and TOD model runs. Depending on the model years (2005 or 2030) and the type of model runs, a working directory and its subdirectories may use from 10 to 18 GB disk spaces with all input, output and binary files.

SERPM6.5 requires CV software version 4.2.2. It has been structured to utilize Cube's parallel-processing capability, Cube Cluster, and runs optimally on a computer with a quad-core processor. There are separate catalog files to run the 24-hour and TOD versions of the model. The model is contained in a CV catalog file (that includes a series of applications), which contains several additional modules. The main model folder contains the catalog file for each version of the models. SERPM6.5 catalog keys are shown in **Appendix-A (**see **Tables A-1, A-2** and **Figures A-1, A-2)**. SERPM6.5 uses catalog keys for managing input and output files. Users can execute any number of scenarios in succession. Each scenario of the model uses its own set of input files, while using common set of scripts and applications. A listing of the scripts for the model is shown in Appendix C, while the voluminous scripts are documented separately. The typical SERPM6.5 model would be executed from the CV interface.

A Cube key (PATH1) was added to point to the model-specific executables. All special programs are kept in a folder and are then identified by the PATH1 key (see **Appendix A**). It is important that user not add last "backslash (\)" in the above path statement. The three custom-written programs are implemented in Cube's User-Program resource files. Those must be copied to Citilab's Cube folder. Those programs are:

a. AUTOCON.EXE	SERPM6.5 Auto access program for 24-hour model run
b. NLOGITK.EXE	SERPM6.5 Mode choice model
c. MLEG.EXE	SERPM6.5 Freeway Roundabout Merge program

The TOD version implemented FDOT's transit model framework version of the AUTOCON program. That program resides in the USER.PRG folder. Users should read the further instructions from "README-SETUP.TXT" file that was distributed with the model to understand the required changes in Cube's resource files (userprogs.rsc & twmenu.rsc).

The model choice program (NLOGITK.EXE) is not the same for the 24-hour and TOD versions of the model. The 24-hour version uses SERPM6 version. The TOD version of SERPM6.5 uses a

revised version of the mode-choice model. The USER.PRG folder of each version of the SERPM6.5 contains correct version of the program for use in the model. The users must copy the required version of the NLOGITK program to the Citilab's Cube folder (IMPORTANT!!!). If the user forgets this important step, then the model run will either stop with an error or will produce unexpected results.

There are two other README files (Readme-ModelRuns.txt and Readme-ClusterSetup.txt) distributed with the release of the model have instructions regarding setting up the cluster run and model run in general. Instruction of these readme files are repeated follows here:

Readme-Model-Runs.txt:

- Users can run either 24-hour or Time-of-Day (TOD) model runs using same inputs. Two separate model folders ("SERPM65MDL" - 24-Hour & "S65TODMDL" - TOD) contain the inputs, programs, cube applications, scripts and catalog. The model folder also includes output folder(s).

- The 24-hour model run uses "SERPM65MDL.cat" catalog file from SERPM65MDL folder. Whereas, TOD model run uses "S65TODMDL.cat" catalog file from S65TODMDL folder.

- Use SERPM65MDL.CAT (see SERPM65MDL folder) to run both base (2005) and 2030 (CF) scenarios of 24-Hour model.

- Use S65TODMDL.CAT (see S65TODMDL folder) to run both base (2005) and 2030 (CF) scenarios of TOD model. The TOD model also contains a future year scenarios to test the HOT lane modeling process.

- By opening any catalog file, users should accept (or say yes) to any changes to the catalog and application files for the very first time and save the catalog.

- Users should also review and update (if necessary) the four catalog keys: CUBE, PATH1, DATADIR and OUTDIR.

Readme-ClusterSetup.txt:

- The 24-Hour (see SERPM65MDL folder) and TOD (see S65TODMDL folder) SERPM65 models were scripted to use 4 intra (quad-core) nodes. Whereas, SERPM6 model was scripted practically for inter-nodes (Multiple machines). Most of the users would prefer to use one machine with dual/quad cores.

- The 24-hour model run uses "SERPM65MDL.cat" catalog file from SERPM65MDL folder, whereas TOD model run uses "S65TODMDL.cat" catalog file from S65TODMDL folder.

- The Cluster.EXE program from "C:\Program Files\Citilabs\Cube" (default) folder should be run prior to running SERPM65 model runs.

- Alternatively, one can create a shortcut icon on desktop and run it before submitting any model run. For a very first time, users do need to specify the values (see red color answers) of the "cluster node management" inputs as shown below:

    1. Work Directory and Process ID :

E:\fsutms\D4\SERPM65MDL\Cube\SERPM6ID [24-Hour Model]
OR,
E:\fsutms\D4\S65TODMDL\Cube\SERPM6ID [TOD Model]

2. Process List: 2-4
3. List of No Response Nodes √ - Check the box

- It should be noted that the model working directory is the SERPM65MDL's (or S65TODMDL's) cube folder (for example, "E:\fsutms\D4\SERPM65MDL\Cube\" or "E:\fsutms\D4\S65TODMDL\Cube\") and the process id is "SERPM6ID".

- Users should do not rename/change the process ID (SERPM6ID) name. It has been coded in the model scripts.

- Process list should always be 2-4 for a quad-core machine. User may use "List Nodes" and "Start Nodes" icons to verify their nodes.

- Those users want to use cluster should run the CLUSTER.EXE program first and start the nodes by pressing "start Nodes" icon before running their Cube model run.

- If an icon of CLUSTER.EXE was created on desktop for the CLUSTER.EXE program, then use that to start the nodes first. It is a good practice to verify the inputs listed above.

The user should open the catalog file through CV and run the model through it. If the user has a different drive or model folder than the one in the catalog file that was distributed, they will be prompted to change the path names. The answers to these questions asked by CUBE would be "yes".

Perhaps the most common way to run SERPM6.5 is to execute the entire model. Model run times are typically 12-18 hours long depending on the speed of the computer used and the versions and scenario of the models on a quad-core machine. A single application of a complete model run usually takes about 10-17 GB of hard-disk space.

SERPM6.5 catalog keys have different values for the base 2005 (validation) and 2030 cost-feasible model runs. **Appendix A** has a complete description of each of the catalog keys and two scenarios. SERPM6.5's PROFILE.MAS file, which now only controls operations for the trip generation and a few mode choice parameters, is presented in Appendix A. The other CV scripts do not use PROFILE.MAS and most of the parameters used by them are stored as "KEYS" in the SERPM6.5 CV catalog.

SERPM6.5 is transmitted with only the input, parameters, custom programs and CV application and catalog files for efficiency. In order to access the output files for the 2000 (base) or 2030 condition, the model must be run in its entirety. There are multiple ways users can run the CV application and scenarios. The following steps could be followed to run the base year validation run:

1. Open CUBE and using either the File Center or the File Open, select the catalog file (SERPM65MDL.cat - 24-hour model or S65TODMDL.cat – TOD model) from the Model directory user installed the model in.
2. On the left of the screen there are three windows: Scenarios, Applications, and Data. Select BASE in the Scenario Window (Double Click). The interface for the SERPM6.5 will then open.
3. This interface will show the input files and various options for the base scenario (2005 validation).

4. Once the choice of files and parameters has been confirmed, click the **Run** button and the model will run.

Running a single application group also may be desirable during model validation when the modeler is trying to focus on one particular aspect of the model, such as trip distribution, before continuing on to other aspects of the model. Running a single application group also is a relatively simple process. First, the user must select the application to be run and open the application manager. The user must double-click a particular application group to open it. Then the modeler can select the **Run Application…** option from the Application menu at the top of the screen. This will open the Run Application window. Alternatively, the user may press the **F2** key to open the Run Application window**.** In the Run setting section of the Run Application window, the modeler must then check the box next to **Run Current Group Only.** Once this box has been checked, the user can click the **OK** button and the model will run only the selected application group. A single step of an application can also be run by double clicking the step. Users should consult the CV documentation for further on different options of CV model run.

The first step to creating a model scenario is to establish scenario specific input folders (IN-{YEAR}{ALT} and subfolders). The separate input and output folders of SERPM6.5 make the alternative/scenario data more portable and keep the modeler from accidentally over writing the input data used for other alternatives/scenarios. Setting up the SERPM6.5 model for a new scenario/alternative can be accomplished using the following steps.

1. Install the model in the desired directory using procedures outlined previously in this report.
2. Open the model catalog file using the CUBE File Center upon entering CUBE, or using File Open. The catalog file is located in the root of the model directory.
3. The model is transmitted only with input and parameter files. If necessary, run the Base/Future Scenarios as described above.
4. Within the Scenarios pane, right click the Base or Future Scenario. Select the Add Child option. You can then add a name for the scenario. Once the name has been entered, a box will appear allowing the user to type in a description of the scenario. Once that is complete, the user interface will appear.

Users should verify that all input and output folders and subfolders for the new scenarios are created. If the input folder (IN-{YEAR}{ALT}) and its subfolders were not populated with data from the parent scenario, then the data should be copied directly. Users should modify/add appropriate data from the new input folder and subfolders for the new alternative/scenario before run the scenario/alternative. The outputs for the scenario/alternative will be mainly written to its output directory (OUT-{YEAR}{ALT}) and sub-directories. A few files will be written to scenario folder.

Scenarios are defined by Citilabs as:

> "*A scenario is used to define a value for each of the keys (keys refer to a file, input value, etc.). Multiple scenarios can be defined to allow variations in the inputs to be run and compared. The scenarios are hierarchical in nature. Hence you start with a Base Scenario. Then you can introduce Scenarios representing variations on the base situation. Then you can introduce variations on those variations and so on." Source: CUBE On-line help files "Scenario Manger Overview"*

Following is a description of the types of Scenarios from the CUBE On-line help:

> *A Scenario defines a value for each key in the Catalog. Scenarios are used to test the effects of variations in input data. You begin with a standard situation represented by a 'Base' scenario. You then introduce new scenarios to test variations on this base situation.*

Every Catalog has a Base scenario, which is created automatically when a new catalog is created. Scenarios are hierarchical in nature. From the Base, you can create scenarios that will appear as children of the Base. A child may be considered as a variation on its parent.

A child scenario will inherit key values from its parent. For example, a Catalog may have some keys, one of which is named 'Year'. This may be set to 2002 in the Base Scenario. If a new scenario 'New Road' is created as a child of the Base, then the new scenario will also initially have a value of 2002 for the Year key. You may then edit the 'New Road' scenario, updating the value of Year to 2005. You may choose to update some of the other keys of the scenario, or you can leave them the same as in the Base. Running the 'New Road' scenario will substitute the value of 2005 into the Application for the Year key, giving new results and providing a comparison with the base situation.

The catalog file keeps tract of all scenarios in the model. The catalog file supplied with model should be opened for any new scenarios. Once modified, it can be saved (**Save Catalog AS…**) as a new catalog file. It is important to start with the model supplied catalog file to ensure that the new catalog file remains with the scenario input files.

2. MODEL DESCRIPTION

SERPM6.5 is an outgrowth of SERPM6 and includes new 2005 base year and more coverage of the study region and has refined zonal boundaries. Both SERPM6.5 and SERPM6 contain a time-of-day model and they use CV platform. Their preceding version (SERPM5) was primarily a 24-hour model implemented in FSUTMS/Tranplan platform. SERPM6.5 TOD model includes the managed lane modeling process. Shared ride 3+ trips do not pay to tolls for using managed lane. The toll rates for using managed lane vary with congestion and are calculated dynamically. SERPM6.5 also includes a 24-hour version of the model and includes the modifications to SERPM6 that were modified to respond to issues raised by FTA. Some of the major differences among SERPM5, SERPM6 and SERPM6.5 are:

- SERPM5 was based on FSUTMS/Tranplan. SERPM6.5 and SERPM6 are CV based models. SERPM6.5 and SERPM6 use floating-point matrices, whereas SERPM5 used integer matrices.
- SERPM5 is primarily a 24-hour model. SERPM6 is a time-of-day model. SERPM6.5 includes both 24-hour and time-of-day models. For both SERPM6 and SERPM6.5, the transit component of the model estimates peak and off-peak travel. For the TOD version of SERPM6 and SERPM6.5, following mode choice, for the highway assignments, the peak trip tables are further partitioned into AM and PM-peak period travel, and highway assignments are made for each of the three periods. On the other hand, for the 24-hour version of the SERPM6.5, following mode choice, for the highway assignment, the peak trip tables are combined and highway assignments are made for the entire day.
- SERPM5 used Tranplan/INET for transit model. SERPM6 and SERPM6.5 use PT to represent the transit networks. However, transit, paths, skims and assignments are generated using the TP+ TRNBUILD program.
- The SERPM6.5 time-of-day model includes managed lane modeling capabilities. It has more flexibility for HOV modeling because it allows separate strategies for 2+ and 3+ shared ride trips for different parts of the networks and regions in the same alternative run. For the managed-lane uses, SR3+ trips do not need to pay any tolls.
- SERPM6.5 adds a new trip purpose (college & university), separating them from other school trip purposes thereby modeling college and university trips more logically.
- SERPM6.5 includes a refined process for distribution of external-internal trips from major external stations (Turnpike, I95 and I75).
- In SERPM6.5 all zonal data (for example, production, attraction and school) are included in the TAZ database, making it easier for users to review and update the data.

For both SERPM6.5 and SERPM6, the following changes were made:

- The lookup table for speeds has been eliminated. The speed estimator used in SERPM5 has been refined, and travel times are estimated from posted speeds and signal data. Furthermore, speeds are being validated against a database of observed travel times for major facilities.
- The traditional FSUTMS lookup table for capacities has been eliminated. The revised capacity estimator process emulates the capacities published in the Florida LOS Manual, which is based on the 2000 Highway Capacity Manual.
- Fixed guideway transit speeds have been being validated against timetables.
- The model explicitly evaluates delays that are expected to occur at freeway and ramp merges.
- Equilibrium convergence criteria have been made much more rigorous.
- Many other improvements have been made (see Section 1.2).

The SERPM6.5 model's PROFILE.MAS file and CV keys, which control most of the operations called from the model script files, are presented in Appendix A. Comments are provided for each of the parameters to explain their use.

The model includes both transit and highway modes. For the TOD version, the highway component of SERPM6.5 estimates traffic for three periods (AM Peak, PM peak and off-peak) and then these period estimates are combined for a 24-hour estimate of traffic. For the 24-hour version, SERPM6.5 estimates 24-hour traffic directly. The SERPM6.5 transit model produces true peak and off-peak estimates. In addition, period estimates are automatically summed to produce 24-hour model estimates. The model with transit modes in this report is referred to as the "full" model. Many of the SERPM6.5 and SERPM6 model features are different from the standard FSUTMS. The most notable ones are listed below:

Trip Generation:

- Zonal data (production, attraction and school) are kept in the TAZ shape file DBF and are written by the CV scripts for use in the model
- The method estimates trips for the standard FSUTMS purposes, plus school, college-university, airports and trucks - twelve trip purposes
- Employment is indexed to BEBR data to rationalize MPO employment data
- Lifestyle trip generation is used for each county, while productions and attractions are estimated on the basis of zonal households, persons, workers vehicles and presence or absence of children
- The attraction model uses employment and households and dynamically estimated area types
- Ps and As are combined and balanced using a revised special generator process
- Generation and distribution are run separately for households with and without autos
- Trips for households with and without autos are maintained separately for separate distribution
- Productions and attractions are allocated to either the peak period or the off-peak period at the trip generation stage of model stream

Network:

- A CV network represents the transportation network
- Speeds and capacities are calculated from roadway attributes
- Area types other than CBD are dynamically estimated from the density of population and employment

Highway Paths:

- Turn penalties and prohibitors include a generalized procedure for left and right turns and through movements

Distribution:

- Public school (school district-based) trip tables are created from the school files
- Peak and off-peak period trips are distributed separately
- The model uses a policy sensitive highway-only mode choice analysis
- The pre-assignment uses congested highway skims
- Peak period feedback loops for distribution, mode-choice and assignments are used to produce "stable" congested speeds for distribution and transit skims

Transit Network, Path and Skim:

- A single transit route file in PT format is used in the transit network model
- Transit connections at fixed guideway stations have detailed micro-coding
- Transit-only links were coded in the highway network

- The station data are coded on the highway network nodes. The station data file is an output, not an input.
- The transit speeds curves were modified with the time of day speeds
- Walk connectors and transfer connectors are generated using PT's GENERATE function
- A revised custom-written program generates auto connectors
- The PT2TRNB program converts PT network to TP+ TRNBUILD network
- Transit path, skim and assignment use the TRNBUILD routine.
- Fares are incorporated mimics the complex fare structure of the transit system
- Fare-zone based Tri-Rail fares are used
- Paths and skims are created for peak and off-peak period walk and auto access to (1) bus and mover, (2) BRT/LRT (new mode), (3) Metrorail and (4) tri-rail

Mode Choice:

- Zero-auto household trips are distributed separately
- Non-motorized trips are removed from the trip table
- Includes an "incremental" nested logit mode-choice structure with fewer constants
- The nested logit model is applied by purposes and periods
- The mode choice routine includes a process to update modal utility constants

Model Trip Tables:

- Uses post mode-choice factors to estimate AM, PM-peak trip tables for the time-of-day model
- Combines peak and off-peak trip tables for the 24-hour model

Highway Assignments:

- Uses multiple volume-delay functions
- Assignments are multimodal (drive alone, shared ride and trucks) using the iterative equilibrium method
- Warm-up assignments explicitly estimate ramp and freeway merge delays
- Uses separate assignments for each period for time-of-day model
- Incorporates HOT lane modeling process by varying tolls that are based on congestion for time-of-day model

Highway Evaluation:

- Produces county specific evaluation outputs for cars and trucks
- Produces separate period evaluation outputs

Transit Assignments:

- Produces true period-specific transit assignments

In all version of SERPM starting with SERPM5, a truck model (generation, distribution and assignment) was implemented. The truck trip table developed by the distribution model contains internal-internal and internal-external trips by periods. In fact, internal-external trips are part of internal-internal trips. The external-external truck table is first constructed by frataring the external-external vehicle trip table. The truck trip table is then assigned to the network simultaneously, with drive-alone and HOV autos, based on the link travel times iteratively adjusted in the multimodal equilibrium assignments.

The following sections of this report describe further the highway and transit models and selected modules.

2.1 Highway Model Elements

The SERPM6 & SERPM6.5 highway model includes many features not seen in previous versions. It has process to calculate the area types dynamically. It includes revised sets of facility and area types that are relevant for revised process for estimation of speeds and capacities. It includes a process to simulate delays and freeway and ramp merging. SERPM6.5's TOD model includes a managed lane modeling process. This section provides more emphasis on these new features.

2.1.1 Facility and Area Types

The development of the 2005 and 2030 Southeast Regional Planning networks builds mainly upon the existing urban models for Palm Beach, Broward and Miami-Dade counties. SERPM6.5 includes more coverage in the Palm Beach counties by adding western portion (Glades area) of the county. The zone and node information of SERPM6.5 model is shown in **Table 2.1**. It also includes more refinements in the TAZ systems in both Palm Beach and Broward counties. The network used in SERPM6 model was the starting point for development of 2030 SERPM6.5 networks. Corradino along with the MPOs, FDOT and turnpike district staffs were involved in the development and updating of the SERPM6.5 networks. After the initial networks were built, the networks were refined to code the proper facility types and other network attributes (for example, posted speed and signal locations). The new facility type definition came from the development of the new capacity calculation process. The revised facility types (FTC1 and FTC2) along with other attributes for capacity calculation are shown in **Table 2-2**.

Table 2-1: **Zone and Node Correspondence Table**
Southeast Regional Planning Model 6.5

TAZ/Node	County	MPO Model Low		MPO Model High	SERPM6.5 Model Low		SERPM6.5 Model High	Offset	Comment
	Palm Beach (PB)	1	-	1724	1	-	1724	0	1. 23 Original Zones splitted to 53 zones. 2. New Splitted Zones: 1567-1597 (31 total) 3. New/Added western zones: 1601-1724 (124 total)
INTERNAL	Broward (BO)	1	-	921	1751	-	2671	1750	1. A total of 19 new splitted zones.
TAZ	Miami-Dade (MD)	1	-	1466	2701	-	4166	2700	
	PB	1725	-	1750	1725	-	1750	0	Reserved/Dummy Zones: 1596-1600(Extra), 1725-1750
DUMMY	BO	922	-	950	2672	-	2700	1750	
TAZ	MD	1467	-	1500	4167	-	4200	2700	
	PB	1751	-	1772	4201	-	4222	2450	
EXTERNAL	BO	951	-	991	4223	-	4263	3272	
TAZ	MD	1501	-	1521	4264	-	4284	2763	
NODES-2005	PB	xxxx	-	9038	4998	-	12369	3331	
Network [*]	BO	1001	-	7976	13001	-	19976	12000	
[see Note1]	MD	1522	-	9925	21001	-	29404	19479	
	PB-Extn	N/A		N/A	32001		xxxxx		
NODES-2030	PB	1667	-	9177	4998	-	12508	3331	
Network [*]	BO	1001	-	8057	13001	-	20057	12000	
[see Note2]	MD	1522	-	10077	21001	-	29556	19479	

[*] Nodes of 30,000-31,999 are kept for transit only nodes.

Table 2-2: **Facility Type Codes and Capacity Calculation Attributes**
Southeast Regional Planning Model 6.5

FTC1: MAJOR Classification	FTC2: MINOR Classification	Capacity Lookup Table	Capacity Calculation Attributes							Capacity Adjustment Attributes		
			FREEWAY (FRWY)	UNINTERRUPTED (UNINTRP)	HOV	KTOLL	LOWSPEED (LOWSPD)	SIGNAL SPACING (SIG_SPACE)	POSTED SPEED (POSTSPD)	TWOWAY	DIVIDED	LEFTTURN
10 FREEWAYS	11 Freeway Segments	FRWYPCE.DAT	1									
	12 Freeway Segments (I 595 - Broward)	FRWYPCE.DAT	1									
20 UNINTERRUPTED ROADWAYS	21 Uninterrupted Segments	HWYPCE.DAT		1				**> 1.5**	**>40**	X	X	X
40 Higher Speed Interrupted Facility	41 Higher Speed Interrupted Facility	ARTPCE.DAT						**<= 1.5**	**>=35**	X	X	X
50 CENTROID CONNECTORS	51 Internal	n/a										
	52 External	n/a										
60 Lower Speed Facility & Collector	61 Lower Speed Facility & Collector	LOWPCE.DAT					1		**< 35**	X	X	X
70 RAMPS	71 On	ONPCE.DAT										
	72 Loop On	LONPCE.DAT										
	73 Off	OFFPCE.DAT										
	74 Loop Off	LOFFPCE.DAT										
	75 Freeway-to-Freeway (included in FRWY)	FRWYPCE.DAT	1									
80 HOV	81 **2+ Persons HOV Segments**	FRWYPCE.DAT	1		1							
	82 **3+ Persons HOV Segments**	FRWYPCE.DAT	1		1							
	83 AM and PM Peak Only Ramps	**n/a**			**1**							
	84 AM Peak Only Ramps	**n/a**			**1**							
	85 PM Peak Only Ramps	**n/a**			**1**							
	86 All Day Ramp	**n/a**			**1**							
90 TOLL	91 Freeway Segments	FRWYPCE.DAT	1			1						
	92 Uninterrupted Segments	HWYPCE.DAT	1			1						
	93 On	TONPCE.DAT				1						
	94 Off	TOFFPCE.DAT				1						
	95 Toll Plaza	n/a				1						

NOTES:

1. Posted Speed and Signal Spacing determine the "Uninterrupted" designation for Non-Toll and Non-HOV facilities.
Toll and HOV facilities are considered to be freeway segments. CDs, Expressways, and Parkways are considered Uninterrupted regardless of posted speed.
2. All possible variables/adjustments are shown here; some may not be triggered for a given link depending on whether the roadway is divided, is oneway and/or has a left-turn bay.

A revised "dynamic" area type was coded on the networks. The area types shown on TAZ layer DBF file (see S65_{Year}.DBF) are for display purposes. The process reads the CBD area type from the transit district field (TD_YY) of TAZ database. It then calculates the activity density based area types for all the non-CBD areas using following equation.

$$ADEN(I) = [POP(I) + B * EMP(I) / AREA(I)$$
$$= PDEN(I) + B * EDEN(I)$$

Where,

ADEN(I)	= activity density in zone I
POP(I)	= population in zone I
EMP(I)	= total employment in zone I
AREA(I)	= total "usable" area of zone I in acres
PDEN(I)	= population density in zone I
EMP(I)	= employment density in zone I
B	= regional population to employment ratio

Three types of exception areas (water, parks, and roadway right-of-way) were excluded from the area calculation to define the "usable" areas. The new area type for each of the subject links is based on zonal activity densities of TAZs with an influence area of one mile of distance from the link middle point. The population and employment of all TAZs within one mile of radius are accumulated to define this new density based area types. All these calculations are done in Cube-Voyager scripts. Users do not need to code any area types other than the CBD area that is determined from the existing area types. The new density based area types (SATx) of SERPM6.5 model are shown in **Table 2-3.**

Table 2-3: **Density Based Area Type Description**
Southeast Regional Planning Model 6.5

Area Type (SATx)	DESCRIPTION	ADEN/Acre Range
SAT1 (Existing AT1-CBD)	**CBD**	**Existing CBD (not variable)**
SAT2 (Comparable to AT2-Fringe)	**High Density (non-CBD)**	**More than 49.6**
SAT3 (Comparable to AT4-OBD)	**Medium Density (non-CBD)**	**>22.9 & <=49.6**
SAT4 (Comparable to AT3-Residential)	**Low Density (non-CBD)**	**>3.1 & <=22.9**
SAT5 (Comparable to AT5-Rural)	**Very Low Density (non-CBD)**	**>=0 & <=3.1**

Steps 7-11 of the Cube-Voyager trip generation application (see **Figure F-2**) are used to calculate these area types.

2.1.2 Speeds and Capacities

Speeds, capacities and volume/delay functions play an important role in nearly all facets of the travel demand model. While the speeds in the FSUTMS default lookup table provide a good estimate of free-flow speeds, some modelers have been somewhat dissatisfied with the results of their use. A common

example would be when a roadway is greatly over- or under-assigned, and an examination of the free-flow speed suggests that it was clearly too high or too low. This occurrence is particularly evident in the case of parallel streets, one of which is greatly over-assigned and the other under-assigned. Often it is found that inappropriate speeds have been used, and the relationship between the speeds of the parallel facilities is incorrect. Some of the studies suggest collecting data to determine the relationship between posted speeds and actual free-flow speeds. While this might produce the best local estimates of speeds, data collection is costly and time-consuming, and is not funded for the SERPM model update.

The TMIP report describes two methods for estimating free-flow speeds, one based on the Highway Capacity Manual (HCM), and the other based on NCHRP 3-55(2). The HCM method requires geometric and signal spacing data, which may not be available. The NCHRP method, which is the procedure recommended in NCHRP Report 387, relies on posted speeds for urban and rural uninterrupted flow, and posted speed, signal spacing and timing data for urban interrupted flow. The consultant's preliminary recommendation for SERPM6 update is the NCHRP 3-55(2) method. A summary of the method appears below.

Uninterrupted flow, posted speed greater than 50 mph:

$$\text{Mean speed} = 0.88(\text{Posted speed}) + 14$$

Uninterrupted flow, posted speed less than or equal to 50 mph:

$$\text{Mean speed} = 0.79(\text{Posted speed}) + 12$$

The plots of posted and initial free-flow speeds are shown in **Figure 2-1**. The NCHRP 365 equation has a step function at 50 mph posted speed and has caused inconsistencies in speeds during initial model development process. The consultant removed this step function by developing a second order equation to estimate mean speeds from posted speeds. During later part of model validation efforts, two second order functions, one for freeways and one for surface streets, were used in the model. **Figure 2-1** exhibits all these functions along with the parameters of the second order equations.

The speeds of the signal-controlled facilities are further adjusted according to following equation.

$$S_f = L/[L/S_{mb} + N(D/3600)]$$

Where,

S_f = Free-flow speed for an urban interrupted facility.
L = Length of the facility
S_{mb} = Mid-block free-flow speed=0.79(Posted speed) + 12
D = Average delay per signal (seconds)

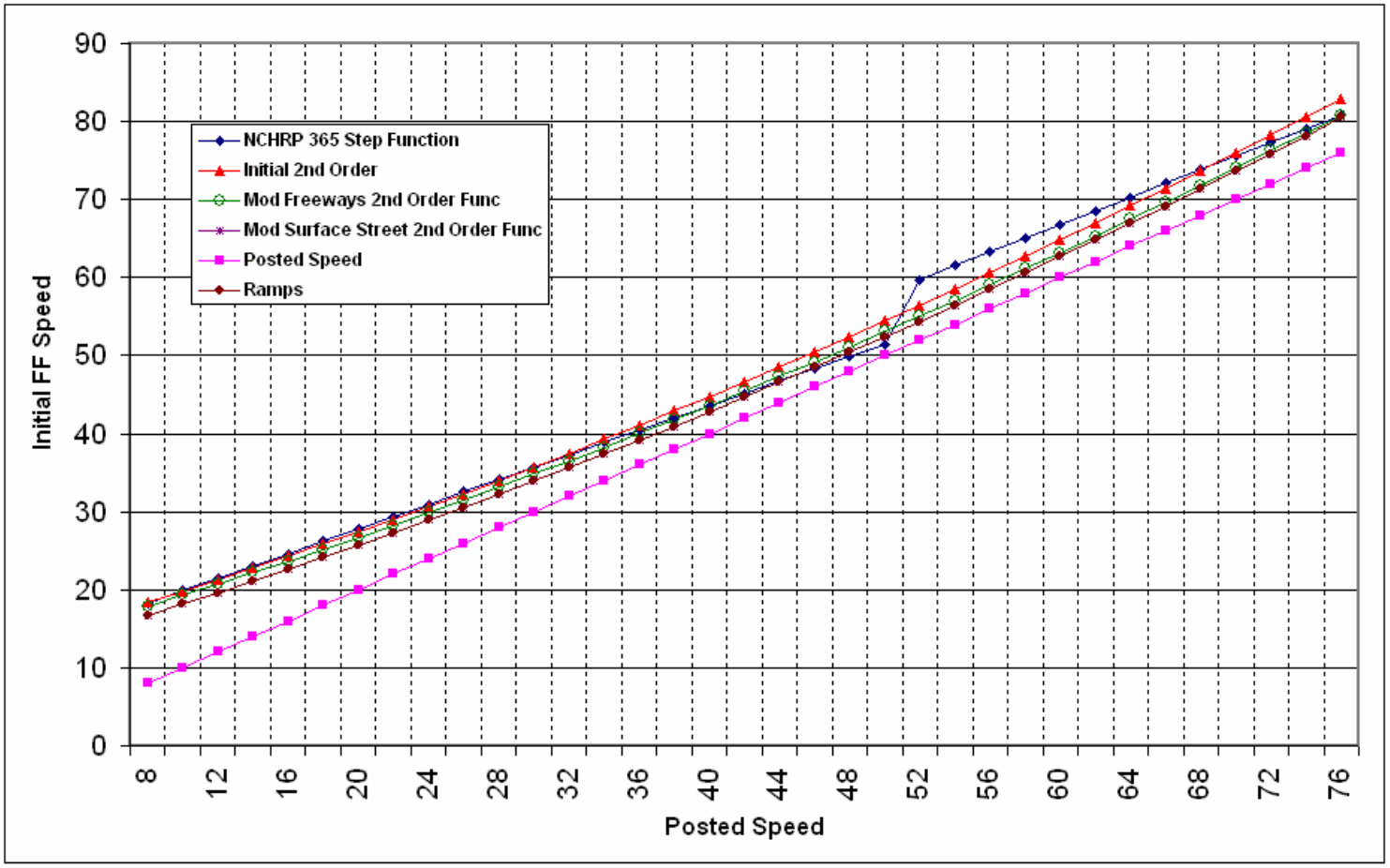
and,

$$D = DF * 0.5 * C(1 - g/C)^2$$

Where,

DF = (1-P)/(1-g/C) where: P= proportion of vehicles arriving on green
g = the effective green time (seconds)
C = Cycle length (seconds)

Figure 2-1: **Initial Free-Flow Speed Curves**
Southeast Regional Planning Model 6.5



NCHRP 387 Step Function:

Uninterrupted flow, posted speed greater than 50 mph:
Initial FF speed= 0.88 *(Posted_Speed) + 14
Uninterrupted flow, posted speed less than or equal to 50 mph:
Initial FF Speed = 0.79 *(Posted_Speed) + 12

Second Order Fitted Function:

Initial FF Speed = C + A*(Posted_Speed) + B * (Posted_Speed)^2

	C	A	B
Initial Fitted Function:	12.88634	0.65735	0.00348
Modified Freeway Function:	12.56418	0.64058	0.00340
Ramps Function:	11.33209	0.64896	0.00344
Modified Surface St Function:	10.10000	0.65735	0.00348

When P is unknown, NCHRP 387 recommends the following default values:

DF	=	0.9 for uncoordinated actuated signals
	=	1.0 for uncoordinated fixed time signals
	=	1.2 for coordinated signals with unfavorable progression
	=	0.9 for coordinated signals with favorable progression
	=	0.6 for coordinated signals with highly favorable progression

The following data are required to apply this free-flow estimation process.

- Posted speed for all links
- Location of signalized intersections
- Distance between signals for signal controlled areas
- An assessment of progression to estimate DF

Additional data on signal timing would enhance the accuracy. The desirable additional data are:

- G/C
- Cycle length for individual signalized intersections

The free flow speed estimation is part of the model stream for SERPM and is fully automated. The highway network module and its sub-modules (see **Figures F-3 to F-5**) are used to derive the speeds and capacities of the network.

One of the problems in the original methodology of SERPM6 is that it is possible for cross-streets that approach a common node or intersection would be assigned different cycle-lengths, when they really must have the same cycle length. Similarly, the total g/C for the intersection might not sum to 1.0. Thus, a change in the method was made to rationalize the values for all links approaching a common node. All other links on signal segments are governed by the segment parameters.

If one or more signalized nodes on a segment contain cycle length value, the highest cycle length value specified would be used as the cycle length for that segment. Otherwise, default values would be used. If a g/C value is available, it should be specified on the link records for all movements for that particular intersection. The user must ensure that manually specified g/C values for all movements add up to 100 percent.

In the absence of detailed g/C data, a procedure has been put in place that uses default facility type specific g/C values as specified in DEFAULT_SEGMENT.CSV. The default values for incoming links into a signalized node are further modified. This is done to consider effect of intersection of different or same facility types and also to ensure that g/C values for two movements adds up to 100 percent.

This procedure assumes that a signalized intersection has at least two movements (e.g., a through street and a cross-street). For a signalized node with two or more incoming links, the default g/C value for all links is temporarily assigned. Then, using the maximum and minimum g/C value from among the temporary values, relative proportions to each other are calculated. These proportions are then reassigned as g/C values to the corresponding links. No more than two links with the highest default values are assigned the maximum proportion value. The rest of links are assigned minimum proportion values. This is done to remain consistent with the assumption of two movements, and that the maximum signal leg cannot have more than two links while the rest of the links would overlap in the second signal leg.

The Cube-Voyager "signal" sub-module (see **Figure F-4**) automatically incorporates this revised methodology for estimating free-flow speeds. This is part of the "Network" application. The model user may have two reasons to deal with this:

- If the model user wants to add a new set of coordinated signals (additional SEGID), then all the links expected to be part of this segment must have same number in the "SEGID" field on the link layer. These SEGIDs must be unique and not be in use already. All the new signalized nodes should have a value "1" in the SIGLOC attribute on the node layer. The user must specify this value for all new signals.
- If the modeler wants to update signal data or test a new signal at a particular intersection that is already part of a segment. All the new signalized nodes should have a value "1" in the SIGLOC attribute on the node layer. The user must specify this value for all new signals. For updating link records, if the g/C ratio is available for all incoming links then it must be specified on the link layer. The list of all free flow speed estimation process attributes is as shown below.

Link Attributes	
GC_RATIO*	If signalized and data is available, g/C ratio for the upstream node
Node Attributes	
SIGLOC	Should either have a value of 1 or 0. (1 for signalized and 0 for non-signalized)
CYC_LEN*	If signalized and data is available, cycle length in seconds

* In absence of local, default data would be used from DEFAULT_SEGMENT.CSV.

During the process of model calibration, certain SEGIDs were allocated special signal-related data to validate the traffic volume and flow. This data is maintained in a separate file called "SPEC_SEGDATA.CSV." New data for signal segment parameters should be added to this file. Signal-specific data must be entered in the node and link layer as explained above.

The consultant implemented the process described above for estimating free-flow speeds from posted speeds and signal information. This method is a CUBE Voyager application that works as follows:

- The highway network is stored as a TP+ (CV) network. It has two numeric fields of the link records: (1) Posted Speed (POSTSPD) and (2) SEGID. It also has two numeric fields of the node records: (1) SIGLOC and (2) Cycle Length (CYC_LEN).
- The modeler should populate the posted speed (POSTSPD) field for new links. A value is required for every link.
- The modeler should populate the SIGLOC field in the node records with a value of "1" for any new signal location, and Cycle Length (CYC_LEN) where available.
- A segment id (SEGID) should be placed on every new link controlled by signals. Links with the same SEGID would use the same segment data.
- FFSPD would be added by the computer program and will be filled in with the free-flow speed (FREEFLOWSPEED) attribute.
- The program creates a segment file called SEGMENT.CSV to hold the signal data. This is a temporary file that requires no user input. The fields are:
  - SEGID - Segment number (matches link record)
  - NUMSIG - Number of signals in the signalized segment
  - Length - Length of the signalized segment (miles)

- FT1 – One digit FSUTMS facility type
- DF - Signalized delay function (see values described earlier)
- CYCLE - Cycle length (seconds)
- GC – Default Fraction green g/C (decimal fraction < 1.0).

- The model application script then estimates the free-flow speed values from the posted speed and traffic signal segment data.

Thus, the procedure described here is a complete procedure for calculating the free-flow speeds, as well as facilities for maintaining highway networks. The capacities of the network are calculated based on the calculation and adjustment attributes as well as lookup tables. The values of these capacity lookup tables are primarily based on "Table 4-7 of the Florida LOS Handbook." The CAPCAL sub-module (see **Figure F-5**) of CV application shows the steps of capacity calculation. The capacity calculation steps also include adjustments based on several network attributes. **Figures 2-2** and **2-3** depict the logic of those adjustments for non-freeway and freeway roadways, respectively. The arterial and collector speeds are adjusted based on posted speed, signalized road and signal spacing, 1-way roadways, lanes and left turn bay and divided roadways. The freeway capacity adjustments are based on interchange spacing. For the model application, very low density area type was used as surrogate measure of more than 2 miles interchange spacing. These adjustments follow the logics of the FDOT LOS manual.

2.1.3 Managed Lane Modeling

Corradino implemented managed lane modeling (often referred as High Occupancy Toll – HOT) first to SERPM6 after its release for use in I-95 express lane study performed for the FDOT, in June 2007. That study was limited mainly to the changes in the assignment steps. Following are several assumptions of the HOT lane modeling in that pilot study.

- Drive alone (DA) cars can enter the HOT lanes by paying a toll
- Shared-Ride-2 (SR2) cars can enter the HOT lanes by paying a toll
- Shared-Ride-3+ (SR3+) cars can enter the HOT lanes without paying a toll
- The HOT lanes function 24 hours a day, as opposed to the existing HOV lane operation
- The toll is varied and is directly proportional to congestion (Volume/Capacity)
- Ingress and Egress points are located at designated locations only
- The throughput of the HOT lanes is expected to be twice as much of the totally General Purpose (GP) lanes
- Trucks are not allowed in HOT lanes
- HOT lanes, unlike the existing HOV lanes will be managed 24 hours a day

A logit toll function developed in the I-95 express lane study using SERPM6 was used in estimating the tolls on HOT lanes. Different toll functions were tested by varying the minimum and maximum tolls, and the preferred toll function which provides optimum lane utilization and toll revenue was selected. More details on the toll function testing are presented in the Design Traffic Memorandum of the I-95 express lane study. **Figure 2-4** explains the effect of the toll variation based on the congestion used in the travel demand model. Initially, based on discussions with FDOT staff, a linear toll function was assumed with a toll range of 13-25 cents-per-mile. However, it was observed that people's choice of managed lanes was greatly affected by tolls when there is no congestion, and the need for modification of the toll functions was found to be essential to maximize the benefits of managed lanes. Both linear and logit functions were tried with varying the minimum toll rates. The recommended one used is the logit function with the toll rates varied from a minimum 12 cents/mile to 25 cents/mile (see **Figure 2-4**).

Figure 2-2: **Capacity Adjustment Logic for Arterials and Collectors**
Southeast Regional Planning Model 6.5

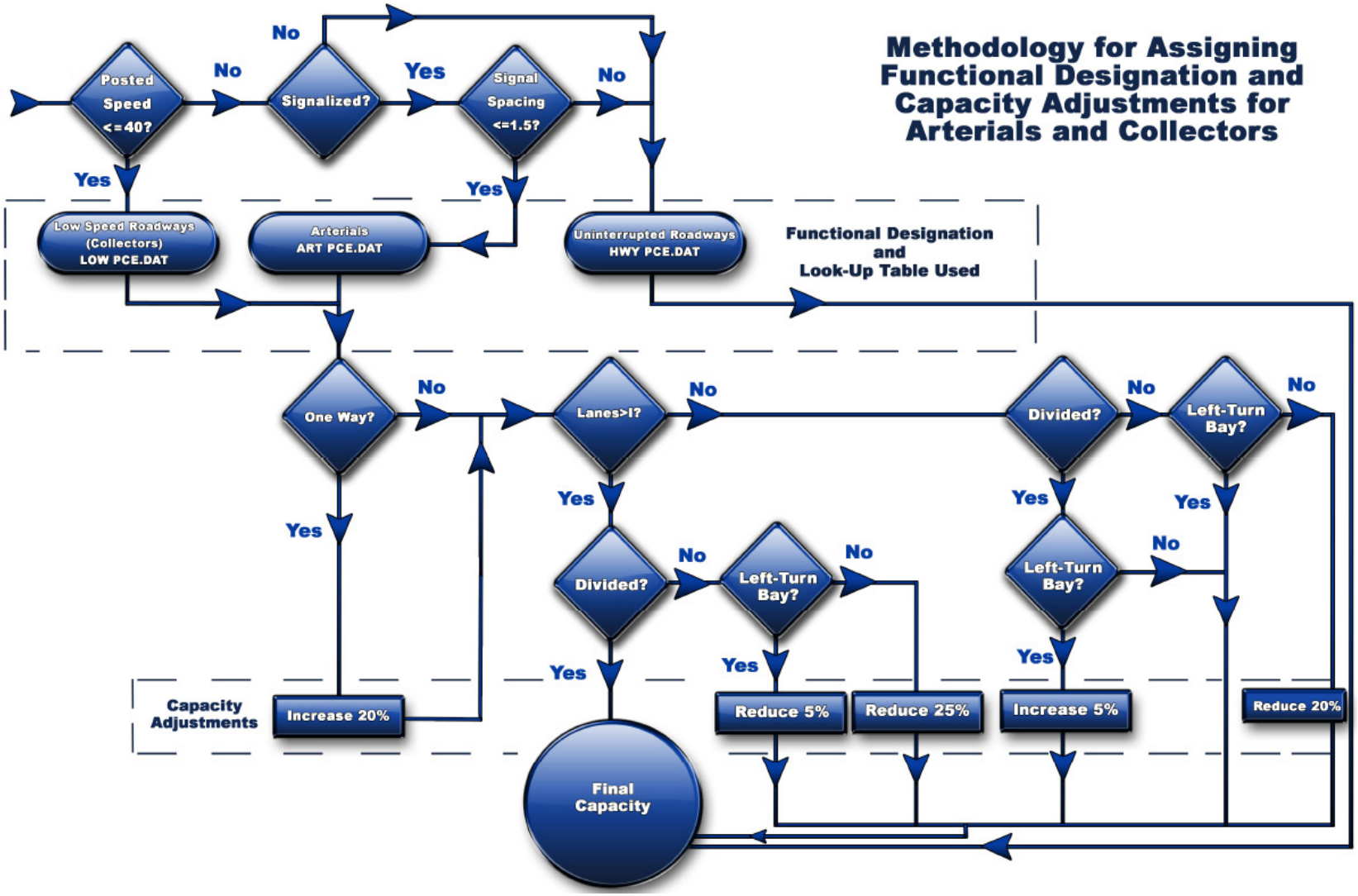
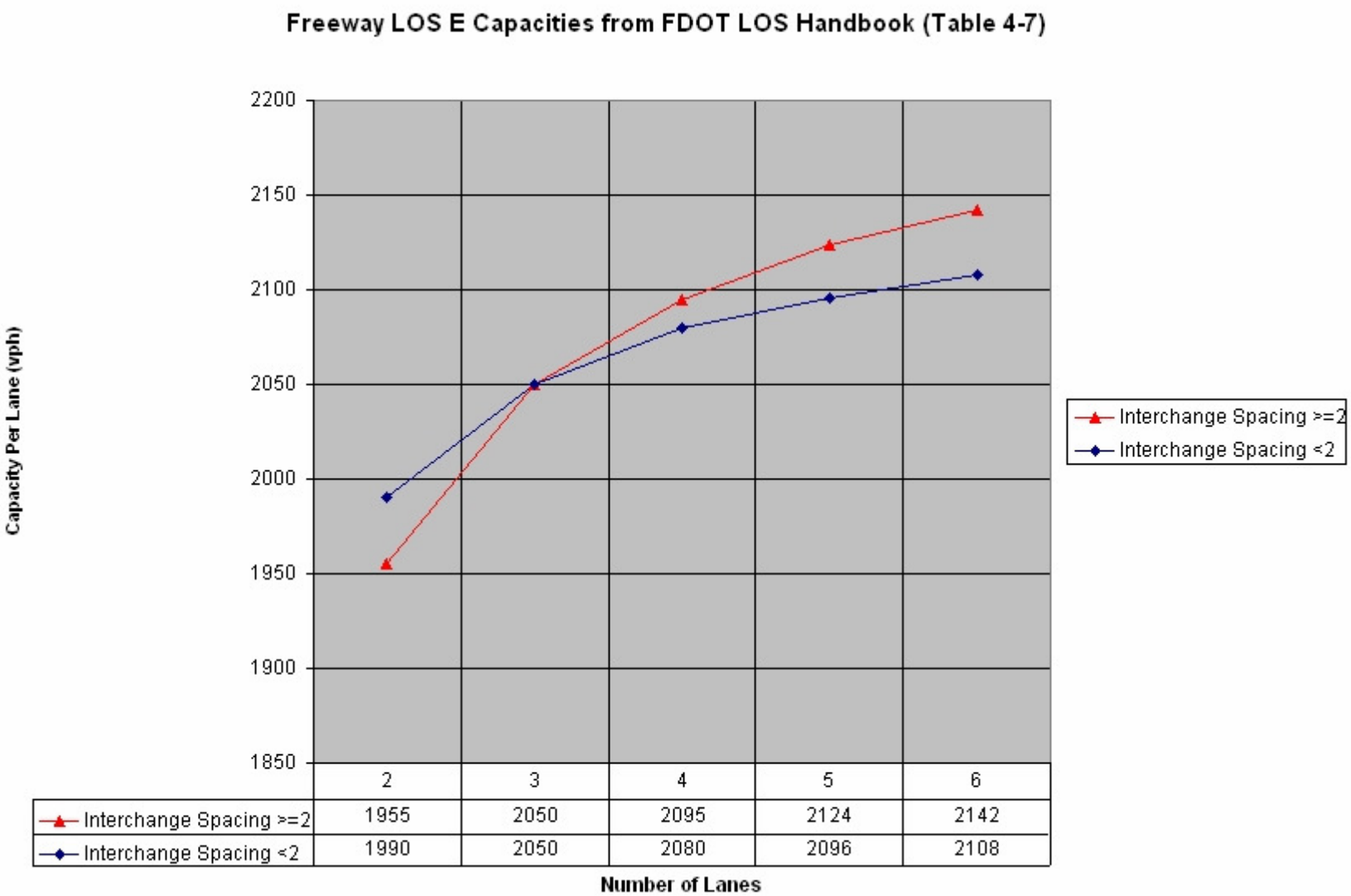
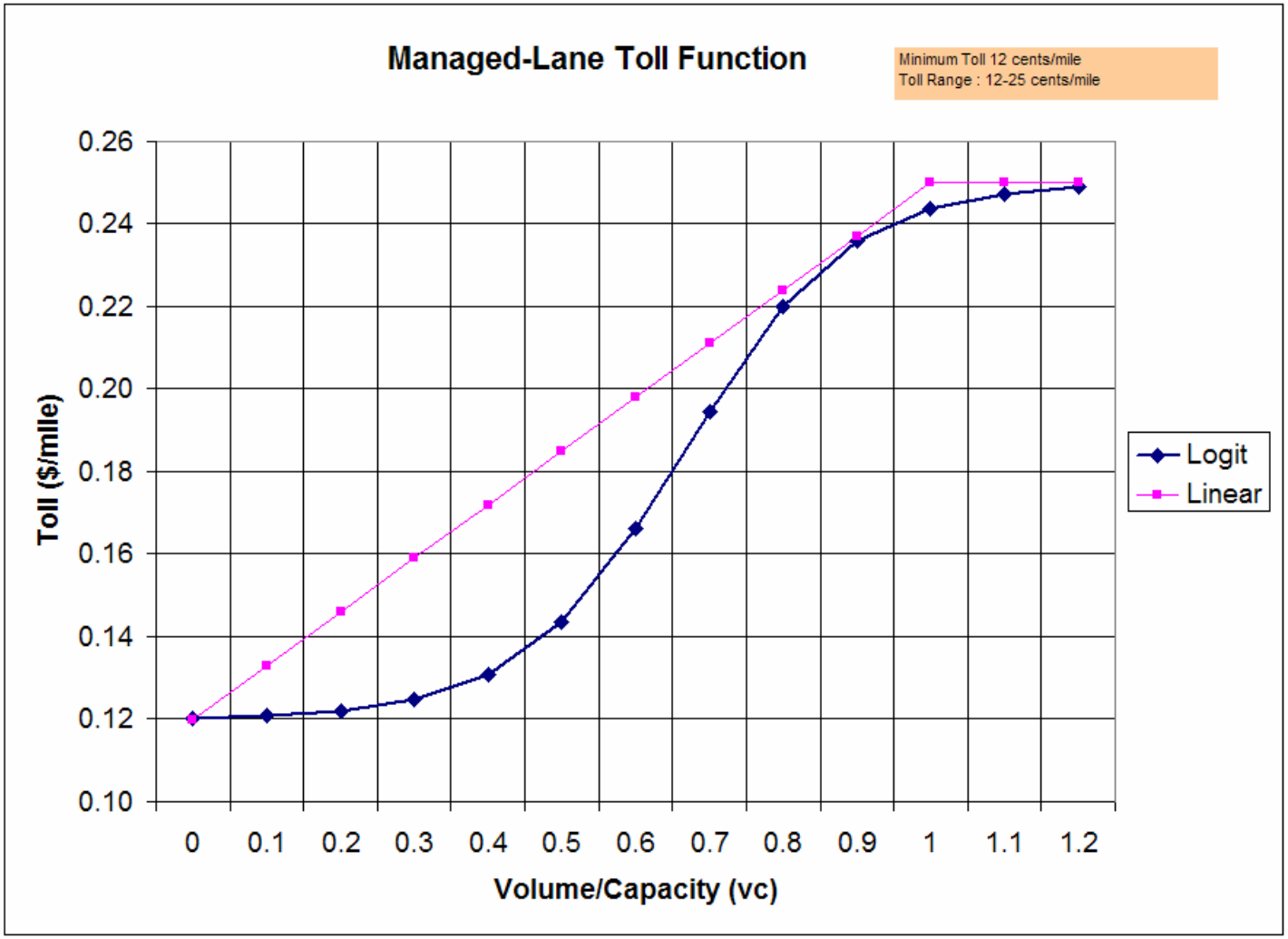


Figure 2-3: **Capacity Adjustment Logics for Freeways**
Southeast Regional Planning Model 6.5



	2	3	4	5	6
Interchange Spacing >=2	1955	2050	2095	2124	2142
Interchange Spacing <2	1990	2050	2080	2096	2108

Figure 2-4: **Managed Lane Toll Rate Function**
Southeast Regional Planning Model 6.5



These assumptions are different from the traditional HOV lane modeling done in SERPM6. The HOV lane assumptions are:

- DA cars can not enter HOV lanes
- SR2 and SR3+ can enter HOV lanes
- No tolls are applied
- Weaving and merging between the GP and HOV lanes is possible at any point in the corridor and is handled by coding HOV slip ramps.
- HOV lanes function in peak periods only and become GP lanes in off-peak period.

Although, the SERPM6 model was calibrated for modeling toll roads and HOV lanes, it was not developed for modeling HOT lanes. To incorporate the new HOT lane assumptions, several modifications were made to the networks and the assignment routines, as part of the HOT lanes pilot study. However, due to the short span of the pilot study and because of the unavailability of data, the trip distribution and mode choice models were not modified in pilot study. For the SERPM6.5 TOD model, changes were made to the all modeling steps (path, skim, distribution, mode-choice and assignment) so that toll costs play a role not only for the assignments but also to find path, develop skims, distribution of trips and choice of mode in the mode choice program.

To implement the model, a special code (HOT) was added in the network along with revision in the facility type code (FTC2) for high occupancy lanes. **Table 2-4** summarizes these codes.

Table 2-4: **Managed Lane and Revised HOV Facility Type Codes**
Southeast Regional Planning Model 6.5

HOT:	Managed Lane Codes
0	Non-HOT Facility
1	HOT Lane Facility
2	"Dummy" HOV Slip Ramps (83-86)

FTC2:	MINOR Classification of Facility Type Codes
81	2+ Persons HOV Segments
82	3+ Persons HOV Segments
83	AM and PM Peak Only Ramps
84	AM Peak Only Ramps
85	PM Peak Only Ramps
86	All Day Ramp
81(old)	*Freeway Segments (see revised definition)*
82(old)	*Uninterrupted Segments (see revised definition)*

For managed lane study, new field (HOT) should be added to the highway network. For the I-95 express lane study using SERPM6 and for the HOT test scenario of SERPM65 model, following codes were used in identifying different link classes on I-95.

1. HOT=1: HOT Lanes
2. HOT=2: Dummy HOV Connector Links: (HOV lanes were connected to the I-95 general purpose lanes by slip ramps. These ramps are now flagged with a special code, HOT=2, as part of making HOT lanes limited access facilities. This was done, instead of physically removing the slip ramps, for future usage.
3. HOT=0: All other links.

It was assumed that vehicles will be able to enter and exit the managed lanes only at designated ingress/egress points. To test the procedure, the I-95 express lane study networks were modified to to include these changes.

A special key called HOTCAPADJUST was introduced into the model; using which, the HOT lane capacity values can be adjusted. In the pilot study, a HOTCAPADJUST value equal to 2 was used and the results were tested. The intent was to reflect a higher throughput in the HOT lanes due to reduces friction and better flow. However, based on further analysis, a HOTCAPADJUST value equal to 1 is recommended.

Users of HOT lane modeling should make sure that HOVUSE parameter of PROFILE.MAS file is set to "4". This parameter value is read by the mode choice program. The program then uses different skims for the 2 or 3+ carpools. In this way, 2-or-more carpools facility (FTC2=81) will have 2-or-more carpool trips and 3-or-more carpools facility (FTC2=82) will have only 3-or-more carpool trips.

Another important point to note is that modeling HOT lanes is still in research and no established modeling techniques are available at this point. In addition, there is no data available to calibrate these models. Hence several sensitivity tests were carried out in original pilot study for I-95 express study by varying the free flow speeds, merging penalties, access points and tolls and its function. In subsequent versions of the model the HOT lanes procedure may be refined to incorporate newly available data from Florida and other areas.

Several "Exclude Volume Groups" were created, on which certain trip tables will not be assigned. Interested readers should review the highway assignment and highway path and skim scripts for this treatment.

There were 3 different trip table classes (Drive Alone - DA, Shared Ride -SR, and Truck) in the original SERPM6 and 24-hour version of SERPM6.5. However, since different assignment routines will be applied in HOT lanes model, the SR trips were divided into SR2 and SR3 tables. Use of HOV facility codes (FTC2 of 81 and 82, see Table 2-4) were used to develop separate skims for SR2 and SR3 classes. The changes made to model steps in the TOD version of SERPM6.5 are more comprehensive and brought consistency in model steps. The assignment results of the HOT lane test scenario were reviwed for "reasonableness" both for the managed lanes as well as for SR2+ and SR3+ HOV facilities. As new data on HOT lane performance becomes available, more tests should be carried out to validate the model.

2.1.4 Trip Generation

The SERPM6.5 model implements the regional lifestyle-based trip generation process that was developed earlier in the SERPM5 model. In SERPM6, the airport trip purpose was added. For SERPM6.5, a new purpose (College & University trips) was added by separating college and university trips from all other private school trips. The revised model produces daily trips for the following twelve trip purposes:

1. Home-based Work (HBW) person trips
2. Home-based Shopping (HBShop/HBSHP) person trips

3. Home-based Social-Recreation (HBSocRec/HBSCR) person trips
4. Home-based School (HBSchool/HBSCH) person trips [It includes only private schools]
5. Home-based College/University (HBUNIV) person trips
6. Home-based Other (HBO) person trips
7. Non-home-based Work (NHBW) person trips
8. Non-home-based Other (NHBO) person trips
9. Airport (AIRPORT) person trips
10. Truck – 4-Tiered Commercial vehicle trips
11. Truck – Single Unit Commercial vehicle trips
12. Truck – Combinations Commercial vehicle trips

The regional trip generation model is a combination of five programs that run in succession. They are:

1. RZDATA2 – Regional Employment Indexing Program
2. ULSTGENM65 - Urban Area Lifestyle Trip Generation Model
3. COMBLSM65 – Trip Generation Integration Program
4. RBALM65 – Regional Balancing and Special Generation Program
5. ZAP65 – Zero Auto Household Trip Production Program

Step 12 of the trip generation module (see **Figure F-2**) runs these five programs. The urban program uses MPO zone numbers (see **Table 2-1**). Other trip generation programs primarily use regional TAZ numbers. The earlier five steps (No. 7-11) are primarily used to compute the activity density based area types (see the description in Section 2.1.1).

The regional model allows use of each urban area's trip production and attraction rates as well as other parameters specified in GRATEBXX.SYN files (where, "XX" stands for two-digit urban code, PB = Palm Beach, BO = Broward and MI = Miami-Dade). The model also uses urban zonal data to produce the productions and attractions. The regional model uses two control files (S65GEN.CTL and COMBLS65.CTL) to map the urban and regional TAZs and data. The program execution assumes the existence of the following directories:

- {PATH1} => See the catalog key for User Written Program Location
- {DATADIR}\MPOIN\PBIN => Subdirectory of Palm Beach Input files
  [Note: {DATADIR} is a catalog key for the main input folder]
- {DATADIR}\MPOIN\BOIN => Subdirectory of Broward Input files
- {DATADIR}\MPOIN\MIIN => Subdirectory of Miami-Dade Input files

- {OUTDIR}\MPOOUT\PBOUT => Subdirectory of Palm Beach Output files
  [Note: {OUTDIR} is a catalog key for the main output folder]
- {OUTDIR}\MPOOUT\BOOUT => Subdirectory of Broward Output files
- {OUTDIR}\MPOOUT\MIOUT => Subdirectory of Miami-Dade Output files
- RGENOUT => Subdirectory of Regional Output files

The input directory should contain the two control files (S65GEN.CTL and COMBLS65.CTL) and PROFILE.MAS. Each of the three input subdirectories (PBIN, BOIN and MIIN) contains seven input files, of which three zonal data files (ZDATA1B, ZDATA2 and SCHOOL) are written from the TAZ database file (S65TAZS_YY.DBF). So, any changes to these data should be made to the database file. Each run of the model will replace the data. The zone numbers used in the trip generation input files of these input folders are the MPO zone numbers. **Figure 2-5** depicts the directories and input files of the SERPM6.5 trip generation process.

Step 14 (see **Figure F-2**) of trip generation module separates the peak and off-peak trips using the diurnal factors shown in **Table 2-5** (see part a).

Table 2-5: **Time-of-Day Model Diurnal Factors**
Southeast Regional Planning Model 6.5

A. Peak & Off-Peak Factors:

HBW-PK	0.5980	HBW-OP	0.4020
HBSHP-PK	0.3790	HBSHP-OP	0.6210
HBSCR-PK	0.3861	HBSCR-OP	0.6139
HBSCH-PK	0.5225	HBSCH-OP	0.4775
HBO-PK	0.3821	HBO-OP	0.6179
NHBW-PK	0.3915	NHBW-OP	0.6085
NHBO-PK	0.2991	NHBO-OP	0.7009
ARPRT-PK	0.3316	ARPRT-OP	0.6684
T4TRK-PK	0.3864	T4TRK-OP	0.6136
SUTRK-PK	0.4541	SUTRK-OP	0.5459
COMBTRK-PK	0.3594	COMBTRK-OP	0.6406

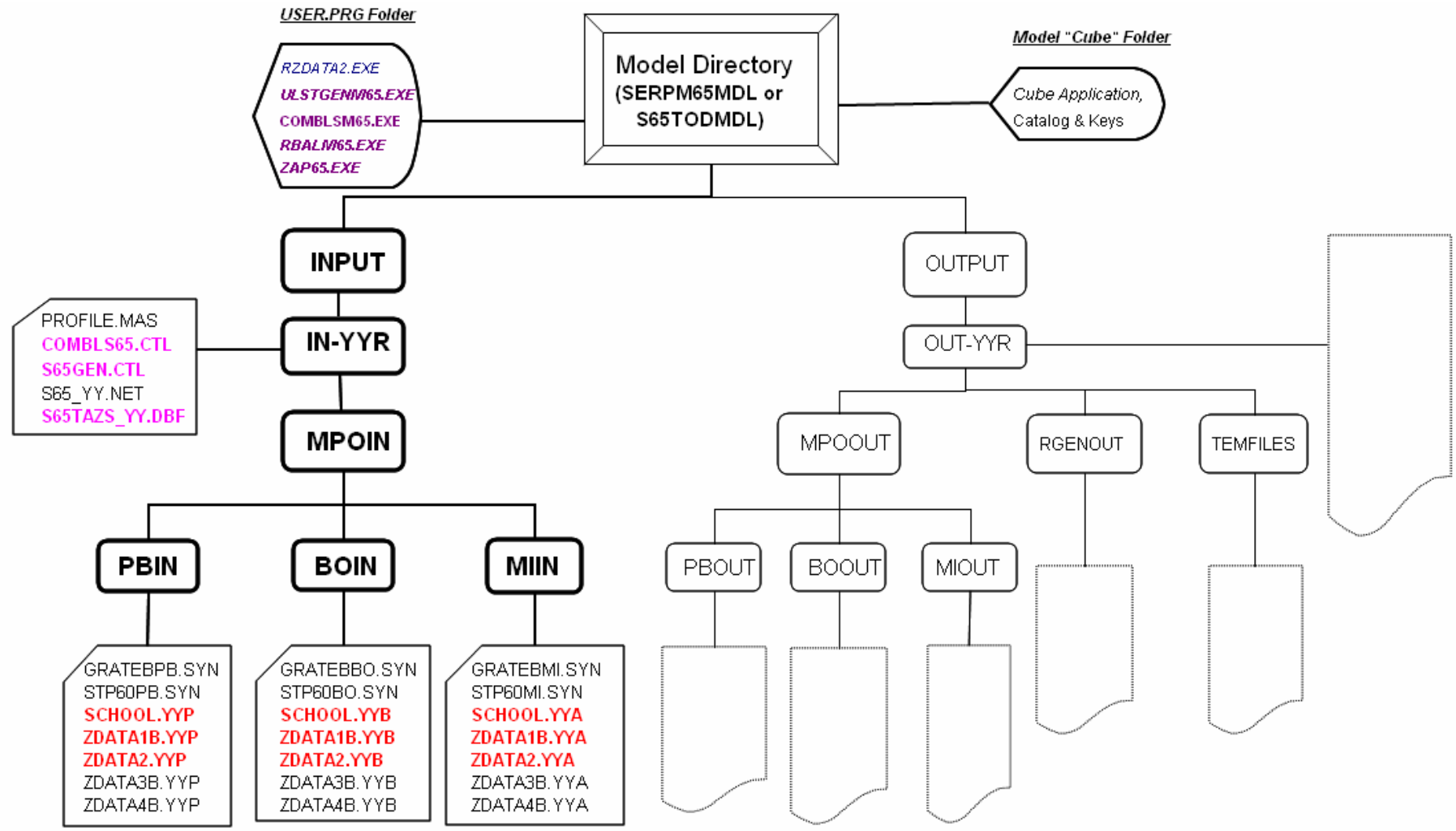
B. AM and PM Peak Splitting Factors:

AMPKSF-HBW	0.4834	PMPKSF-HBW	0.5166
AMPKSF-HBNW	0.4482	PMPKSF-HBNW	0.5518
AMPKSF-NHB	0.3983	PMPKSF-NHB	0.6017
AMPKSF-4TTRK	0.4755	PMPKSF-4TTRK	0.5245
AMPKSF-SUTRK	0.4830	PMPKSF-SUTRK	0.5170
AMPKSF-COMBTRK	0.4492	PMPKSF-COMBTRK	0.5508

C. AM and PM Peak PtoA (PA) & AtoP (AP) Factors:

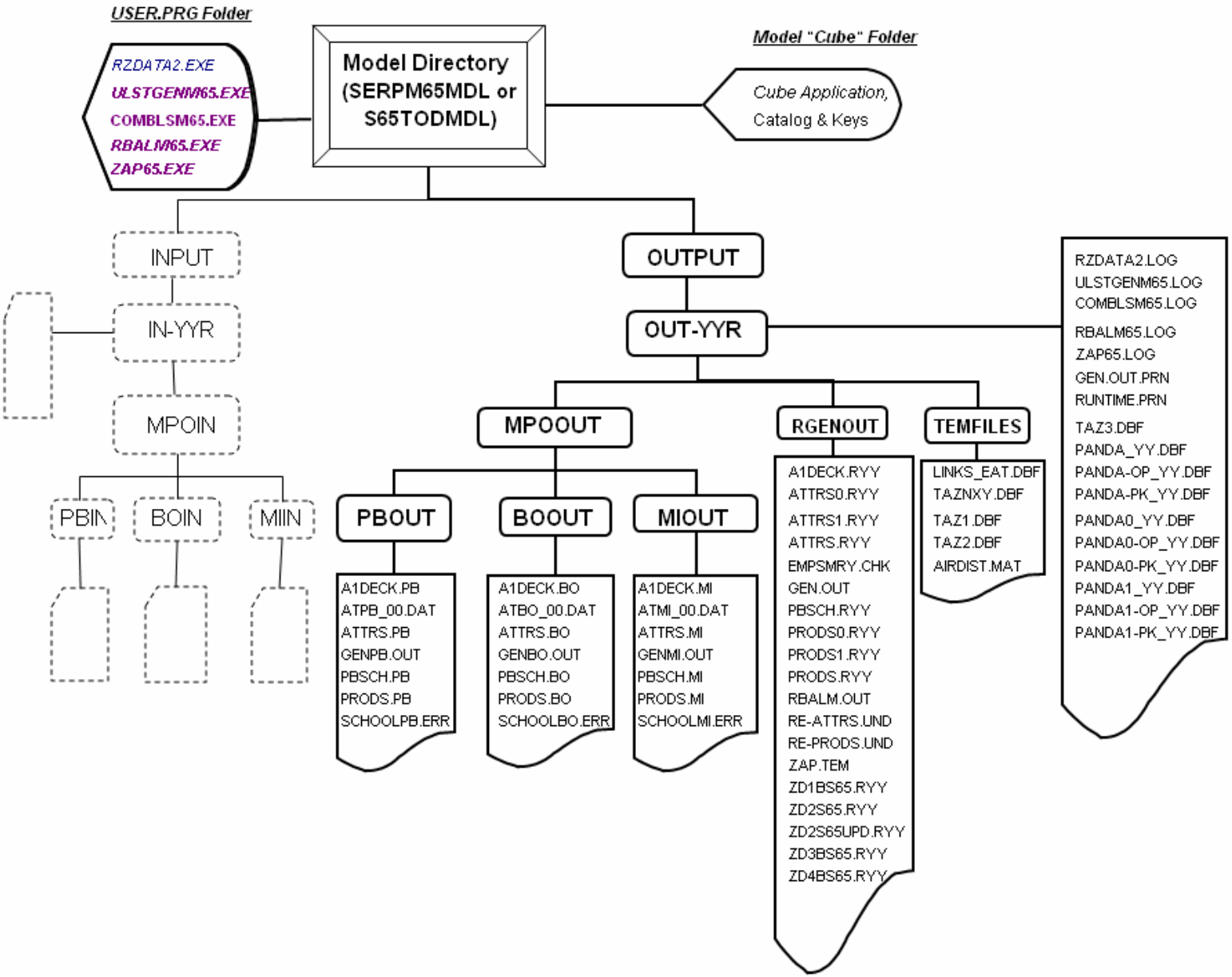
AMPKPAF-HBW	0.9549	PMPKPAF-HBW	0.0963	OFPKPAF-HBW	0.4947
AMPKPAF-HBNW	0.7683	PMPKPAF-HBNW	0.3051	OFPKPAF-HBNW	0.4889
AMPKAPF-HBW	0.0451	PMPKAPF-HBW	0.9037	OFPKAPF-HBW	0.5053
AMPKAPF-HBNW	0.2317	PMPKAPF-HBNW	0.6949	OFPKAPF-HBNW	0.5111

Figure 2-5: **Trip Generation Directories and Input Files**
Southeast Regional Planning Model 6.5



Note: SCHOOL, ZDATA1B and ZDATA2 input files are written from S6TAZ_YY.DBF database using Cube-Voyager scripts. So, any changes for these input files should be in the database file.

Figure 2-6: **Trip Generation Directories and Output Files**
Southeast Regional Planning Model 6.5



Following is a list of the input files of the XXIN (where, XX=PB-Palm Beach, BO-Broward, and MI-Miami-Dade) folder.

- GRATEBXX.SYN: Trip Production Rate, Attraction Rate and Household Stratification Curve File.
- STP60XX.SYN: Year 2000 Census Special Tabulation (STP60) File.
- SCHOOL.{YEAR}{ALT}: Year 20YY SCHOOL file.
- ZDATA1B.{YEAR}{ALT}: Year 20YY zonal production data file.
- ZDATA2.{YEAR}{ALT}: Year 20YY zonal attraction data file.
- ZDATA3B.{YEAR}{ALT}: Year 20YY airport and special generator file.
- ZDATA4B.{YEAR}{ALT}: Year 20YY internal-external production/attraction file.

Steps 1-3 of the trip generation module (see **Figure F-2**) write the main zonal data (ZDATA1B, ZDATA2 and SCHOOL). In addition, steps 7-11 write the dynamically determined density-based area types for their use in trip attraction model.

The trip generation routine then estimates the households within each cell of the cross-classification matrices. The ULSTGENM65 routine reports the number of households in each of the cross-classification cells. The HBW and NHBW productions use the work classification structure, which uses the stratification variables presence/absence of children, number of HH workers and number of HH autos. The other purposes (HBShop, HBSocRec, HBSchool-non-public, HBUNIV, HBOther and NHBO) productions use the non-work structure, which uses the stratification variables presence/absence of children, number of persons and number of HH autos. The other production and attraction models use a regression model. The production and attraction rates, as well as the stratification curves, are entered in GRATEBXX.SYN (XX=PB, BO and MI) files. The regional model implements county specific trip generation rates. Beside standard {ALT}{YEAR} output file extension, the trip generation module generates several output files with extensions of XX (PB, BO and MI), ERR, CHK, and UND. **Figure 2-6** depicts the directories and output files of the SERPM6.5 20YY model run.

2.1.5 Trip Distribution

For both 24-hour and time-of-day versions of SERPM6.5, separate distributions are run for peak and off-peak period trips. The off-peak distribution uses free-flow skims, whereas the peak period distribution uses congested skims. The peak period distribution also uses feedback loops of distribution, highway-only mode choice and pre-assignment steps. **Figure F-7** presents the flowchart of the main distribution module. Two feedback loops were used in the SERPM6.5 model. The loaded networks of these two feedback loops were combined for the calculation of transit paths and skims. A final congested distribution is also run using this merged loaded network (see Step 8 of **Figure F-7**).

2.1.6 Highway Assignments

SERPM6.5 highway assignments run separately for all of its three periods for the TOD version of the model. For the 24-hour version, an all-day assignment is made. **Figures F-25** to **F-30** present the Cube Voyager flowchart for highway assignments. For any period and 24-hour assignments, the final assignments are followed by a warm-up assignment to derive the penalties that are expected to occur at the freeway and on-ramp junctions. For SERPM6 model development process, the initial experimentation with Cube-Voyager junction model, representing merges as roundabouts, indicated unstable results. A simplified method was then developed to derive the freeway-ramp merging penalties. This method is primarily based on suggestions from the 1985 Highway Capacity Manual. These

relationships were not included in more recent versions of the HCM. Nevertheless they were deemed relevant for this modeling procedure. The same process was carried out in SERPM6.5.

Freeway-Ramp Merge Delays

Based on the warm-up model volume, the model then calculates the fraction of the warm-up volume that is expected to use the merge lane. **Table 2-6** presents the fractions of the freeway and ramp warm-up volume to derive the freeway-ramp merge volume. The fractions for freeways are taken from the 1985 HCM.

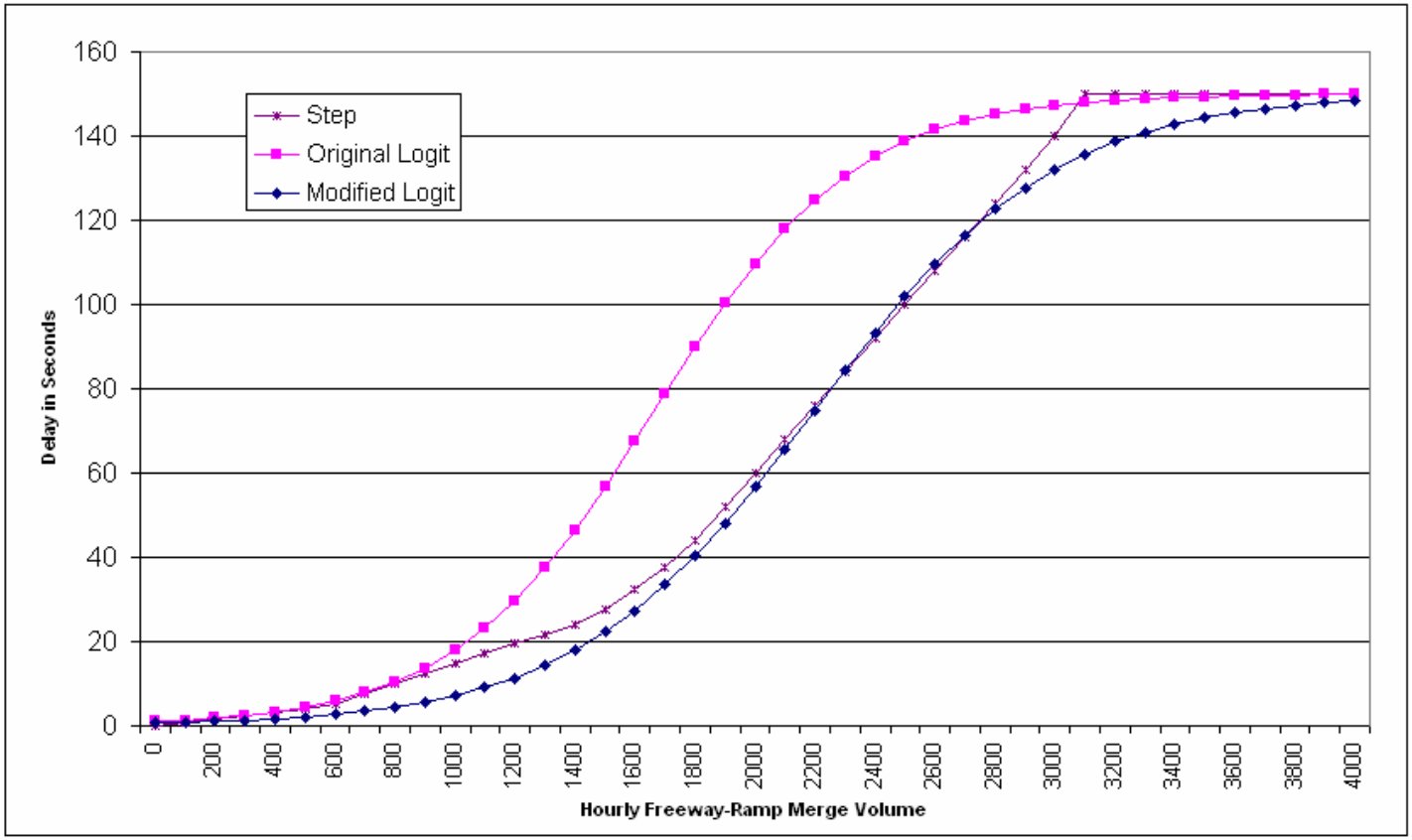
Table 2-6: **Freeway and Ramp Merge Volume Fractions**
Southeast Regional Planning Model 6.5

No of Freeway Directional Lanes	Warmup Volume (PreVol)	Freeway Fraction of Merge Volume
2	<1500	0.20
	1500-3500	(0.05 + 0.0001 * PreVol)
	>3500	0.40
3	<3500	0.06
	3500-5000	(-0.22 + 0.00008 * PreVol)
	>5000	0.18
>= 4	<4500	0.08
	4500-6000	(0.04 + 0.00001 * PreVol)
	>6000	0.10
	No of Ramp Directional Lanes	**Ramp Fraction of Merge Volume**
	1	1.00
	2	0.75
	>=3	0.50
	Freeway-to-Freeway Ramps	0.25

The merge volume is then used in a logit equation to derive the expected freeway-ramp merge delays. **Figure 2-7** presents these logit curves. Initially, the 1985 HCM-based step functions were used. A logit curve was then used in place of step functions. The logit curve is preferable because it is continuous. The original logit curve was then modified to dampen the merge delays because of its influence in high congestion areas, particularly for future year model runs. Both initial and modified curves are compared in **Figure 2-7**. The delays that will then be carried to approach legs of freeway-ramp junctions are assumed to be the fraction of their merged volume. This process was completely coded in Cube-Voyager scripts. Model users do not need to supply any data other than maintaining the facility types codes (see **Table 2-2**) and code "1" for LFWYMRG link attribute for left ramp freeway merging.

The warm-up assignments are run for a fixed 15 equilibrium iterations. The final period assignments are allowed to run for a maximum of 30 (pre-assignment in feedback loops) and 50 iterations (final assignments) or until the equilibrium process converge according to GAPS (less than equal to 0.0005) convergence criterion for three successive iterations.

Figure 2-7: **Freeway and Ramp Merge Delay Functions**
Southeast Regional Planning Model 6.5



Step Functions:

Merge Volume (MV)	Delay Function
<= 600	[0.0 + 0.008334*(MV-0)]
600-1000	[5.0 + 0.025*(MV-600)]
1000-1450	[15.0 + 0.02222*(MV-1000)]
1450-1750	[25.0 + 0.05*(MV-1450)]
1750-2000	[40.0 + 0.08*(MV-1750)]
2000-3000	[60.0 + 0.08*(MV-600)]
>3000	150

Logit Function:

Delay = [C / (1 + EXP(A*MV + B)

where,	**Original**	**Modified**
MV = Merge Volume		
A = Slope	-0.003	-0.0025
B = Offset	5	5.5
C = Maximum Delay	150	150

Modified Volume-Delay Functions

The traditional BPR curve is used in most areas to estimate congested roadway travel speeds. The BPR expression is:

$$s = s_f / [1+ALPHA(v/c)^{BETA}]$$

where

s	=	capacity restrained speed
s_f	=	free-flow speed
v	=	volume
c	=	practical capacity
ALPHA	=	coefficient (traditionally, 0.15)
BETA	=	exponent (traditionally, 4)

FSUTMS specifies a set of UROADFAC factors in the VFACTORS file to convert LOS E capacity to practical capacity. The VFACTORS file also allows the BPR equation to use different coefficients (a) and exponents (b). In the southeast Florida models, modified BPR curves have been used, with different coefficients and exponents for each facility type. **Figure 2-8** presents the facility specific modified BPR volume-delay functions. A relatively steeper curve was used for freeways and HOV facilities. Model users could use the links attributes (ALPHA_OVERRIDE and BETA_OVERRIDES) if they need to overwrite any facility specific ALPHA or BETA values that are entered in the VFACTORS file. The factors entered in the VFACTORS are usually validated parameters and should not be changed for model application.

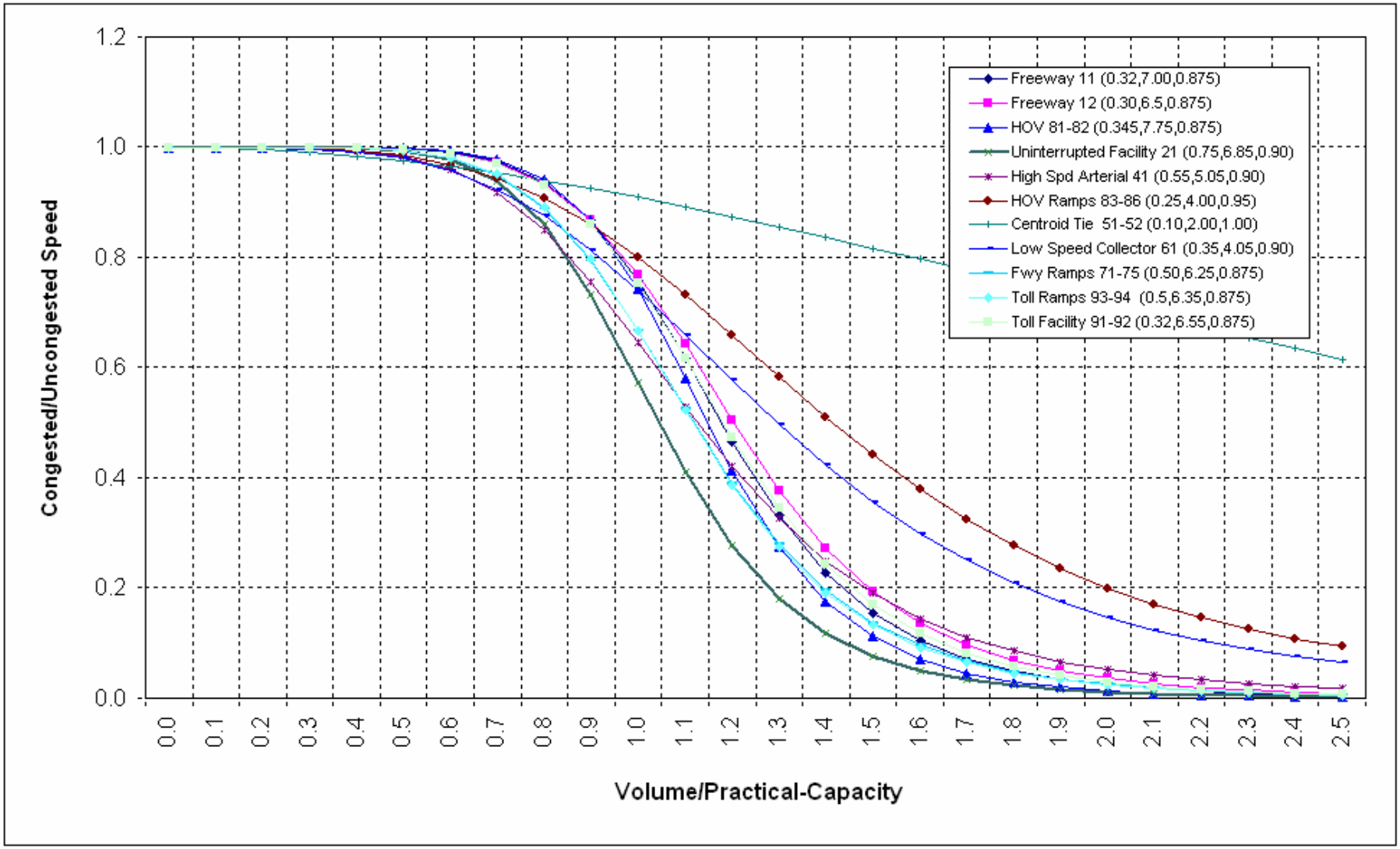
2.2 Transit Model Elements

The transit modeling process used in SERPM6.5 is essentially same as that used in SERPM6. Minor changes in the transit modeling process were made in SERPM6.5 network and data files. The mode choice routine in the SERPM6.5 TOD version is different than that used in 24-hour version, which uses the SERPM6's mode-choice program. The auto connector program of the TOD version implements the new FDOT transit modeling framework program. The 24-hour version uses the SERPM6's auto connector program.

The SERPM6 development team decided to convert the new model to the FSUTMS-Voyager software and utilize its advanced features in the model development process. For transit, the team proposed to use Voyager's PUBLIC TRANSPORT (henceforth called PT in the document) module. PT was designed as a multi-path path-builder, meaning that it can internally evaluate different path and sub-modal trade-offs.

At a New Starts workshop in June 2006, the FTA proposed requiring "best" walk and drive path results (i.e., walk and drive to best transit) sent to a standardized incremental logit model as a quality assurance practice. The paths would necessitate a single-path path-builder or a multi-path path-builder with its ability to evaluate multiple paths sharply curtailed. This was an obstacle to using PT for New/Small Starts projects during model development (note: this has since been resolved with the development of the "best-path" option). Consequently, the development team decided that the paths, skims and the transit assignment should be build in TP+'s TRNBUILD software (also available in FSUTMS-Voyager). PT is used to maintain the transit networks and generate walk-access and transfer connectors. A process within the model stream converts the PT-formatted network and access connectors to TRNBUILD format; the user does not have to convert any other data.

Figure 2-8: **Modified BPR Volume-Delay Functions**
Southeast Regional Planning Model 6.5



Note: Facility-specific ALPHA and BETA parameters are shown as FACILITY TYPE - FTC2 (ALPHA,BETA,UROADFAC)

In addition, the team reviewed other key features in the transit model, especially the network speeds, zero car household distribution, and the mode choice model. In the new model, one transit route file is maintained in PT format, which allows multiple headways per route.

The new model (SERPM6 & SERPM6.5) has different mode definitions than SERPM5. Transit paths, skims and fare matrices were derived from the transit networks using a set of path-building parameters. This chapter describes the changes to the transit networks, paths and fares used in model validation.

The list below summarizes the different approaches that were followed in SERPM6 and SERPM6.5 transit network development. Some of the features are new to the model. Each of the changes has been described in detail in the sections that follow.

- Transit Network – Mode and operator (similar to Company in TRANPLAN) codes have been revised and a new set of modes were introduced to handle the complex fare structure in southeast Florida
- Transit Network – A single transit route file is maintained in PT format
- Transit Network – Several changes were made to transit network, especially the fixed guideways were micro-coded to separate out the rail platform from the street layer
- Transit Network – Walk-access and transfer connectors are generated using PT's GENERATE function
- Transit Network – A special FORTRAN program REWALK adjusts the percent walk file and the coded walk file
- Transit Network – Changes were made to the AUTOCON program for generating the auto-access links
- Transit Network – Transit-only links were coded in the highway network, so was the station data file
- Transit Network – The transit speed curves were modified with the time-of-day speeds
- Transit Network – The transit route file and the non-transit connectors are converted to TRNBUILD format within the model stream using a FORTRAN program
- Transit Network – Many SERPM5 FORTRAN programs were either eliminated or converted to Voyager scripts (e.g., WALKCON, SIDECON, SIDEXTD, FLAGLINE, SCALEA, FLAGLINE)
- Transit Path – TRNBUILD is used for generating transit paths
- Transit Path – The need for using the Station-to-station matrix was eliminated
- Transit Skim – TRNBUILD is used for generating transit skims
- Transit Fare – A stand-along script calculates fare

2.2.1 Mode Numbers

Two sets of mode numbers are used in the model stream, one for PT and another for TRNBUILD. The PT mode numbers generally reflect previous SERPM models. Three new modes were added to assist analysis for New/Small Starts studies. Modes 10 and 11 are reserved for a "new mode" (i.e., a new transit mode that is built between the base and horizon years) and a "project mode" (i.e., the mode under analysis), respectively. Limited-stop buses were assigned to Mode 13.

A second set of mode numbers was developed for TRNBUILD. While PT (like Tranplan) can use the OPERATOR feature to differentiate transit fares, TRNBUILD relies on the mode numbers themselves. Consequently, the TRNBUILD mode system has a separate mode for each county and transit mode combination. Mode definitions between the two systems were kept identical to the extent possible. Both sets are detailed in **Table 2-7**.

Table 2-7: **Transit Mode Listing**
Southeast Regional Planning Model 6.5

No	PT Mode (applicable county)	TRNBUILD Mode (applicable county)
1	Walk Access	Walk Access
2	Drive Access	Drive Access
3	Sidewalk/Transfer connector	Sidewalk/Transfer connector
4	Bus (Palm Beach & Broward)	Bus (Palm Beach)
5	Bus (Miami-Dade)	Bus (Dade)
6	Express Bus (all)	Express Bus (Broward)
7	Metrorail	Metrorail
8	Tri-Rail	Tri-Rail
9	Metromover	Metromover
10	New Mode (all)	New Mode (Broward)
11	Project Mode (all)	Project Mode (all)
12	Tri-Rail Shuttle (all)	Tri-Rail Shuttle (all)
13	Limited Stop Bus (all)	Limited Stop Bus (Miami-Dade)
14	n/a	Bus (Broward)
15	n/a	Express Bus (Miami-Dade)
16	n/a	Express Bus (Palm Beach)
17	n/a	New Mode (Miami-Dade)
18	n/a	Limited Stop Bus (Broward)
19	n/a	Limited Stop Bus (Palm Beach)
20	n/a	New Mode (Palm Beach)

2.2.2 Operators

Operators, the equivalent of companies in FSUTMS-Tranplan, provide and maintain the transit service. Each operator is given a specific identifier, which is used in the route file to identify the operator of each line. During early development of SERPM6, it was decided to assign an operator number for each operator and service type to assist in fare computations. This became unnecessary when TRNBUILD was introduced. The operator codes used in the SERPM6 and SERPM6.5 are listed in **Table 2-8**.

Table 2-8: **Transit Operator Listing**
Southeast Regional Planning Model 6.5

Operator Number	Operator & Type of Service
1	PalmTran local bus
2	Tri-Rail Shuttle buses
3	BCT local bus
4	MDT local bus
5	BCT express bus
6	MDT express bus
7	New mode
8	Metrorail
9	Metromover
10	Tri-Rail

2.2.3 Transit Lines

For SERPM6, the INET transit line files from the Palm Beach, Broward and Miami-Dade models were converted to PT format. For the SERPM6.5, the PT transit network of SERPM6 was modified based on the transit route data that were collected for 2005 model validation. Many of the PT data fields are similar to the INET data fields in the MPO models. A table describing the field names is shown in **Table 2-9**.

Table 2-9: **Transit Line Field Description**
Southeast Regional Planning Model 6.5

Field Name	Field Description
MODE	**PT mode number**
NAME	10-12 character identifier, follows MxLyyyzz format where x=MPO mode number, yyy = line number (either Coder assigned or Transit agency designated number - see USERA2) and zz=MPO code and inbound/outbound indicator
ONEWAY	**If true, route operates in coded direction only. If false, route operates in both directions.**
LONGNAME	40-character identifier, generally follows route description of Transit Agency
XYSPEED	Default speed if link does not appear in the highway network
USERA1 (*)	Corradino staff Initials (SKS, SV and TAW) primarily responsible to code the line
USERA2 (*)	Transit Agency's Route Number
USERA3 (*)	Year 2005 line specific ridership counts
USERA4 (*)	User defined transit agency code - 1=PalmTran, 2=BCT, 3=Metro-Bus, 5=MR & MV, 6=TR
HEADWAY[x]	**Service frequency, where 1=AM peak, 2=midday, 3=PM peak**
OPERATOR	Transit service operator for the route
N	**Node string; stops are positive, non-stops are negative**

(*) Not Used by CV model.

Only one transit route file is necessary in PT since headways for up to five time periods can be coded. The PM peak frequencies have been coded in period 3, but are not used in SERPM6 or SEERPM6.5.

An example of a route coded in PT-format is shown in the **Figure 2-9**. This line represents the Tri-Rail, which is coded as mode 8. The AM and PM period headways on this line are 30 minutes, and the midday headway is 60 minutes.

Several efforts were undertaken during model development to clean up transit coding. The largest effort was removing the two-way coding of buses in Miami-Dade County. These buses operate differently in inbound and outbound directions on one-way streets, but were coded such that the outbound direction traversed an inbound one-way street. This technique avoided the FSUTMS-Tranplan limit on the number of transit lines. These routes now have separate lines coded for inbound and outbound directions

Figure 2-9: **An Example Transit Line (Tri-Rail) Coding**
Southeast Regional Planning Model 6.5

```
;; TRI-RAIL
LINE MODE=8, NAME="M8L1S65", ONEWAY=F,
     LONGNAME="TRI-RAIL MANGONIA-MIA", XYSPEED=40, USERA1="SKS",
     USERA2="TR",USERA3="11382", USERA4="6", HEADWAY[1]=30, HEADWAY[2]=60,
     HEADWAY[3]=30, OPERATOR=10, N=30500, -31059, 30501, -31060,
     -30502, -30523, -30524, 30503, -31061, 30504, -31054, -31055,
     -31056, -31053, 30505, -31052, 30506, -30507, -30508, 30509,
     30510, 30511, 30512, 30513, 30514, 30515, -30516, -30517,
     30518, 30519, 30520, 30521, 30522
```

.

PT2TRNB Program

The transit network coding is done using the PT mode number definitions. The mode numbers for each line are converted to the TRNBUILD set by the PT2TRNB program during the model run (in the TRANSIT/CONNECTOR module). All path-building, skimming and assignment reports follow the TRNBUILD mode set.

PT2TRNB reads in the walk, drive and sidewalk connector files as well as the bus line file from the list in the CONTROL.MAS file. It outputs new files using the TRNBUILD mode set.

2.2.4 Modifications to Highway Network

Some transit-related highway coding guidelines are necessary so that generalized scripting procedures can be developed. Several transit network elements are now coded in the highway network (making it essentially a 'transportation' network). Two noticeable elements are station data, now coded into the highway node layer rather instead of a STATDATA file, and fixed-guideway links. These new procedures take advantage of the extended network attributes available in FSUTMS-Voyager and should provide better data-checking and maintenance capability to the user.

Micro-Coding Stations

In recent months, FTA has strongly encouraged detailed coding of fixed-guideway stations. Street nodes served as rail station nodes in FSUTMS-Tranplan, implying zero transfer time between bus and rail platforms. Micro-coding means separating the rail platform from the street layer by a connector to represent the time needed to access or egress the rail platform and transfer to other transit modes. The connectors are coded in such a way that only the fixed-guideway system is able to access the rail platform (see **Figure 2-10**).

All Metrorail, Tri-Rail and Metromover platforms have been micro-coded. The travel times on the connector links (coded with facility type 59) vary, but are typically between 30 seconds and one minute. An example of the micro-coding done at the MetroRail-Tri-Rail transfer station is shown in **Figure 2-11**.

Figure 2-10: **Micro-Coding Rail Platform**

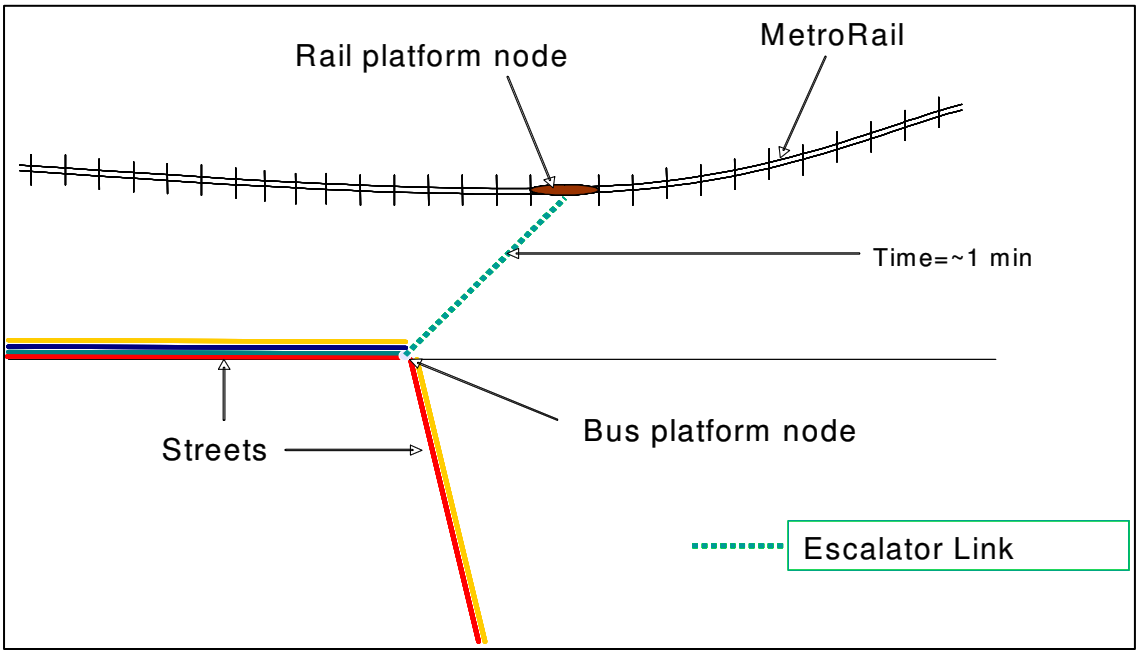
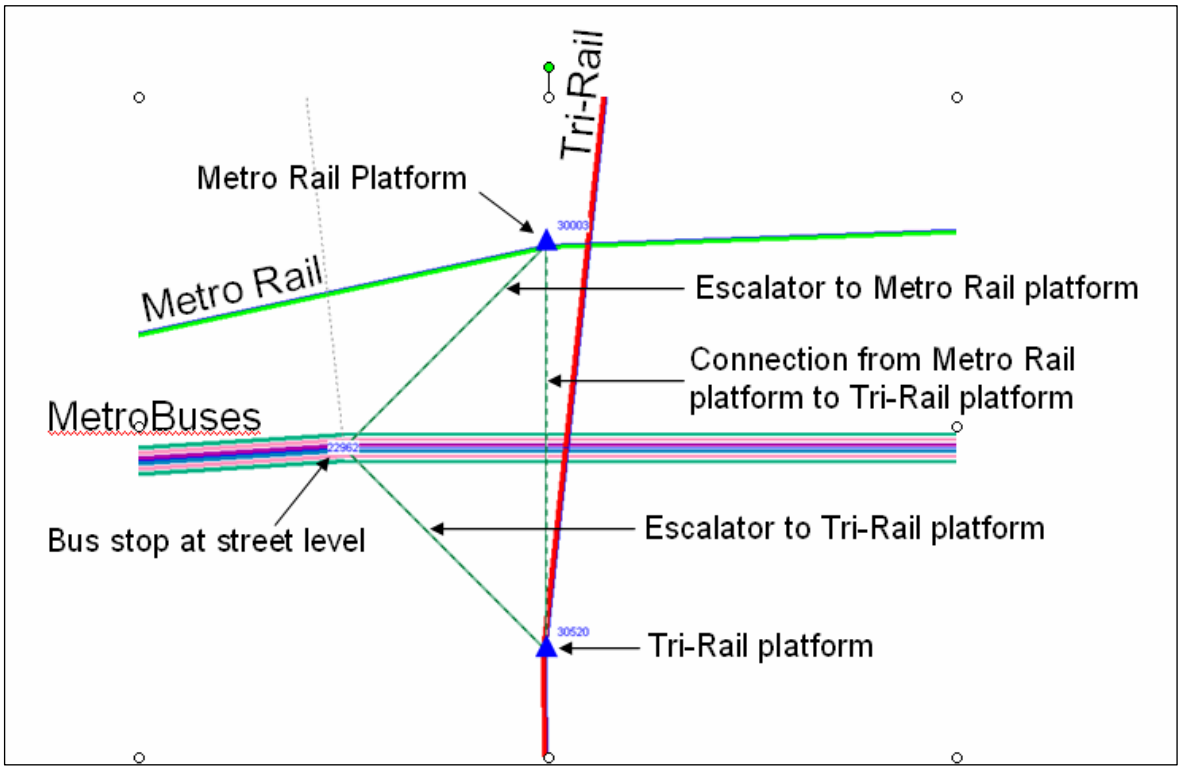


Figure 2-11: **An Example of Micro-Coding – Tri-Rail and Metrorail Transfer Station**
Southeast Regional Planning Model 6.5



Station Information (STATDATA File)

For SERPM6 and SERPM6.5, the transit station file inputs are coded directly on the nodes of the highway network and converted to an ASCII file via scripting for use during the model run. In SERPM5, these fields were coded into the STATDATA.{Year}{Alt}file. Information is coded on both the rail platform (if applicable) and the bus platform/street node. **Table 2-10** shows the fields that are coded on the street nodes.

Table 2-10: **Highway Node Fields for Coding Transit Stations**
Southeast Regional Planning Model 6.5

Parameter	Type	Description
STATIONNUMBER	Numeric	Must be greater than 0 to be used in SERPM6.5
STATIONZONE	Numeric	Nearest centroid to station. This field is filled during model execution.
SERVICEMILES	Numeric	Maximum roadway distance allowed for auto-access connector (miles)
PARKINGSPACES	Numeric	Number of parking spaces
PARKINGCOSTAM	Numeric	Parking cost in peak period in cents
PARKINGCOSTMD	Numeric	Parking cost in off-peak period in cents
TERMTIMEPNR	Numeric	Terminal time for park-and-ride trips (in minutes)
TERMTIMEKNR	Numeric	Terminal time for kiss-and-ride trips (in minutes)
ACTIVEFLAG	Numeric	Used in model execution if greater than zero
STATIONDESC	Character	Station name & description
FAREZONE	Numeric	Fare zone (zone-based fares only). Not used for SERPM6 or SERPM6.5

The station data on the node layer, especially the ACTIVEFLAG field, determines which nodes have park-and-ride access. The corresponding street node should also have station data coded if a park-and-ride to bus opportunity exists. This is an important practice since the drive-access connector cost includes parking costs and terminal times. Different terminal times, for example, may be justified at certain stations. This procedure is likely to remain for future versions of SERPM when PT replaces the current TRNBUILD functionality.

Transit-Only Links

Transit-only links for bus and fixed-guideway transit are coded directly into the highway network. These links are coded with facility type 69. A set of three (distance, time and speed) is specifically for bus transit or other forms of transit subject to mixed-flow conditions. Another set of four fields (see **Table 2-11**) are designed for fixed-guideway transit, with a mode field is added to the distance, time and speed fields. The bus-related fields do not have a mode since it is assumed that the speeds will apply to all transit operating within auto traffic. In all cases, time or speed should be coded, not both.

Table 2-11: **Headway Link Fields for Coding Transit-Only Links**
Southeast Regional Planning Model 6.5

Parameter	Type	Description
TMODE	Numeric	Transit mode number
TDIST	Numeric	Distance for bus transit (miles)
TSPEED	Numeric	Average speed for bus transit (mph)
TTIME	Numeric	Travel time for bus transit (minutes)

2.2.5 Access to Transit

There are four elements to correctly determine transit accessibility: zonal access, walk-access connectors, drive-access connectors, and non-centroid to non-centroid connectors.

Percent Walk

Percent walk represents the proportion of zone that is accessible to the transit stops. Proportions are determined using buffers in GIS around the stops and stations. The portion of a zone within 0.33 mile of the stops/lines is called short-walk percent and that within one mile is long-walk area. For SERPM6.5, these buffers were generated around the lines. The percent walk file is not generated within the model stream and is an input file required by the transit model. **Appendix E** describes an ARCVIEW based process to develop this percent walk file. This process also employs a user written program (CVLIN2AV) that parses Cube Voyager transit route lines for ARCVIEW import. A listing of this program is presented in **Appendix D4**. The format for PCWALK file is shown in **Table B-29**. As an illustration, the short-walk percentages for peak period used in the 2000 model are presented in **Figure 2-12**.

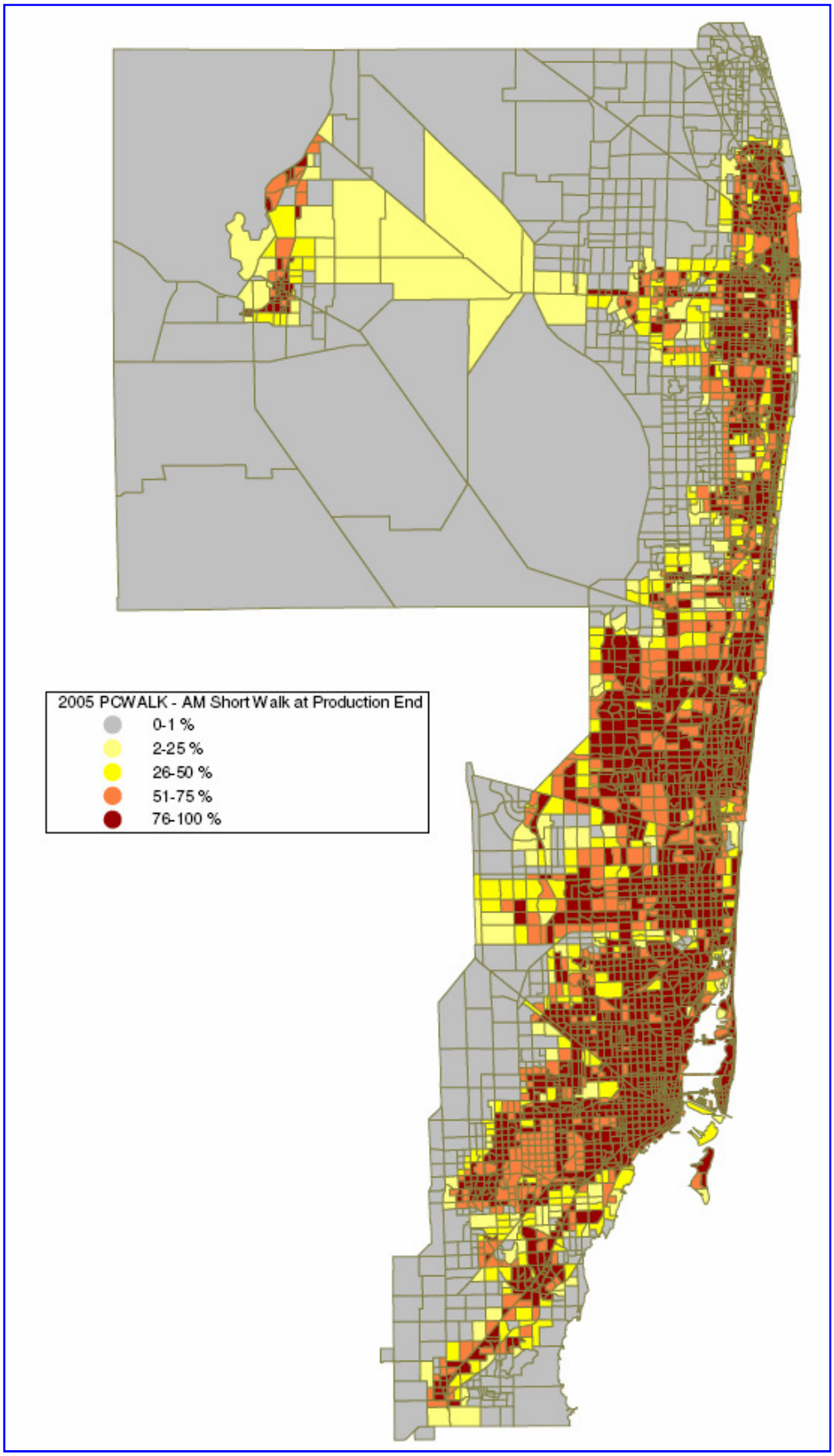
Walk Connectors

Two sets of connectors are produced by the model, walk-access to transit stops and walk-access to transit stations (i.e., fixed-guideway stations and park-rides). SERPM6 uses PT's GENERATE statement to create the initial set of walk connectors. The connectors are built by using the highway links as a path for movement. The parameters used in the GENERATE command are shown in **Table 2-12**.

Table 2-12: **GENERATE Parameters for Walk Access and Egress Connectors**
Southeast Regional Planning Model 6.5

Parameter	Description	Values
COST	Equation that determines the minimum cost path	WALKDISTANCE (in miles)
EXTRACTCOST	Equation that determines the skimmed value of the connector	WALKTIME (in minutes)
FROMNODE	The list of origin and destination nodes that are eligible to be connected	All centroids
TONODE		All non-centroids
INCLUDELINK	Links that can be traversed to develop the connectors	Facility Types = 20-69
EXCLUDELINK	Links that cannot be traversed to develop the connectors	TMODE=7,8,9 (fixed-guideways links)
LIST	Lists each connector in the print file	False
ONEWAY	Determines how the underlying highway links can be traversed. If true, connectors can only be created on one-way links in the coded direction. If false, connectors can be created on one-way links in both directions.	False
DIRECTION	Specifies one of three ways the connector is generated: 1. FROM NODE(s) to TONODE(s) 2. TONODE(s) to FROMNODE(s) 3. Both (1) and (2)	3
MAXCOST (walk-access/egress)	Maximum cost, as defined by COST, for a connector	1.1 miles for all modes
MAXNTLEGS	The maximum number of connectors by mode for each FROMNODE	5 (local buses), 2 (express buses), 1 (Metrorail), 1(Tri-Rail), 2 (Metromover), 2 (New mode), 1(Project Mode), 5 (Tri-Rail Shuttle)
NTLEGMODE	Mode number for connector being generated	1

Figure 2-12: **An Example of Zonal Walk Accessibility**
Southeast Regional Planning Model 6.5



The maximum walk time is set to 1.1 miles for walk-stop connectors, reflecting a one-mile maximum plus some extra to account for variance in network topology. An example shown in **Figure 2-13** lists all walk connectors generated from zone number 2764. **Figure 2-14** shows the connectors graphically. Note the 5-connectors limited to the local buses are all generated to the stops west of the zone. The inset of the Metrorail-Tri-Rail transfer point shows one connector to the Metrorail station and one to the Tri-Rail station.

Figure 2-13: **PT Generated Non-Transit Legs from Zone 2764**
Southeast Regional Planning Model 6.5

```
1.  NT LEG=2764-17980 MODE=1 COST=9.78 DIST=0.41 ONEWAY=T XN=22007
2.  NT LEG=2764-17981 MODE=1 COST=14.82 DIST=0.62 ONEWAY=T XN=22007 17980
3.  NT LEG=2764-17982 MODE=1 COST=20.34 DIST=0.85 ONEWAY=T XN=22007 17980
4.  NT LEG=2764-17984 MODE=1 COST=21.78 DIST=0.91 ONEWAY=T XN=22007 17980 17981
5.  NT LEG=2764-22057 MODE=1 COST=17.81 DIST=0.74 ONEWAY=T XN=22006
6.  NT LEG=2764-22060 MODE=1 COST=11.30 DIST=0.47 ONEWAY=T XN=22059
7.  NT LEG=2764-22061 MODE=1 COST=23.51 DIST=0.98 ONEWAY=T XN=22059 22060 29376
8.  NT LEG=2764-26942 MODE=1 COST=17.07 DIST=0.71 ONEWAY=T XN=22059 22060
9.  NT LEG=2764-29376 MODE=1 COST=14.44 DIST=0.60 ONEWAY=T XN=22059 22060
```

Walk connectors to fixed-guideway stations

Longer connectors to fixed-guideway stations are required to minimize potential of path disconnections between alternatives. The maximum distance is set to three miles. Walk-station connectors are built from all the Metrorail station and Tri-Rail stations to all zone centroids that meet the parameter conditions shown in **Table 2-13**.

Figure 2-14: **Graphical Illustration of Example Walk Connectors**
Southeast Regional Planning Model 6.5

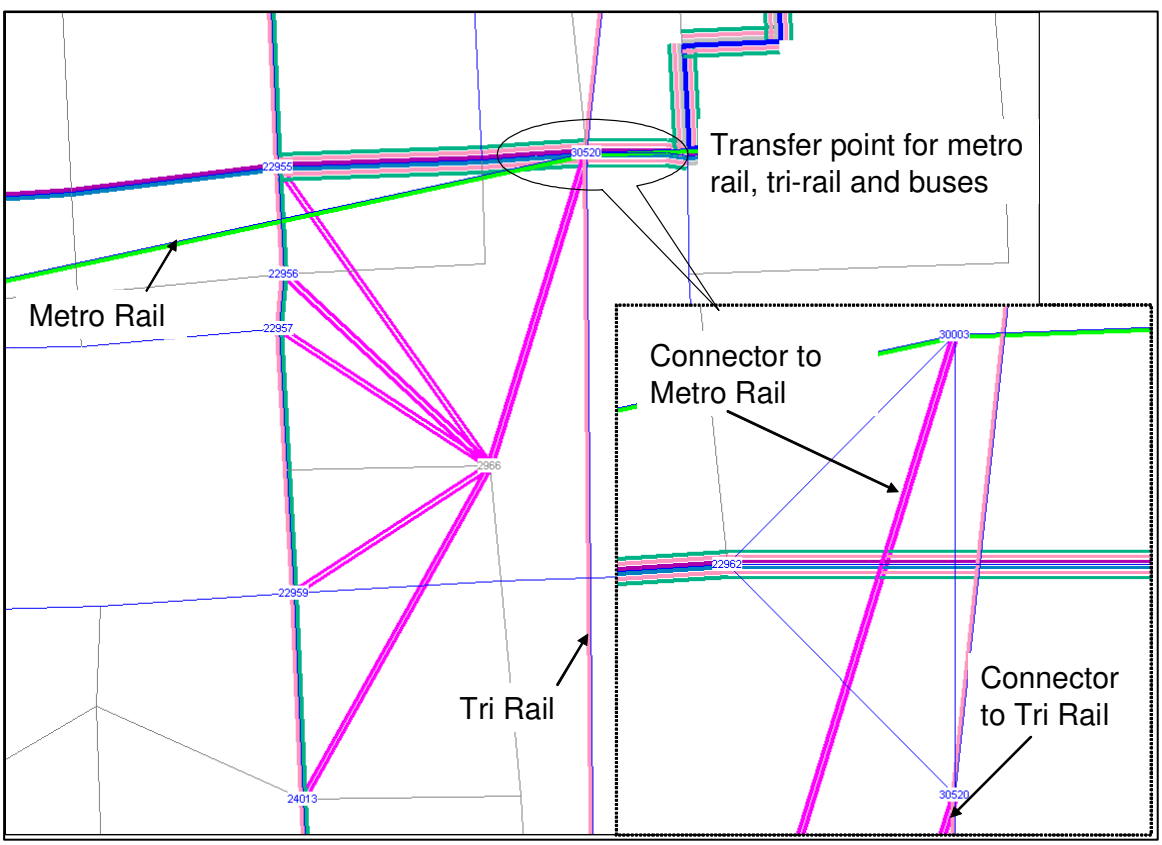


Table 2-13: **GENERATE Parameters for Walk Connectors to Stations**
Southeast Regional Planning Model 6.5

Parameter	Values
COST	Walk Distance
MAXNTLEGS	20 connectors per mode
MAXCOST	3 miles
EXTRACTCOST	Link walk time
INCLUDELINK	Facility Types = 20-69
EXCLUDELINK	TMODE = 7 (metrorail), 8 (Tri-Rail) , 9 (metromover)
ONEWAY	False
DIRECTION	3 (generate in both directions)
FROMNODE	All metrorail and Tri-Rail stations
TONODE	All centroid nodes

During development of the SERPM6 model, it was determined that PT's process generated more realistic connections (the most realistic scenario was no access for some zones) than the WALKCON program used in earlier versions. An additional procedure was developed to coordinate the percent walk and walk connector data. This coordination is important, as there are conflicting assumptions in how they are generated. Percent walks are generated via a GIS-based program (see Appendix E) and assume ubiquitous access within the zone. PT's GENERATE creates walk access connectors by spidering along the highway network, assuming that the centroid connectors are not only the best but the *only* connection between the zone and the street grid, an assumption that is inconsistent with the percent walk calculations.

A FORTRAN program, named REWALK, was developed to coordinate the percent walk and walk connector data. This coordination is important as the ubiquitous nature of GIS buffers conflicts with the network topology used by PT's GENERATE keyword. REWALK reads in the walk connectors file generated using PT and the PCWALK file.

A coded walk time is determined for each zone, depending on the short-walk percentage, long-walk percentage and whether there is a transit stop at the centroid connector. In some situations, the walk time on a zone's walk-access connectors may be modified to better coordinate with the percent walk information. If a transit stop is not located at the centroid connector, all percent walk values are set to zero since a viable transit connector is unlikely. If there are no connectors from a zone, the short- and long-walk percentages are set to zero. If not already, the length of the shortest connector is reset to at most 0.5 mile for zones with good transit coverage (i.e., 100% short walk). Connectors from zones with some transit coverage have their length altered to the average long walk distance. A summary of the REWALK logic is shown in the **Table 3-1** of Chapter 3.

Drive Access Connectors

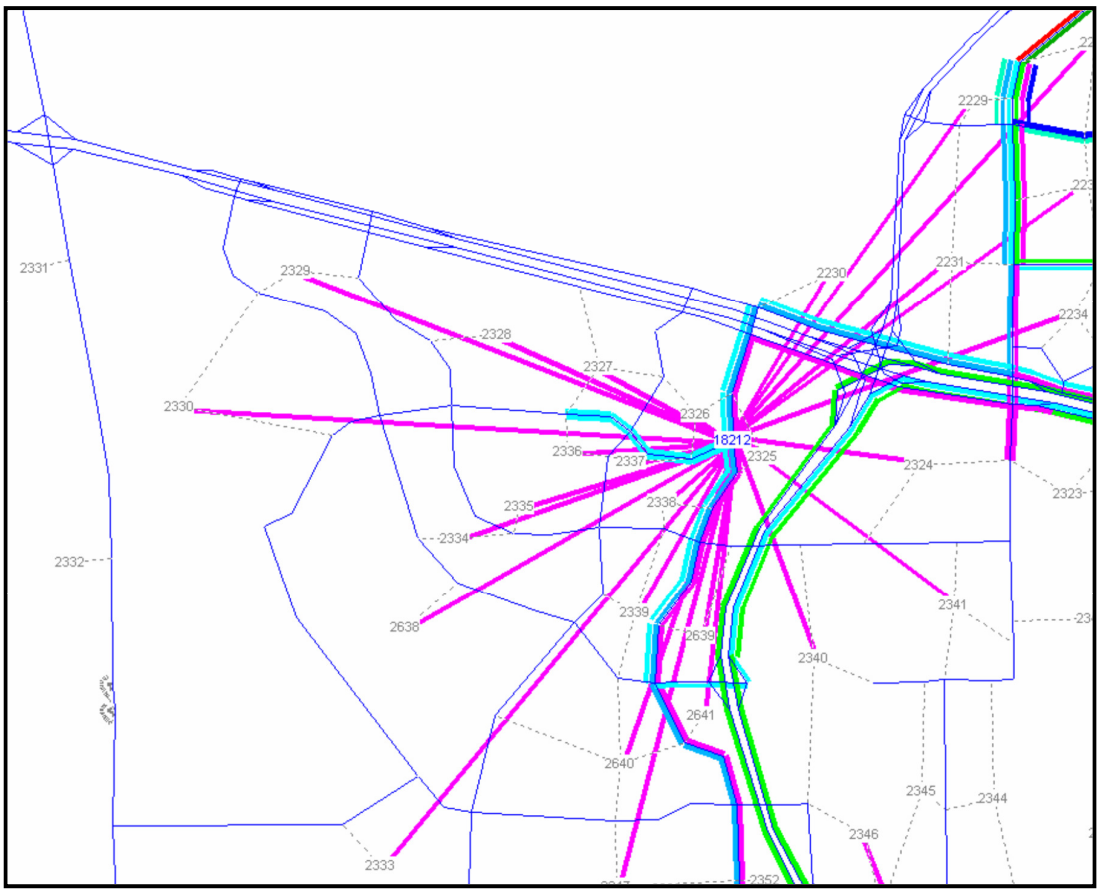
For SERPM6, drive-access connectors are developed using a modified version of the AUTOCON program. The same version of the program was used in the 24-hour version of SERPM6.5. The TOD version of SERPM6.5 implements new AUTOCON program for FDOT's transit modeling framework. The cost on the connector now includes driving time, terminal times, station parking cost and auto operating cost. All attributes are summed and weighted to in-vehicle travel time.

Peak period uses the congested skims and the off-peak period uses the free flow skims. Auto-connectors are generated only for the nodes that are in the station data file. It reads in the transit line file. Distances and speeds for the auto connectors were automatically extracted from the congested highway skims for the peak period.

The 24-hour version AUTOCON reads CONTROL.MAS (see **Table G-1** of Appendix G) to allow the flexible filenames that occur by using Voyager's Application Manager. The TOD version AUTOCON program reads TRANSIT.MAS file (see **Table G-4** for description of the parameters) generated by step 6 of transit connector sub-module. It contains all the parameters for the AUTOCON program as well as its input and output files.

The AUTOCON program reads "AM" (for peak period) or "MD" (for off-peak period) as command-line parameter. The program outputs the access connectors in a form that can be read in PT. The weighted cost on the auto access connector is in IVT minutes. The costs on the access connectors take into account the station parking cost. The auto in-vehicle time is converted to weighted-IVT minutes by multiplying by a factor of 1.5. The terminal time in the cost includes a 2-minute terminal time at home-end and the terminal time at the parking node. **Figure 2-15** shows an example of auto-connectors built to the parking lot at Weston/Bonaventura.

Figure 2-15: **An Example of Auto Connectors**
Southeast Regional Planning Model 6.5



Transfer Connectors

Transfer connectors connect the various forms of transit. There are four sets of transfer connectors generated in SERPM6 & SERPM6.5: (1) between rail and bus platforms, (2) between stations and nearby

bus stops, (3) between all transit stops in CBDs and (4) between Metromover stations to nearby stops All transfer connectors are built as mode number 3 in the model.

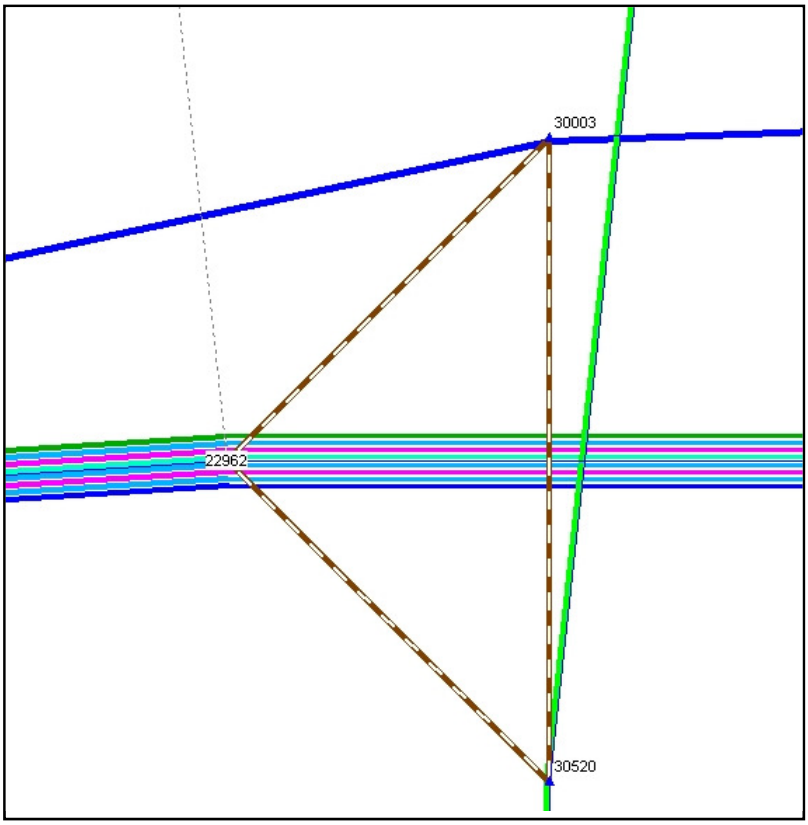
(1) Connection between rail and bus platforms

This set addresses the new station micro-coding technique introduced in SERPM6. The connection is between the bus stop at the street-level and the rail platform using a highway link coded as facility type 59. **Table 2-14** shows the parameter values used in PT to generate such connectors. **Figure 2-16** shows the connectors at the Metrorail-Tri-Rail transfer station.

Table 2-14: **Parameters for Connectors between Rail and Bus Platforms**
Southeast Regional Planning Model 6.5

Parameter	Values
COST	Walk Distance
MAXNTLEGS	20 connectors per mode
MAXCOST	0.6 miles
EXTRACTCOST	Link walk time
INCLUDELINK	Facility Types = 59
ONEWAY	False
DIRECTION	3 (both directions)
FROMNODE	30000-35000 (All fixed-guideways station – Metrorail, Tri-Rail and Metromover stops)
TONODE	All non-centroid nodes

Figure 2-16: **An Example of Rail-Bus Platform Connectors**
Southeast Regional Planning Model 6.5



(2) Connection between stations and nearby bus stops
This set of connectors mimics the SIDECON procedures used in SERPM5. The list of station nodes, from and to where the connectors are built, is obtained by reading the station data on the transportation network nodes. **Table 2-15** shows the parameter values used in PT to generate these connectors.

Table 2-15: **Parameters for Connectors between Stations and Bus Stops**
Southeast Regional Planning Model 6.5

Parameter	Values
COST	Walk Distance
MAXNTLEGS	20 connectors per mode
MAXCOST	0.6 miles
EXTRACTCOST	Link walk time
INCLUDELINK	Facility Types = 20-69
EXCLUDELINK	TMODE = 7 (Metrorail), 8 (Tri-Rail) , 9 (Metromover)
ONEWAY	False
DIRECTION	3 (both directions)
FROMNODE	All station nodes (park-ride and rail stations) from STATDATA file
TONODE	All non-centroid nodes

(3) Connection between all transit stops in CBD
The third set replaces the coding of downtown sidewalks. It also eliminates the need of SIDETXD program used in SERPM5. The CBD nodes are identified using the area type field on the links. **Table 2-16** shows the parameter values used in PT to generate such connectors.

Table 2-16: **Parameters for Connectors between All Transit Stops in CBD Areas**
Southeast Regional Planning Model 6.5

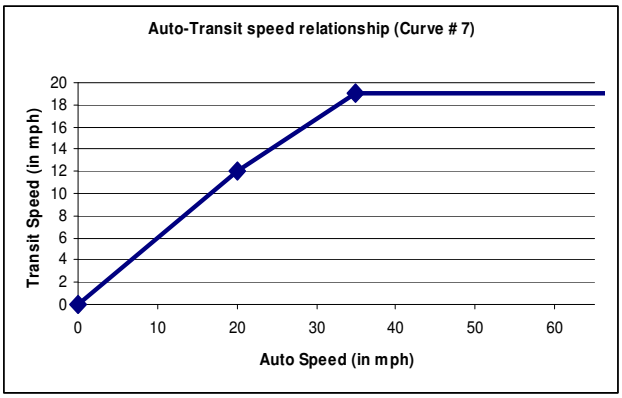
Parameter	Values
COST	Walk Distance
MAXNTLEGS	20 connectors per mode
MAXCOST	0.6 miles
EXTRACTCOST	Link walk time
INCLUDELINK	Facility Types = 20-58, 60-69
EXCLUDELINK	TMODE = 7 (Metrorail), 8 (Tri-Rail) , 9 (Metromover)
ONEWAY	False
DIRECTION	3 (both directions)
FROMNODE	All CBD nodes
TONODE	All non-centroid nodes

2.2.6 Transit Speeds

While speeds for modes that have exclusive right-of-way are “hard-coded” into the transit links as attributes, speeds for modes that share right-of-way with vehicular traffic are based on the relationship between transit and highway speed, which may vary with congestion. The transit model assumes the time for a transit vehicle to traverse a highway link is a linear (usually, segmented/piecewise linear) function of the highway travel time.
A series of speed curves, based on the auto speed, define this relationship. Exclusive right-of-way transit lines (Tri-Rail and Metrorail) running times were based on their schedule times. Peak and off-peak files are maintained separately.

Different sets of curves were developed for the off-peak period. An example on how to interpret the curve is shown using the **Figure 2-17**.

Figure 2-17: **An Example of Auto-Transit Speed Curve**
Southeast Regional Planning Model 6.5



Based on area type and facility type of each link, a different curve is applied to get the transit speed from the auto speeds. The curve number to be used for each area type and facility type combinations is shown in **Table 2-17**.

Table 2-17: **Auto-Transit Curves Used by Area and Facility Type Combinations**
Southeast Regional Planning Model 6.5

Curves for mode 4 (Broward and Palm Beach County Buses)

FT AT	10-19	20-29	40-49	50-59	60-69	70-99
1-1	3	6	6	4	13	3
2-2	4	6	6	5	6	4
3-3	4		10	7	10	4
4-4	4		8	6	8	4
5-5	5		12	2	12	5

Curves for mode 5 (Metrobus)

FT AT	10-19	20-29	40-49	50-59	60-69	70-99
1-1	3	11	11	4	13	3
2-2	4	11	11	5	11	4
3-3	4		15	7	15	4
4-4	4		14	11	14	4
5-5	5		12	2	12	5

Table 2-18 shows the curve used in the calculating the peak period transit run times.

Table 2-18: **Auto-Transit Speed Relationship Curves**
Southeast Regional Planning Model 6.5

Peak period

Curve Number	X1	X2	Y1	Y2
1	30	70	2.5	2.5
2	30	70	30	70
3	25	45	25	30
4	27	50	27	40
5	35	55	35	48
6	18	32	10	16
7	20	35	12	19
8	20	35	10	14
9	16	36	11	21
10	17	36	14	20
11	20	34	9	13.5
12	24	48	16	25
13	20	28	10	14
14	16	37	12	15
15	21	38	12	18

Off-peak period

Curve Number	X1	X2	Y1	Y2
1	30	70	2.5	2.5
2	30	70	30	70
3	25	45	25	30
4	27	50	27	40
5	35	55	35	48
6	17	31	11.5	17.5
7	19	34	13.5	20.5
8	19	34	11.5	15.5
9	15	35	12.5	22.5
10	18	35	13.5	20.5
11	19	33	10.5	15
12	23	47	17.5	26.5
13	19	27	11.5	15.5
14	21	36	10.5	13.5
15	20	37	11.5	17.5

Note: (0, 0), (X1, Y1) and (X2, Y2) are the three curve points on the piecewise continuous auto-transit speed relationship

2.2.7 Transit Fares

Transit fares for all operators are coded in 2005 dollars for the base and future years. Both base and future year fares are scaled to 2005 dollars in the mode choice model via the INFL1 factor in PROFILE.MAS (see Appendix A). The boarding fares for PalmTran, Broward County Transit (BCT) and Miami-Dade Transit/Metrobus (MDT) operators are shown in the **Table 2-19**.

In general, transit fares are as a "boarding plus transfer" system; a boarding fare is charged on the first boarding and a reduced fare is charged for each transfer. PalmTran and BCT also had a reduced fare when transferred between the two systems. By 2006, both systems had eliminated reduced transfer fares. MDT uses "boarding plus transfer" fare system. Metromover fare is free.

Table 2-19: **Boarding Fares – PalmTran, BCT and Miami-Dade Transit**
Southeast Regional Planning Model 6.5

Agency/Fare Type	Fare in Cents (See Note)	
	2005 Model	2030 Model
PalmTran	125	125
PalmTran Daily Unlimited Pass	300	300
BCT	100	100
BCT All Day 'BUS' Pass	250	250
Metrobus	150	150
Metrobus Express	185	185
Metrorail	150	150
Metromover	free	free
Tri-Rail	"Fare-zone" fares	"Fare-zone" fares

Note: Fares for 2005 and 2030 model are in 2007$. Model application uses an inflation factor to convert them to 2005$

It is likely that customers that transfer regularly utilize one of the unlimited ride passes available. The SERPM6.5 fare logic assumes that single ride trips receive the general boarding fare while trips that require a transfer receive half of the cost of a daily pass.

Tri-Rail charges a fare relative to the rail distance traveled. Tri-Rail bus shuttles are free. The rail service is divided into distinct fare zones. Traveling within a zone is considered to have traveled one zone. There were six such zones in 2005. Five additional zones were developed for 2030 to reflect three planned expansions. Refer to **Table 2-20** for the listing of Tri-Rail zones.

Table 2-20: **Tri-Rail Fare Zones**
Southeast Regional Planning Model 6.5

Fare Zone	Stations	
	2005 Model	**2030 Model**
1	Mangonia Park West Palm Beach Lake Worth	Same as 2005 plus: Australian
2	Boynton Beach Delray Beach	Same as 2005
3	Boca Raton Deerfield Beach Pompano Beach	Same as 2005
4	Cypress Creek Fort Lauderdale	Same as 2005
5	Ft. Lauderdale Int'l Airport Sheridan Hollywood	Same as 2005
6	Golden Glades Opa Locka Tri-Rail/Metrorail Transfer Hialeah Market Miami International Airport	Same as 2005
7	Not used	Jupiter Frederick PGA Boulevard Blue Heron West Palm Beach/Jupiter line
8	Not used	Old Scripps Mangonia/Scripps line
9	Not used	Atlantic Deerfield Beach/FEC line Boca Raton/FEC line
10	Not used	Fort Lauderdale/FEC line Sunrise Oakland Park Cypress Creek/FEC line
11	Not used	Aventura Hollywood/FEC line Ft. Lauderdale Int'l Airport/FEC line

The Jupiter line, running between West Palm Beach and Jupiter, and the Scripps line, running between the original Howard Scripps development and Mangonia Park, were assigned unique zones (Zones 7 and 8, respectively). The Florida East Coast (FEC) line was assigned three zones due to its length (Zones 9-11). Its zonal boundaries correspond to the existing boundaries on the main line. Tri-Rail fare based on number of fare zones traveled is shown in **Table 2-21**.

Table 2-21: **Tri-Rail Zonal Fares**
Southeast Regional Planning Model 6.5

Number of zones traveled	Fare in cents	
	2005 Model	2030 Model
1	200	200
2	300	300
3	400	400
4	450	450
5	500	500
6	550	550
7	n/a	600

SERPM6.5 uses a scripted, rule-based process to determine transit fares because it was felt that TRNBUILD's fare capabilities were inadequate to capture the complex fare interactions among the different modes and operators. This process, while not perfect, should produce the correct fare in most interchanges.

The AMMAT00F.S script (See Appendix C7) in TRANSIT/AMTRANSIT module reads transit travel times by mode and the number of transfers from the skims and then follows a hierarchical list of rules. The fare is assigned when the interchange first meets the conditions of a rule. A listing of the rules in order of their application, the resulting fare and the rationale are listed in **Table 2-22**. On interchanges using many modes and operators, a best-guess assumption of the most common fare is used.

A CV key (FARESTRUC) was added to handle the transit fares for years other than 2005 and 2030. The values of this new key for 2005 and 2030 models are set as BASE and FUTURE, respectively. For any interim year model run, the value of this key should be FUTURE. Transit fares for the 2030 model used 2007 transit fares and an INFL1 (Transit fare inflation) parameter from PROFILE.MAS (a value of 0.97), which converts the 2007 dollar fares to 2005 dollars. If the FARESTRUC key is set to FUTURE, users should not change the value of INFL1 for interim years.

2.2.8 Transit Path

A transit network must be formed and transit paths must be developed for the each zone pair for processing. The paths are the bases for extracting the impedance data for use in the mode choice models and for assigning trips to the network. Path development is considerably more complex than the highway processing as consideration has to be given to mode transfers, mode weighting and line combining.

A path set is developed for an origin zone, and the individual zone-to-zone paths are extracted from the path set. Transit path building has considerably more variables to deal with than traditional highway path building. TRNBUILD develops the single best path between two zones, and the flexibility of TRNBUILD allows many factors that can be invoked at various points in the process.

Transit paths are built for both peak and off-peak periods. The peak period transit paths use congested highway skims as the basis for auto access and bus travel times. The off-peak transit paths use free-flow highway skims.

Table 2-22: **Fare Rule Logic in Order of Application**
Southeast Regional Planning Model 6.5

Rule Order	If rider uses…	Then the fare is…	Because…
1	Tri-Rail, regardless in any other mode is used	Tri-Rail fare	Tri-Rail discounts the rail fare by the amount of the bus boarding fare. Transfers to Metrorail and Metromover are free.
2	PalmTran only	PalmTran boarding fare if no transfers or half of daily pass fare if transfers	Follows PalmTran fare policy as applied in 2007
3	BCT only	BCT boarding fare if no transfers or half of daily pass fare if transfers	Follows BCT fare policy as applied in 2007
4	Metrobus only	Metrobus boarding fare plus a transfer fare for each transfer	Follows MDT fare policy
5	Metrobus express buses only	Metrobus express bus boarding fare plus a transfer fare for each transfer	Follows MDT fare policy
6	Metrorail only	Metrorail boarding fare with free transfers	Follows existing MDT fare policy
7	Metromover only	No fare is assessed.	Follows MDT fare policy as applied in 2007
8	PalmTran & BCT services	Half of PalmTran OR BCT daily pass fare.	No specific information was found, so current rule reflects best guess.
9	BCT & Metrobus services (may use Metromover also)	Metrobus boarding fare plus Metrobus-to-BCT transfer fare and a Metrobus transfer fare for each additional transfer	Follows BCT and MDT fare policy in 2007. Assumes that Metrobus is first boarding. Metrobus to Metromover transfer is free.
10	BCT & Metrobus express bus services (may use Metromover also)	Metrobus express bus boarding fare plus Metrobus-to-BCT transfer fare and a Metrobus transfer fare for each additional transfer	Follows BCT and MDT fare policy in 2007. Assumes that Metrobus express bus is first boarding. Metrobus to Metromover transfer is free.
11	Metrobus local & express buses (may use Metromover also)	Metrobus express bus boarding fare plus a Metrobus transfer fare for each additional transfer	Follows MDT fare policy in 2007. Assumes that Metrobus express bus is first boarding. Metrobus to Metromover transfer is free.
12	Metrobus & Metrorail (may use Metromover also)	Metrorail fare plus a Metrobus transfer fare for each transfer	Follows MDT fare policy. Assumes that Metrorail is first boarding. Metrorail or Metrobus to Metromover transfer is free.
13	Metrobus express bus & Metrorail (may use Metromover also)	Metrorail express bus fare plus a Metrobus transfer fare for each transfer	Follows MDT fare policy. Assumes that Metrorail is first boarding. Metrorail or Metrobus to Metromover transfer is free.
14	Any combination of Metrobus, Metrobus express bus, Metrorail & Metromover	Metrobus boarding fare plus a Metrobus transfer fare for each transfer	Reflects likely most common fare.

The revised nested logit model requires eight sets of transit paths for each peak and midday period. The following paths are built:

1. Walk Access – Bus,
2. Walk Access – New Mode,
3. Walk Access – Metrorail,

4. Walk Access – Tri-Rail,
5. Auto Access – Bus,
6. Auto Access – New Mode,
7. Auto Access – Metrorail, and
8. Auto Access – Tri-Rail.

For walk to transit paths, auto access connectors are ignored; similarly for auto access to transit paths all walk access connectors are ignored. In a similar fashion, modes are either ignored or required to exist on the path to be evaluated by the mode choice model. For example, all rail modes and project modes are not taken into account in bus paths (both walk- and auto-access), but buses must exist for it to be sent to the mode choice model. The modes (mode numbers used in TRNBUILD set of modes, see **Table 2-7**) used in each path are shown in the **Table 2-23**. The table also indicates which modes are necessary for the paths ('☼') to be evaluated by the mode choice model.

Table 2-23: **Modes Included in Path Development Process**
Southeast Regional Planning Model 6.5

Mode / Path	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Bus	☼	☼	☼			☼			☼	☼	☼	☼	☼		☼	☼	
New/Project	☺	☺	☺			☺	☼	☼		☺	☺	☺	☺	☼	☺	☺	☼
MetroRail	☺	☺	☺	☼		☺	☺	☺		☺	☺	☺	☺	☺	☺	☺	☺
Tri-Rail	☺	☺	☺	☺	☼	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺

☺ Included in the path
☼ Path exists only if time on at least one of these modes is greater than 0.

Time Factors

Perceived time factors by mode, boarding/transfer and wait time are applied as the transit paths are built. Each time a path segment (i.e., a support link or as a contiguous portion of a transit line) is to be chosen, the actual time is converted to perceived time according to the action being considered. As the path moves from one segment to another, the modes used in the "from and to" segments determine how the path will be processed. In most situations, there is some perceived time associated with segment connections. Accessing a transit segment is considered as a boarding, and if it is not the initial boarding in the path, it is considered as a transfer.

Wait Times

The wait time for a line is usually calculated to be one-half of its headway. However, a limit on the maximum initial wait time is used to take into account the fact the travelers are knowledgeable about the bus schedules and have rearranged their schedules to limit their wait to a more reasonable amount of time. Also, if the person is transferring to the line, most likely there is some synchronization in the transit system. In TRNBUILD, the minimum and maximum initial wait times are specified by IWAITMIN and IWAITMAX variables, respectively. IWAITFAC is used to convert the actual values to perceived values.

Transfer and Boarding Penalties

A transit user has more control over the initial wait time than he does over subsequent wait times. So, the boarding penalties can be stratified according to initial or transfer conditions differently. The

XWAITMIN and XWAITMAX values are actual values, and to convert them to perceived values the XWAITFAC factors are used.

Additional boardings incur an additional time penalty since they typically add uncertainty about path travel time and require an additional fare. Boarding penalties are specified by the BOARDPEN variable, with separate penalties specified for the each boarding on the path.

Service Combination

A segment can be combined with another segment between the same two nodes during path building using the COMBINE variable. If a destination is accessible on more than one line, it is possible that some travelers would use one line and others would use the other lines. In line choice situations the program determines which line provides the best path and saves that as the "best". Then every other line is compared to the best line to determine if it should be considered in combination with the best line. In SERPM6.5, lines in peak period are combined if the differences in total times (the line vs. best line) is less than 5 minutes. Similarly, in the off-peak period, the lines are combined if the difference between the lines is less than 10 minutes. The line combining process combines only lines with the same mode.

After the program obtains a list of the lines to be combined, it determines how the trips will be distributed among the lines. A revised perceived wait time for each line is computed as the difference between the line's perceived time and the best path run time. Each line is given a weight based upon its revised wait time relative to the other lines' revised wait times.

Paths are developed using parameters intended to isolate a mode, or a submode, such as walk or auto access. People 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 depends then on the following parameters: time weighting coefficients, minimum and maximum wait times, transfer penalty, and mode deletion. **Table 2-24** show all of the values of the different path building parameters used in SERPM6.5.

Table 2-24: **Description of TRNBUILD Path Building Parameters**
Southeast Regional Planning Model 6.5

Keyword	Description	Value
MODEFAC	Travel time factor by TRNBUILD mode	See Travel time factor table
IWAITFAC	Initial wait time weight factor	2.25 (all transit modes)
IWAITMAX	Maximum initial wait time allowed in minutes	60 (all transit modes)
XWAITFAC	Transfer wait time weight	2.25 (all transit modes)
XWAITMIN	Minimum transit wait time allowed in minutes	0 (all transit modes)
BOARDPEN	Boarding penalties by order [1st boarding, 2nd boarding (i.e., first transfer), etc.]	Walk access 2.25 for first three boardings, 6.75 for 4th boarding, 13.5 for next 6 boardings Drive access 2.25 for first two boardings, 6.75 for 3rd boarding, 13.5 for next 7 boardings
COMBINE	Determines maximum difference in travel time allowed for headway combination of two or more lines (minutes)	5 (peak period) 10 (off-peak period)

Different transit run-time factors are applied for different modes. **Table 2-25** shows the factors that are applied on the travel time on different modes for different paths. FTA does not recommend large favoring ratios and prefers the ratios in the 10-20% range. In the SERPM6.5, a factor of 1.00 was used for the favored mode and 1.20 was used for all the disfavored modes.

Table 2-25: **Transit Perceived-to-Actual Travel Time Factors**
Southeast Regional Planning Model 6.5

Mode	TRNBUILD Mode Numbers	Weight Values			
		Bus Paths	New/Project Mode Paths	Metrorail Path	Tri-Rail Path
Walk	1	2.25	2.25	2.25	2.25
Auto	2	1.00	1.00	1.00	1.00
Sidewalks	3	2.25	2.25	2.25	2.25
Bus & Metromover	4,5,6,9,13-16,18,19	1.00	1.20	1.20	1.20
New/Project mode	10,11,17,20	n/a	1.00	1.20	1.20
Metrorail	7	n/a	n/a	1.00	1.20
Tri-Rail & Shuttles	8,12	n/a	n/a	n/a	1.00

Trip Matrix used in TRNBUILD set

Trips from a trip matrix can be assigned to the paths. When a trip matrix is used, a path set will not be built for an origin zone for which there are no trips. This could reduce computation time considerably. If there are any trips for any of the I-J pairs selected (explicitly or implicitly), the path set will be generated, but only the selected I-J pairs with trips will be processed. If the assignment option is true, the trips will be assigned to the appropriate I-J paths.

2.2.9 Transit Skims

Zone-to-zone values such as times, distance, first and last transit nodes, access and first transit modes, number-of-boardings, and fares can be obtained for I-J paths. These skims are used by the mode choice model in evaluating transit paths versus the auto paths. Most of elements can be extracted by mode, or combinations of modes. They can be combined via user expressions. The transit running times and distances may be not exact for the transit legs where the path is split amongst several lines. In those segments, the extracted element is the weighted sum of for all lines in the segment.

Peak and off-peak skims are obtained using the peak and off-peak paths. One skim matrix corresponds to each path developed. Each of the skim matrix files contains the following 14 tables:

1. Walk access/egress time (in minutes)
2. Drive access time (in minutes)
3. Transfer and sidewalk time (in minutes)
4. Local bus IVT time (in minutes)
5. Express bus IVT time (in minutes)
6. New mode IVT time (in minutes)
7. Project mode IVT time (in minutes)
8. Metrorail IVT time (in minutes)
9. Tri-Rail IVT time (in minutes)
10. Number of transfers
11. Initial wait time (in minutes)
12. Transfer wait time (in minutes)

13. Total transit IVT time (in minutes)
14. Fare (in cents)

2.2.10 Transit Assignment and Summaries

The final transit-modeling step is assigning the transit trip tables produced by the mode choice model to the transit networks and paths. The transit trips are assigned to the minimum time path by an all-or-nothing method for each combination of mode and access. The resulting loads are added together and reported by link and mode using the TRANSTAT program.

The transit trips are allocated independently of highway trips. Unlike trips estimated during the mode choice step, assigned transit trips can be identified on all modes that they use to get to a destination. In other words, transit trips are measured by route and represent unlinked trips by mode. It should be noted that trips are assigned in production-attraction (P-A) format, as is normal practice for transit analyses, rather than origin-destination (O-D) formats more commonly used in highway assignments.

2.3 Mode Choice Model

The 24-hour SERPM6.5 mode choice model, NLOGITK, is similar to previous SERPM models. For handling managed modeling process in the time of day versions of SERPM6.5 necessitated some changes. Users should use correct version of this program (NLOGITK) by coping them from the USER.PRG folder to the Citilab's cube folder.

NLOGITK is a seven-purpose mode-choice program. The MODECHOICE module consists of three basic elements: distribute trips made by zero-car households, compute the number of non-motorized trips and execute the NLOGITK mode choice model.

The model executes for seven purposes and two times of the day concurrently. It is structured as if it were running for 14 trip purposes with the first seven using peak skims and the last seven using off-peak skims. The seven purposes are:

1. Zero-car household HBW trips,
2. 1-car household HBW trips,
3. 2+ cars household HBW trips,
4. Zero-car household HBNW trips,
5. 1-car household HBNW trips,
6. 2+ cars household HBNW trips, and
7. NHB trips.

The mode choice model zeros out the drive alone and park-ride sub-modes as possibilities for zero-car households. The reason for this is to reduce the size of the bias constants on the sub-modes during calibration. It is an option that is triggered with the parameter ZAPZERO in PROFILE.MAS (see Appendix A). It is highly recommended that users should not change this parameter value of 1 (YES). However, a value of 0 (NO) would allow one to return to a previous version with drive alone trips for the zero car households.

The model structure with transit modes is referred as the "full" model structure. The model with only highway modes is referred as the "highway-only" model structure. NLOGITK can be run four different ways depending on the type of study. It has separate procedures for the "full" mode structure and the "highway-only" model structure. The model structure with transit modes is referred as the "full" model

structure and is executed using the TRSTD argument. The model with only highway modes is referred as the “highway-only” model structure. This is executed using the HWONLY argument. Both use versions of the nested logit model, but the highway-only model allocates trips only to levels of auto occupancy but not to transit trip tables.

The highway-only model does not require transit network inputs. **Figures 2-18 and 2-19** present the nested logit structures of the “full” and “highway-only” models. NLOGITJ.SYN is the only transit file that is used by the highway-only model. NLOGITK also has different options for user benefit analysis; TRUB executes a build user benefit run and TRUBBAS runs the user benefit run for the baseline.

2.3.1 Mode Choice Model Structure

The overall structure of the mode choice model has not been changed from its previous version, which was based on suggestions by the FTA to reduce the number of constants used in the mode choice models. During development of the SERPM5 (revised version), FTA had suggested simplification of the constant terms in the utility expression and the validation to target mode shares. The grouped/incremental structure is shown in **Figure 2-20**. The program uses a grouped (or “incremental”) nested logit parameter file named (NLOGITJ.SYN).

This form of the model requires only 18 unique constants for each trip purpose. There are three additional constants that are location specific. With the fewer "degrees of freedom", the model was validated in a much more aggregate fashion. The observed target values were developed from several sources, including the 2000 household and transit on-board surveys, and other information obtained from the transit operators.

The drive-alone mode is the base or reference mode, and the constants for this mode are zero. During model validation, model results are compared to observed target values for each of these constants, and then the constants are adjusted until there is a reasonable level of agreement between the model results and the target.

For each of the three main trip purposes (HBW, HBNW, and NHB), utility constants were updated to match trips targets for the following markets:

- Drive alone
- 2-occupant carpools for 0 car households
- 2-occupant carpools for 1 car households
- 2-occupant carpools for 2+ car households
- Carpools (sum of 2 and 3+ carpools) from 0 car households.
- Carpools (sum of 2 and 3+ carpools) from 1-car households.
- Carpools (sum of 2 and 3+ carpools) from 2+ car households.
- Walk to Total transit trips 0 car households
- Walk to Total transit trips 1 car households
- Walk to Total transit trips 2+ car households
- BRT and LRT mode transit (new mode)
- Metrorail trips
- Tri-Rail trips
- Walk to premium transit trips
- Park-and-ride trips
- Kiss-and-ride trips
- Total transit trips to the CBD
- Local bus trips by county

Figure 2-18: **Mode Choice Structure – FULL Model**
Southeast Regional Planning Model 6.5

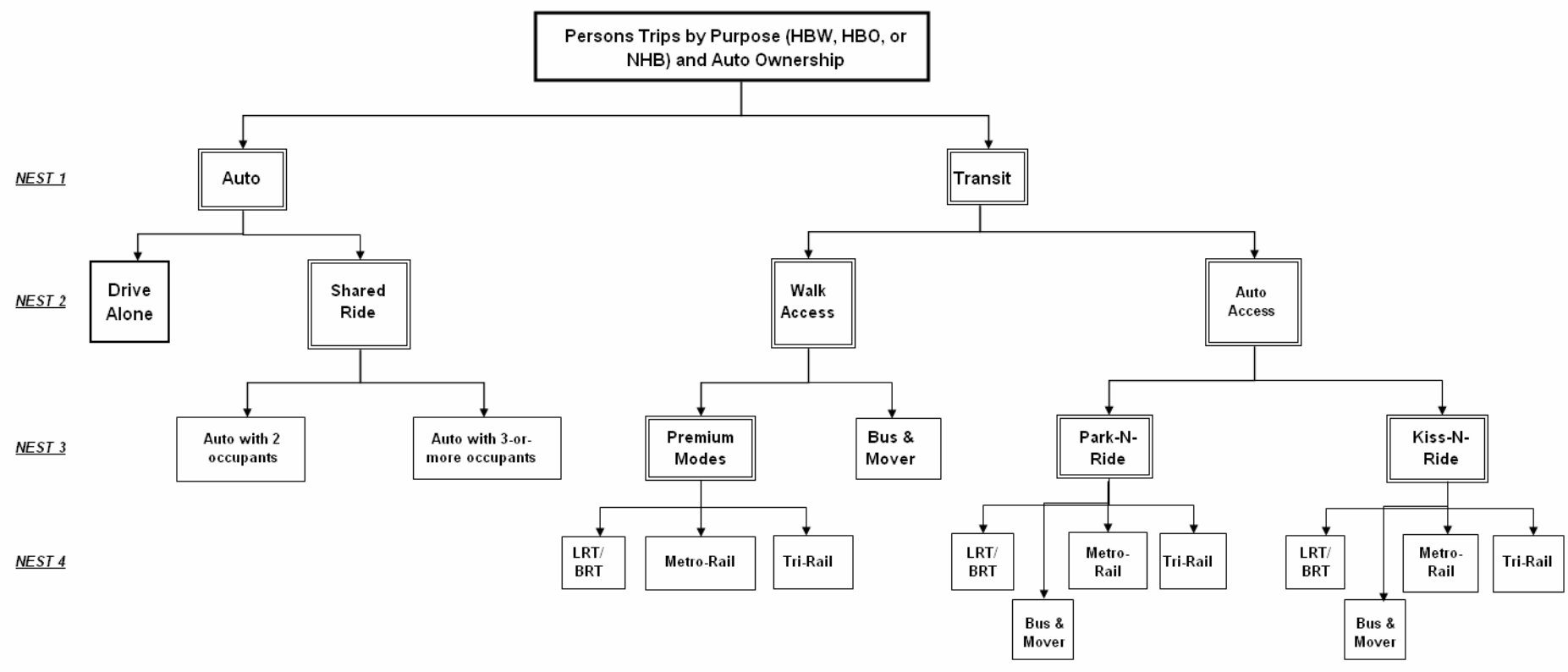


Figure 2-19: **Mode Choice Structure - Highway-Only Model**
Southeast Regional Planning Model 6.5

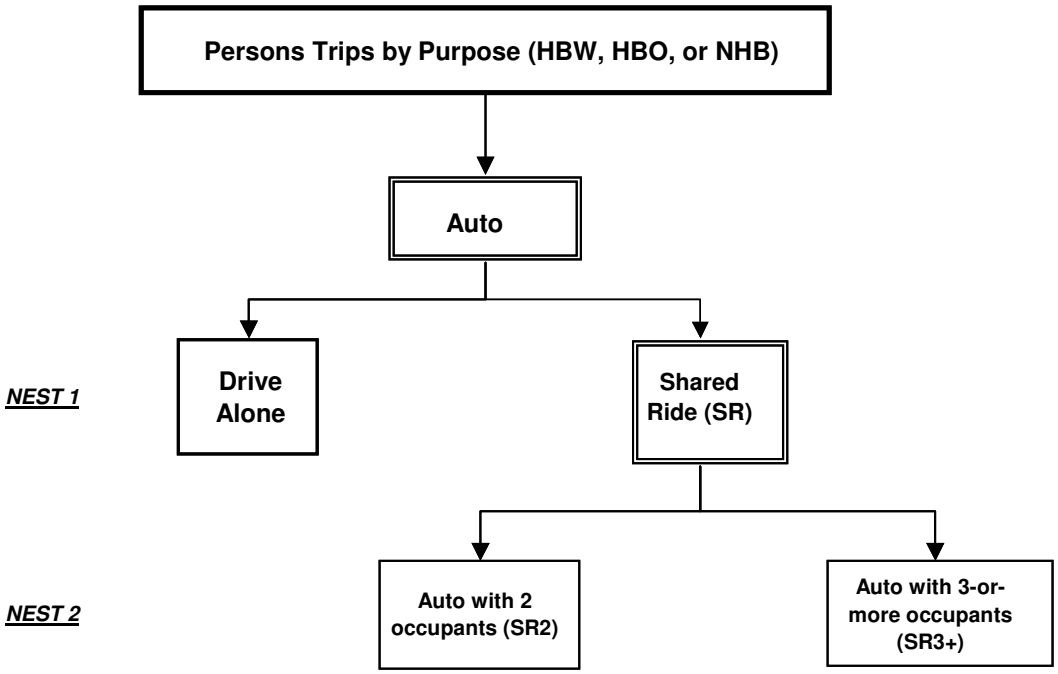
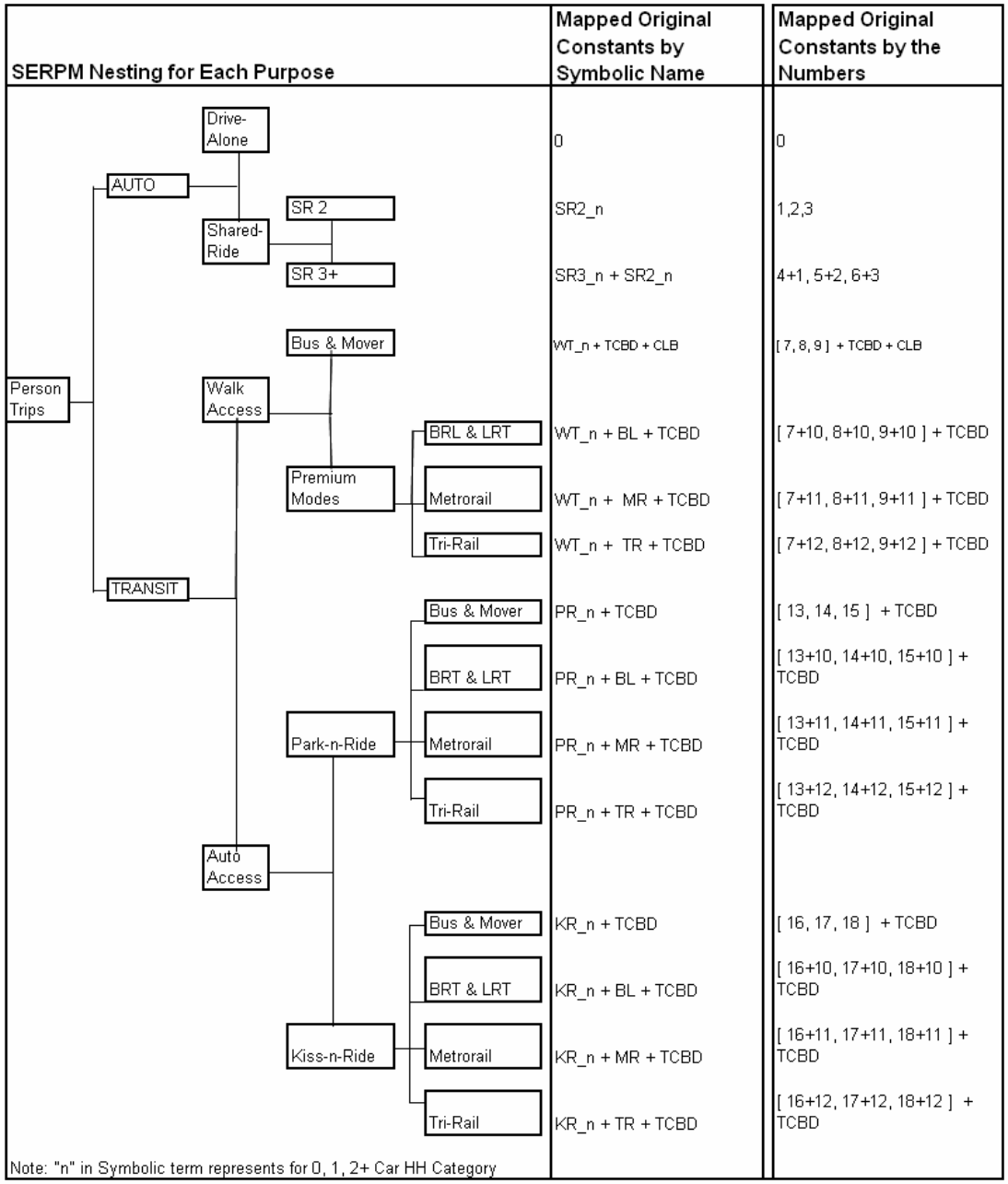


Figure 2-20: **Utility Constants of New "Incremental" Model and Mapping of Constants to Original Model**
Southeast Regional Planning Model 6.5



Definition of "Incremental" Constants

No.	Symbol	Description
	Location	
	CLB	County local Bus
	TCBD	Transit district
	Hwy Constants by Auto Ownership	
1	SR2_0	Shared ride 2
2	SR2_1	
3	SR2_2	
4	SR3_0	Shared ride 3+
5	SR3_1	
6	SR3_2	
	Transit Constants by Auto Ownership	
7	WT_0	Walk to Transit (local bus as base)
8	WT_1	
9	WT_2	
	Transit Modal Constants	
10	BL	BRT & LRT
11	MR	MetrorRail
12	TR	Tr-Rail
	Transit Constants by Auto Ownership	
13	PR_0	PnR to transit (Bus as base)
14	PR_1	
15	PR_2	
16	KR_0	KnR to transit (Bus as base)
17	KR_1	
18	KR_2	

Note: 18 Unique & 2 location terms

Thus, the model would be concerned with only 18 targets for each trip purpose. For example, while the model will attempt to match the number of premium bus trips, and the total number of transit trips from zero-car households, it will not try to match the number of premium bus trips from zero-car households. This is a significant simplification, and much more in line with available data. The structure also allows better evaluation as to whether the constants make sense and produces a reasonable forecast.

It should be noted that the constants for household markets separately for each of the "main" modes (auto, walk to transit, park-and-ride to transit, and kiss-and-ride to transit) are very logical. Clearly, the ability to drive to transit is a function of auto availability and should not be treated the same as walk to transit.

2.3.2 Mode Choice Constants and Coefficients

Figure 2-20 presents the mapping of the grouped/incremental constants to its original mode and access forms. The symbolic names as well as the numbers are used to display this mapping. The mode choice subroutine (SETCOEFF) implements this mapping before they are applied in the utility equation. This is included in the NLOGITJ.SYN file.

The same nesting coefficients are used for the three purposes. The values of the nesting coefficients are shown in **Table 2-26**. All the constants are echoed back as input and also expressed in minutes of IVT. They are then added together following the mapping logic in **Figure 2-20** and echoed back in the detailed format of the original program.

Table 2-26: **Mode Choice Structure Nesting Coefficients**
Southeast Regional Planning Model 6.5

Nest	Value
Auto	0.80
Auto/Shared-ride	0.20
Transit	**0.50**
Transit/Walk Access	**0.30**
Transit/Park-ride Access	**0.30**
Transit/Kiss-ride Access	**0.30**

The mode split calculation takes into account the time and cost of travel. Travel time is divided into two general groups: (1) time spent in the vehicle, and (2) time spent outside the vehicle (walking, waiting, transferring, and parking the vehicle). Times are separated in the model because travelers dislike out-of-vehicle travel much more than riding time. Both wait and transfer times in the SERPM model are weighted by 2.25 times the in-vehicle time.

The mode choice model derives the detailed structure constants for use in the utility expressions. **Figure 2-20** shows the relationship of mapping. 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 for the unknown effects of the variables not included in the utility computation.

Table 2-27 shows the value of parameters used in the mode choice model. The values are specified in the PROFILE.MAS file.

Table 2-27: **Description of PROFILE.MAS Attributes Used by Mode-Choice Program**
Southeast Regional Planning Model 6.5

Parameter	Variable	Value
Auto operating cost	&AOC	9.50 cents/mile
3+ auto occupancy by purpose	&OC3	3.20 persons for all purposes
Park-ride auto occupancy by purpose	&OCTA	1.20 persons for all purposes
Average auto access speed (peak)	&TASPD	26.00 mph
Average auto access speed (off-peak)	&TASPD	26.00 mph
Minimum distance		
Walk to local transit	&MINRUN1	0.60 mile
Walk to premium transit	&MINRUN2	0.60 mile
Auto access local transit	&MINRUN3	1.20 mile
Auto access premium transit	&MINRUN4	1.20 mile
Inflation		
Transit fare	**&INFL1**	**0.97**
Auto operating cost	&INFL2	1.00
Parking cost	&INFL3	1.00
Minimum mode split by purpose	&MSMIN	0.00 for all purposes
HOV flag (SERPM6.5 -24 Hour Model)	**&HOVUSE**	**2, so 2 or 3+ carpools can use <u>same</u> HOV facilities & skims**
HOV flag (SERPM6.5 -TOD Model)	**&HOVUSE**	**4, so 2 or 3+ carpools can use <u>different</u> HOV facilities & skims**
Minimum HOV qualifying time	&HOVMIN	3.00
Station walk-access impedance flag	&RAILAC	0
Validation summary flag	&VAL	0
Kiss-ride additional impedance factor	&KRFAC	1.50
Default regional mode splits by purpose	&DEFMS	0.0375 (HBW peak) 0.0121 (HBNW peak) 0.0147 (NHB peak) 0.0349 (HBW off-peak) 0.0119 (HBNW off-peak) 0.0072 (NHB off-peak)
Default zonal mode split update flag	&DEFUPD	2 (1= yes, 2= no)
Zero-out drive-along as a sub-mode for 0-car households	&ZAPZERO	1 (1= yes, anything else= no)
Integer bucket rounding method	&IBUCK	1 (0= none, 1=modified)

A listing of the validated constants along with the other coefficients of the validated model is shown in **Figure B-13** of Appendix B. For work trips, the model uses twice the model coefficients for the first seven minutes of weight (-.045 vs. -.023). Transit fare, parking costs, and auto operating costs also are factored into the mode split analysis. Other factors considered in the mode choice model include location specific CBD related constants (see **Figure B-11** for listing and **Table B-35** for formats) by the origin-destination pairs and purpose and county specific local bus constants, which reflects the effect of items beyond time and cost that impact the decision to use alternative modes.

The listing of the incremental and the derived detailed mode and access constants from MODEFINAL.OUT are presented in **Figure G-4** of Appendix G. Constants represent the included attributes of travel, those cannot or are not being represented in the model, and the goal of the validation should be lower values of these constants. A higher value of the constants causes the model to be more insensitive to changes in the level of service and costs associated with a particular mode. Most of the values of the constants are small. The auto access constants for zero-car households are the result of the auto-calibration procedure. The auto-calibration routine modifies them even though they are not used in the utility equations (the ZAPZERO flag is set to a value of one in PROFILE.MAS). The signs of the constants are also reasonable among the auto ownership categories and by mode and purpose.

2.3.3 Transit District-to-District Constants

The SERPM6.5 mode choice program use DISTS_SYN.TXT (see **Figure B-11** of Appendix B) to add extra constants on a district-to-district basis. This is explained by TD_YY variable in **Table B-18**. The process allows for reading in production or attraction districts with their own constants. The transit districts are coded in ZDATA1B file (TRNDIST field, see **Table B-22** of Appendix B). The current model has a mode control with added flexibility of a maximum of 99 transit districts. The transit district constants are read and applied as origin-destination (IJ) pair basis.

The DISTS.SYN is semi-free format file, and allows up to 99 transit districts. The constants are used in the utility expression of the model for each IJ zone pair and the purpose. In order to preserve flexibility, a simple structure based on a range of "i-values" and a range of "j-values" was implemented. The first two ranges are for the (origin districts), the second two ranges are for the destination districts and the third two ranges are the trip purposes. The constants for transit and the shared modes are input last two columns. This format will allow for simple constants to be input but will allow for a more general structure if needed without the need to revise the code every time. This allowed for something fairly sophisticated by simply identifying and grouping districts cleverly.

The SERPM6.5 model identified six transit districts each with zero values before calibration: Miami CBD, Fort Lauderdale CBD, Outlying CBD's (Palm Beach Area), Metro-Dade Other, Broward Other and West Palm Other. The model calibration and validation efforts did not require any adjustments.

2.3.4 Local Bias Constants

The model contains bias constants for walk- and auto-access for each county. The addition of these constants added an extra flexibility in the model validation at the county and at the regional level. The mode-choice program uses separate constants for the transit services of Palm Beach, Broward and Miami-Dade Counties. This is added to the utility equations and has improved the model validation statistics for the local buses not only for the whole region but also for each individual county. The bias constants are entered in PROFILE.MAS (see **Appendix A**). The portion of the PROFILE.MAS file that includes these bias constants is shown in the **Figure 2-21**.

Figure 2-21: **Local Bus Bias Constants from PROFILE.MAS File**
Southeast Regional Planning Model 6.5

```
&BWABSPB       Walk-Access Bus Bias - Palm Beach
0.65
&BWABSBO       Walk-Access Bus Bias - Broward
0.30
&BWABSMD       Walk-Access Bus Bias - Miami-Dade
0.10
&BAABSPB       Auto-Access Bus Bias - Palm Beach
1.00
&BAABSBO       Auto-Access Bus Bias - Broward
1.00
&BAABSMD       Auto-Access Bus Bias - Miami-Dade
1.00
&WKBRTF        Walk Access BRT/LRT Bias Factor as frac of Walk-Access Bus Biases
0.00
&PKBRTF        Auto Access BRT/LRT Bias Factor as frac of Walk-Access Bus Biases
0.00
```

2.3.5 Zero-Vehicle Household Trip Distribution

SERPM6.5 maintains the practice of distributing zero-car household trips using transit impedances. Version 4 and other earlier versions of SERPM and most of the other FSUTMS models distribute all home based person trips using a single distribution function and (usually) highway skims as the primary or only measure of impedance. The trip tables are divided into household auto ownership categories by applying factors at the production end based on the socio-economic characteristics of the zone. Thus, the proportion of trips by auto ownership category will be the same for every interchange.

In the past, FTA has responded negatively to this modeling approach, as it frequently produces trip tables with trips from too many zero-car households on interchanges lacking transit service and, conversely, too few households on interchanges with transit service. The latter frequently leads to the introduction of very high modal bias constants for zero car households, as the model struggles to find enough transit trips on interchanges with transit service. As a way of addressing this, SERPM, starting version 5, was modified so that the zero-car households were distributed separately.

With this approach, each of the trip tables by auto ownership category was computed separately within the trips distribution step and read into the mode choice model as full zone-to-zone tables, rather than a single table to split within the model as was done in the previous process. This approach results in the mode choice model reading in a total of seven separate tables, three each for home based work and home based other, and a seventh for non-home based.

The zero-auto distribution process requires a set of transit skims for the gravity model to use. The SERPM6.5 model develops eight sets of walk access skims, with names as follows:

- Peak walk to Bus – TSKIMAM1_{Alt}{Year}.MTX
- Peak walk to New Mode – TSKIMAM2_{Alt}{Year}.MTX
- Peak walk to Metrorail – TSKIMAM3_{Alt}{Year}.MTX
- Peak walk to Tri-rail – TSKIMAM4_{Alt}{Year}.MTX
- Off peak walk to Bus – TSKIMMD1_{Alt}{Year}.MTX
- Off peak walk to New Mode– TSKIMMD2_{Alt}{Year}.MTX
- Off peak walk to Metrorail – TSKIMMD3_{Alt}{Year}.MTX
- Off peak walk to Tri-rail – TSKIMMD4_{Alt}{Year}.MTX

Each contains 14 tables, as specified in earlier Section 2.2.9. The model chooses the minimum values of the four peak skims for peak period zero-car distribution and the minimum values of the four off-peak skims for off-peak period distribution. The module uses a parameter, MAXTIM (see Cube keys in **Tables A-1** and **A-2**), the time (in minutes) to place in the output table for unconnected zones. This value is needed to represent the unconnected zones. Before these values are used in the gravity model the matrix is updated with intrazonal and terminal times.

The zero-car household trip distribution is then done using a standard gravity model and "deterrence" functions for four home based trip purposes (Work, Shopping, Social-Recreation and Others). Another mode choice CV step uses the proportion of zero-car HBO for each zone to separate out the zero-car household school trips from the total school trips. This is done separately for peak and off-peak periods.

2.3.6 Non-Motorized Mode Choice

In this transit model, the person trip tables were broken down by auto ownership categories for HBW and HBO trips. The process was undertaken with a view of altering the logit model as little as possible and making as few changes as possible in the rest of the model application package. The version of the motorized trip splitting program has been prepared as NMOTOR7. It applies the same factors to each of the sub-purposes, although it could be argued that zero-car households are more likely to make non-motorized trips.

The SERPM6.5 mode choice program uses only motorized trips. A logit-based program (NMOTOR7, originally developed for SERPM5) was modified for SERPM6 and SERPM6.5 to separate motorized and non-motorized trips from total trips for the seven trip purposes (HBW0Car, HBW1Car, HBW2+Car, HBO0Car, HBO1Car, HBO2+Car and NHB). The model estimates the percentage of non-motorized trips by trip purposes between each pair of TAZs. This percentage is determined by a logit equation, and the utilities contain the following measures:

- Spatial separation (highway network distance between the two TAZs).
- A non-motorized friendliness index of the origin and destination TAZs. The values are calculated for each TAZ, and the values for the origin and destination are averaged and used in the utility.

The non-motorized trips should decrease as distance increases. Thus, a logit trip elasticity curve was used that decreases the potential non-motorized trips as the highway distance skim increases. The following variables were used to devise the non-motorized friendliness (NMF) index:

- Percentage of streets with sidewalks
- Percentage of streets that are easy to cross by pedestrians
- Area type

A composite rating (index) for a TAZ was the sum of the NMF for the three variables. The logit model constants and parameters are entered in the NMOTOR.SYN file (see **Figure B-14** for listing and **Table B-28** for formats).

Subsequent sections will describe the input/output files as well as the special programs.

2.4 Input Files

A SERPM6.5 model run uses the input files from the INPUT\IN-{YEAR}{ALT} directory as well as subdirectories (PBIN, BOIN, MIIN, and TRANSIT). The file naming convention generally follows the name used in predecessor models in South Florida. All user-specified files required for a model run are listed in **Table 2-28**. **Figure 1-1** presents the directory setup for SERPM6.5. It should be noted that the terms, directory and folder as well as subdirectory and subfolder, are used interchangeably throughout this report.

The SERPM6.5 model user-supplied files primarily use FSUTMS naming conventions FILENAME.{YEAR}{ALT} (or FILENAME.YYC) where the filename extensions YYA and YYC denote the year and alternative. The model allows separate alternative codes for the regional and constituent counties (for example, R for SERPM, P for Palm Beach, B for Broward and A for Miami-Dade). The alternative codes used in the MPO models are kept the same in the subdirectories of the MPOIN folder. The parameter data files, which consist of PROFILE.MAS and FILENAME.SYN are also described in this section.

Several user input files (for example, S65GEN and COMBLS65) use an extension CTL. The trip generation programs use these two CTL files. There are a few files (for example, WALK) with an extension XX, where XX stands for two letters county abbreviation (XX=PB for Palm Beach, XX=BO for Broward and XX=MI for Miami-Dade). The WALK.XX files are used in the NMOTOR7 or NMOTOR3 programs to separate motorized and non-motorized trips. Several input files also use XX as part of the FILENAME. Those are (1) GRATEBXX.SYN and STP60XX.SYN of the XXIN folders. **Figure 2-5** depicts the directories and input files of the SERPM6.5 trip generation programs for a year 20YY model run.

Program-generated model output files are identified by standard naming conventions designed by FILENAME.{ALT}{YEAR} and FILENAME.TEM. The trip generation module generates several output files with extensions of XX (PB, BO and MI), ERR, CHK, UND. For a year 20YY model run, **Figure 2-6** depicts the directories and outputs files of the SERPM6.5 trip generation programs.

Table 2-28 also identifies the primary use of all the input files. The contents and usage of each of these files are also summarized. The formats of all structured input files are shown in **Appendix Tables B-1** through **B-36**. Users will find these tables extremely helpful in understanding and performing any alternative analysis using SERPM6.5. Others input files which do not follow the rigid formats are presented in **Figures B-1** through **B-20** of Appendix B. Once again, users should find this information very useful for model application. The following subsections provide further description of each of the input files. The terms shown in {xxx} are usually CV keys.

Several input files are stored as databases instead of fixed-format text file, which greatly simplifies data entry and maintenance. Highway and transit networks and assignments are stored in a graphical interface, which presents the network as a map. Editing to network done graphical environment (Cube/Viper) and model assignment and plots can be made directly from map. Model outputs and statistics are sent either to text files or to databases.

2.4.1 A1DECK_DMY.TXT

The file contains a list of dummy zones in a format same as A1DECK.TEM file. The file format is shown in **Table B-1** of Appendix B. An empty file was used in SERPM6.5.

2.4.2 Lookup Capacity Tables

A number of ASCII lookup capacity tables are used in SERPM6 model. The descriptions of these lookup tables are shown in **Tables B-2 through B-6** for the following facilities.

Lookup Table	For Facilities	Description in Table…
ARTPCE.DAT	Arterials	B-2
FRWYPCE.DAT	Freeways	B-3
HWYPCE.DAT	Uninterrupted Roadways	B-4
LOFFPCE.DAT	Ramps – Loop Off	B-5
LONPCE.DAT	Ramps – Loop On	B-5
OFFPCE.DAT	Ramps – Off	B-5
ONPCE.DAT	Ramps – On	B-5
TOFFPCE.DAT	Ramps – Toll Off	B-5
TONPCE.DAT	Ramps – Toll On	B-5
LOWPCE.DAT	Low Speed Roadways & Collectors	B-6

Table 2-28: **User-Specified Input Files and Their Usage**
Southeast Regional Planning Model 6.5

A. Main Level Input Files [File Location: ...\S65TODMDL or SERPM65MDL\Input\IN-YYR\ (YY=05 or 30)]

Sl No	Input Files	Description	For Format or Listing see ...
1	A1DECK_DMY.TXT	A1Deck data for dummy zones	Table B-1
2	ARTPCE.DAT	Capacity (LOS-E) lookup table for Arterials	Table B-2
3	COMBLS65.CTL	A control file for COMBLSM65 program	Table B-7, Figure B-2
4	DATABASE.CTL	A Control file use by HEVALS6 program	Figure B-3
5	DEFAULT_SEGMENT.CSV	Default signal related segment data (Cycle length, GC & DF)	Table B-8
6	EETRIPS.{Year}{ALT}	External trip table	Table B-10
7	FF.CSV	Free-Flow distribution Friction Factor file	Table B-11
8	FF2.CSV	Congested distribution Friction Factor file	Table B-11
9	FRWYPCE.DAT	Capacity (LOS-E) lookup table for Freeways	Table B-3
10	HELABELS.SYN	HEVALS6 program labeling specification (A standard FSUTMS file)	Figure B-4
11	HERATES.SYN	HEVALS6 program analysis rates (A standard FSUTMS file)	Figure B-5
12	HESCREEN.SYN	HEVALS6 program screenline labeling specification (A standard FSUTMS file)	Figure B-6
13	HWYPCE.DAT	Capacity (LOS-E) lookup table for Uninterrupted Roadways	Table B-4
14	LOFFPCE.DAT	Capacity (LOS-E) lookup table for Loop Off Ramps	Table B-5
15	LONPCE.DAT	Capacity (LOS-E) lookup table for Loop On Ramps	Table B-5
16	LOWPCE.DAT	Capacity (LOS-E) lookup table for Low Speed Roadways & Collectors (posted speed <35 mph)	Table B-6
17	ML.CTL	A control file for MLEG program	Figure B-7
18	S65_{Year}.NET	Input cube-voyager highway network	Table B-12
19	MSPDADJ_{Year}.DBF	Speed adjustment factors	Table B-13
20	MTURNDEF.{Year}{ALT} / TCARDS.{Year}{ALT}	Turning prohibitor and penalty data	Tables B-15,16; Figure B-8
21	MVFACTORS.{Year}{ALT}	Used for facility specific UROAD and volume-delay function by equilibrium assignment	Figure B-9
22	OFFPCE.DAT	Capacity (LOS-E) lookup table for Off Ramps	Table B-5
23	ONPCE.DAT	Capacity (LOS-E) lookup table for On Ramps	Table B-5
24	PERTRKEXTZ.dbf	External zones truck trip percentages	Table B-14

Table 2-28 (continued): **User-Specified Input Files and Their Usage**
Southeast Regional Planning Model 6.5

A. Main Level Input Files

Sl No	Input Files	Description	For Format or Listing see ...
25	PROFILE.MAS	It contains substitution parameters used by many custom programs	Figures A-3, A-4
26	S65GEN.CTL	A control file for ULSTGENM3 program	Figure B-10
27	S65TAZS_{Year}.dbf	The DBF file of SERPM6.5 TAZ shape file	Table B-18
28	SPEC_SEGDATA.csv	User coded signal related segment data (Cycle length, GC & DF)	Table B-9
29	TD_Obs_Data.csv	Observed travel time and delay study speed data by TDSECTION and periods	Table B-17
30	TOFFPCE.DAT	Capacity (LOS-E) lookup table for Toll Off Ramps	Table B-5
31	TONPCE.DAT	Capacity (LOS-E) lookup table for Toll Off Ramps	Table B-5
32	TOLLLINK.{Year}{ALT}	A Standard FSUTMS File. Toll data is directly read from network for highway model. This file is mainly used to review toll related data.	Table B-36

B. MPO's Zonal Data and production/attraction rate Files

[File Location: \S65TODMDL or SERPM65MDL\Input\IN-YYR\MPOIN\XXIN (YY=00 or 30 & XX=PB, BO and MI)]

Note: (County Alternative "C" uses "P" for Palm Beach, "B" for Broward & "A" for Miami-Dade)

Sl No	Input Files	Description	For Format or Listing see ...
33	grateb{XX}.syn	County Specific production rates, attraction rates and household stratification cureves	Table B-19
34	school.{Year}{C}	Enrollments and TAZ allocation of school trips (**Use MPO zone numbers**). This file is written from S65TAZS_{Year}.DBF file. User should update this DBF file for any changes in the school related data.	Table B-20
35	stp60{XX}.syn	2000 Census special tabulation data (**Use MPO zone numbers**)	Table B-21
36	zdata1b.{Year}{C}	Zonal production data (**Use MPO zone numbers**). This file is written from S65TAZS_{Year}.DBF file. User should update this DBF file for any changes in the scholl related data.	Table B-22
37	zdata2.{Year}{C}	Zonal attraction data (**Use MPO zone numbers**). This file is written from S65TAZS_{Year}.DBF file. User should update this DBF file for any changes in the scholl related data.	Table B-23
38	zdata3b.{Year}{C}	Zonal special generator data (**Use MPO zone number**)	Table B-24
39	zdata4b.{Year}{C}	External zone trip and travel data (**Use MPO zone numbers**)	Table B-25

Table 2-28 (continued): **User-Specified Input Files and Their Usage**
Southeast Regional Planning Model 6.5

C. Transit Related Input Files [File Location: \S65TODMDL or SERPM65MDL\Input\IN-YYR\transit (XX=PB, BO and MI)]

Sl No	Input Files	Description	For Format or Listing see ...
40	AUTDELAM_{Year}{ALT}.DAT	List of zones where auto connectors will be prohibited during peak period	Table B-34 (see Note)
41	AUTDELMD_{Year}{ALT}.DAT	List of zones where auto connectors will be prohibited during off-peak period	Table B-34 (see Note)
42	BASEFARES_{Year}{ALT}.DAT or FUTRFARES_{Year}{ALT}.DAT	Transit Boarding and transfer fares. The value BASE and FUTURE of CV catalog key FARESTRUC determine the usuage of this file.	Figure B-1
43	DISTS_SYN.TXT	Transit District-to-District added mode choice utility constants	Table B-35, Figure B-11
44	JEFFDIST.DBF & TDISTS6.DBF	These DBF files contains equivalency of zones and district for transit district summary. These files are written from S65TAZS_{Year}.DBF file. Users should not modify this data.	
45	nlogitj.syn	Mode choice constants and coefficients file and use by NLOGITK program	Table B-27, Figure B-13
46	NMOTOR.SYN	Motorized/non-motorized parameters and use by NMOTOR3/NMOTOR7 programs	Table B-28, Figure B-14
47	pcwalk_{Year}{ALT}.dat	Walk percentages for transit access	Table B-29
48	SDLAYAM2_{Year}{ALT}.CSV	Peak period highway-to-transit speed relationships	Table B-30
49	SDLAYMD2_{Year}{ALT}.CSV	Off-Peak period highway-to-transit speed relationships	Table B-30
50	sdlayupd_{Year}{ALT}.DAT	This standard FSUTMS file is used as input to extract highway-to-transit curves	Table B-31, Figure B-15
51	TRFAREZONE_{Year}{ALT}.dat	Tri-Rail Zonal Fare Data	Table B-26, Figure B-12
52	TROUTE_{Year}.LIN	Transit (both peak and off-peak) route data	Figure B-16
53	TSYSD_{Year}{ALT}.PTS	PT system data file - "mode" and "operator" information	Figure B-17
54	WALK.XX	Walkability Index data and use by NMOTOR3 and NMOTOR7 programs	Table B-32, Figure B-18
55	WalkTRL_{Year}{ALT}.FAC	PT factor file	Figure B-19
56	XTRAAUTO_{Year}{ALT}.DAT	Required/additional auto connectors	Table B-33 (see Note)

Note: These files were not used in SERPM6.5 model. If these files exist, then data will be used by AUTOCON program.

2.4.3 AUTODELAM_{Year}{ALT}.DAT and AUTODELMD_{Year}{ALT}.DAT

The file contains a list of zones that are prohibited from having auto connectors. The AUTOCON program will not generate any connectors to these zones. Separate files are maintained for peak and off-peak periods. The format of the file is shown in **Table B-34** of Appendix B.

2.4.4 COMBLS65.CTL

The COMBLSM65 program uses this file to combine multiple urban areas productions and attractions as well as the several zonal data files. The program also combines A1DECK and PBSCH output files generated through ULSTGENM65 program. **Figure B-2** presents the 2005 COMBLS65.CTL file. This control file is used to specify all control and input data required for the integration process. The format for this control file is presented in **Table B-7**. Blank lines and comment lines can be inserted anywhere in the file. Comments are designated by coding the first column with a "c" or "C." There are three types of records in the COMBLS65.CTL file, which start with a letter "U" (or "u"), "R" (or "r") and "E" (or "e") in the first column representing urban, regional and external zone information, respectively.

2.4.5 DATABASE.CTL

Figure B-3 presents a listing of this file. It specifies the loaded network "aliases". It is being used by the DBF version of highway evaluation routines (HEVALS6 and RMSEDBF).

2.4.6 DEFAULT_SEGMENT.CSV and SPEC_SEGDATA.CSV

The default signal related free-flow speed data is specified in DEFAULT_SEGMENT.CSV file. **Table B-8** shows description of the fields of this default segment attributes. The file is used as a lookup table by CV scripts for the segments without user coded segment data. The user-coded signal parameters are entered in SPEC_SEGDATA.CSV file. **Table B-9** presents the description of this user coded segment data. If used, it needs values of cycle length, green-over-cycle ratio and coordination parameters.

2.4.7 DISTS_SYN.TXT

This file details the district-to-district constants used by the mode choice model. The format of the file is described in **Table B-35**. The file is required by the mode choice program (NLOGITK). It specifies any added constants for transit and shared ride trips for transit district-to-district movements. **Figure B-11** presents a listing of this file. No district-to-district constants were used in SERPM6.5.

2.4.8 FARES.DAT and TRFAREZONE_{Year}{ALT}.DAT

The FARES.DAT (a simplified version of transit fares) specifies transit boarding and transfer fares and is read by step 7 of transit assignment module. However, it is not used as transfer fares in transit skims and fare process. **Figure B-20** shows a listing of the FARES.DAT file. A Cube-Voyager script (see 7-3-8-AMMAT00F.S of Appendix C7, step 8 of AMTRANSIT sub-module) calculates transit fares that are used in transit path and skimming.

The TR_FARE program uses the FAREZONE_{YEAR}{ALT}.DAT file to calculate the Tri-Rail fare, which allows a zonal-based fare structure. The format of the TRFAREZONE_{YEAR}{ALT}.DAT is described in **B-26**. A listing of the 2005 SERPM6.5 TRFAREZONE file is presented in **Figure B-12**.

2.4.9 EETRIPS.{Year}{ALT}

This file is used to build the through vehicle trip table by specifying trips between all external stations. **Table B-10** presents the format of this file. This file is used by CV's Matrix program to create the External-External (EE) trip matrix.

2.4.10 FF.CSV and FF2.CSV

These files specify the friction factors for the gravity model. The SERPM6.5 model uses 12 purposes. **Table B-11** shows the format of the friction factor files FF and FF2. These two input files are structured with the first column indicating the travel time in minutes. The subsequent columns include the friction factors used for each of the trip purpose. Any distribution with free-flow skims uses FF.CSV file. The FF2.CSV file is used in the congested skims trip distribution. These files are used in CV scripts as lookup tables.

2.4.11 GRATEB{XX}.SYN

These files specify (1) trip production rates; (2) trip attraction rates; and, (3) household stratification curves for each urban area. The letter {XX} of the filename represents the two-letter county/MPO name (PB for Palm Beach, BO for Broward and MI for Miami-Dade). Each of the constituent counties has its separate production and attraction rates and household stratification curves file. The lifestyle-based trip generation program (ULSTGENM65) uses these files. **Table B-19** presents the format of the GRATEBXX files. The formats of these files are context sensitive and determined by the first character of the record.

2.4.12 HELABELS.SYN

This file allows users to specify the highway evaluation (HEVAL) summary groupings by facility and area type codes. **Figure B-4** presents the SERPM6.5's HELABELS.SYN file. It specifies label names for numbered facility and area types for use in the HEVAL summary. This file is structured in ASCII format and defines the labels, which are to be assigned to each facility type and area type. Following the two digit codes of facility and area types, this file specifies the numbered grouping for analysis and validation modes of the HEVAL routine. The labels that go with these groupings are entered in last two columns. The first of the last two columns is used for ANALYSIS and the last column is used for VALIDATION. The Cube-Catalog keys (see Appendix A) set the modes of analysis by specifying YES to the ANALYSIS and VALIDATION keys.

2.4.13 HERATES.SYN

Figure B-5 presents a listing of this file. It contains the highway evaluation rates used for the ANALYSIS mode calculation of HEVAL routine. This includes accident rates, injury rates, fatality rates, fuel use, construction costs, and emissions of CO, HC and NOx.

2.4.14 HESCREEN.SYN

The HEVAL routine optionally permits the user to label the screenlines and cutlines. This feature is toggled on by the presence of the HESCREEN.SYN file. A listing of the SERPM6.5's HESCREEN.SYN file is shown in **Figure B-6.**

2.4.15 ML.CTL

This file contains parameters for the MLEG program. The parameters of this file can be used to generate CV's junction file for ramp and freeway junction. SERPM6.5 uses this file to generate the lists of freeway and ramp merged nodes. **Figure B-7** presents a list of this input file. It is a FORTRAN namelist function that starts with &PARAM and ends with &END. The MLEG program reads this file.

2.4.16 S65_{Year}.NET

This file is a CV unloaded transportation network and it contains all highway network input data and selected transit network data. It contains both node and link attributes. Both node and link attributes have been described in **Table B-12.** The users should carefully review this table for the definition of the network attributes. Many link attributes are carried along with the model networks. **Table B-12** shows the list that of the attributes that are used in the model. Other than traffic count related attributes, users should maintain other attributes when the network is changed or updated. Please note that input variables must be edited only in the input network (the box is **pink** in the Highway Network flowchart – see **Figure F-3** of Appendix F). The scripts will overwrite attributes entered or changed at other locations in the flowcharts. It is also important to note that CV has no practical limit on the number of attributes, so the users may add others to the network.

2.4.17 MSPDADJ_{Year}.DBF

Both SERPM6 and SERPM6.5 models implement a free-flow estimation process, which is completely automated and implemented in CV application. Modelers often need to adjust the speed further to properly validate the model. Adjustments to the free-flow speeds should be made before they are used in the model. The multiplicative factors for speed adjustment are entered in a separate database file (MSPDADJ_YY.DBF). This file has five fields:

1. Lower range of the 2-digit area type codes
2. Higher range of the 2-digit area type codes
3. Lower range of the 2-digit facility type codes
4. Higher range of the 2-digit facility type codes, and
5. Multiplicative speed adjustment factor.

The MSPDADJ_YY.DBF file is used as a lookup table in CV application. The factors from this are used to adjust the speeds in the automated process further. **Table B-13** presents the description of the fields of this speed adjustment file. It allows a range of area and facility types to specify the factors.

2.4.18 MTURNDEF.{Year}{ALT} and TCARDS.{Year}{ALT}

The SERPM6.5 model uses turning penalties and prohibitors that are entered in the MTURNDEF file. A sample listing of the MTURNDEF file used in SERPM6.5 model is shown in **Figure B-8**. A description along with format of the MTURNDEF file records is shown in **Table B-15.** The MKTURN65 program uses the MTURNDEF file to produce TCARDS records. It provides a uniform method for dealing with turning issues. It manages the traditional turn penalties and prohibitors and generates new penalty records for left, through and right turns.

The Traditional FSUTMS TCARDS was added to the MTURNDEF file. In addition to the turning penalties and prohibitors, the turning cards are used to specify the HOV ingress and egress penalties. **Table B-16** presents the formats for the TCARDS file.

2.4.19 MVFACTORS.{Year}{ALT}

The MVFACTORS files allow the user (1) to implement facility specific volume-delay relationship (ALPHA and BETA of BPR volume-delay function); (2) to specify the volume to capacity ratio (UROAD Factor) at which traffic diversion should occur; and, (3) to specify factors (CONFAC) of hourly to model period capacities. The CONFAC values of the MVFACTORS file are period specific and vary with the time period used in assignment. **Figure B-9** presents the validated MVFACTORS file. The attributes of this ASCII delimited by comma are:

- FTC2 — Facility Type Code
- UROADF — Practical/Possible Capacity ratio
- CONFAC24H — 24-Hour CONFAC
- BPR LOS — BPR Volume-Delay Function Constant term
- BPR EXP — BPR Volume-Delay Function Exponent term
- CONFACAMP — AM Peak Period CONFAC
- CONFACPMP — PM Peak Period CONFAC
- CONFACOFP — Off Peak Period CONFAC

2.4.20 NLOGITJ.SYN

This file contains the general mode choice constants and coefficients. **Table B-27** presents the format for this file. It contains the coefficients and constants of the mode choice utility functions for each of three main trip purposes (HBW, HBNW and NHB) for peak and off-peak periods. The mode choice program (NLOKITK) uses these parameters to calculate the mode shares. **Figure B-13** presents the validated constants along with coefficients of the mode choice utility functions.

2.4.21 NMOTOR.SYN

This file provides parameters for the logit-based non-motorized programs (NMOTOR7 or NMOTOR3). The NMOTOR7 was written for SERPM5 for seven purposes – HBW (Zero, 1 and 2+ cars), HBO (Zero, 1 and 2+ cars) and NHB. The original NMOTOR3 is used in pre-assignment step in trip distribution module for three main purposes. **Table B-28** presents the format for this file. It contains the coefficients, constants and index coefficient of the utility functions for each of three trip purposes (HBW, HBNW and NHB). **Figure B-14** presents a listing if the NMOTOR.SYN file. The NMOTOR programs separate motorized and non-motorized trips from total trips.

2.4.22 PCWALK_{Year}{ALT}.DAT

This file contains zonal walk percentages for transit trips. It is used in mode choice module and adjusted by the REWALK program for consistency of the walk connectors generated by the PT process. **Table B-29** presents the formats of this file. The walk percentages vary by short and long walk, peak and off-peak period and production and attraction ends. ARCVIEW-based GIS-based procedures (see **Appendix E**) are used to generate this file.

2.4.23 PERTRKEXTZ.DBF

The truck percentages of external stations are specified in this file. **Table B-14** describes the fields of this file. It is used to develop trough truck trip table. The growth factor data of this file are used in the CV step of the FRATAR model.

2.4.24 PROFILE.MAS

The PROFILE.MAS file stores several user defined model parameters for input into custom-written programs. The parameters entered in Cube keys are also used by the cube programs as well as by the custom written programs. **Figure A-3** of Appendix A lists the PROFILE.MAS file that was used in 2005 validation. All parameters listed in the PROFILE.MAS are preceded by an ampersand sign ("&") and the label for the variable. The variable or value itself then follows on the next line. Descriptions of each of the parameters follow the variable labels. The PROFILE file for 2030 SERPM6.5 model is shown in **Figure A-4** of Appendix A.

2.4.25 S65GEN.CTL

The lifestyle trip generation program (ULSTGENM65) uses this file to generate productions and attractions, A1DECK and PBSCH output files for each MPOs of the regional model. **Figure B-10** presents the 2005 S65GEN.CTL file. The regional trip generation program has flexibility to include a multiple number of urban areas. For each county/MPO, S65GEN.CTL file contains the following information:

1. Two letter urban area designation (for example, PB= Palm Beach, BO = Broward, and MI = Miami-Dade),
2. Input file extension (for example, 05P = Year 2005 and Palm Beach County),
3. Total internal zone numbers which includes "dummies" for future expansion,
4. Total internal and external zone numbers,
5. Starting Regional Zone Number, and
6. A title for trip generation output.

A blank line is expected between each set of county data. The last record should end with a "999999" record, as shown in **Figure B-10**.

2.4.26 SCHOOL.{Year}{C}

The lifestyle-based trip generation program (ULSTGENM65) uses the school file to develop the public school trip tables (PBSCH). It contains the enrollment and TAZ allocations that are used to calculate the school trip productions and attractions. **Table B-20** presents the format of the SCHOOL file. The alternate designation "C" of file extension should be different for each county. Also, a separate letter for the regional model alternative should be used. The regional alternate ("R") is entered in the cube key, {ALT}. The following letters are used for county alternate designation of SERPM6.5 model:

- Palm Beach: P
- Broward: B
- Miami-Dade: A

The SCHOOL related data for SERPM6.5 reside in TAZ database (S65TAZS_{Year}.DBF). The county specific SCHOOL data files are written from this database file for use in ULSGENM65. Any changes to this school allocation and enrollment should be made to the database.

2.4.27 SDLAYAM2_{Year}{ALT}.CSV and SDLAYPM2_{Year}{ALT}.CSV

These two files – one for the peak period and another for the off-peak period - are used as a lookup table for auto-transit relationship curves. The first 15 columns of the file are the auto speeds for 15 different curves and the next 15 are the corresponding 15 transit speeds. For example, the three rows in the first column give the three auto speeds and the three rows in the sixteenth column gives the corresponding transit speeds on the auto-transit speed relationship curve. The format of the file is described in **Table B-30**.

2.4.28 SDLAYUPD_{Year}{ALT}.DAT

The format of this ASCII file is described in **Table B-31**. The file contains the curve number that is to be used for a specific combination of facility type and area type. SDLAYAM2_{Year}{Alt}.CSV and SDLAYMD2_{Year}{Alt}.CSV files are used to get the auto-transit speed relationship for each curve. A listing of this input file is shown in **Figure B-15**.

2.4.29 S65TAZS_YY.DBF

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 East, feet. There are a few gaps in the TAZ numbering system (see **Table 2-1**). The SERPM6.5 traffic analysis zone file contains several zonal data. The database file of TAZ (SERPM6_TAZ.DBF) is used to store zonal production, attraction, school and walk-index data. The CV scripts write these data for use in trip generation and other user written programs and CV steps. **Table B-18** describes the fields of the database file. Users interested in modifying any of the zonal data (Fields 12-51,59,71-72) should modify this file.

2.4.30 STP60{XX}.SYN

The life-style based trip generation program (ULSTGENM65) uses this file as one of its inputs. Special Tabulation Product (STP) #60 from the 2000 Census is a table created for the Florida Department of Transportation. The tabulation at the TAZ level was done for 26 MPO regions in Florida. The universe for the table is all households in the study area. The spreadsheet file (stp60-mt1.xls) was converted to an ASCII file with each field of 10 characters in width. All fields are right justified. The converted ASCII file is named as STP60{XX}.SYN ({XX}=PB, BO and MI). The format for the STP60{XX}.SYN file is presented in **Table B-21**. The tabulation consists of a cross-classification of four characteristics of households (presence or absence of children, workers, persons and autos) for each traffic analysis zone.

The STP60{XX}.SYN file consists of one record for each TAZ in the MPO region, plus a total record for the entire area. Each record begins with an MPO region code of 4 characters (column position 7-10), followed FIPS state and county code (column position 11-20) and then TAZ code (column position 21-30). The rest of the record is made up of 176 fields that are also ten characters wide, one for each data item in the table. The total record is the first record and is identified by a zero in the TAZ code field. For the number of workers in household variable, a worker is defined as a person at least 16 years old who was employed and at work during the census reference week. The presence of children is identified as a household member of less than 18 years of age.

2.4.31 TD_OBS_DATA.CSV

Both SERPM6 and SERPM6.5 model validation process used observed speeds to validate the model-generated speeds by periods. The observed speed sections in the network are coded in TDSECID ("Travel

Time and Delay Section ID") field of network. The overall sectional speeds are entered in this input file for three of its period. **Table B-17** describes the fields of this input file. It is used as a lookup table in Highway Evaluation module.

2.4.32 TROUTE_{Year}{ALT}.LIN

Figure B-16 shows a sample listing of transit line file that is used in the model. **Table 2-9** describes the fields of the transit line file. The file contains the transit networks for both peak and off-peak periods. The transit line file depicts transit routes through a sequence of nodes in the highway network. The file is maintained in standard route file required by the PT module. For more information on the route file, please refer to the Cube help manual.

2.4.33 TSYSD_{Year}{ALT}.PTS

This is the system data file required by the PT module. This file gives the list of the mode and operator numbers and their description that are used in the transit line file. **Figure B-17** shows the file that is used in SERPM6.5. For more information on the system data file, please refer to the Cube help manual

2.4.34 WALK.{XX}

Three WALK files, one for each county ({XX}=PB, BO, MI), are used in SERPM as inputs to the NMOTOR3 or NMOTOR7 routines to separate out the motorized trips from the non-motorized trips. **Figure B-18** presents the sample listings of these WALK files. The formats of the WALK file along with the information on selection of the non-motorized index values are shown in **Table B-32**.

2.4.35 WALKTRL_{Year}{ALT}.DAT

The factors file required by the PT module to generate the walk and sidewalk access connectors. RUNFACTOR for modes 1 and 3 are specified in the file. The file is shown in **Figure B-19**. For more information on the factors file, please refer to the Cube help manual.

2.4.36 XTRAAUTO_{Year}{ALT}.DAT

This is an optional file used by the AUTOCON program. The format of this file is shown in **Table B-33**. The file contains a list of auto connectors that are to be added to the list of connectors generated by the program.

2.4.37 ZDATA1B.{Year}{C}

The ZDATA1B file contains mainly the production demographic data that is input to the lifestyle-based trip generation program (ULSTGENM65). It is written from the TAZ database file (S65TAZS_YY.DBF), and thus is no longer an input file. Any changes to any of the production data must be made to the database. **Table B-22** presents the format for this file. The alternate symbol "C" of input file extension (YYC) refers to the county alternative. Separate alternative symbols are used for each of the constituent counties.

2.4.38 ZDATA2.{Year}{C}

The ZDATA2 file is the standard trip attraction data file for the trip generation program. It also contains parking cost for the mode choice model. It is written from the TAZ database file (S65TAZS_YY.DBF),

and thus is no longer an input file. Any changes to any of the attraction data must be made to the database. **Table B-23** presents the format of this ZDATA2 file. The alternate symbol "C" of the input file extension ({Year}{C}) refers to the county alternative. Separate alternative symbol are used for each of the constituent counties.

2.4.39 ZDATA3B.{Year}{C}

The information on special generators is contained in the ZDATA3B file. **Table B-24** presents the format of this file. The ZDATA3B file includes airport enplanement data. The alternate symbol "C" of the input file extension ({Year}{C}) refers to the county alternative. Separate alternative symbols are used for each of the constituent counties.

2.4.40 ZDATA4B.{Year}{C}

The ZDATA4B files provide information on external to internal trips for the lifestyle trip generation model. The alternate symbol "C" of the input file extension ({Year}{C}) refers to the county alternative. Separate alternative symbols are used for each of the constituent counties. The ZDATA4B file specifies both productions and attractions for each of the external stations. **Table B-25** presents the format for the ZDATA4B file. The model treats the external stations as internal zones. The file also requires data for extra-regional travel time, as well as the percent of work and non-work trips by zero, one and two-or-more auto households. The percentage data are written to the A1DECK file, which is an input to the mode-choice routine. The lifestyle trip generation routine COMBLSM65 writes a regional ZDATA4B.{Year}{ALT}, where alternate symbol "{ALT}" refers to regional model alternative. This regional file is then used in "Highway Path and Skim" module to extract external station terminal time.

2.4.41 TOLLLINK.{Year}{ALT}

This file is used to describe the toll plaza locations and associated tolls and delay. **Table B-36** presents the format for this file. The CTOLL value from line one of this file is a representative regional value entered in the CV key. SERPM6.5 uses region and often facility specific CTOLL values. The CTOLL values are used to convert toll values to the time units in minutes. The information of the toll links is directly entered on the Cube-Voyager input network (see items 27-38 and 96-98 of **Table B-12** for description of unloaded network, S65_YY.NET). All highway based modeling processes use the toll related data directly from the network. The ASCII TOLLINK file is written by a CV step for use in 24-hour version of the mode choice program (NLOGITK). In TOD version of SERPM6.5, this file is also written by CV step. However, mode-choice program does not use this file. The file provides a summary of toll related data in model and is valuable for quick check of these data.

2.5 Selected Output Files

This section provides description of selected output files that are either generated by the CV routines or custom written programs.

2.5.1 CONTROL.MAS

The transit model is executed across three major modules: TRANSIT, MODECHOICE and TASSIGN. The TRANSIT module creates the access connectors (walk, auto and sidewalk/transfer), some network data files, and the skim and fare matrices. The MODECHOICE module performs a variety of actions preparing data for the mode choice model. The non-motorized and motorized mode choice models are also executed in this module. Transit assignment and reporting is performed in the TASSIGN module.

Virtually all of the user programs in the transit model read CONTROL.MAS, the master control file. This file is created in the very first PILOT (S6PIL00H.S) step in SERPM6.5. It lists the input and output files used for selected custom written programs. **Table G-1** of Appendix G shows the list of parameters used in this file.

Lines starting with ';' are the comment lines in the file. These lines are ignored by the user-written programs. The first 29 characters of the file are the variables (either file variables or parameters) that are read in by the programs. The next 90 characters are the value of these variables. The input and output files of the REWALK, AUTOCON (24-hour version of SERPM6.5), NOLOGITK and PT2TRNB programs are controlled using the CONTROL.MAS file. The TOD version of SERPM6.5 uses TRANSIT.MAS file (see Section 2.5.2). To change the location of the input/output of any of these programs, user should modify the S6PIL00H.S script file.

2.5.2 TRANSIT.MAS

The TOD version of the SERPM6.5 uses standard AUTOCON program developed for new FSUTMS transit modeling framework. More information of this standard program can be found FSUTMS online website at:

http://www.FSUTMSOnline.net/index.php?/transit_modeling/comments/new_fsutms_transit_modeling_framework/

This standard AUTOCON program reads a control file named TRANSIT.MAS. In the SERPM6.5 TOD model, this file is created within the model stream in the 'Connector' sub-module (see step 6, **Figure F-14** of Appendix F) application and resides in model's cube folder. The parameter names are in columns 1-29 while its corresponding values is stored in columns 30-119. Standard AUTOCON reads the values of various parameters needed by the program from this file. **Table G-4** of Appendix G describes the list of the parameters that the standard AUTOCON program reads in from the TRANSIT.MAS file.

2.5.3 FAREZONE.DAT

The fourth step of the prepare sub-module (see Figure F-13 of Appendix F) issues a PILOT statement that performs two actions. First, it copies the STATION_{Year}{Alt}.DAT file created in the first step to TRANSFER_{Year}{Alt}.DAT. Second, it executes the TR_FARE program, which creates the Tri-Rail fare file used by TRNBUILD during path-building. TR_FARE reads the Tri-Rail fare data in the TRFAREZONE_{Year}{Alt}.DAT file and produces FAREZONE.DAT. **Table G-2** presents the format of the FAREZONE.DAT file. It is used by the TRANBUILD program to implement zonal based Tri-Rail fare system. This file enumerates every pair of origin and destination tri-rail station and their fares in cents.

2.5.4 STATION_{ALT}{Year}.DAT

The station data describes permanent park-and-ride and kiss-and-ride locations for rail and express bus stations. For the Tri-Rail stations, it also contains information on the Tri-Rail fare zones. The unloaded highway network node attributes are used to enter all the station related data (see items 3-13 of **Table B-12**). The very first step of transit prepare sub-module extracts this station related data from the highway nodes for use in several custom written programs (AUTOCON, TR_FARE, NLOGITK, ARCVIEW PCWALK process). **Table G-3** presents the format for the STATION file, which is an output of the data stored on the node.

2.5.5 Loaded Highway Networks

For the TOD version of SERPM6.5, the assignment module combines the loaded network from the three period assignment loadings and creates a combined loaded network for further processing. The fields of this combined loaded network were named carefully to distinguish each of the loaded attributes for each period as well as 24-hour combined loaded attributes. **Table G-5** describes the selected attributes of the TOD version loaded network (Combined-HLOAD-AYY.NET). The final loaded network attributes of the 24-hour version of the SERPM6.5 (AllDay-HLOAD-AYY.NET) are described in **Table G-6** of Appendix G.

2.5.6 TRANSTAT Reports

Unlike TRANPLAN, TRNBUILD and PT do not produce useful information to summarize the transit network and loadings. The TRANSTAT program (a custom written program) generates the required summaries.

During assignment, TRNBUILD produces files in DBF format. These files are converted to ASCII-format in the eighth step of TASSIGN module (see **Figure F-21**). The 12th step of TASSIGN module generates the TRANSTAT.CTL control file and executes TRANSTAT. It reads the following input files:

- TITLE.MAS – title master file
- TRANSTAT.CTL – control file
- TASNAMx.TXT, where x=1-8 – Assignment loadings for each of the eight paths (peak period)
- TASNMDx.TXT, where x=1-8 – Assignment loadings for each of the eight paths (off-peak period)

It produces the following output files:

- TASROUTE.PRN – stop-level assignment report
- TASSUM.PRN – route-level assignment report

The stop-level report displays time, distance, boardings, alightings and riders for each stop on every route. Boardings, alightings and riders are provided for peak and off-peak periods as well as a daily total. The route-level report displays the mode, distance, time, frequency, boardings, and maximum load for each route. The report includes figures for peak and off-peak periods as well as a daily total. Also, a similar summary is provided by mode. Sample listings of these outputs are presented in **Figures G-1** to **G-3** of Appendix G.

2.6 Custom Programs

Several existing SERPM5 and SERPM6 utility programs were directly used in the SERPM6.5 model, while others were modified to suit the SERPM6.5 model needs. All custom-written programs are listed in **Table 2-29**. There are 18 of these programs, of which five are lifestyle trip generation related programs (RZDATA2, ULSTGENM65, COMBLSM65, RBALM65 and ZAP65).

There are two major custom-written programs: trip generation and mode choice. The source codes of these trip generation programs are listed in **Appendix D1**. The mode choice program is another major custom-written program and **Appendix D2** lists the source codes of the SERPM6.5 mode choice programs. Other highway and transit related programs source codes are listed in **Appendix D3** and **D4**, respectively.

These custom-written programs are described throughout the report where they are more relevant. **Table 2-29** provides the main function of each of the custom-written programs. It also identifies the steps and modules or sub-modules where they are applied in model stream.

There is less need for the user to understand the inner workings of these programs than to understand the overall model flow. For standard applications of the model, users should not revise these programs. For special, non-standard application of the model, users may find a need to update these programs.

A Cube key (PATH1) was added to point to the model-specific executables. All special programs are kept in a folder and are then identified by PATH1 key (see **Appendix A**). It is important that user not add last "backslash (\)" in the above path statement. The three of the custom-written programs are implemented in Cube's User-Program resource files. Those must be copied to the Citilab's Cube folder. Those programs are:

a. AUTOCON.EXE	SERPM6.5 Auto access program (24-hour version only)
b. NLOGITK.EXE	SERPM6.5 Mode choice model
c. MLEG.EXE	SERPM6.5 Freeway Roundabout Merge program

Users should read the further instructions from "README-Setup" file that was distributed with the model for changes in Cube's resource files (userprogs.rsc & twmenu.rsc):

Table 2-29: **Custom-Written Program Description**
Southeast Regional Planning Model 6.5

Sl No	Program Name	Used in Module/Step (see Note 2)			Program Function
		Module	Step	See Figures	
1	**autocon**	TRANSIT \ CONNECTOR	Steps 7 & 8	Figure F-14	This program generates auto connectors for the transit network. The connectors are generated for the stations in use. (see **Note 1** for the AUTOCON version used in SERPM6.5)
2	**comblsm65**	Generation	Step 6	Figure F-2	It creates regional trip productions and attractions, A1DECK file and PBSCH file by integrating individual county files generated through ULSTGENM65. The "comblsm" program also combines urban model ZDATA files.
3	**HEVALS6**	Evaluation Evaluation\Period Evaluation Evaluation\Truck Evaluation Distribution \Final Peak Period Distribution	Steps 2,4,6,8 Steps 2,4,6 Steps 2,4,6,8 Steps 12	Figure F-23 Figure F-24 Figure F-25 Figure F-11	Standard DBF version of Highway Evaluation reporting (HEVAL-DBF) program that was slightly customized for use in SERPM6.
4	**mkturn65**	HwyPaths	Step 4	Figure F-6	It creates TCARDS file from the MTURNDEF file. MTURNDEF file is used to assign turn penalties on the basis of type of turn and facility type. Traditional FSUTMS TCARDS should be added to the MTURNDEF file.
5	**MLEG**	HwyPaths	Step 4	Figure F-6	It identifies the merging node of freeway and on-ramp links. It can also be used to create file for the merging nodes.
6	**NLOGITK**	MODECHOICE MODECHOICE \ MCAL Distribution \ Peak Period Distribution	Step 10 Steps 1 & 5 Step7	Figure F-16 Figure F-17 Figure F-9	This nested logit mode choice program splits trips among competing modes.
7	**nmotor3**	Distribution \ Peak Period Distribution	Step 4	Figure F-9	It separates the motorized and non-motorized trips from the total trips for the three main purposes (HBW, HBO and NHB).
8	**nmotor7**	MODECHOICE	Steps 5 & 7	Figure F-16	It separates the motorized and non-motorized trips from the total trips for the seven trip purposes (HBW-0,1,2+cars; HBO-0,1,2+cars and NHB).
9	**PT2TRNB**	TRANSIT \ CONNECTOR	Step 10	Figure F-14	It converts NTLEG and transit line files in PT formats to TRNBUILD format and performs "spline" function to fixed-guideway headways.
10	**rbalm65**	Generation	Step 6	Figure F-2	It balances regional attractions to productions. The program does not change attractions for special generators TAZS for purposes HBW, HB Shopping, HB Social-Recreation, HB Other, Airport and three truck purposes. Balancing of School, college/university, NHBW and NHBO trip purposes are carried out in urban module (ULSTGENM65).
11	**REWALK**	TRANSIT \ CONNECTOR	Step 5	Figure F-14	It modifies walk connectors and percent walks for consistency

Table 2-29 (continued): **Custom-Written Program Description**
Southeast Regional Planning Model 6.5

Sl No	Program Name	Used in Module/Step (see Note 2)			Program Function
		Module	Step	See Figures	
12	**RMSEDBF**	Evaluation	Steps 2,4,6,8	Figure F-23	Standard DBF version of Root-Mean-Square-Error reporting (RMSEDBF) program.
		Evaluation\Period Evaluation	Steps 2,4,6	Figure F-24	
		Evaluation\Truck Evaluation	Steps 2,4,6,8	Figure F-25	
		Distribution \Final Peak Period Distribution	Steps 12	Figure F-11	
13	**rzdata2**	Generation	Step 6	Figure F-2	It indexes the employment data to a user defined controls. The program scales the MPO's employment based on the control totals for each employment category by county.
14	**TRANSTAT**	TASSIGN	Step 12	Figure F-20	It generates transit assignment reports.
15	**TR_FARE**	TRANSIT \ PREPARE	Step 4	Figure F-13	It creates Tri-rail FAREZONE.DAT file for TRNBUILD skimming.
16	**UPDATEM**	MODECHOICE\MCAL	Step 4	Figure F-17	It updates the model choice utility constants for calibration "only". Model users do not need to run this program.
17	**ulstgenm65**	Generation	Step 6	Figure F-2	It generates production and attraction files as well as the zonal A1DECK (zonal data input to the nested logit model) for each urban areas.
18	**zap65**	Generation	Step 6	Figure F-2	It generates productions and attractions files for zero and 1+ auto households. The program reads the total productions and attractions files generated through RBALM65 program. The program creates zero-auto p's and a's for HBW, HB Shopping, HB Social-Recreation and HB Other purposes.

Note 1: The TOD version of SERPM6.5 TOD uses standard autocon program that are released by FDOT central office. A copy of this documentation is also copied in model's user-program folder. For more up-to-date information of central office transit modeling framework, please use following URL:
http://www.fsutmsonline.net/index.php?/transit_modeling/comments/new_fsutms_transit_modeling_framework/
The 24-Hour version of SERPM6.5 uses the model specific progran that were used in SERPM6.

Note 2: The steps reffered here are for TOD version of the model. They may differ for the 24-hour version of the model.

3. MODEL GUIDELINES

Two SERPM65 models (24-Hour and Time-of-Day versions) for the 2005 base year and 2030 cost-feasible scenarios were developed in this study using Cube-Voyager software. This section provides the user with guidelines for preparing and running SERPM. While SERPM follows the Florida Standard Urban Transportation Model Structure (FSUTMS), it includes new and refined modeling procedures.

It should be mentioned that formats of all fixed format input files and with definite fields (CSV and DBF files etc.) are presented in the 36 tables in **Appendix B**. Input files without rigid structures are listed in the 20 figures of Appendix B. Chapter 2 provides descriptions of each of the user input files. The rest of this section presents the model guidelines for each of the main modules.

For the highway component models, SERPM65 uses the CV's programs. For the transit network PT software was used. The rest of the transit modules used TRNBUILD programs. This chapter provides a detailed description of the model scripts, inputs and outputs of each module of SERPM65 models. **Figure 3-1** presents a screen capture of the Cube-Voyager model flowchart. The main modules as well as interrelated model files of different modules are shown in this illustration. CV is a more modern travel demand-modeling package with greatly expanded capabilities. The model itself is represented as a computer flowchart, and scripting code is integrated into the flowchart.

The module and step numbers of the CV applications precede the scripts listed in this report. The last hyphenated number is the step number of the preceding module or sub-modules number, which are also hyphenated.

In addition to user-supplied input files, the significant output files for each module are identified and discussed in this section. Most of the CV steps produce standard PRN files. These PRN files often provide useful model information and several of these files are saved to the model OUTPUT\OUT-YY folder. These saved PRN and standard model outputs are used to produce model summaries.

The rest of this chapter presents guidelines for each of the main modules.

3.1 Pilot Module

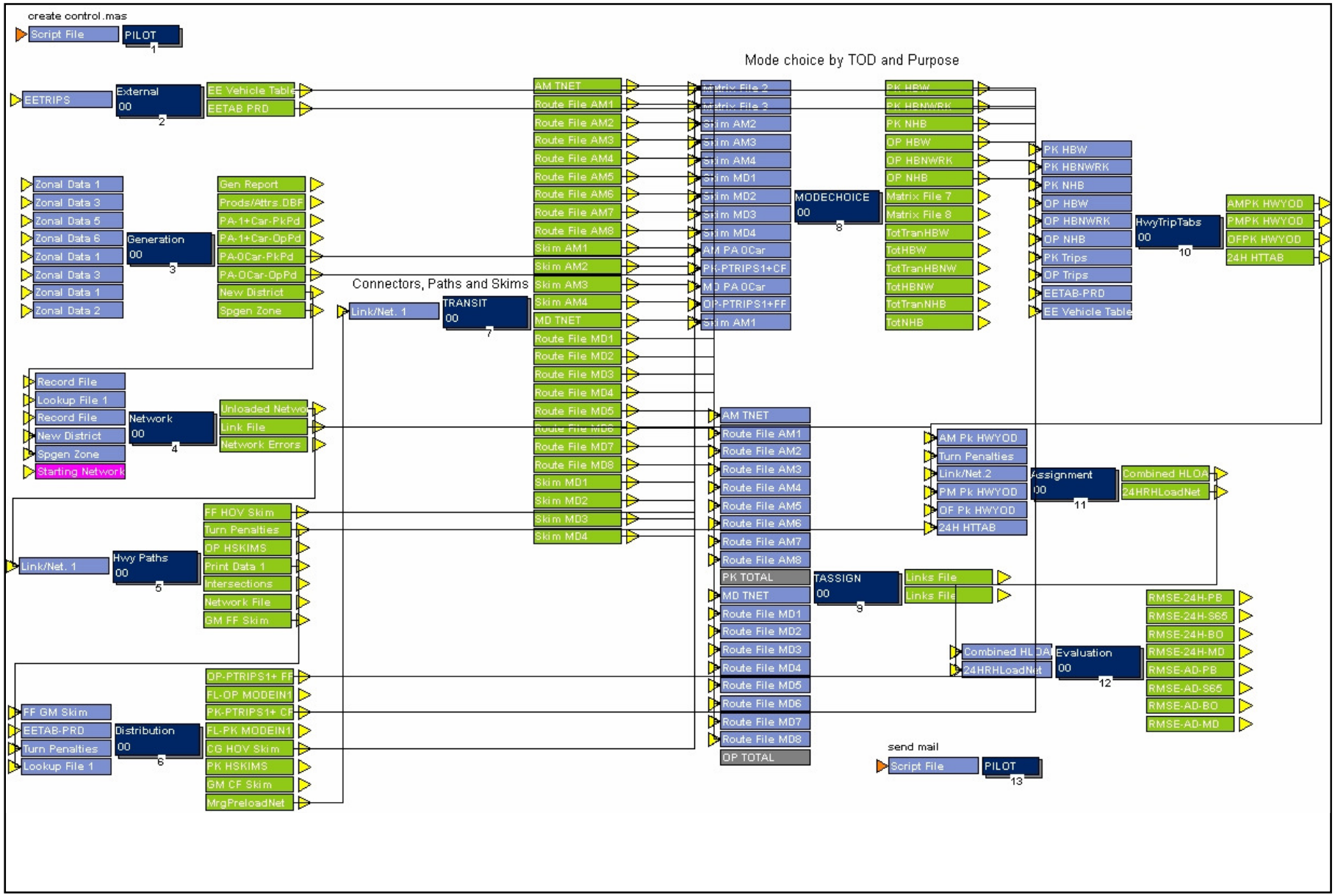
This very first module (PIOLT) creates a master control file (CONTROL.MAS). This master file lists input and output files for several custom-written programs (REWALK, AUTOCON for 24-hour version, NLOGITK and PT2TRNB). The script (S6PIL00C.S) of this pilot module is shown in **Appendix C1**. The AUTOCON program input and output files are specified in TRANSIT.MAS file (see **Table G-4**) are used for the Time-of-Day version of the model, which uses the standard AUTOCON (FDOT new transit platform) program. The 24-hour version of the SERPM6.5 uses the SERPM specific AUTOCON program and uses the input and output file as shown in **Table G-1**.

Table G-1 presents the parameters of the output CONTROL.MAS file along with a description and example of a 2005 model run.

3.2 External (EXT) Module

The external module flowchart is shown in **Figure F-1**. This purpose of this module is to develop through trip tables by period. The SERPM65 external module deals only with the through vehicle trip table. This module has 4 steps. The CV scripts of external module are shown in **Appendix C2**. A brief description of main functions of scripts of main module follows:

Figure 3-1: **CV Model Macro Flow Diagram**
Southeast Regional Planning Model 6.5



2-1-EXMAT00A.S	- Create EETRP table from EETRIPS.{YEAR}{ALT} and Generate FSUTMS.CTL for many custom-written programs
2-2-EXPIL00A.S	- Copy FSUTMS.CTL into main data folder, defined by CV key {DATADIR}
2-3-EXMAT00C.S	- Create period specific EE matrices
2-4-EXPIL00B.S	- Echo module run time

The external module builds the external-external vehicle trip table (EETAB) from the EETRIPS file. EETRIPS is a user-developed file in standard FSUTMS format, and its contents are developed outside of the modeling process. **Table B-10** presents the format of this file.

Later in the modeling process ("Highway Trip Tables" module), EETAB is subdivided into truck, auto drive-alone, and auto shared-ride trips.

External-internal highway trips are generated in the "Trip Generation" module and distributed in the "Distribution" module as internal trips. These trips are included in the purpose-specific trip tables with the internal trips.

3.3 Trip Generation (GEN) Module

The trip generation module flowchart is shown in **Figure F-2**. The primary purpose of this module is to estimate productions and attractions on the basis of zonal households, persons, workers, vehicles and presence of children. It implements the life style trip generation program. The method estimates trips for the standard FSUTMS purposes, plus school, college-university, airports and trucks. Additionally, files of trips from households with and without autos are maintained separately. Also, productions and attractions are allocated to either peak or off-peak periods at this stage of the model stream. Attractions are estimated from employment and household data. This module also writes out all zonal data (ZDATA1, ZDATA2, SCHOOL, Walk-Index, and district database, etc.) either for use in this module or other modules.

The SERPM65 model uses a regional version of the Lifestyle Trip Generation Model. It has five component programs (RZDATA2, ULSTGENM65, COMBLSM65, RBALM65 and ZAP65). Section 2.1.3 has more description of the trip generation model along with its inputs and outputs. **Figure 2-5** shows the user supplied input files and custom written programs used in this module.

The trip generation model develops productions and attractions for all trip purposes, including internal-external trips. Trip purposes are:

1. Home-based-work - HBW
2. Home-based-shopping - HBSHP
3. Home-based-social/recreational - HBSR
4. Home-based-school (non-public) – HBSCH
5. Home-based-College/University -HBUNIV
6. Home-based-other - HBO
7. Non-home-based Work – NHBW
8. Non-home-based Other – NHBO
9. Airport
10. Four-tired Truck
11. Single Unit Truck
12. Combination Truck

It should be noted that the separate Internal-External (IE) purpose used in the standard FSUTMS process is not followed in the lifestyle trip generation model. IE trips are modeled with the internal trips.

This module has 17 steps. The CV generation module scripts are shown in **Appendix C3**. The Step 13 script is simply a CV's TRCOPY execution. A brief description of main functions of remaining scripts of this module follows:

3-1-GNMAT00J.S	- Write production data (ZDATA1B)
3-2-GNMAT00K.S	- Write Attraction data (ZDATA2)
3-3-GNMAT00L.S	- Write school enrollments and assignments data (SCHOOL)
3-4-GNMAT00M.S	- Write walk index data (WALK)
3-5-GNMAT00N.S	- Write two transit district summary and CBDZONES DBF files
3-6-GNMAT00P.S	- Write new district and special generator indicator DBF files
3-7-GNNET00A.S	- Extract XY coordinates for the internal TAZs
3-8-GNMAT00B.S	- Merge selected zonal data, XY coordinates and CBDZONES indicator
3-9-GNMAT00C.S	- Write "valid" (no dummies) internal TAZ data
3-10-GNMAT00E.S	- Compute TAZ-to-TAZ airline distance
3-11-GNMAT00F.S	- Compute density based area types and write those into an ASCII file
3-12-GNPIL00A.S	- Run five custom trip generation programs (ZDAT2, ULSTGENM65, COMBLSM65, RBALM65 and ZAP65)
3-14-GNMAT00A.S	- Convert total PRODS and ATTRS to DBF format
3-15-GNMAT00H.S	- Convert 1+ vehicle households productions (PROD1) and attractions (ATTRS1) to DBF format
3-16-GNMAT00I.S	- Convert zero-vehicle households productions (PROD0) and attractions (ATTRS0) to DBF format
3-17-GNPIL00D.S	- Echo module run time

The GEN module requires a number of input files from the input folder and the three subfolders of MPO's trip generation-related files. **Figure 2-5** presents the name and locations of the input files required by trip generation module. User-supplied input files for the GEN module are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters of Cube Scripts [see Tables A-1, A-2 and Figures A-1, A-2]
- GRATEBXX.SYN (XX = PB, BO & MI) – This file contains the production and attraction rates for all trip purposes. It also contains the household stratification curves. [Format in Table B-19]
- STP60XX.SYN (XX = PB, BO & MI) – This is the 2000 Census Special Tabulation Product file obtained by FDOT from the Census Bureau that contains the detailed household composition structure for each TAZ. [Format and description in Table B-21]
- S65_YY.NET – This is the CV input highway network file. The XY coordinate of each centroid zone is read from this file and then computes density based area type using zonal data. The density based area type is then used select the area and employment-based attraction rates. [Field description in Table B-12]
- S65TAZS_YY.DBF – The DBF file of SERPM65 TAZ shape file. The CV scripts use the production and attraction data from this file to calculate density based area type. The transit district attribute (TD_YY) is used for the CBD area type. All zonal data (production, attraction and school) are also written from this file for use in trip generation programs. [Field description in Table B-18]
- SCHOOL.YYC – The SCHOOL files are written from the TAZ database (S65TAZS_YY.DBF). All changes in SCHOOL data must be made by modifying the S665TAZS_YY.DBF file. The TAZs in the school and all other zonal files are the TAZ numbers of the MPO models. There is one-to-one correspondence of the regional and MPO TAZ number (see Table 2-1). The SCHOOL file contains elementary, middle, and high school TAZ for public school students living in each home TAZ (production

zone), and the enrollment of elementary, middle, and high school students in the TAZ (attraction zone). [Format in Table B-20]

- ZDATA1B.YYC – This is the household production data file for the lifestyle trip production model. It also contains the transit district (TD_YY) codes to support revised set of constants of mode choice model. This zonal data are written from the TAZ's DBF file. All changes in ZDATA1B file must be made by modifying the S665TAZS_YY.DBF file. It should be noted that the TAZs in this file represent MPO TAZ numbers. [Format in Table B-22]
- ZDATA2.YYC – The standard FSUTMS attraction data file. This zonal data are written from the TAZ's DBF file. All changes in the ZDATA2 file must be made by modifying the S665TAZS_YY.DBF file. It should be noted that the TAZs in this file represent MPO TAZ numbers. [Format in Table B-23]
- ZDATA3B.YYC – The special generator data file. Few revisions were made to accommodate the new trip purposes. It should be noted that the TAZs in this file represent MPO TAZ numbers. [Format in Table B-24]
- ZDATA4B.YYC – The internal-external data file. It contains data on total trip productions, attractions, trip purpose split, auto availability assumptions for IE trip productions for use by the nested logit model (auto occupancy level), and extra-regional travel time estimates for the IE model. It should be noted that the TAZs in this file represent MPO TAZ numbers. [Format in Table B-25]
- S65GEN.CTL – This is the control file for ULSTGENM65 program. Users should verify and adjust the data of this control file for any changes in the alternative year, alternative code and changes in the TAZs (for example, splitting and expansion in study areas). In general, users do not need to change this file other than 2-digit year information. [A listing and description in Figure B-10]
- COMBLS65.CTL – A control file for COMBLSM65 program. Users should verify and adjust the data of this control file for any changes in the alternative year, alternative code and changes in the TAZs (for example, splitting and expansion in study areas). In general, users do not need to change this file other than 2-digit year and alternative information. [Format in Table B-7 and a listing in Figure B-2]

The GEN module produces a number of ASCII output files in the {OUTDIR} folder and its subfolders (see **Figure 2-6**). The main output files used in later modules (HNET, DISTRIB and MODE) of the model run are:

- A1DECK.AYY — Zonal data file required by the nested logit model.
- TAZ3.DBF — TAZ record with density based area type
- PANDA_YY.DBF — Trip production and attraction for the 12 trip purposes
- PANDA-OP_YY.DBF — Off peak period trip production and attraction for the 12 trip purposes
- PANDA-PK_YY.DBF — Peak period trip production and attraction for the 12 trip purposes
- PANDA0_YY.DBF — Zero-auto households trip production and attraction for selected trip purposes
- PANDA0-OP_YY.DBF — Off peak period zero-auto households trip production and attraction for selected trip purposes
- PANDA0-PK_YY.DBF — Peak period zero-auto households trip production and attraction for selected trip purposes
- PANDA1_YY.DBF — 1+ auto households trip production and attraction for 12 trip purposes
- PANDA1-OP_YY.DBF — Off peak period 1+ auto households trip production and attraction for 12 trip purposes
- PANDA1-PK_YY.DBF — Peak period 1+ auto households trip production and attraction for 12 trip purposes
- PBSCH.{ALT}{YEAR} — Non-private school trip table in TRANPLAN's "BUILD TRIP TABLE" format.

The GEN.OUT.PRN file of the OUT-{YEAR}{ALT} folder contains the standard ASCII outputs of the trip generation programs. The productions and attractions files each contain one record for each of the internal zones and external stations. Later, in the distribution module, the IE trips are prevented from being distributed between pairs of external stations. Users should also note numerous log and other temporary output files that exist in either in the main output and its subfolders (see **Figure 2-6**). They are used for debugging the trip generation model.

3.4 Highway Network (HNET) Module

The network module flowchart contains two sub-modules and is shown in **Figure F-3**. This purpose of this module is to calculate speeds and capacities using network attributes. The SERPM65 model uses revised facility and area types. Sections 2.1.1 and 2.1.2 have detailed descriptions on these topics.

This module has two sub-modules and 10 steps. The sub-modules (SIGNAL and CAPCAL) are executed in steps 1 and 2. These sub-modules are described in separate sub headings. The CV scripts of highway network module are shown in **Appendix C4**. A brief description of main functions of scripts of main module follows:

4-1-1-SGNET00A.S 4-1-2-SGMAT00B.S 4-1-3-SGNET00C.S 4-1-4-SGNET00E.S 4-1-6-SGNET00G.S 4-1-7-SGMAT00D.S 4-1-8-SGNET00I.S	"**SIGNAL"** Sub-module scripts
4-2-1-CAPCALNET-A.S 4-2-2-CAPCALMAT-B.S 4-2-3-CAPCALNET-B.S 4-2-4-CAPCALNET-C.S 4-2-5-CAPCALNET-D.S 4-2-6-CAPCALNET-F.S	"**CAPCAL"** Sub-module scripts
4-3-NTMAT00C.S	- Process MVFACTORS data into a LOOKUP table
4-4-NTNET00C.S	- Attach MVFACTORS data and update capacity fields. Estimate 2005 period and truck counts
4-5-NTNET00D.S	- Flag toll acceleration and deceleration nodes
4-6-NTNET00E.S	- Assign acceleration and deceleration attributes to links and update CTOLL by county. Attach District and special generator flags to centroid nodes.
4-7-NTNET00I.S	- Write TOLLLINKS file for debugging and use in mode choice program
4-8-NTMAT00B.S	- Rewrite MSPDADJ data into script commands for later use via read statement
4-9-NTNET00B.S	- Compute FFSPD values and then the adjusted initial speed values
4-10-NTPIL00A.S	- Echo module completion date and clock time

Figure 1-2 shows the user supplied input files used in this module. Those are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters of Cube Scripts [see Tables A-1, A-2 and Figures A-1, A-2]
- S65_YY.NET – This is the CV input highway network file. [Field description in Table B-12]
- MVFACTORS.{YEAR}{ALT} – Facility specific UROAD, CONFAC and volume-delay parameters. The CONFAC varies by the periods of model. [Listing in Figure B-9]
- MSPDADJ_YY.DBF – Speed adjustment factors [Field description in Table B-13]

- DEFAULT_SEGMENT.CSV – Default signal related segment data [Field description in Table B-8]
- SPEC_SEGDATA.CSV – User coded signal related segment data [Format in Table B-9]
- ARTPCE.DAT – High speed arterial lookup capacity table [Format in Table B-2]
- FRWYPCE.DAT – Freeway (including mainline toll and HOV) lookup capacity table [Format in Table B-3]
- HWYPCE.DAT – Uninterrupted roadways (includes CDs expressways and parkways) lookup capacity table [Format in Table B-4]
- LOWPCE.DAT – Low speed roadways and collectors lookup capacity table [Format in Table B-6]
- LOFFPCE.DAT – Loop off ramps lookup capacity table [Format in Table B-5]
- LONPCE.DAT – Loop on ramps lookup capacity table [Format in Table B-5]
- OFFPCE.DAT – Off ramps lookup capacity table [Format in Table B-5]
- ONPCE.DAT – On ramps lookup capacity table [Format in Table B-5]

The main output file used in later modules of the model run is the CV highway network with speeds and capacities (S6SPDCAP_YY.NET). This output network file is used in HPATH module for free-flow skims.

3.4.1 SIGNAL Sub-Module

The flowchart of the SIGNAL sub-module is shown in **Figure F-4**. This sub-module has eight steps. The CV scripts of these eight steps are shown in **Appendix C4**. The Step 5 script is simply a CV TRCOPY. A brief description of main functions of remaining scripts of this sub-module follows:

```
4-1-1-SGNET00A.S      - Calculate segment parameters from link data
4-1-2-SGMAT00B.S      - Read special segment data
4-1-3-SGNET00C.S      - Extract terminating segment signalized nodes
4-1-4-SGNET00E.S      - Calculate Green/Cycle ratio
4-1-6-SGNET00G.S      - Extract user coded signal cycle length
4-1-7-SGMAT00D.S      - Create SEGMENT.CSV for use in LOOKUP and apply defaults
4-1-8-SGNET00I.S      - Post cycle length on links from segment file
```

3.4.2 CAPCAL Sub-Module

The flowchart of the CAPCAL sub-module is shown in **Figure F-5**. This sub-module has six steps. The CV scripts of these six steps are shown in **Appendix C4**. A brief description of main functions of these scripts follows:

```
4-2-1-CAPCALNET-A.S  - Upload segment data
4-2-2-CAPCALMAT-B.S  - Write area type lookup data
4-2-3-CAPCALNET-B.S  - Upload area type to internal TAZ nodes
4-2-4-CAPCALNET-C.S  - Transfer area type to nearest links from that of internal TAZ nodes
4-2-5-CAPCALNET-D.S  - Calculate LOS E capacity
4-2-6-CAPCALNET-F.S  - Exclude several temporary network attributes
```

3.5 Highway Paths and Skims ("Hwy Paths" or HPATH) Module

The highway path module flowchart is shown in **Figure F-6**. This purpose of this module is to generate free flow highway skims for HOV and LOV conditions. For the TOD version of the SERPM65, separate HOV skims are written for 2+ persons and HOV3+ persons to recognize the separate tolls in the managed lane modeling. Skims are updated with terminal times, which are a function of area type, and with intrazonal times, which are the average of half the time to the two nearest TAZs. Turn penalties and prohibitors are also added at this stage. Also, in this module time turn penalty times and prohibitors are added, including generalized penalties generated for left and right turns and through movements. A list of nodes for freeway ramp merges is also generated at this time.

The SERPM65 model highway path module HPATH uses CV's HIGHWAY program to build time and distance skim matrices for drive-alone and HOV highway paths. Only one HOV skim is written for the 24-hour version of the SERPM65 model. Two separate HOV skims are written for HOV2+ and HOV3+ persons to allow manage lane modeling. This module has 10 steps. The highway path module scripts are shown in **Appendix C5**. Step 2 executes a custom written program (MLEG) to generate the list of nodes of freeway and ramp merging. A brief description of the main functions of remaining scripts follows:

5-1-HPNET00A.S	- Write network attributes for two custom written programs (MKTURN65 and MLEG)
5-3-HPNET00B.S	- Identify Freeway and Ramp merge approach links from merged nodes, identified through MLEG2 program at step 2
5-4-HPPIL00A.S	- Run automated turning movement program (MKTURN65)
5-5-HPMAT00A.S	- Convert FSUTMS TCARDS data to voyager turn penalty format
5-6-HPMAT00C.S	- Extract terminal time for external zones from ZDATA4B file
5-7-HPHWY00A.S	- Build LOV and HOV free-flow skims
5-8-HPMAT00B.S	- Compile skims for free-flow distribution and mode choice
5-9-HPMAT00E.S	- Revise distribution skims for main thoroughfare (Turnpike, I-95 and I-75) externals
5-10-HPPIL00B.S	- Echo module completion date and clock time

Figure 1-2 shows the user supplied input files and custom written programs used in this module. It uses two custom-written programs, MKTURN65 and MLEG. User-supplied input files are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters for Cube scripts [see Tables A-1, A-2 and Figures A-1, A-2]
- MTURNDEF.{YEAR}{ALT}/TCARDS.{YEAR}{ALT} – Turn penalties and prohibitors, including the HOV-lane access and egress penalties cards are included in TCARDS. This file is generated from MKTURN65 program which uses the MTURNDEF file [Format for TCARDS in Table B-16 and for MTURNDEF in Table B-15. Sample listing of MTURNDEF in Figure B-8]
- ML.CTL – Control file MLEG program [Listing in Figure B-7]

The HPATH procedure also reads output the CV network file (S6SPDCAP_YY.NET) of the HNET module. The final skim matrices produced by this step are free-flow and include intrazonal and terminal times. The main output files used in later modules (DISTRIB, MODE and HASSIGN) of the model run are:

- S6HNET_YY.NET - CV Highway Network with identified freeway and ramp merge node identified (FWYRNDNODE=1 or NODETYPE=5). This network is input to DISTRIB and HASSIGN modules.
- TURNS_YY.PEN - CV format turning penalties
- FHSKIMTT.{ALT}{YEAR} - Tranplan format off-peak skim matrix. This is used in off-peak distribution. The tables are:
    1. Cost

2. Distance
3. TIME1 (free flow time)
4. TIME2 (TIME1+Toll Time equivalent + terminal time)
5. TIME1WTT (TIME1 + Terminal Time)

- OPHSKIMS.{ALT}{YEAR} - Tranplan format off-peak skim matrix. This is used in mode choice program. The tables are:
  1. OPTIME – Off peak time
  2. OPDIST – Off peak distance
  3. OPCOST – Off peak cost
  4. HOVOPTIME – HOV off peak time
  5. HOVOPDIST – HOV off peak distance
  6. HOVOPCOST – HOV off peak cost

  For the TOD version of the SERPM65 model, three additional HOV skim tables are produced and they are:
  7. HOV3OPTIME – HOV off peak time for 3+ persons facility
  8. HOV3OPDIST – HOV off peak distance for 3+ persons facility
  9. HOV3OPCOST – HOV off peak cost for 3+ persons facility

- HFSKIMS.{ALT}{YEAR}.MAT - CV format free-flow skim matrix. This is used in mode choice module. The tables are:
  1. Cost
  2. Distance
  3. TIME1 (free flow time)
  4. TIME2 (TIME1+Toll Time equivalent + terminal time)
  5. SVCTIME – Toll service Time
  6. TOLLTIMEEQ – Equivalent time of tolls
  7. TERMINALTIME

  For the TOD version of the SERPM65 model, an additional skim matrix (HFSKIMS3.{ALT}{YEAR}.MAT) is produced for 3+ persons that has also seven tables as shown above.

- EXTERNALTT.TXT - External zone terminal time

The MKTURN65 program produces a report file, MKTURN65.OUT.

3.6 Distribution (DISTRIB) Module

The distribution module flowchart contains four sub-modules and is shown in **Figure F-7**. This module performs the following functions:

1. Create the public school (school district-based) trip tables from the school file;
2. Distribute off-peak trips with free flow skims;
3. Perform a preliminary distribution of peak period trips with free flow skims;
4. Perform a feedback process of peak period pre-assignments, congested skims (HOV and LOV) and redistribution of trips with congested skims; and
5. Perform final peak period distribution and pre-assignment evaluation summaries.

The DISTRIB module develops trip tables, by trip purpose, based on the productions and attractions from the GEN module, and highway network skims from the HPATH and DISTRIB modules. A standard gravity model is used to distribute the productions and attractions.

The off-peak distribution of the P's and A's from households with autos uses free-flow skims. The peak distribution of the P's and A's from households with autos uses free-flow skims for the first iteration then uses the congested skims within a feedback loop. The trip table in the pre-assignment step of the DISTRIB module uses the highway-only option of the mode choice program (NLOGITK).

While the DISTRIB module generally follows FSUTMS procedures, two modeling enhancements create significant differences between the standard FSUTMS and SERPM model processes. The first difference is the use of constrained highway skims in distribution, which requires "pre-mode-choice" and "pre-assignment" steps to be applied to develop the constrained skims. To get a stable congested time for final peak distribution, the two-feedback loaded networks from the final distribution are combined and then re-skimmed.

The second difference is the inclusion of IE/EI trips in the internal trip tables, which requires the addition of extra-regional travel times at external stations in the time skim matrices as terminal times from ZDATA4B.

The "Off-Peak Distribution", "Peak Period Distribution" and "Final Peak Distribution" sub-modules are executed at steps 2, 5 and 8, respectively. The fourth sub-module ("PkPrd PreAssign and Final Distrib") is called at step 12 of the "Peak Period Distribution" sub-module. These sub-modules are described in separate sub headings. The distribution module scripts are shown in **Appendix C6**. Steps 4 and 6 are CV looping steps. A brief description of the main functions of the main module scripts follows:

6-1-DTMAT00A.S - Build Public School Trip Matrix

6-2-1-ODDST00A.S
6-2-2-ODMAT00A.S
6-2-3-ODMAT00B.S
6-2-4-ODPIL00B.S

A. "**Off-Peak Period Distribution**" Sub-module scripts

6-3-DTPIL00B.S - Copy free-flow skims and friction factors to a temporary name for use in the feedback loop

6-5-1-PDDST00B.S
6-5-2-PDMAT00D.S
6-5-3-PLMAT00A.S
6-5-4-PDPIL00G.S
6-5-5-PDMAT00I.S
6-5-6-PLPIL00A.S
6-5-8-PDPIL00F.S
6-5-10-PLMAT00G.S
6-5-11-PLMAT00B.S

B. "**Peak Period Distribution**" Sub-module scripts

6-5-12-1-TPHWY00C.S
6-5-12-2-TPNET00D.S
6-5-12-3-TPNET00E.S
6-5-12-4-TPNET00F.S
6-5-12-5-TPHWY00A.S
6-5-12-6-TPNET00C.S
6-5-12-7-TPHWY00B.S
6-5-12-8-TPMAT00A.S
6-5-12-9-TPMAT00G.S
6-5-12-10-TPPIL00D.S

D. "**PkPrd PreAssign and Final Distrib**" Sub-sub-module scripts

6-5-13-PDPIL00E.S -> B. "**Peak Period Distribution**" Sub-module scripts

6-6-DTPIL00C.S - Copy congested skims and friction factors to a temporary name for use in the feedback loop

6-7-DTNET00A.S - Combine two feedback loop loaded networks and compute the congested time for peak transit

6-8-1-FDHWY00A.S
6-8-2-FDMAT00D.S
6-8-3-FDMAT00E.S
6-8-4-FDDST00A.S
6-8-5-FDMAT00B.S
6-8-6-FDMAT00C.S
6-8-7-FDNET00A.S
6-8-8-FDPIL00A.S
6-8-9-FDPIL00C.S
} C. "**Final Peak Period Distribution**" Sub-module scripts

6-9-DTPIL00A.S - Echo module completion date and clock time

Figure 1-2 shows the user supplied input files and custom written programs used in this module. This module uses four custom-written programs (NMOTOR3, NLOGITK, HEVALS6 and RMSEDBF). User-supplied input files for DISTRIB module are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters for Cube Scripts [see Table A-1, A-2 and Figures A-1, A-2]
- FF.CSV – The friction factor file, calibrated for free-flow times [Format in Table B-11]
- FF2.CSV – The friction factor file, calibrated for congested times [Format in Table B-11]
- NLOGITJ.SYN – The nested logit model parameters file [Format in Table B-27, Listing in Figure B-13]
- NMOTOR.SYN – The NMOTOR3 parameters file. The NMOTOR3 separates the motorized trips, which then used in mode-choice program. [Format in Table B-28, Listing in Figure B-14]

The DISTRIB module also reads several output files from earlier modules. The main ones are (1) highway network (S6HNET_YY.NET) from HPATH, (2) productions and attractions from GEN, and skims (FHSKIMTT.{ALT}{YEAR} and OPHSKIMS.{ALT}{YEAR}) from HPATH.

The main output files used in later modules (TRANSIT, MODE and HWYTAB) of the model run are:

- PTRIPS1PVeh-OP_{ALT}{YEAR}.MAT - **Off peak** person trip tables. The twelve tables are:
  1. HBW1_OP (1+ auto households' HBW trips)
  2. HBSH1_OP (1+ auto households' HB-Shopping trips)
  3. HBSR1_OP (1+ auto households' HB-Social-Recreational trips)
  4. HBSCALL_OP (HB-School trips)
  5. HBUNIV_OP (HB-College-University trips)
  6. HBO1_OP (1+ auto households' HB-Other trips)
  7. NHBW_OP (NHBW trips)
  8. NHBO_OP (NHBO trips)
  9. AIRPORT_OP (AIRPORT vehicle trips)
  10. TRK4T_OP (4-tire truck vehicle trips)
  11. TRKSU_OP (Single-Unit truck vehicle trips)
  12. TRKCOMB_OP (Combination truck vehicle trips)
- MODEIN1-OP.TEM - **Off peak** mode choice (full run) temporary input trip tables. The three tables are:
  1. HBW1_OP (1+ auto households' HBW trips)
  2. HBO1_OP (1+ auto households' HB-Non-Work trips)
  3. NHB_OP (NHB trips)
- PTRIPS1PVeh-PK_{ALT}{YEAR}.MAT - **Peak** person trip tables. The eleven tables are:

1. HBW1_PK (1+ auto households' HBW trips)
2. HBSH1_PK (1+ auto households' HB-Shopping trips)
3. HBSR1_PK (1+ auto households' HB-Social-Recreational trips)
4. HBSCALL_PK (HB-School trips)
5. HBUNIV_PK (HB-College-University trips)
6. HBO1_PK (1+ auto households' HB-Other trips)
7. NHBW_PK (NHBW trips)
8. NHBO_PK (NHBO trips)
9. AIRPORT_PK (AIRPORT vehicle trips)
10. TRK4T_PK (4-tire truck vehicle trips)
11. TRKSU_PK (Single-Unit truck vehicle trips)
12. TRKCOMB_PK (Combination truck vehicle trips)

- MODEIN1-PK.TEM - **Peak** mode choice (full run) temporary input trip tables. The three tables are:
  1. HBW1_PK (1+ auto households' HBW trips)
  2. HBO1_PK (1+ auto households' HB-Non-Work trips)
  3. NHB_PK (NHB trips)
- CGHOVSKIM.{ALT}{YEAR}.MAT - CV format congested skim matrix. This is used in mode choice module. The tables are:
  1. Cost
  2. Distance
  3. TIME1 (congested time)
  4. TIME2 (TIME1+Toll Time equivalent + terminal time)
  5. SVCTIME – Toll service Time
  6. TOLLTIMEEQ – Equivalent time of tolls
  7. TERMINALTIME

  For the TOD version of the SERPM65 model, an additional skim matrix (CGHOVSKIM. .{ALT}{YEAR}.MAT) is produced for 3+ persons that has also seven tables as shown above.
- RHSKIMTT.{ALT}{YEAR} - Tranplan format restrained skim matrix. This is used in peak distribution. The tables are:
  1. Cost
  2. Distance
  3. TIME1 (congested time)
  4. TIME2 (TIME1+Toll Time equivalent + terminal time)
  5. TIME1WTT (TIME1 + Terminal Time)
- PKHSKIMS.{ALT}{YEAR} - Tranplan format peak skim matrix. This is used in mode choice program. The tables are:
  1. PKTIME – Peak Time
  2. PKDIST – Peak distance
  3. PKCOST – Peak cost
  4. HOVPKTIME – HOV peak time
  5. HOVPKDIST – HOV peak distance
  6. HOVPKCOST – HOV peak cost

  For the TOD version of the SERPM65 model, three additional HOV skim tables are produced and those are:
  10. HOV3PKTIME – HOV peak time for 3+ persons facility
  11. HOV3PKDIST – HOV peak distance for 3+ persons facility
  12. HOV3PKCOST – HOV peak cost for 3+ persons facility

- MTPPreLOAD.NET - CV Highway Network with congested time (PreLd_CongTime) for the transit model

The primary product of DISTRIB is the 12-purpose and 3-purpose trip tables. These tables are input to the MODE and HWYTAB modules. The highway-skim matrices (PKHSKIMS, CGHOVSKIM and

CGHOV3SKIM) are other main outputs of the DISTRIB module, which are used in the mode-choice analysis program and zero-auto distribution in the MODE module.

Other outputs of this module are:

- TPPreTOLL.PRN - Toll Summary Report of pre-assign
- NLOGITHO.OUT - NLOGITK highway-only output of AM-peak period pre-assign
- NMOTOR3-PkPre.OUT - NMOTOR3 output for AM peak period pre-assign

Other CV generated PRN outputs of this module are:

- ODDST00A.PRN - CV's PRN file of off-peak period trip distribution
- FDDST00B.PRN - CV's PRN file of peak period trip distribution
- PDDST00B_IT01.PRN - CV's PRN file of peak period trip distribution for 1st feedback iteration
- PDDST00B_IT02.PRN - CV's PRN file of peak period trip distribution for 2nd feedback iteration
- TPHWY00C_IT01.PRN - CV's PRN file of AM peak period "warm-up" pre-highway assignment for 1st feedback iteration
- TPHWY00C_IT02.PRN - CV's PRN file of AM peak period "warm-up" pre-highway assignment for 2nd feedback iteration
- TPHWY00A_IT01.PRN - CV's PRN file of AM peak period "final" pre-highway assignment 1st feedback iteration
- TPHWY00A_IT02.PRN - CV's PRN file of AM peak period "final" pre-highway assignment 2nd feedback iteration

3.6.1 Off-Peak Period Distribution Sub-Module

The flowchart of the "Off Peak Period Distribution" sub-module is shown in **Figure F-8**. This sub-module has four steps. The CV scripts of these steps are shown in **Appendix C6**. A brief description of main functions of the scripts of this sub-module follows:

6-2-1-ODDST00A.S	- Perform off-peak period distribution of for households with autos
6-2-2-ODMAT00A.S	- Compute person-hours of off-peak period distributed trips
6-2-3-ODMAT00B.S	- Assemble off-peak distributed trips for households with autos for final mode choice
6-2-4-ODPIL00B.S	- Echo sub-module completion date and clock time

3.6.2 Peak Period Distribution Sub-Module

The flowchart for the "Peak Period Distribution" sub-module is shown in **Figure F-9**. This sub-module has thirteen steps. The CV scripts of these steps are shown in **Appendix C6**. A highway-only mode choice run is executed in Step 7. The Step 9 script is simply a CV TRCOPY that saves the highway-only mode choice ASCII output report. Step 12 of this sub-module loops to "PkPrd PreAssign and Final Distrib" sub-modules. A brief description of the main functions of the remaining scripts of the "Peak Period Distribution" sub-module follows:

6-5-1-PDDST00B.S	- Perform peak period pre-distribution of 1+ autos households trips
6-5-2-PDMAT00D.S	- Compute person-hours of peak period pre-distributed trips
6-5-3-PLMAT00A.S	- Assemble 1+ autos households peak pre-distributed trips for highway-only mode choice

6-5-4-PDPIL00G.S	- Run 3-purpose motorized program (NMOTOR3) to extract motorized trips for highway-only mode choice
6-5-5-PDMAT00I.S	- Scale and bucket round for highway-only mode choice
6-5-6-PLPIL00A.S	- Prepare and copy input files for highway-only mode choice
6-5-8-PDPIL00F.S	- Save highway-only mode-choice ASCII outputs
6-5-10-PLMAT00G.S	- Rescale and bucket round the mode-choice trip tables outputs
6-5-11-PLMAT00B.S	- Create AM peak period vehicle trip table for pre-assignment
6-5-13-PDPIL00E.S	- Echo sub-module completion date and clock time

Pre-Assign Feedback Sub-Module

This sub-module is invoked at step 12 of the "Peak Period Distribution" sub-module. The flowchart of this sub-module (known as "PkPrd PreAssign and Final Distrib") is shown in **Figure F-10**. It has ten steps. The CV scripts for these steps are shown in **Appendix C6**. A brief description of the main functions of scripts of this sub-sub-module follows:

6-5-12-1-TPHWY00C.S	- Perform AM peak period multi-class WARMUP pre-assignment
6-5-12-2-TPNET00D.S	- Develop freeway and ramp merged volume using pre-assigned WARMUP loaded volume for AM peak period
6-5-12-3-TPNET00E.S	- Compute Freeway and ramp merged junction delays for pre-assign AM peak period
6-5-12-4-TPNET00F.S	- Transfer junction delays to links for pre-assign AM peak period
6-5-12-5-TPHWY00A.S	- Perform AM peak period multi-class final pre-assignment using both regular turning penalties (and prohibitors) and freeway-ramp junction delays
6-5-12-6-TPNET00C.S	- Revise final AM peak period pre-loaded network to include merging delays in calculation of time, speed and VHT
6-5-12-7-TPHWY00B.S	- Build LOV and HOV congested-flow skims for AM peak period pre-assigned loaded network
6-5-12-8-TPMAT00A.S	- Compile LOV and HOV skims for congested-flow distribution and mode choice
6-5-12-9-TPMAT00G.S	- Revise congested distribution skims for main thoroughfare (Turnpike, I-95 and I-75) externals
6-5-12-10-TPPIL00D.S	- Echo sub-module completion date and clock time

The assignment scripts (steps 1 & 5) are different for 24-hour and TOD versions of the model. In the TOD version, separate class assignments are made for 2-person and 3+ person HOV trips. However, the 24-hour version assignments are made for only 2+ person HOV trips. In the TOD version, the separation of HOV assignments allows separate costs for two HOV categories. The 3+ HOV trips are not subject to any toll costs on managed lane, whereas HOV2 and DA trips using managed lanes are subject to tolls.

3.6.3 Final Peak Period Distribution Sub-Module

The flowchart of the "Final Peak Period Distribution" sub-module is shown in **Figure F-11**. This sub-module has nine steps. The CV scripts of these steps are shown in **Appendix C6**. A brief description of main functions of the scripts of this sub-module follows:

6-8-1-FDHWY00A.S	- Build LOV and HOV congested flow skims using merged loaded networks resulting from 2 feedback loops
6-8-2-FDMAT00D.S	- Compile merged skims for 1+ autos households final peak distribution and mode choice
6-8-3-FDMAT00E.S	- Revise congested distribution skims for main thoroughfare (Turnpike, I-95 and I-75) externals
6-8-4-FDDST00A.S	- Perform peak period final distribution of trips for households with one or more auto

6-8-5-FDMAT00B.S	- Compute person-hours of peak period distributed trips
6-8-6-FDMAT00C.S	- Assemble 1+ autos households peak distributed trips for full mode choice
6-8-7-FDNET00A.S	- Create input links records for pre-assignment evaluation summaries; Develop selected cross tabs and RMSE stats for peak period pre-assignment
6-8-8-FDPIL00A.S	- Run standard HEVAL and RMSE routines (pre-evaluation step)
6-8-9-FDPIL00C.S	- Echo sub-module completion date and clock time

The evaluation step 7 (pre-evaluation) of this sub-module produces following outputs:

- HEVAL-AMPK-PreAssign-S6.OUT - Standard HEVAL outputs for AM peak pre-assign
- RMSE-AMPK-PreAssign-S6.OUT - Standard RMSE outputs for AM peak pre-assign
- SCRNLINE-AMPK-PreAssign-S6.OUT - Standard total screenline volume and count outputs for AM peak pre-assign
- RMSE-AMPK-Pre-S6.PRN - CV generated RMSE summaries by facilities, areas and volume groups for AM peak pre-assign
- XtabSmry-AMPkPrdPreAssign-S6.OUT - CV's PRN output file for AM peak pre-assign. It has numerous cross tab outputs.

3.7 Transit Network and Path (TNET/TPATH) Module

The TRANSIT module flowchart contains three sub-modules and is shown in **Figure F-12**. This purpose of this module is to build transit paths and corresponding skim values for each zone pair. Transit networks are represented in the CV PT program. Peak period and off-peak networks are represented in the same file. All transit routes, including fixed guideway routes, operate on links that appear in the highway network facilitating their geographical accuracy. Highway and transit travel times for both time periods were validated against available measured travel time data. Transit path building and skimming were done with TRNBUILD due to issues regarding the compatibility of PT and mode choice models that require singles paths. The transit network step has three sub-components:

- **Prepare**: This step calculates transit speeds from newly calibrated transit/highway speed curves for peak and off-peak conditions. It also creates station transfer links.
- **Connector**: This step generates peak and off-peak connectors. PT creates walk connectors, which are then adjusted by a custom program. PT also creates transfer connectors. A custom-written FORTRAN program generates auto connectors for the 24-hour model. For the TOD version, a similar custom written program developed FDOT standardized model using CV's transit modeling framework was used.
- **AMTRANSIT**: Both peak and off-peak transit networks, paths, fares and skims are generated in this step. Networks, paths and skims are created for: peak period and off-peak period, walk and auto access to (1) bus and Metromover, (2) BRT/LRT (new mode), (3) Metrorail, and (4) Tri-Rail.

Figure 1-2 shows the user supplied input files and custom written programs used in this module. The Transit module uses four custom-written programs (REWALK, PT2TRNB, AUTOCON and TR_FARE). User-supplied input files for the transit module are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters for Cube Scripts [see Tables A-1, A-2 and Figures A-1, A-2]
- TROUTE_{YEAR}{ALT}.LIN – Transit route descriptions [Sample listing in Figure B-16]
- SDLAYPP2_{YEAR}{ALT}.CSV – Highway-to-transit speed relationships [Format in Table B-30]

- TSYSD_{YEAR}{ALT}.PTS – PT system data file for mode and operator [Listing in Figure B-18]
- TRFAREZONE_{YEAR}{ALT}.DAT – Tri-Rail zone based fare data [Format in Table B-26, Listing in Figure B-12]
- PCWALK – Long and short walk percentages transit zonal access [Format in Table B-29]
- SDLAYUPD – Standard FSUTMS file to extract highway-to-transit curves [Format in Table B-31, Listing in Figure B-15]
- WALKTRL_{YEAR}{ALT}.FAC – PT factor file [Listing in Figure B-19]
- XTRAAUTO_{YEAR}{ALT}.DAT – Required/Additional auto connectors [Format in Table B-33]
- AUTDELPP_{YEAR}{ALT}.DAT – Zones with no auto connectors [Format in Table B-34]

The outputs of this module are transit path files named TROUTEAM{1-8}_{ALT}{YEAR}.RTE and TROUTEMD{1-8}_{ALT}{YEAR}.RTE, and transit skim files named TSKIMAM{1-8}_{ALT}{YEAR}.RTE and TSKIMMD{1-8}_{ALT}{YEAR}.RTE. Filename attributes 1 through 8 correspond to the following eight paths developed by the TRNBUILD path builder:

1. Walk access to Buses
2. Walk access to New mode
3. Walk access to Metrorail
4. Walk access to Tri-Rail
5. Auto access to Buses
6. Auto access to New mode
7. Auto access to Metrorail
8. Auto access to Tri-Rail

The route files are used in the TASSIGN step for assignment the transit trips coming out of the mode choice model. Each of the skim matrix files contains the following 14 tables:

1. Walk access/egress time (in minutes)
2. Drive access time (in minutes)
3. Transfer and sidewalk time (in minutes)
4. Local bus IVT time (in minutes)
5. Express bus IVT time (in minutes)
6. New mode IVT time (in minutes)
7. Project mode IVT time (in minutes)
8. Metrorail IVT time (in minutes)
9. Tri-Rail IVT time (in minutes)
10. Number of transfers
11. Initial wait time (in minutes)
12. Transfer wait time (in minutes)
13. Total transit IVT time (in minutes)
14. Fare (in cents)

3.7.1 Prepare Sub-Module

The first sub-module, PREPARE, has five steps to prepare several data files for use later in the TRANSIT module. This module also computes the transit time for each link using a set of auto-transit speed relationship curves. The output network of this module is used by the TRNBUILD path builder as the starting network. The flowchart is shown in **Figure F-13**. This sub-module has eight steps. Steps 4, 7 and 8 are CV TRCOPY programs that copy the alternative base and future year transit fare data to generic

files for use in the transit path and skim module. The CV scripts for other steps are shown in **Appendix C7**. They are:

7-1-1-PRNET00A.S
7-1-2-PRMAT00E.S
7-1-3-PRNET00B.S
7-1-5-PRPIL00A.S
7-1-6-PRMAT00B.S

The first step, a NETWORK module, extracts network information in ASCII format that is used later in the user-written program and some other modules. The input file for this NETWORK module is the loaded pre-assignment highway network. This step defines the link field CGSTDTIME as the congested time from the pre-assignment. The following files are the outputs of this step:

1. NODEAT_{Year}{Alt}.DAT - This is a node/area type lookup file which is used later to get the CBD-only nodes for sidewalk connectors
2. STATION_{Year}{Alt}.DAT – This is the station data file containing information on the park-ride and kiss-ride nodes. The AUTOCON and the NLOGITK programs use this file. The format of the file is described in **Table G-3** of Appendix G.
3. XY_{Year}{Alt}.DAT – This is used by the AUTOCON program

The second step, a MATRIX program, reads the auto-bus speed definition file (SDLAYUPD_{Year}{Alt}.DAT) and creates a temporary ASCII file to be used in the next step. This step translates the SDLAYUPD_{Year}{Alt}.DAT data into IF/THEN commands that Voyager can read. The temporary output file is H2TCURVES.TXT (for "highway-to-transit" curves).

The third step in PREPARE is a NETWORK program. It first writes a file (TRANSFER_CBD.TXT) with a GENERATE statement used to create transfer connectors among CBD nodes. Nodes are identified as being in the CBD by reading the NODEAT_{Year}{Alt}.DAT file created in the first step. The second action is to compute the transit travel times for each link using the congested speeds in CGSTDTIME and the curves defined by H2TCURVES.TXT. Speed and time fields are created for each mode. Mode 4 and 5 speeds and times are used for all buses. Metrorail, Tri-Rail, Metromover, New Mode and Project mode speeds are used where those modes exists. Link fields, namely MxSPEEDAM, MxSPEEDMD, MxTIMEAM and MxTIMEMD, are created in this step. However, since TRNBUILD does not read transit speeds by mode, the mode-specific transit times are not used during path-building and skimming steps and two new link fields TBTIMEAM (for peak period) and TBTIMEMD (for off-peak period) are created. They will be used when SERPM is eventually converted to PT in those areas. The travel times coded on the transit-only links and fixed-guideways times are used to overwrite the TBTIMEAM and TBTIMEMD times. Two data fields for walking (WALKSPEED and WALKTIME) are also created for generating walk connectors in the next sub-module.

The fifth step is a PILOT statement that performs two actions. First, it copies the STATION_{Year}{Alt}.DAT file created in the first step to TRANSFER_{Year}{Alt}.DAT. Second, it executes the TR_FARE program, which creates the Tri-Rail fare file used by TRNBUILD during path building. TR_FARE reads the Tri-Rail fare data in the FAREZONE_{Year}{Alt}.DAT file and produces FAREZONE.DAT.

The sixth step creates two ASCII files that are used in the next sub-module. Looping through each station in the TRANSFER_{Year}{Alt}.DAT file, it creates GENERATE statements that will connect each station to nearby zones. They are written to the STATION.TXT file. A similar GENERATE statement is written to TRANSFER.TXT that will connect each station to nearby bus stops. This step also creates a

GENERATE statement to connect micro-coded Metromover stations to the street network. The metromover connectors are included in TRANSFER.TXT.

3.7.2 Connector Sub-Module

Access connectors are created in the second sub-module, CONNECTOR. The flowchart is shown in **Figure F-14**. The sub module uses PT modules to generate walk connectors, which are modified using the REWALK program. Transfer connectors are generated using the PT module. The AUTCON program generates the drive connectors. Finally, the PT2TRNB program converts all the connectors and transit line files to a format that TRNBUILD can read.

This sub-module has ten steps. The CV scripts of these steps are shown in **Appendix C7**. They are:

7-2-1-CNPTR00C.S
7-2-2-CNPTR00D.S
7-2-3-CNPTR00A.S
7-2-4-CNPTR00B.S
7-2-5-CNPIL00D.S
7-2-6-CNPIL00E.S
7-2-7-CNPIL00A.S
7-2-9-CNPIL00B.S
7-2-10-CNPIL00C.S

Steps 6-9 run and save auto connectors. They are different for the 24-hour and TOD versions of the model. The 24-hour version implements the SERPM6's AUTOCON program. Whereas, the auto connector program of FDOT's new transit framework process (or, FDOT standard AUTOCON) is implemented in the TOD version. Step 6 of the TOD version creates a TRANSIT.MAS file that defines the input, output and parameters of the standard program. **Table G-4** summarizes the parameters of this TRANSIT.MAS file. A more elaborate discussion of this standard program can be found FSUTMS online website:

http://www.fsutmsonline.net/index.php?/transit_modeling/comments/new_fsutms_transit_modeling_framework/

Transfer Connectors and Walk Connectors

The first two steps create transfer connectors for the peak and off-peak periods, respectively, using PT's GENERATE command. Both use the TRANSFER.TXT and TRANSFER_CBD.TXT files created in the PREPARE sub-module. The next two steps create walk-access connectors using PT's GENERATE command. The number and maximum length of the connectors varies by the connecting transit mode. The zone-to-nearby transit stop connectors are scripted accordingly. The zone-to-transit station connectors use the STATION.TXT file created in PREPARE. All four steps require a simplified system data file (TSYSD_{Year}{Alt}.PTS) and factors file (WalkTRL_{Year}{Alt}.FAC) to properly execute PT.

REWALK Program

The fifth step prepares for the REWALK program, and then executes it. REWALK computes the coded walk time (for use with the mode choice model) by reviewing the access connectors and the PCWALK_{Year}{Alt}.DAT file. Some minor preparation steps in advance of AUTOCON are also undertaken in this step. The REWALK program reads the following input files:

- PROFILE.MAS – master profile
- CONTROL.MAS – master control file
- NTLEGAM1_TEM.NTL – walk-access connectors in PT-format for the peak period
- NTLEGMD1_TEM.NTL – walk-access connectors in PT-format for the off-peak period
- PCWALK_{Year}{Alt}.DAT – percent walk data file

A coded walk time is determined for each TAZ depending on the short walk percentage, long walk percentage and whether there is a transit stop at the centroid connector. In some situations, the a zone's walk-access connector time may be modified to better coordinate with the percent walk information. If a transit stop doesn't exist at the centroid connector, all percent walk values are set to zero as a viable transit connector is unlikely. A summary of the REWALK logic is shown in **Table 3-1**.

Table 3-1: **REWALK Program Logic**
Southeast Regional Planning Model 6.5

Short Walk Percentage	Long Walk Percentage	Transit Stop at Centroid Connector?	Coded walk is…	Changes to Walk Time on Walk-Access Connector?	Changes to PCWALK
100%	100%	Yes	½ of short walk distance (&SHTWALK in PROFILE.MAS) divided by walking speed (&WALKSPD in PROFILE.MAS)	None	None
		No	9999.99 (default maximum)	None	Set all percent walks to zero
<100%	100%	Yes	Short walk distance divided by walking speed	None	None
		No	9999.99 (default maximum)	None	Set all percent walks to zero
<100%	<100%	Yes	Long walk distance (&AVGLONG) divided by walking speed	Distance revised to difference of original distance and difference between shortest connector distance and long walk distance; time recomputed accordingly	None
		No	9999.99 (default maximum)	None	Set all percent walks to zero
0%	100%	Yes	Long walk distance (&AVGLONG) divided by walking speed	None	None
		No	9999.99 (default maximum)	None	Set all percent walks to zero
0%	<100%	Yes	Long walk distance (&AVGLONG) divided by walking speed	Distance revised to difference of original distance and difference between shortest connector distance and long walk distance; time re-computed accordingly	None
		No	9999.99 (default maximum)	None	Set all percent walks to zero

REWALK program produces the following output files:

- NTLEGAM1_{Alt}{Year}.NTL – revised walk-access connectors for the peak period (PT-format)

- NTLEGMD1_{Alt}{Year}.NTL – revised walk-access connectors for the off-peak period (PT-format)
- PCWALK.{Year}{Alt} – revised percent walk file
- CODWAM.{Alt}{Year} – peak period coded walk times by zone
- CODWMD.{Alt}{Year} – off-peak period coded walk times by zone

AUTOCON Program

SERPM6's Auto connectors program is used in the 24-hour version of the model. The standard AUTOCON program is used in the TOD version. Both versions of AUTOCON program adds the station cost, terminal time and auto operating cost to the drive travel time on the leg.

The SERPM6 based AUTOCON used in 24-hour version reads the following input files:

- PROFILE.MAS – master profile
- CONTROL.MAS – master control file
- RHSKIMTT.{Alt}{Year} – congested highway skims
- FHSKIMTT.{Alt}{Year} – free-flow highway skims
- XY_{Year}{Alt}.DAT – node/coordinate file (generated in PURPOSE)
- STATION_{Year}{Alt}.DAT – station data file
- XTRAAUTO_{Year}{Alt}.DAT – required/additional auto connectors
- AUTDELAM_{Year}{Alt}.DAT – list of zones that will produce no auto connectors (peak period)
- AUTDELMD_{Year}{Alt}.DAT – list of zones that will produce no auto connectors (off-peak period)
- TROUTE_{Year}{Alt}.LIN – transit line file

It produces following output files:

- NTLEG2AM_{Alt}{Year}.NTL – peak-period auto connectors
- NTLEG2MD_{Alt}{Year}.NTL – off-peak period auto connectors
- AUTOCON.OUT – report file

The standard version of the AUTOCON, implemented in TOD version of SERPM65, uses TRANSIT.MAS file (see **Table G-4**) to define its inputs, outputs and parameters. The same input and output filenames were used in both versions of the AUTOCON program.

For the 24-hour version of the SERPM65, after the execution of the peak (sixth step) and off-peak (eighth step) AUTOCON setups, the generic AUTOCON.OUT report file is copied to AUTOCONAM.OUT and AUTOCONMD.OUT, respectively.

The TOD version of the SERPM65, TRANSIT.MAS that defines input files, output files and parameters of the standard AUTOCON program is created in the sixth step. The steps 7 and 9 (two pilot steps) then runs the standard AUTOCON program and save the period specific output files as AUTOCONAM.OUT and AUTOCONMD.OUT for peak and off-peak period, respectively.

AUTOCON program uses MAXMODE, PREMIUMFLAG and MODEPRIORITY parameters of PROFILE.MAS (for SERPM's AUTOCON program) and TRANSIT.MAS (for standard AUTOCON program) to help determine the best stations for each origin zone. The PREMIUMFLAG matches the PROFILE.MAS description, 1 if premium service and zero otherwise. It reads from left-to-right in PT mode order. So the example below shows that modes 6, 7, 8, 10, 11 and 13 are premium modes.

```
&MAXMODE       Number of Transit modes
13
&PREMIUMFLAG   1 if premium service, 0 otherwise
0000011101101
&MODEPRIORITY  Priority in increasing order given to a mode in autocon
 17 18 19  7  7  6  2  1  7  4  3  7  5
```

Lower numbers of MODEPRIORITY indicate a higher priority. These rankings are in PT modes from left-to-right. The example shows that Tri-Rail is #1, Metrorail #2, project mode #3 and new mode #4, etc.

These flags come into play because sometimes multiple stations are eligible for use by a zone. AUTOCON uses rule-bases logic to determine the best stations. One of the rules is whether or not the station has a premium mode available to it (via PREMIUMFLAG). Another is if a zone has multiple modes available to it via multiple stations, the MODEPRIORITY rankings will make AUTOCON favor stations using the highest available mode.

PT2TRNB Program

The final step in CONNECTOR is a PILOT script that prepares for and executes the PT2TRNB program. The PT2TRNB reads the access connectors, transfer connectors, and transit line files and converts them to TRNBUILD format. It reads the following input files:

- CONTROL.MAS – master control file
- NTLEG1AM_{Alt}{Year}.NTL – walk-access connectors in PT-format (peak period)
- NTLEG2AM_{Alt}{Year}.NTL – drive-access connectors in PT-format (peak period)
- NTLEG3AM_{Alt}{Year}.NTL – transfer connectors in PT-format (peak period)
- NTLEG1MD_{Alt}{Year}.NTL – walk-access connectors in PT-format (off-peak period)
- NTLEG2MD_{Alt}{Year}.NTL – drive-access connectors in PT-format (off-peak period)
- NTLEG3MD_{Alt}{Year}.NTL – transfer connectors in PT-format (off-peak period)
- TROUTE_{Year}{Alt}.LIN – transit line file in PT-format

It produces the following output files:

- NTLEG1AM.TRB – walk-access connectors in TRNBUILD-format (peak period)
- NTLEG2AM.TRB – drive-access connectors in TRNBUILD-format (peak period)
- NTLEG3AM.TRB – transfer connectors in TRNBUILD-format (peak period)
- NTLEG1MD.TRB – walk-access connectors in TRNBUILD-format (off-peak period)
- NTLEG2MD.TRB – drive-access connectors in TRNBUILD-format (off-peak period)
- NTLEG3MD.TRB – transfer connectors in TRNBUILD-format (off-peak period)
- TROUTE{Alt}{Year}.TRB – transit line file in TRNBUILD-format

3.7.3 Path and Skim (AMTransit) Sub-Module

The final sub-module in TRANSIT is named AMTRANSIT (the MDTRANSIT sub-module was originally developed for PT and is not used at this time). The paths, skims and fares are computed for both peak and off-peak periods in this sub-module. The process operates in a 2 x 2 x 4 loop, with two loops for peak/off-peak periods, another two for walk/drive access, and a loop for each of the four paths. The flowchart of the AMTRANSIT sub-module is shown in **Figure F-15.**

This sub-module has twelve steps, of which three are CV's loop steps. The remaining nine CV scripts in these steps are shown in **Appendix C7**. They are:

7-3-2-AMPIL00F.S
7-3-4-AMPIL00C.S
7-3-6-AMPIL00A.S
7-3-7-AMTRN00A.S
7-3-8-AMMAT00F.S
7-3-9-AMMAT00E.S
7-3-10-AMPIL00G.S
7-3-11-AMPIL00D.S
7-3-12-AMPIL00E.S

Paths and skims are created in the seventh step, using the applicable variables in the loop. Transit fares for each interchange are determined in the eighth step. Please refer to **Section 2.2.7** for details on the fare logic and values. The ninth step conditions the skims to ensure that the required modes are used.

Each of the skim matrix files contain 25 tables – one table for each TRNBUILD mode plus boardings, initial wait, transfer wait, total travel time and Tri-Rail fare – so that transit fares can be computed as accurately as possible. After fare processing, the skim matrix files are collapsed to 14 tables for easier handling by the mode choice model. The 14 tables in the skim matrix file are described in the earlier section.

3.8 Mode Choice (MODECHOICE or MODE) Module

The mode choice module (MODECHOICE) performs several tasks, including mode choice: (1) distribute zero-car trips by purpose and period, (2) estimate trips for HH with cars, (3) apply non-motorized model to separate walk/bike trips from motorized trips, and (4) apply the nested mode choice model by purpose and period. Several notes are in order. First, the mode choice model is the nested logit model used in the revised SERPM5 model, except that it is run for each purpose (HBW, HBNW and NHB), for peak and off-peak periods. Skim values, developed in CUBE, are input to the model in hundredths of minutes. The FORTRAN mode choice program reads Tranplan-format trips tables. To avoid bucket-rounding issues, the input trip tables are scaled up by a factor of 100 when trip tables are converted to Tranplan format, and then scaled back down to CV floating point matrices with two decimal places after mode choice. Finally, a routine for updating modal utility constants has been added to the procedure. The mode choice model can generate the user-benefit matrices required by the SUMMIT routines. The module flowchart is shown in **Figure F-16**.

Figure 1-2 shows the user supplied input files and custom written programs used in this module. The MODECHOICE module uses three custom-written programs (NLOGITK, NMOTOR7 and UPDATEM). User-supplied input files for this module are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters for Cube Scripts [see Tables A-1, A-2 and Figures A-1, A-2]
- PCWALK_{YEAR}{ALT}.DAT – Percentage of each TAZ's productions and attractions within long and short walking distances of transit for the peak and off-peak time periods. A detailed description of the development of the PCWALK file is provided in Appendix E. [Format in Table B-29]
- DISTS_SYN.TXT – District-to-district added utility constants [Format in Table B-35, Listing in Figure B-11]
- NLOGITJ.SYN – Calibration constants and coefficients for the nested logit utility functions. [Format in Table B-27, Listing in Figure B-13]
- NMOTOR.SYN – Calibration constants, coefficients and index coefficient of utility function of NMOTOR7 program. [Format in Table B-28, Listing in Figure B-14]
- WALK.XX (XX=PB, BO, MI) – This walk file is used in the NMOTOR7 program. These files written from the SERPM65 TAZ database. So any changes to these index values should be made to the database. [Format in Table B-32 and sample listing in Figure B-18]
- TOLLLINK.{Year}{Alt} – Toll link data file. It is written from SERPM65 CV network (see step 7 of highway network module, Figure F-3). [Format in Table B-36]
- A1DECK_DMY.TXT – A1DECK data for dummy zones. This file is an empty for SERPM65. [Format in Table B-1]

This module has four sub-modules and 15 steps. The sub-modules, (MCAL, MODEINPK, MODEINOP and "Mode Summary") are executed in steps 0, 4, 6 and 14. These sub-modules are described in separate

sub headings. The mode-choice program (NLOGITK) for the full model run is executed in step 10. The CV scripts for the mode choice module are shown in **Appendix C8**. They are:

8-0-2-00PIL00K.S
8-0-4-00PIL00J.S
8-0-6-00PIL00L.S
} "**MCAL"** Sub-module Scripts

8-1-MCMAT00A.S
8-2-MCMAT00G.S
8-3-MCMAT00S.S

8-4-1-MADST00A.S
8-4-2-MAMAT00B.S
8-4-3-MAPIL00A.S
8-4-4-MAMAT00C.S
8-4-5-MAMAT00D.S
8-4-6-MAMAT00E.S
8-4-7-MAMAT00F.S
8-4-8-MAMAT00G.S
} "**MODEINPK"** Sub-module Scripts

8-5-MCPIL00M.S

8-6-1-MODST00A.S
8-6-2-MOMAT00A.S
8-6-3-MOPIL00A.S
8-6-4-MOMAT00B.S
8-6-5-MOMAT00C.S
8-6-6-MOMAT00D.S
8-6-7-MOMAT00E.S
8-6-8-MOMAT00F.S
} "**MODEINOP**" Sub-module Scripts

8-7-MCPIL00N.S
8-8-MCMAT00U.S
8-9-MCPIL00J.S
8-11-MCPIL00A.S
8-12-MCMAT00W.S
8-13-MCMAT00F.S

8-14-1-MSMAT00A.S
8-14-2-MSMAT00B.S
8-14-3-MSMAT00C.S
8-14-4-MSMAT00D.S
8-14-5-MSMAT00E.S
8-14-6-MSMAT00F.S
8-14-7-MSMAT00G.S
} "**Mode Summary**" Sub-module Scripts

8-15-MCPIL00K.S

The distribution of zero-car household trips begins in the first three steps (8-1 to 8-3). The first step creates a walk-to-best transit skim for each period that reflects the best overall transit travel time in each of the four walk-transit skims. The second step computes the intrazonals for the walk-to-best transit matrix as the intrazonals are initially given the default value of zero. The third step develops two files needed for the upcoming trip distribution. One file (DET2FF_TMP.CSV) contains the friction factors developed by applying the deterrence coefficients used in previous versions (5 & 6) of SERPM. The other file (KFACT_TMP.MTX) is a matrix of zeros and ones reflecting k-factors. External-to-external zone interchanges receive a k-factor value of 0.0 to avoid the placement of zero-car household trips.

Sections 3.8.2 and 3.8.3 describe the MODEINPK (step 4) and MODEINOP (step 6) sub-modules, respectively.

NMOTOR7 Program

The fifth step in MODECHOICE prepares for and executes the NMOTOR7 program for peak trips. The NMOTOR7 is a logit-based program written for an earlier version of SERPM (SERPM5) to separate the motorized and non-motorized trips from total trips for the seven trip purposes. Those purposes are:

1. HBW – Zero car
2. HBW – 1 car
3. HBW – 2-or-more cars
4. HBNW – Zero car
5. HBNW – 1 car
6. HBNW – 2-or-more cars
7. NHB

The program estimates the percentage of non-motorized trips by trip purposes between each pair of TAZs. This percentage is determined by a logit equation, and the utilities contain the following measures:

- Spatial separation (highway network distance between the two TAZs).
- A non-motorized friendliness index of the origin and destination TAZs. The values are calculated for each TAZ, and the values for the origin and destination are averaged and used in the utility.

The non-motorized trips should decrease with distance. Thus, a logit trip elasticity curve was used that the decrease of potential non-motorized trips as the highway distance skims increases. The following variables were used to devise the non-motorized friendliness (NMF) index:

- Percentage of streets with sidewalks
- Percentage of streets that are easy to cross by pedestrians
- Area type

A composite rating (index) for a TAZ was the sum of the NMF for the three variables. These score are read from WALK.XX files (see **Table B-32** for formats and **Figure B-18** for sample listing), which are written from SERPM65 TAZ database. The logit model constants and parameters are entered in the NMOTOR.SYN file (see **Table B-28** for formats and **Figure B-14** for listing). In addition, program reads a distance table of free-flow highway skims. The CV pilot script (8-5-MCPIL00M.S, see Appendix C8) implements this program. The output of this program is motorized trip matrices (MOTOR.TEM). The FORTRAN source code of the NMOTOR7 program is shown in **Appendix-D4**.

The seventh step prepares for and executes the NMOTOR7 program for off-peak trips. The NMOTOR7 program also produces an ASCII report file (NMOTOR-PK.OUT for peak and NMOTOR-OP.OUT for off-peak execution).

The eighth step in MODECHOICE concatenates the motorized trips from both NMOTOR7 executions. The ninth step also prepares for executing NLOGITK, the motorized trip mode choice model executed in the tenth step. NLOGITK reads the following input files:

- CONTROL.MAS – master control file [see Table G-1 of Appendix G for description]
- PROFILE.MAS – master profile [Listing in Tables A-3 and A-4]
- TITLE.MAS – title master file
- TSKIMAMx_{Alt}{Year}.MTX, where x=1-8 – peak transit skims for all eight transit paths
- TSKIMMDx_{Alt}{Year}.MTX, where x=1-8 – off-peak transit skims for all eight transit paths
- MODEIN_TEM.MTX – motorized person trip table
- NLOGITJ.SYN – coefficients file [Format in Table B-27, Listing in Figure B-13]
- OPHSKIMS.{Alt}{Year} – Off-peak highway skims
- PKHSKIMS.{Alt}{Year} – Peak highway skims
- A1DECK.TEM – socio-economic data file [Format in Table B-1]

- TOLLLINK.{Year}{Alt} – Toll link data file. It is written from SERPM65 CV network (see step 7 of highway network module, Figure F-3). [Format in Table B-36]
- DISTS_SYN.TXT – district-to-district constant file [Format in Table B-35, Listing in Figure B-11]

A new addition to the SERPM65 model is an application to summarize different trip tables to several district levels. It is done in step 14, "mode Summary" sub-module. In step 13, the mode choice trip tables are further processed for use in step 14.

A detailed description of the mode choice model processes can be found in Chapter 2 of this report. A mode choice model update routine is included in the MODECHOICE module should an update of the utility constants be needed (see Section 3.8.1). Step 12 in MODECHOICE converts the Tranplan trip tables from NLOGITK to Voyager format.

This module produces the following output files:

- HBWORKPK_TEM.MTX – peak HBW trip table
- HBNWKPK_TEM.MTX – peak HBNWK trip table
- HBWORKOP_TEM.MTX – peak NHB trip table
- HBNWKOP_TEM.MTX – off-peak HBW trip table
- NHBPK_TEM.MTX – off-peak HBNWK trip table
- NHBOP_TEM.MTX – off-peak NHB trip table
- MODEFINAL.OUT – NLOGITK report file
- NMOTOR-OP.OUT – peak NMOTOR7 report file
- NMOTOR-PK.OUT – off-peak NMOTOR7 report file

There are fifteen tables, one for each lower level nest of mode structure (see **Figure 2-18**), for each of the six matrices above. These six matrices are processed further in the HWYTAB module to produce period specific highway trip tables. The fifteen tables of each matrix are:

1. AutoDriveAlone - Drive Alone
2. AutoOnePassenger - Shared Ride with 2 Occupants
3. AutoTwoPassengers - Shared Ride with 3-or-more Occupants
4. WalkToBusTransit - Walk Access Bus & Mover
5. WalkToNewTransit, - Walk Access Premium Transit - New Transit (BRT/LRT)
6. WalkToMRLTransit - Walk Access Premium Transit - Metrorail
7. WalkToTRLTransit - Walk Access Premium Transit – Tri-Rail
8. AutoPNRToBusTransit - Auto (Park-n-Ride) Access Premium Transit – Bus & Mover
9. AutoPNRToNewTransit - Auto (Park-n-Ride) Access Premium Transit – New Transit (BRT/LRT)
10. AutoPNRToMRLTransit - Auto (Park-n-Ride) Access Premium Transit – Metrorail
11. AutoPNRToTRLTransit - Auto (Park-n-Ride) Access Premium Transit – Tri-Rail
12. AutoKNRToBusTransit - Auto (Kiss-n-Ride) Access Premium Transit – Bus & Mover
13. AutoKNRToNewTransit - Auto (Kiss-n-Ride) Access Premium Transit – New Transit (BRT/LRT)
14. AutoKNRToMRLTransit - Auto (Kiss-n-Ride) Access Premium Transit – Metrorail
15. AutoKNRToTRLTransit - Auto (Kiss-n-Ride) Access Premium Transit – Tri-Rail

In addition, the MODECHOICE module outputs two total matrices for two periods. They are:

- TOTALAM_{ALT}{YEAR}.MTX – peak total trip table
- TOTALMD_{ALT}{YEAR}.MTX – off-peak total trip table

There are eight tables, one for each transit paths (see Section 3-8), for each of the two matrices above. These two matrices are used as input to TASSIGN module. The eight tables of each total matrix are:

1. WalkToBusTransitPP - Total trips for Walk Access to Bus of PP (peak or off-peak) period
2. WalkToNewTransitPP - Total trips for Walk Access to New Mode of PP (peak or off-peak) period
3. WalkToMRLTransitPP - Total trips for Walk Access to Metrorail of PP (peak or off-peak) period
4. WalkToTRLTransitPP - Total trips for Walk Access to Tri-Rail of PP (peak or off-peak) period
5. AutoToBusTransitPP - Total trips for Auto Access to Bus of PP (peak or off-peak) period
6. AutoToNewTransitPP - Total trips for Auto Access to New Mode of PP (peak or off-peak) period
7. AutoToMRLTransitPP - Total trips for Auto Access to Metrorail of PP (peak or off-peak) period
8. AutoToTRLTransitPP - Total trips for Auto Access to Metrorail of PP (peak or off-peak) period

Other CV generated PRN outputs of this module are:

- MADST00A.PRN - CV's PRN file of peak period zero-auto households trip distribution
- MODST00A.PRN - CV's PRN file of off-peak period zero-auto households trip distribution

3.8.1 MCAL Sub-Module

The MCAL sub-module is turned off in the overall model run process. It is an optional process for calibration of mode choice utility constants. **Figure F-17** shows the flowchart of this module. The notes shown on this figure should be followed for execution of this sub-module. The users of SERPM65 model are not required to execute this module for any model application. This is primarily a model developer tool. The first three scripts of Appendix C8 (8-0-x) are used in this sub-module. It uses a custom written program (UPDATEM) to update the constants in successive iteration. It is called from the second pilot script (8-0-4-00PILJ.S). The program uses the target shares from model's cube folder (Target Share.prn) as its main input. The FORTRAN source code for this program is shown in **Appendix-D2**.

3.8.2 MODEINPK Sub-Module

The distribution of peak trips made by zero-car households occurs in the first step (8-4-1) of the MODEINPK sub-module. The remaining steps (8-4-2 to 8-4-8) in this sub-module prepare the person trip tables for the non-motorized and motorized mode choice programs by computing the number of trips made by zero-, one- and two or more-car households. The third step prepares the A1DECK.TEM file by concatenating it with the A1DECK file for dummy zones (A1DECK_DMY.TXT in the \INPUT\IN-{Year}{Alt} folder) and sorting it by zone number. For SERPM65, there is no need of A1DECK_DMY.TXT, which is an empty file. The A1DECK.TEM file is used in steps four and seven to compute the number of trips by auto ownership category. The final step in MODEINPK assembles the zero-, one-, and two or more-car household trip matrices into a single matrix file. The flowchart of the process is shown in **Figure F-18**.

3.8.3 MODEINOP Sub-Module

The flowchart of the sixth step (MODEINOP sub-module) is shown in **Figure F-19**. It performs the distribution of off-peak trips made by zero-car households and prepares the person trip tables for the non-motorized and motorized mode choice programs. Both are accomplished using the same methodology as in MODEINPK.

3.8.4 Mode Summary Sub-Module

The flowchart of the fourteenth step ("Mode Summary" sub-module) is shown in **Figure F-20**. The first seven steps use matrix procedure and renumber the zonal trip flows into several district flows. Steps 1-2

develop total and transit only flows of the work trips. Steps 3-6 are used to develop flow matrices of transit trips by the six transit districts. Step 7 summarizes HBW trips into new districts. There are fourteen matrix steps that are turned off in the overall model run process. These were used to develop the CTPP flow matrices for comparison to the model work flow matrix in step 7.

3.9 Transit Assignment (TASSIGN) Module

The TASSIGN module performs transit assignment using the same 2 x 2 x 4 loop structure for path-building, with two loops for peak/off-peak periods, another two for walk/drive access, and a loop for each of the four paths. The actual assignment occurs in the seventh step, using the applicable variables in the loop. The flowchart of this module is shown in **Figure F-21**. Transit assignments are developed for each period and path combination using TRNBUILD. The transit assignment routine also reports various assignment results.

This module has thirteen steps, of which three are CV's loop steps (period, access and path). The remaining ten CV scripts of these steps are shown in **Appendix C9**. They are:

9-2-TAPIL00J.S
9-4-TAPIL00H.S
9-6-TAPIL00F.S
9-7-TATRN00A.S
9-8-TAMAT00A.S
9-9-TAPIL00L.S
9-10-TAPIL00I.S
9-11-TAPIL00K.S
9-12-TAPIL00M.S
9-13-TAPIL00E.S

During assignment, TRNBUILD produces files in DBF format. These files are converted to ASCII-format in the eighth step so that they can be scanned and summarized by the TRANSTAT program. The 12th step generates the TRANSTAT.CTL control file and executes TRANSTAT. It reads the following input files:

- TITLE.MAS – title master file
- TRANSTAT.CTL – control file
- TASNAMx.TXT, where x=1-8 – Assignment loadings for each of the eight paths (peak period)
- TASNMDx.TXT, where x=1-8 – Assignment loadings for each of the eight paths (off-peak period)

Figure 1-2 shows the user supplied input files and a custom written program (TRANSTAT) used in this module. User-supplied input files for this module are:

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters of Cube Scripts [see Table A-1, A-2 and Figures A-1, A-2]
- FARES.DAT – Transit Fare File for assignment [Listing in Figure B-20]

It produces the following output files:

- TASROUTE.PRN – stop-level assignment report (see **Figure G-2** for sample listing)
- TASSUM.PRN – route-level assignment report (see **Figure G-3** for sample listing)

The stop-level report displays time, distance, boardings, alightings and riders for each stop on every route. Boardings, alightings and riders are provided for peak and off-peak periods as well as a daily total. The route-level report displays the mode, distance, time, frequency, boardings, and maximum load for each

route. The report includes figures for peak and off-peak periods as well as a daily total. A similar summary is provided by mode.

3.10 Highway Period Trip (HwyTrpTab or HWYTAB) Module

The highway period trip tables (known as "HwyTripTabs"or HWYTAB) module flowchart is shown in **Figure F-22**. This module has two sub-modules – one for 24-hour model and another for period models. The applications, "AllDayHwyTripTabs" and "PeriodHwyTripTabs", are for 24-hour and TOD models, respectively. In the TOD model run, the 24-hour application is turned off. And reverse is true for 24-hour model run.

The HWYTAB module uses the following user-supplied input files (see **Figure 1-2**):

- PROFILE.MAS – Standard FSUTMS file [Listing in Figures A-3 and A-4]
- Cube Keys – Substitution parameters for Cube Scripts [see Table A-1, A-2 and Figures A-1, A-2]
- PERTRKTRKEXTZ.DBF – Fratar factors defining the percentage of EE trips that are trucks. [Field description in Table B-14]

The HWYTAB module outputs three highway OD matrices for three periods of the TOD model and a 24-hour OD matrix of the 24-hour model. They are:

- HWYOD-AMPK_{ALT}{YEAR}.MAT - AM peak period highway OD trip table
- HWYOD-PMPK_{ALT}{YEAR}.MAT - PM peak period highway OD trip table
- HWYOD-OFPK_{ALT}{YEAR}.MAT - Off peak period highway OD trip table
- HTTAB_24H__{ALT}{YEAR}.MAT - 24-Hour highway OD trip table

There are five tables, one for each highway modes, for each of the four matrices above. These matrices are used as input to HASSIGN module. The five tables of each period (ZZ=AM, PM or OP) highway OD matrices are:

1. ZZPK_DA - Drive-Alone vehicle trips of ZZ period
2. ZZPK_SR2 - 2 occupants vehicle trips of ZZ period
3. ZZPK_SR3P - 3-or-more occupants vehicle trips of ZZ period
4. ZZPK_TRKS - Trucks in passenger car equivalents of ZZ period
5. ZZPK_SR2P - 2-or-more occupants vehicle trips of ZZ period

The tables of 24-hour OD matrix are DA, SR2, SR3P, 24-TRKS and 24H-SR2P. The three tables (DA, SR2+ and trucks) are then used for the corresponding period and 24-hour highway assignment.

3.10.1 24-Hour HWYTAB ("HwyTripTabs") Sub-Module

This purpose of this sub-module is to create the highway trip tables, including trucks, needed for 24-hour highway assignments. **Figure F-23** shows CV's flowchart for this 24-hour highway trip table module. SERPM65 period models use two period (peak and off-peak) trip tables from the MODECHOICE module. This sub- module sums the peak and off-peak trip tables to a 24-hour trip tables.

This sub-module has 6 steps. The CV scripts of this module are shown in **Appendix C10**. A brief description of the main functions of these scripts follows:

10-0-1-DTMAT00E.S	- Create temporary 24-hour trip tables by DA, SR2 and SR3+ modes
10-0-2-DTMAT00F.S	- Extract truck trips by purpose (4-tire truck, trucks –SU & Combinations, trucks in passenger car equivalents)
10-0-3-DTFRA00A.S	- Create 24-hour external trip matrices (DA, SR2, SR3+ and trucks in PCE)
10-0-4-DTMAT00C.S	- Create 24-hour temporary highway OD trip tables
10-0-5-DTMAT00I.S	- Create 24-hour final highway vehicular OD trip tables by transposing the step 4 matrices
10-0-6-DTPIL00F.S	- Echo module completion date and clock time

3.10.2 Period HWYTAB ("PeriodHwyTripTabs") Sub-Module

This purpose of this sub-module is to create the highway trip tables, including trucks, needed for AM peak period, PM peak period, and off-peak highway assignments. **Figure F-24** shows CV's flowchart for this TOD highway trip table module. SERPM65 period models use two period (peak and off-peak) trip tables from the MODECHOICE module and then separate the peak trips into AM and PM period trips using purpose specific splitting factors (see **Table 2-3**).

The period HWYTAB module performs following functions:

1. Develop DA, SR2 and SR3+ auto and EE truck trips. The process uses a Fratar model to extract truck EE trips and several matrix manipulations to develop occupancy level auto EE trips.
2. Transpose PA mode module trip tables to AP trip tables.
3. Develop AM period highway trip table for the DA, SR2, SR3+ and truck modes. The P-to-A factors are applied to the P-to-A mode choice output tables of HBW, HBNW and NHB trips. The A-to-P factors are applied to the transposed table. CV's MATRIX program is used to develop AM period highway trip table. It should be mentioned that truck trips for assignment consists of Single Unit and Combination trucks. The four-tire trucks are added to the drive-alone trips. The airport trips are added to NHB trips before mode choice analysis in MODE module.
4. Develop off-peak period highway trip table for the DA, SR2, SR3+ and truck modes. The processes used for the off-peak period highway period are the same as those used for the AM period, except it does not require P-to-A and A-to-P factoring.
5. Develop PM period highway trip table for the DA, SR2, SR3+ and truck modes. The processes used for the PM period highway period are same as those used for the AM period.

This module has 10 steps. The CV scripts of this module are shown in **Appendix C10**. A brief description of the main functions of these scripts follows:

10-1-1-HTMAT00A.S	- Create AM and PM peak period highway trip tables by purpose (HBW, HBO, NHB), mode (DA, SR2, SR3+) and direction (P-to-A and A-to-P)
10-1-2-HTMAT00B.S	- Create off peak period highway trip tables by purpose (HBW, HBO, NHB), mode (DA, SR2, SR3+) and direction (P-to-A and A-to-P)
10-1-3-HTMAT00C.S	- Extract Truck trips by purpose (4-tire truck, trucks –SU & Combinations, trucks in passenger car equivalents)
10-1-4-HTFRA00A.S	- Create AM peak external trip matrices (DA, SR2, SR3+, trucks, and trucks in PCE)
10-1-5-HTFRA00D.S	- Create PM peak external trip matrices (DA, SR2, SR3+, trucks, and trucks in PCE)
10-1-6-HTFRA00E.S	- Create off peak external trip matrices (DA, SR2, SR3+, trucks, and trucks in PCE)

10-1-7-HTMAT00E.S	- Create AM peak period highway vehicular OD trip tables (DA, SR2, SR3+, Trucks in PCE, SR2+)
10-1-8-HTMAT00F.S	- Create PM peak period highway vehicular OD trip tables
10-1-9-HTMAT00G.S	- Create off peak period highway vehicular OD trip tables
10-1-10-HTPIL00A.S	- Echo module completion date and clock time

3.11 Highway Assignment (Assignment or HASSIGN) Module

The highway assignment module flowchart is shown in **Figure F-25**. This module has two sub-modules – one for 24-hour model and another for period model. The applications, "AllDayAssignment" and "PeriodAssignment", are for 24-hour and TOD models, respectively. In the TOD model run, the 24-hour application is turned off. The reverse is true for a 24-hour model run.

The purpose of period sub-module is to produce AM peak period, PM peak period, and off-peak highway multi-modal assignments (drive-alone, shared-ride, trucks) using the iterative equilibrium method. Before the final assignments are made, "warm-up" assignments are made for each time period to estimate freeway ramp merge delays. Section 2.1.5 has detailed description on the freeway-ramp merge delays and modified volume-delay functions. The 24-hour highway assignment module produces the same multi-modal assignments for the 24-hour period.

The TOD model assignments include separate assignments for 2-persons share-ride and 3-or-more-persons share-ride. The assignment also includes managed lane modeling to include toll costs for DA and SR2 trips using managed lanes. The SR3+ trips do not need to pay tolls using managed lanes. The amount the toll for the managed lane is dependent on the volume/capacity ratios.

The highway assignment model loads vehicle trips onto the highway network. The model loads truck, HOV, and drive-alone trips. The assignment model uses revised volume/delay curves developed during calibration and facility-type-specific UROAD factors to convert the input level-of-service "E" capacities from possible to practical capacities.

The master PROFILE file and CV keys are the only user-supplied input to the HASSIGN module. It also uses the OD trip tables from the HYYTAB module, CV network from the HPATH module and turning penalties also from the HPATH module.

3.11.1 24-Hour Highway Assignment ("AllDayAssignment") Sub-Module

This sub-module has 10 steps. **Figure F-26** shows CV's flowchart for this 24-hour assignment. The CV scripts of this sub-module are shown in **Appendix C11**. A brief description of main functions of these scripts follows:

11-0-1-AAHWY00I.S	- Perform **24-hour** multi-class WARMUP assignment
11-0-2-AANET00A.S	- Develop freeway and ramp merged volume using assigned WARMUP loaded volume for **24-hour period**
11-0-3-AANET00B.S	- Compute freeway and ramp merged junction delays for **24-hour period**
11-0-4-AANET00C.S	- Transfer junction delays to links for **24-hour period**
11-0-5-AAHWY00B.S	- Perform **24-hour** multi-class final assignment using both regular turning penalties (and prohibitors) and freeway-ramp junction delays

11-0-6-AANET00D.S - Rename **24-hour period** loaded attributes;
Correct for truck units and freeway ramp merge delays
11-0-7-AAHWY00C.S - Build **24-hour** loaded network skims (LOV, HOV2 & HOV3+)
11-0-8-AAMAT00C.S - Compile **24-hour** skims for computation of vehicle-hour and vehicle-mile statistics of selected link trips
11-0-9-AAMAT00A.S - Compute and report **24-hour** vehicle-hour and vehicle-mile statistics of the select link trips
11-0-10-AAPIL00C.S - Echo **24-hour** sub-module completion date and clock time

The 24-hour loaded network (AllDay-HLOAD_{ALT} {YEAR}.NET) contains all-day assignment attributes. **Table G-6** of Appendix G describes the attributes of the all day loaded network. This loaded network is used in last module (HEVAL).

Other outputs of this module are:

- **24H**-TOLLRPT.PRN - Toll Summary Report of 24-hour highway assignment
- AAHWY00A.PRN - CV's PRN file of 24-hour "warm-up" highway assignment
- AAHWY00C.PRN - CV's PRN file of 24-hour "final" highway assignment
- AAMAT00A.PRN - CV's PRN file of off peak period select link vehicle- hours and vehicle-miles statistics

3.11.2 Period Highway Assignment ("PeriodAssignment") Sub-Module

This sub-module has three sub-modules, one for three time periods – AM, PM and off-peak, and three steps. **Figure F-27** shows CV's flowchart for this period model assignment. Each of the period sub-modules has 10 steps. The CV flow charts for the AM, PM and off-peak periods are shown in **Figures F-28, F-29 and F-30,** respectively. The CV scripts of this module are shown in **Appendix C11**. A brief description of main functions of these scripts follows:

11-1-1-1-AMHWY00G.S - Perform **AM peak period** multi-class WARMUP assignment
11-1-1-2-AMNET00F.S - Develop freeway and ramp merged volume using assigned WARMUP loaded volume for **AM peak period**
11-1-1-3-AMNET00G.S - Compute freeway and ramp merged junction delays for **AM peak period**
11-1-1-4-AMNET00H.S - Transfer junction delays to links for **AM peak period**
11-1-1-5-AMHWY00D.S - Perform **AM peak period** multi-class final assignment using both regular turning penalties (and prohibitors) and freeway-ramp junction delays
11-1-1-6-AMNET00B.S - Rename **AM peak period** loaded attributes;
Correct for truck units and freeway ramp merge delays
11-1-1-7-AMHWY00J.S - Build **AM-Peak** loaded network skims (LOV, HOV2 & HOV3+)
11-1-1-8-AMMAT00G.S - Compile **AM-peak** skims for computation of vehicle-hour and vehicle-mile statistics of selected link trips
11-1-1-9-AMMAT00H.S - Compute and report **AM-peak** vehicle-hour and vehicle-mile statistics of the select link trips
11-1-1-10-AMPIL00H.S - Echo **AM-peak** sub-module completion date and clock time

11-1-2-1-PMHWY00G.S 11-1-2-2-PMNET00I.S 11-1-2-3-PMNET00J.S 11-1-2-4-PMNET00K.S 11-1-2-5-PMHWY00D.S 11-1-2-6-PMNET00C.S 11-1-2-7-PMHWY00J.S 11-1-2-8-PMMAT00G.S 11-1-2-9-PMMAT00H.S 11-1-2-10-PMPIL00A.S	Same as Steps 11-1-1-1 to 11-1-1-10 (above) for **PM peak period**
11-1-3-1-NPHWY00F.S 11-1-3-2-NPNET00K.S 11-1-3-3-NPNET00L.S 11-1-3-4-NPNET00M.S 11-1-3-5-NPHWY00C.S 11-1-3-6-NPNET00C.S 11-1-3-7-NPHWY00I.S 11-1-3-8-NPMAT00E.S 11-1-3-9-NPMAT00F.S 11-1-3-10-NPPIL00A.S	Same as Steps 11-1-1-1 to 11-1-1-10 (above) for **Off-peak period**

11-1-4-ASNET00E.S - Merge and combine three period loaded networks attributes to all day loaded attributes
11-1-5-ASNET00D.S - Write managed lane loadings to a text file
11-1-6-ASPIL00A.S - Echo sub-module completion date and clock time

For the period model, the HASSIGN module also combines the highway loads from the three period assignment modules to develop 24-hour loads and other loaded network attributes (for example, VMT, VHT and congested speeds etc.). The combined loaded network (Combined-HLOAD_{ALT}{YEAR}.NET) contains each period's as well as all-day assignment attributes. **Table G-5** of Appendix G describes the attributes of the combined loaded network. This combined loaded network is used in last module (HEVAL).

Other outputs of this module are:

- **ZZ**PK-TOLLRPT.PRN - Toll Summary Report of **ZZ** period highway assignment; where **ZZ=** AM, PM and OF (off) peak periods
- ASHWY00C.PRN - CV's PRN file of AM peak period "warm-up" highway assignment
- ASHWY00H.PRN - CV's PRN file of AM peak period "final" highway assignment
- AMMAT00B.PRN - CV's PRN file of AM peak period select link vehicle- hours and vehicle-miles statistics
- ASHWY00E.PRN - CV's PRN file of PM peak period "warm-up" highway assignment
- ASHWY00J.PRN - CV's PRN file of PM peak period "final" highway assignment
- PMMAT00D.PRN - CV's PRN file of PM peak period select link vehicle- hours and vehicle-miles statistics
- ASHWY00G.PRN - CV's PRN file of off peak period "warm-up" highway assignment
- ASHWY00k.PRN - CV's PRN file of off peak period "final" highway assignment
- NPMAT00B.PRN - CV's PRN file of off peak period select link vehicle- hours and vehicle-miles statistics

3.12 Highway Evaluation (Evaluation or HEVAL) Module

The highway evaluation module flowchart is shown in **Figure F-31**. This module has two sub-modules – one for 24-hour model and another for period model. The applications, "All Day Based Model Evaluation" and "Period Based Model Evaluation", are for 24-hour and TOD models, respectively. In the TOD model run, the 24-hour application is turned off. The reverse is true for a 24-hour model run.

The standard FSUTMS highway evaluation program produces evaluation reports for all vehicles (drive-alone autos, shared-ride autos and trucks). The program produces similar reports for the truck loadings. Users have option to generate HEVAL output either in evaluation or analysis mode. The ANALYSIS and VALIDATE parameters of CV Keys (see Appendix A) allow for making this change.

A root mean square error (RMSE) statistics output is generated from the RMSE routine. It is generated for the whole study area, as well as for each county. The RMSE output is only valid for the base year model run.

The HEVAL routine is run multiple times to generate regional as well as countywide HEVAL outputs. The PROFILE.MAS records required for each of the HEVAL run are written from CV scripts.

Figure 1-2 shows the user supplied input files and custom written programs used in this module. It uses two custom-written programs, HEVALS6 and RMSEDBF. User-supplied input files are:

- Cube Keys – Substitution parameters for Cube Scripts [see Table A-1, A-2 and Figures A-1, A-2]
- TD_OBS_DATA.CSV – Observed travel sectional speeds. [Field description in Table B-17]
- HELABELS.SYN – It defines the area type and facility type labels for HEVAL routine. [Listing in Figure B-4]
- HERATES.SYN – This file contains accident rates, accident costs, fuel consumption rates, and air pollutant emission rates for analysis mode output of HEVAL routine. [Listing in Figure B-5]
- HESCREEN.SYN – This is an optional file, which describes the screenlines and cutlines. If it exists, it is used to label the screenline outputs of HEVAL routine. [Listing in Figure B-6]
- DATABASE.CTL – A control file for HEVAL program that specifies loaded network aliases. [Listing in Figure B-3]

This purpose of this module is to produce highway evaluation summaries from the CV routines, and using a version of the Florida HEVAL and RMSE programs.

3.12.1 24-Hour Model Evaluation ("All Day Based Model Evaluation") Sub-Module

The all day based highway evaluation sub-module flowchart contains one sub-module and is shown in **Figure F-32**. Trucks evaluation statistics reported by county and region. This module has 11 steps. Sub-module truck evaluation is executed at step 10. This sub-module is described in separate sub headings (Section 3.12.4). The CV scripts of this module are shown in **Appendix C12**. Step 9 is simply a TRCOPY to save the highway evaluation output report. A brief description of main functions of the scripts follows:

12-0-1-EDNET00A.S	- Create (1) input links records and PROFILE records for all day evaluation summaries and (2) Develop selected cross tabs and RMSE stats for **Palm Beach** County

12-0-2-EDPIL00A.S - Run standard HEVAL and RMSE routines for **Palm Beach** County

12-0-3-EDNET00C.S
12-0-4-EDPIL00C.S
] Same as Steps 1-2 (above) for **Broward** County

12-0-5-EDNET00D.S
12-0-6-EDPIL00D.S
] Same as Steps 1-2 (above) for **Miami-Dade** County

12-0-7-EDNET00B.S
12-0-8-EDPIL00B.S
] Same as Steps 1-2 (above) for **ALL THREE** Counties

12-0-11-1-TKNET00A.S
12-0-11-2-TKPIL00A.S
12-0-11-3-TKNET00B.S
12-0-11-4-TKPIL00B.S
12-0-11-5-TKNET00C.S
12-0-11-6-TKPIL00C.S
12-0-11-7-TKNET00D.S
12-0-11-8-TKPIL00D.S
} "**Truck Evaluation**" Sub-module Scripts

12-0-11-EDPIL00E.S - Echo sub-module completion date and clock time

The HEVAL module produces highway evaluation outputs for the SERPM region as well as for each county for both truck and all highway vehicles. The main evaluation module produces following outputs:

- HEVAL-AD-XX.OUT - Standard all day HEVAL outputs for XX region; where XX= PB (Palm Beach), BO (Broward), MD (Miami-Dade), S65 (All Counties)
- RMSE-AD-XX.OUT - Standard all day RMSE outputs for XX region
- SCRNLINE-AD-XX.OUT - Standard all day total screenline volume and count outputs for XX region
- HRLDXY-AD-XX.OUT - Standard all day HRLDXY outputs for XX region
- HRLDXY2-AD-XX.OUT - Standard all day HRLDXY2 outputs for XX region
- RMSE-AD-XX.PRN - CV generated all day RMSE summaries by facilities, areas and volume groups for XX region
- XtabSmry-AD-XX.OUT - CV's PRN output file. It has numerous cross tab outputs for XX region.

3.12.2 Period Model Evaluation ("Period Based Model Evaluation") Sub-Module

The period based highway evaluation sub-module flowchart contains two sub-modules and is shown in **Figure F-34**. Evaluation statistics for all vehicles are reported by time period. The 24-hour summaries of the period model are produced from combined loadings of three model periods (AM peak, PM peak and off peak). For trucks, evaluation statistics reported by county and region for the 24-hour period.

This module has 12 steps. Sub-module "Period Evaluation" is executed at step 10 and that of truck evaluation is executed at step 11. These sub-modules are described in separate sub headings. The CV scripts of this module are shown in **Appendix C12**. Step 9 is simply a TRCOPY to save the highway evaluation output report. A brief description of main functions of the scripts follows:

12-1-1-EVNET00A.S - Create (1) input links records and PROFILE records for 24-hour evaluation summaries and (2) Develop selected cross tabs and RMSE stats for **Palm Beach** County

12-1-2-EVPIL00A.S - Run standard HEVAL and RMSE routines for **Palm Beach** County

12-1-3-EVNET00E.S
12-1-4-EVPIL00D.S
Same as Steps 1-2 (above) for **Broward** County

12-1-5-EVNET00F.S
12-1-6-EVPIL00E.S
Same as Steps 1-2 (above) for **Miami-Dade** County

12-1-7-EVNET00D.S
12-1-8-EVPIL00C.S
Same as Steps 1-2 (above) for **ALL THREE** Counties

12-1-10-1-PENET00A.S
12-1-10-2-PEPIL00A.S
12-1-10-3-PENET00B.S
12-1-10-4-PEPIL00B.S
12-1-10-5-PENET00C.S
12-1-10-6-PEPIL00C.S
"**Period Evaluation**" Sub-module Scripts

12-1-11-1-TENET00B.S
12-1-11-2-TEPIL00A.S
12-1-11-3-TENET00C.S
12-1-11-4-TEPIL00C.S
12-1-11-5-TENET00D.S
12-1-11-6-TEPIL00D.S
12-1-11-7-TENET00E.S
12-1-11-8-TEPIL00E.S
"**Truck Evaluation**" Sub-module Scripts

12-1-12-EVPIL00F.S - Echo sub-module completion date and clock time

The HEVAL module produces highway evaluation outputs for the SERPM region as well as for each county for both truck and all highway vehicles. The main evaluation module produces following outputs:

- TDSECResult.CSV - Observed and model speeds of travel time delay sections. The 17 fields of this output file are:
  1. TD SECTION — Travel Time and Delay Section ID
  2. LENGTH — Section Length (miles)
  3. FTC2 — Facility Type Code
  4. Posted Time — Travel time (minutes) in posted speeds
  5. Free Flow Speed — Free-Flow Speeds (mph)
  6. AM SPEED — Model estimated AM peak period congested speed (mph)
  7. PM SPEED — Model estimated PM peak period congested speed (mph)
  8. OP SPEED — Model estimated off peak congested speed (mph)
  9. OBS AM SPD — AM peak period observed speed (mph)
  10. OBS PM SPD — PM peak period observed speed (mph)
  11. OBS OP SPD — Off peak period observed speed (mph)
  12. AM DIFF — AM peak speed difference (model-observed)
  13. % AM DIFF — AM peak period percent speed difference
  14. PM DIFF — PM peak speed difference
  15. % PM DIFF — PM peak period percent speed difference
  16. OP DIFF — Off peak speed difference
  17. %OP DIFF — Off peak period percent speed difference

- HEVAL-24H-XX.OUT - Standard 24-hour HEVAL outputs for XX region; where XX= PB

(Palm Beach), BO (Broward), MD (Miami-Dade), S65 (All Counties)

- RMSE-24H-XX.OUT - Standard 24-hour RMSE outputs for XX region
- SCRNLINE-24H-XX.OUT - Standard 24-hour total screenline volume and count outputs for XX region
- HRLDXY-24H-XX.OUT - Standard 24-hour HRLDXY outputs for XX region
- HRLDXY2-24H-XX.OUT - Standard 24-hour HRLDXY2 outputs for XX region
- RMSE-24H-XX.PRN - CV generated 24-hour RMSE summaries by facilities, areas and volume groups for XX region
- XtabSmry-AllPeriod-XX.OUT - CV's PRN output file. It has numerous cross tab outputs for XX region.

3.12.3 Period Evaluation Sub-Module

The flowchart of the "Period Evaluation" sub-module is shown in **Figure F-35**. This period based sub-module ("Period Evaluation" application) is called from its parent period "Period Based Model Evaluation" (see Section 3.11.2). This sub-module has six steps. The CV scripts for these steps are shown in **Appendix C12**. A brief description of the main functions of scripts of this sub-module follows:

12-1-10-1-PENET00A.S - Create **AM peak period** (1) input links records and PROFILE records for evaluation summaries and (2) Develop selected cross tabs and RMSE stats

12-1-10-2-PEPIL00A.S - Run standard HEVAL and RMSE routines for **AM Peak Period**

12-1-10-3-PENET00B.S
12-1-10-4-PEPIL00B.S
] Same as Steps 1-2 (above) for **PM Peak Period**

12-1-10-5-PENET00C.S
12-1-10-6-PEPIL00C.S
] Same as Steps 1-2 (above) for **Off-Peak Period**

The period evaluation sub-module produces following outputs:

- HEVAL-**ZZ**PK-S65.OUT - Standard HEVAL outputs for **ZZ** period; where **ZZ**= AM, PM and OF (off) peak periods
- RMSE- **ZZ**PK-S65.OUT - Standard RMSE outputs for **ZZ** period
- SCRNLINE- **ZZ**PK-S65.OUT - Standard total screenline volume and count outputs for **ZZ** period
- HRLDXY- **ZZ**PK-S65.OUT - Standard HRLDXY outputs for **ZZ** period
- HRLDXY2- **ZZ**PK-S65.OUT - Standard HRLDXY2 outputs for **ZZ** period
- RMSE- **ZZ**PK-S65.PRN - CV generated RMSE summaries by facilities, areas and volume groups for **ZZ** period
- XtabSmry-**ZZ**PkPrd-S65.OUT - CV's PRN output file. It has numerous cross tab outputs for **ZZ** period.

3.12.4 Truck Evaluation Sub-Module

The flowchart for the "Truck Evaluation" sub-module is shown in **Figures F-33** and **F-36** for 24-hour and TOD model, respectively. Truck evaluations of both 24-hour and TOD models are made on the 24-hour basis. Truck evaluation sub-modules of both 24 hour and TOD models have eight steps. The CV scripts of these steps are shown in **Appendix C12**.

24-Hour Model:

A brief description of the main functions of 24-hour model truck evaluation scripts follows:

12-0-10-1-TKNET00A.S	- Create (1) input links & PROFILE records for 24-hour truck evaluation summaries and (2) Develop selected truck cross tabs and RMSE stats for **Palm Beach** County
12-0-10-2-TKPIL00A.S	- Run standard truck HEVAL and RMSE routines for **Palm Beach** County
12-0-10-3-TKNET00B.S 12-0-10-4-TKPIL00B.S	Same as Steps 1-2 (above) for **Broward** County
12-0-10-5-TKNET00C.S 12-0-10-6-TKPIL00C.S	Same as Steps 1-2 (above) for **Miami-Dade** County
12-0-10-7-TKNET00D.S 12-0-10-8-TKPIL00D.S	Same as Steps 1-2 (above) for **ALL TRREE** Counties

The 24-hour truck evaluation sub-module produces the following outputs:

- TRKEVL-AD-XX.OUT - Standard 24-hour truck HEVAL outputs for XX region; where XX= PB (Palm Beach), BO (Broward), MD (Miami-Dade), S65 (All Counties)
- RMSE-AD-TRK-XX.OUT - Standard 24-hour truck RMSE outputs for XX region
- SCRNLINE-AD-TRK-XX.OUT - Standard 24-hour total screenline truck volume and count outputs for XX region
- RMSE-AD-TRK-XX.PRN - CV generated 24-hour truck RMSE summaries by facilities, areas and volume groups for XX region

TOD Model:

A brief description of the main functions of TOD model truck evaluation scripts follows:

12-1-11-1-TENET00B.S	- Create (1) input links & PROFILE records for 24-hour truck evaluation summaries and (2) Develop selected truck cross tabs and RMSE stats for **Palm Beach** County
12-1-11-2-TEPIL00A.S	- Run standard truck HEVAL and RMSE routines for **Palm Beach** County
12-1-11-3-TENET00C.S 12-1-11-4-TEPIL00C.S	Same as Steps 1-2 (above) for **Broward** County
12-1-11-5-TENET00D.S 12-1-11-6-TEPIL00D.S	Same as Steps 1-2 (above) for **Miami-Dade** County
12-1-11-7-TENET00E.S 12-1-11-8-TEPIL00E.S	Same as Steps 1-2 (above) for **ALL TRREE** Counties

The TOD truck evaluation sub-module produces the following outputs:

- TRKEVL-XX.OUT - Standard 24-hour truck HEVAL outputs for XX region; where XX= PB (Palm Beach), BO (Broward), MD (Miami-Dade), S65 (All Counties)
- RMSE-TRK-XX.OUT - Standard 24-hour truck RMSE outputs for XX region

- SCRNLINE-TRK-XX.OUT - Standard 24-hour total screenline truck volume and count outputs for XX region
- RMSE-TRK-XX.PRN - CV generated 24-hour truck RMSE summaries by facilities, areas and volume groups for XX region

4. MODEL APPLICATION AND ADJUSTMENTS

Chapter 2 identifies the inputs and special programs for the SERPM6.5 model. This chapter provides guidelines for several inputs and parameters that users may need to modify as part of model application. In general, the changes needed for SERPM6.5 applications are no different from those needed for an MPO model application.

Users should always compare the model results to base year results or to results from other alternatives to evaluate the reasonableness of network and parameter changes. Cube-Voyager's PRN output log and custom written program logs and output files also should be examined carefully for error messages, warnings and notes. These messages and notes are extremely useful in the debugging process should the user make an error in the content or specification of input data.

For each alternative to be analyzed, users should be sure to create/rename the input file extension to reflect the "year" and "alternative" designation. The required changes to model data and parameters as well as checks that should be make on those data and parameters are described in the following sections.

4.1 Zone System

In many instances (for example DRI studies), users need detailed traffic forecasts for a focused study area. The user might need to run the regional model on a modified zonal system. In most instances, the new zones will be added based on modified land use characteristics and compatibility with the network and zones. Splitting of zones and changes in data for the existing zones might also be required.

Within a focused area of interest, for example a DRI, system-level, regional TAZs are often too large and may yield unreasonable results from traffic assignments. To overcome this problem, zones and networks are often modified by creating more zones and centroid connectors. This is done to more accurately simulate actual street loadings. The boundaries of the new zones and/or subzones are usually determined by the uniformity and geographical features of the zone.

Like other system-level models, the SERPM6.5 network includes the maximum permitted number of zones (and nodes); therefore, as new zones are added to the study area, other zones (usually "dummy" zones – which do not play any role in modeling) must be removed. The SERPM6.5 model implements the most recent zone systems from the MPO staffs. Any "dummy" zones proposed by the MPO staffs were preserved as "dummy" zones under the SERPM6.5 model. Moreover, extra "dummy" zones were added to the SERPM6.5 network to facilitate adding new zones between counties. **Table 2-1** presents the list of SERPM6.5 model dummy zones along with other zones and nodes ranges. The PROFILE.MAS, CV Keys, S65GEN.CTL and COMBLS65.CTL files, which define the MPO's zone system, should also be modified.

The changes required to the CV network should be made as part of the revisions to the highway network. The deletion and merger of zones is simple. In that situation, the deleted zones should be new "dummy" zones. The users in most applications will need to add new zones. If the users need more "dummy" zones than are available, a major renumbering of the whole zonal system would be required. However, the existing dummy zones (31 for Palm Beach, 29 for Broward and 34 for Miami-Dade) should be sufficient for most alternatives.

If the added new zones fall either in CBD or CBD fringe areas with extensive parking services to the core CBD, then its corresponding urban zone number should be flagged with codes 1-3 in the TD_YY field in the TAZ database (see **Table B-18** for the format of TAZ database).

Users should check the employment control total values (see **Section 4.3**) for any change for either new TAZ data or any other zonal data change. Once the control total value for the base model is defined, only minor changes will be needed to reflect the new TAZ data. The user should check the EMPSMRY.CHK (an output from the RZDATA2 routine) for the ratio by the employment category (industrial, commercial and service). This ratio should be used to factor the expected employment for new TAZs so that the scaling process of the "RZDATA2" routine uses the correct employment total. Usually, the expected employment total of the proposed new TAZs should be multiplied by the factor and the result should be added to the base control total value for the year of the model run.

4.2 Zonal Demographic Data

The socioeconomic data used in SERPM6.5 are the socioeconomic data from the three constituent counties -- Palm Beach, Broward and Miami-Dade. Zonal data is the input to the trip generation model, which calculates the trip productions and attractions by zone. For changes in the production, attraction and school zonal data, the S65TAZS_YY.DBF file should be reviewed and updated, if necessary. All other demographic data files (for example, ZDATA3B and ZDATA4B files "MPOIN\XXIN XX=PB, BO and MI" folders) also should be updated and/or reviewed in all future year model applications. The zonal data files should be checked and then modified if changes are made in the zone system. The zonal data files may also need to be changed even if there is no change in the zonal system. The contents of these files should be edited to reflect proposed land use changes. Similarly, the reference zone should be reviewed and modified as appropriate. This is especially important if the character of the zone changes between the base and future year.

New special generators should be added to the ZDATA3B file if the normal generation process fails to generate the expected level of traffic for a proposed development. Following is a set of "guidelines" that should be used in deciding whether to add special generators:

1. If the TAZ's activity would not be reflected by the ordinary employment or school enrollment of the TAZ, like a park or marina, then all expected trips should be added as a special generator.
2. If the TAZ contains a mall or shopping center and if the special generator attractions are greater than the standard generator attractions, then add the difference. Otherwise add zero.
3. If the TAZ contains a large college or university, and
    a. If the school enrollment in the SCHOOL file is zero, then add the entire special generator.
    b. If the school enrollment in the SCHOOL file is greater than zero, then add the difference if positive.
    c. Otherwise add zero.

The SERPM6.5's ZDATA3B file includes the special generators suggested and reviewed by the MPO staffs. Minor changes to the special generators data may have been done during the model validation process. Depending on the type of the generator, and whether ZDATA2 provides a good indication of the activity in the TAZ, it might not make sense to add the special generator trip ends to the standard attractions. For example, for during model development it was found that for some malls ZDATA2 provided a good estimate of the activity and special attraction generators did not need to be added.

4.3 Employment Data Indexing

The attraction (ZDATA2) file contains the employment types classified as industrial, commercial, and service. The 2005 ZDATA2 files received from the MPO staffs were used in the SERPM6.5 model.

To remove the inconsistencies between counties in the urban model's place-of-work employment totals, the control totals derived from the Florida Department of Labor and Economic Security (FDLES) were used in model validation. Inconsistencies are due primarily to using different procedures to derive TAZ's employment data in each of the three MPOs. For urban models this inconsistency is resolved when computed attractions are scaled to the total number of productions. In the regional model, an inconsistency in the employment data will result in comparatively higher or lower attractions between counties and incorrect travel patterns. Inconsistencies in the place-of-work employment totals were resolved with an indexing procedure. The procedure simply scales the MPO's employment based on the control totals of each employment category by county.

It should be noted that this automated process does not change the employment zonal data received from MPO staffs, but creates temporary files for use in the regional model run. Model performance improved as a result of this indexing process. The procedure is highly desirable for any regional model with possible inconsistencies in the employment data between counties.

For model application, users should derive these control total values for the plan year. Two approaches could be undertaken in order to derive target year control total values. First, if the same level of inconsistencies were assumed in the MPO's base year and the plan year data, then a "ratio" method could be used to derive the future year control total values. In this method, the ratio of the base year control total to the MPO total is assumed to hold in the future year. This ratio is then multiplied by the MPO future year estimates to derive the future year control values. This approach was used to derive 2030 control totals. Alternatively, time-series models of the past 10-15 years of FDLES data could be developed. This model should then be used to derive control total values in future years. The reasonableness of these estimates should always be checked through the following statistics: workers-per-household, workers/population ratio. **Failure to account for the indexing procedure will produce a model run with grossly incorrect results.**

4.4 External Travel Data

Modeling of external travel is done through the data in three files:

- EETRIP.{YEAR}{ALT}: Through trips
- ZDATA4B.{YEAR}{ALT}: Internal-external and external-internal trips
- PERTRKEXTZ.DBF: Truck traffic for external trips

Through vehicle trips are entered in the EETRIPS file. Major attractions or activity centers near, but outside the model area, may require changes to be made in the EETRIP and ZDATA4B files.

The ZDATA4B file contains internal-external productions and attractions in terms of person trips. Both ZDATA4B and EETRIPS files work together to define the external station highway traffic. The percent distribution of trips for each external station in the ZDATA4B file should be reviewed for future year model applications. The external travel times in ZDATA4B also should be reviewed and adjusted if external travel conditions have changed significantly.

The PERTRKEXTZB.DBF uses the standard FRATAR model growth factor data format. If the truck percentages for any of the external stations are expected to be different than those shown in this file, they should be modified.

If the model is being used to determine development impacts, then external data should be checked if the site to be analyzed is near the study boundary or it is expected that external trips for the proposed site were not fully accounted for during the normal development of these files.

For any future application, the external-external trips (EETRIPS) and internal-external trips (ZDATA4B) should be factored to the anticipated traffic growth at the external stations. The MPO models, as well as a traffic trend analysis of external station traffic, should be used to develop the traffic growth factors. It should be noted that external trips are a very small percentage of the total trips in the regional model.

4.5 Alternative Network Development

In most model applications, users will need to modify the networks (base and/or existing-plus-committed) to represent various alternative scenarios. The SERPM6.5's 2005 base network started with the 2000 based SERPM6 network and then updated for (1) expansion of the study area in the Glades area of Palm Beach, (2) zonal splits and (3) 2000-2005 updates of the networks. The 2000 based 2030 cost-feasible network, which builds upon the MPO's cost-feasible networks, was also updated for the changes made to update/develop the 2005 base network. It is always helpful to generate plots of the network where changes need to be carried out. Then the modifications necessary for the alternative should be sketched on the plots.

Any changes required to the network must be made to the input Cube-Voyager network. For any new or improved facilities, users should check the reasonableness of the posted speeds and other signal related data (see **Section 2.1.2**). For scenarios/alternatives involving managed lane modeling, users should consult **Section 2.1.3** for changes in the network.

The user should be aware that changes in the highway network might require changes in the transit network, as all node sequences in the route cards must be present in the highway network. If, for example, a link in the highway network is divided into two links, then the new node must be added to the route description for every route using that link, or "transit" module will fail. Thus, the user should keep a record of highway network changes so that similar changes can be made in the route descriptions. If the changes are made to the CV's highway network, transit line file should be opened to incorporate changes in transit lines. In general, CUBE will automatically update the PT transit network files if they are open and displayed when the highway network is edited.

4.5.1 Highway Network

Almost all alternatives will require changes to be made to the highway network. Both written and graphical descriptions of the alternative network will be used to make changes to the highway networks. It is also common practice to use Cube/VIPER to make changes to the highway network. When making any highway network edits the user should carefully review the following attributes (see **Table B-12** of Appendix B) for all affected links and nodes:

Link Attributes:

1. Facility-type codes (FTC2, #66)
2. HOT lane codes (HOT, #100)
3. Number of lanes per direction (NUM_LANES, #6)
4. Posted speed and SEGID (POSTSPD and SEGID, #19 and 18)
5. Few capacity calculation attributes – OVERRIDE, DIVIDED, LEFTTURN (see #67-69)
6. Toll related attributes (see #27-38, 96-98)
7. Direction codes (TWOWAY and DIRCODE, #8 and 10)
8. Geographical Location codes (LOCATION and CONUM, #13 and 42)
9. User coded GC_RATIO, if any (#72)
10. Left-side ramp merge (LFWYMRG, #70)

11. Transit-only links attributes (see #14-17) – These links should have FTC1 and FTC2 codes of 59 or 69.

Node Attributes:

1. Signal location (SIGLOC, #2)
2. NODETYPE (#17)
3. User coded cycle length, if any (CYC_LEN, #18)
4. Transit station data (see #3-12)
5. Tri-Rail fare zone (FAREZONE,#13)

In summary, other than traffic count data related attributes, all other attributes of **Table B-12** should be reviewed and then updated.

Highway network changes can be categorized as follows:

1. Addition and deletion of nodes
2. Moving dummy zones to proposed new zone locations
3. Addition and deletion of links
4. Modification of existing network attributes.

The two pieces of data that users will often need to modify will be the turning prohibitor and penalties. Changes here may be needed turns are changed as part of the alternative or to reflect changes in the network or zonal system. A direct change in the MTURNDEF file will be necessary to:

1. Add or remove turning penalty
2. Add/remove turning prohibitor
3. Implement a penalty for HOV ingress and egress links

Users may also need to edit toll related network data. Unlike earlier models, all toll related data are coded directly on the CV network. Users should address the changes of the toll data in the network. A modification of the toll data will be needed to test a new toll strategy (ticket vs. coin) and new toll facilities. A change in the toll data may also be necessary if changes are to be made in service times. Users should modify all toll related link attributes (see links attributes 27-38 and 96-98, **Table B-12**). The SERPM6.5 model implements both ticket and coin systems as they apply to the region.

The TOLLLINK file is only used for the 24-hour version mode choice model. Any toll related data should be made onto network (see links attributes # 27-38 and 96-98). The TOLLLINK file will be written from CV network, it is no longer an input file. The toll attributes on CV network must be reviewed and modified for alternatives involving the toll networks and toll parameters changes. A few notes on the toll model follow.

Florida's Turnpike has two basic toll collection schemes: ticket and coin. The card (ticket) system is the "old" system for toll collection. Drivers must stop at the toll plaza upon entering the Turnpike or ticket system section to pick up a ticket, which registers the entry point. Drivers do not need to stop for tolls again until they exit the Turnpike or ticket system section. At the exit point, the toll is paid according to a toll schedule, which is based on mileage. In order to model this type of toll collection system, both "toll facilities model" types 1 and 2 must be used. Type 1 is used on entry and exit ramps to represent time lost through acceleration/deceleration and queueing at the tollbooths. The service time may need to be greater at the exit booths than entry booths because of the need to pay, make change, and deliver receipts. However, for the model no toll (money) is assessed at the type 1 locations; only service time, acceleration/deceleration, and queuing. Tolls are not assessed because the length of the toll road trip, and thus the dollar amount, is not known by the model at either the entry and exit booth. Type 2 is used on the mainline to assess the toll amounts, but in reality no such "booths" exist. So, between every entry and exit

node there must be an imaginary tollbooth to assess the toll. The toll for a roadway section is equal to the toll rate per mile times the distance between the entry and exit nodes. No extra travel time, including acceleration/deceleration, service time, and queuing, is added at these imaginary locations.

For the coin system, a tollbooth is a barrier across the mainline or ramp. All vehicles must slow down or stop, and money is collected. These tollbooths are always type 1, whether they are mainline or ramps. In the model, these booths are always placed in their actual location. So, for these locations, there is always a time delay associated with the booths (acceleration/deceleration, service time, and queuing), and assessment of a monetary toll.

The SERPM6.5 model incorporates a flexible method for handling of HOV lanes, not by restricting the modes to use the HOV lanes, but by restricting the modes that can use the ramps that access the HOV lanes. Modification of the freeway system where HOV lanes are present must maintain the integrity of this system. The SERPM6's HOV lane codes are defined as follows:

- FTC2 81-82: These are the main HOV facility types (2+ or 3+ persons HOV). The HOV links are coded as parallel facilities to the respective general-purpose links.
- FTC2 83: Ramps connecting general-purpose lanes and HOV lanes, restricting to the HOV trip table during AM and PM peak hours.
- FTC2 84: Ramps connecting general-purpose lanes and HOV lanes, restricting to the HOV trip table during AM peak hours only.
- FTC2 85: Ramps connecting general-purpose lanes and HOV lanes, restricting to the HOV trip table during PM peak hours only.
- FTC2 86: Ramps connecting general-purpose lanes and HOV lanes, restricting to the HOV trip table during the entire 24-hour day.

All connections to and from HOV lanes <u>must</u> be made through FTC2 83-86 ramps to prevent SOVs from using HOV facilities. The HOV access/egress penalties, usually coded as turn penalties, used in model validation generally should be used for any new access links to and from the HOV lanes.

To represent the difficulty encountered in weaving in and out of the carpool lanes, turning penalty cards should be coded for the access and egress links in the MTURNDEF file. The penalty also discourages short trips from using the HOV links. For example, HOV trips traveling only one interchange may not choose to weave to the left lanes and then back to the right lane to exist. For any new HOV facilities, the user should code the turning penalty for the ingress and egress links using the MTURNDEF file. The penalties are iteratively developed for the 2005 validated model. The user should check the validation report for the appropriateness of using those time penalties and may alter the validated penalty value based on the anticipated level of congestion in the network.

4.5.2 Transit Network

Changes in the transit network and parameter files should be made when the transit system is changed. Transit alternatives usually involve the addition, deletion and modification of transit lines.

The best way to edit the transit network is through the CUBE/Viper transit line editor. The reader is referred to the Citilabs documentation. Use of the editor is beyond the scope of the report. The ASCII transit line records also could be edited. In that case, the following steps should be followed to code the transit network alternatives.

1. Make highway and transit plots for the part of the network where the changes need to be made.

2. Mark the changes on both of these plots. Then CV should be used to trace the highway nodes, which constitute the transit route modification. Users should also identify the stop node locations.

3. Edit the transit route cards (TROUTE) for the changes identified in Step 2. The underlying highway network file should be open when making changes to the transit network in VIPER. For any transit links, which do not run on highway links, code those links as FTC2 (69) and FTC1 (69) - transit-only link. The more detailed transit plat form links use FTC2 and FTC1 code of 59. Users should consult Section 2.2.4 for micro-coding stations.

4. Use the "transit" module step to identify errors in the transit network, which may require changes to be made in the route cards, and transit-only links and station data.

5. It should be noted that the transit network uses the highway network data to extract link geometry and operating characteristics. This may require several back and forth changes in both the highway and transit networks. If the transit network is open and displayed in CUBE when editing the highway network, CUBE will automatically update the PT route node list.

6. Check the final transit network through Cube/Viper to make sure all intended network changes are made or make paper plots.

Usually several back-and-forth debugging steps are needed for all transit-related changes. Both transit "route" cards and transit-only links need to be modified for most transit alternatives. It should be noted that changes in the transit route cards may be needed as a result of changes made to the highway network. This will be needed only if the transit lines run on the modified portions of the highway network.

After completing transit network coding, the user should modify the PCWALK file and station related data (see **Table B-29** of Appendix B for the formats of the PCWALK file). Both of these data are used by the transit centroid connector programs. The SERPM6.5 model builds the transit access connectors automatically. The key inputs to these access connectors programs are the PCWALK file and station data coded as node attributes.

The STATDATA file will be written from CV network, it is no longer an input file. This file contains transit station data information for the fixed-guideway systems and the major Park-N-Ride (PNR) and Kiss-N-Ride (KNR) locations. Alternatives that modify this data should be reflected in the station related data of node attributes (see node attributes nos. 3-13 of **Table B-12**). The user should also check the output STATDATA for any changes to this file data as well as for any new PNR and KNR locations, to make sure that all node records were correctly coded. **Table G-3** of Appendix G contains the formats for the STATDATA file.

For any major change in the transit network, the user should use the GIS-based process (see **Appendix E**) for redevelopment of the PCWALK file. However, for minor changes in the transit network, the percentages of the PCWALK could be derived manually. For such a case, the transit routes would be sketched on a zone map, and the percentage of each TAZ's (affected by the modified or new route) activity within walking distance (one mile and 1/3 mile) would be estimated. Areas could be estimated using a planimeter or by visual inspection. The next section provides further discussion on the development of this file.

Route characteristics should be properly coded for each new or modified new transit line. The most important characteristic is headway. Headways represent the time between runs. Users may test different headways during peak and off-peak periods.

Users should review **Section 2.2** for further information on changes to transit network and parameters. Particular attention should be paid to **Section 2.2.4** that deals with modifications to highway networks for (1) micro-coding stations, (2) station information and transit-only links.

4.6 Transit Walk Percentages

All South Florida models use a walk percentage file (PCWALK), which is input to the nested logit model. The walk connector program also uses the PCWALK file. The walk percentages vary by short and long walk, peak and off-peak period and production and attraction ends. Appendix **Table B-29** presents the formats of the PCWALK file.

The idea behind the need for the PCWALK file is that the mode choice logit equations should be applied only when there is a choice that can be estimated by the logit curve. If, for a given trip, either the origin or destination of a walk access trip is not within walking distance of transit service, then the trip cannot be a walk-to-transit trip and so the logit equation does not apply. In such cases, the choice of modes is determined by the access conditions alone. Florida's nested logit model assumes a long walk distance of one mile, and a short walk distance of one-third of a mile. These distances apply to the production end (home) of trips. For the attraction end, the percentage of activity within the walk area is assumed to be twice that of the production end (capped at 100%) on the assertion that trip attraction activities (like jobs and shopping) are more clustered, and that bus stops serve these areas directly.

GIS spatial analysis techniques were employed to estimate the percentage walk file. During the development of SERPM4, an ArcInfo based GIS procedure was used to estimate the PCWALK file. That process was replaced in later versions of SERPM (SERPM5, SERPM6 and SERPM6.5) with a procedure based on ArcView 3.2. The process also has capability to generate coverages either along transit lines (line buffers) or around the stop nodes only (point buffers). For the SERPM6.5 models, buffers around the lines were used. Detailed step-by-step procedures along with programs and batch routines are presented under **Appendix E**.

The advantage of using the GIS procedure is the reduction of staff time and required knowledge, and the possibility of providing maps and plots that could be used later by a local analyst to adjust the raw estimation from the computerized procedure. Perhaps more importantly, the availability of this computerized method makes it more likely that the percentage walk file will be adjusted when changes to the transit network are made, instead of ignoring the requirement with the assumption that "it doesn't make much difference."

4.7 Transit Fares

Transit Fare is one of the variables that the user may modify depending on the alternative. The fare data are input to the model from the following files:

- BASEFARES_YYA/FUTRFARES_YYA: To specify fares
- TRFAREZONE_{YEAR}{ALT}.DAT: Tri-Rail System Fare using zonal travel based zone fare

Section 2.2.7 has detailed description on transit fare. Users should modify these files if changes in transit fares are made.

The "TR_FARE" program automates the process of deriving station-to-station fares. The SERPM6.5 model implements Tri-Rail fares based on the number of fare zones traveled. The "TR_FARE" program uses the TRFAREZONE_{YEAR}{ALT}.DAT file as its input to develop station-to-station fares.

For any alternative involving Tri-Rail zonal fares, users should modify the fare information in the TRFAREZONE-{YEAR}{ALT}.DAT file and station FAREZONE attributes of node layer.

For other travel-mode boarding and transfer fares, the user should modify the fare data coded in fare files (BASEFARES_YYA or FUTRFARES_YYA) and CV key FARESTRUC that accepts values of BASE and FUTURE.

4.8 Other Model Data and Parameters

Users seldom need to adjust highway parameters in PROFILE.MAS and other files. However, there may be a need to adjust the parameters like posted speeds and capacities in the lookup capacity tables and "confacs" in MVFACTORS file. The friction factors in FF and FF2 files and terminal time in CV keys may need slight adjustments if unusual intrazonal trip percentages or unexpected trip lengths are found, but this would be highly unusual. These changes should be made only as part of a re-validation effort as changing these parameters alters the original model validation.

For each alternative analyzed, be sure to check the PATH1 CV key. PATH1 points to the location of all custom-written special programs that are used by the script files. For future year applications, users should specify YES to ANALYSIS and NO to VALIDATE in the CV keys. This will cause HEVAL to generate analysis mode evaluation output.

There are a number of model parameters that should be reviewed because they relate to the alternative descriptions. These parameters are:

1. Speed and capacity values (review S6SPDCAP_YY.NET or S6HNET_YY.NET CV networks generated by the HNET and HPATH module)
2. Toll model parameters (CTOLL CV key and SVCMINUTES and SVCSECONDS link attributes)
3. Turning prohibitors and penalties (MTURNDEF file)

The parameters for the BPR curve (see MVFACTORS.{YEAR}{ALT}), production-attraction rates (GRATEBXX.SYN), and f-factors (FF.CSV and FF2.CSV) were established during the model validation process. These parameters are usually not altered during the model application. However, users may wish to study the model validation report to verify that these values are stable and reasonable for the forecast horizon year and for the alternative being modeled. This should only be done as part of a re-validation effort.

The "prepare" sub-module of transit calculates transit speeds from highway speeds and other assumptions. The SDLAYUPD and SDLAYAM_{YEAR}{ALT}.CSV and SDLAYMD_{YEAR}{ALT}.CSV files incorporate 15 curves to relate highway and transit speeds by mode, facility and area types. For most applications the user should use the validated values. Any changes to these validated values must be justified for the alternative being tested, as it has the potential to greatly affect the mode choice calibration. The default values could also be overridden by inserting speed/time on the link attributes (TSPEED or TTIME).

The NLOGITJ file also contains the calibrated coefficient values for the transit utility functions. Interested users should consult the model validation report for details of the development and calibration of the NLOGITJ parameters. The NLOGITJ.SYN file should not be changed without a thorough understanding of the impacts on the nested logit model and a documented explanation of the change. Again, this should only be done as part of a re-validation effort.

The lifestyle trip generation parameters are entered in GRATEBXX.SYN file. This file includes production rates, attraction rates and household stratification curves. This file should be changed only as part of model calibration and validation.

5. SUMMARY AND CONCLUSION

The SERPM6.5 application guidelines report has documented the differences between SERPM6.5 and standard FSUTMS and the changes needed to apply the model for various alternatives. SERPM6.5 includes both 24-hour and time-of-day versions of the model. It assumes that users have knowledge of Cube-Voyager for a variety of alternatives. The report has identified the key data and their format in Appendix B. Chapter 2 describes all the user input files. Users should consult Tables 2-28 and 2-29 for a complete list of the input files and SERPM6.5 specific routines.

SERPM6.5 includes many new features (time-of-day, managed lane modeling, PT/TRNBUILD transit model), which do not exist in standard FSUTMS. It implements a revised nested logit mode choice model that was implemented in the revised SERPM5 model. It uses all existing transit modes (local, express, Metrorail, Metromover, Tri-Rail) and access. The model has the capability to test new/project modes. More on this and other transit improvements can be found throughout this report as well as in "SERPM5 – Revised Transit Model" report.

Chapter 2 has descriptions of each of the new elements of the SERPM6 and SERPM6.5 models as well as some features that were incorporated in the revised SERPM5 transit model.

The SERPM6.5 model requires a large amount of disk space. If a model run fails, the user should examine the output reports and the file systems to determine if the failure was caused by insufficient disk space.

Chapter 3 describes each module of SERPM6.5 models and their inputs and outputs. Chapter 4 provides general information for the modeling changes needed for a wide range of transportation alternatives. Regardless of the alternative to be tested, the user should review all input and output files and reports for reasonableness. It is expected that the user will find this report a useful guide for understanding the SERPM6.5 model and possible applications.

6. LIST OF REFERENCES

Recent MPO Model References:

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Appendix A

MODEL CUBE KEYS AND PROFILE.MAS

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A-1 SERPM65 (TOD Version) Base Scenario Keys..... A-7
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A-3 Year 2005 PROFILE.MAS File Parameters A-15
A-4 Year 2030 PROFILE.MAS File Parameters A-18

SERPM65 Model Cube Keys & PROFILE.MAS

SERPM65 uses a variety of Cube-Voyager catalog keys that have been created and defined during the model development process. Many variables that were previously defined in the PROFILE.MAS have been defined as "keys" in SERPM65. The keys are listed in **Tables A-1 & A-2** for 24-Hour and TOD model, respectively. These tables list the keys name, description and values used in base (2005) and future (2030) scenarios. Year 2005 and 2030 "PROFILE.MAS" files are listed **Figures A-1 and A-2**, respectively.

[**A Note**: AUTOCON program uses MAXMODE, PREMIUMFLAG and MODEPRIORITY parameters of PROFILE.MAS to help determine the best stations for each origin zone. The PREMIUMFLAG matches the PROFILE.MAS description, 1 if premium service and zero otherwise. It reads from left-to-right in PT mode order. So the example below shows that modes 6, 7, 8, 10, 11 and 13 are premium modes.

```
&MAXMODE       Number of Transit modes
13
&PREMIUMFLAG   1 if premium service, 0 otherwise
0000011101101
&MODEPRIORITY  Priority in increasing order given to a mode in AUTOCON
 17 18 19  7  7  6  2  1  7  4  3  7  5
```

Lower numbers of MODEPRIORITY indicate a higher priority. These rankings are in PT modes from left-to-right. The example shows that Tri-Rail is #1, Metrorail #2, project mode #3 and new mode #4, etc.

These flags come into play because sometimes multiple stations are eligible for use by a zone. AUTOCON uses rule-bases logic to determine the best stations. One of the rules is whether or not the station has a premium mode available to it (via PREMIUMFLAG). Another is if a zone has multiple modes available to it via multiple stations, the MODEPRIORITY rankings will make AUTOCON favor stations using the highest available mode.]

Table A-1: **SERPM65 Cube-Voyager Catalog Keys – 24-Hour Model**
Southeast Regional Planning Model 6.5

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)
1	Scen.Name	Scenario Name	Base	Future-CF
2	USER1		(Note)	
3	DESCR	Description of Alternative	SERPM65 Model	
4	Year	Year (2 digits)	05	30
5	ALT	Alternative (1 Letter)	R	
6	**CUBE**	**Cube Directory**	**E:\fsutms\d4\SERPM65MDL\Cube**	
7	**PATH1**	**Location of User Written Program**	**E:\fsutms\d4\SERPM65MDL\user.prg**	
8	**DATADIR**	**Input Data Directory**	**E:\fsutms\d4\SERPM65MDL\IN-05R**	**E:\fsutms\d4\SERPM65MDL\IN-30R**
9	**OUTDIR**	**Output Data Directory**	**E:\fsutms\d4\SERPM65MDL\out-05R**	**E:\fsutms\d4\SERPM65MDL\out-30R**
10	USER2		(Note)	
11	INTTAZS	Internal TAZs	4166	
12	POP_EMP_RTO	Regional Population/Employment Ratio	2.097	2.2049
13	**NAME**	**Study Area Name**	**2005 SERPM**	**2030 SERPM**
14	ANALYSIS	Sets HEVAL to run in analysis mode if "YES"	NO	YES
15	VALIDATE	Sets HEVAL to run in validate mode if "YES"	YES	NO
16	ZONESI	Number of Internal Zones	4200	
17	ZONESA	Total number of zones including internal and external	4284	
18	EXTK	External zones	4201-4284	
19	CBDZONE	Home node for path skimming	3245	
20	NODES	Highest node number permitted	35000	55000
21	UNITS	Coordinate units per mile	5280	
22	ATITERFF	Max No of attraction iterations (gravity model) using Free Flow Skims	40	
23	ATITERCF	Max No of attraction iterations (gravity model) using Congested Flow Skims	40	
24	ITERD	Max number of initial equilibrium assignment iterations	30	
25	ITER	Max number of final equilibrium assignment iterations	50	
26	EPSILON2	Specifies closure criterion for equilibrium acceptance	0.0005	
27	CITYCODE	Identifies City	SOUTHEAST REGIONAL PLANNING MODEL	
28	**TITLE**	**Title use in reporting**	**S65 Base (2005) 24-Hour Run**	**S65 CF (2030) 24-Hour Run**
29	TERM1	Terminal time for SAT1 (CBD)	4.5	
30	TERM2	Terminal time for SAT2 (High Density NonCBD)	3.25	
31	TERM3	Terminal time for SAT3 (Medium Density NonCBD)	2.5	
32	TERM4	Terminal time for SAT4 (Low Density NonCBD)	0.75	
33	TERM5	Terminal time for SAT5 (Very-Low Density NonCBD)	0.5	
34	MAXTIM	Maximum time used in FF.yya or FF2.yya file (friction factors)	500	
35	**CTOLL**	**Impedance units per dollar of toll**	**0.095**	
36	EE1OCC	Percentage of EE trips that are DA	0.7326	
37	EE2OCC	Percentage of EE trips that are 2 occupancy	0.1718	
38	VCMAX	Maximun Vol-over-CAP Ratio for BPR equation	4	
39	VCMAXD	Maximun Vol-over-CAP Ratio for BPR equation in DISTRIB	3	
40	ACCELRATE	Acceleration Rate im mph/sec	2.5	
41	EE-PK	EE Peak Period Factor	0.4029	
42	EE-AMPK	EE AM-Peak Period Factor	0.1847	
43	EE-PMPK	EE PM-Peak Period Factor	0.2182	
44	HBW-PK	HB Work Trip Peak Period Factor	0.59802	
45	HBSHP-PK	HB Shopping Trip Peak Period Factor	0.37898	
46	HBSCR-PK	HB SocRec Trip Peak Period Factor	0.38608	

Table A-1 (continued)

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)
47	HBSCH-PK	HB School (Private School and College/University) Trip Peak Period Factor	0.5225	
48	HBO-PK	HB Other Trip Peak Period Factor	0.38208	
49	NHBW-PK	Non HB Work Trip Peak Period Factor	0.39146	
50	NHBO-PK	Non HB Other Trip Peak Period Factor	0.29908	
51	ARPT-PK	Airport Trip Peak Period Factor	0.33162	
52	T4TRK-PK	Four-Tired Truck Trip Peak Period Factor	0.38638	
53	SUTRK-PK	Single Unit Truck Trip Peak Period Factor	0.45412	
54	COMBTRK-PK	Combination Truck Trip Peak Period Factor	0.35942	
55	PCE-TRK	Passenger-Car-Equivalents for Trucks	1.5	
56	SIG-SPACE	Signal Spacing in Miles for Uninterrupted Condition	1.5	
57	UNINTSPEED	Maximum speed in MPH for Uninterrupted Condition of Unsignalized Facilities	40	
58	MAXMODE	Highest PT Mode Number for generatin Acesss Connector	13	
59	CBDSIDEWALK	Maximum Length of Transfer Connector in CBD in Miles	0.6	
60	ZONESA1	Lowest non-centroid node number in Highway Network	5000	
61	MAXWALKDIST	Maximum Walk Acess Walking Distance	1.1	
62	MAXLEGSBYMODE	Maximum number connectors by mode	6*5,2,1,1,2,2,1,5	
63	XFERWALKDIST	Max Cost of Transfer Connector [Not used, superceded by CBDSIDEWALK - #59)	0.3	
64	AMPKSF-HBW	AM Peak Splitting Factor - HBW Trips	0.4834	
65	AMPKSF-HBNW	AM Peak Splitting Factor - HBNW Trips	0.4482	
66	AMPKSF-NHB	AM Peak Splitting Factor - NHB Trips	0.3983	
67	AMPKPAF-HBW	AM Peak P-to-A Factor - HBW Trips	0.9549	
68	AMPKPAF-HBNW	AM Peak P-to-A Factor - HBNW Trips	0.7683	
69	PMPKPAF-HBW	PM Peak P-to-A Factor - HBW Trips	0.0963	
70	PKPKPAF-HBNW	PM Peak P-to-A Factor - HBNW Trips	0.3051	
71	OFPKPAF-HBW	Off Peak P-to-A Factor - HBW Trips	0.4947	
72	OFPKPAF-HBNW	Off Peak P-to-A Factor - HBNW Trips	0.4889	
73	AMPKSF-4TTRK	AM Peak Splitting Factor - 4TTRK Trips	0.4755	
74	AMPKSF-SUTRK	AM Peak Splitting Factor - SUTRK Trips	0.483	
75	AMPKSF-COMBTRK	AM Peak Splitting Factor - COMBTRK Trips	0.4492	
76	SELORIG	Selected Origin node(s) for path skimming	1180	
77	SELDEST	Selected Destination node(s) for path skimming	1184	
78	RegTimeFac	Generic Travel Time Improvement for Limited or Premium Buses	0.8	
79	FARESTRUC	Transit Fare Structure BASIS (BASE or FUTURE)	BASE	FUTURE
80	ITERWARM	Max number of WARMUP equilibrium iterations	15	
81	SELLINK	Enter Link(s) for Select Link Loadings and Matrices	9904-9908,9906-9904	

Note 1: Values for Future Year remain same as Base year unless specified.

Table A-2: **SERPM65 Cube-Voyager Catalog Keys – TOD Model**
Southeast Regional Planning Model 6.5

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note 1)	Future-HOT (2030) Scenario Value (Note 1 & 2)
1	Scen.Name	Scenario Name	Base	Future-CF	Future-HOT
2	USER1		(Note)		
3	DESCR	Description of Alternative	SERPM65 Model		
4	Year	Year (2 digits)	05	30	30
5	ALT	Alternative (1 Letter)	R		T
6	**CUBE**	**Cube Directory**	**E:\fsutms\d4\S65TODMDL\Cube**		
7	**PATH1**	**Location of User Written Program**	**E:\fsutms\d4\S65TODMDL\user.prg**		
8	**DATADIR**	**Input Data Directory**	**E:\fsutms\d4\S66TODMDL\IN-05R**	**E:\fsutms\d4\S65TODMDL\IN-30R**	**E:\fsutms\d4\S65TODMDL\IN-30T**
9	**OUTDIR**	**Output Data Directory**	**E:\fsutms\d4\S65TODMDL\out-05R**	**E:\fsutms\d4\S65TODMDL\out-30R**	**E:\fsutms\d4\S65TODMDL\out-30T**
10	USER2		(Note)		
11	INTTAZS	Internal TAZs	4166		
12	POP_EMP_RTO	Regional Population/Employment Ratio	2.097	2.2049	2.097
13	**NAME**	**Study Area Name**	**2005 SERPM65 TOD**	**2030 SERPM65 TOD**	**2030 SERPM65 TOD-HOT**
14	ANALYSIS	Sets HEVAL to run in analysis mode if "YES"	NO	YES	YES
15	VALIDATE	Sets HEVAL to run in validate mode if "YES"	YES	NO	NO
16	ZONESI	Number of Internal Zones	4200		
17	ZONESA	Total number of zones including internal and external	4284		
18	EXTK	External zones	4201-4284		
19	CBDZONE	Home node for path skimming	3245		
20	NODES	Highest node number permitted	35000	55000	55000
21	UNITS	Coordinate units per mile	5280		
22	ATITERFF	Max No of attraction iterations (gravity model) using Free Flow Skims	40		
23	ATITERCF	Max No of attraction iterations (gravity model) using Congested Flow Skims	40		
24	ITERD	Max number of initial equilibrium assignment iterations	30		
25	ITER	Max number of final equilibrium assignment iterations	50		
26	EPSILON2	Specifies closure criterion for equilibrium acceptance	0.0005		
27	CITYCODE	Identifies City	SOUTHEAST REGIONAL PLANNING MODEL		
28	**TITLE**	**Title use in reporting**	**2005 SERPM65 - TOD Base Run**	**2030 SERPM65 - TOD Future-CF Run**	**2030 SERPM65 - TOD HOT- A Test Run**
29	TERM1	Terminal time for SAT1 (CBD)	4.5		
30	TERM2	Terminal time for SAT2 (High Density NonCBD)	3.25		

Table A-2 (continued)

SI No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)	Future-HOT (2030) Scenario Value (Note 1 & 2)
31	TERM3	Terminal time for SAT3 (Medium Density NonCBD)	2.5		
32	TERM4	Terminal time for SAT4 (Low Density NonCBD)	0.75		
33	TERM5	Terminal time for SAT5 (Very-Low Density NonCBD)	0.5		
34	MAXTIM	Maximum time used in FF.yya or FF2.yya file (friction factors)	500		
35	**CTOLL**	**Impedance units per dollar of toll**	**0.079**		
36	EE1OCC	Percentage of EE trips that are DA	0.7326		
37	EE2OCC	Percentage of EE trips that are 2 occupancy	0.1718		
38	VCMAX	Maximun Vol-over-CAP Ratio for BPR equation	4		
39	VCMAXD	Maximun Vol-over-CAP Ratio for BPR equation in DISTRIB	3		
40	ACCELRATE	Acceleration Rate im mph/sec	2.5		
41	EE-PK	EE Peak Period Factor	0.4029		
42	EE-AMPK	EE AM-Peak Period Factor	0.1847		
43	EE-PMPK	EE PM-Peak Period Factor	0.2182		
44	HBW-PK	HB Work Trip Peak Period Factor	0.59802		
45	HBSHP-PK	HB Shopping Trip Peak Period Factor	0.37898		
46	HBSCR-PK	HB SocRec Trip Peak Period Factor	0.38608		
47	HBSCH-PK	HB School (Private School and College/University) Trip Peak Period Factor	0.5225		
48	HBO-PK	HB Other Trip Peak Period Factor	0.38208		
49	NHBW-PK	Non HB Work Trip Peak Period Factor	0.39146		
50	NHBO-PK	Non HB Other Trip Peak Period Factor	0.29908		
51	ARPT-PK	Airport Trip Peak Period Factor	0.33162		
52	T4TRK-PK	Four-Tired Truck Trip Peak Period Factor	0.38638		
53	SUTRK-PK	Single Unit Truck Trip Peak Period Factor	0.45412		
54	COMBTRK-PK	Combination Truck Trip Peak Period Factor	0.35942		
55	PCE-TRK	Passenger-Car-Equivalents for Trucks	1.5		
56	SIG-SPACE	Signal Spacing in Miles for Uninterrupted Condition	1.5		
57	UNINTSPEED	Maximum speed in MPH for Uninterrupted Condition of Unsignalized Facilities	40		
58	MAXMODE	Highest PT Mode Number for generatin Acesss Connector	13		
59	CBDSIDEWALK	Maximum Length of Transfer Connector in CBD in Miles	0.6		
60	ZONESA1	Lowest non-centroid node number in Highway Network	5000		
61	MAXWALKDIST	Maximum Walk Acess Walking Distance	1.1		
62	MAXLEGSBYMODE	Maximum number connectors by mode	6*5,2,1,1,2,2,1,5		
63	XFERWALKDIST	Max Cost of Transfer Connector [Not used, superceded by CBDSIDEWALK - #59)	0.3		
64	AMPKSF-HBW	AM Peak Splitting Factor - HBW Trips	0.4834		
65	AMPKSF-HBNW	AM Peak Splitting Factor - HBNW Trips	0.4482		

Table A-2 (continued)

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)	Future-HOT (2030) Scenario Value (Note 1 & 2)
66	AMPKSF-NHB	AM Peak Splitting Factor - NHB Trips	0.3983		
67	AMPKPAF-HBW	AM Peak P-to-A Factor - HBW Trips	0.9549		
68	AMPKPAF-HBNW	AM Peak P-to-A Factor - HBNW Trips	0.7683		
69	PMPKPAF-HBW	PM Peak P-to-A Factor - HBW Trips	0.0963		
70	PKPKPAF-HBNW	PM Peak P-to-A Factor - HBNW Trips	0.3051		
71	OFPKPAF-HBW	Off Peak P-to-A Factor - HBW Trips	0.4947		
72	OFPKPAF-HBNW	Off Peak P-to-A Factor - HBNW Trips	0.4889		
73	AMPKSF-4TTRK	AM Peak Splitting Factor - 4TTRK Trips	0.4755		
74	AMPKSF-SUTRK	AM Peak Splitting Factor - SUTRK Trips	0.483		
75	AMPKSF-COMBTRK	AM Peak Splitting Factor - COMBTRK Trips	0.4492		
76	SELORIG	Selected Origin node(s) for path skimming	1180		
77	SELDEST	Selected Destination node(s) for path skimming	1184		
78	RegTimeFac	Generic Travel Time Improvement for Limited or Premium Buses	0.8		
79	FARESTRUC	Transit Fare Structure BASIS (BASE or FUTURE)	BASE	FUTURE	FUTURE
80	ITERWARM	Max number of WARMUP equilibrium iterations	15		
81	SELLINK	Enter Link(s) for Select Link Loadings and Matrices	9904-9908,9906-9904		
82	**TODMODEL**	Is this a TOD Model Run? "YES/yes/Yes" else NO/no/No"	YES		
83	**HOTCAPADJUST**	Capacity Adjustment Factor for HOT Lanes	1		
84	**MINHOTTOLL**	Minumum Toll rate for HOT Lanes ($/mile)	0.12		
85	**MAXHOTTOLL**	Maximum Toll rate for HOT Lanes ($/mile)	0.25		
86	**DevCtollPB**	Deviation of CTOLL for Palm Beach County	-0.014		
87	**DevCtollBO**	Deviation of CTOLL for Broward County	-0.009		
88	**DevCtollMD**	Deviation of CTOLL for Miami-Dade County	0.012		
89	**DevCtollPk**	Deviation of CTOLL for Peak Period	-0.007		
90	**DevCtollOp**	Deviation of CTOLL for Off-Peak Period	0.006		
91	**FacCtollShort**	CTOLL Adj Fac for Shorter Toll Facility (eg. CSWY Bdg and Isolated Toll Locations), LI.NONTPKTOLL=1	0.7		
86	**FacCtollLong**	CTOLL Adj Fac for Comparatively Longer Toll Facility (eg. Sawgrass Parkway), LI.NONTPKTOLL=2	0.75		

Note 1: Values for Future Year remain same as Base year unless specified.
Note 2: A test case scenario for Managed-Lane application.

Figure A-1: **SERPM65 (TOD Version) Base Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Base (Application SERPM65 Model in Cube Voyager)

FSUTMS

FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

User-Specified Model Parameters

Description of Alternative	SERPM65 Model
Year (2 digits)	05
Alternative (1 Letter)	R
Cube Directory	E:\fsutms\d4\S65TODMDL\cube
Location of User Written Program	E:\fsutms\d4\S65TODMDL\user.prg
Input Data Directory	E:\fsutms\d4\S65TODMDL\input\IN-05R
OUTDIR	E:\fsutms\d4\S65TODMDL\output\out-05R

PROFILE.MAS Entries (not normally changed)

INTTAZS	4166
POP_EMP_RTO	2.097
Study area name	2005 SERPM65 TOD
Sets HEVAL to run in analysis mode if "YES"	NO
Sets HEVAL to run in validate mode if "YES"	YES
Number of internal zones	4200
Total number of zones including internal and external	4284
External zones	4201-4284
Home node for path skimming	3245
Highest node number permitted	35000
Coordinate units per mile	5280
Maximum number of attraction iterations (gravity model) using Free Flow Skims	40
Maximum number of attraction iterations (gravity model) using Congested Flow Skims	40
Max number of initial equilibrium assignment iterations	30
Max number of final equilibrium assignment iterations	50

OK | Cancel | Next... | Back... | Run

Figure A-1 (contd.): **SERPM65 (TOD Version) Base Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Base (Application SERPM65 Model in Cube Voyager)

FSUTMS
FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

Specifies closure criterion for equilibrium acceptance	0.0005
Identifies City	SOUTHEAST REGIONAL PLANNING MODEL
Title use in reporting	2005 SERPM65 - TOD Base Run
Terminal time for SAT1 (CBD)	4.5
Terminal time for SAT2 (High Density NonCBD)	3.25
Terminal time for SAT3 (Medium Density NonCBD)	2.5
Terminal time for SAT4 (Low Density NonCBD)	0.75
Terminal time for SAT5 (Very-Low Density NonCBD)	0.5
Maximum time used in FF.yya file (friction factors)	500
Impedance units per dollar of toll	0.079
Percentage of EE trips that are DA	0.7326
Percentage of EE trips that are 2 occ	0.1718
Maximum VOL-over-CAP Ratio for BPR equation	4
Maximum VOL-over-CAP Ratio for BPR equation in DISTRIB	3
ACCELRATE	2.5
EE Peak Period Factor	0.4029
EE AM-Peak Period Factor	0.1847
EE PM-Peak Period Factor	0.2182
HB Work Trip Peak Period Factor	0.59802
HB Shopping Trip Peak Period Factor	0.37898
HB SocRec Trip Peak Period Factor	0.38608
HB Scool (Private School and College/University) Trip Peak Period Factor	0.5225
HB Other Trip Peak Period Factor	0.38208
Non HB Work Trip Peak Period Factor	0.39146

OK | Cancel | Next... | Back... | Run

Figure A-1 (contd.): **SERPM65 (TOD Version) Base Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Base (Application SERPM65 Model in Cube Voyager)

FSUTMS

FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

Non HB Other Peak Period Factor	0.29908
Airport Trip Peak Period Factor	0.33162
Four-Trred Truck Trip Peak Period Factor	0.38638
Single Unit Truck Peak Period Factor	0.45412
Combination Truck Trip Peak Period Factor	0.35942
Passenger-Car-Equivalents for Trucks	1.5
Signal Spacing in Miles for Uninterrupted Condition	1.5
Maximum speed in MPH for Uninterrupted Condion of Unsignalized Facilities	40
MAXMODE	13
CBDSIDEWALK	0.6
ZONESA1	5000
MAXWALKDIST	1.1
MAXLEGSBYMODE	6*5,2,1,1,2,2,1,5
XFERWALKDIST	0.3
Am Peak Splitting Factor - HBW Trips	0.4834
AM Peak Splitting Factor - HBNW Trips	0.4482
Am Peak Splitting Factor - NHB Trips	0.3983
Am Peak P-to-A Factor - HBW Trips	0.9549
Am Peak P-to-A Factor - HBNW Trips	0.7683
PM Peak P-to-A Factor - HBW Trips	0.0963
PM Peak P-to-A Factor - HBNW Trips	0.3051
Off Peak P-to-A Factor - HBW Trips	0.4947
Off Peak P-to-A Factor - HBNW Trips	0.4889
AM Peak Splitting Factor - 4TTRK Trips	0.4755

OK Cancel Next... Back... Run

Figure A-1 (contd.): **SERPM65 (TOD Version) Base Scenario Keys**
Southeast Regional Planning Model 6.5

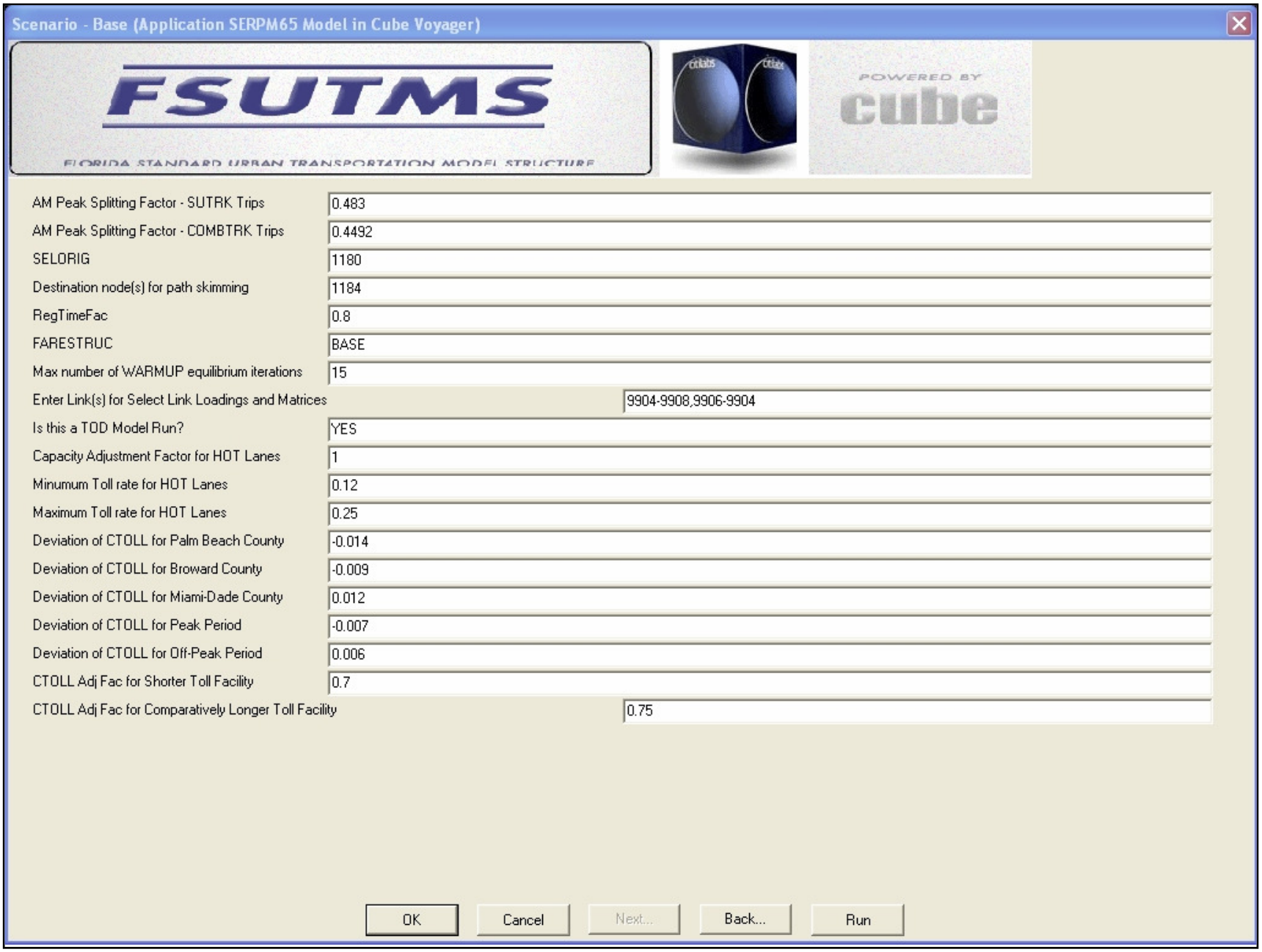


Figure A-2: **SERPM65 (TOD Version) Future Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Future-CF (Application SERPM65 Model in Cube Voyager)

FSUTMS

FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

User-Specified Model Parameters

Description of Alternative	SERPM65 Model
Year (2 digits)	30
Alternative (1 Letter)	R
Cube Directory	E:\fsutms\d4\S65TODMDL\cube
Location of User Written Program	E:\fsutms\d4\S65TODMDL\user.prg
Input Data Directory	E:\fsutms\d4\S65TODMDL\input\IN-30R
OUTDIR	E:\fsutms\d4\S65TODMDL\output\out-30R

PROFILE.MAS Entries (not normally changed)

INTTAZS	4166
POP_EMP_RTO	2.2049
Study area name	2030 SERPM65 TOD
Sets HEVAL to run in analysis mode if "YES"	YES
Sets HEVAL to run in validate mode if "YES"	NO
Number of internal zones	4200
Total number of zones including internal and external	4284
External zones	4201-4284
Home node for path skimming	3245
Highest node number permitted	55000
Coordinate units per mile	5280
Maximum number of attraction iterations (gravity model) using Free Flow Skims	40
Maximum number of attraction iterations (gravity model) using Congested Flow Skims	40
Max number of initial equilibrium assignment iterations	30
Max number of final equilibrium assignment iterations	50

OK | Cancel | Next... | Back... | Run

Figure A-2 (contd.): **SERPM65 (TOD Version) Future Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Future-CF (Application SERPM65 Model in Cube Voyager)

FSUTMS

FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

Specifies closure criterion for equilibrium acceptance	0.0005
Identifies City	SOUTHEAST REGIONAL PLANNING MODEL
Title use in reporting	2030 SERPM65 - TOD Future-CF Run
Terminal time for SAT1 (CBD)	4.5
Terminal time for SAT2 (High Density NonCBD)	3.25
Terminal time for SAT3 (Medium Density NonCBD)	2.5
Terminal time for SAT4 (Low Density NonCBD)	0.75
Terminal time for SAT5 (Very-Low Density NonCBD)	0.5
Maximum time used in FF.yya file (friction factors)	500
Impedance units per dollar of toll	0.075
Percentage of EE trips that are DA	0.7326
Percentage of EE trips that are 2 occ	0.1718
Maximum VOL-over-CAP Ratio for BPR equation	4
Maximum VOL-over-CAP Ratio for BPR equation in DISTRIB	3
ACCELRATE	2.5
EE Peak Period Factor	0.4029
EE AM-Peak Period Factor	0.1847
EE PM-Peak Period Factor	0.2182
HB Work Trip Peak Period Factor	0.59802
HB Shopping Trip Peak Period Factor	0.37898
HB SocRec Trip Peak Period Factor	0.38608
HB Scool (Private School and College/University) Trip Peak Period Factor	0.5225
HB Other Trip Peak Period Factor	0.38208
Non HB Work Trip Peak Period Factor	0.39146

OK Cancel Next... Back... Run

Figure A-2 (contd.): **SERPM65 (TOD Version) Future Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Future-CF (Application SERPM65 Model in Cube Voyager)

FSUTMS
FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

Non HB Other Peak Period Factor	0.29908
Airport Trip Peak Period Factor	0.33162
Four-Tired Truck Trip Peak Period Factor	0.38638
Single Unit Truck Peak Period Factor	0.45412
Combination Truck Trip Peak Period Factor	0.35942
Passenger-Car-Equivalents for Trucks	1.5
Signal Spacing in Miles for Uninterrupted Condition	1.5
Maximum speed in MPH for Uninterrupted Condion of Unsignalized Facilities	40
MAXMODE	13
CBDSIDEWALK	0.6
ZONESA1	5000
MAXWALKDIST	1.1
MAXLEGSBYMODE	6*5,2,1,1,2,2,1,5
XFERWALKDIST	0.3
Am Peak Splitting Factor - HBW Trips	0.4834
AM Peak Splitting Factor - HBNW Trips	0.4482
Am Peak Splitting Factor - NHB Trips	0.3983
Am Peak P-to-A Factor - HBW Trips	0.9549
Am Peak P-to-A Factor - HBNW Trips	0.7683
PM Peak P-to-A Factor - HBW Trips	0.0963
PM Peak P-to-A Factor - HBNW Trips	0.3051
Off Peak P-to-A Factor - HBW Trips	0.4947
Off Peak P-to-A Factor - HBNW Trips	0.4889
AM Peak Splitting Factor - 4TTRK Trips	0.4755

OK | Cancel | Next... | Back... | Run

Figure A-2 (contd.): **SERPM65 (TOD Version) Future Scenario Keys**
Southeast Regional Planning Model 6.5

Scenario - Future-CF (Application SERPM65 Model in Cube Voyager)

FSUTMS

FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE

POWERED BY cube

AM Peak Splitting Factor - SUTRK Trips	0.483
AM Peak Splitting Factor - COMBTRK Trips	0.4492
SELORIG	1180
Destination node(s) for path skimming	1184
RegTimeFac	0.8
FARESTRUC	FUTURE
Max number of WARMUP equilibrium iterations	15
Enter Link(s) for Select Link Loadings and Matrices	9904-9908,9906-9904
Is this a TOD Model Run?	YES
Capacity Adjustment Factor for HOT Lanes	1
Minumum Toll rate for HOT Lanes	0.12
Maximum Toll rate for HOT Lanes	0.25
Deviation of CTOLL for Palm Beach County	-0.014
Deviation of CTOLL for Broward County	-0.009
Deviation of CTOLL for Miami-Dade County	0.012
Deviation of CTOLL for Peak Period	-0.007
Deviation of CTOLL for Off-Peak Period	0.006
CTOLL Adj Fac for Shorter Toll Facility	0.7
CTOLL Adj Fac for Comparatively Longer Toll Facility	0.75

OK Cancel Next... Back... Run

Figure A-3: **Year 2005 PROFILE.MAS File Parameters**
Southeast Regional Planning Model 6.5

```
&HEVALDBF
LNKSCNT.DBF
&ZAPZERO       Zeroing out DA as a submode for 0-car HH (1=YES, others = NO)
1
&PATH1         Location of User Written Program
..\user.prg\
&FSUTMS        Location of special control files (blank = present directory)
..\fulscrpt\
&SCENARIO      Use by LSTGEN program for any future year
FUTURE
&BALATTR       Option to balance attrac to prod controls (0=NO, 1=YES)
0
&MOBILE        Location of Mobile5a files (IMDATA & TECH12)
c:\FSUTMS.v55
&NAME          Study area name
2005 SOUTHEAST REGIONAL M0del 65
&TWODIGIT      The twodigit network flag
YES
&ZONESI        Number of internal zones
4200
&ZONESA        Total number of zones including internal and external
4284
&PALMBEACH     Palm Beach Internal and Dummy Zones
1-1750
&BROWARD       Broward Internal and Dummy Zones
1751-2700
&MIAMI         Miami-Dade Internal and Dummy Zones
2701-4200
&MAXZPB        Maximum Palm Beach MPO Zone Number
1750
&MAXZBO        Maximum Broward MPO Zone Number
950
&MAXZMI        Maximum Miami-Dade MPO Zone Number
1500
&EXTZONE       External zones
4201-4284
&EXTK          External zones for K-Factors
4201-4284
&CBDZONE       Home node for path skimming
3251
&NODES         Highest node number permitted
35000
&UNITS         Coordinate units per mile
5280
&CITYCODE      Identifies City
SERPM65
&TITLE         Title use in reporting
2005 SERPM65
&MAXD          Maximum sidewalk area around stations
0.5
&TERM          Auto access terminal time (home end)
2.0
&DEF           Default auto access time
2.0
&NOPT          Usage check on second auto connector
1
&BACK          Backtrack flag for auto connector
1
&MXTFERWA      Maximum Number of Transfer for Transit Path - Walk Access
3
&MXTFERAA      Maximum Number of Transfer for Transit Path - Auto Access
2
&AOC           Auto operating costs
9.5
&OC3           Average 3+ auto occupancy
3.20  3.20  3.20  3.20  3.20  3.20
```

Figure A-3 (Continued)

```
&OCTA           Average park/ride auto occupancy
1.2  1.2  1.2  1.2  1.2  1.2
&TASPD          Average auto access speed
26.0  26.0
&MINRUN1        Minimum walk-to-local run distance
0.6
&MINRUN2        Minimum walk-to-premium run distance
0.6
&MINRUN3        Minimum auto-to-local run distance
1.2
&MINRUN4        Minimum auto-to-premium run distance
1.2
&INFL1          Transit fare inflation
0.97
&INFL2          Auto operating cost inflation
1.0
&INFL3          Parking cost inflation
1.0
&MSMIN          Minimum mode split
0.00  0.00  0.00  0.00  0.00  0.00
&HOVUSE         HOV usage flag                (see Note)
4
&HOVMIN         HOV minimum time
3.0
&RAILAC         Station walk access impedance flag
0
&VAL            Validation summary flag
0
&KRFAC          Kiss/ride additional impedance factor
1.50
&JITNEY         Jitney flag (0=none, 1=base, 2=alt)
0
&VERS           Model Version (1=standard FSUTMS, 2=Orlando 10 purposes)
1
&DEFMS          Default Regional Mode Splits
.0375 .0121 .0147 .0349 .0119 .0072
&DEFUPD         Update Zonal Default Mode Splits (1=yes, 2=no)
2
&EMISFAC        Model VMT to HPMS VMT Factor
0.850
&IMFAC          IM/ATP credit adjustment factor
.8000
&CTPBINDE       Palm Beach County Industrial Employ Control Total - Using 2005 FSA derived Control
Total
69157
&CTPBCOME       Palm Beach County Commercial Employ Control Total
132926
&CTPBSERE       Palm Beach County Service Employ Control Total
344291
&CTBOINDE       Broward County Industrial Employ Control Total
85492
&CTBOCOME       Broward County Commercial Employ Control Total
191600
&CTBOSERE       Broward County Service Employ Control Total
455653
&CTMIINDE       Dade (Miami) County Industrial Employ Control Total
103822
&CTMICOME       Dade (miami) County Commercial Employ Control Total
249253
&CTMISERE       Dade (miami) County Service Employ Control Total
645004
&CTOLL          Impedance units per dollar of toll
0.079
&PERIOD         Number of hours in transit analysis period
1
```

Figure A-3 (Continued)

```
&CBDPB        PB CBDZONE xxx for Auto Connector backtracking
3245
&CBDBO        BO CBDZONE xxx for Auto Connector backtracking
3245
&CBDMI        MI CBDZONE for Auto Connector backtracking
3245
&VFACTORS      Required entry.  YES must start in column one
YES
&DATABASE      Optional entry to enable database capability
NO
&DBCOUT        When activated, writes database files for TASSIGN
~ DBC OUTPUT, INET
&MINUROADFAC   Specifies minimum UROAD factor allowed   (Optional)
0.50
&MAXUROADFAC   Specifies maximum UROAD factor allowed
1.00
&MINCONFAC     Specifies minimum CONFAC factor allowed
0.04
&MAXCONFAC     Specifies maximum CONFAC factor allowed
1.00
&MINBPRCOEFF   Specifies minimum BPR coefficient allowed
0.0
&MAXBPRCOEFF   Specifies maximum BPR coefficient allowed
1.00
&MINBPREXP     Specifies minimum BPR exponent allowed
1.00
&MAXBPREXP     Specifies maximum BPR exponent allowed
10.00
&EMISTABLES    Tables on HTTAB file for intrazonal emissions (default = 1)
1
&ASCII
YES
&TWOWAY        Generates second ASCII file (HRLDXY2.ASC) with 2-way vol and cap
YES
&MODELCAP      For maximum capacity use MAXIMUM CAPACITY
MODEL CAPACITY
&BWABSPB       Walk-Access Bus Bias - Palm Beach
0.65
&BWABSBO       Walk-Access Bus Bias - Broward
0.30
&BWABSMD       Walk-Access Bus Bias - Miami-Dade
0.10
&BAABSPB       Auto-Access Bus Bias - Palm Beach
1.00
&BAABSBO       Auto-Access Bus Bias - Broward
1.00
&BAABSMD       Auto-Access Bus Bias - Miami-Dade
1.00
&WKBRTF        Walk Access BRT/LRT Bias Factor as frac of Walk-Access Bus Biases
0.00
&PKBRTF        Auto Access BRT/LRT Bias Factor as frac of Walk-Access Bus Biases
0.00
&PENMD         Transit Run Time Factor for Penalized Modes
1.20
&FAVMD         Transit Run Time Factor for Favored Modes
1.00
&IBUCK         0=none, 1=modified, 2=original for mode choice
1
&WALKSPD       Sidewalk walking speed
2.5
&SHTWALK       Short walk distance
0.33333
&AVGLONG       Average long walk distance
0.66667
&MAXMODE       Number of Transit modes
13
&PREMIUMFLAG   1 if premium service, 0 otherwise
0000011101101
&MODEPRIORITY  Priority in increasing order given to a mode in autocon
 17 18 19  7  7  6  2  1  7  4  3  7  5
```

Figure A-3 (Continued)

```
&CTOTAM        AM Factors to convert Station PARK and AO cost (cents to min)
0.16
&CTOTMD        MD Factors to convert Station PARK and AO cost (cents to min)
0.32
&WTOAAM        AM Factors to convert Station Terminal time to IVT minutes
2.25
&WTOAMD        MD Factors to convert Station Terminal time to IVT minutes
2.33
&AATFAM        AM Factors to convert Station Auto Access time to IVT minutes
1.5
&AATFMD        MD Factors to convert Station Auto Access time to IVT minutes
1.5
```

Note on HOVUSE:

- Parameter value of "4" is used in **TOD model** so that 2 or 3+ carpools can use different HOV facilities and skims. The FTC2 of 81 facilities will have 2+ carpools, whereas FTC2 of 82 facilities will have only 3+ carpools.
- Parameter value of "2" is used in **24-Hour model** so that 2 or 3+ carpools can use same HOV facilities and skims. The FTC2 of 81 and/or 82 facilities will have 2+ carpools.
- Parameter values of 1 and 3 (not used in model) are for Non-HOV assignment and HOV assignment for 3+ carpools only, respectively.

Figure A-4: **Year 2030 PROFILE.MAS File Parameters**
Southeast Regional Planning Model 6.5

```
&HEVALDBF
LNKSCNT.DBF
&ZAPZERO       Zeroing out DA as a submode for 0-car HH (1=YES, others = NO)
1
&PATH1         Location of User Written Program
..\user.prg\
&FSUTMS        Location of special control files (blank = present directory)
..\fulscrpt\
&SCENARIO      Use by LSTGEN program for any future year
FUTURE
&BALATTR       Option to balance attrac to prod controls (0=NO, 1=YES)
0
&MOBILE        Location of Mobile5a files (IMDATA & TECH12)
c:\FSUTMS.v55
&NAME          Study area name
2030 SOUTHEAST REGIONAL Model 65
&TWODIGIT      The twodigit network flag
YES
&ZONESI        Number of internal zones
4200
&ZONESA        Total number of zones including internal and external
4284
&PALMBEACH     Palm Beach Internal and Dummy Zones
1-1750
&BROWARD       Broward Internal and Dummy Zones
1751-2700
&MIAMI         Miami-Dade Internal and Dummy Zones
2701-4200
&MAXZPB        Maximum Palm Beach MPO Zone Number
1750
&MAXZBO        Maximum Broward MPO Zone Number
950
&MAXZMI        Maximum Miami-Dade MPO Zone Number
1500
&EXTZONE       External zones
4201-4284
&EXTK          External zones for K-Factors
4201-4284
&CBDZONE       Home node for path skimming
3251
&NODES         Highest node number permitted
55000
```

Figure A-4 (Continued)

```
&UNITS          Coordinate units per mile
5280
&CITYCODE       Identifies City
SERPM65
&TITLE          Title use in reporting
2030 SERPM65
&MAXD           Maximum sidewalk area around stations
0.5
&TERM           Auto access terminal time (home end)
2.0
&DEF            Default auto access time
2.0
&NOPT           Usage check on second auto connector
1
&BACK           Backtrack flag for auto connector
1
&MXTFERWA       Maximum Number of Transfer for Transit Path - Walk Access
3
&MXTFERAA       Maximum Number of Transfer for Transit Path - Auto Access
2
&AOC            Auto operating costs
9.5
&OC3            Average 3+ auto occupancy
3.20  3.20  3.20  3.20  3.20  3.20
&OCTA           Average park/ride auto occupancy
1.2  1.2  1.2  1.2  1.2  1.2
&TASPD          Average auto access speed
26.0  26.0
&MINRUN1        Minimum walk-to-local run distance
0.6
&MINRUN2        Minimum walk-to-premium run distance
0.6
&MINRUN3        Minimum auto-to-local run distance
1.2
&MINRUN4        Minimum auto-to-premium run distance
1.2
&INFL1          Transit fare inflation
0.97
&INFL2          Auto operating cost inflation
1.0
&INFL3          Parking cost inflation
1.0
&MSMIN          Minimum mode split
0.00  0.00  0.00  0.00  0.00  0.00
&HOVUSE         HOV usage flag                (see Note)
4
&HOVMIN         HOV minimum time
3.0
&RAILAC         Station walk access impedance flag
0
&VAL            Validation summary flag
0
&KRFAC          Kiss/ride additional impedance factor
1.50
&JITNEY         Jitney flag (0=none, 1=base, 2=alt)
0
&VERS           Model Version (1=standard FSUTMS, 2=Orlando 10 purposes)
1
&DEFMS          Default Regional Mode Splits
.0505 .0181 .0198 .0500 .0175 .0129
&DEFUPD         Update Zonal Default Mode Splits (1=yes, 2=no)
2
&EMISFAC        Model VMT to HPMS VMT Factor
0.850
&IMFAC          IM/ATP credit adjustment factor
.8000
```

Figure A-4 (Continued)

```
&CTPBINDE      Palm Beach County Industrial Employ Control Total -Reflect 2005
Control/MPO Ratio
107125
&CTPBCOME      Palm Beach County Commercial Employ Control Total
216452
&CTPBSERE      Palm Beach County Service Employ Control Total
458715
&CTBOINDE      Broward County Industrial Employ Control Total
133406
&CTBOCOME      Broward County Commercial Employ Control Total
280077
&CTBOSERE      Broward County Service Employ Control Total
556592
&CTMIINDE      Dade (Miami) County Industrial Employ Control Total
90358
&CTMICOME      Dade (miami) County Commercial Employ Control Total
565978
&CTMISERE      Dade (miami) County Service Employ Control Total
613809
&CTOLL         Impedance units per dollar of toll
0.079
&PERIOD        Number of hours in transit analysis period
1
&CBDPB        PB CBDZONE xxx for Auto Connector backtracking
3245
&CBDBO        BO CBDZONE xxx for Auto Connector backtracking
3245
&CBDMI        MI CBDZONE for Auto Connector backtracking
3245
&VFACTORS      Required entry.  YES must start in column one
YES
&DATABASE      Optional entry to enable database capability
NO
&DBCOUT        When activated, writes database files for TASSIGN
~ DBC OUTPUT, INET
&MINUROADFAC   Specifies minimum UROAD factor allowed   (Optional)
0.50
&MAXUROADFAC   Specifies maximum UROAD factor allowed
1.00
&MINCONFAC     Specifies minimum CONFAC factor allowed
0.04
&MAXCONFAC     Specifies maximum CONFAC factor allowed
1.00
&MINBPRCOEFF   Specifies minimum BPR coefficient allowed
0.0
&MAXBPRCOEFF   Specifies maximum BPR coefficient allowed
1.00
&MINBPREXP     Specifies minimum BPR exponent allowed
1.00
&MAXBPREXP     Specifies maximum BPR exponent allowed
10.00
&EMISTABLES    Tables on HTTAB file for intrazonal emissions (default = 1)
1
&ASCII
YES
&TWOWAY        Generates second ASCII file (HRLDXY2.ASC) with 2-way vol and cap
YES
&MODELCAP      For maximum capacity use MAXIMUM CAPACITY
MODEL CAPACITY
&BWABSPB       Walk-Access Bus Bias - Palm Beach
0.65
&BWABSBO       Walk-Access Bus Bias - Broward
0.30
&BWABSMD       Walk-Access Bus Bias - Miami-Dade
0.10
```

Figure A-4 (Continued)

```
&BAABSPB        Auto-Access Bus Bias - Palm Beach
1.00
&BAABSBO        Auto-Access Bus Bias - Broward
1.00
&BAABSMD        Auto-Access Bus Bias - Miami-Dade
1.00
&WKBRTF         Walk Access BRT/LRT Bias Factor as frac of Walk-Access Bus Biases
0.00
&PKBRTF         Auto Access BRT/LRT Bias Factor as frac of Walk-Access Bus Biases
0.00
&PENMD          Transit Run Time Factor for Penalized Modes
1.20
&FAVMD          Transit Run Time Factor for Favored Modes
1.00
&IBUCK          0=none, 1=modified, 2=original for mode choice
1
&WALKSPD        Sidewalk walking speed
2.5
&SHTWALK        Short walk distance
0.33333
&AVGLONG        Average long walk distance
0.66667
&MAXMODE        Number of Transit modes
13
&PREMIUMFLAG    1 if premium service, 0 otherwise
0000011101101
&MODEPRIORITY   Priority in increasing order given to a mode in autocon
 17 18 19  7  7  6  2  1  7  4  3  7  5
&CTOTAM         AM Factors to convert Station PARK and AO cost (cents to min)
0.16
&CTOTMD         MD Factors to convert Station PARK and AO cost (cents to min)
0.32
&WTOAAM         AM Factors to convert Station Terminal time to IVT minutes
2.25
&WTOAMD         MD Factors to convert Station Terminal time to IVT minutes
2.33
&AATFAM         AM Factors to convert Station Auto Access time to IVT minutes
1.5
&AATFMD         MD Factors to convert Station Auto Access time to IVT minutes
1.5
```

Note on HOVUSE:

- Parameter value of "4" is used in **TOD model** so that 2 or 3+ carpools can use different HOV facilities and skims. The FTC2 of 81 facilities will have 2+ carpools, whereas FTC2 of 82 facilities will have only 3+ carpools.
- Parameter value of "2" is used in **24-Hour model** so that 2 or 3+ carpools can use same HOV facilities and skims. The FTC2 of 81 and/or 82 facilities will have 2+ carpools.
- Parameter values of 1 and 3 (not used in model) are for N0n-HOV assignment and HOV assignment for 3+ carpools only, respectively.

Appendix B

FORMAT AND LISTING OF USER INPUT FILES

FORMAT (Table B-X):

1. A1DECK_DMY.TXT
2. ARTPCE.DAT
3. FRWYPCE.DAT
4. HWYPCE.DAT
5. LOFFPCE., LONPCE., OFFPCE., ONPCE., TOFFPCE., TONPCE.DAT
6. LOWPCE.DAT
7. COMBLS65.CTL
8. DEFAULT_SEGMENT.CSV
9. SPEC_SEGDATA.CSV
10. EETRIPS.{Year}{ALT}
11. FF.CSV and FF2.CSV
12. **S65_{Year}.NET => Unloaded Network**
13. MSPDADJ_{Year}.DBF
14. PERTRKEXTZ.DBF
15. MTURNDEF.{Year}{ALT}
16. TCARDS.{Year}{ALT}
17. TD_OBS_DATA.CSV
18. **S65TAZS_{Year}.DBF => Zonal Data**
19. GRATEB{XX}.SYN ({XX}=PB, BO & MI)
20. SCHOOL.{Year}{C}
21. STP60{XX}.SYN ({XX}=PB, BO & MI)
22. ZDATA1B.{Year}{C}
23. ZDATA2.{Year}{C}
24. ZDATA3B.{Year}{C}
25. ZDATA4B.{Year}{C}
26. TRFAREZONE_{Year}{ALT}.DAT
27. NLOGITJ.SYN
28. NMOTOR.SYN
29. PCWALK_{Year}{ALT}.DAT
30. SDLAY{PP}2_{Year}{ALT} ({PP}=AM,MD)
31. SDLAYUPD_{Year}{ALT}.DAT
32. WALK.{XX} ({XX}=PB, BO, MI)
33. XTRAAUTO_{Year}{ALT}.DAT
34. AUTODEL{PP}_{Year}{ALT} ({PP}=AM,MD)
35. DISTS_SYN.TXT
36. TOLLLINK.{Year}{ALT}

LISTING (Figure B-X):

1. BASEFARES_05R.DAT
2. COMBLS65.CTL
3. DATABASE.CTL
4. HELABELS.SYN
5. HERATES.SYN
6. HESCREEN.SYN
7. ML.CTL
8. MTURNDEF.05R (sample listing)
9. MVFACTORS.05R
10. S65GEN.CTL
11. DISTS_SYN.TXT
12. TRFAREZONE_05R.DAT
13. NLOGITJ.SYN
14. NMOTOR.SYN
15. SDLAYUPD_05R.DAT
16. TROUTE_05.LIN (sample listing)
17. TSYSD_05R.PTS
18. WALK.{XX} (sample listing; XX=PB, BO & MI)
19. WALKTRL_05R.FAC
20. FARES.DAT

Table B-1
Format of A1DECK Dummy Zone Data (A1DECK_DMY.TXT)
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format
1	1-6	Traffic Analysis Zone	I6
2	7-11	Terminal Time (minutes)	I5
3	12-16	Long-term (9-hour) parking cost (cents) - Used for work purpose	I5
4	17-21	Short-term (3-hour) parking cost (cents) - Used for non-work purposes	I5
5	25-28	Percent of zero auto - Peak trips	I4
6	29-32	Percent of 1 auto - Peak trips	I4
7	33-36	Percent of 2-or-more autos - Peak trips	I4
8	40-43	Percent of zero auto - Off-Peak trips	I4
9	44-47	Percent of 1 auto - Off-Peak trips	I4
10	48-51	Percent of 2-or-more autos - Off-Peak trips	I4
12	52-55	Flag of Transit District (1=Miami-Dade - CBD, 2=Broward - CBD, 3=Palm Beach - CBD, 4=Miami-Dade - Other, 5=Broward - Other, 6=Palm Beach - Other)	I4

Note: (1) An empty file is used in SERPM65. The trip generation programs handle any data required for any dummy zones.
(2) The A1DECK.{ALT}{Year} data generated by trip generation programs are written in the format shown in this table.

Table B-2
Description of Lookup Capacity Table for Arterials (ARTPCE.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1	Number of Directional Lanes
2	3-6	LOS E Capacity (passenger cars/hour/lane) for Segment Signal Density of 0-1.99 signals/mile
3	8-11	LOS E Capacity (passenger cars/hour/lane) for Segment Signal Density of 1.99-4.5 signals/mile
4	13-16	LOS E Capacity (passenger cars/hour/lane) for Segment Signal Density of more than 4.5 signals/mile and not within CBD and major city and county area types (Area types:1,2&5)
5	18-21	LOS E Capacity (passenger cars/hour/lane) for segment signal density of more than 4.5 signals/mile and within CBD and major city and county area types (Area types: 1 & 4)
6	23-27	LOS E Capacity (passenger cars/hour/lane) for other signalized roadways
7	28-31	LOS E Capacity (passenger cars/hour/lane) for other non-signalized arterials

Table B-3
Description of Lookup Capacity Table for Freeways (FRWYPCE.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1	Number of Directional Lanes
2	3-6	LOS E Capacity (passenger cars/hour/lane) for interchange spacing of 2 miles or more
3	9-12	LOS E Capacity (passenger cars/hour/lane) for interchange spacing of less than 2 miles

Table B-4
Description of Lookup Capacity Table for Uninterrupted Roadways (HWYPCE.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1	Number of Directional Lanes
2	4-7	LOS E Capacity (passenger cars/hour/lane)

Table B-5
Description of Lookup Capacity Table for Ramps (*)
Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1	Number of Directional Lanes
2	4-7	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
3	9-12	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	14-17	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	19-22	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	24-27	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

(*) Files: LOFFPCE.DAT, LONPCE.DAT,OFFPCE.DAT,ONPCE.DAT,TOFFPCE.DAT,TONPCE.DAT

Table B-6
Description of Lookup Capacity Table for Low Speed Roadways and Collectors (LOWPCE.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1	Number of Directional Lanes
2	4-6	LOS E Capacity (passenger cars/hour/lane) for CBD (1) & "High Density Non-CBD" (2) area types
3	9-11	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
4	14-16	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	19-21	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table B-7
Format of COMBLSM65 Program Control File (COMBLS65.CTL)
Southeast Regional Planning Model 6.5

Columns	Description
1) Urban Area Information	
1	"U" for urban information
2-19	Comment, can be used for area name
20-21	2-digit urban area tag, "PB" for Palm Beach, "BO" for Broward, "MI" for Miami-Dade
22-29	Comment, can be used for model year
30-32	File extension, e.g., P05 if input is PRODS.P05
33-38	Total number of internal zones in urban area
39-44	Beginning zone number to be used when renumbering to regional system
45-50	End zone number to be used when renumbering to regional system
2) Regional Information	
1	"R" for regional information
2-19	Comment, can be used for region name
20-21	Region area tag = "RE"
22-29	Comment, can be used for model year
30-32	File extension, e.g., R05 if output file is PRODS.R05
33-38	Total number of internal zones in the regional model
3) External Zone Information	
1	"E" for external zone information
7-8	2-digit urban area tag, "PB" for Palm Beach, "BO" for Broward, "MI" for Miami-Dade
9-16	External urban TAZ number
17-24	Equivalent external regional TAZ number, 0 if dropped in regional model
30-60	External Station Name/Description

Note: See **Figure B-2** for listing of COMBLS65.CTL file

Table B-8
Description of Default Signal Lookup Data (DEFAULT_SEGMENT.CSV)
Southeast Regional Planning Model 6.5

Field	Description	Variable	Comment (*)
1	Facility Type of the Segment	FT1	1-digit FTC2 codes and calculated as INT(FTC2/10)
2	Cycle Length (secs)	CYCLE	
3	Green-over-Cycle_Length (G/C) Ratio	GC	
4	Cordination Parameter (DF)	DF	
5	Segment Length	SLEN	
6	Number of Signals	NSIG	

(*) Fields 2-6 are only used if their values are zero either calculated from network or user-coded values.

Table B-9
Description of User Coded Signal Lookup Data (SPEC_SEGDATA.CSV)
Southeast Regional Planning Model 6.5

Field	Description	Variable	Comment (*)
1	Segment ID	SEGID	User must define SEGID on network
2	Cycle Length (secs)	CYCLE	Cordinated Cycle Length
3	Green-over-Cycle_Length (G/C) Ratio	GC	Cordinated G/C Ratio of Segment
4	Cordination Parameter (DF)	DF	

Table B-10
Format of Through Trip Table (EETRIPS.{Year}{ALT})
Southeast Regional Planning Model 6.5

Field	Columns (*)	Description	Format
1	3-5	Table ID ("101")	I3
2	7-9	Table ID ("101")	I3
3	11-14	Origin Low Zone	I4
4	16-19	Origin High Zone	I4
5	21-24	Destination Low Zone	I4
6	25-28	Destination High Zone	I4
7	29	An equal sign ("=")	A1
8	30-36	**Vehicle Trips**	I7
9	82	From County (1=PB, 2=BO, 3=MD)	I1
10	84	To County (1=PB, 2=BO, 3=MD)	I1

Table B-11
Description of Friction Factor Data (FF.CSV and FF2.CSV)
Southeast Regional Planning Model 6.5

Field	Description	Variable
1	Impedance (Usually Travel Time in minutes)	IMPEDANCE
2	Purpose 1 (Home Based Work) Friction Factor	HBW FF
3	Purpose 2 (Home Based Shopping) Friction Factor	HBSHP FF
4	Purpose 3 (Home Based Social Recreation) Friction Factor	HBSR FF
5	Purpose 4 (Home Based School-non-public) Friction Factor	HBSCH FF
6	Purpose 5 (Home Based College & University) Friction Factor	HBUNV FF
7	Purpose 6 (Home Based Other) Friction Factor	HBO FF
8	Purpose 7 (Non Home Based Work) Friction Factor	NHBW FF
9	Purpose 8 (Non Home Based Other) Friction Factor	NHBO FF
10	Purpose 9 (Aipport) Friction Factor	AIRPORT FF
11	Purpose 10 (Four-tired Truck) Friction Factor	4-TIRED TRK FF
12	Purpose 11 (Single Unit Truck) Friction Factor	SU TRK FF
13	Purpose 12 (Combination Truck) Friction Factor	COMB TRK FF

Table B-12

Description of Selected Network Attributes of Unloaded Network (S65_05.NET)

Southeast Regional Planning Model 6.5

Sl No	Node Attributes	Description	Comments
1	N	Node Number	
2	SIGLOC	Signal Location (1=Yes, 0/blank=No)	
3	STATIONNUMBER	Station ID Number	
4	STATIONZONE	Zone Centroid nearest to Station	
5	SERVICEMILES	Maximum driving distance (miles)	
6	PARKINGSPACES	Parking spaces	
7	PARKINGCOSTAM	All day (peak) parking cost (cents)	
8	PARKINGCOSTMD	Midday (off-peak) parking cost (cents)	
9	TERMTIMEPNR	Added park-and-ride impedance (terminal time - minutes)	
10	TERMTIMEKNR	Added drop-off impedance (terminal time - minutes)	
11	ACTIVEFLAG	Station Usuage Flag (1=yes, 0=No)	
12	STATIONDESC	Station Description	
13	FAREZONE	Tri-Rail Fare zone (Note: This data is used only for display)	Model used FAREZONE data from transit\TRFAREZONE_YYA.DAT file
14	X	X-Coordinate	
15	Y	Y-Coordinate	
16	CONUM	County Number (1=PB, 2=BO, 3=MD)	
17	NODETYPE	Node Type (1=Centroid, 2=External , 3=Int Dummy , 4=Ext Dummy)	
18	CYC_LEN	User coded Signal Cycle Length (secs)	

Sl No	Link Attributes	Description	Comments
1	A	A-Node	
2	B	B-Node	
3	DISTANCE	Distance (miles)	
4	CAPACITY	Total Directional 24-Hour Capacity	Used if OVERIDE=1
5	SCREENLINE	Screenline, Cutline and Corridor ID	
6	NUM_LANES	No of Lanes	
7	TOLL	Toll ID (PB=100s, BO=200s, MD=300s)	
8	TWOWAY	Two-way Indicator (1=yes, 0=no)	
9	COUNT	Directional Year 2005 Traffic Count	
10	DIRCODE	Directional Code (1=1-way, 0=2-way)	
11	CONSTRUCTION	USED IN HEVAL	
12	LANDUSE	USED IN HEVAL	
13	LOCATION	Geographical Location (1=PB, 2=BO, 3=MD)	
14	TMODE	Transit Mode	
15	TDIST	Transit Distance	
16	TSPEED	Transit Speed	
17	TTIME	Transit Time	
18	SEGID	Segment ID	
19	POSTSPD	Posted Speed (mph)	
20	STATION	Count Station ID	
21	AADT	Year 2005 Annual Average Daily Traffic	
22	CTOTAL	Year 2000 Classification Count Total	
23	PASS_PCT	Classification Count Percent (Passenger Vehicles)	
24	F4T_PCT	Classification Count Percent (4-tired Trucks)	
25	SU_PCT	Classification Count Percent (Single-Unit Trucks)	
26	COMB_PCT	Classification Count Percent (Combination Trucks)	
27	TOLLTYPE	Toll Type (1=coin, 2=card, 3=AVI)	
28	PLAZADESC	Toll Plaza Description	
29	PLZALNSMIN	Minimum No. of Lanes in Toll Plaza	
30	PLZALNSMAX	Maximum No. of Lanes in Toll Plaza	
31	CARTOLL	Car Toll Price ($) [Same as SUNPASSTOLL]	
32	SVCMINUTES	Service Time (min)	
33	SVCSECONDS	Service Time (sec)	
34	DECELCODE	Deceleration Code ('1' for FTC2=95, Not Used)	
35	ACCELCODE	Acceleration Code ('1' for FTC2=95, Not Used)	
36	EXACTCHGLNS	Number of Exact Coin Change Lanes	
37	AVILANES	Number of Dedicated AVI Lanes	
38	PCTTRUCKS	Ratio of Heavy Trucks on Toll Links	
39	STCARD	STCARD (S for Speed and T for Time)	
40	ROADNAME	Road Name	
41	RDNAME	Road Name	
42	CONUM	County Number (1=PB, 2=BO, 3=MD)	

Table B-12 (continued)

Description of Selected Network Attributes of Unloaded Network (S65_05.NET)

Southeast Regional Planning Model 6.5

Sl No	Link Attributes	Description	Comments
43	STN	Year 2000 Period Count Station Number	
44	TODRC	Year 2000 Time-of-Day Total 24-Hour Raw Count (Directional)	
45	PAMPRD	Percent of AM Peak Period Traffic Count	
46	PMDPRD	Percent of MIDDAY Period Traffic Count	
47	PPMPRD	Percent of PM Peak Period Traffic Count	
48	PNTPRD	Percent of NIGHT Period Traffic Count	
49	PAMPH	Percent of AM Peak Hour Traffic Count	
50	PPMPH	Percent of PM Peak Hour Traffic Count	
51	TODRC2W	Time-of-Day Total 24-Hour Raw Count (2-way)	
52	CNT_AMPRD	AM Peak Period Traffic Count	
53	CNT_MDPRD	MIDDAY Period Traffic Count	
54	CNT_PMPRD	PM Peak Period Traffic Count	
55	CNT_NTPRD	NIGHT Period Traffic Count	
56	CNT_OFPRD	Off-Peak Period Traffic Count	
57	CNT_AMPKH	AM Peak Hour Traffic Count	
58	CNT_PMMPH	PM Peak Hour Traffic Count	
59	TRKCNT_PAS4T	24-Hour Classification Count - Passenger Cars & 4-Tire Truck	
60	TRKCNT_4TIRE	24-Hour Classification Count - 4-Tire Truck	
61	TRKCNT_SU	24-Hour Classification Count - Single-Unit Truck	
62	TRKCNT_COMB	24-Hour Classification Count - Combination Truck	
63	TRKCNT_SUCOMB	24-Hour Classification Count - SU & COMB Truck	
64	FT2_OLD	Old 2-digit Facility Type (Not Used)	
65	AT2_OLD	Old 2-digit Area Type (Not Used)	
66	FTC2	Revised Facility Type Codes (Minor Classification)	
67	OVERIDE	Override Capacity Indicator (0=No, 1=yes)	If yes, users should manually enter CAPACITY field (No 4)
68	DIVIDED	Divided Arterials and Uninterrupted roadways (1=yes,0=no)	Used in Capacity Calculation
69	LEFTTURN	Presence of a left-turn bay (1=yes,0=no)	Used in Capacity Calculation
70	LFWYMRG	Left-side ramp and freeway merge (1=yes,0=no)	
71	TDSECID	Travel Time & Delay Section ID	
72	GC_RATIO	User-Coded Grren/Cycle_Length Ratio	
73	ALPHA_OVERRIDE	Override "Alpha" value for BPR volume-delay equation	
74	BETA_OVERRIDE	Override "Beta" value for BPR volume-delay equation	
75	Y05_STN	Year 2005 Traffic Count Station Number	
76	Y05_AGNCD	Year 2005 Traffic Count Agency Code (Ext=999,FDOT=99,PB=93,MD=87)	
77	Y05_STNCNT	Year 2005 Station Count	
78	Y05_AADT	Year 2005 Annual Average Daily Count	
79	Y05_COUNT	Year 2005 Directional Link Count	
80	CHKLNK	A CHECK FLAG	
81	NOCNT	A CHECK FLAG	
82	SUSPCNT	A CHECK FLAG	
83	Y05_CNTYR	Year for 2005 Count (Year 2003 & 2004 may used in 2005 Count Estimate)	
84	CNT_LINK_F	A CHECK FLAG	
85	CNT_LINK_1S	A CHECK FLAG	
86	HOV_MANUAL	A CHECK FLAG	
87	HOV_DISTBN	Traffic Count Allocation Factors for HOV and GP Lanes	
88	IMPUTED	A CHECK FLAG	
89	Y05_RDNAME	Road Name (Not Used)	
90	Y05_STNDES	Year 2005 Traffic Count Station Description	
91	Y00_SCRNLN	Year 2000 (SERPM6) Screenline/Cutline Numbers	
92	Y00_COUNT	Year 2000 (SERPM6) Directional Traffic Count	
93	Y00_STN	Year 2000 (SERPM6) Traffic Count Station Number	
94	Y00_AADT	Year 2000 (SERPM6) Traffic Count - AADT	
95	Y00_POSTSPD/POSTSPD00	SERPM6 Posted Speed (mph)	
96	SUNPASSTOLL	SUNPASS Car Toll Price ($)	
97	CASHTOLL	CASH Car Toll Price ($)	
98	NONTPKTOLL	An Indicator for Non-Turnpike Toll Booth Facility (1=Miami-Dade, 2=Broward-Sawgrass)	
99	PBEXTN	An Indicator for Palm Beach Extension Area (1=yes, 0=No)	
100	HOT	HOT Lane Flag (0=Non-HOT Facility - Default, 1=HOT Lane Facility, 2="Dummy" HOV Slip Ramps - FTC2 of 83-86)	

Table B-13
Description of Speed Adjustment Factors (MSPDADJ_{Year}.DBF)
Southeast Regional Planning Model 6.5

Field	Name	Description
1	ATL	Low Area Type Code (1-5)
2	ATH	High Area Type Code (1-5)
3	FTC2L	Low Facility Type (FTC2) Code (11-95)
4	FTC2H	High Facility Type (FTC2) Code (11-95)
5	FACTOR	Speed Adjustment Factor

Table B-14
Description of External Station Truck Percentages (PERTRKEXTZ.DBF)
Southeast Regional Planning Model 6.5

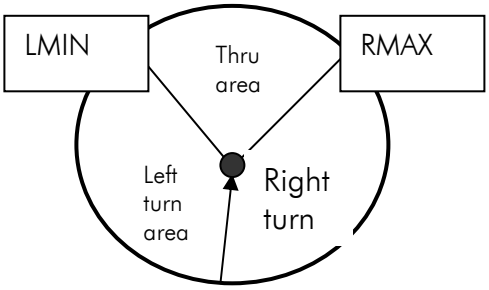
Field	Name	Description
1	ZONE	External Regional Zone Number
2	OFACTOR	Production/Origin Truck Percentages
3	DFACTOR	Attraction/Destination Truck Percentages
4	RNAME	Roadway Name

Table B-15
Format and Description for Turning Definition File (MTURNDEF.{Year}{ALT})
Southeast Regional Planning Model 6.5

[See **Table B-16** for format of standard TCARDS file and **Figure B-8** for a listing of MTURNDEF file]

MTURNDEF contains all data needed to construct a TCARDS file. Any existing TCARDS file must be copied into MTURNDEF file, as MKTURN2 program will overwrite TCARDS file. MTURNDEF is a fixed-format ASCII file, which can contain six types of records, depending on the code entered in column 1 of each record:

- C – Means a comment record. These records are read and output to the report file, but are otherwise ignored.
- "blank" – These records contain entries in the turn penalty definition table, as described later.
- T – These records are standard Tranplan turn data, and should be copied from your original TCARDS file.
- R – This is the specification of the maximum included angle for a right-turn (RMAX).



- L – This is the specification of the minimum included angle for a left-turn (LMIN).
- F – Factors to be applied to penalties at specified intersection nodes. The penalty obtained from the turn penalty definition table will be factored by this amount at the specified nodes.

Records with "R" in column 1, specify the maximum included angle for a right-turn. There should be only one of these records. The format is:

- cc: 1 – R
- cc: 2-5 – Maximum angle in degrees.
- cc: 6 - 80 – Optional description

Records with "L" in column 1, specify the minimum included angle for a left-turn. There should be only one of these records. The format is:

- cc: 1 – L
- cc: 2-5 – Minimum angle in degrees.
- cc: 6 - 80 – Optional description

Records with "T" in column 1 are traditional turn penalty/prohibitor records. These records contain a T in column 1, from node, through node, to node and penalty in hundredths of a minute (A1,4I5).

Records with "F" in column 1 are factors. The penalty obtained from the penalty table will be multiplied by this factor for all movements passing through the specified intersection. The format is:

- cc: 1 – F
- cc: 2-6 – Intersection node number (I5).
- cc: 7 - 12 – Factor (F6.0).

Penalty table records have a blank in column 1. Only facility type pairs (from – to) with non-zero penalties need to be entered, as the penalty table is initialized with zeros by the program. The format is:

- cc: 1 – blank
- cc: 6 – from facility type (one digit)
- cc: 11 – to facility type (one digit)
- cc: 24-25 – left turn penalty in hundredths of minutes
- cc: 29-30 – through penalty in hundredths of minutes
- cc: 34-35 – right turn penalty in hundredths of minutes
- cc: 36-80 – an optional description

Table B-16
Format of User Coded Turning Penalties and Prohibitors (TCARDS.{Year}{ALT}
Southeast Regional Planning Model 6.5

Field	Columns (*)	Description	Format
1	1	"T" indicates a Turn Penalty Card	A1
2	2-6	From Node Number of Link Approaching Intersection	I5
3	7-11	Through/Intersection Node Number	I5
4	12-16	To Node Number of Link Exiting Intersection	I5
5	17-21	Time Penalty for Penalized Movement in hundredths of minutes. If blank or zero, from-thru-to is a turn prohibitor.	I5
6	22-26	From Node	I5
7	27-31	Thru Node	I5
8	32-36	To Node	I5
9	37-41	see Columns 17-21	I5
10	42-46	From Node	I5
11	47-51	Thru Node	I5
12	52-56	To Node	I5
13	57-61	see Columns 17-21	I5
14	61+	User Coded Description of turning penalties/prohibitors	Axx

(*) Standard TCARDS records (Fields 1-13) are included into MTURNDEF file.

Table B-17
Description of Observed Sectional Speed Lookup Data (TD_OBS_DATA.CSV)
Southeast Regional Planning Model 6.5

Field	Description	Variable	Comment
1	Travel time and delay Section ID of observed speeds	TDSECID	Must be one of the TDSECID coded onto network
2	AM period observed speeds (mph)	OBSAMSPD	
3	PM period observed speeds (mph)	OBSPMSPD	
4	Off-peak period observed speeds (mph)	OBSOPSPD	

Table B-18
Description of TAZ Database (S65TAZS_YY.DBF) Attributes
Southeast Regional Planning Model 6.5

Field		Name	Description
1,3,10,26,42,57		NAME,TAZ_REG,TAZRGNS_YY,RTAZZ1B_YY,RTAZZD2_YY,REgWzn	Regional TAZ number (SERPM65 - 2005 Based) - YY stands for Year (05=2005 & 30=2030)
2		AREA	Gross area in square feet
4,11,27,43,58		TAZ_MPO,TAZMPOS_YY,UTAZZ1B_YY,UTAZZD2_YY,UrbWzn	MPO TAZ number (SERPM65 -2005 Based)
5,53		AREA_TFT, GR_SQ_TFT	Gross area in 1/10 square feet
6		SRTINDEX	A sort Index
7		TAZ_MPO_00	MPO TAZ number (SERPM6 -2000 Based)
8		TAZ_REG_00	Regional TAZ number (SERPM6 - 2000 Based)
9,25,41,52,60		COUNTY,CNTYSCH,Cnty_Zd1B,Cnty_Zd2,CntyWlk	County number (1=Palm Beach, 2=Broward, 3=Miami-Dade)
12	School File Data	EL_TAZ_YY	Grade (public) school TAZ_MPO assigned to students living in the TAZ_MPO in field 4
13		MD_TAZ_YY	Middle (public) school TAZ_MPO assigned to students living in the TAZ_MPO in field 4
14		HI_TAZ_YY	High (public) school TAZ_MPO assigned to students living in the TAZ_MPO in field 4
15		EL_ENRL_YY	Enrollment for grade (public) school indicated in field 4
16		MD_ENRL_YY	Enrollment for middle (public) school indicated in field 4
17		HI_ENRL_YY	Enrollment for high (public) school indicated in field 4
18		PRVENRL_YY	Private school enrollment at schools (NOT College & University) indicated in field 4
19		CU_ENRL_YY	College & Universityl enrollments indicated in field 4
20		ELEMTR	School trip rate (override DEFAULT) for students enrolled in grade (public) school indicated in field 4
21		MIDTR	School trip rate (override DEFAULT) for students enrolled in middle (public) school indicated in field 4
22		HIGHTR	School trip rate (override DEFAULT) for students enrolled in high (public) school indicated in field 4
23		PRIVTR	School trip rate (override DEFAULT) for students enrolled in private school indicated in field 4
24		COLUNVTR	School trip rate (override DEFAULT) for students enrolled in college & University indicated in field 4
28	ZDATA1B File Data	REFTZ_YY	MPO reference TAZ number
29		HHC0_YY	Households without children (<18 years age)
30		HHC1_YY	Households with children
31		VC0_YY	Vehicles in households without children category
32		VC1_YY	Vehicles in households with children category
33		WC0_YY	Workers in households without children category
34		WC1_YY	Workers in households with children category
35		PC0_YY	Persons in households without children category
36		PC1_YY	Persons in households with children category
37		HMR_YY	Total occupied hotel/motel rooms
38		TD_YY	Transit districts (1=MD CBD, 2=BO CBD, 3=PB CBD, 4=MD Other, 5=BO Other, 6=PB Other)

Table B-18 (continued)

Description of TAZ Database (S65TAZS_YY.DBF) Attributes

Southeast Regional Planning Model 6.5

Field		Name	Description
39		JEFFDIST	User Specified Districts (1-13=Miami-Dade,14=Broward,15=Palm Beach) to compare model vs. CTPP trips
40		POP_YY	Total population
44	ZDATA2 File Data	CARD2	"2"- Card Type for Employment Data
45	ZDATA2 File Data	SEC_YY	ZDATA2's sector number
46	ZDATA2 File Data	INDE_YY	Industrial employment (SIC=1-39 & NAICS=11,21,23,31-33)
47	ZDATA2 File Data	COME_YY	Commercial employment (SIC=50-59 & NAICS=42,44-45,722)
48	ZDATA2 File Data	SVCE_YY	Service employment (SIC=40-49, 60-99 & NAICS=22,48-49,51-56,61,62,71,721,81,99 & Govt Emp)
49	ZDATA2 File Data	TOTE_YY	Total employment (SIC=1-99 & NAICS=11-99 & Govt Emp)
50	ZDATA2 File Data	SPK_YY	Short-term (3-hour) parking cost (in cents)
51	ZDATA2 File Data	LPK_YY	Long-term (9-hour) parking cost (in cents)
54		EXC_SQ_TFT	Non-overlapping exceptional areas (water, parks and roadway right-of-way) in 1/10 square feet
55		NET_SQ_TFT	Net areas (gross minus exceptional) in 1/10 square feet
56		PCT_LEFT	Percentages of usable (Net) gross areas
59		WlkIndx_YY	Non-motorized Friendliness Index (0-3)
61		ARSM_NET	Net area in square miles
62		ARACRS_NET	Net area in acres
63		REGTAZN_YY	Regional zone centroid number extracted from network
64		REGTAZX_YY	X-coordinate of zone centroids
65		REGTAZY_YY	Y-coordinate of zone centroids
66		SPOP_YY	Total population of 1-mile radius of the TAZ centroid
67		SEMP_YY	Total employment of 1-mile radius of the TAZ centroid
68		SACRES_YY	Areas in acres of 1-mile radius of the TAZ centroid
69		SADEN_YY	Activity density of 1-mile radius of the TAZ centroid
70		SAT1_YY	Activity based density area types (1=CBD, 2=High-Density-NonCBD, 3=Medium-Density-NonCBD, 4=Low-Density-NonCBD, 5=Very-Low-Density-NonCBD)
71		DISTRICT	User Specified Districts (1-20=Palm Beach,21-35=Broward,51-66=Miami-Dade) to compare model vs. CTPP trips
72		SPGEN	Special Generator Indicator (1=yes, 0=no)

Note:

1. **Zonal data files (ZDATA1B, ZDATA2 and SCHOOL) are written by CV scripts to MPOIN\XXIN (XX=PB, BO & MI) folders. So, any changes to data should be made in S65TAZS_{Year}.DBF file.**
2. Other files written from this database file are Walk-Index (WALK.XX), several districts equivalencies (NEWDISTRICT_{Year}.DBF, TDISTS6.DBF and JEFFDIST.DBF) and two other intermediate input files (SPGEN_{Year}.DBF and CBDZNS_{Year}.DBF). In general, users do not need to modify these data.

Table B-19

Format of Trip Generation Rates and Household Stratification Curves (GRATEB{XX}.SYN)

Southeast Regional Planning Model 6.5

Note: The format of GRATEBXX.SYN (XX=PB,BO,MI) file is context sensitive which is determined by the first character of the records.
The description of the contents (Column 1) follows:
P/p = Production Record, A/a/o = Attraction/Allocation Record
C/c = Comment Record, V/D = HH Disaggeregation Curve Record

(1) For Production Records (see Note 1):

Field	Columns	Description	Format
1	1	P or p (Stands for Production Rate Record)	A1
2	2-7	Purpose (1=HBW, 2=HBSHOP, 3=HBSR, 4=HBSCH, 5= HBUNV, 6=HBO, 7=NHBW, 8=NHBO, 9=Airport, 10=4-tire truck, 11=SU-truck, 12=COMB-truck)	I6
3	8-13	Number of children (0=without children under 18 years of age, 1=with children under 18 years of age, 9-not applicable (n.a.) and used for hotels/motels)	I6
4	14-19	Number of autos (0=0 auto, 1= 1 auto, 2 =2 autos, 3=3+ autos, 9=n.a. used for hotels/motels	I6
5 (see Note 3)	21-26	Production rate for category defined by fields 2-4 and (1) 0 workers per household if HBW and NHBW, (2) 1 person per household for non-work purposes, (3) Business type hotel/motel (see Note 2)	F6.3
6	27-32	Production rate for category defined by fields 2-4 and (1) 1 worker per household if HBW and NHBW, (2) 2 persons per household for non-work purposes, (3) Leisure/Recreation type hotel/motel (see Note2)	F6.3
7	33-38	Production rate for category defined by fields 2-4 and (1) 2+ workers per household if HBW and NHBW, (2) 3 persons per household for non-work purposes, (3) Mix type hotel/motel (see Note2)	F6.3
8	39-44	Production rate for category defined by fields 2-4 and 4+ persons per household for non-work purposes	F6.3
9	45-50	Production rate for ALL hotel/motel	F6.3
10	53-80	Comments and Descriptors	A28

Note 1: NHBW and NHBO control totals are calculated using production rates. NHBW control total is then used to factor the zonal NHBW production and attraction derived from allocation rates. Similarly, NHBO control total is used to factor the zonal NHBO origin and destination derived from allocation rates.

Note 2: If zonal data file (ZDATA1B) contains sub-hotel data (for example, Business, Leisure/Recreation and Mix) then program uses their rates. Otherwise, all hotel/motel rates from columns 45-50 will be used by the program.

Note 3: For Airport Purpose (=9), the data in field 5 is airport trip productions per enplanement. Data in field 3 and 4 for airport purpose are irrelevant.

Table B-19 (continued)

Format of Trip Generation Rates and Household Stratification Curves (GRATEB{XX}.SYN)

Southeast Regional Planning Model 6.5

(2) For Attraction Records (see Note 4):

Field	Columns	Description	Format
1	1	A or a stands for Attraction Rate Record. O or o stands for Origin allocation.	A1
2 (see Note 5)	2-7	Purpose (1=HBW, 2=HBSHOP, 3=HBSR, 4=HBSCH, 5= HBUNV, 6=HBO, 7=NHBW, 8=NHBO, 9=Airport, 10=4-tire truck, 11=SU-truck, 12=COMB-truck)	I6
3	10	Area type (1=CBD, NonCBD: 2=High Density, 3=Medium Density, 4=Low Density, 5=Very Low Density)	I1
4	12-17	Attraction rate for industrial employment	F6.3
5	18-23	Attraction rate for commercial employment	F6.3
6	24-29	Attraction rate for service employment	F6.3
7	30-35	Attraction rate for total employment	F6.3
8	36-41	Attraction rate for school enrollments	F6.3
9	42-47	Attraction rate for occupied dwelling units	F6.3
10	48-53	Attraction rate for occupied hotel/motel units	F6.3
11	56-80	Comments and Descriptors	A25

Note 4: NHBW and NHBO rates are for allocation of trip ends. Control totals from production are used to allocate the trip ends.

Note 5: Truck productions and attractions rates are same and productions are set to attractions.

Table B-19 (continued)
Format of Trip Generation Rates and Household Stratification Curves (GRATEB{XX}.SYN)
Southeast Regional Planning Model 6.5

(3) For Household Disaggregation Curve Records:

Part 1: Deviation or Subtraction Parameters of Polynimial Disaggregation Curves:

Field	Columns	Description	Format
1	1	V or v stands for Deviation or Subtraction Records	A1
2	6	Number of children (0=without children under 18 years of age, 1=with children under 18 years of age)	I1
3	7-14	Deviation parameter for household vehicle	F8.5
4	15-22	Deviation parameter for household worker	F8.5
5	23-30	Deviation parameter for household person	F8.5

Part 2: Constants and Coefficients of Polynomial Disaggregation Curves:

Field	Columns	Description	Format
1	1	D or d stands for disaggregation constants and coefficients	A1
2	6	Number of children (0=without children under 18 years of age, 1=with children under 18 years of age)	I1
3	10	Number of autos (0=0 auto, 1= 1 auto, 2 =2 autos, 3=3+ autos)	I1
4	14	Number of workers (0=0 worker, 1= 1 worker, 2 =2 workers, 3=3+ workers)	I1
5	18	Number of persons (1= 1 person, 2 =2 persons, 3=3 persons, 4=4+ persons)	I1
6	19-28	Constant	F10.6
7	29-38	Coefficient for variable raised to exponent 1	F10.6
8	39-48	Coefficient for variable raised to exponent 2	F10.6
9	49-58	Coefficient for variable raised to exponent 3	F10.6

Table B-20

Format of School District Boundaries and Enrollments Data (SCHOOL.{Year}{C})

Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1-4	MPO Traffic Analysis Zone (MPOTAZ) number
2	5-10	Grade (public) school MPOTAZ assigned to students living in the MPOTAZ in field 1
3	11-16	Middle (public) school MPOTAZ assigned to students living in the MPOTAZ in field 1
4	17-22	High (public) school MPOTAZ assigned to students living in the MPOTAZ in field 1
5	23-28	Enrollment for grade (public) school indicated in field 1
6	29-34	Enrollment for middle (public) school indicated in field 1
7	35-40	Enrollment for high (public) school indicated in field 1
8	41-46	Private School enrollment at schools indicated in field 1
9	47-52	College & University enrollments in field 1
10	53-58	School trip rate for students enrolled in grade (public) school indicated in field 1.
11	59-64	School trip rate for students enrolled in middle (public) school indicated in field 1.
12	65-70	School trip rate for students enrolled in high (public) school indicated in field 1.
13	71-76	School trip rate for students enrolled in private schools indicated in field 1.
14	77-82	Trip rate for students enrolled in College & Universities in field 1.
15	92	County (1=PB, 2=BO & 3=MD)

Note 1: (a) Fields 2 through 4 are used to calculate productions,
(b) Fields 5 through 9 are used to calculate attractions, and
(c) Fields 10 through 14 are used to implement school specific trip rates.

Note 2: SCHOOL files are written from the TAZ database (S65TAZS_{Year}.DBF) file.
Any changes to the school data should be made to the TAZ database file.

Table B-21

Format and Description of Special Census Tabulation Data (STP60{XX}.SYN)

Southeast Regional Planning Model 6.5

Variable No	Column	Variable Name	Variable Description			
A	1 - 10	mpocd	MPO Code			
B	11 - 20	fipscd	FIPS State and County Code			
C	21 - 30	TAZID	TAZs (MPO)			
1	31 - 40	thh	Total Households			
2	41 - 50	tc1	**With Child**			
3	51 - 60	tc1p2	*With Child*	Person 2		
4	61 - 70	tc1p2v0			Vehicle 0	
5	71 - 80	c1p2v0w0				Worker 0
6	81 - 90	c1p2v0w1				Worker 1
7	91 - 100	c1p2v0w2				Worker 2
8	101 - 110	tc1p2v1			Vehicle 1	
9	111 - 120	c1p2v1w0				Worker 0
10	121 - 130	c1p2v1w1				Worker 1
11	131 - 140	c1p2v1w2				Worker 2
12	141 - 150	tc1p2v2			Vehicle 2	
13	151 - 160	c1p2v2w0				Worker 0
14	161 - 170	c1p2v2w1				Worker 1
15	171 - 180	c1p2v2w2				Worker 2
16	181 - 190	tc1p2v3			Vehicle 3	
17	191 - 200	c1p2v3w0				Worker 0
18	201 - 210	c1p2v3w1				Worker 1
19	211 - 220	c1p2v3w2				Worker 2
20	221 - 230	tc1p3	*With Child*	Person 3		
21	231 - 240	tc1p3v0			Vehicle 0	
22	241 - 250	c1p3v0w0				Worker 0
23	251 - 260	c1p3v0w1				Worker 1
24	261 - 270	c1p3v0w2				Worker 2
25	271 - 280	c1p3v0w3				Worker 3
26	281 - 290	tc1p3v1			Vehicle 1	
27	291 - 300	c1p3v1w0				Worker 0
28	301 - 310	c1p3v1w1				Worker 1
29	311 - 320	c1p3v1w2				Worker 2
30	321 - 330	c1p3v1w3				Worker 3
31	331 - 340	tc1p3v2			Vehicle 2	
32	341 - 350	c1p3v2w0				Worker 0
33	351 - 360	c1p3v2w1				Worker 1
34	361 - 370	c1p3v2w2				Worker 2
35	371 - 380	c1p3v2w3				Worker 3
36	381 - 390	tc1p3v3			Vehicle 3	
37	391 - 400	c1p3v3w0				Worker 0
38	401 - 410	c1p3v3w1				Worker 1
39	411 - 420	c1p3v3w2				Worker 2
40	421 - 430	c1p3v3w3				Worker 3

Table B-21 (continued)
Format and Description of Special Census Tabulation Data (STP60{XX}.SYN)
Southeast Regional Planning Model 6.5

Variable No	Column	Variable Name	Variable Description			
41	431 - 440	tc1p4	*With Child*	Person 4		
42	441 - 450	tc1p4v0			Vehicle 0	
43	451 - 460	c1p4v0w0				Worker 0
44	461 - 470	c1p4v0w1				Worker 1
45	471 - 480	c1p4v0w2				Worker 2
46	481 - 490	c1p4v0w3				Worker 3
47	491 - 500	tc1p4v1			Vehicle 1	
48	501 - 510	c1p4v1w0				Worker 0
49	511 - 520	c1p4v1w1				Worker 1
50	521 - 530	c1p4v1w2				Worker 2
51	531 - 540	c1p4v1w3				Worker 3
52	541 - 550	tc1p4v2			Vehicle 2	
53	551 - 560	c1p4v2w0				Worker 0
54	561 - 570	c1p4v2w1				Worker 1
55	571 - 580	c1p4v2w2				Worker 2
56	581 - 590	c1p4v2w3				Worker 3
57	591 - 600	tc1p4v3			Vehicle 3	
58	601 - 610	c1p4v3w0				Worker 0
59	611 - 620	c1p4v3w1				Worker 1
60	621 - 630	c1p4v3w2				Worker 2
61	631 - 640	c1p4v3w3				Worker 3
62	641 - 650	tc1p5	*With Child*	Person 5		
63	651 - 660	tc1p5v0			Vehicle 0	
64	661 - 670	c1p5v0w0				Worker 0
65	671 - 680	c1p5v0w1				Worker 1
66	681 - 690	c1p5v0w2				Worker 2
67	691 - 700	c1p5v0w3				Worker 3
68	701 - 710	tc1p5v1			Vehicle 1	
69	711 - 720	c1p5v1w0				Worker 0
70	721 - 730	c1p5v1w1				Worker 1
71	731 - 740	c1p5v1w2				Worker 2
72	741 - 750	c1p5v1w3				Worker 3
73	751 - 760	tc1p5v2			Vehicle 2	
74	761 - 770	c1p5v2w0				Worker 0
75	771 - 780	c1p5v2w1				Worker 1
76	781 - 790	c1p5v2w2				Worker 2
77	791 - 800	c1p5v2w3				Worker 3
78	801 - 810	tc1p5v3			Vehicle 3	
79	811 - 820	c1p5v3w0				Worker 0
80	821 - 830	c1p5v3w1				Worker 1
81	831 - 840	c1p5v3w2				Worker 2
82	841 - 850	c1p5v3w3				Worker 3

Table B-21 (continued)
Format and Description of Special Census Tabulation Data (STP60{XX}.SYN)
Southeast Regional Planning Model 6.5

Variable No	Column	Variable Name	Variable Description			
83	851 - 860	tc0	**Without Child**			
84	861 - 870	tc0p1	*Without Child*	Person 1		
85	871 - 880	tc0p1v0			Vehicle 0	
86	881 - 890	c0p1v0w0				Worker 0
87	891 - 900	c0p1v0w1				Worker 1
88	901 - 910	tc0p1v1			Vehicle 1	
89	911 - 920	c0p1v1w0				Worker 0
90	921 - 930	c0p1v1w1				Worker 1
91	931 - 940	tc0p1v2			Vehicle 2	
92	941 - 950	c0p1v2w0				Worker 0
93	951 - 960	c0p1v2w1				Worker 1
94	961 - 970	tc0p1v3			Vehicle 3	
95	971 - 980	c0p1v3w0				Worker 0
96	981 - 990	c0p1v3w1				Worker 1
97	991 - 1000	tc0p2	*Without Child*	Person 2		
98	1001 - 1010	tc0p2v0			Vehicle 0	
99	1011 - 1020	c0p2v0w0				Worker 0
100	1021 - 1030	c0p2v0w1				Worker 1
101	1031 - 1040	c0p2v0w2				Worker 2
102	1041 - 1050	tc0p2v1			Vehicle 1	
103	1051 - 1060	c0p2v1w0				Worker 0
104	1061 - 1070	c0p2v1w1				Worker 1
105	1071 - 1080	c0p2v1w2				Worker 2
106	1081 - 1090	tc0p2v2			Vehicle 2	
107	1091 - 1100	c0p2v2w0				Worker 0
108	1101 - 1110	c0p2v2w1				Worker 1
109	1111 - 1120	c0p2v2w2				Worker 2
110	1121 - 1130	tc0p2v3			Vehicle 3	
111	1131 - 1140	c0p2v3w0				Worker 0
112	1141 - 1150	c0p2v3w1				Worker 1
113	1151 - 1160	c0p2v3w2				Worker 2
114	1161 - 1170	tc0p3	*Without Child*	Person 3		
115	1171 - 1180	tc0p3v0			Vehicle 0	
116	1181 - 1190	c0p3v0w0				Worker 0
117	1191 - 1200	c0p3v0w1				Worker 1
118	1201 - 1210	c0p3v0w2				Worker 2
119	1211 - 1220	c0p3v0w3				Worker 3
120	1221 - 1230	tc0p3v1			Vehicle 1	
121	1231 - 1240	c0p3v1w0				Worker 0
122	1241 - 1250	c0p3v1w1				Worker 1
123	1251 - 1260	c0p3v1w2				Worker 2
124	1261 - 1270	c0p3v1w3				Worker 3

Table B-21 (continued)

Format and Description of Special Census Tabulation Data (STP60{XX}.SYN)

Southeast Regional Planning Model 6.5

Variable No	Column	Variable Name	Variable Description			
125	1271 - 1280	tc0p3v2	*Without Child*	Person 3	Vehicle 2	
126	1281 - 1290	c0p3v2w0				Worker 0
127	1291 - 1300	c0p3v2w1				Worker 1
128	1301 - 1310	c0p3v2w2				Worker 2
129	1311 - 1320	c0p3v2w3				Worker 3
130	1321 - 1330	tc0p3v3			Vehicle 3	
131	1331 - 1340	c0p3v3w0				Worker 0
132	1341 - 1350	c0p3v3w1				Worker 1
133	1351 - 1360	c0p3v3w2				Worker 2
134	1361 - 1370	c0p3v3w3				Worker 3
135	1371 - 1380	tc0p4	*Without Child*	Person 4		
136	1381 - 1390	tc0p4v0			Vehicle 0	
137	1391 - 1400	c0p4v0w0				Worker 0
138	1401 - 1410	c0p4v0w1				Worker 1
139	1411 - 1420	c0p4v0w2				Worker 2
140	1421 - 1430	c0p4v0w3				Worker 3
141	1431 - 1440	tc0p4v1			Vehicle 1	
142	1441 - 1450	c0p4v1w0				Worker 0
143	1451 - 1460	c0p4v1w1				Worker 1
144	1461 - 1470	c0p4v1w2				Worker 2
145	1471 - 1480	c0p4v1w3				Worker 3
146	1481 - 1490	tc0p4v2			Vehicle 2	
147	1491 - 1500	c0p4v2w0				Worker 0
148	1501 - 1510	c0p4v2w1				Worker 1
149	1511 - 1520	c0p4v2w2				Worker 2
150	1521 - 1530	c0p4v2w3				Worker 3
151	1531 - 1540	tc0p4v3			Vehicle 3	
152	1541 - 1550	c0p4v3w0				Worker 0
153	1551 - 1560	c0p4v3w1				Worker 1
154	1561 - 1570	c0p4v3w2				Worker 2
155	1571 - 1580	c0p4v3w3				Worker 3
156	1581 - 1590	tc0p5	*Without Child*	Person 5		
157	1591 - 1600	tc0p5v0			Vehicle 0	
158	1601 - 1610	c0p5v0w0				Worker 0
159	1611 - 1620	c0p5v0w1				Worker 1
160	1621 - 1630	c0p5v0w2				Worker 2
161	1631 - 1640	c0p5v0w3				Worker 3
162	1641 - 1650	tc0p5v1			Vehicle 1	
163	1651 - 1660	c0p5v1w0				Worker 0
164	1661 - 1670	c0p5v1w1				Worker 1
165	1671 - 1680	c0p5v1w2				Worker 2
166	1681 - 1690	c0p5v1w3				Worker 3
167	1691 - 1700	tc0p5v2			Vehicle 2	
168	1701 - 1710	c0p5v2w0				Worker 0
169	1711 - 1720	c0p5v2w1				Worker 1
170	1721 - 1730	c0p5v2w2				Worker 2
171	1731 - 1740	c0p5v2w3				Worker 3
172	1741 - 1750	tc0p5v3			Vehicle 3	
173	1751 - 1760	c0p5v3w0				Worker 0
174	1761 - 1770	c0p5v3w1				Worker 1
175	1771 - 1780	c0p5v3w2				Worker 2
176	1781 - 1790	c0p5v3w3				Worker 3

Table B-22
Format of Zonal Production Data (ZDATA1B.{Year}{C})
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format	Variable
1	1-6	MPO Traffic Analysis Zone (MPOTAZ) number	I6	ZONE
2	7-12	Reference MPO Traffic Analysis Zone Number	I6	RTAZ
3	13-18	Number of Households without children (<18 years age)	I6	HHOC
4	19-24	Number of Households with children	I6	HHWC
5	25-30	Number of vehicles in households without children category	I6	VOC
6	31-36	Number of vehicles in households with children category	I6	VWC
p	37-42	Number of workers in households without children category	I6	WOC
8	43-48	Number of workers in households with children category	I6	WWC
9	49-54	Number of persons in households without children category	I6	POC
10	55-60	Number of persons in households with children category	I6	PWC
11	61-66	Number of "ALL" type occupied hotel/motel rooms	I6	HMOC
12	67-69	Specifies Transit Districts as follows: 1-MD CBD, 2-BO CBD, 3-PB CBD, 4-MD Other, 5-BO Other 6-PB Other	I3	TRNDST
13	79	County Number (1=PB, 2=BO, 3=MD)	I1	CNTY

Note: ZDATA1B files are written from the TAZ database (S65TAZS_{Year}.DBF) file. Any changes to the production data should be made to the TAZ database file.

Table B-23
Format of Zonal Attraction Data (ZDATA2.{Year}{C})
Southeast Regional Planning Model 6.5

Field	Columns	Description
1	1	Card Number (=2)
2	2-4	Sector Number
3	5-8	MPO Traffic Analysis Zone (MPOTAZ) number
4	9-14	Industrial Employment (SIC: 1-39 => NAICS: 1, 21, 23, 31-33)
5	15-20	Commercial Employment (SIC: 50-59 => NAICS: 42, 44-45, 722)
6	21-26	Service Employment (SIC: 40-49, 60-99 => NAICS: 22, 48-49, 51-56, 61-62, 71, 721, 81, 99)
7	27-32	Total Employment (SIC 1-99)
8	33-38	Total School Enrollment
9	39-42	**Short-Term (3-Hour) Parking Cost (in cents) - Use for non-work purpose in Mode Choice**
10	43-46	**Long-Term (9-Hour) Parking Cost (in cents) - Use for work purposes in Mode Choice**
11	56	County Number (1=PB, 2=BO, 3=MD)

Note: ZDATA2 files are written from the TAZ database (S65TAZS_{Year}.DBF) file. Any changes to the attraction data should be made to the TAZ database file.

Table B-24
Format of Special Generator Data (ZDATA3B.{Year}{C})
Southeast Regional Planning Model 6.5

			Description	
Field	**Columns**	**Format**	**Content**	**Comment**
1 (*)	1	I1 / A1	Card Type	3 or A(*)
2	2-4	I3	Sector Number	
3 (*)	5-8	I4	MPO Zone Number (*)	
4	9	A1	Generator Type	"P" - Production "A" - Attraction
5	10	A1	Function Type	"T" - Total Trips "+" - Additive "-" - Deductive
6 (*)	11-16	I6	Total Person Trips (*) Difference in Person Trips	If "T" in Column 10 If "+/-" in Column 10
7	17-19	I3	Percent Home Based Work Trips	Percent of Fields 7 through 18 should add up to 100
8	20-22	I3	Percent Home Based Shopping Trips	
9	23-25	I3	Percent Home Based SocRec Trips	
10	26-28	I3	Percent Home Based School Trips	
11	29-31	I3	Percent Home Based College/University Trips	
12	32-34	I3	Percent Home Based Other Trips	
13	35-37	I3	Percent Non Home Based Work Trips	
14	38-40	I3	Percent Non Home Based Other Trips	
15	41-43	I3	Percent Airport Trips	
16	44-46	I3	Percent 4-tired Truck Trips	
17	47-49	I3	Percent Single-Unit Truck Trips	
18	50-52	I3	Percent Combination Truck Trips	
19	53-57	I5	Total Employment	Fields 19 through 24 are necessary if "T" is coded in Column 10 (special generators variable only, not total for zone)
20	58-62	I5	Commercial Employment	
21	63-67	I5	Service Employment	
22	68-72	I5	School Enrollment	
23	73-77	I5	Households	
24	78-82	I5	Occupied H/M Units	
25	84-115	A32	Name or Description of the Special Generator	

(*) Airport Enplanements data are entered in ZDATA3B file and use flag "A" in Column 1.
The description of the other relevant fields for this enplanement data follows:
Field 3: Airport Zone Number.
Field 6: Daily Passanger Enplanements.

Note: (1) All numeric data must be coded, right justified, with no leading zero.
(2) All percentages must be in whole units (E.G. 10 = 10 percent)
(3) Data for any special generators in a zone should be included on production and attraction files.

Table B-25
Format of External-Internal Trip Data (ZDATA4B.{Year}{C})
Southeast Regional Planning Model 6.5

			Description	
Field	**Columns**	**Format**	**Content**	**Comment**
1	1	I1	Card Type/Identifier	4
2	2-8	I7	MPO TAZ/External station number	
3	**9-14**	**I6**	**Total person trip productions**	**Splits in fields 4-15**
4	15-17	I3	Percentage of HBW production trips	
5	18-20	I3	Percentage of HBSHP production trips	
6	21-23	I3	Percentage of HBSocRec production trips	
7	24-26	I3	Percentage of HBSchool production trips	Percent of Fields
8	27-29	I3	Percentage of HBUNV (inc. College) production trips	4 through 15 should
9	30-32	I3	Percentage of HBOther production trips	add up to 100
10	33-35	I3	Percentage of NHBW production trips	
11	36-38	I3	Percentage of NHBO production trips	
12	39-41	I3	Percentage of AIRPORT production trips	
13	42-44	I3	Percentage of 4-TIRED-Truck production trips	
14	45-47	I3	Percentage of SU-Truck production trips	
15	48-50	I3	Percentage of COMB-Truck production trips	
16	**51-56**	**I6**	**Total person trip attractions**	**Splits in fields 17-28**
17	57-59	I3	Percentage of HBW attraction trips	
18	60-62	I3	Percentage of HBSHP attraction trips	
19	63-65	I3	Percentage of HBSocRec attraction trips	
20	66-68	I3	Percentage of HBSchool attraction trips	Percent of Fields
21	69-71	I3	Percentage of HBUNV (inc. College) attraction trips	17 through 28 should
22	72-74	I3	Percentage of HBOther attraction trips	add up to 100
23	75-77	I3	Percentage of NHBW attraction trips	
24	78-80	I3	Percentage of NHBO attraction trips	
25	81-83	I3	Percentage of AIRPORT attraction trips	
26	84-86	I3	Percentage of 4-TIRED-Truck attraction trips	
27	87-89	I3	Percentage of SU-Truck attraction trips	
28	90-92	I3	Percentage of COMB-Truck attraction trips	
29	**93-95**	**I3**	**Extra Regional Travel Time (minutes)**	
30	*96-98*	*I3*	*Percent of peak trips made from 0 auto households*	*Percent of Fields*
31	*99-101*	*I3*	*Percent of peak trips made from 1 auto households*	*30 through 32 should*
32	*102-104*	*I3*	*Percent of peak trips made from 2+ auto households*	*add up to 100*
33	*105-107*	*I3*	*Percent of off-peak trips made from 0 auto households*	*Percent of Fields*
34	*108-110*	*I3*	*Percent of off-peak trips made from 1 auto households*	*33 through 35 should*
35	*111-113*	*I3*	*Percent of off-peak trips made from 2+ auto households*	*add up to 100*
36	**115-145**	**A31**	**Roadway Name**	

Note: Fields 30-35 are used to write A1DECK data for the external station.

Table B-26
Format of Tri-Rail Farezone Data (TRFAREZONE_{Year}{ALT}.DAT)
Southeast Regional Planning Model 6.5

Note: The format of this data file is context sensitive and determined by first field of the records.
The description of the contents (Field 1) follows:
1 = Station nodes and farezone specification records
2 = Number of farezone traveled records
3 = Amount of fares by farezone traveled records

(1) Station Nodes and Farezone Specification:

Field	Columns	Description
1	8	Index for Station nodes and farezone specification records (Coded with "1")
2	9-16	Station Node Number
3	17-24	Farezone number
4	41-80	Station Name

(2) Number of Farezone Traveled:

Field	Columns	Description
1	8	Index for Number of farezone traveled records (Coded with "2")
2	9-16	Origin Farezone number
3	17-24	Destination Farezone number
4	25-32	Number of Farezone Traveled

(2) Number of Farezone Traveled:

Field	Columns	Description
1	8	Index for Amount of fares by farezone traveled records (Coded with "3")
2	9-16	Number of Farezone Traveled
3	17-24	Amount of zonal fares in cents
4	41-80	Comment on dollars of the year

Note: See **Figure B-12** for listing of TRFAREZONE_05R.DAT file

Table B-27
Format of Mode Choice Utility Constants and Coefficients (NLOGITJ.SYN)
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format
1	1-10	Peak HBW Purpose - Constants and Coefficients of Utility Functions	F10.4
2	11-20	Peak HBNW Purpose - Constants and Coefficients of Utility Functions	F9.4
3	21-30	Peak NHB Purpose - Constants and Coefficients of Utility Functions	F9.4
4	31-40	Off-Peak HBW Purpose - Constants and Coefficients of Utility Functions	F9.4
5	41-50	Off-Peak HBNW Purpose - Constants and Coefficients of Utility Functions	F9.4
6	51-60	Off-Peak NHB Purpose - Constants and Coefficients of Utility Functions	F9.4
4	64-111	Description of Coefficients and Constants	A48
5	112-137	Symbolic Variable Name and Row Number (not used by program)	

Note: See **Figure B-13** for listing of NLOGIT.SYN file

Table B-28
Format of Non-motorized Utility Functions (NMOTOR.SYN)
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format
1 (record 1)	1-15	HBW Purpose - Coefficient (COEF) of Utility Functions	REAL NO
2 (record 1)	16-30	HBNW Purpose - Coefficients (COEF) of Utility Functions	REAL NO
3 (record 1)	31-45	NHB Purpose - Coefficients (COEF) of Utility Functions	REAL NO
1 (record 2)	1-15	HBW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
2 (record 2)	16-30	HBNW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
3 (record 2)	31-45	NHB Purpose - BIAS COnstants (BIAS) of Utility Functions	REAL NO
1 (record 3)	31-45	ALL Purposes - Index Coefficient (INDCOEF) of Utility Functions	REAL NO

Note: See **Figure B-14** for listing of NMOTOR.SYN file

Table B-29
Format of Zonal Walk Access Data (PCWALK_{Year}{ALT}.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format
1	1-5	Zone number	I5
2	6-11	Short production walk percentage - peak period	I6
3	12-17	Short attraction walk percentage - peak period	I6
4	18-23	Long production walk percentage - peak period	I6
5	24-29	Long attraction walk percentage - peak period	I6
6	30-35	Short production walk percentage - off peak period	I6
7	36-41	Short attraction walk percentage - off peak period	I6
8	42-47	Long production walk percentage - off peak period	I6
9	48-53	Long attraction walk percentage - off peak period	I6

Table B-30
Description of Highway-to-Transit Curves
(SDLAY{PP}2_{Year}{ALT}.CSV, PP=AM,MD)
Southeast Regional Planning Model 6.5

Field	Record	Description
1	1	Curve 1 - Origin Auto Speed Value (X0)
1	2	Curve 1 - Low Auto Speed Value (X1)
1	3	Curve 1 - High Auto Speed Value (X2)
16	1	Curve 1 - Origin Auto Speed Value (X0)
16	2	Curve 1 - Low Transit Speed Value (Y1)
16	3	Curve 1 - High Transit Speed Value (Y2)
Curve 2: Fields 2, 17; Curve 3: Fields 3,18 and so on...		
15	1	Curve 15 - Origin Auto Speed Value (X0)
15	2	Curve 15 - Low Auto Speed Value (X1)
15	3	Curve 15 - High Auto Speed Value (X2)
30	1	Curve 15 - Origin Auto Speed Value (X0)
30	2	Curve 15 - Low Transit Speed Value (Y1)
30	3	Curve 15 - High Transit Speed Value (Y2)

Table B-31
Format of Transit Speed-Delay Curves (SDLAYUPD_{Year}{ALT}.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format
SPEED CURVE USE FORMAT (Card Type 2)			
1	1	**Card Type (=2)**	I1
2	2-3	Low Mode	I2
3	4-5	High Mode	I2
4	6-7	Low Area Type (NEWAREA: 1-5)	I2
5	8-9	High Area Type (NEWAREA: 1-5)	I2
6	10-11	Low Facility Type (FTC2: 10-99)	I2
7	12-13	High Facility Type (FTC2: 10-99)	I2
	14	(Unused)	
9	15-16	Curve Number (1-15)	I2
SPEED CURVE FORMAT (Card Type 3) [see Note]			
1	1	**Card Type (=3)**	I1
	2	(Unused)	
2	3-4	Curve Number (1-15)	I2
	5	(Unused)	
3	6-10	Low Auto Speed Value (X1)	F5.0
	11	(Unused)	
4	12-16	Low Transit Speed Value (Y1)	F5.0
	17	(Unused)	
5	18-22	High Auto Speed Value (X2)	F5.0
	23	(Unused)	
6	24-28	High Transit Speed Value (Y2)	F5.0
	29-30	(Unused)	

Note: Card Type 3 information from this file are not used in model.
These data are used from SDLAYAM2_{Year}{ALT}.CSV or SDLAYMD2_{Year}{ALT}.CSV.

See **Figure B-15** for listing of SDLAYUPD_05R.DAT file

Table B-32
Format of Non-motorized Friendliness Index (WALK.{XX})
Southeast Regional Planning Model 6.5

Field	Columns	Description	Format
1	1-5	MPO Internal TAZ Number	I5
2	6-11	NMF Index (see Note)	I6

NOTE:
The composite index (index) for a TAZ is the sum of three non-motorized friendliness (NMF) variables.

	Index Rating			
Variable	0	1	2	3
Sidewalk Availability	No sidewalks	<10% have sidewalks	10-90% have sidewalks	>90% have sidewalks
Ease of Crossing	No crossings	<10% have crossings	10-90% have crossings	>90% have crossings
Area Type	5 (Very Low Density - NonCBD)	4 (Low Density - NonCBD)	2-3 (High-Medium Density - NonCBD)	1 (CBD)

See **Figure B-18** for sample listing of WALK.XX files

Table B-33
Format of Extra Auto Connectors (XTRAAUTO_{Year}{ALT}.dat)
Southeast Regional Planning Model 6.5

Field #	Format	Description
1-2		Blank
3-7	Integer	Anode (Centroid)
8-12	Integer	Bnode (Station)

Note: There is a maximum of four over-rides per zone.

Table B-34
Format of Prohibited Auto Connectors (AUTODELPP_{Year}{ALT}.DAT, PP=AM,MD)
Southeast Regional Planning Model 6.5

Field #	Format	Description
1-5	Integer	Zone number

Note: Auto connectors are prohibited from this list of zones.

Table B-35
Format of District-to-District Constants (DISTS_SYN.TXT)
Southeast Regional Planning Model 6.5

Line #	Columns	Format	Description
1	1-10		Description
	11-12	Integer	Number of districts
2 (repeated for each district)	1-3		Description
	4-13	Character	District label
3 (repeated for each desired district-to-district pair)	1-3	Integer	Low district number of origin range
	4-6	Integer	High district number of origin range
	7-9	Integer	Low district number of destination range
	10-12	Integer	High district number of destination range
	13-15	Integer	Low district number of purpose range
	16-18	Integer	High district number of purpose range
	19-28	Real	District constant for transit mode
	29-38	Real	District constant for shared-ride mode

Table B-36
Format of Toll Link Data (TOLLLINK.{Year}{ALT})
Southeast Regional Planning Model 6.5

Field	Columns (*)	Description
Line 1 of the File:		
1	1-5	"CTOLL"
2	7	"="
3	9-13	CTOLL value (x.xxx), overrides PROFILE.MAS value
Lines 2+ of the File:		
1	1-2	Toll class from columns 17-18 of LINKS file - Not Used
2	4	Toll type (1=coin, 2=card, 3=AVI) / (1=freeway booths, 2=ramp booths, no decel/accel)
3	6-10	A-Node - Location of toll booth
4	12-16	B-Node - Location of toll booth
5	18-42	Toll Plaza/ramp ID
6	44-45	Number of lanes through toll plaza
7	47-48	Maximum number of lanes
8	50-54	Toll amount in dollars with decimal in 52 (xx.xx)
9	56-59	Average service time in MIN:SEC with colon in 57 (x:xx)
10	61	Deceleration Code (1-5), used only as "1"
11	63	Acceleration Code (1-5), used only as "1"
12	65-66	Number of exact change lanes
13	68-69	Number of Automated Vehicle ID (AVI) lanes
14	71-74	Ratio of Heavy Truck with decimal in 72 (x.xx)
15	94	County (1=PB, 2=BO, 3=MD)
16	97-99	Average service seconds (X.X secs) data received from toll authorities.

Note: All highway based modeling processes use the toll related data entered on the Cube-Voyager highway network. In SERPM6.5 (24-Hour Version), this file is written and used in the mode-choice program. In TOD version of SERPM6.5, this file is also written by CV step. However, mode-choice program does not use this file. The file provides a summary of toll related data in model and is valuable for quick check of these data.

Figure B-1
Listing of BASEFARES_05R.DAT File
Southeast Regional Planning Model 6.5

```
; 2005 Fares (assume same as 2007 fares listed on PalmTran, BCT and Metrobus websites)
; Boarding Fares (Note: all fares are regular; no discount is applied)
_PalmTran   = 125      ;PalmTran - Regular 1-ride Fare
_PalmTranPass = 300    ;PalmTran - Regular Daily Pass Fare
_BCT        = 100      ;BCT - Regular 1-ride Fare
_BCTPass    = 250      ;BCT - Regular Daily Pass Fare
_Metrobus   = 150      ;MetroBus - Regular 1-ride Fare
_Metroexp   = 185      ;MetroBus Express - Regular 1-ride Fare
_Metrorail  = 150      ;MetroRail - Regular 1-ride Fare
_MetroMover = 0        ;Metromover - Free Ride
_ProjMode   = 0        ;Insert fares for Project Mode
;Note: Tri-rail feeder bus "Free" fares in transfer between tri-rail and
;      feedder buses are handeled in CV script (AMMAT00F.S)


; Transfer Fares (Note: all transfer fares are regular; no discount is applied)
_Metro2BCT  = 50               ;MetroBus/BCT regular Xfer
_Metroxfer  = 50               ;MetroBus regular Xfer
_Metro2exp  = 85               ;MetroBus and Express Xfer - assuming diff (35cents) of metrobus
                               ; and express fare plus normal xfer (50cents)
```

Figure B-2
Listing of COMBLS65.CTL File
Southeast Regional Planning Model 6.5

```
c  Control file for SERPM65 lifestyle trip generation aggregation program
c  File contains urban and regional TAZ information
c                                    REGION REGION
c   CNTY         AREA        ALT   INT START   END
c                NAME  YEAR   YR ZONES  ZONE  ZONE
c

U PALM BEACH       PB  2005  P05  1750     1  1750
U BROWARD          BO  2005  B05   950  1751  2700
U MIAMI-DADE       MI  2005  A05  1500  2701  4200
R REGIONAL         RE  2005  R05  4200

c  External data follows
c        1         2         3         4         5         6
c234567890123456789012345678901234567890123456789012345678901234567890
c   AREA  COUNTY  REGION     <-------STATION-------NAME---->
c   NAME    ZONE    ZONE
E     PB    1751    4201     A1A-Beach Road - MA CL
E     PB    1752    4202     SR 5 - MA CL
E     PB    1753    4203     I-95 - MA CL
E     PB    1754    4204     FL TPK - MA CL
E     PB    1755    4205     SR 7 EXT - MA CL
E     PB    1756    4206     Pratt-Whitney Rd - MA CL
E     PB    1757    4207     BeeLine Hwy(SR710)-MA CL
E     PB    1758    4208     US 98 North
E     PB    1759    4209     US 27 North
E     PB    1760    4210      dummy ext - PB
E     PB    1761    4211      dummy ext - PB
E     PB    1762    4212      dummy ext - PB
E     PB    1763    4213      dummy ext - PB
E     PB    1764    4214      dummy ext - PB
E     PB    1765    4215      dummy ext - PB
E     PB    1766    4216      dummy ext - PB
E     PB    1767    4217      dummy ext - PB
E     PB    1768    4218      dummy ext - PB
E     PB    1769    4219      dummy ext - PB
E     PB    1770    4220      dummy ext - PB
E     PB    1771    4221      dummy ext - PB
E     PB    1772    4222      dummy ext - PB
```

Figure B-2 (continued)
Listing of COMBLS65.CTL File
Southeast Regional Planning Model 6.5

```
E     BO     951    4223      dummy ext - BO
E     BO     952    4224      dummy ext - BO
E     BO     953    4225      dummy ext - BO
E     BO     954    4226      dummy ext - BO
E     BO     955    4227      dummy ext - BO
E     BO     956    4228      dummy ext - BO
E     BO     957    4229      dummy ext - BO
E     BO     958    4230      dummy ext - BO
E     BO     959    4231      dummy ext - BO
E     BO     960    4232      dummy ext - BO
E     BO     961    4233      dummy ext - BO
E     BO     962    4234      dummy ext - BO
E     BO     963    4235      dummy ext - BO
E     BO     964    4236      dummy ext - BO
E     BO     965    4237      dummy ext - BO
E     BO     966    4238     XXX
E     BO     967    4239     I-75 NORTH (COLLIER)
E     BO     968    4240      dummy ext - BO
E     BO     969    4241      dummy ext - BO
E     BO     970    4242      dummy ext - BO
E     BO     971    4243      dummy ext - BO
E     BO     972    4244      dummy ext - BO
E     BO     973    4245      dummy ext - BO
E     BO     974    4246      dummy ext - BO
E     BO     975    4247      dummy ext - BO
E     BO     976    4248      dummy ext - BO
E     BO     977    4249      dummy ext - BO
E     BO     978    4250      dummy ext - BO
E     BO     979    4251      dummy ext - BO
E     BO     980    4252      dummy ext - BO
E     BO     981    4253      dummy ext - BO
E     BO     982    4254      dummy ext - BO
E     BO     983    4255      dummy ext - BO
E     BO     984    4256      dummy ext - BO
E     BO     985    4257      dummy ext - BO
E     BO     986    4258      dummy ext - BO
E     BO     987    4259      dummy ext - BO
E     BO     988    4260      dummy ext - BO
E     BO     989    4261      dummy ext - BO
E     BO     990    4262      dummy ext - BO
E     BO     991    4263      dummy ext - BO
E     MI    1501    4264      dummy ext - MI
E     MI    1502    4265      dummy ext - MI
E     MI    1503    4266      dummy ext - MI
E     MI    1504    4267      dummy ext - MI
E     MI    1505    4268      dummy ext - MI
E     MI    1506    4269      dummy ext - MI
E     MI    1507    4270      dummy ext - MI
E     MI    1508    4271      dummy ext - MI
E     MI    1509    4272      dummy ext - MI
E     MI    1510    4273      dummy ext - MI
E     MI    1511    4274      dummy ext - MI
E     MI    1512    4275      dummy ext - MI
E     MI    1513    4276      dummy ext - MI
E     MI    1514    4277      dummy ext - MI
E     MI    1515    4278      dummy ext - MI
E     MI    1516    4279      dummy ext - MI
E     MI    1517    4280      dummy ext - MI
E     MI    1518    4281      dummy ext - MI
E     MI    1519    4282     US41/SR90
E     MI    1520    4283     US1/SR5-Monroe CL
E     MI    1521    4284     Card Sound Road-Monroe CL
```

Note: See **Table B-7** for format of COMBCLS65.CTL file.

Figure B-3
Listing of DATABASE.CTL File
Southeast Regional Planning Model 6.5

```
*** DEFINITON *** HRLDXY ALIASES
 DBF IDENT NO FIELD       ALIAS        FACTOR
1234567890 12 12345678901 123456789011 1234567
LINK ALIAS  1 ANODE       A              1.000
LINK ALIAS  2 BNODE       B              1.000
LINK ALIAS  3 DISTANCE    DISTANCE     100.000
LINK ALIAS  4 DIR         DIRCODE        1.000
LINK ALIAS  5 ATYPE       AREA_TYPE      1.000
LINK ALIAS  6 FTYPE       FTC2           1.000
LINK ALIAS  7 LANES       NUM_LANES      1.000
LINK ALIAS  8 TIME        TIME         100.000
LINK ALIAS  9 CAPACITY    CAPACITYE      1.000
LINK ALIAS 10 COUNT       COUNT          1.000
LINK ALIAS 11 SCREENLINE  SCREENLINE     1.000
LINK ALIAS 12 ZONE        ZONE           1.000
LINK ALIAS 13 USE         USECODE        1.000
LINK ALIAS 14 LOCATION    LOCATION       1.000
LINK ALIAS 15 LANDUSE     LANDUSE        1.000
LINK ALIAS 16 CONSTRUCT   CONSTRUCTIO    1.000
LINK ALIAS 17 CONG_TIME   CONGTIME     100.000
LINK ALIAS 18 MODELVOL    TOTAL_VOL      1.000
LINK ALIAS 19 COST        TOLL         100.000
LINK ALIAS 20 TWFLAG      TWOWAY         1.000
```

Figure B-4
Listing of HELABELS.SYN File
Southeast Regional Planning Model 6.5

```
LABEL FT 11  1  1  Freeway Freeway(11)
LABEL FT 12  1  1  Freeway Freeway(12)
LABEL FT 21  2  2  UnterRd UninterRd(21)
LABEL FT 41  4  4  HSpdArt HiSpdArt(41)
LABEL FT 51  5  5   CenCon Cencon(51-52)
LABEL FT 52  5  5   CenCon Cencon(51-52)
LABEL FT 61  6  6  LSpdCol LowSodCol(61)
LABEL FT 71  7  7    Ramps Ramps(71+,93-94)
LABEL FT 72  7  7    Ramps Ramps(71+,93-94)
LABEL FT 73  7  7    Ramps Ramps(71+,93-94)
LABEL FT 74  7  7    Ramps Ramps(71+,93-94)
LABEL FT 75  7  7    Ramps Ramps(71+,93-94)
LABEL FT 93  7  7    Ramps Ramps(71+,93-94)
LABEL FT 94  7  7    Ramps Ramps(71+,93-94)
LABEL FT 81  8  8      HOV HOV(81-82)
LABEL FT 82  8  8      HOV HOV(81-82)
LABEL FT 91  9  9     Toll Toll(91-92)
LABEL FT 92  9  9     Toll Toll(91-92)
LABEL AT  1  1  1      CBD CBD(1)
LABEL AT  2  2  2    HiDen NCBD-HiDen(2)
LABEL AT  3  3  3   MedDen NCBD-MedDen(3)
LABEL AT  4  4  4   LowDen NCBD-LowDen(4)
LABEL AT  5  5  5  VlowDen NCBD-VeryLowDen(5)
```

Figure B-5
Listing of HERATES.SYN File
Southeast Regional Planning Model 6.5

```
 1.060, 5.830, 5.740, 5.290, 8.630, 5.740, 5.740, 1.060, 1.060 ACC RATES
 0.730, 3.850, 3.520, 3.120, 3.490, 3.520, 3.520, 0.730, 0.730 INJ RATES
 0.009, 0.019, 0.019, 0.017, 0.018, 0.019, 0.019, 0.009, 0.009 FAT RATES
 1000.,36550.,2632016.                    ACCIDENT COST RATES
 37.73, 37.73, 37.73, 37.73, 37.73, 37.73, 37.73, 37.73, 37.73 CO RATES
 27.77, 27.77, 27.77, 27.77, 27.77, 27.77, 27.77, 27.77, 27.77     "
 21.82, 21.82, 21.82, 21.82, 21.82, 21.82, 21.82, 21.82, 21.82     "
 17.72, 17.72, 17.72, 17.72, 17.72, 17.72, 17.72, 17.72, 17.72     "
 14.74, 14.74, 14.74, 14.74, 14.74, 14.74, 14.74, 14.74, 14.74     "
 12.49, 12.49, 12.49, 12.49, 12.49, 12.49, 12.49, 12.49, 12.49     "
 10.76, 10.76, 10.76, 10.76, 10.76, 10.76, 10.76, 10.76, 10.76     "
 10.64, 10.64, 10.64, 10.64, 10.64, 10.64, 10.64, 10.64, 10.64     "
 12.84, 12.84, 12.84, 12.84, 12.84, 12.84, 12.84, 12.84, 12.84     "
 17.23, 17.23, 17.23, 17.23, 17.23, 17.23, 17.23, 17.23, 17.23     "
  2.30,  2.30,  2.30,  2.30,  2.30,  2.30,  2.30,  2.30,  2.30 HC RATES
  1.73,  1.73,  1.73,  1.73,  1.73,  1.73,  1.73,  1.73,  1.73     "
  1.47,  1.47,  1.47,  1.47,  1.47,  1.47,  1.47,  1.47,  1.47     "
  1.29,  1.29,  1.29,  1.29,  1.29,  1.29,  1.29,  1.29,  1.29     "
  1.16,  1.16,  1.16,  1.16,  1.16,  1.16,  1.16,  1.16,  1.16     "
  1.05,  1.05,  1.05,  1.05,  1.05,  1.05,  1.05,  1.05,  1.05     "
  0.97,  0.97,  0.97,  0.97,  0.97,  0.97,  0.97,  0.97,  0.97     "
  0.95,  0.95,  0.95,  0.95,  0.95,  0.95,  0.95,  0.95,  0.95     "
  0.98,  0.98,  0.98,  0.98,  0.98,  0.98,  0.98,  0.98,  0.98     "
  1.07,  1.07,  1.07,  1.07,  1.07,  1.07,  1.07,  1.07,  1.07     "
  1.99,  1.99,  1.99,  1.99,  1.99,  1.99,  1.99,  1.99,  1.99 NO RATES
  1.89,  1.89,  1.89,  1.89,  1.89,  1.89,  1.89,  1.89,  1.89     "
  1.88,  1.88,  1.88,  1.88,  1.88,  1.88,  1.88,  1.88,  1.88     "
  1.89,  1.89,  1.89,  1.89,  1.89,  1.89,  1.89,  1.89,  1.89     "
  1.91,  1.91,  1.91,  1.91,  1.91,  1.91,  1.91,  1.91,  1.91     "
  1.94,  1.94,  1.94,  1.94,  1.94,  1.94,  1.94,  1.94,  1.94     "
  1.99,  1.99,  1.99,  1.99,  1.99,  1.99,  1.99,  1.99,  1.99     "
  2.25,  2.25,  2.25,  2.25,  2.25,  2.25,  2.25,  2.25,  2.25     "
  2.56,  2.56,  2.56,  2.56,  2.56,  2.56,  2.56,  2.56,  2.56     "
  2.92,  2.92,  2.92,  2.92,  2.92,  2.92,  2.92,  2.92,  2.92     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258 FUEL RATE
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258,.06258     "
 1901., 1478., 1267., 1267.,    0., 1267., 1267., 1901., 1901. CC RATES
 2628., 2464., 2217., 2217.,    0., 2217., 2217., 2628., 2628.     "
 2713., 2851., 2534., 2534.,    0., 2534., 2534., 2713., 2713.     "
    0., 1478., 1267., 1267.,    0., 1267., 1267.,    0.     0.     "
    0.,    0., 1267., 1267.,    0., 1267., 1267.,    0.     0.     "
    0., 2464., 2217., 2217.,    0., 2217., 2217.,    0.     0.     "
    0., 1267., 1267., 1267.,    0., 1267., 1267.,    0.,    0.     "
 2059., 2112., 1760., 1760.,    0., 1760., 1760., 2059., 2059.     "
 2628., 2464., 2218., 2218.,    0., 2218., 2218., 2628., 2628.     "
    0.,    0.,    0.,    0.,    0.,    0.,    0.,    0.,    0.     "
```

Figure B-5 (continued)
Listing of HERATES.SYN File
Southeast Regional Planning Model 6.5

```
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100 UC RATES
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
.4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100, .4100     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493. MAIN RATE
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
 638.,  493.,  352.,  253.,  253.,  253.,  493.,  493.,  493.     "
```

Figure B-6
Listing of HESCREEN.SYN File
Southeast Regional Planning Model 6.5

```
  3 PB:EW SL along N of Boynton Bch Blvd
  4 PB:EW Middle SL along S of Forest Hill
  5 PB:EW Northern SL along N of 45th St
  6 PB:EW Northern SL along N of Donald Ross
  7 PB:EW Ext SL @Martin County Line
  8 PB:NS CL W of TPK from PGA-Beeline
  9 PB:NS CL E of I95 from PGA-Northlake
 10 PB:NS CL along TPK from SR704-SR822
 11 PB:NS CL E of SR809 from SR704-Gun Club
 12 PB:NS CL E of I95 from PB Lakes-Summitt
 13 PB:NS CL along I95 from Lake IDA-Linton
 14 PB:NS CL along TPK from Clintmore-SR806
 15 PB:NS CL along I95 from SR794-SW18th
 16 PB:Two Western Ext Stations
 17 PB:NS CL by Heaven Hill Summitt-Gateway
 18 PB:NS SL along Intra-Coastal Crossings
 21 BO:EW Northern SL along Pompano Canal
 22 BO:EW Middle SL along Oakland Park Blvd
 23 BO:EW Southern SL along River Canal
 24 BO:NS Western SL between I75 and TPK
 25 BO:NS Middle SL along TPK
 26 BO:NS Eastern SL along Intracostal Wway
 27 BO:EW SL BO/PB County Line
 28 BO:EW SL BO/MD County Line
 29 BO:Western Ext CL @ Collier County Line
 32 BO:NS I-95 CL  from Miami-Dade to I-595
 33 BO:NS Western CL alng SR897 frm PB-SR816
 34 BO:NS I-95 CL  from Palm Beach to I-595
```

Figure B-6 (continued)
Listing of HESCREEN.SYN File
Southeast Regional Planning Model 6.5

```
42 MD:NS SL east of TPK
43 MD:EW SL south of I-75/Gratigny (SR 924)
44 MD:NS SL east of Palmeto Expwy (SR 826)
45 MD:EW SL south of SR934
46 MD:NS SL west of SR9/27th Avenue
47 MD:EW SL south of Dolphin Expwy (SR 836)
48 MD:EW CL along TPK ext and SR 826
49 MD:EW SL S of SR986/72ndSt & SnapperExpy
50 MD:NS SL west of I-95
51 MD:EW SL north of 152nd St (SR 992)
52 MD:NS Eastern SL along Intracostal Wway
53 MD:EW SL between 200th and 216th St
71 MD:Three Miami-Dade External Stations
59 BO:I-595 Corridor links not in SL21-34
75 BO:I-75 Corridor links not in SL21-34
82 BO:HEFT (SR 821) links not in SL21-34
86 BO:Sawgrass/SR869 links not in SL21-34
91 BO:FL TPK (SR 91) links not in SL21-34
95 PB/BO: I95 Links not in any other SL
96 PB: TPK Links not in any other SL
99 PB/BO/MI: All Other Counts w/o any SL/CL
```

Figure B-7
Listing of ML.CTL File
Southeast Regional Planning Model 6.5

```
&PARAM FWYCG=1.10,FWYFU=1.00,
 RAMPCG=1.10,RAMPFU=1.00,RANDOM=0.95,SLOPE=0.00,FWYED=0.01,RAMPED=0.05 &END
```

Figure B-8
Sample Listing of MTURNDEF.05R File
Southeast Regional Planning Model 6.5

```
C TURN PENALTY DEFINITION FILE
C (see Table B-15 for format of MTURNDEF records)
c FAC. TYPE         TURN PENALTIES (hundredths of minutes)
c FROM  TO          Left Thru Right Description
c    6   11            25   30   35
c----+----+*********----+----+----+*******************************************
     2    2             0    0    0  Uninterrupted Hwy to Uninterrupted Hwy
     2    4             0    0    0  Uninterrupted Hwy to HighSpeed Arterial
     2    6             0    0    0  Uninterrupted Hwy to LowSpeed Arterial
     2    7             0    0    0  Uninterrupted Hwy to FwyRamp
     4    2             0    0    0  HighSpeed Arterial to Uninterrupted Hwy
     4    4             0    0    0  HighSpeed Arterial to HighSpeed Arterial
     4    6             0    0    0  HighSpeed Arterial to LowSpeed Arterial
     4    7             0    0    0  HighSpeed Arterial to FwyRamp
     6    2             0    0    0  LowSpeed Arterial to Uninterrupted Hwy
     6    4             0    0    0  LowSpeed Arterial to HighSpeed Arterial
     6    6             0    0    0  LowSpeed Arterial to LowSpeed Arterial
     6    7             0    0    0  LowSpeed Arterial to FwyRamp
     7    2            50   30   20  FwyRamp to Uninterrupted Hwy
     7    4            50   30   20  FwyRamp to HighSpeed Arterial
     7    6            50   30   20  FwyRamp to LowSpeed Arterial
     7    7             0    0    0  FwyRamp to FwyRamp
     9    2            50   30   20  TollRamp to Uninterrupted Hwy
     9    4            50   30   20  TollRamp to HighSpeed Arterial
     9    6            50   30   20  TollRamp to LowSpeed Arterial
c
c TURN ANGLE DEFINITIONS
c   5
c---+***********************************
R 135 Maximum Included Right Turn Angle
L 225 Minimum Included Left Turn Angle
c
c***** FACTOR CARDS **********
c node   fac
c----+-----+
F 8038 1.100
c
c***** STANDARD TCARDS *******
c (see Table B-16 for format of standard TCARDS records)
c
C--Palm Beach User Specified Standard TCARDS
...
T 5344 5470 5340                              TURNPIKE - INDIANTOWN NO U TURN TURN AT BOOTH
...
c
c--Broward User Specified Standard TCARDS
...
T136821500914270                              No LT Sawgrass to SR7 - S65 NEW
...
c
c--Miami-Dade User Specified Standard TCARDS
...
T276692160927186                              No LT Allapattah and TPK
...
c--Palm Beach HOV Ingress/Egress Penalty Starts
...
T 5718 5694 5702  146                         I95HOV ON  NB CONGRESS
...
c--Broward HOV Ingress/Egress Penalty Starts
T144601441014411  175                         E-I95 BO Starts/Ends @ PB CL
...
T147851478124477  176                         I-I95 BO Starts/Ends @ MD Co LN
c--Miami_Dade HOV Ingress/Egress Penalty Starts
T244802448323333  155                         E-I95 MI Ends/Starts @ BO CL
...
```

Figure B-9
Listing of MVFACTORS.05R File
Southeast Regional Planning Model 6.5

```
FTC2 = 11, UROADF = 0.8750, CONFAC24H = .06976, BPR LOS = 0.3200, BPR EXP = 7.000, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .09500
FTC2 = 12, UROADF = 0.8750, CONFAC24H = .06976, BPR LOS = 0.3000, BPR EXP = 6.500, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .09500
FTC2 = 21, UROADF = 0.9000, CONFAC24H = .08534, BPR LOS = 0.7500, BPR EXP = 6.850, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 41, UROADF = 0.9000, CONFAC24H = .08392, BPR LOS = 0.5500, BPR EXP = 5.050, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 51, UROADF = 1.0000, CONFAC24H = .04167, BPR LOS = 0.1000, BPR EXP = 2.000, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 52, UROADF = 1.0000, CONFAC24H = .04167, BPR LOS = 0.1000, BPR EXP = 2.000, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 59, UROADF = 1.0000, CONFAC24H = .04167, BPR LOS = 0.1000, BPR EXP = 2.000, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 61, UROADF = 0.9000, CONFAC24H = .08609, BPR LOS = 0.3500, BPR EXP = 4.050, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 69, UROADF = 1.0000, CONFAC24H = .04167, BPR LOS = 0.1000, BPR EXP = 2.000, CONFACAMP = .34333, CONFACPMP = .34333, CONFACOFP = .11500
FTC2 = 71, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.5000, BPR EXP = 6.250, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 72, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.5000, BPR EXP = 6.250, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 73, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.5000, BPR EXP = 6.250, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 74, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.5000, BPR EXP = 6.250, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 75, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.4000, BPR EXP = 6.550, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 81, UROADF = 0.8750, CONFAC24H = .06809, BPR LOS = 0.3450, BPR EXP = 7.750, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .09500
FTC2 = 82, UROADF = 0.8750, CONFAC24H = .06809, BPR LOS = 0.3450, BPR EXP = 7.750, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .09500
FTC2 = 83, UROADF = 0.9500, CONFAC24H = .04167, BPR LOS = 0.2500, BPR EXP = 4.000, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 84, UROADF = 0.9500, CONFAC24H = .04167, BPR LOS = 0.2500, BPR EXP = 4.000, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 85, UROADF = 0.9500, CONFAC24H = .04167, BPR LOS = 0.2500, BPR EXP = 4.000, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 86, UROADF = 0.9500, CONFAC24H = .04167, BPR LOS = 0.2500, BPR EXP = 4.000, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11000
FTC2 = 91, UROADF = 0.8750, CONFAC24H = .07266, BPR LOS = 0.3300, BPR EXP = 6.650, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .09500
FTC2 = 92, UROADF = 0.8750, CONFAC24H = .08266, BPR LOS = 0.3300, BPR EXP = 6.650, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .09500
FTC2 = 93, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.5000, BPR EXP = 6.350, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11250
FTC2 = 94, UROADF = 0.8750, CONFAC24H = .07536, BPR LOS = 0.5000, BPR EXP = 6.350, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11250
FTC2 = 95, UROADF = 1.0000, CONFAC24H = .07536, BPR LOS = 0.4500, BPR EXP = 3.000, CONFACAMP = .33333, CONFACPMP = .33333, CONFACOFP = .11250
```

Figure B-10
Listing of S65GEN.CTL File
Southeast Regional Planning Model 6.5

```
PB
05P
1750
1772
   1
Trip Generation for Palm Beach County

BO
05B
950
991
1751
Trip Generation for Broward County

MI
05A
1500
1521
2701
Trip Generation for Miami-Dade County
999999
```

Note:
For each county/MPO, S65GEN.CTL contains the following information:

1. Two letter urban area designation (for example, PB= Palm Beach, BO = Broward, and MI = Miami-Dade),
2. Input file extension (for example, 05P = Year 2005 and Palm Beach County),
3. Total internal zone numbers which includes "dummies" for future expansion,
4. Total internal and external zone numbers,
5. Starting Regional Zone Number, and
6. A title for trip generation output.

A blank line is expected between each set of county data. The last record should end with a "999999" record.

Figure B-11
Listing of DISTS_SYN.TXT File
Southeast Regional Planning Model 6.5

```
$Districts for modal choice
NUMDISTS   6
 1 Miami CBD
 2 Fort Lauderdale CBD
 3 Outlying CBD'S
 4 Metro-Dade Other
 5 Broward Other
 6 West Palm Other
$I1 I2 J1 J2 P1 P2   TRANSIT    SHARED
$MD-CBD to MD-CBD
  1  1  1  1  1  1      0.00      0.00
  1  1  1  1  2  2      0.00      0.00
  1  1  1  1  3  3      0.00      0.00
$MD-OTHR to MD-CBD
  4  4  1  1  1  1      0.00      0.00
  4  4  1  1  2  2      0.00      0.00
  4  4  1  1  3  3      0.00      0.00
$MD-CBD to BO-PB-CBD
  1  1  2  3  1  1      0.00      0.00
  1  1  2  3  2  2      0.00      0.00
  1  1  2  3  3  3      0.00      0.00
$MD-OTHR to BO-PB-CBD
  4  4  2  3  1  1      0.00      0.00
  4  4  2  3  2  2      0.00      0.00
  4  4  2  3  3  3      0.00      0.00
$BO-PB-CBD to Any-CBD
  2  3  1  3  1  1      0.00      0.00
  2  3  1  3  2  2      0.00      0.00
  2  3  1  3  3  3      0.00      0.00
$BO-PB-OTHR to Any-CBD
  5  6  1  3  1  1      0.00      0.00
  5  6  1  3  2  2      0.00      0.00
  5  6  1  3  3  3      0.00      0.00
```

Figure B-12
Listing of TRFAREZONE_05R.DAT File
Southeast Regional Planning Model 6.5

```
1   30500       1                Mangonia Park
1   30501       1                West Palm Beach
1   30503       1                Lake Worth
1   30504       2                Boynton Beach
1   30505       2                Delray Beach
1   30506       3                Boca Raton
1   30509       3                Deerfield Beach
1   30510       3                Pompano Beach
1   30511       4                Cypress Creek
1   30512       4                Fort Lauderdale
1   30513       5                FLL Airport
1   30514       5                Sheridan
1   30515       5                Hollywood
1   30518       6                Golden Glades
1   30519       6                Opa Locka
1   30520       6                Tri-Rail
1   30521       6                Hialeah Market
1   30522       6                Miami Airport
2       1       1       1
2       1       2       2
2       1       3       3
2       1       4       4
2       1       5       5
2       1       6       6
2       2       2       1
2       2       3       2
2       2       4       3
2       2       5       4
2       2       6       5
2       3       3       1
2       3       4       2
2       3       5       3
2       3       6       4
2       4       4       1
2       4       5       2
2       4       6       3
2       5       5       1
2       5       6       2
2       6       6       1
3       1     200                Regular Zonal Fares in 2005$
3       2     300
3       3     400
3       4     450
3       5     500
3       6     550
```

Note: See **Table B-26** for format of TRFAREZONE.{Year}{ALT}.DAT file

Figure B-13
Listing of NLOGITJ.SYN File
Southeast Regional Planning Model 6.5

-0.0450	-0.0350	-0.0450	-0.0450	-0.0350	-0.0450	TRANSIT WALK TIME, HIGHWAY TERMINAL TIME	WALKC	ATRMC	1
-0.0200	-0.0150	-0.0180	-0.0200	-0.0150	-0.0180	TRANSIT AUTO ACCESS TIME	AUTOC		2
-0.0200	-0.0150	-0.0180	-0.0200	-0.0150	-0.0180	TRANSIT RUN TIME, HIGHWAY RUN TIME	TRUNC	ARUNC	3
-0.0450	-0.0350	-0.0450	-0.0450	-0.0350	-0.0450	TRANSIT FIRST WAIT < 7 MIN	WTTAC		4
-0.0230	-0.0350	-0.0450	-0.0230	-0.0350	-0.0450	TRANSIT FIRST WAIT > 7 MIN	WTTBC		5
-0.0450	-0.0350	-0.0450	-0.0450	-0.0350	-0.0450	TRANSIT TRANSFER TIME	XFTC		6
-0.0450	-0.0350	-0.0450	-0.0450	-0.0350	-0.0450	TRANSIT NUMBER OF TRANSFERS	NXFC		7
-0.0032	-0.0048	-0.0048	-0.0032	-0.0048	-0.0048	TRANSIT FARE	FAREC		8
-0.0025	-0.0048	-0.0048	-0.0025	-0.0048	-0.0048	HIGHWAY AUTO OPERATING COSTS	ACSTC		9
-0.0032	-0.0048	-0.0048	-0.0032	-0.0048	-0.0048	HIGHWAY PARKING COSTS	APRKC		10
-0.0180	-0.0150	-0.0180	-0.0180	-0.0150	-0.0180	HOV TIME DIFFERENCE	HOVDIFFC		11
0.0000	0.0000	-0.5066	0.0000	0.0000	-0.5416	SHARED RIDE 2 CONSTANT - ZERO CAR HOUSEHOLDS	NEWCOEF(1,I)		12
-1.3778	-0.0181	-0.5066	-1.3749	-0.0309	-0.5416	SHARED RIDE 2 CONSTANT - ONE CAR HOUSEHOLDS	NEWCOEF(2,I)		13
-1.9391	-0.0026	-0.5066	-1.9413	-0.0146	-0.5416	SHARED RIDE 2 CONSTANT - TWO+ CAR HOUSEHOLDS	NEWCOEF(3,I)		14
-0.3042	-0.1759	-0.2013	-0.2991	-0.1716	-0.2116	SHARED RIDE 3+ CONSTANT - ZERO CAR HOUSEHOLDS	NEWCOEF(4,I)		15
-0.3555	-0.2076	-0.2013	-0.3499	-0.2119	-0.2116	SHARED RIDE 3+ CONSTANT - ONE CAR HOUSEHOLDS	NEWCOEF(5,I)		16
-0.3471	-0.1093	-0.2013	-0.3447	-0.1130	-0.2116	SHARED RIDE 3+ CONSTANT - TWO+ CAR HOUSEHOLDS	NEWCOEF(6,I)		17
2.0275	-0.1574	-2.0285	2.3909	0.1007	-2.1992	WALK TO TRANSIT - ZERO CAR HOUSEHOLDS	NEWCOEF(7,I)		18
-0.1869	-1.2172	-2.0285	0.2499	-0.8780	-2.1992	WALK TO TRANSIT - ONE CAR HOUSEHOLDS	NEWCOEF(8,I)		19
-2.4066	-2.8865	-2.0285	-1.9963	-2.5546	-2.1992	WALK TO TRANSIT - TWO+ CAR HOUSEHOLDS	NEWCOEF(9,I)		20
0.2400	0.1800	0.2160	0.2400	0.1800	0.2160	BRT/LRT TRANSIT	NEWCOEF(10,I)		21
0.4365	0.4404	0.5442	0.7280	0.7722	0.4600	METRORAIL TRANSIT	NEWCOEF(11,I)		22
0.0784	0.3692	0.6689	0.2723	1.0722	1.2355	TRIRAIL TRANSIT	NEWCOEF(12,I)		23
-5.4062	-5.0829	-2.7066	-5.2436	-5.0444	-3.0979	PARK AND RIDE TO TRANSIT - ZERO CAR HOUSEHOLDS	NEWCOEF(13,I)		24
-0.6040	-1.9240	-2.7066	-0.4965	-1.8675	-3.0979	PARK AND RIDE TO TRANSIT - ONE CAR HOUSEHOLDS	NEWCOEF(14,I)		25
-2.5343	-3.3131	-2.7066	-2.4571	-3.3034	-3.0979	PARK AND RIDE TO TRANSIT - TWO+ CAR HOUSEHOLDS	NEWCOEF(15,I)		26
-5.4062	-5.0829	-2.6116	-5.2436	-5.0444	-2.9957	KISS AND RIDE TO TRANSIT - ZERO CAR HOUSEHOLDS	NEWCOEF(16,I)		27
-0.5497	-1.8198	-2.6116	-0.4387	-1.7530	-2.9957	KISS AND RIDE TO TRANSIT - ONE CAR HOUSEHOLDS	NEWCOEF(17,I)		28
-2.5314	-3.2233	-2.6116	-2.4481	-3.1954	-2.9957	KISS AND RIDE TO TRANSIT - TWO+ CAR HOUSEHOLDS	NEWCOEF(18,I)		29
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	WALK TO PREMIUM BUS SURCHARGE	PREMFLAG(I)		30
0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	TRANSIT NESTING	TTNSTC		31
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	WALK ACCESS LOCAL BUS NESTING	TWNSTC		32
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	WALK ACCESS PREMIUM NESTING	PWNSTC		33
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	AUTO ACCESS NESTING	TANSTC		34
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	PARK N RIDE NESTING	PRNSTC		35
0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	KISS N RIDE NESTING	KRNSTC		36
0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	HIGHWAY NESTING	ATNSTC		37
0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	SHARED RIDE NESTING	SHNSTC		38
17.5821	33.5277	28.8003	17.5821	33.5277	28.8003	Multiplicative Scaling Factor for CPI/Purpose	FM		39
2.3300	2.4600	1.0500	2.3300	2.4600	1.0500	Additive Scaling Factor for CPI/Purpose	FA		40

Note: See **Table B-27** for format of NLOGITJ.SYN file

Figure B-14
Listing of NMOTOR.SYN File
Southeast Regional Planning Model 6.5

```
          3.0            2.5            2.0
-0.679779495     0.42366883     1.32410057
         0.25
```

Note: See **Table B-28** for format of NMOTOR.SYN file

Figure B-15
Listing of SDLAYUPD_05R.DAT File
Southeast Regional Planning Model 6.5

```
9999
2 1 1 1 51099  1
2 2 2 1 51099  2
2 3 3 1 51099  1
2 4 4 1 11019  3
2 4 4 2 41019  4
2 4 4 5 51019  5
2 4 4 1 24049  6
2 4 4 3 34049 10
2 4 4 3 36069 10
2 4 4 4 44049  8
2 4 4 4 46069  8
2 4 4 5 54049 12
2 4 4 5 56069 12
2 4 4 1 16069 13
2 4 4 2 26069  6
2 4 4 1 15059  4
2 4 4 2 25059  5
2 4 4 3 35059  7
2 4 4 4 45059  6
2 4 4 5 55059  2
2 4 4 1 22029  6
2 4 4 1 17099  3
2 4 4 2 47099  4
2 4 4 5 57099  5
2 5 5 1 11019  3
2 5 5 2 41019  4
2 5 5 5 51019  5
2 5 5 1 24049 11
2 5 5 3 34049 15
2 5 5 3 36069 15
2 5 5 4 44049 14
2 5 5 4 46069 14
2 5 5 5 54049 12
2 5 5 5 56069 12
2 5 5 1 16069 13
2 5 5 2 26069 11
2 5 5 1 15059  4
2 5 5 2 25059  5
2 5 5 3 35059  7
2 5 5 4 45059 11
2 5 5 5 55059  2
2 5 5 1 22029 11
2 5 5 1 17099  3
2 5 5 2 47099  4
2 5 5 5 57099  5
```

Figure B-15 (continued)
Listing of SDLAYUPD_05R.DAT File
Southeast Regional Planning Model 6.5

```
2 6 6 1 11019  3
2 6 6 2 41019  4
2 6 6 5 51019  5
2 6 6 1 24049 11
2 6 6 3 34049 15
2 6 6 3 36069 15
2 6 6 4 44049 14
2 6 6 4 46069 14
2 6 6 5 54049 12
2 6 6 5 56069 12
2 6 6 1 16069 13
2 6 6 2 26069 11
2 6 6 1 15059  4
2 6 6 2 25059  5
2 6 6 3 35059  7
2 6 6 4 45059 11
2 6 6 5 55059  2
2 6 6 1 22029 11
2 6 6 1 17099  3
2 6 6 2 47099  4
2 6 6 5 57099  5
2 9 9 1 11019  3
2 9 9 2 41019  4
2 9 9 5 51019  5
2 9 9 1 24049 11
2 9 9 3 34049 15
2 9 9 3 36069 15
2 9 9 4 44049 14
2 9 9 4 46069 14
2 9 9 5 54049 12
2 9 9 5 56069 12
2 9 9 1 16069 13
2 9 9 2 26069 11
2 9 9 1 15059  4
2 9 9 2 25059  5
2 9 9 3 35059  7
2 9 9 4 45059 11
2 9 9 5 55059  2
2 9 9 1 22029 11
2 9 9 1 17099  3
2 9 9 2 47099  4
2 9 9 5 57099  5
21212 1 11019  3
21212 2 41019  4
21212 5 51019  5
21212 1 24049  6
21212 3 34049 10
21212 3 36069 10
21212 4 44049  8
21212 4 46069  8
21212 5 56069 12
21212 5 52029 12
21212 1 16069 13
21212 2 26069  6
21212 1 15059  4
21212 2 25059  5
21212 3 35059  7
21212 4 45059  6
21212 5 55059  2
21212 1 22029  6
21212 1 17099  3
21212 2 47099  4
21212 5 57099  5
```

Figure B-15 (continued)
Listing of SDLAYUPD_05R.DAT File
Southeast Regional Planning Model 6.5

```
21011 1 11019  3
21011 2 41019  4
21011 5 51019  5
21011 1 14049  6
21011 2 24049  7
21011 2 26069  7
21011 3 44049  9
21011 3 46069  9
21011 5 54049 12
21011 5 56069 12
21011 1 16069 13
21011 2 26069  8
21011 1 15059  4
21011 2 25059  5
21011 3 35059  7
21011 4 45059  6
21011 5 55059  2
21011 1 12029  6
21011 1 17099  3
21011 2 47099  4
21011 5 57099  5
21313 1 11019  3
21313 2 41019  4
21313 5 51019  5
21313 1 22039 11
21313 3 32049 15
21313 4 42049 14
21313 5 52049 12
21313 1 14049 13
21313 2 24049 11
21313 1 15059  4
21313 2 25059  5
21313 3 35059  7
21313 4 45059 11
21313 5 55059  2
21313 1 26069 11
21313 3 36069 15
21313 4 46069 14
21313 5 56069 12
21313 1 17099  3
21313 2 47099  4
21313 5 57099  5
9999
3  1    30   2.5    70   2.5
3  2    30    30    70    70
3  3    25    25    45    30
3  4    27    27    50    40
3  5    35    35    55    48
3  6    18    10    32    16
3  7    20    12    35    19
3  8    20    10    35    14
3  9    16    11    36    21
3 10    19    12    36    19
3 11    20     9    34  13.5
3 12    24    16    48    25
3 13    20    10    28    14
3 14    22     9    37    12
3 15    21    10    38    16
9999
```

Note:

1. See **Table B-31** for format of SDLAYUPD.{Year}{ALT}.DAT file.
2. **Card Type 3 data of this file are not used in model. These data are used from SDLAYAM2_05R.CSV or SDLAYMD2_05R.CSV files.**

Figure B-16
Sample Listing of TROUTE_05.LIN File
Southeast Regional Planning Model 6.5

```
;;<<PT>><<LINE>>;;
;
;=========================Palm Beach Lines==========================
;
LINE NAME="M4L1PO", MODE=4, ONEWAY=T, LONGNAME="RTE 1: SB",
     XYSPEED=15, USERA1="TAW", USERA2="1", USERA3="7172",
     USERA4="1", HEADWAY[1]=15, HEADWAY[2]=50, HEADWAY[3]=15,
     OPERATOR=1, N=12106, 11214, 11216, 5829, -12107, -5928, 5912,
     11974, -5904, -5900, 5908, 5916, 5920, 12111, 11972, -5984,
     11970, 6116, 11968, 6136, 11966, 6200, 6236, 6272, 6384,
     -11962, 6388, -10812, 10810, 6392, -6396, 6408, -6436, -6464,
     -6210, -6488, 6512, -6540, 6632, -6660, -6708, -6724, -6736,
     -6772, -6780, 6820, -6906, 6924, -6946, 6974, -6988, -6990,
     11204, -12297, 7022, -11198, 11890, -7056, 12094, -7064, 11862,
     -7100, -11854, 5510, -11192, -11176, 11178, 11832, -7150, 7178,
     11164, -6786, 7228, 11724, 11730, 11736, 7290, 7356, -7358,
     -5000, 7446, -11360, -7470, 5814, -7572, 7608, -12298, 5016,
     -7706, -11240, 7748, -5805, -11376, -7800, 7816, 11252, -7872,
     7896, 7948, -12201, -7966, 12126, -8008, 8036, -12203, -5801,
     11624, -8098, -6310, -11254, 5778, 8134, -5793, -8200, 8230,
     8248, -8282, 8316, -8326, -8332, 8344, 8360, 8376, 8416, -8428,
     -8417, -8444, 8454, -8480, -8512, 12210, -8526, -8562, 8590,
     8606, 11286, 8618, -11560, 8666, -8702, 12145, -11394, 8720,
     11562, -8734, -8752, 8776, -8788, 12146, -8824, 12147, -8838,
     12150, -8862, 8874, -8882, -8898, 8928, -8944, 8966, -8976,
     8992, 9010, -11504, 9056, 12153, -9104, -9140, 9144, 9152,
     -9162, -9192, 9196, -9200, 9212, -9226, 9240, -9244, 9258,
     11448, -11446, 9302, -9312, 9322, 9332, -9336, 9380, -9400,
     -9440, -9476, 9496, 9558, -12270, 6110, 9630, 9632, 9648,
     11308, 11314, 11456, 9700, 9750, 9770, 9816, 9814
...
;
;=========================Broward Lines============================
;
LINE NAME="M4L1BO", MODE=4, ONEWAY=T, LONGNAME="RTE 1: SB",
     USERA1="TAW", XYSPEED=15, USERA2="1", USERA3="8069",
     USERA4="2", HEADWAY[1]=10, HEADWAY[2]=20, HEADWAY[3]=10,
     OPERATOR=3, N=16128, 16117, 16106, 16105, 16104, 16102, 16337,
     16396, 16394, 16392, 16390, 16388, 16386, 16372, 16370, 16368,
     16366, 16350, 14011, 16348, 16610, 16616, 16620, 16662, 16664,
     16666, 16670, 16672, 16636, 16682, 16946, 16944, 16942, 16940,
     16938, 16936, 17042, 17040, 17038, 17036, 17034, 17266, 17264,
     17258, 17254, 17252, 17250, 17248, 17634, 17632, 17630, 17628,
     17626, 17624, 17622, 17620, 17618, 17960, 17958, 17956, 21997,
     -27272, 22015, -27722, 26670, 22075, 22864, 26671, -23880,
     22076, -23881, 22077, 27620, 22079
...
;
;=========================Miami-Dade Lines==========================
;
LINE NAME="M5L1MI", MODE=5, ONEWAY=T,
     LONGNAME="RTE A: WB MIAMI BCH LINCOLN/WASHINGTON TO OMNI",
     XYSPEED=14, USERA1="SV", USERA2="A", USERA3="426", USERA4="3",
     HEADWAY[1]=20, HEADWAY[2]=45, HEADWAY[3]=20, OPERATOR=4,
     N=21520, 21536, 26655, 21532, 26654, 21530, 21528, 21525,
     21523, 21522, 23952, -21964, -21923, 24558, 24557, 24545
;
```

Figure B-16 (continued)
Sample Listing of TROUTE_05.LIN File
Southeast Regional Planning Model 6.5

```
;=======================Metro-Rail & Metro-mover Lines===================
;
LINE MODE=7, NAME="M7L1MD", ONEWAY=F,
     LONGNAME="STAGE 1: PALMETTO -> DADELAND SOUTH", USERA1="SKS",
     XYSPEED=30, USERA2="MR", USERA3="59400", USERA4="5",
     HEADWAY[1]=6, HEADWAY[2]=12, HEADWAY[3]=6, OPERATOR=8, N=30000,
     30001, 30002, 30003, 30004, 30005, 30006, 30007, 30008, 30009,
     30010, 30011, 30012, 30013, 30014, 30015, 30016, 30017, 30018,
     30019, 30020, 30021
;
LINE NAME="M9L1MD", MODE=9, ONEWAY=T, LONGNAME="DPM: CW INNER LOOP",
     USERA1="SKS", XYSPEED=17.5, USERA2="DPM", USERA3="28546",
     USERA4="5", HEADWAY[1]=1.5, HEADWAY[2]=1.5, HEADWAY[3]=1.5,
     OPERATOR=9, N=30700, 30701, 30702, -30703, 30772, 30704,
     -30705, 30706, -30707, 30708, -30709, -30710, 30711, 30700
LINE NAME="M9L2MD", MODE=9, ONEWAY=T, LONGNAME="DPM: OMNI LOOP",
     USERA1="SKS", XYSPEED=17.5, USERA2="DPM", USERA3="28546",
     USERA4="5", HEADWAY[1]=3, HEADWAY[2]=3, HEADWAY[3]=3,
     OPERATOR=9, N=30720, 30721, -30722, -30723, 30724, 30770,
     30725, -30703, 30702, 30701, 30700, -30712, 30726, -30709,
     30708, -30707, 30706, -30705, 30704, 30772, -30727, 30728,
     30771, 30729, -30730, -30731, 30732, 30720
LINE NAME="M9L3MD", MODE=9, ONEWAY=T, LONGNAME="DPM: BRICKELL LOOP",
     USERA1="SKS", XYSPEED=17.5, USERA2="DPM", USERA3="28546",
     USERA4="5", HEADWAY[1]=3, HEADWAY[2]=3, HEADWAY[3]=3,
     OPERATOR=9, N=30750, -30751, 30752, -30753, 30754, 30755,
     30756, -30709, 30708, -30707, 30706, -30705, 30704, 30772,
     -30703, 30702, 30701, 30700, -30712, 30726, 30757, 30758,
     30759, -30760, 30761, -30762, 30750
;
;=======================Tri-Rail Main Line==============================

LINE MODE=8, NAME="M8L1S65", ONEWAY=F,
     LONGNAME="TRI-RAIL MANGONIA-MIA", XYSPEED=40, USERA1="SKS",
     USERA2="TR",USERA3="11382", USERA4="6", HEADWAY[1]=30, HEADWAY[2]=60,
     HEADWAY[3]=30, OPERATOR=10, N=30500, -31059, 30501, -31060,
     -30502, -30523, -30524, 30503, -31061, 30504, -31054, -31055,
     -31056, -31053, 30505, -31052, 30506, -30507, -30508, 30509,
     30510, 30511, 30512, 30513, 30514, 30515, -30516, -30517,
     30518, 30519, 30520, 30521, 30522
```

Figure B-17
Listing of TSYSD_05R.PTS File
Southeast Regional Planning Model 6.5

```
; PT System Data File

; Mode Information
MODE NUMBER=1    NAME="Walk Access"  LONGNAME="Walk Access Connectors"
MODE NUMBER=2    NAME="Auto Access"  LONGNAME="Auto Access Connectors"
MODE NUMBER=3    NAME="Transfer"     LONGNAME="Transfer Connectors"
MODE NUMBER=4    NAME="PB&Brow LB"   LONGNAME="Palm Beach & Broward Local Bus"
MODE NUMBER=5    NAME="Metrobus LB"  LONGNAME="Miami-Dade Local Bus"
MODE NUMBER=6    NAME="Express Bus"  LONGNAME="Express Buses"
MODE NUMBER=7    NAME="Metrorail"    LONGNAME="METRORAIL STG 1"
MODE NUMBER=8    NAME="Tri-RaiL"     LONGNAME="TRI-RAIL"
MODE NUMBER=9    NAME="Metromover"   LONGNAME="Miami-Dade MetroMover"
MODE NUMBER=10   NAME="New Mode"     LONGNAME="New Mode"
MODE NUMBER=11   NAME="Proj Mode"    LONGNAME="Project Mode"
MODE NUMBER=12   NAME="Shuttle Bus"  LONGNAME="Shuttle Buses to Tri-Rail"
MODE NUMBER=13   NAME="Ltd Stop Bus" LONGNAME="Limited Stop Buses"

; Operator Information - used in FARESYSTEM
OPERATOR NUMBER=1  NAME="PB LB"      LONGNAME="Palm Beach Local Buses"
OPERATOR NUMBER=2  NAME="TR Shuttle" LONGNAME="Tri-Rail Shuttle Buses"
OPERATOR NUMBER=3  NAME="Broward LB" LONGNAME="Broward Local Buses"
OPERATOR NUMBER=4  NAME="Metrobus"   LONGNAME="Miami Metrobus"
OPERATOR NUMBER=5  NAME="Brow Exp"   LONGNAME="Broward Express Bus"
OPERATOR NUMBER=6  NAME="Miami Exp"  LONGNAME="Miami Express Buses"
OPERATOR NUMBER=7  NAME="New Mode"   LONGNAME="Reserved for New Mode"
OPERATOR NUMBER=8  NAME="MetroRail"  LONGNAME="METRORAIL"
OPERATOR NUMBER=9  NAME="MetroMover" LONGNAME="Miami-Dade METROMOVER"
OPERATOR NUMBER=10 NAME="Tri-Rail"   LONGNAME="TRI-RAIL"

; Wait Curve Definitions
```

Figure B-18
Sample Listing of WALK.XX File (*)
Southeast Regional Planning Model 6.5

WALK.PB File

TAZ	INDX	CNTY
1	0	1
2	0	1
3	0	1
4	0	1
5	0	1
6	0	1
7	0	1
8	0	1
9	0	1
10	0	1
11	0	1
12	0	1
13	0	1
14	0	1
15	0	1
16	0	1
17	0	1
18	0	1
19	0	1
20	3	1
...		
1730	0	1
1731	0	1
1732	0	1
1733	0	1
1734	0	1
1735	0	1
1736	0	1
1737	0	1
1738	0	1
1739	0	1
1740	0	1
1741	0	1
1742	0	1
1743	0	1
1744	0	1
1745	0	1
1746	0	1
1747	0	1
1748	0	1
1749	0	1
1750	0	1

WALK.BO File

TAZ	INDX	CNTY
1	3	2
2	3	2
3	3	2
4	1	2
5	1	2
6	1	2
7	1	2
8	2	2
9	2	2
10	2	2
11	1	2
12	2	2
13	2	2
14	1	2
15	1	2
16	1	2
17	0	2
18	2	2
19	2	2
20	2	2
...		
930	0	2
931	0	2
932	0	2
933	0	2
934	0	2
935	0	2
936	0	2
937	0	2
938	0	2
939	0	2
940	0	2
941	0	2
942	0	2
943	0	2
944	0	2
945	0	2
946	0	2
947	0	2
948	0	2
949	0	2
950	0	2

WALK.MI File

TAZ	INDX	CNTY
1	1	3
2	0	3
3	0	3
4	0	3
5	0	3
6	0	3
7	0	3
8	1	3
9	2	3
10	1	3
11	0	3
12	0	3
13	0	3
14	1	3
15	0	3
16	2	3
17	1	3
18	3	3
19	2	3
20	2	3
...		
1480	0	3
1481	0	3
1482	0	3
1483	0	3
1484	0	3
1485	0	3
1486	0	3
1487	0	3
1488	0	3
1489	0	3
1490	0	3
1491	0	3
1492	0	3
1493	0	3
1494	0	3
1495	0	3
1496	0	3
1497	0	3
1498	0	3
1499	0	3
1500	0	3

(*) XX=PB, BO, MI

Note:

1. See **Table B-32** for format of three WALK.XX files
2. **Walk Index files (WALK.XX) are written from the TAZ database (S65TAZS_{Year}.DBF) file. Any changes to the walk index data should be made to the TAZ database file.**

Figure B-19
Listing of WalkTRL_05R.FAC File
Southeast Regional Planning Model 6.5

```
; PT Factor File for ******** Walk Access - TriRail ********

; Global Settings

; Access/Egress Modes
DELMODE = 2

; Fares & Wait Times

; Run Factors
RUNFACTOR[1]   = 2.25
RUNFACTOR[3]   = 2.25
```

Figure B-20
Listing of FARES.DAT File
Southeast Regional Planning Model 6.5

```
FARE
  XFARE[1]=3*0,80,125,80,125,0,0,80,125,0,150,80,150,80,125,80,80,80
  XFARE[2]=3*0,80,125,80,125,0,0,80,125,0,150,80,150,80,125,80,80,80
  XFARE[3]=3*0,80,125,80,125,0,0,80,125,0,150,80,150,80,125,80,80,80
  XFARE[4]=3*80,25,125,25,125,-80,25,80,80,0,150,25,150,25,125,25,25,25
  XFARE[5]=3*125,80,25,80,25,-125,25,80,80,0,25,80,50,80,25,80,80,80
  XFARE[6]=3*80,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[7]=3*125,80,25,80,0,-125,0,80,80,0,25,80,50,80,25,80,80,80
  XFARE[8]=3*0,17*0
  XFARE[9]=3*0,80,125,80,125,-25,0,80,80,0,125,80,150,80,125,80,80,80
  XFARE[10]=3*80,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[11]=3*125,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[12]=3*0,80,125,80,125,0,25,80,80,0,125,80,150,80,125,80,80,80
  XFARE[13]=3*150,80,25,80,25,-125,25,80,80,0,25,80,50,80,25,80,80,80
  XFARE[14]=3*80,80,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[15]=3*150,80,25,80,0,-150,25,80,80,0,25,80,25,80,25,80,80,80
  XFARE[16]=3*80,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[17]=3*125,80,25,80,25,-125,25,80,80,0,25,80,50,80,25,80,80,80
  XFARE[18]=3*80,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[19]=3*80,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
  XFARE[20]=3*80,25,125,25,125,-80,25,25,25,0,125,25,150,25,125,25,25,25
```

Appendix C

CUBE VOYAGER SCRIPTS

[Note: These voluminous appendices (C1 through C12) are documented separately as APPENDIX-CN (N=1-12)].

The names of the scripts by its module and step number follow here:

APPENDIX C1: PILOT Module

1-S6PIL00H.S

APPENDIX C2: EXTERNAL Module

2-1-EXMAT00A.S
2-2-EXPIL00A.S
2-3-EXMAT00C.S
2-4-EXPIL00B.S

APPENDIX C3: TRIP GENERATION Module

3-1-GNMAT00J.S
3-2-GNMAT00K.S
3-3-GNMAT00L.S
3-4-GNMAT00M.S
3-5-GNMAT00N.S
3-6-GNMAT00P.S

3-7-GNNET00A.S
3-8-GNMAT00B.S
3-9-GNMAT00C.S
3-10-GNMAT00E.S
3-11-GNMAT00F.S
3-12-GNPIL00A.S

3-14-GNMAT00A.S
3-15-GNMAT00H.S
3-16-GNMAT00I.S
3-17-GNPIL00D.S

APPENDIX C4: HIGHWAY NETWORK Module

4-1-1-SGNET00A.S
4-1-2-SGMAT00B.S
4-1-3-SGNET00C.S
4-1-4-SGNET00E.S
4-1-6-SGNET00G.S
4-1-7-SGMAT00D.S
4-1-8-SGNET00I.S

4-2-1-CAPCALNET-A.S
4-2-2-CAPCALMAT-B.S
4-2-3-CAPCALNET-B.S
4-2-4-CAPCALNET-C.S

4-2-5-CAPCALNET-D.S
4-2-6-CAPCALNET-F.S

4-3-NTMAT00C.S
4-4-NTNET00C.S
4-5-NTNET00D.S
4-6-NTNET00E.S
4-7-NTNET00I.S
4-8-NTMAT00B.S
4-9-NTNET00B.S
4-10-NTPIL00A.S

APPENDIX C5: HIGHWAY PATHS AND SKIMS Module

5-1-HPNET00A.S
5-3-HPNET00B.S
5-4-HPPIL00A.S
5-5-HPMAT00A.S

5-6-HPMAT00C.S
5-7-HPHWY00A.S
5-8-HPMAT00B.S
5-9-HPMAT00E.S
5-10-HPPIL00B.S

APPENDIX C6: DISTRIBUTION Module

6-1-DTMAT00A.S
- **6-2-1-ODDST00A.S**
- **6-2-2-ODMAT00A.S**
- **6-2-3-ODMAT00B.S**
- **6-2-4-ODPIL00B.S**

6-3-DTPIL00B.S
- **6-5-1-PDDST00B.S**
- **6-5-2-PDMAT00D.S**
- **6-5-3-PLMAT00A.S**
- **6-5-4-PDPIL00G.S**
- **6-5-5-PDMAT00I.S**
- **6-5-6-PLPIL00A.S**
- **6-5-8-PDPIL00F.S**
- **6-5-10-PLMAT00G.S**
- **6-5-11-PLMAT00B.S**
  - **6-5-12-1-TPHWY00C.S**
  - **6-5-12-2-TPNET00D.S**
  - **6-5-12-3-TPNET00E.S**
  - **6-5-12-4-TPNET00F.S**
  - **6-5-12-5-TPHWY00A.S**
  - **6-5-12-6-TPNET00C.S**
  - **6-5-12-7-TPHWY00B.S**
  - **6-5-12-8-TPMAT00A.S**
  - **6-5-12-9-TPMAT00G.S**

6-5-12-10-TPPIL00D.S
6-5-13-PDPIL00E.S
6-6-DTPIL00C.S
6-7-DTNET00A.S
6-8-1-FDHWY00A.S
6-8-2-FDMAT00D.S
6-8-3-FDMAT00E.S
6-8-4-FDDST00A.S
6-8-5-FDMAT00B.S
6-8-6-FDMAT00C.S
6-8-7-FDNET00A.S
6-8-8-FDPIL00A.S
6-8-9-FDPIL00C.S
6-9-DTPIL00A.S

APPENDIX C7: TRANSIT NETWORK, CONNECTORS, PATHS AND SKIMS Module

7-1-1-PRNET00A.S
7-1-2-PRMAT00E.S
7-1-3-PRNET00B.S
7-1-5-PRPIL00A.S
7-1-6-PRMAT00B.S

7-2-1-CNPTR00C.S
7-2-2-CNPTR00D.S
7-2-3-CNPTR00A.S
7-2-4-CNPTR00B.S
7-2-5-CNPIL00D.S
7-2-6-CNPIL00E.S
7-2-7-CNPIL00A.S
7-2-9-CNPIL00B.S
7-2-10-CNPIL00C.S

7-3-2-AMPIL00F.S
7-3-4-AMPIL00C.S
7-3-6-AMPIL00A.S
7-3-7-AMTRN00A.S
7-3-8-AMMAT00F.S
7-3-9-AMMAT00E.S
7-3-10-AMPIL00G.S
7-3-11-AMPIL00D.S
7-3-12-AMPIL00E.S

APPENDIX C8: MODE CHOICE Module

8-0-2-00PIL00K.S
8-0-4-00PIL00J.S
8-0-6-00PIL00L.S
8-1-MCMAT00A.S
8-2-MCMAT00G.S
8-3-MCMAT00S.S

8-4-1-MADST00A.S
8-4-2-MAMAT00B.S
8-4-3-MAPIL00A.S
8-4-4-MAMAT00C.S
8-4-5-MAMAT00D.S
8-4-6-MAMAT00E.S
8-4-7-MAMAT00F.S
8-4-8-MAMAT00G.S
8-5-MCPIL00M.S
8-6-1-MODST00A.S
8-6-2-MOMAT00A.S
8-6-3-MOPIL00A.S
8-6-4-MOMAT00B.S
8-6-5-MOMAT00C.S
8-6-6-MOMAT00D.S
8-6-7-MOMAT00E.S
8-6-8-MOMAT00F.S
8-7-MCPIL00N.S
8-8-MCMAT00U.S
8-9-MCPIL00J.S
8-11-MCPIL00A.S
8-12-MCMAT00W.S
8-13-MCMAT00F.S
8-14-1-MSMAT00A.S
8-14-2-MSMAT00B.S
8-14-3-MSMAT00C.S
8-14-4-MSMAT00D.S
8-14-5-MSMAT00E.S
8-14-6-MSMAT00F.S
8-14-7-MSMAT00G.S
8-15-MCPIL00K.S

APPENDIX C9: TRANSIT ASSIGNMENT Module

9-2-TAPIL00J.S
9-4-TAPIL00H.S
9-6-TAPIL00F.S
9-7-TATRN00A.S
9-8-TAMAT00A.S
9-9-TAPIL00L.S
9-10-TAPIL00I.S
9-11-TAPIL00K.S
9-12-TAPIL00M.S
9-13-TAPIL00E.S

APPENDIX C10: HIGHWAY TRIP TABLES Module

24-Hour Model:

10-0-1-DTMAT00E.S
10-0-2-DTMAT00F.S
10-0-3-DTFRA00A.S

10-0-4-DTMAT00C.S
10-0-5-DTMAT00I.S
10-0-6-DTPIL00F.S

Time-of-Day Model:

10-1-1-HTMAT00A.S
10-1-2-HTMAT00B.S
10-1-3-HTMAT00C.S
10-1-4-HTFRA00A.S
10-1-5-HTFRA00D.S
10-1-6-HTFRA00E.S
10-1-7-HTMAT00E.S
10-1-8-HTMAT00F.S
10-1-9-HTMAT00G.S
10-1-10-HTPIL00A.S

APPENDIX C11: HIGHWAY ASSIGNMENT Module

24-Hour Model:

11-0-1-AAHWY00I.S
11-0-2-AANET00A.S
11-0-3-AANET00B.S
11-0-4-AANET00C.S
11-0-5-AAHWY00B.S
11-0-6-AANET00D.S
11-0-7-AAHWY00C.S
11-0-8-AAMAT00C.S
11-0-9-AAMAT00A.S
11-0-10-AAPIL00C.S

Time-of-Day Model:

AM Peak Period (11-1-1-X):
11-1-1-1-AMHWY00G.S
11-1-1-2-AMNET00F.S
11-1-1-3-AMNET00G.S
11-1-1-4-AMNET00H.S
11-1-1-5-AMHWY00D.S
11-1-1-6-AMNET00B.S
11-1-1-7-AMHWY00J.S
11-1-1-8-AMMAT00G.S
11-1-1-9-AMMAT00H.S
11-1-1-10-AMPIL00H.S
PM Peak Period (11-1-2-X):
11-1-2-1-PMHWY00G.S
11-1-2-2-PMNET00I.S
11-1-2-3-PMNET00J.S
11-1-2-4-PMNET00K.S
11-1-2-5-PMHWY00D.S
11-1-2-6-PMNET00C.S

11-1-2-7-PMHWY00J.S
11-1-2-8-PMMAT00G.S
11-1-2-9-PMMAT00H.S
11-1-2-10-PMPIL00A.S
Off Peak Period (11-1-3-X):
11-1-3-1-NPHWY00F.S
11-1-3-2-NPNET00K.S
11-1-3-3-NPNET00L.S
11-1-3-4-NPNET00M.S
11-1-3-5-NPHWY00C.S
11-1-3-6-NPNET00C.S
11-1-3-7-NPHWY00I.S
11-1-3-8-NPMAT00E.S
11-1-3-9-NPMAT00F.S
11-1-3-10-NPPIL00A.S
11-1-4-ASNET00E.S
11-1-5-ASNET00D.S
11-1-6-ASPIL00A.S

APPENDIX C12: HIGHWAY EVALUATION Module

24-Hour Model:

12-0-1-EDNET00A.S
12-0-2-EDPIL00A.S
12-0-3-EDNET00C.S
12-0-4-EDPIL00C.S
12-0-5-EDNET00D.S
12-0-6-EDPIL00D.S
12-0-7-EDNET00B.S
12-0-8-EDPIL00B.S

12-0-10-1-TKNET00A.S
12-0-10-2-TKPIL00A.S
12-0-10-3-TKNET00B.S
12-0-10-4-TKPIL00B.S
12-0-10-5-TKNET00C.S
12-0-10-6-TKPIL00C.S
12-0-10-7-TKNET00D.S
12-0-10-8-TKPIL00D.S

12-0-11-EDPIL00E.S

Time-of-Day Model:

12-1-1-EVNET00A.S
12-1-2-EVPIL00A.S
12-1-3-EVNET00E.S
12-1-4-EVPIL00D.S
12-1-5-EVNET00F.S
12-1-6-EVPIL00E.S
12-1-7-EVNET00D.S
12-1-8-EVPIL00C.S

12-1-10-1-PENET00A.S
12-1-10-2-PEPIL00A.S
12-1-10-3-PENET00B.S
12-1-10-4-PEPIL00B.S
12-1-10-5-PENET00C.S
12-1-10-6-PEPIL00C.S

12-1-11-1-TENET00B.S
12-1-11-2-TEPIL00A.S
12-1-11-3-TENET00C.S
12-1-11-4-TEPIL00C.S
12-1-11-5-TENET00D.S
12-1-11-6-TEPIL00D.S
12-1-11-7-TENET00E.S
12-1-11-8-TEPIL00E.S

12-1-12-EVPIL00F.S

Appendix D

CUSTOM-WRITTEN PROGRAM SOURCE CODES

[Note: These voluminous appendices (D1 through D4) are documented separately as APPENDIX-DN (N=1-4)].

The names of the source codes for the main and its subroutines of each custom-written program follow here:

APPENDIX D1: Trip Generation Program Source Codes

```
1-RZDATA2
  1-1 RZDATA2.for

2-ULSTGENM65
  2-1 ULSTGENM65.FOR
  2-2 INOUT65.FOR
  2-3 STP60.FOR
  2-4 READAT65.FOR
  2-5 READSPGN.FOR
  2-6 READRATE.FOR
  2-7 MAKESEED.FOR
  2-8 PREFRAT.FOR
  2-9 SESPGEN.FOR
  2-10 PASPGEN.FOR
  2-11 ADJPA65.FOR
  2-12 REPORT1.FOR
  2-13 SCHOOL65.FOR
  2-14 REPORT2.FOR
  2-15 A1DECK65.FOR
  2-16 CALCPA65.FOR
  2-17 CBR.INC

3-COMBLSM65
  3-1 COMBLSM65.FOR
  3-2 COMBLS.INC

4-RBALM65
  4-1 RBALM65.FOR
  4-2 READCTL.FOR
  4-3 RDRGSPGN65.FOR
  4-4 PARGSPGN65.FOR
  4-5 READPA65.FOR
  4-6 RGADJPAM65.FOR
  4-7 CBR.INC

5-ZAP65
  5-1 ZAP65.for
```

APPENDIX D2: Mode Choice Program Source Codes

1-NLOGITK

- 1-1 NLOGITM.FOR
- 1-2 ARRAYS.FOR
- 1-3 BUCKET.FOR
- 1-4 CHKEXP.FOR
- 1-5 PARMS.FOR
- 1-6 PSUM.FOR
- 1-7 SETCOEF.FOR
- 1-8 SETUNT.FOR
- 1-9 TESUM.FOR
- 1-10 TPLOAD.FOR
- 1-11 TPOPEN.FOR
- 1-12 TPOPEN2.FOR
- 1-13 INTAB.FOR
- 1-14 OUTTAB.FOR
- 1-15 TPSTOP.FOR
- 1-16 DATTIM.FOR
- 1-17 STDHED.FOR
- 1-18 REMARK.FOR
- 1-19 TABORT.FOR
- 1-20 CARD.INC
- 1-21 CONTROL.INC
- 1-22 LUNCOM.INC
- 1-23 PRTCOM.INC
- 1-24 TPCOM.INC
- 1-25 NLOGIT.LOC

2-UPDATEM

- 2-1 UPDATEM.FOR

APPENDIX D3: Other Highway Model Program Source Codes

1-MKTURN65

- 1-1 MKTURN65.FOR

2-MLEG

- 2-1 MLEG.FOR

APPENDIX D4: Other Transit Model Program Source Codes

1-NMOTOR3 & NMOTOR7
- 1-1 NMOTOR3.FOR
- 1-2 NMOTOR7.FOR
- 1-3 COMMONA.FOR
- 1-4 TPCOM.INC
- 1-5 LUNCOM.INC
- 1-6 PRTCOM.INC

2-PT2TRNB
- 2-1 PT2TRNB.F90
- 2-2 DATTIM00.FOR
- 2-3 DAVESUBS.F90
- 2-4 DERR.F90
- 2-5 MODS.F90

3-REWALK
- 3-1 REWALK.FOR

4-TR_FARE
- 4-1 TR_FARE.FOR

5-TRANSTAT
- 5-1 TRANSTAT.FOR

6-CVLIN2AV
- 6-1 CVlin2av.FOR

Appendix E

ARCVIEW BASED PCWALK ROUTINE

ARCVIEW-BASED PERCENT WALK ROUTINE FOR THE SOUTHEAST FLORIDA NESTED LOGIT MODELS

E.1 OVERVIEW

The nested logit models used in Southeast Florida require for each TAZ an estimate of the percentage of trips that can walk to transit. Two estimates are needed: a "long walk," generally estimated as one mile, and a "short walk," generally estimated as 1/3 mile. Additionally, the nested logit model requires estimates of long and short walk percentages for productions and attractions. The traditional method has been to estimate the production TAZ walk percentage as the percentage of a TAZ's area inside a walk buffer drawn about the transit routes. An alternative method is to build buffers around bus stops. A common assumption has been to assume that attractions are more concentrated near transit service, and thus, the attraction walk percentage is twice the production percentage, capped at 100%. The method presented does not address the correctness of this method. There are a host of assumptions here, and that there may be better ways of estimating walk percentage, such as the "modified network ratio" method, but data and software for that method are not generally available.

Nevertheless, practitioners using the nested logit model need a manageable method for generating the PCWALK input file. The Corradino Group initially developed a PC-ARCINFO procedure for generating the PCWALK file, and this procedure is well documented in reports prepared for the Florida Department of Transportation. There were a few problems with the PC-ARCINFO procedure, however. Some agencies and consultants did not have access to ARCINFO, and some had access only to the workstation version. The Corradino Group has not tested the PCWALK procedure with workstation ARCINFO. Additionally, it was Corradino's experience that often the PC-ARCINFO buffer and overlay procedures would fail. The remedy was to "tweak" the ARCINFO tolerances. While this usually, worked, the procedure was not clean and straightforward.

To create a better and more reliable procedure, Corradino developed a procedure based on ArcView 3.3. The process was then further modified to address the changes to input files from the Cube-Voyager model. This paper documents the use of this procedure. It requires a Fortran program (CVLIN2AV) and the "CVWALK.APR" ArcView project.

E.2 SUMMARY

The Southeast Florida Regional Planning Model (SERPM) uses a nested logit model to subdivide the person trip tables among travel modes. One of the inputs of this model is a file specifying for each traffic analysis zone (TAZ):

- TAZ number
- Short walk percentage for peak period productions
- Short walk percentage for peak period attractions
- Long walk percentage for peak period productions
- Long walk percentage for peak period attractions
- Short walk percentage for midday productions
- Short walk percentage for midday attractions
- Long walk percentage for midday productions
- Long walk percentage for midday attractions

The idea behind the need for this file is that the mode choice logit equation should be applied only when there is a choice that can be estimated by the logit curve. If, for a given trip, either the origin or destination of a walk access trip is not within walking distance of transit service, then the trip cannot be a walk-to-transit trip and so the logit equation does not apply. In such cases the choice of modes is determined by the access conditions alone. The authors of Florida's nested logit model have defined the long walk distance to be one mile, and the short walk distance to be one-third of a mile. These distances apply to the production end (home) of trips. For the attraction end, the percentage of activity within the walk area is assumed to be twice that of the production end on the assertion that trip attraction activities (like jobs and shopping) are more clustered, and that bus stops serve these areas directly.

Within the usual concept of transportation modeling input data, the idea of "percent walk" creates a dilemma, because it creates a set of zonal data that is dependent on the configuration of the transit network. This means that the percent walk zonal data should change if significant changes are made to the transit network service area..

E.3 METHOD

GIS spatial analysis techniques were employed to estimate the percentage walk file for Florida models using the nested logit model. The GIS software used was ArcView 3.3. There is no practical limit on the number of TAZs the procedure can handle.

This section outlines the steps used to develop the percent walk file. While this section provides a complete explanation of the process, it assumes the reader is familiar with ArcView, and GIS spatial analysis concepts.

E.3.1 DIGITIZED TAZ MAPS

TAZ maps in the same coordinate system as the networks are required to run the procedure. Coordinates must be expressed in state plane feet (not degrees). The TAZ maps can be either an ArcView shape file or ArcInfo coverage. The TAZs must have numerical fields called "area" with the polygon area, and "name" with the TAZ number. The TAZ polygons **should not** contain water area or other large non-developed areas. The ArcView shape file "FTAB" must be in ascending sort by the "name" field. If it is not, the PCWALK.OUT file will have to be sorted by TAZ before the nested logit model can use it.

E.3.2 TRANSIT MAPS

Station nodes and transit lines must be imported into ArcView as shape files. The consultant wrote a FORTRAN program, called CVLIN2AV that reads the model files, and writes files that can be read by ArcView to create shape files. CVLIN2AV is executed by the ArcView routine. The required input files are:

- Transit Route file (TROUTE_{YEAR}{ALT}.LIN)
- Highway links (ILINKS2.TXT), a file written from CV based network
- Highway coordinates (IXY2.TXT), a file written from CV based network
- Station data (STATDATA_{YEAR}{ALT}.DAT), a file written from CV based network
- Control files read from the command line (AM.IN and MD.IN)

Input file names are specified in the control file read from the command line, and the transit modes and highway facility types that have transit walk access are specified in this file. For use with the ArcView buffering application, the control files must be named AM.IN and MD.IN. A listing of the input file is:

```
** Buffering links, not nodes
** Buffering FT2=2x,3x(not really present),4x,6x
** Buffering modes 4,5,6,10,11,12,13
&files fhud='ixy2.txt',flink='ilinks2.txt',fxy='newxy.dum',
       finet='TROUTE_05R.LIN',
       fsi='STATION_05R.DAT' /
&param perd='am',
       tmode=0,0,0,1,1,1,0,0,0,1,1,1,1
       tft= 0,1,1,1,0,1,0,0,0
       stops='F' /
```

The input is in Fortran namelist format with data as follows:

fhud = the coordinate (IXY2.TXT file) output by a CV script (see listing at the end)
flink = selected link attributes of CV highway network output by a CV script (see listing at the end)
fxy = transit coordinates not in the highway net
fsi = the station data file
finet = the Public Transport (PT) route card file
tmode = array of transit modes with walk access, 0=no access (e.g., can't walk to rail lines, only to stations), 1=access permitted
tft = array of valid walk access facility types (one-digit FTYPE), 0= no walk access, 1=walk access available (e.g. can't walk to a bus running on a freeway)
perd = 'AM' or 'MD'
stops = 'T' or 'F'

Thus, the three coverages (stations, AM lines, and midday lines) are created as ArcView shape files. CVLIN2AV must be run twice, once for AM and MD files. All output files are written to a single directory. The station coverage is generated by the AM run. Error files are output: AM.ERR for the AM period and MD.ERR for the MD period.

The program offers a choice of methods for generating the AM and MD route service areas (buffers). The traditional procedure is to draw buffers about the route lines. An alternative method is to draw circular buffers about stops – the nodes coded with a negative sign, indicating a bus stop. If the routes have been coded carefully, accurately noting which transit nodes are stops, the "stops" method (STOPS='T') is the preferred method because it more accurately represents the walk access area and will reflect the frequency of stops on the route. The model should ALWAYS be run the way it was calibrated. If the mode choice constants are calibrated with STOPS='F', always run it this way, because of the very different way the PCWALK file is generated. If STOPS='F', the output files are (buffers around lines):

- TNETAM.LIN for the AM period
- TNETMD.LIN for the MD period
- STATS.PTS for the AM period only.

If STOPS='T', the files are (buffers around bus stops):

- STOPAM.PTS for the AM period
- STOPMD.PTS for the MD period
- STATS.PTS for the AM period only.

As explained later, the ArcView file open dialog will ask you to specify the route coverage. If STOPS='F', you must select TNETAM.LIN. If STOPS='T', you must select STOPAM.PTS. This is a critical point.

It is also worth noting that when STOPS='T', ArcView routine takes much more processing time than the STOPS='F' option – on the order as two to three times as long.

The "Get Transit Net" button, which is the left button in the group of two in the CVWALK.APR ArcView application, runs CVLIN2AV and causes ArcView to read the output files.

The ArcView script will prompt you for the location of TNETAM.LIN or STOPAM.PTS and the location of the TAZ shape file. Again, if you specified STOPS='F', choose TNETAM.LIN. If you specified STOPS='T', choose STOPAM.PTS. Please remember that the TAZ file must have a numeric field called "name," which contains the zone number, and "area," which is the area of the TAZ.

E.3.3 CALCULATION OF PERCENTAGE WALK BY TAZ

To calculate percentage walk, the following must be accomplished:

- Construct station buffers
- Construct buffers around the routes or stops
- Merge station and route buffers
- Clip (overlay) the TAZs with the walk buffers to make PCWALK buffers
- Update the "area" field in the PCWALK buffers
- Summarize the data
- Write the PCWALK.OUT file

All of these tasks can be accomplished with one click of the right button from CVWALK.APR. Again, the ArcView script will prompt you for the location of TNETAM.LIN or STOPAM.PTS. Buffers will be created, and the intersection of the zones and buffers will be created for AMLONG, AMSHORT, MDLONG, and MDSHORT walk areas.

The ArcView routine will ask you to locate the CVLIN2AV.EXE file, the TNETAM.LIN or STOPAM.PTS file, and the TAZ shape file. You should keep CVWALK.APR, CVLIN2AV.EXE, AM.IN, MD.IN, and the other input data files in one single directory. The TAZ shape file can be located elsewhere. You also must enter the number of internal TAZs in your models, when prompted by the ArcView application.

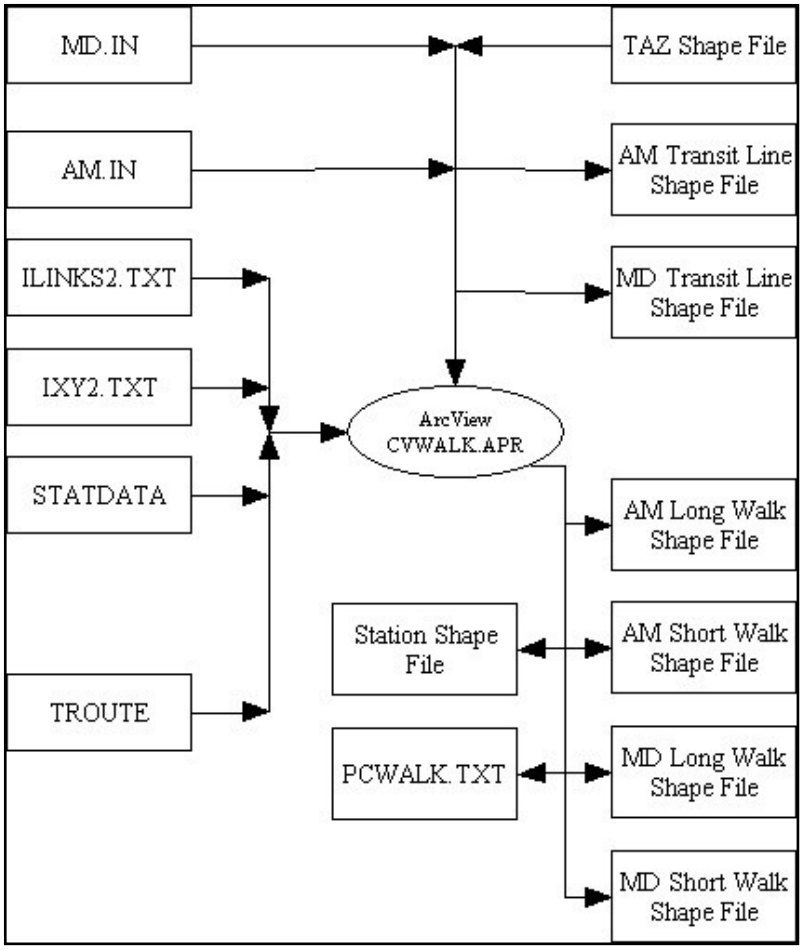
E.3.4 APPLICATION STEPS

The steps for developing the PCWALK file are as follows:

1. Prepare the appropriate AM.IN and MD.IN files (samples follow).
2. Make sure you have run the Cube voyager scripts to create ILINKS2.TXT and IXY2.TXT files from the Cube-Voyager network.
3. Double-click the CVWALK.APR icon to start ArcView.
4. Click the left button and respond to the file open dialogs to point to CVLIN2AV.EXE, the TNETAM.LIN or STOPAM.PTS file and the TAZ file. It is important to NOT change the order of the themes. The TAZ theme should be listed first (top).

5. After the first ArcView routine completes, click the right button to build the buffer files.
6. Enter the number of internal TAZs when prompted. This is important because it makes sure that the routine creates one PCWALK record for every TAZ in your system.
7. When the ArcView routine is finished, and you've reviewed the walk buffers to make sure they appear reasonable, leave ArcView.
8. Rename PCWALK.OUT as appropriate, generally PCWALK.&ya. If the TAZ zone shape file was not in sort by "NAME," this file will have to be sorted.

The use of these procedures requires ArcView 3.3, CVLIN2AV.EXE, CVWALK.APR and the input data files. The routine was developed using ArcView 3.2a. Versions 3.1 and 3.2 should work, but were not tested.



SAMPLE INPUT FILES

These example input files are set up to build buffers around transit lines. If you want to build buffers around bus stops, set stops='T'.

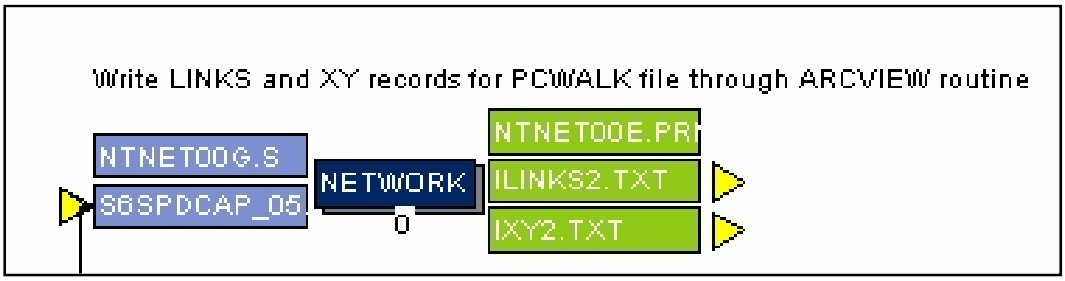
AM.IN:

```
** Buffering links, not nodes
 ** Buffering FT2=2x,3x(not really present),4x,6x
 ** Buffering modes 4,5,6,10,11,12,13
 &files fhud='ixy2.txt',flink='ilinks2.txt',fxy='newxy.dum',
        finet='TROUTE_30R.LIN',
        fsi='STATION_30R.DAT' /
 &param perd='am',
        tmode=0,0,0,1,1,1,0,0,0,1,1,1,1
        tft= 0,1,1,1,0,1,0,0,0
        stops='F' /
```

MD.IN:

```
** Buffering links, not nodes
 ** Buffering FT2=2x,3x(not really present),4x,6x
 ** Buffering modes 4,5,6,10,11,12,13
 &files fhud='ixy2.txt',flink='ilinks2.txt',fxy='newxy.dum',
        finet='TROUTE_30R.LIN',
        fsi='STATION_30R.DAT' /
 &param perd='md',
        tmode=0,0,0,1,1,1,0,0,0,1,1,1,1
        tft= 0,1,1,1,0,1,0,0,0
        stops='F' /
```

CV Scripts to create ILINKS2.TXT & IXY2.TXT Files



NTNET00G.S

```
; Do not change filenames or add or remove FILEI/FILEO statements using an editor. Use
Cube/Application Manager.
RUN PGM=NETWORK PRNFILE="D:\fsutms\d4\S65TODMDL_PRN\CUBE\NTNET00E.PRN" MSG='Write LINKS and XY
records for PCWALK file through ARCVIEW routine'
FILEO PRINTO[2] = "{OUTDIR}\TEMFILES\IXY2.TXT"
FILEO PRINTO[1] = "{OUTDIR}\TEMFILES\ILINKS2.TXT"
FILEI LINKI[1] = "{OUTDIR}\S6SPDCAP_{Year}.NET"


Phase=NodeMerge
;  print CSV=T list=n(6.0),x(9.0),y(9.0),SECTIONID(4.0) PRINTO=2
  print CSV=T list=n(6.0),x(9.0),y(9.0) PRINTO=2
endphase

Phase=LinkMerge
  _AT=int(AREA_TYPE/1)
  _FT=int(FTC2/10)

;if(_FT<>0)
;  if(a.SECTIONID<>0)
;    print CSV=T list=a(6.0),'EX'(2.0c),B(6.0),NUM_LANES(2.0),_AT(2.0),_FT(2.0) PRINTO=1
;  endif
;-sks 'EX' & 'AP' are related to Junction Modeling of signal approach (AP) and Exit (EX) links
;  if(b.SECTIONID<>0)
;    print CSV=T list=b(6.0),'AP'(2.0c),a(6.0),NUM_LANES(2.0),_AT(2.0),_FT(2.0) PRINTO=1
;  endif
;endif


;EX/AP are not needed and are used as XX, just for space holder
if(_FT<>0)
    print CSV=T list=a(6.0),'XX'(2.0c),B(6.0),NUM_LANES(2.0),_AT(2.0),_FT(2.0),TMODE(2.0)
PRINTO=1
endif


endphase

PHASE=SUMMARY
endphase


ENDRUN
```

Appendix F

CUBE-VOYAGER FLOWCHARTS

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F-33	(Sub-Module 12-0-10) 24-Hour Truck Model Evaluation Flowchart	F-33
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Figure F-1: **(Module 2) External Flowchart**
Southeast Regional Planning Model 6.5

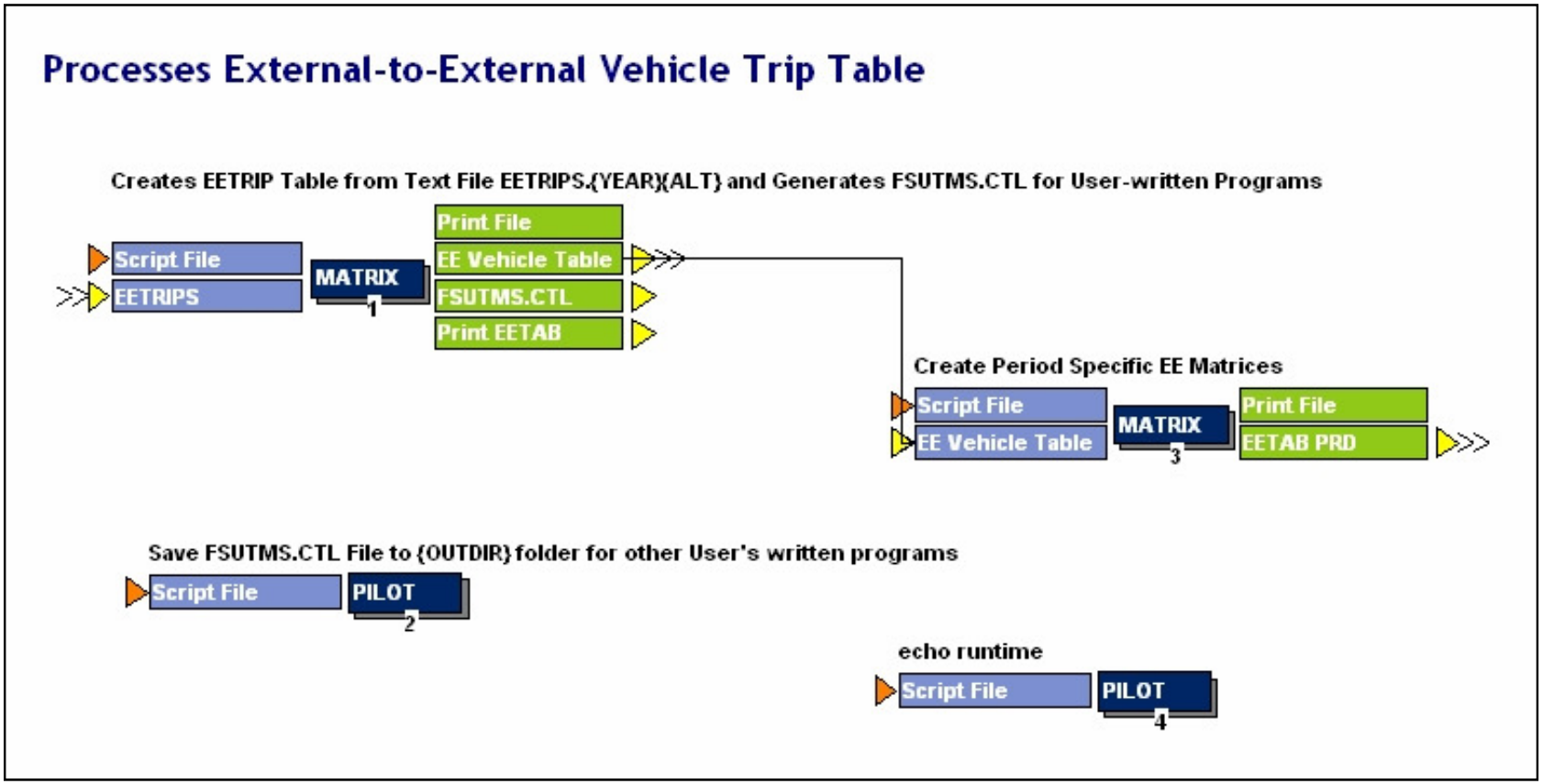


Figure F-2: **(Module 3) Trip Generation Flowchart**
Southeast Regional Planning Model 6.5

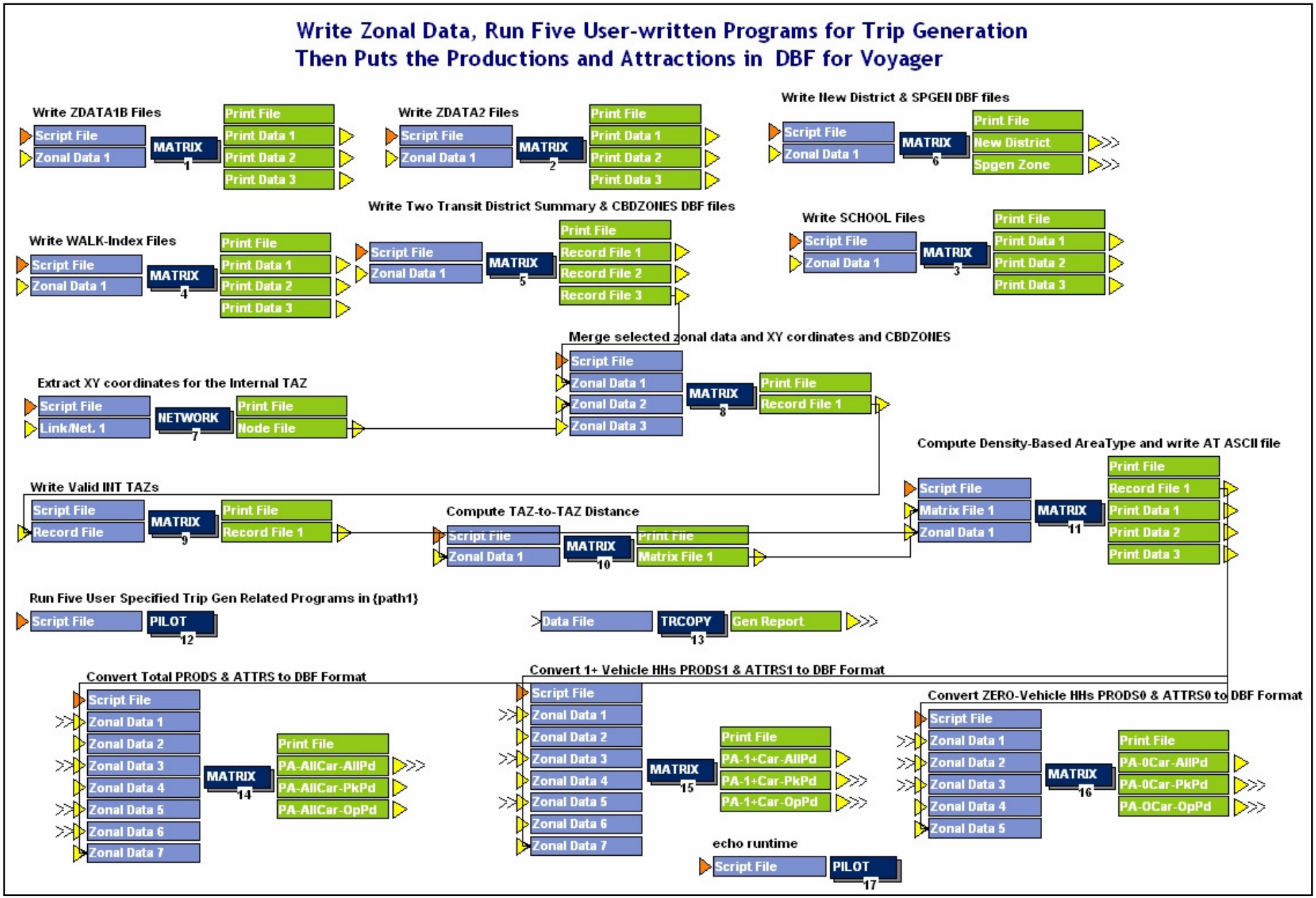


Figure F-3: **(Module 4) Highway Network Flowchart**
Southeast Regional Planning Model 6.5

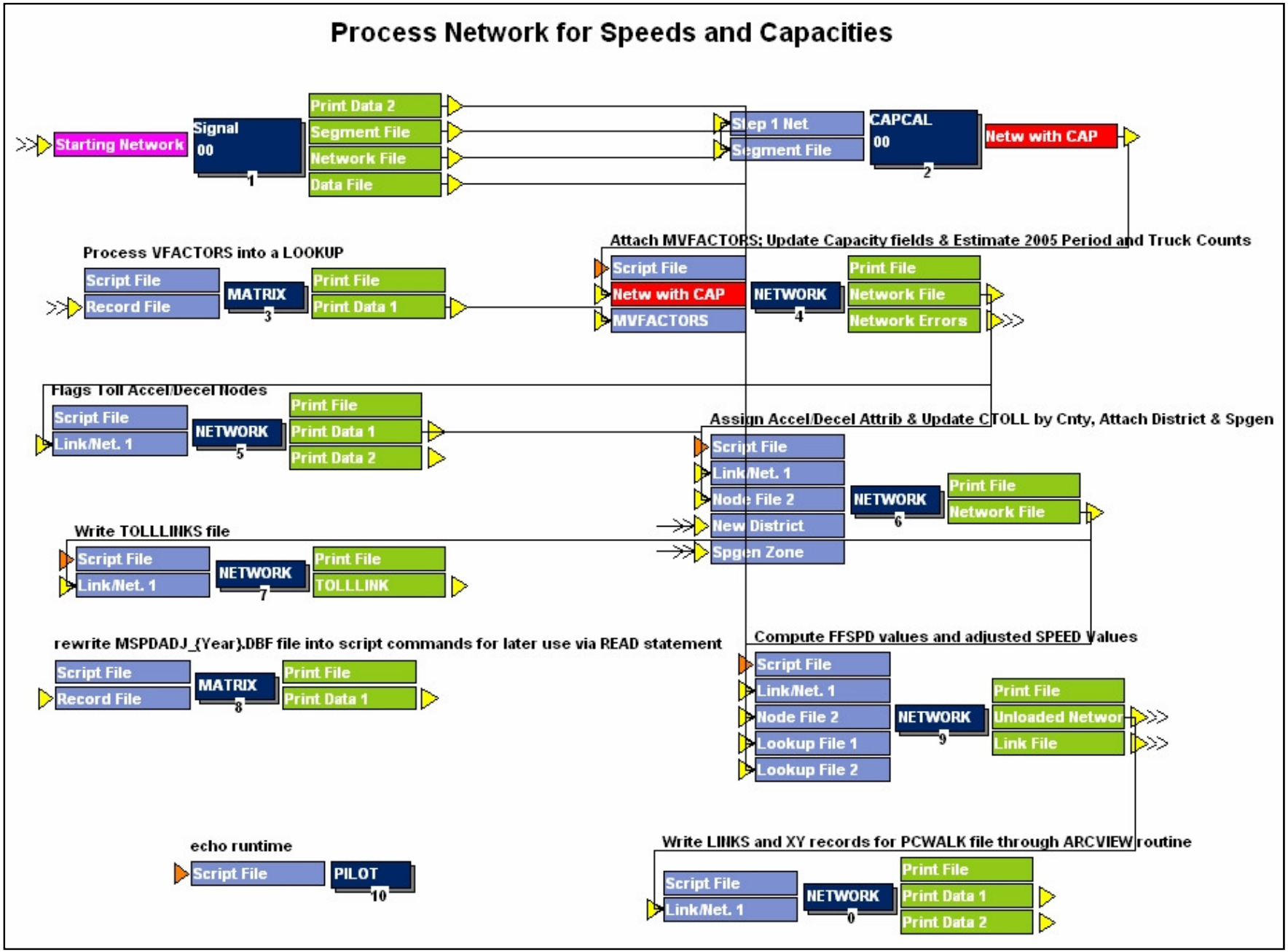


Figure F-4: **(Sub-Module 4-1) Highway Network Signal Parameter Flowchart**
Southeast Regional Planning Model 6.5

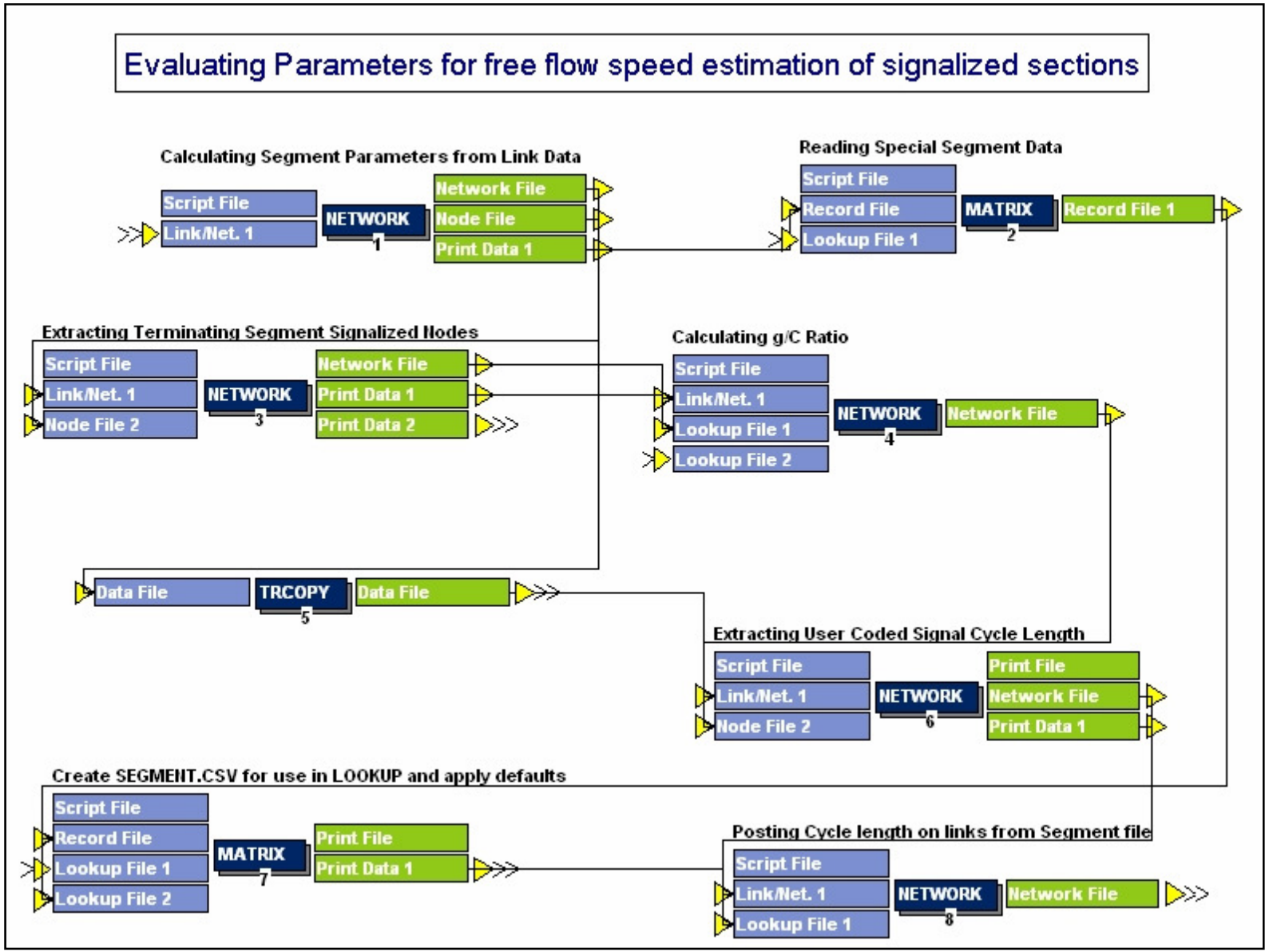


Figure F-5: **(Sub-Module 4-2) Highway Network Capacity Calculation Flowchart**
Southeast Regional Planning Model 6.5

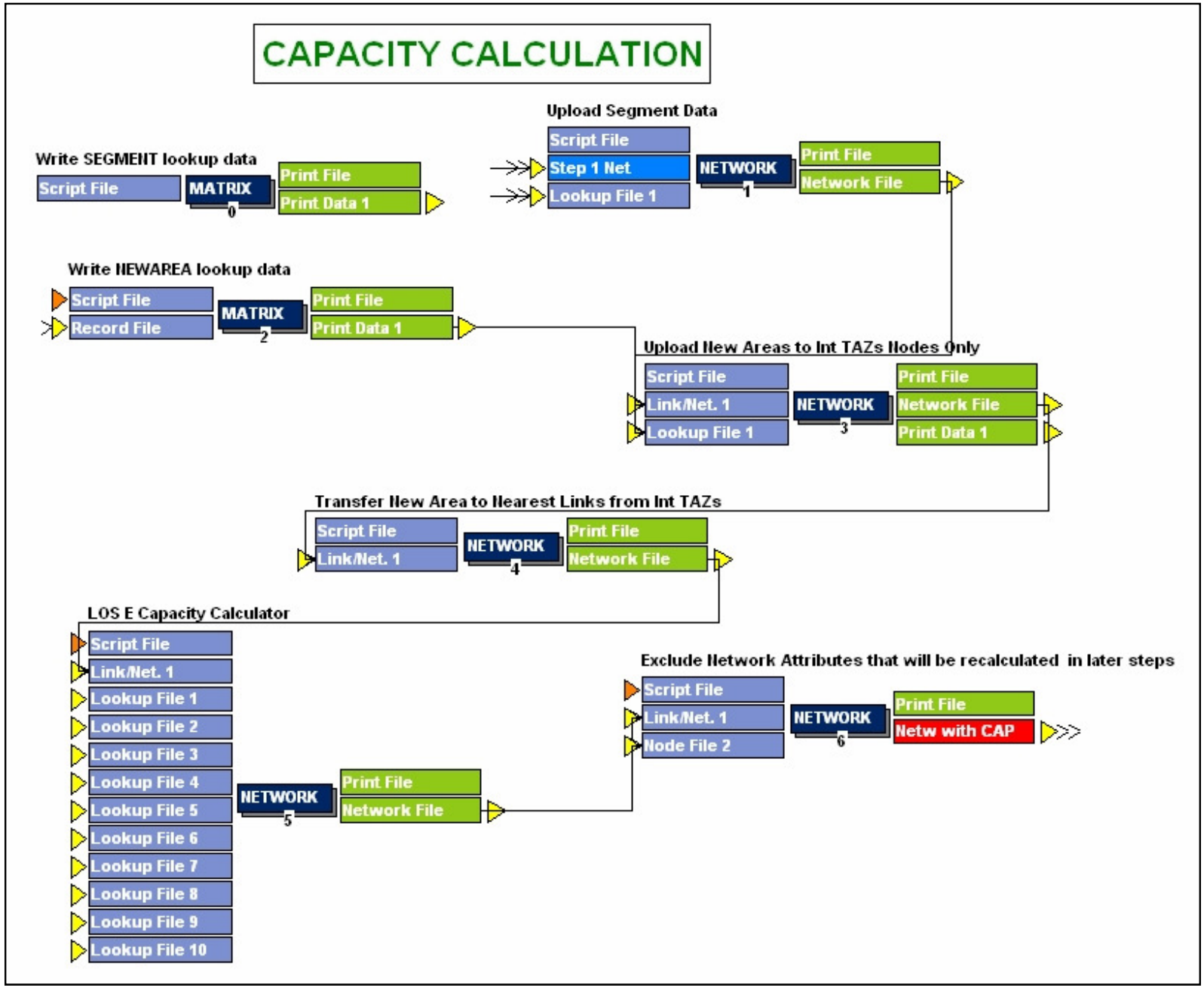


Figure F-6: **(Module 5) Highway Path Flowchart**
Southeast Regional Planning Model 6.5

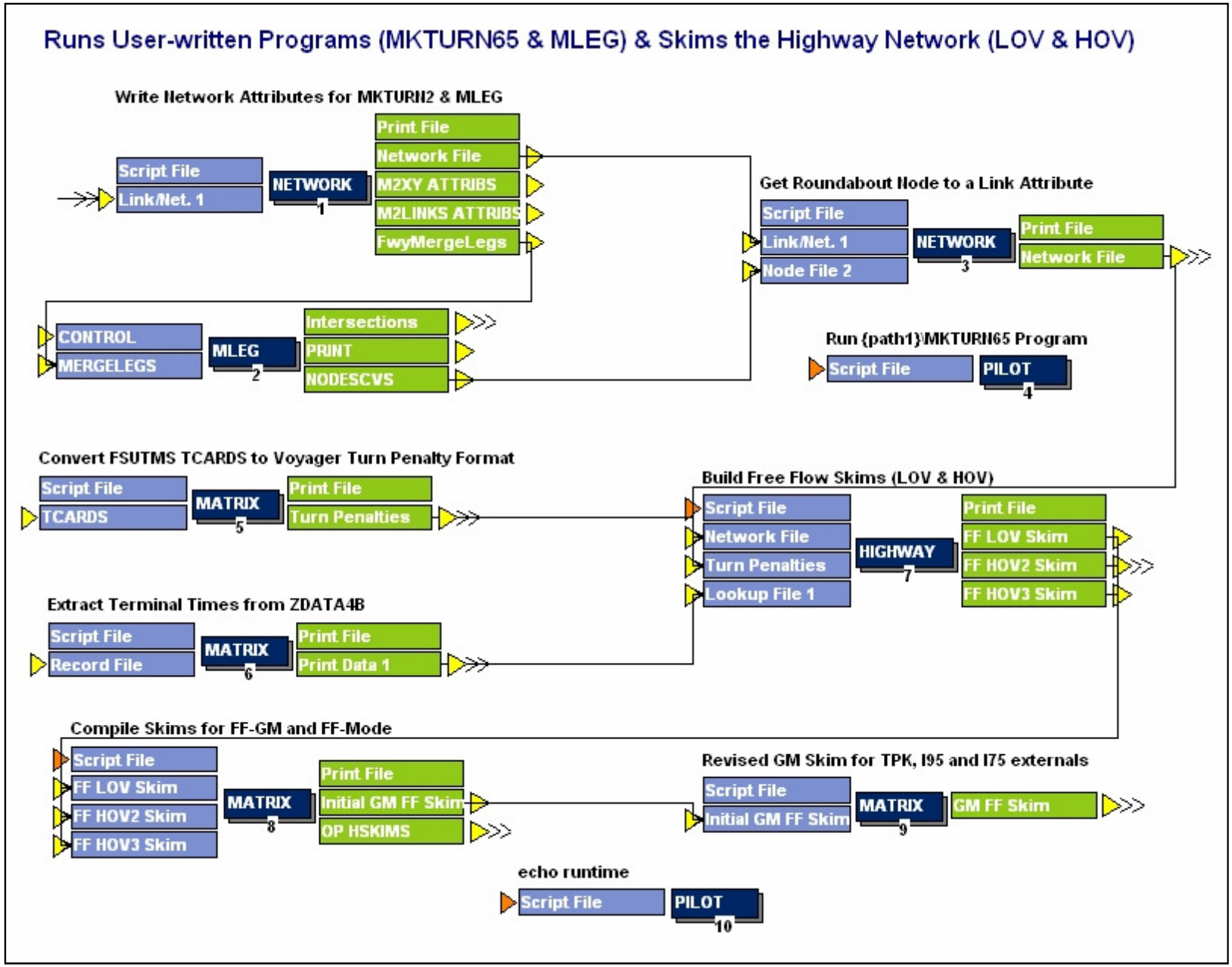


Figure F-7: **(Module 6) Distribution Flowchart**
Southeast Regional Planning Model 6.5

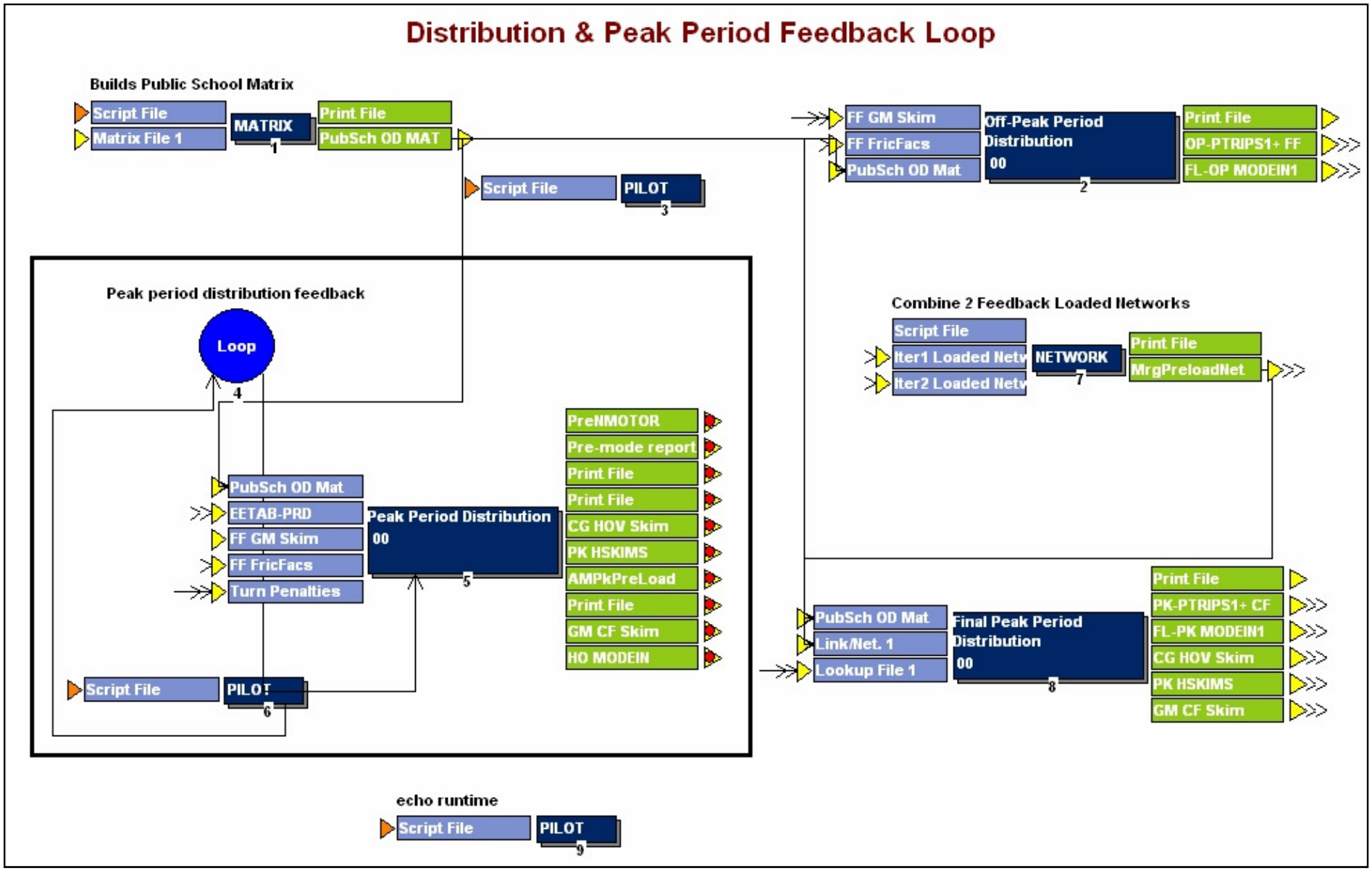


Figure F-8: **(Sub-Module 6-2) Off-Peak Period Distribution Flowchart**
Southeast Regional Planning Model 6.5

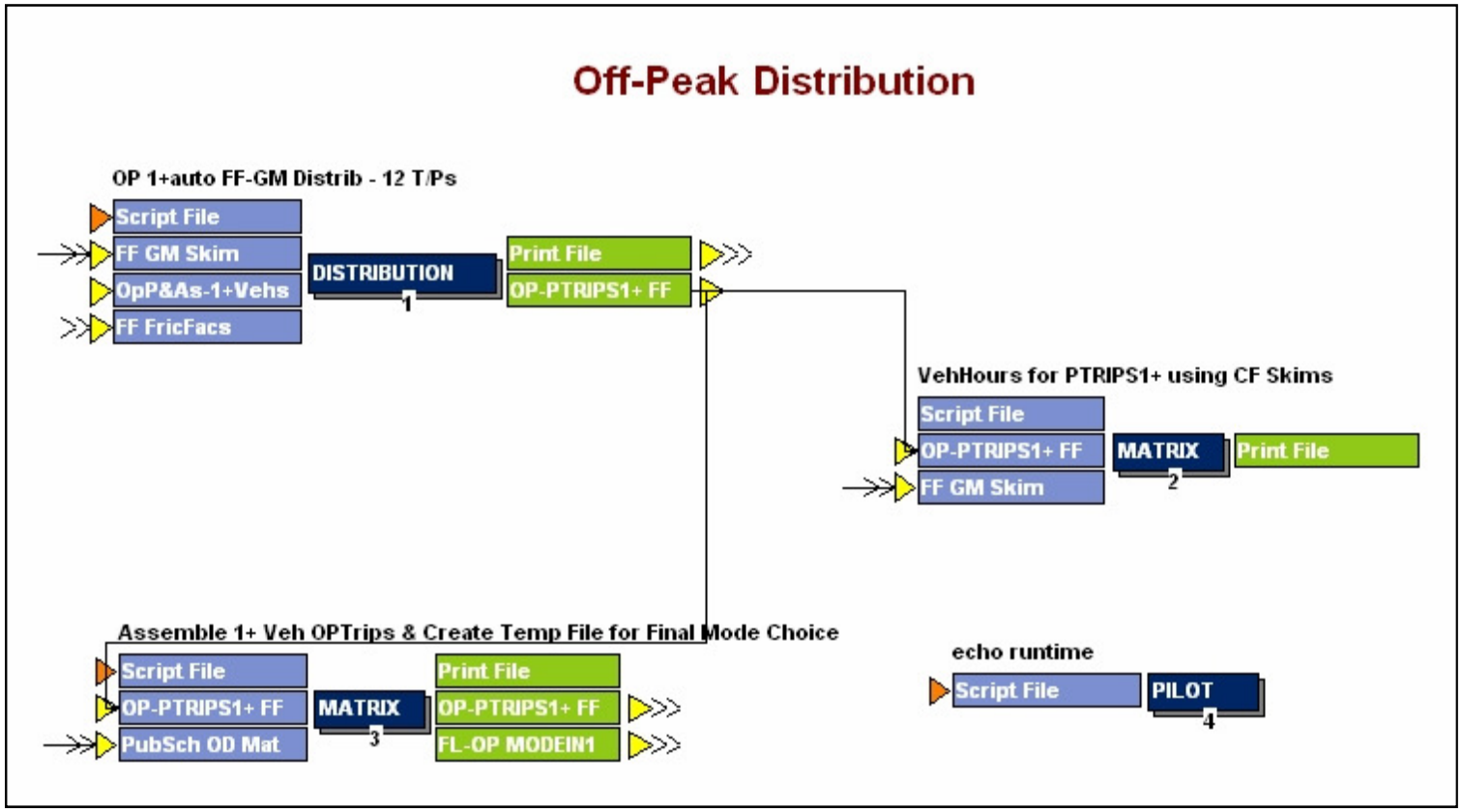


Figure F-9: **(Sub-Module 6-5) Peak Period Distribution Flowchart**
Southeast Regional Planning Model 6.5

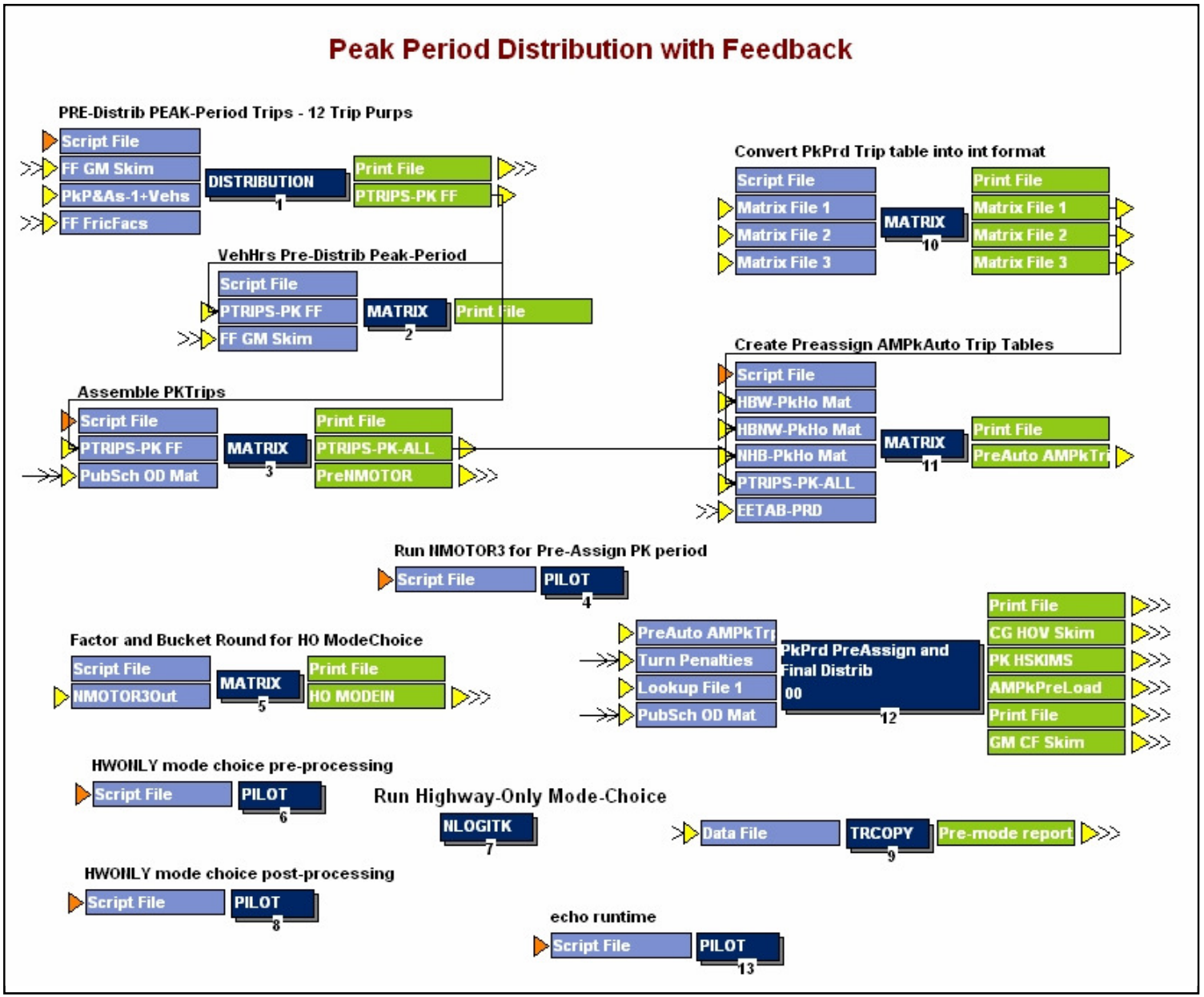


Figure F-10: **(Sub-Module 6-5-12) Peak Period Pre-Assignment Flowchart**
Southeast Regional Planning Model 6.5

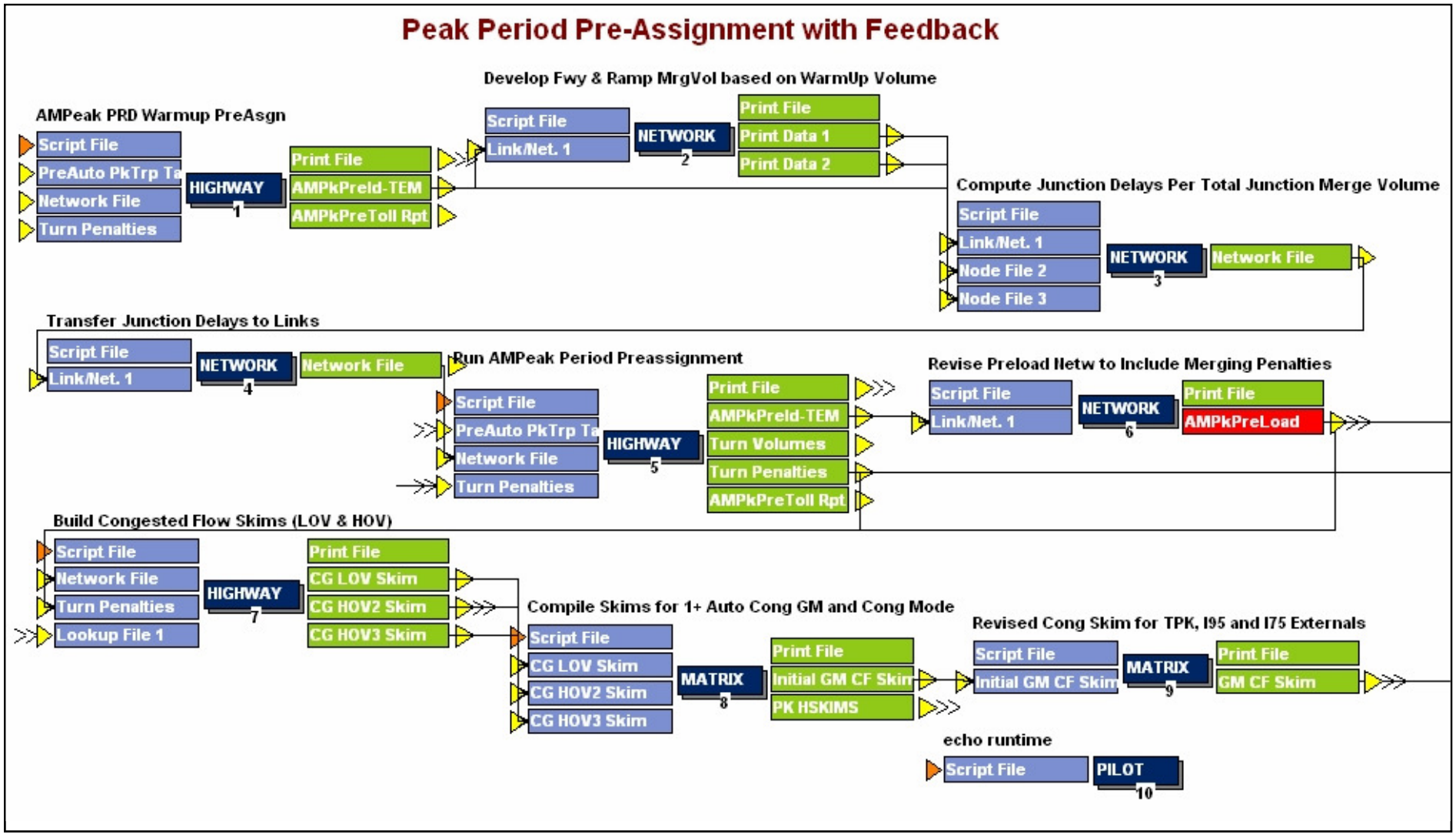


Figure F-11: **(Sub-Module 6-8) Final Peak Period Distribution Flowchart**
Southeast Regional Planning Model 6.5

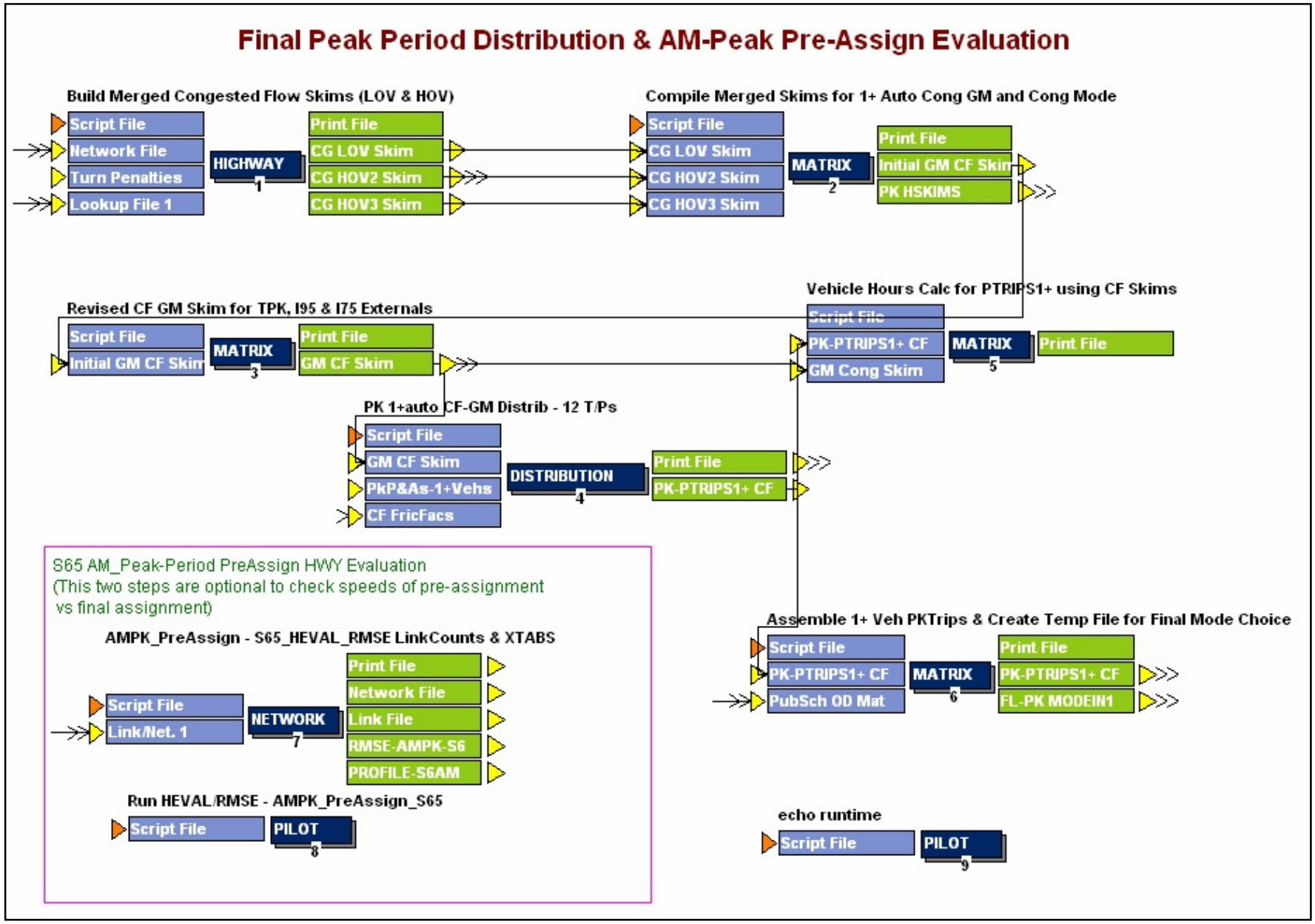


Figure F-12: **(Module 7) Transit Connector, Path and Skim Flowchart**
Southeast Regional Planning Model 6.5

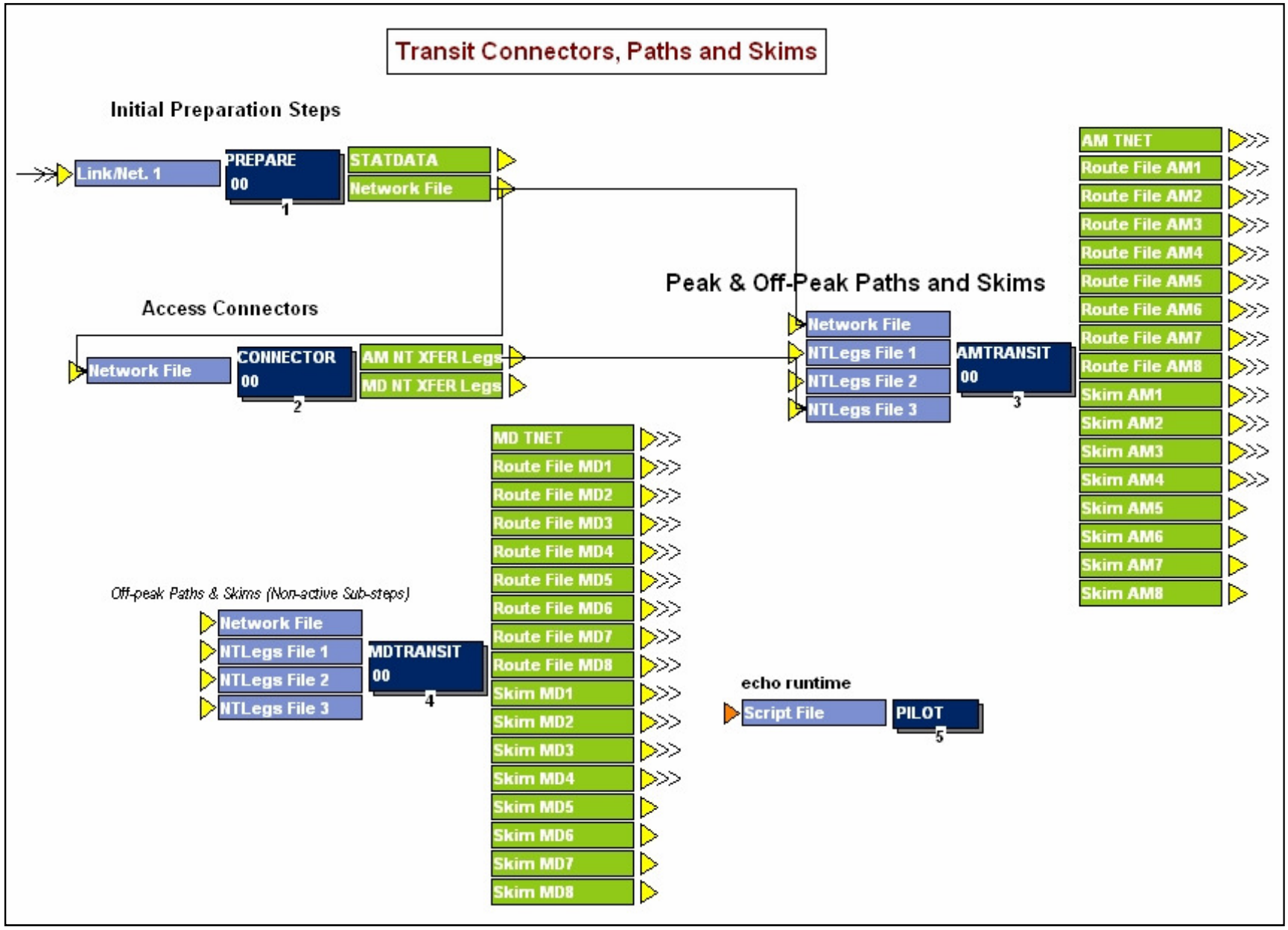


Figure F-13: **(Sub-Module 7-1) Transit Network Preparation Flowchart**
Southeast Regional Planning Model 6.5

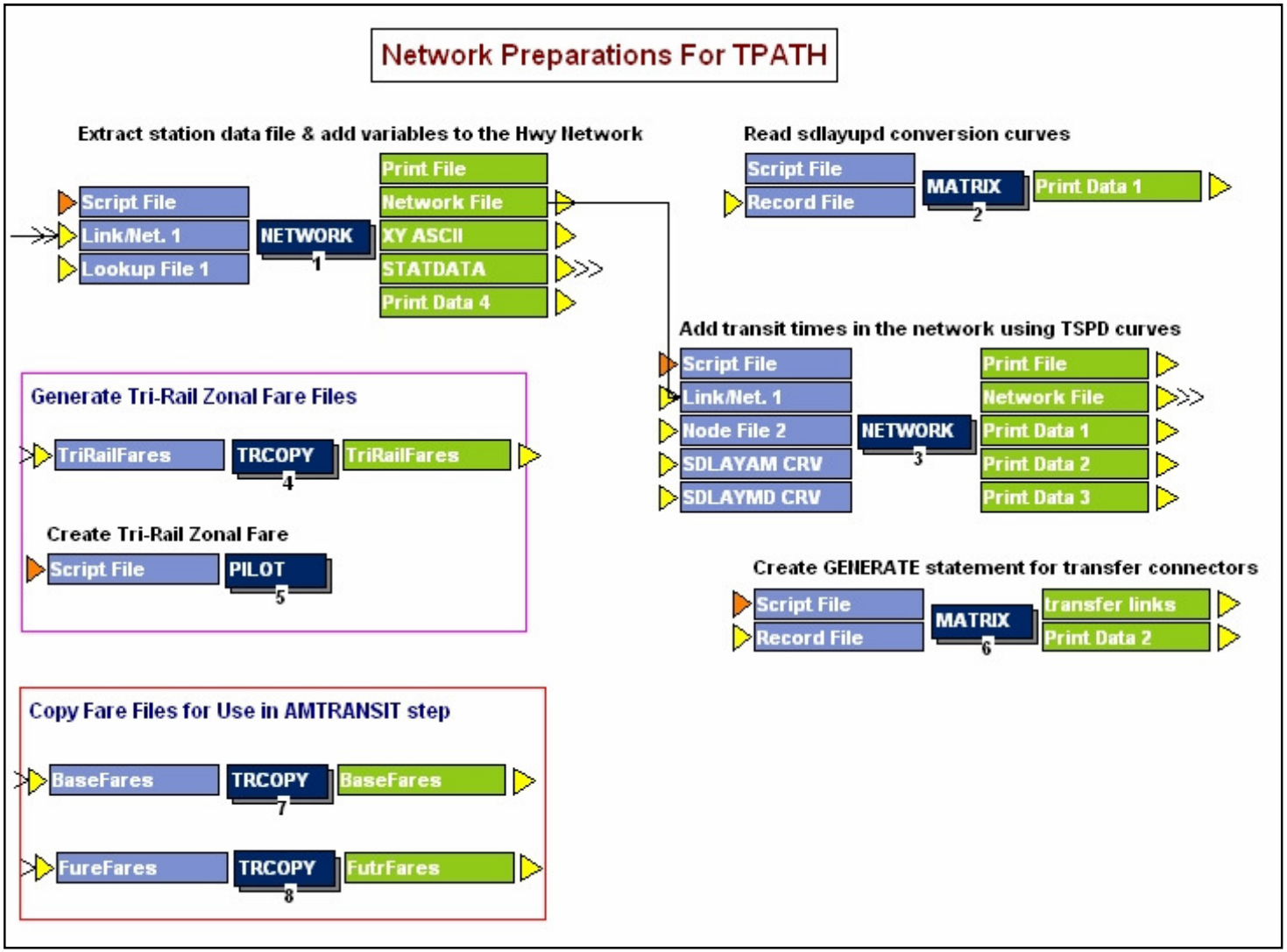


Figure F-14: **(Sub-Module 7-2) Transit Connector Flowchart**
Southeast Regional Planning Model 6.5

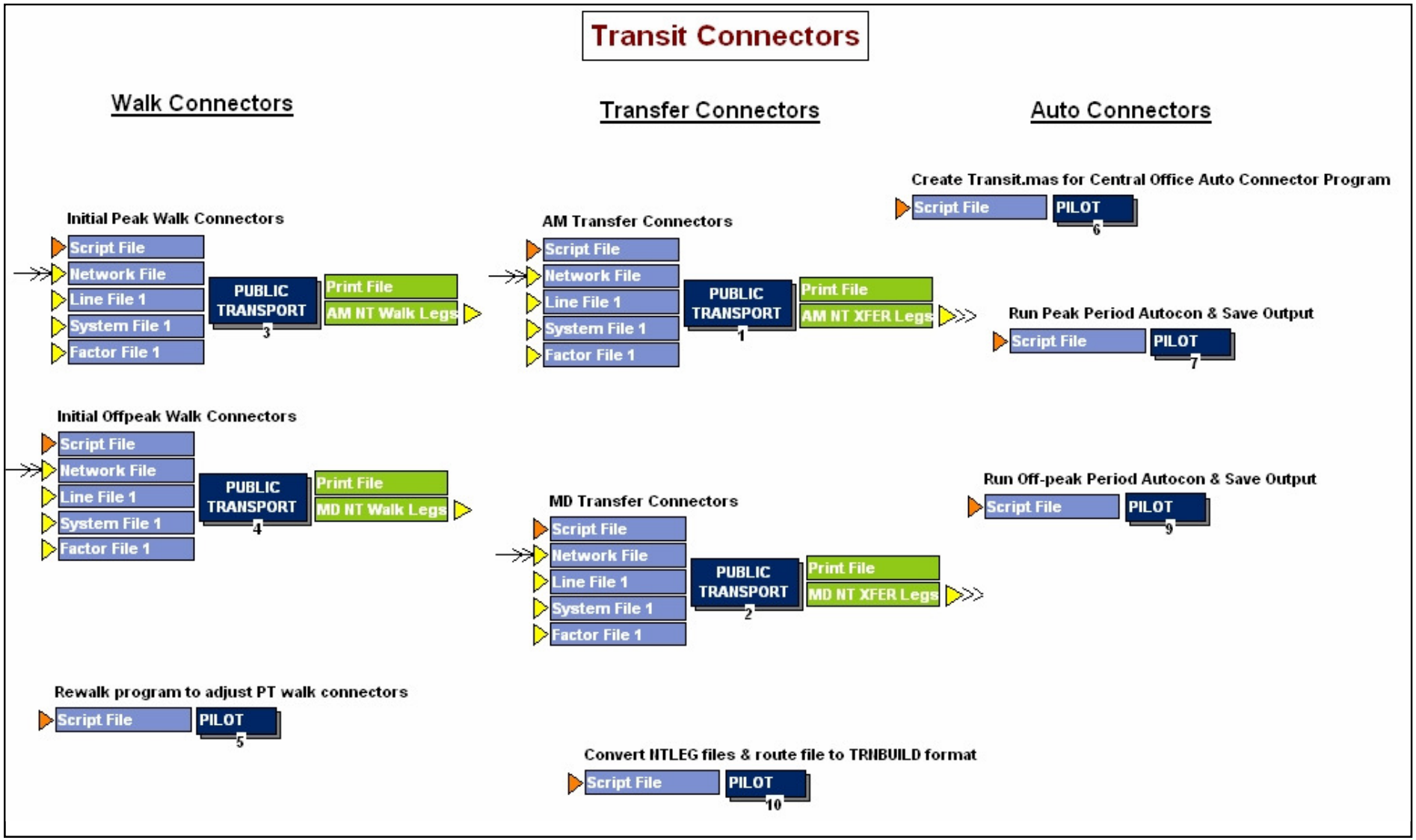


Figure F-15: **(Sub-Module 7-3) Transit Path and Skim Flowchart**
Southeast Regional Planning Model 6.5

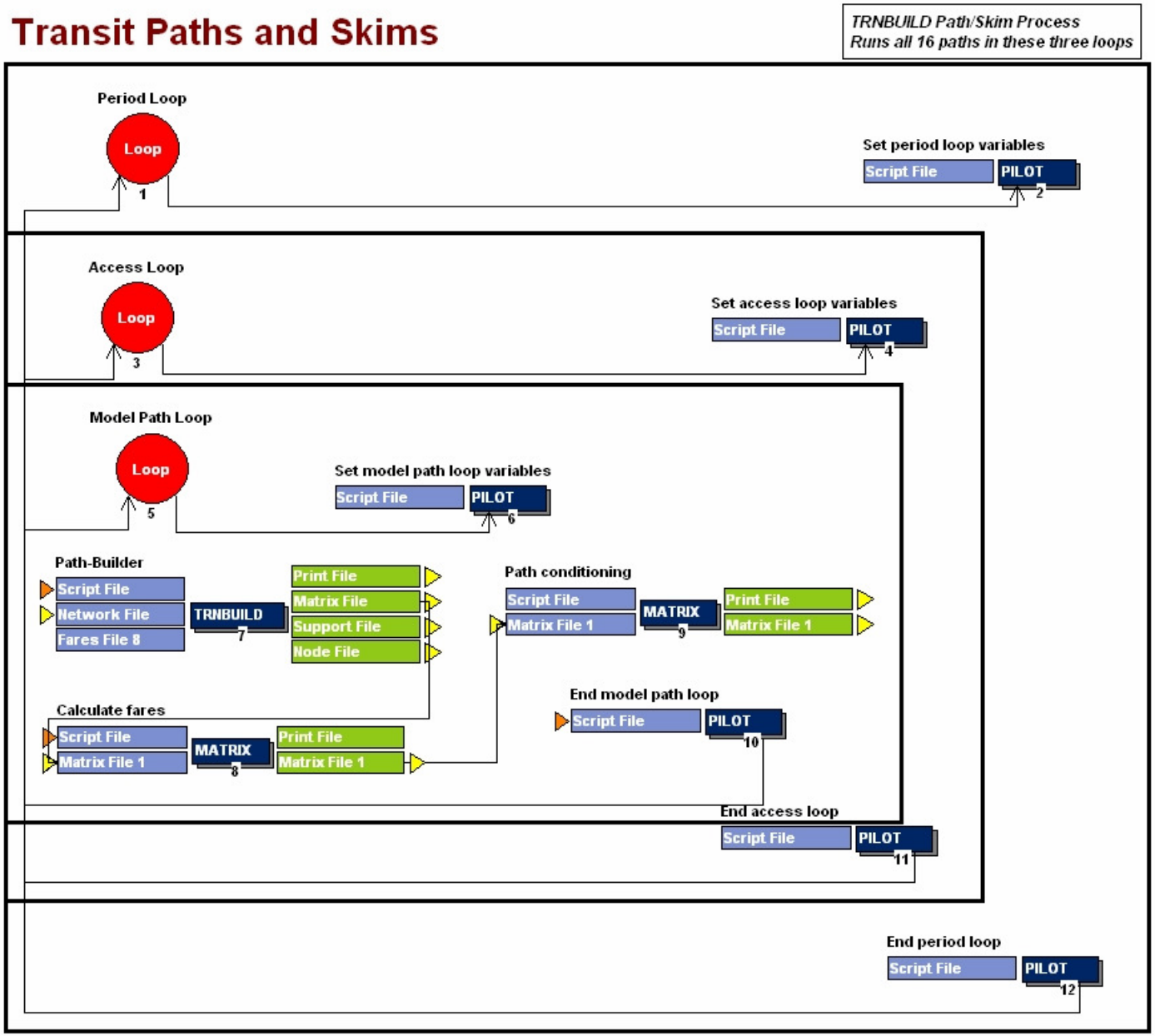


Figure F-16: **(Module 8) Mode Choice Flowchart**
Southeast Regional Planning Model 6.5

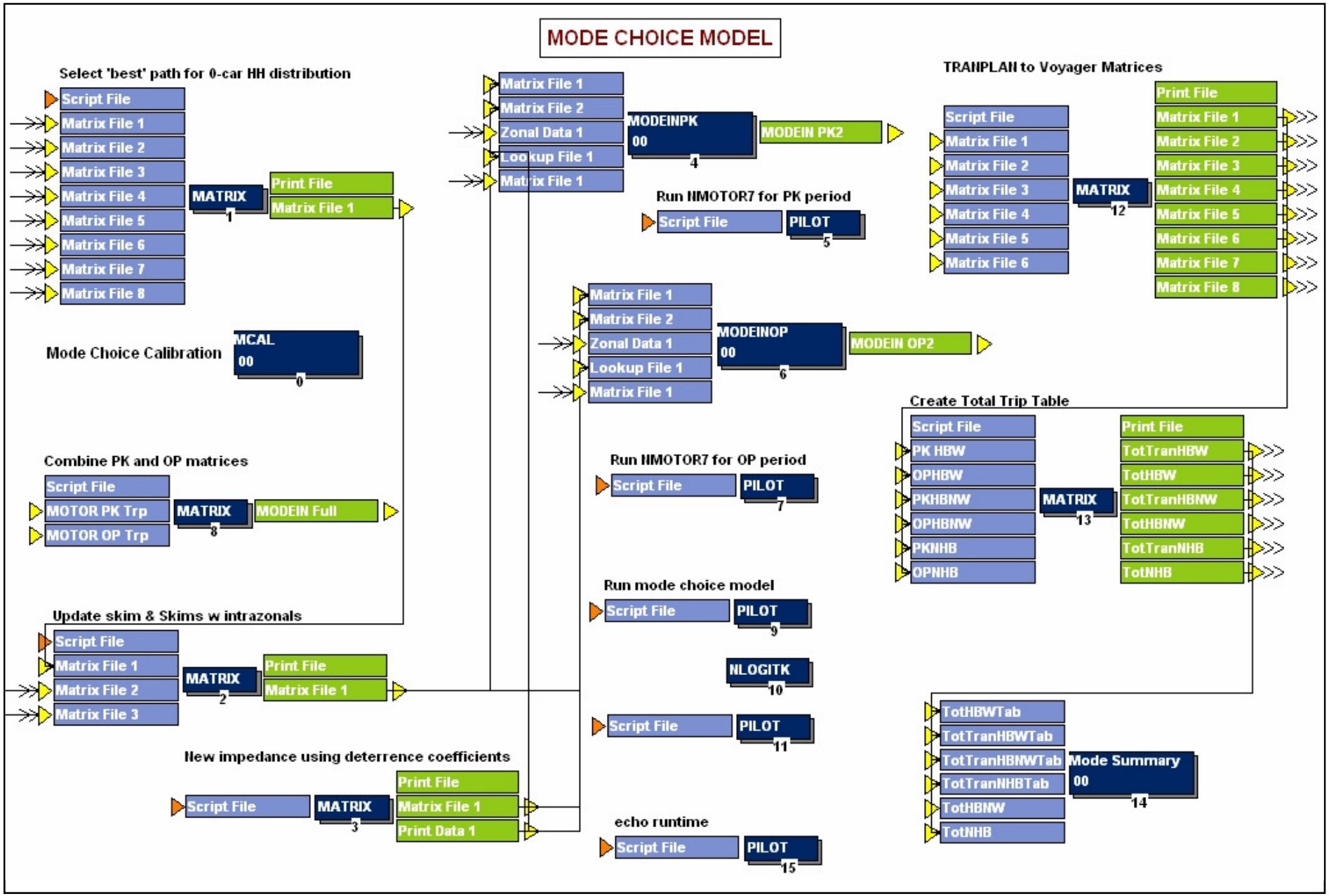


Figure F-17: **(Sub-Module 8-0) Mode Choice Calibration Flowchart**
Southeast Regional Planning Model 6.5

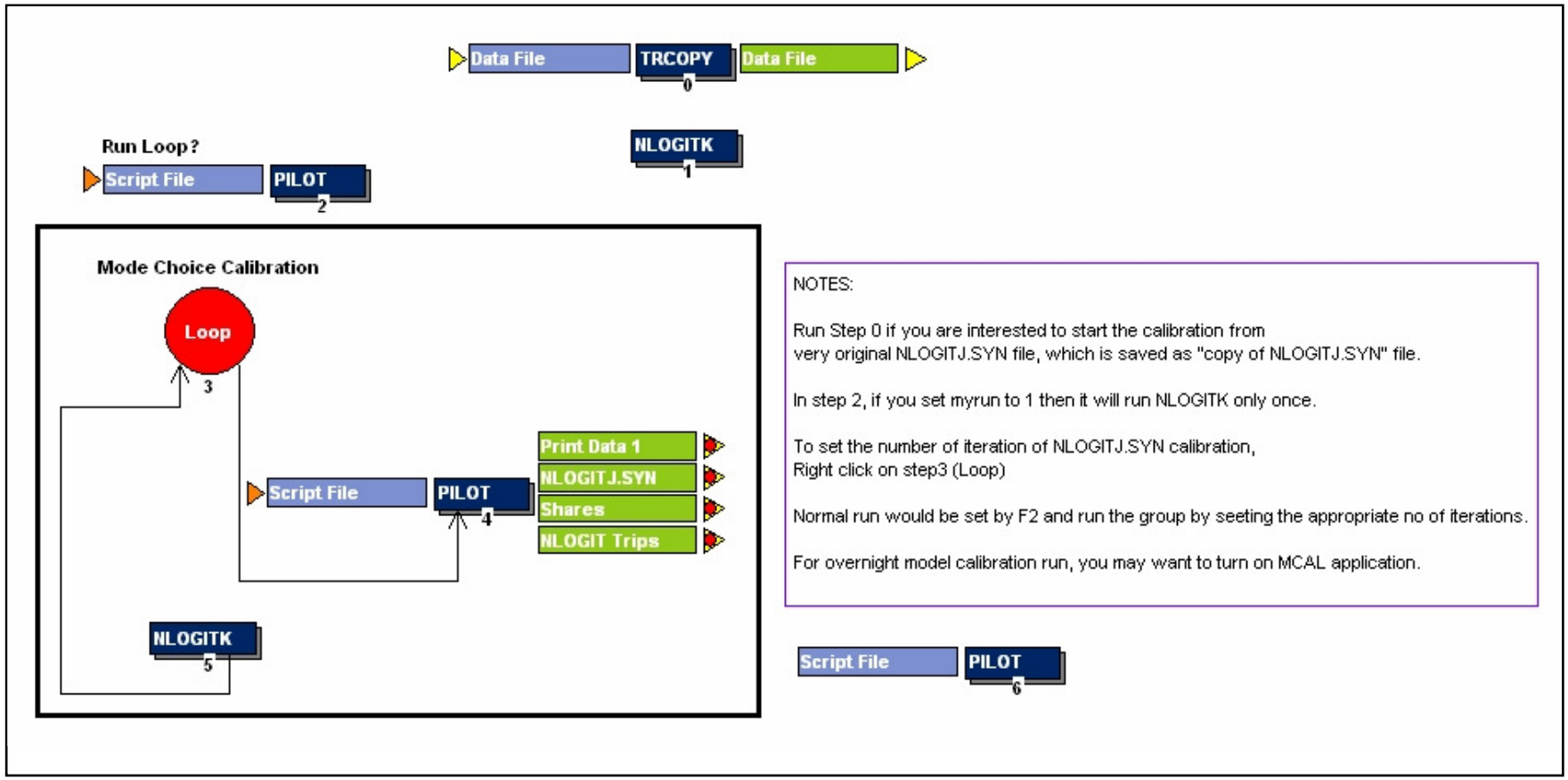


Figure F-18: **(Sub-Module 8-4) Peak Period Mode Choice Trip Input Flowchart**
Southeast Regional Planning Model 6.5

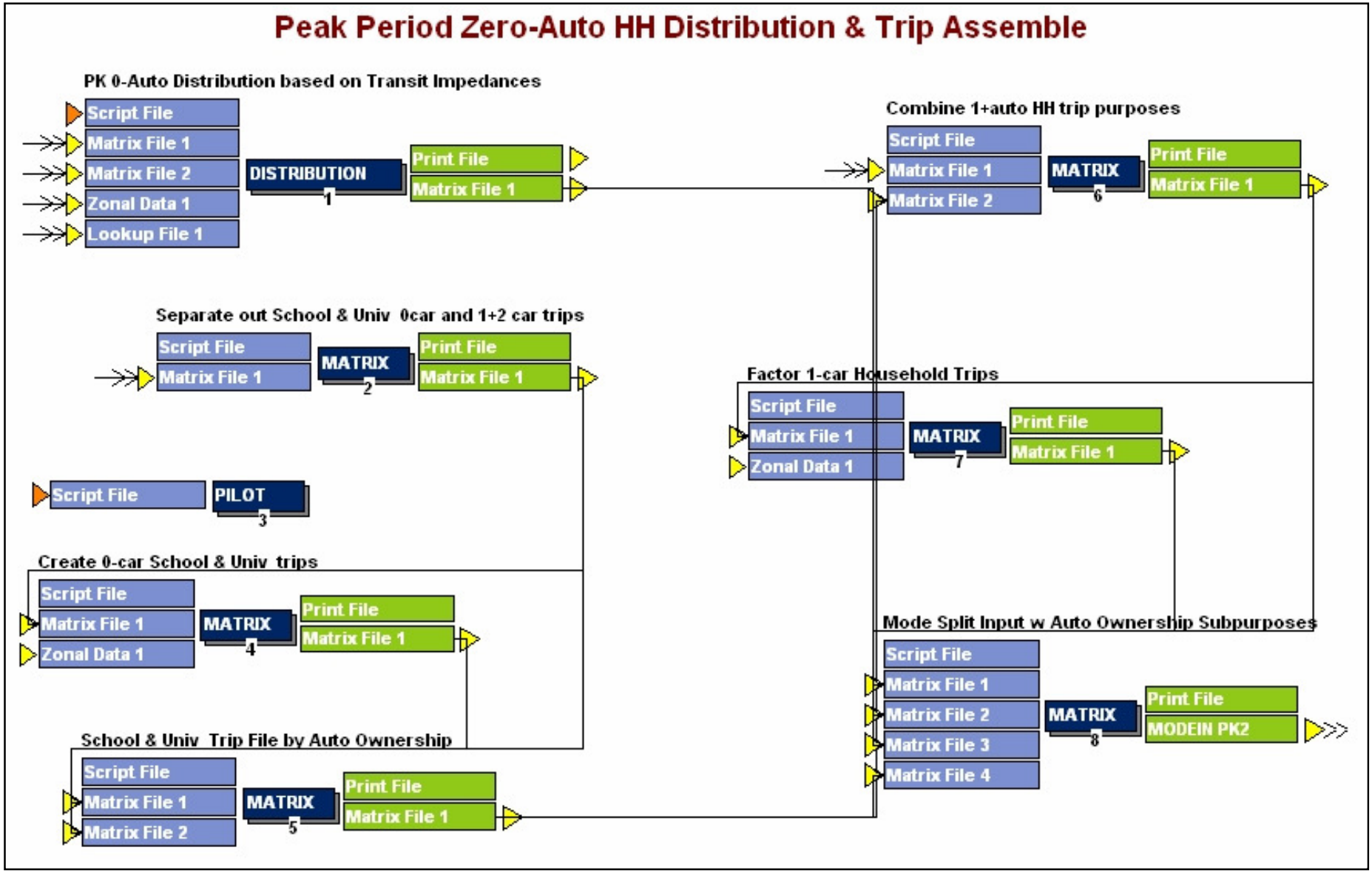


Figure F-19: **(Sub-Module 8-6) Off Peak Period Mode Choice Trip Input Flowchart**
Southeast Regional Planning Model 6.5

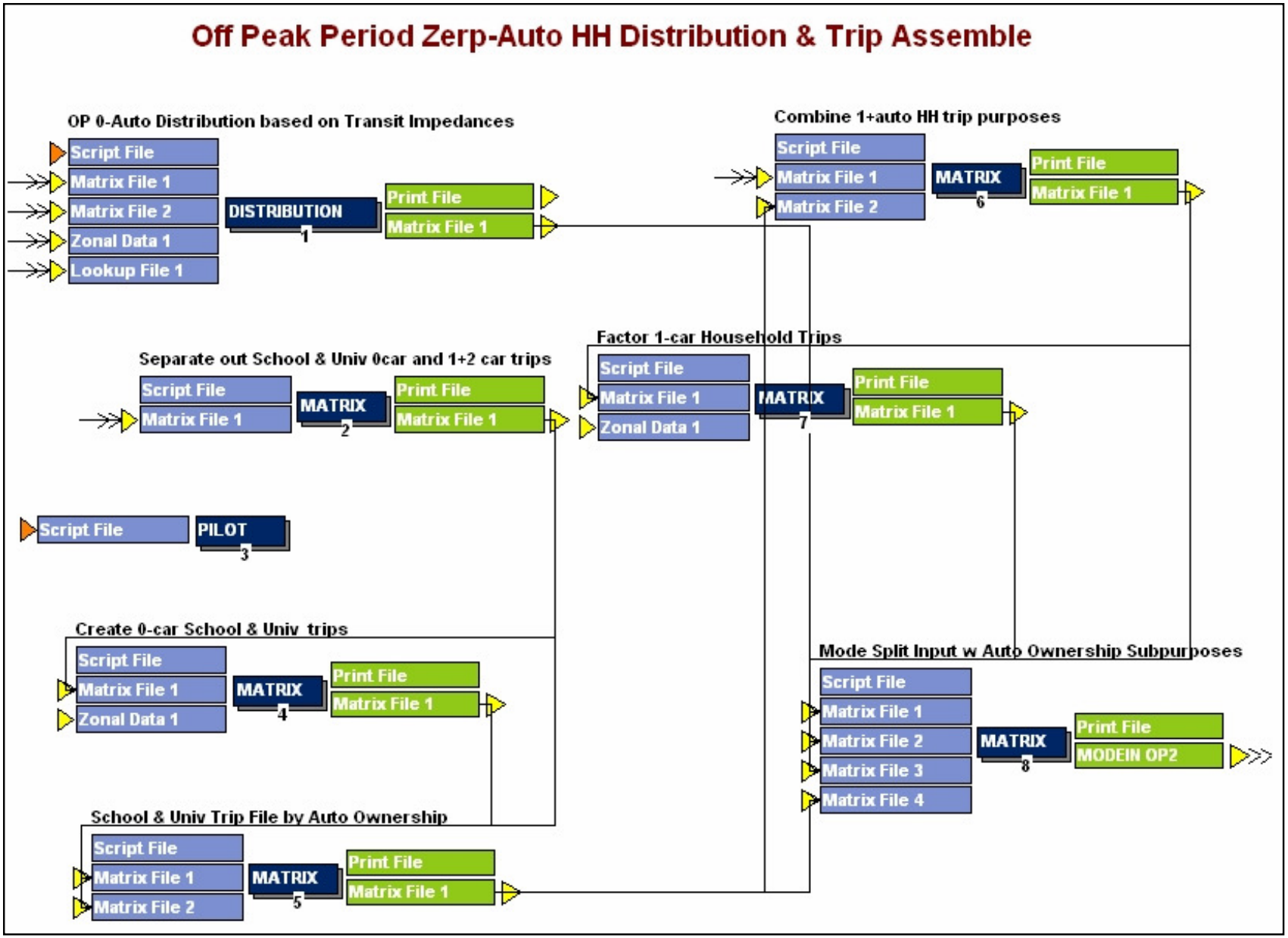


Figure F-20: **(Sub-Module 8-14) Model and JTW Trip Flow Summary by Districts Flowchart**
Southeast Regional Planning Model 6.5

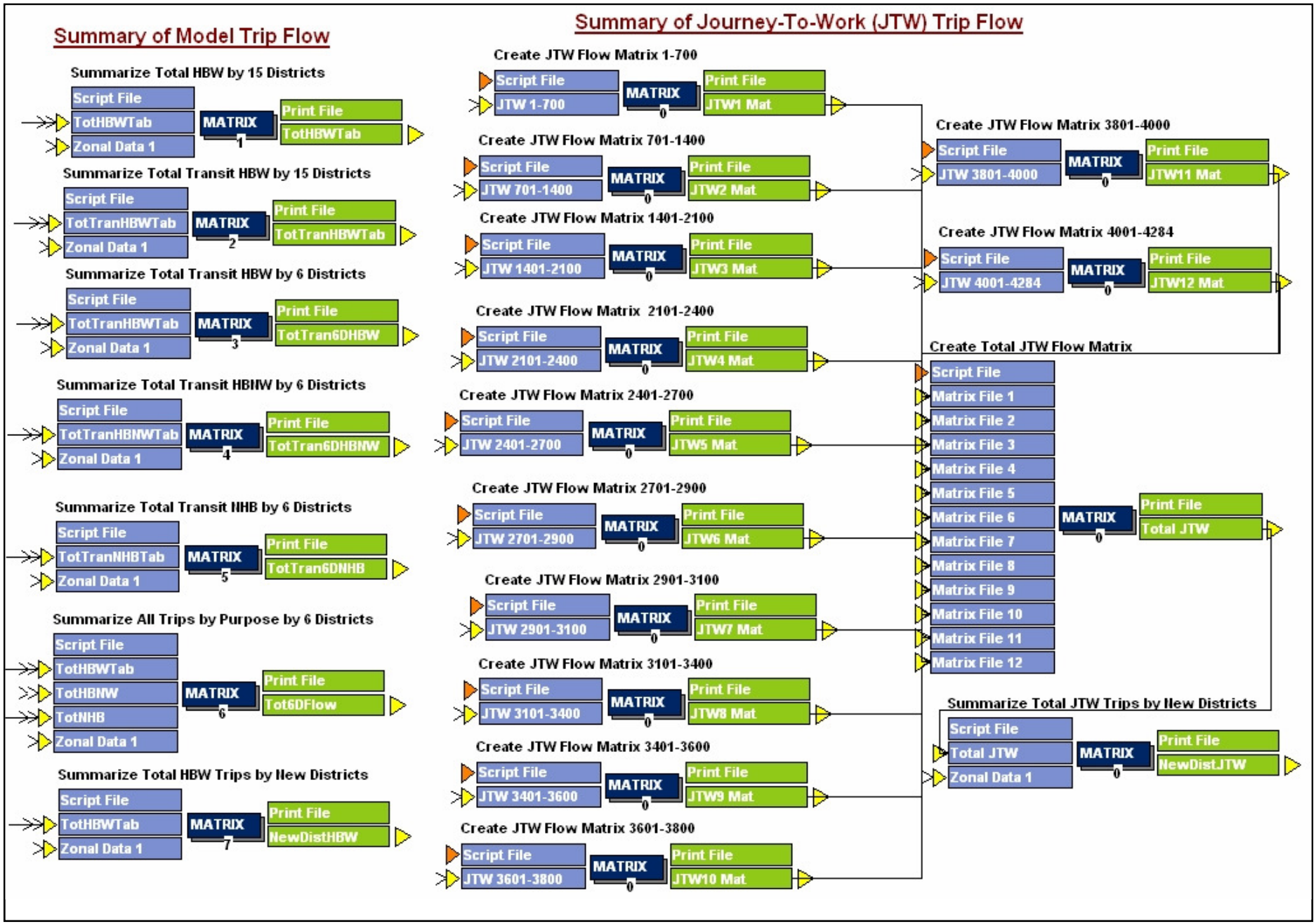


Figure F-21: **(Module 9) Transit Assignment Flowchart**
Southeast Regional Planning Model 6.5

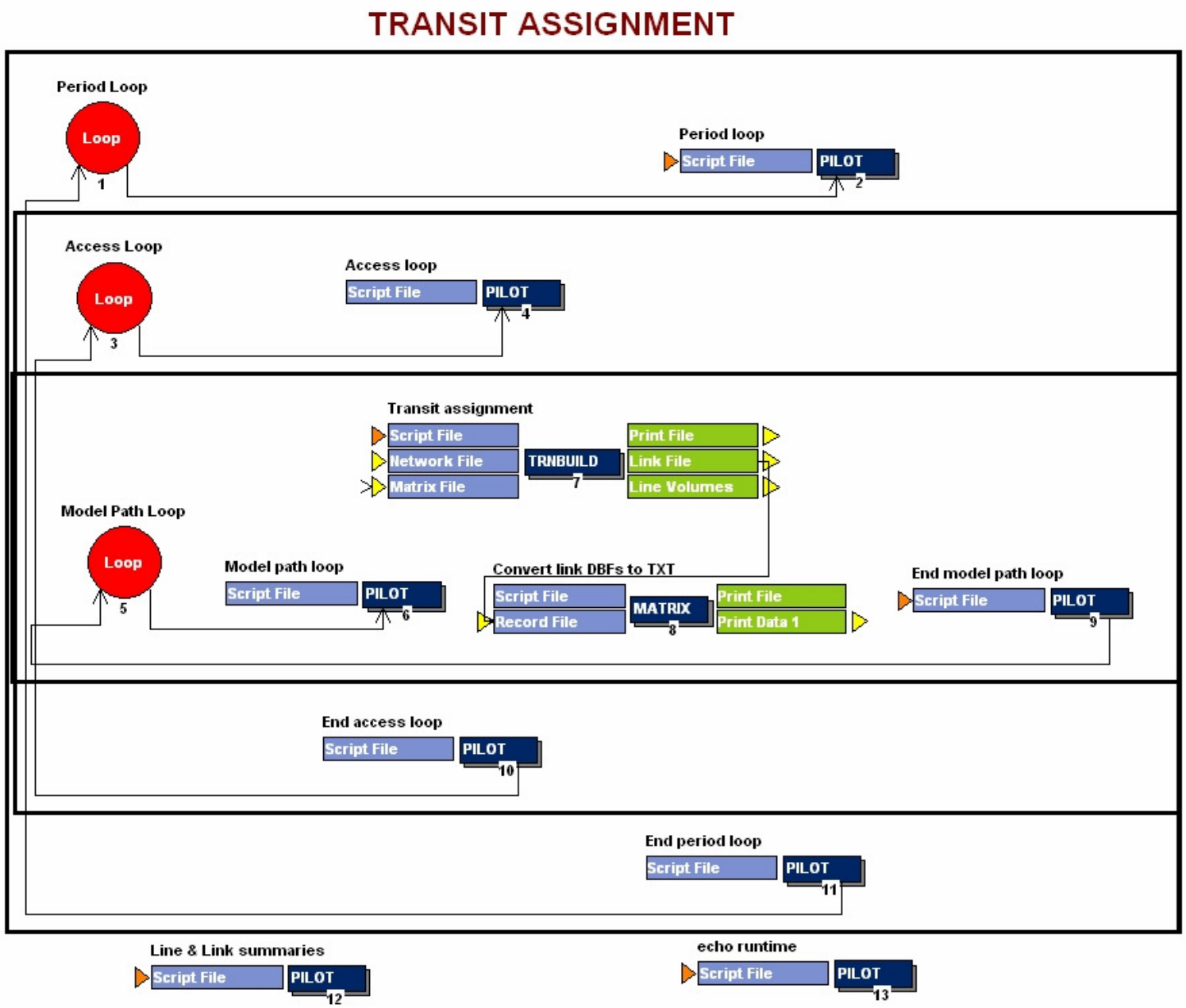


Figure F-22: **(Module 10) Highway Trip Tables Flowchart**
Southeast Regional Planning Model 6.5

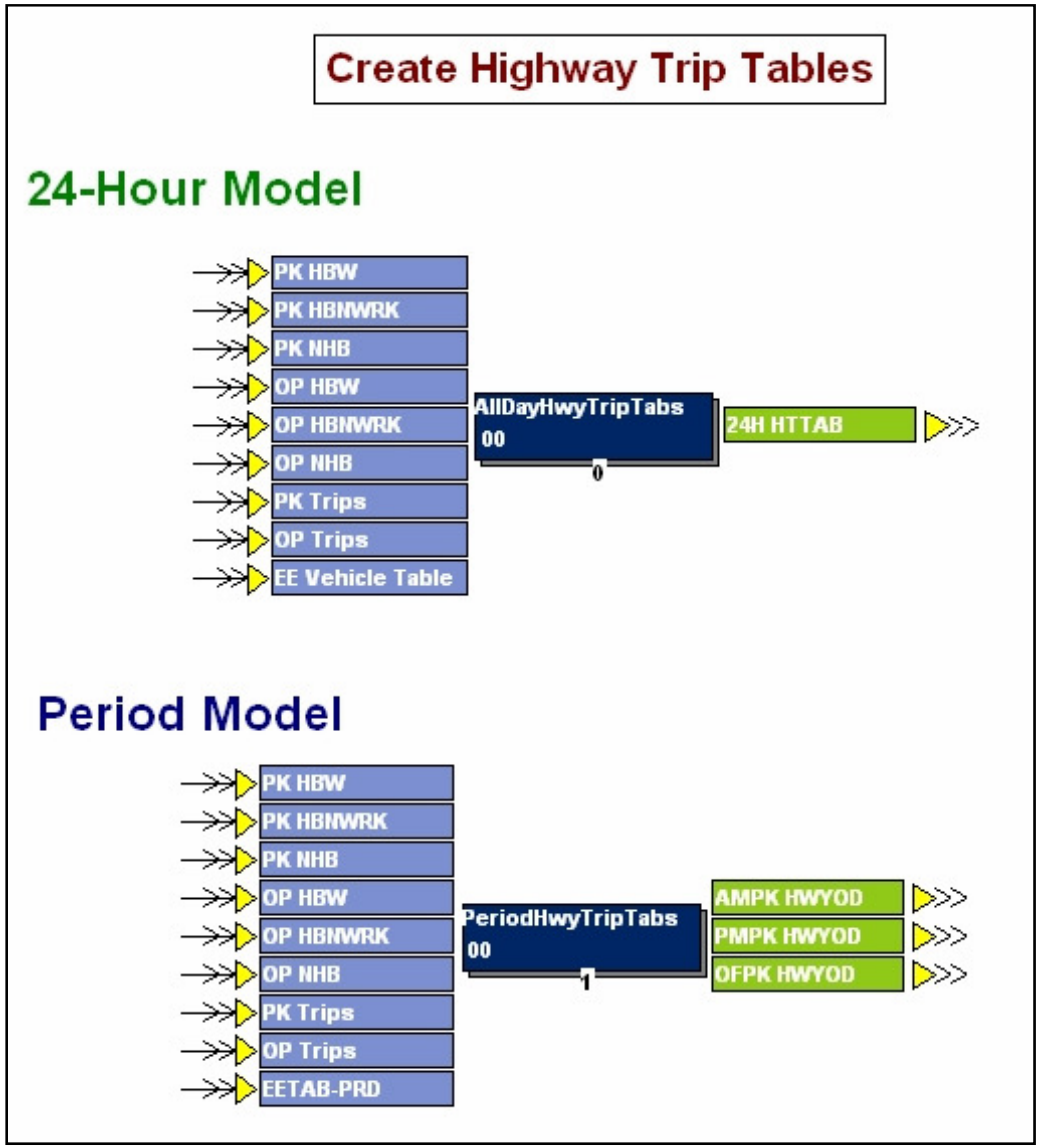


Figure F-23: **(Sub-Module 10-0) 24-Hour Highway Trip Tables Flowchart**
Southeast Regional Planning Model 6.5

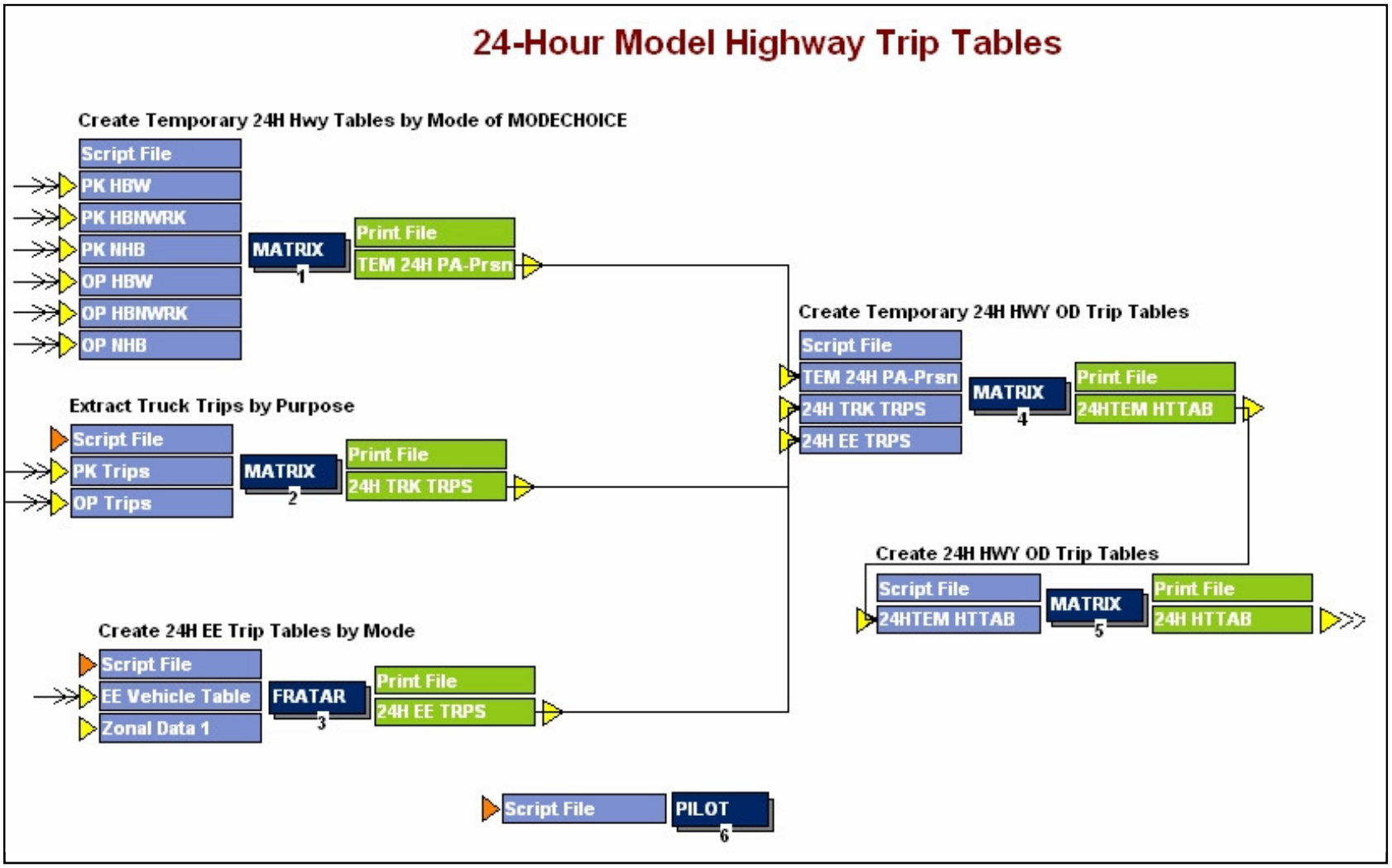


Figure F-24: **(Sub-Module 10-1) Time-of-Day Highway Trip Tables Flowchart**
Southeast Regional Planning Model 6.5

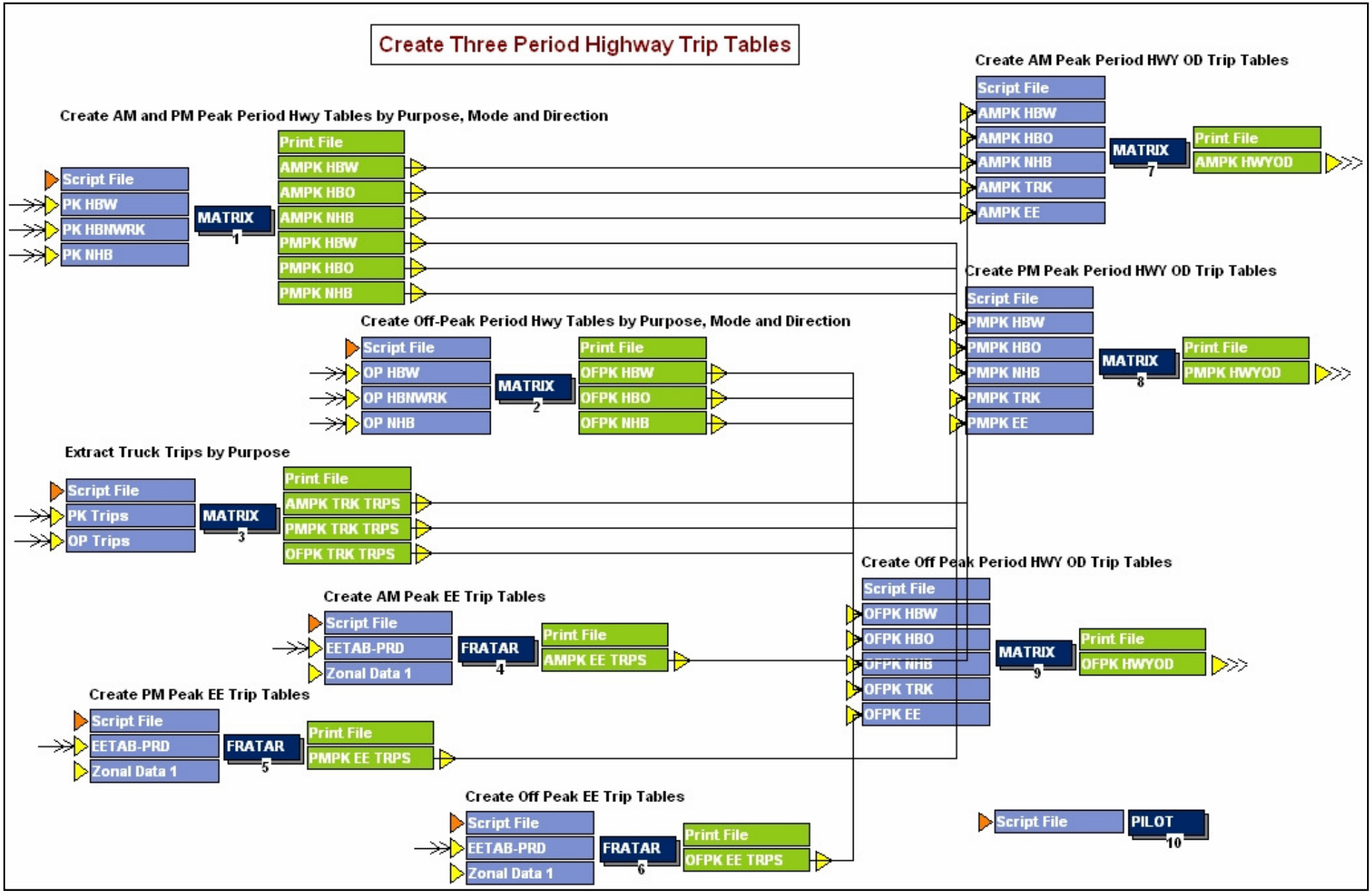


Figure F-25: **(Module 11) Highway Assignment Flowchart**
Southeast Regional Planning Model 6.5

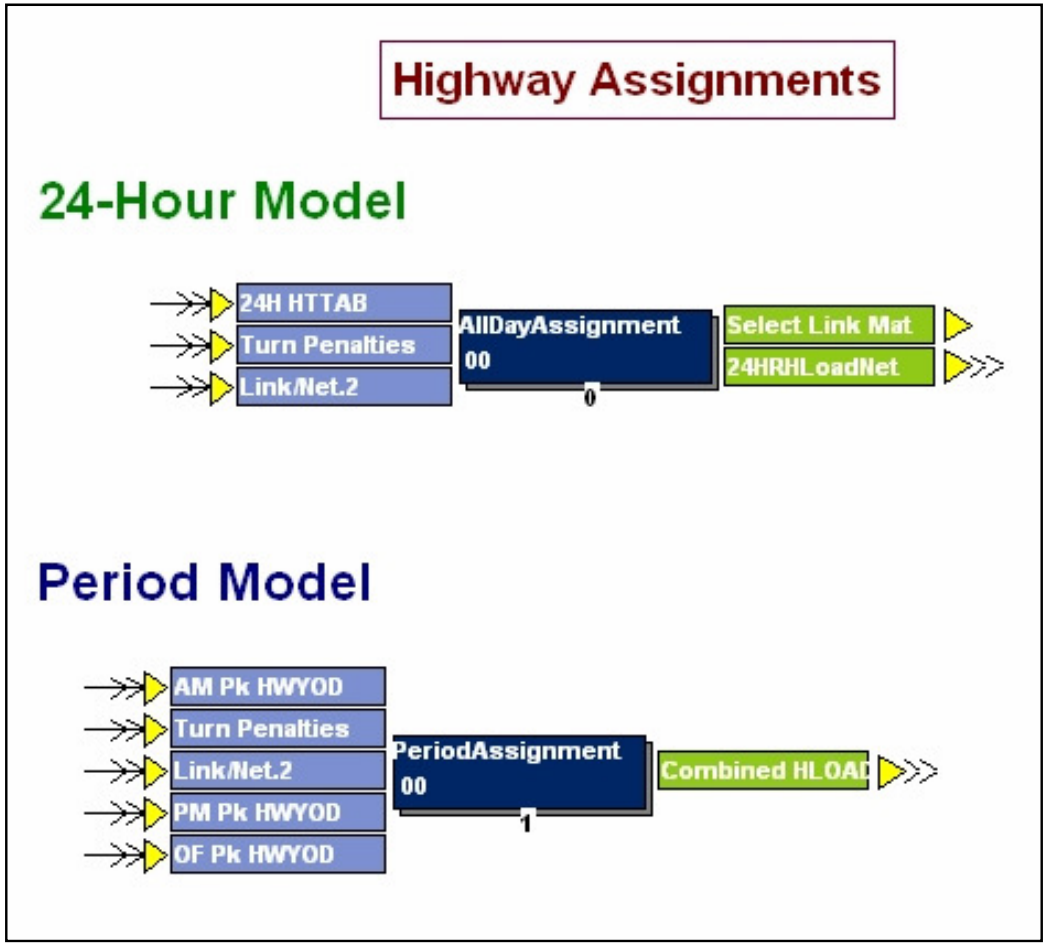


Figure F-26: **(Sub-Module 11-0) 24-Hour Highway Assignment Flowchart**
Southeast Regional Planning Model 6.5

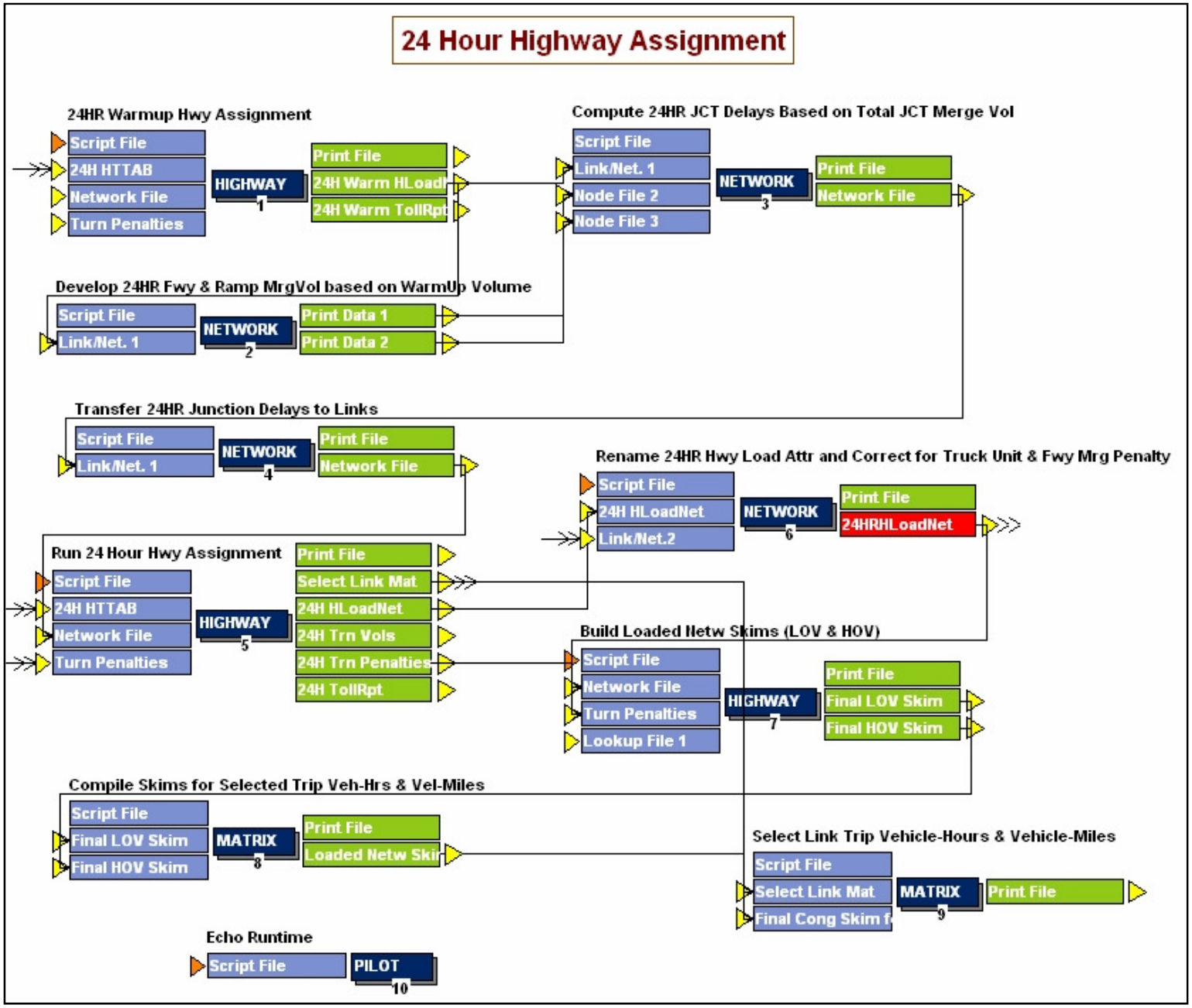


Figure F-27: **(Sub-Module 11-1) Time-of-Day Highway Assignment Flowchart**
Southeast Regional Planning Model 6.5

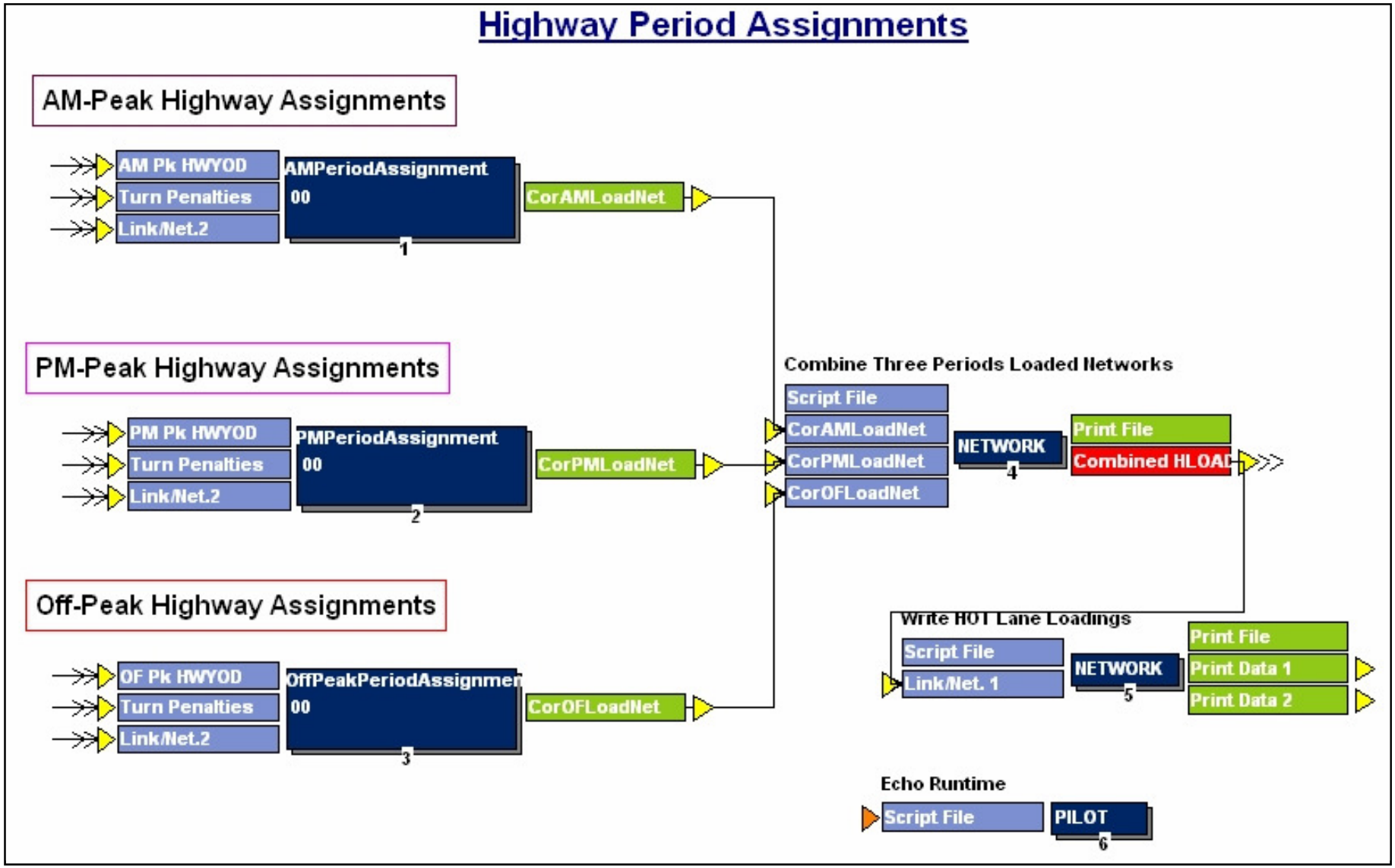


Figure F-28: **(Sub-Module 11-1-1) AM-Peak Period Highway Assignment Flowchart**
Southeast Regional Planning Model 6.5

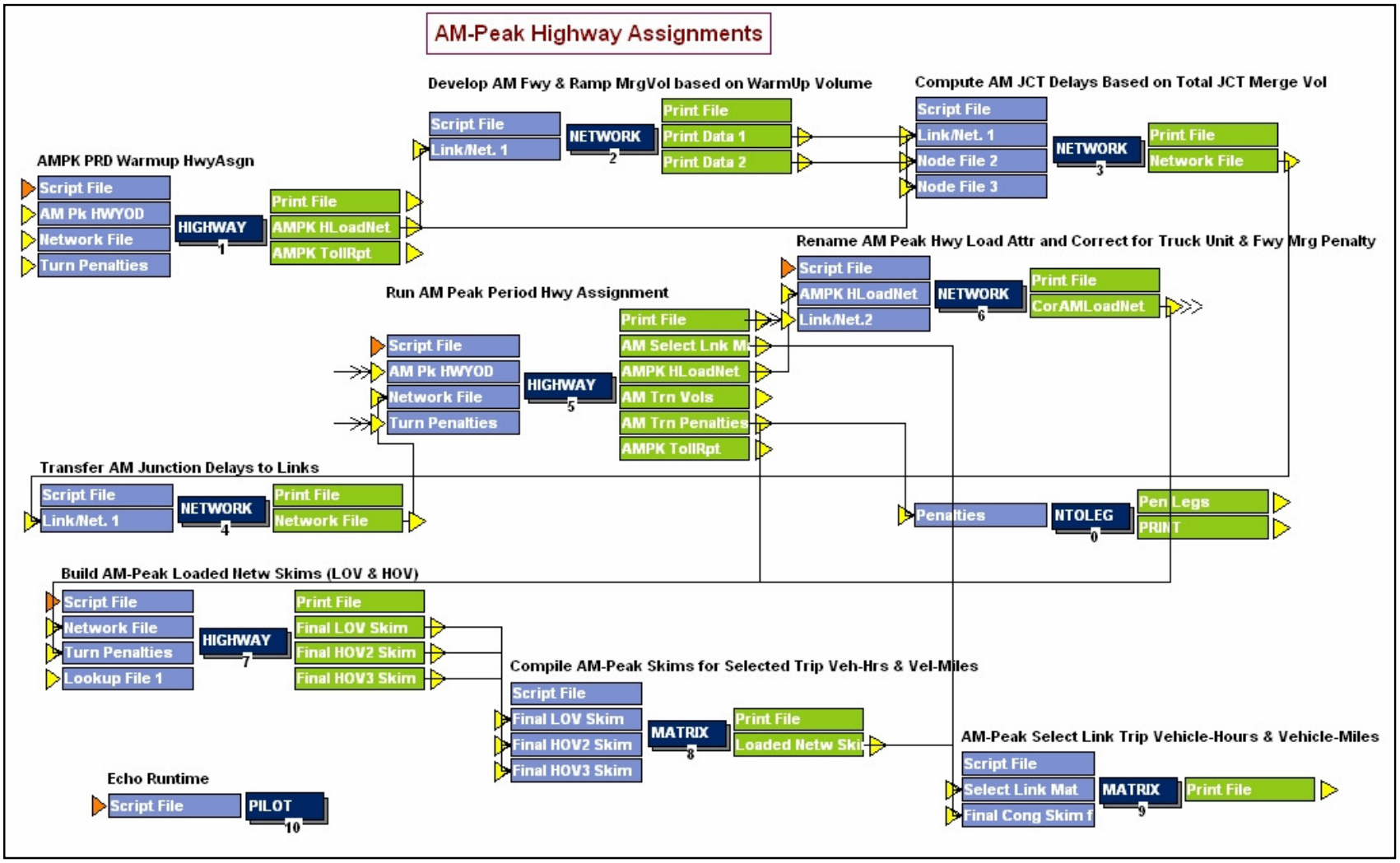


Figure F-29: **(Sub-Module 11-1-2) PM-Peak Period Highway Assignment Flowchart**
Southeast Regional Planning Model 6.5

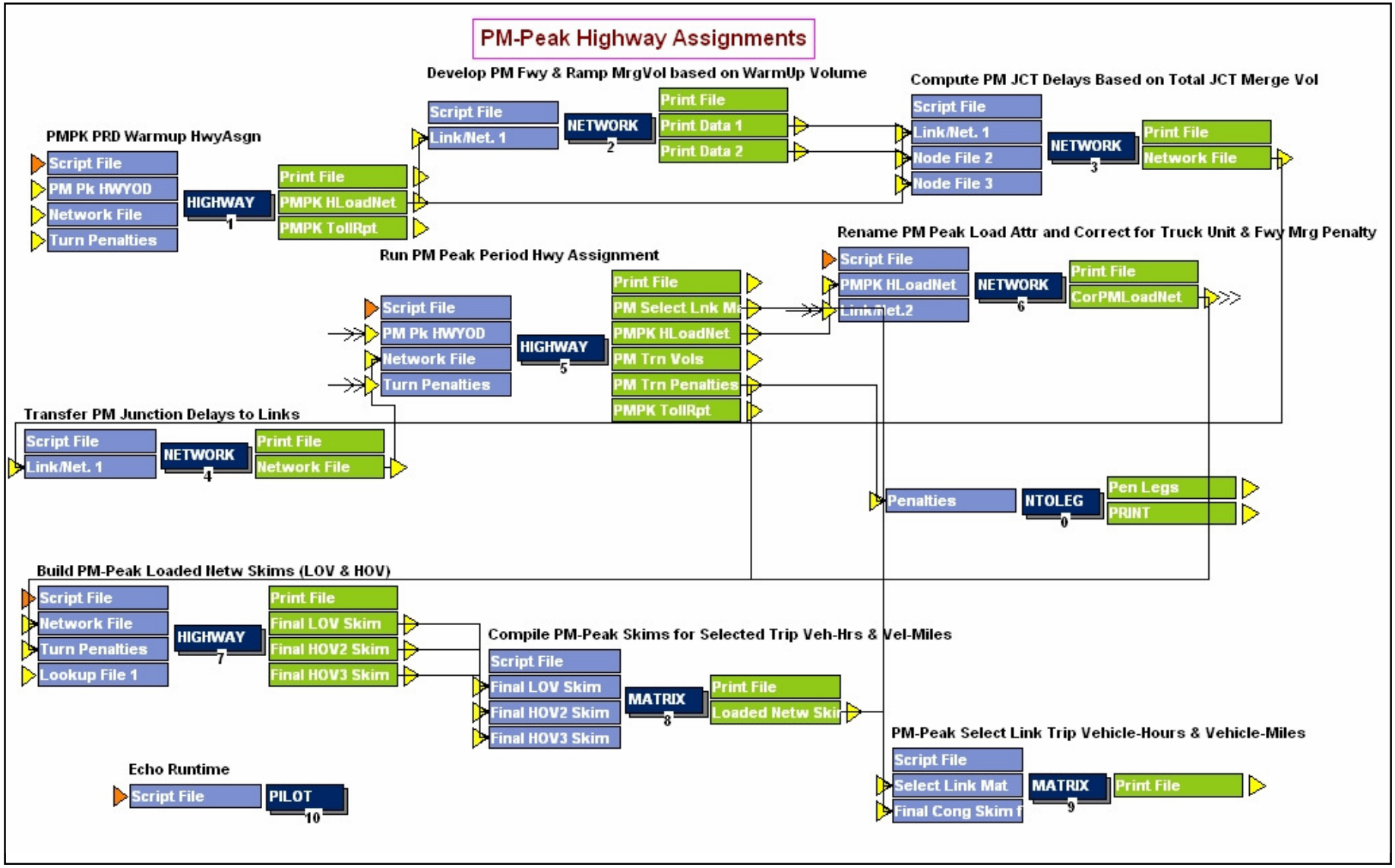


Figure F-30: **(Sub-Module 11-1-3) Off-Peak Period Highway Assignment Flowchart**
Southeast Regional Planning Model 6.5

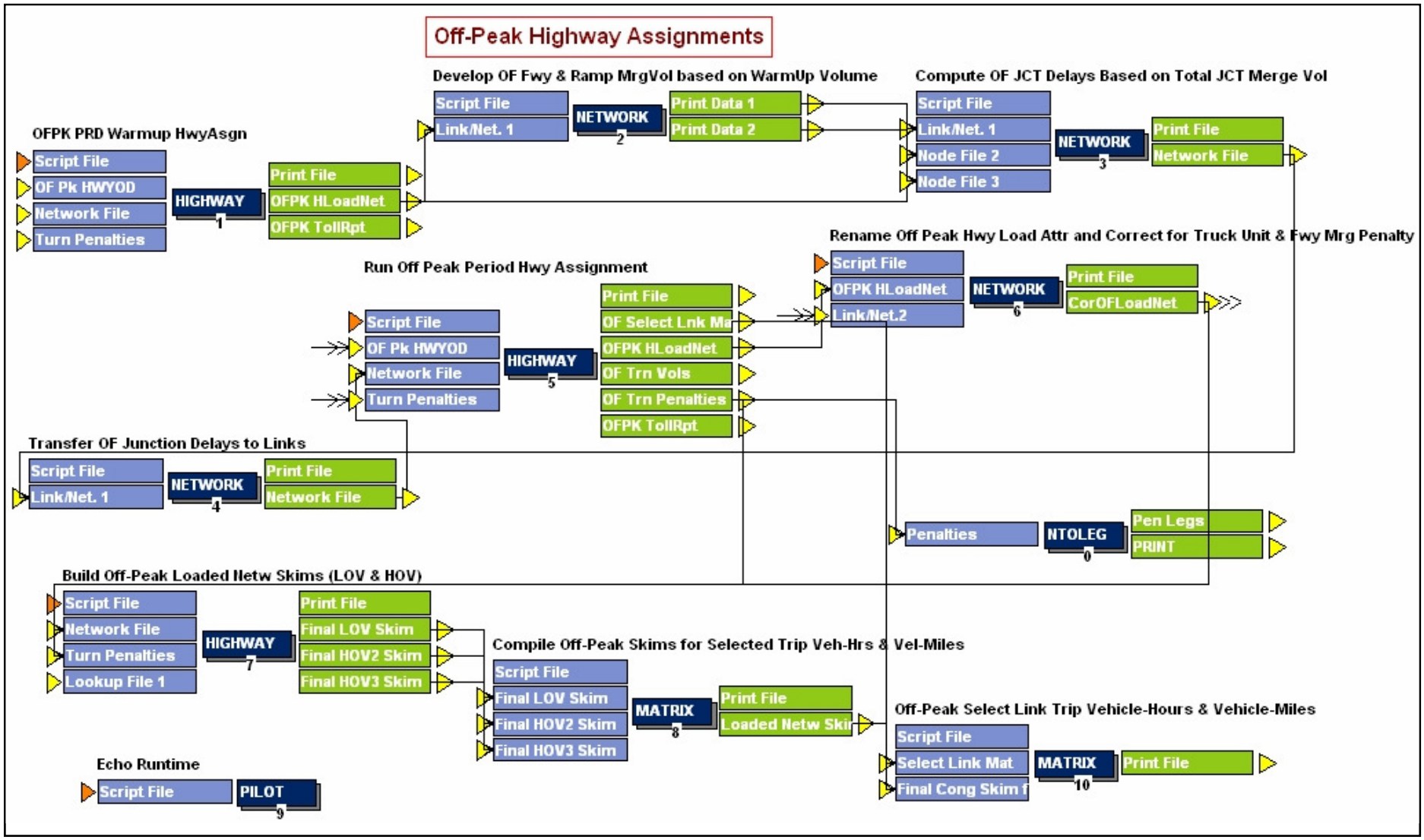


Figure F-31: **(Module 12) Highway Evaluation Flowchart**
Southeast Regional Planning Model 6.5

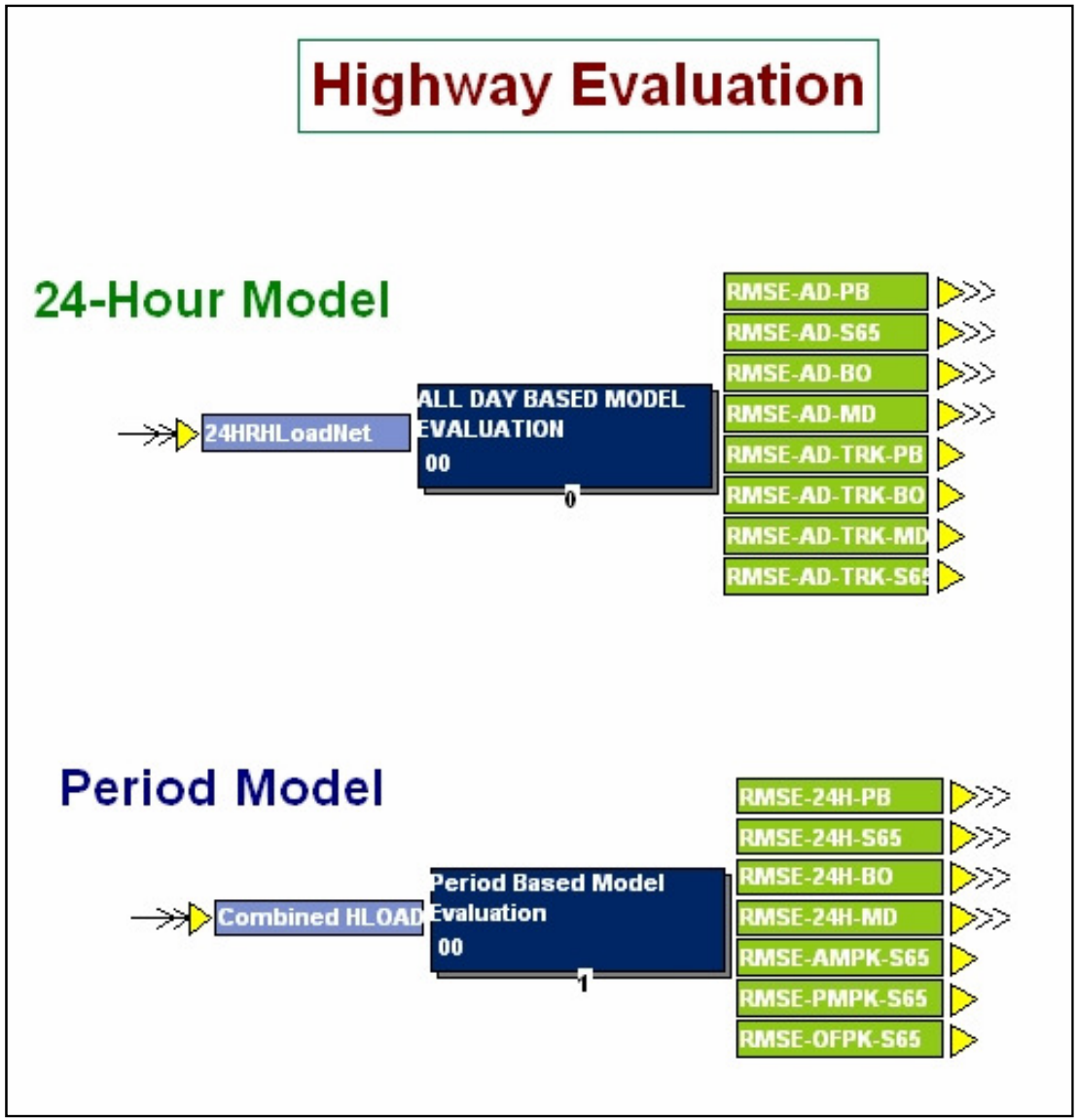


Figure F-32: **(Sub-Module 12-0) 24-Hour Model Evaluation Flowchart**
Southeast Regional Planning Model 6.5

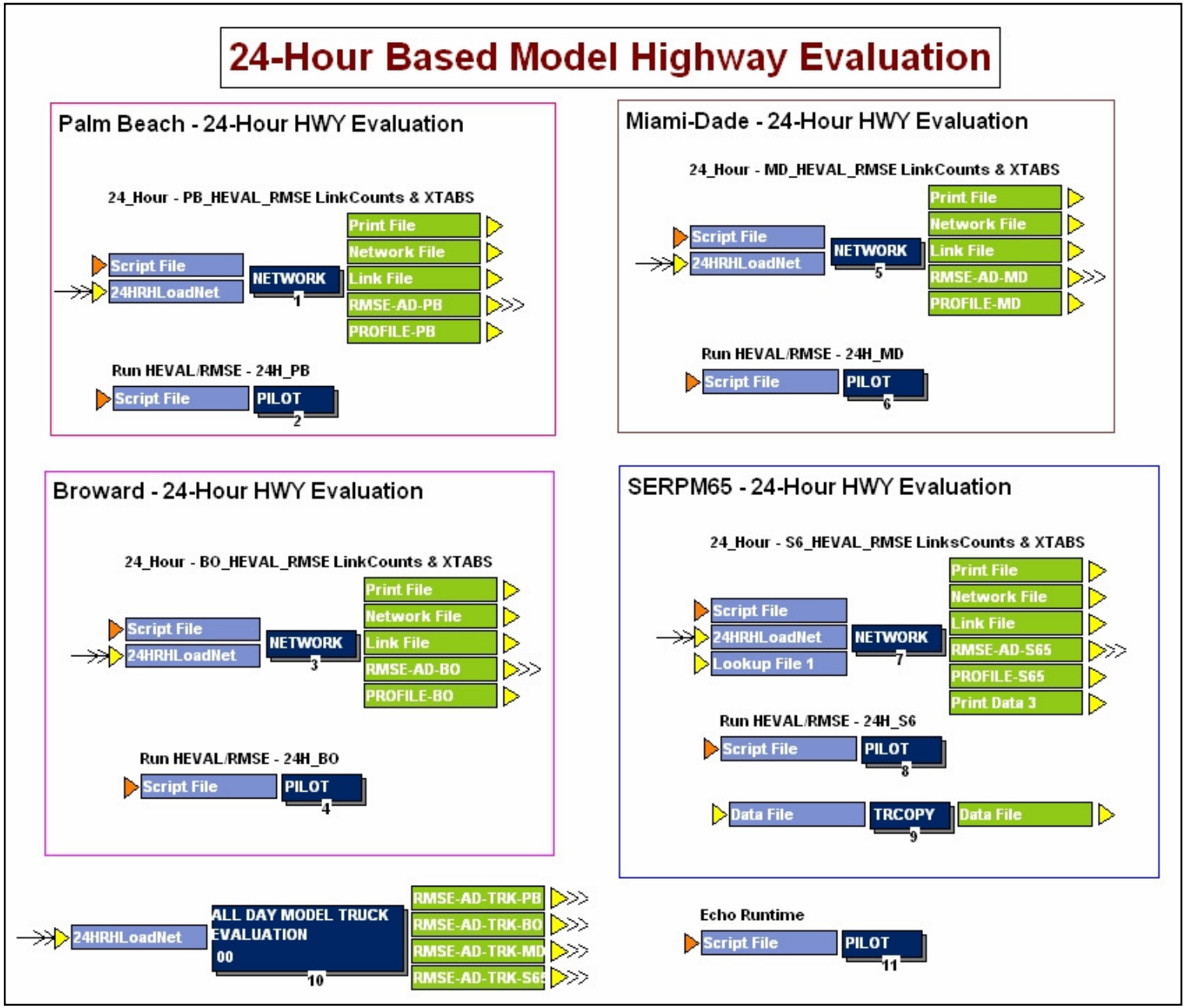


Figure F-33: **(Sub-Module 12-0-10) 24-Hour Truck Model Evaluation Flowchart**
Southeast Regional Planning Model 6.5

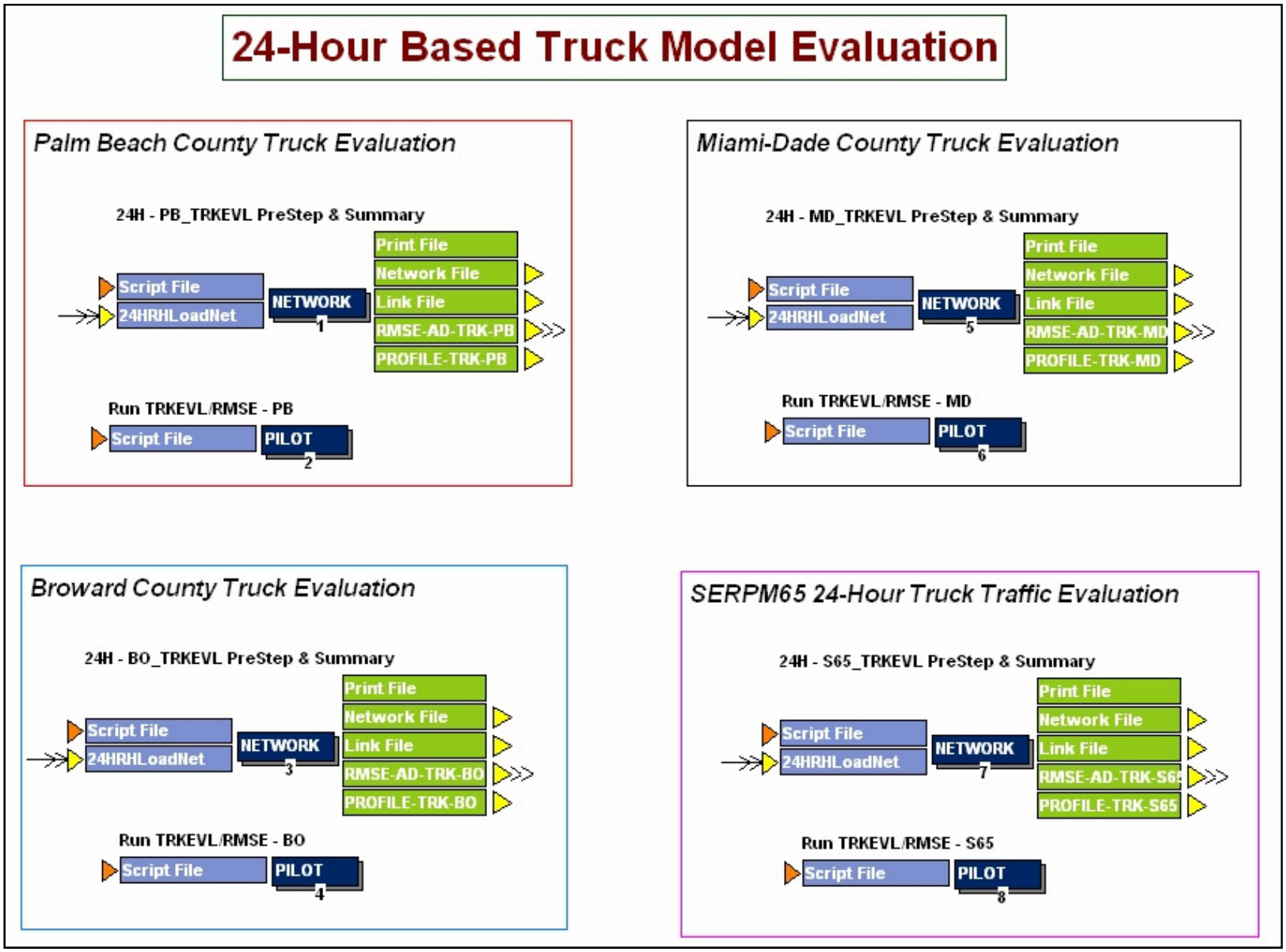


Figure F-34: **(Sub-Module 12-1) Period Model Evaluation Flowchart**
Southeast Regional Planning Model 6.5

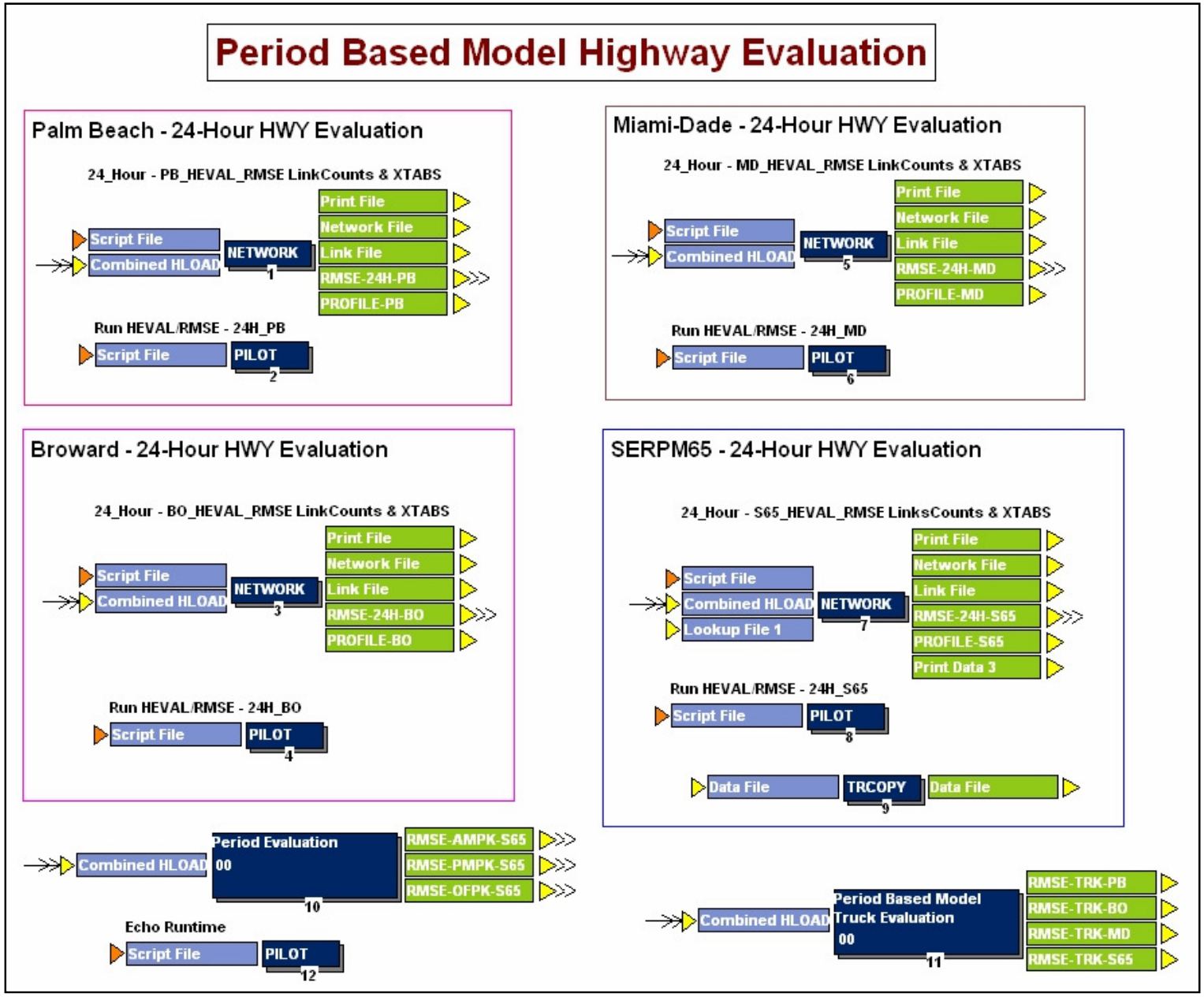


Figure F-35: **(Sub-Module 12-1-10) Highway Period Based Assignment Evaluation Flowchart**
Southeast Regional Planning Model 6.5

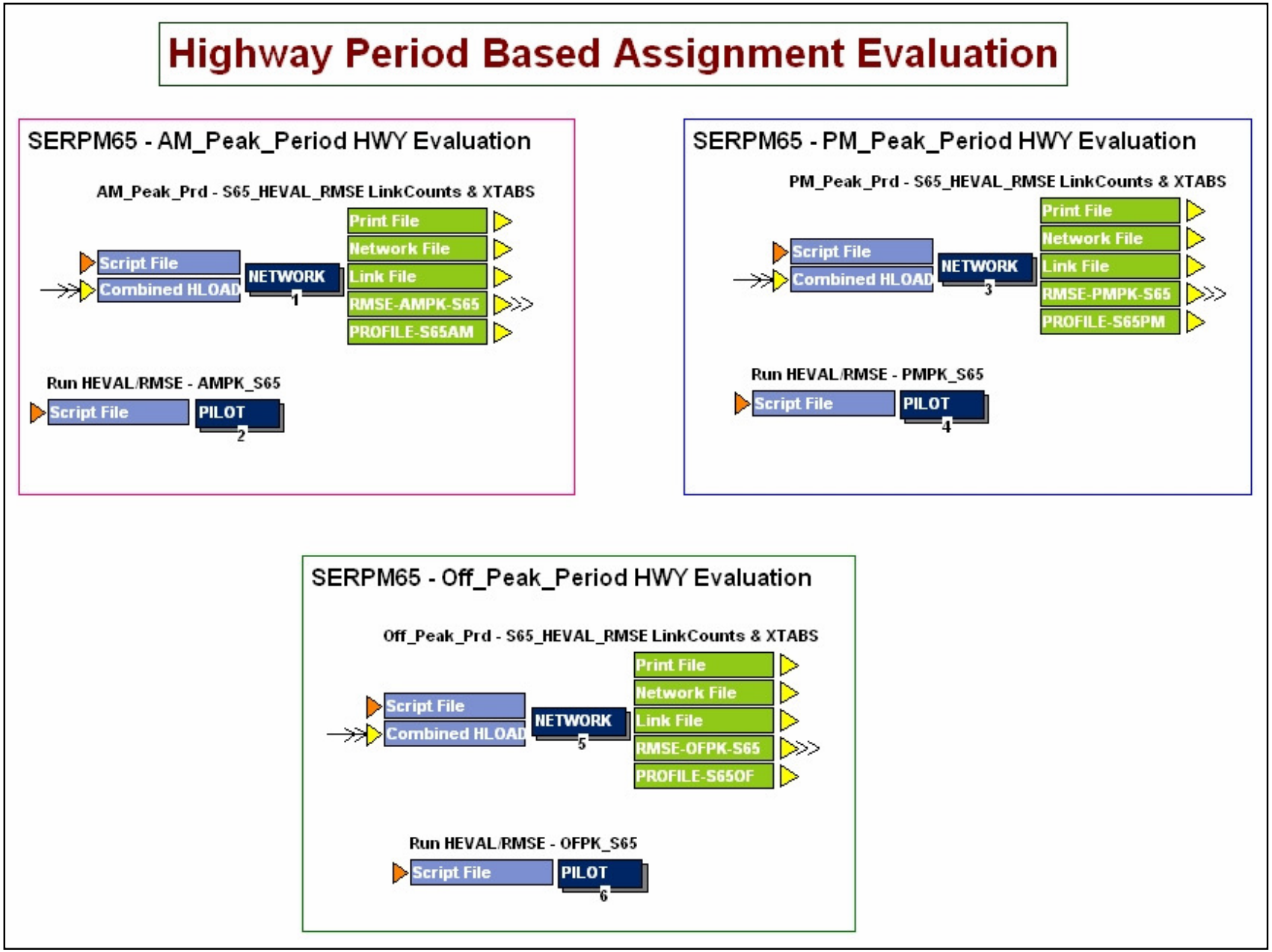
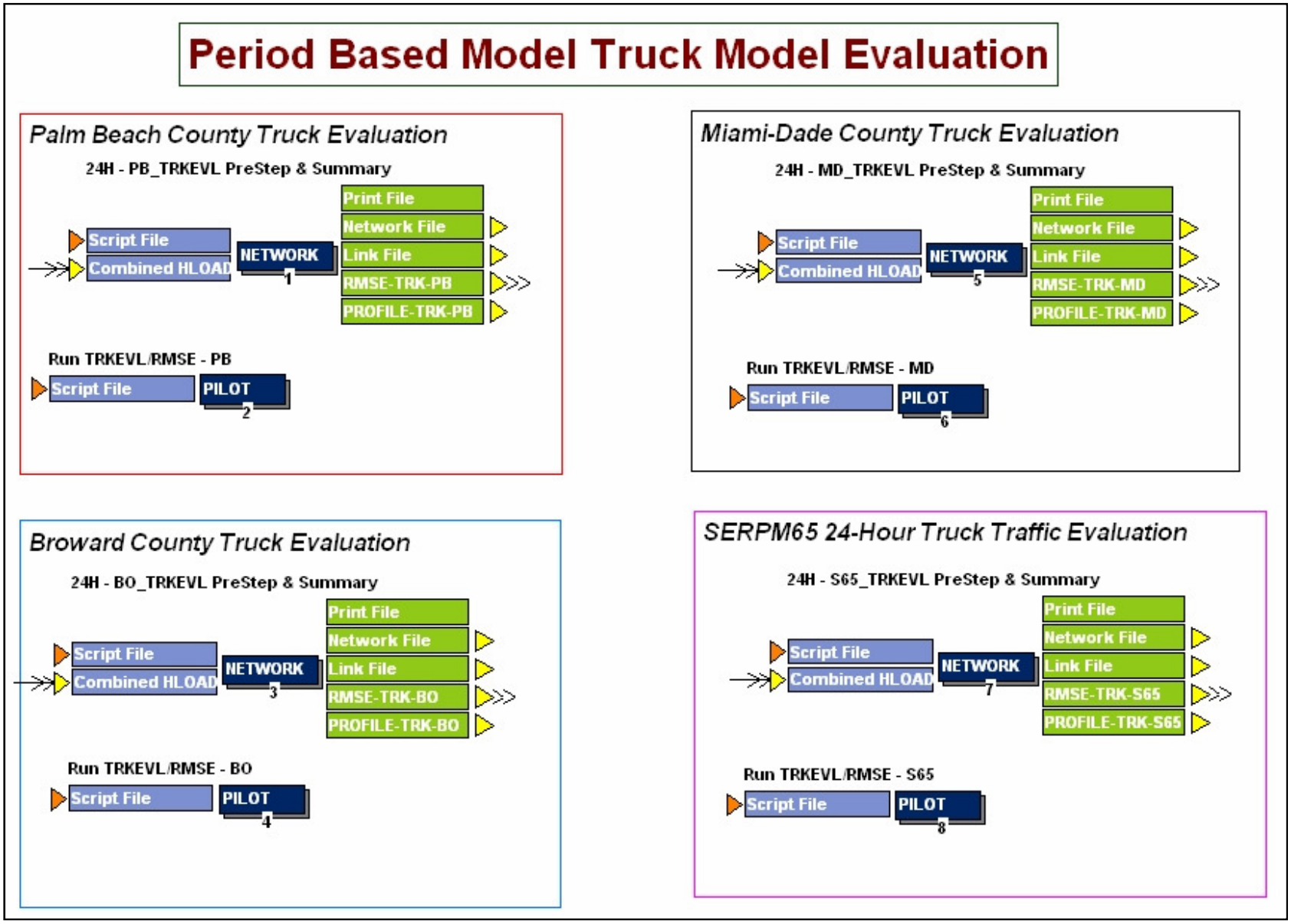


Figure F-36: **(Sub-Module 12-1-11) Period Model All Day Truck Evaluation Flowchart**
Southeast Regional Planning Model 6.5



Appendix G

SELECTED OUTPUT FILE INFORMATION

FORMAT (Table G-X):

1. CONTROL.MAS
2. FAREZONE.DAT
3. STATION_{ALT}{Year}.DAT
4. TRANSIT.MAS
5. **Loaded Highway Network Attributes (TOD Model)**
6. **Loaded Highway Network Attributes (24-Hour Model)**

LISTING (Figure G-X):

1. TASNAMx.TXT and TASNMDx.TXT
2. TASROUTE.PRN
3. TASSUM.PRN
4. Mode Choice Utility Constants and Coefficients

Table G-1

Parameters used in CONTROL.MAS File

Southeast Regional Planning Model 6.5

(1) REWALK and AUTOCON (see Note) files

Parameters	Description	Example
InputDirectory	path for input folder	{DATADIR}\
CubeDirectory	path for cube folder	{CUBE}\
OutputDirectory	path for output folder	{OUTDIR}\
; Rewalk program files		
FLEGINAM	PT walk connector file (peak period)	{OUTDIR}\NTLEG1AM_TEM.NTL
FLEGINMD	PT walk connector file (off-peak period)	{OUTDIR}\NTLEG1MD_TEM.NTL
FLEGOUTAM	Revised walk connector file (peak period)	{OUTDIR}\NTLEG1AM_R05.NTL
FLEGOUTMD	Revised walk connector file (off-peak period)	{OUTDIR}\NTLEG1MD_R05.NTL
FPCWALKIN	Input PCWALK file	{DATADIR}\transit\PCWALK_05R.DAT
FPCWALKOUT	Revised PCWALK file	{OUTDIR}\PCWALK.05R
FCODWAM	Coded Walk file (peak period)	{OUTDIR}\temfiles\CODWAM.R05
FCODWMD	Coded Walk file (off-peak period)	{OUTDIR}\temfiles\CODWMD.R05
; AUTOCON files		
; Inputs		
StatDataFile	Station data file	{OUTDIR}\STATION_05R.DAT
XtraAutoFileAM	File with override connectors (peak period)	{DATADIR}\transit\XTRAAUTO_05R.DAT
XtraAutoFileMD	File with override connectors (off-peak period)	{DATADIR}\transit\XTRAAUTO_05R.DAT
AutoDelFileAM	File with zone lists (peak period)	{DATADIR}\transit\AUTDELAM_05R.DAT
AUTODELFILEMD	File with zone lists (off-peak period)	{DATADIR}\transit\AUTDELMD_05R.DAT
NodesFile	Node/Coordinate look up file	{OUTDIR}\XY_05R.DAT
TransitLineFile	Transit Line file	{DATADIR}\transit\TROUTE_05R.LIN
RHSKIMS	Congested highway skim file	{OUTDIR}\RHSKIMTT.R05
FHSKIMS	Uncongested highway skim file	{OUTDIR}\FHSKIMTT.R05
; Outputs		
AUTOCONRPT	Autocon report	{OUTDIR}\AUTOCON.OUT
AUTOAM	List of Stations (peak period)	{OUTDIR}\NTLEG2AM_R05.NTL
AUTOMD	List of Stations (off-peak period)	{OUTDIR}\NTLEG2MD_R05.NTL

(2) NLOGITK files

Parameters	Description	Example
; Inputs		
AMWalkBusTransitSkim	Walk-bus skim (peak period)	{OUTDIR}\TSKIMAM1_R05.MTX
AMWalkModTransitSkim	Walk-New mode skim (peak period)	{OUTDIR}\TSKIMAM2_R05.MTX
AMWalkMRLTransitSkim	Walk-Metrorail skim (peak period)	{OUTDIR}\TSKIMAM3_R05.MTX
AMWalkTRLTransitSkim	Walk- TriRail skim (peak period)	{OUTDIR}\TSKIMAM4_R05.MTX
AMAutoBusTransitSkim	Auto-bus skim (peak period)	{OUTDIR}\TSKIMAM5_R05.MTX
AMAutoModTransitSkim	Auto-New mode skim (peak period)	{OUTDIR}\TSKIMAM6_R05.MTX
AMAutoMRLTransitSkim	Auto-Metrorail skim (peak period)	{OUTDIR}\TSKIMAM7_R05.MTX
AMAutoTRLTransitSkim	Auto- TriRail skim (peak period)	{OUTDIR}\TSKIMAM8_R05.MTX

Table G-1 (continued)

(2) NLOGITK files (contd.)

Parameters	Description	Example
; Inputs		
MDWalkBusTransitSkim	Walk-bus skim (off-peak period)	{OUTDIR}\TSKIMMD1_R05.MTX
MDWalkModTransitSkim	Walk-New mode skim (off-peak period)	{OUTDIR}\TSKIMMD2_R05.MTX
MDWalkMRLTransitSkim	Walk-Metrorail skim (off-peak period)	{OUTDIR}\TSKIMMD3_R05.MTX
MDWalkTRLTransitSkim	Walk- TriRail skim (off-peak period)	{OUTDIR}\TSKIMMD4_R05.MTX
MDAutoBusTransitSkim	Auto-bus skim (off-peak period)	{OUTDIR}\TSKIMMD5_R05.MTX
MDAutoModTransitSkim	Auto-New mode skim (off-peak period)	{OUTDIR}\TSKIMMD6_R05.MTX
MDAutoMRLTransitSkim	Auto-Metrorail skim (off-peak period)	{OUTDIR}\TSKIMMD7_R05.MTX
MDAutoTRLTransitSkim	Auto- TriRail skim (off-peak period)	{OUTDIR}\TSKIMMD8_R05.MTX
PersonTripTableFile	Input person trip table	{OUTDIR}\MODEIN_TEM.MTX
HwyOnlyPTTFile	Highway-only person trip table	{OUTDIR}\TEMFILES\MODEIN_HO.TEM
CoefficientFile	Input coefficient file	{DATADIR}\transit\NLOGITJ.SYN
OPHwySkim	Off-peak highway skim	{OUTDIR}\OPHSKIMS.R05
PKHwySkim	Peak highway skim	{OUTDIR}\PKHSKIMS.R05
ZonalData	zonal data file	{OUTDIR}\TEMFILES\A1DECK.TEM
FCPIFile	CPI file	{OUTDIR}\CPIFILE_R05.XXX
DEFINAMFile	Default MS file	{DATADIR}\transit\DEFMSAM.DEF
DEFINMDFile	Default MS file	{DATADIR}\transit\DEFMSMD.DEF
TolllinkFile	Toll file	{DATADIR}\TOLLLINK.05R
DistrictsFile	District input file	{DATADIR}\transit\DISTS_SYN.TXT
BaselinePath	baseline path	..\Baseline\Cube\
BaselineAYY	AYY code for baseline	B00
; Outputs		
HBWPKTripTable	HBW peak period matrix	{OUTDIR}\HBWORKPK_TEM.MTX
HBNWPKTripTable	HBNW peak period matrix	{OUTDIR}\HBNWRKPK_TEM.MTX
NHBPKTripTable	NHB peak period matrix	{OUTDIR}\NHBPK_TEM.MTX
HBWOPTripTable	HBW off-peak period matrix	{OUTDIR}\HBWORKOP_TEM.MTX
HBNWOPTripTable	HBNW off-peak period matrix	{OUTDIR}\HBNWRKOP_TEM.MTX
NHBOPTripTable	NHB off-peak period matrix	{OUTDIR}\NHBOP_TEM.MTX
HBWPKUBTripTable	HBW peak period matrix (user benefit file)	{OUTDIR}\HBWORKPKUB_R05.MTX
HBNWPKUBTripTable	HBNW peak period matrix (user benefit file)	{OUTDIR}\HBNWRKPKUB_R05.MTX
NHBPKUBTripTable	NHB peak period matrix (user benefit file)	{OUTDIR}\NHBPKUB_R05.MTX
HBWOPUBTripTable	HBW off-peak period matrix (user benefit file)	{OUTDIR}\HBWORKOPUB_R05.MTX
HBNWOPUBTripTable	HBNW off-peak period matrix(user benefit file)	{OUTDIR}\HBNWRKOPUB_R05.MTX
NHBOPUBTripTable	NHB off-peak period matrix (user benefit file)	{OUTDIR}\NHBOPUB_R05.MTX
HBWHwyOnlyTripTable	HBW peak period matrix (highway-only)	{OUTDIR}\HBWORKHO_TEM.MTX
HBNWHwyOnlyTripTable	HBNW peak period matrix (highway-only)	{OUTDIR}\HBNWRKHO_TEM.MTX
NHBHwyOnlyTripTable	NHB peak period matrix (highway-only)	{OUTDIR}\NHBHO_TEM.MTX
DEFMSAMFile	Default MS file (not used)	{OUTDIR}\DEFMSAM_R05
DEFMSMDFile	Default MS file (not used)	{OUTDIR}\DEFMSMD_R05
NLOGITOutFile	report file	{OUTDIR}\MODEFINAL.OUT
NLOGITHwyOnlyOutFile	report file	{OUTDIR}\NLOGITHO.OUT
NLOGITUBOutFile	report file	{OUTDIR}\NLOGITUB.OUT
UBENHBWPKFile	Summit file (HBW peak)	{OUTDIR}\UBHBWPK_R05.BEN
UBENHNWPKFile	Summit file (HBNW peak)	{OUTDIR}\UBHNWPK_R05.BEN
UBENNHBPKFile	Summit file (NHB peak)	{OUTDIR}\UBNHBPK_R05.BEN
UBENHBWOPFile	Summit file (HBW off-peak)	{OUTDIR}\UBHBWOP_R05.BEN
UBENHNWOPFile	Summit file (HBNW off-peak)	{OUTDIR}\UBHNWOP_R05.BEN
UBENNHBOPFile	Summit file (NHB off-peak)	{OUTDIR}\UBNHBOP_R05.BEN

Table G-1 (continued)

(3) PT2TRNB files

Parameters	Description	Example
IPKNTLEG1	PT Walk connector file (peak period)	{OUTDIR}\NTLEG1AM_R05.NTL
IPKNTLEG2	PT Auto connector file (peak period)	{OUTDIR}\NTLEG2AM_R05.NTL
IPKNTLEG3	PT Transfer connector file (peak period)	{OUTDIR}\NTLEG3AM_R05.NTL
IOPNTLEG1	PT Walk connector file (off-peak period)	{OUTDIR}\NTLEG1MD_R05.NTL
IOPNTLEG2	PT Auto connector file (off-peak period)	{OUTDIR}\NTLEG2MD_R05.NTL
IOPNTLEG3	PT Transfer connector file (off-peak period)	{OUTDIR}\NTLEG3MD_R05.NTL
OPKNTLEG1	TRNBUILD Walk connector file (peak period)	{OUTDIR}\NTLEG1AM.TRB
OPKNTLEG2	TRNBUILD Auto connector file (peak period)	{OUTDIR}\NTLEG2AM.TRB
OPKNTLEG3	TRNBUILD Transfer connector file (peak period)	{OUTDIR}\NTLEG3AM.TRB
OOPNTLEG1	TRNBUILD Walk connector file (off-peak period)	{OUTDIR}\NTLEG1MD.TRB
OOPNTLEG2	TRNBUILD Auto connector file (off-peak period)	{OUTDIR}\NTLEG2MD.TRB
OOPNTLEG3	TRNBUILD Transfer connector file (off-peak period)	{OUTDIR}\NTLEG3MD.TRB
OTransitLineFile	Transit line file in TRNBUILD	{OUTDIR}\TROUTER05.TRB
RegionalTimeFac	Regional time factor	0.80
OAllLinesLinesum	Line summary used by TRANSTAT program	{OUTDIR}\ALLLines.CTL

Note: AUTOCON program input and output files specified in TRANSIT.MAS file (see Table G-4) are used for the Time-of-Day version of the model, which uses the standard FDOT AUTOCON program. The 24-hour version of the SERPM6.5 uses the specification of this input and output files, which uses the SERPM specific AUTOCON program.

Table G-2
Format of FAREZONE.DAT (output of program TR_FARE.EXE)
Southeast Regional Planning Model 6.5

Consists of n lines, one for each station-to-station pair (pairs are assumed to be symmetrical)…

Field #	Format	Description
1	Integer	Boarding (or alighting) station
2	Integer	Alighting (or boarding) station
3	Integer	Fare in cents

Table G-3
Format of Station Data File (STATION_{ALT}{Year}.DAT)
Southeast Regional Planning Model 6.5

Field	Columns	Format	Description
1	1-4	I4	Station number
2	5-10	I6	Station Node
3	11-16	I6	Nearest Zone to the parking lot
4	17-22	F6.1	Service area (in miles)
5	23-28	I6	Parking Spaces
6	29-34	I6	Peak period parking cost (in cents)
7	35-40	I6	Off-peak period parking cost (in cents)
8	41-46	F6.1	Peak period terminal time (in minutes)
9	47-52	F6.1	Off-peak period terminal time (in minutes)
10	53-55	I3	Active Flag
11	56-79	A24	Parking lot name

Table G-4
Parameters used in TRANSIT.MAS File
Southeast Regional Planning Model 6.5

Parameters	Description	Example
; AUTOCON files		
; Inputs		
StatDataFile	Station data file	{OUTDIR}\STATION_05R.DAT
XtraAutoFileAM	File with override connectors (peak period)	{DATADIR}\transit\XTRAAUTO_05R.DAT
XtraAutoFileMD	File with override connectors (off-peak period)	{DATADIR}\transit\XTRAAUTO_05R.DAT
AutoDelFileAM	File with zone deletion lists (peak period)	{DATADIR}\transit\AUTDELAM_05R.DAT
AUTODELFILEMD	File with zone deletion lists (off-peak period)	{DATADIR}\transit\AUTDELMD_05R.DAT
NodesFile	Node/Coordinate look up file	{OUTDIR}\XY_05R.DAT
TransitLineFile	Transit Line file	{DATADIR}\transit\TROUTE_05R.LIN
RHSKIMS	Congested highway skim file	{OUTDIR}\RHSKIMTT.R05
FHSKIMS	Uncongested highway skim file	{OUTDIR}\FHSKIMTT.R05
; Outputs		
AUTOCONRPT	Autocon report	{OUTDIR}\AUTOCON.OUT
PNRAUTOAM	Drive Access Connectors in PT format (peak period); COST value represents the total cost	{OUTDIR}\NTLEG2AM_R05.NTL
PNRAUTOMD	Drive Access Connectors in PT format (off-peak period); COST value represents the total cost	{OUTDIR}\NTLEG2MD_R05.NTL
AUTODATAM	Drive Access Connectors in PT format (peak period); COST value represents only the drive access time - generated for analysis only & not used by model	{OUTDIR}\NTLDA2PK_R05.NTL
AUTODATMD	Drive Access Connectors in PT format (off-peak period); COST value represents only the drive access time - generated for analysis only & not used by model	{OUTDIR}\NTLDA2OP_R05.NTL
ACONLISTAM	Drive Access Connectors reports that break down the variables of the total cost (peak period)	{OUTDIR}\NTLEG2PK_R05.PRN
ACONLISTMD	Drive Access Connectors reports that break down the variables of the total cost (off-peak period)	{OUTDIR}\NTLEG2OP_R05.PRN
; AutoCon Parameters		
AUTOCONVERSION	Standard Version uses code 1. Enhanched version uses code 2.	1
DESCRIPTION	Character string that describes the alternative scenario	SERPM65 Model
ZONESA	Total number of zones	4284
ZONESI	Number of internal zones	4200
CBDZONE	Zone that best represents the core of Central Business District	3245
TERM	Assumed terminal time at home end of the trip	2.00
DEF	Default Auto Access Time	2.00
NOPT	A usuage flag on whether to take the shortest connector or find an alternate, second connector. If NOPT is "1", program try to find an alternate connector; otherwise use the shortest connector.	1
BACK	Backtrack flag for auto connector	1
BACKD	Maximum distance (miles) a connector ia able to backtrack	4
BACKPC	Amount of backtracking as compared to the distance to the CBD (0.30 means 30%)	0.30
UNITS	Coordinate units per mile	52.80
MAXMODE	Maximum node number used in the model	33
MODENUM (not used)		21 22 23 24 25 26 27 28 29 30 31 32 33
PREMIUMFLAG	A flag of "1" and "0" designates it as premium and non-premium mode, respectively.	0 0 0 0 0 1 1 1 0 1 1 0 1
MODEPRIORITY	Additional priotization using the MODEPRIORITY ranking. The lower rankings denoth higher priority.	17 18 19 7 7 6 2 1 7 4 3 7 5
VOTAM	Value of time ($/hour) for the peak period	6.25
VOTMD	Value of time ($/hour) for the off-peak period	3.13
OVTRATIOAM	Ratio of out-of-vehicle time to transit in vehicle time coefficients for the peak period	2.00
OVTRATIOMD	Ratio of out-of-vehicle time to transit in vehicle time coefficients for the off-peak period	2.00
AATRATIOAM	Ratio of drive-access time to transit in-vehicle time coefficients for the peak period	1.50
AATRATIOMD	Ratio of drive-access time to transit in-vehicle time coefficients for the off-peak period	1.50
AUTOCCPNR	Average auto occupancy for park-ride trips	1.2
AUTOCCKNR	Average auto occupancy for kiss-ride trips	1.2
AOC	Auto operating cost in cents per mile	9.5
InflTransitFare	Inflation factor for transit fare	0.97
InflAOC	Inflation factor for auto operating cost	1.00
InflParkingCost	Inflation factor for parking cost	1.00

Table G-5

Description of Selected Attributes of Loaded Highway Network – TOD Model (Combined-HLOAD-AYY.NET)

Southeast Regional Planning Model 6.5

Sl No	Node Attributes	Description
1	N	Node Number
2	FWYRNDNODE	Freeway-Ramp Junction Node (1=Yes,0=No)
3	NODETYPE	Node Type (1=Centroid, 2=External , 3=Int Dummy , 4=Ext Dummy, 5=Fwy-Ramp-Jct)
4	ITAZNAT	Revised Area Type
5	SPGEN	Special Generatir Indicator (1=yes, 0=no)
6	DISTRICT	User Specified Districts (1-20=Palm Beach,21-35=Broward,51-66=Miami-Dade) to compare model vs. CTPP trips
7	AM_RMPMRGLNFAC	AM Peak Period - Merge Ramp Volume Factor
8	AM_RAMPFACVOL	AM Peak Period - Merge Ramp Hourly Volume
9	AM_FWYMRGLNFAC	AM Peak Period - Merge Freeway Volume Factor
10	AM_FWYMRGLNVOL	AM Peak Period - Merge Freeway Hourly Volume
11	AM_JCTMRGHRVOL	AM Peak Period - Merge Ramp & Freeway Hourly Volume
12	AM_JCTMRGDELAY	AM Peak Period - Merge Ramp & Freeway Delay (min)
13	AM_JCTFWYDELAY	AM Peak Period - Merge Freeway Delay (min)
14	AM_JCTRAMPDELAY	AM Peak Period - Merge Ramp Delay (min)
15	PM_RMPMRGLNFAC	PM Peak Period - Merge Ramp Volume Factor
16	PM_RPMPFACVOL	PM Peak Period - Merge Ramp Hourly Volume
17	PM_FWYMRGLNFAC	PM Peak Period - Merge Freeway Volume Factor
18	PM_FWYMRGLNVOL	PM Peak Period - Merge Freeway Hourly Volume
19	PM_JCTMRGHRVOL	PM Peak Period - Merge Ramp & Freeway Hourly Volume
20	PM_JCTMRGDELAY	PM Peak Period - Merge Ramp & Freeway Delay (min)
21	PM_JCTFWYDELAY	PM Peak Period - Merge Freeway Delay (min)
22	PM_JCTRPMPDELAY	PM Peak Period - Merge Ramp Delay (min)
23	OF_RMPMRGLNFAC	Off Peak Period - Merge Ramp Volume Factor
24	OF_RPMPFACVOL	Off Peak Period - Merge Ramp Hourly Volume
25	OF_FWYMRGLNFAC	Off Peak Period - Merge Freeway Volume Factor
26	OF_FWYMRGLNVOL	Off Peak Period - Merge Freeway Hourly Volume
27	OF_JCTMRGHRVOL	Off Peak Period - Merge Ramp & Freeway Hourly Volume
28	OF_JCTMRGDELAY	Off Peak Period - Merge Ramp & Freeway Delay (min)
29	OF_JCTFWYDELAY	Off Peak Period - Merge Freeway Delay (min)
30	OF_JCTRPMPDELAY	Off Peak Period - Merge Ramp Delay (min)

Sl No	Link Attributes	Description
1	A	A-Node
2	B	B-Node
3	AREA_TYPE (NEWAREA)	Revised Activity Based Area Types
4	CAPACITY	LOS E Capacity (24 Hour)
5	CYCLELENGTH	Approach Node Cycle Length (secs)
6	CYCLE	Approach Node Cycle Length (secs)
7	FTC1	Revised Facility Type (Minor Classification)
8	HOV	All HOV facilities including ramps (1=yes,0=no) - Used in Capacity Calculation
9	KTOLL	All Toll facilities including rams & Plazas (1=yes, 0=no) - Used in Capacity Calculation
10	TOLLPLAZA	Toll Plazas (1=yes, 0=no) - Used in Capacity Calculation
11	FRWY	Freeway Segments (1=yes, 0=no) - Used in Capacity Calculation
12	UNINTRP	Uninterrupted Roadways (1=yes, 0=no) - Used in Capacity Calculation
13	LOWSPD	Roadways with posted speed less than 35 mph (1=yes, 0=no) - Used in Capacity Calculation
14	RAMPS	AllRamps including HOV and Toll (1=yes, 0=no) - Used in Capacity Calculation
15	ON	Non-HOV and non-toll non-loop on-ramps (1=yes, 0=no) - Used in Capacity Calculation
16	ONLOOP	Non-HOV and non-toll loop on-ramps (1=yes, 0=no) - Used in Capacity Calculation
17	OFF	Non-HOV and non-toll non-loop off-ramps (1=yes, 0=no) - Used in Capacity Calculation
18	OFFLOOP	Non-HOV and non-toll loop off-ramps (1=yes, 0=no) - Used in Capacity Calculation
19	FRWY2FRWY	Freeway-to-freeway ramps (1=yes, 0=no) - Used in Capacity Calculation

Table G-5 (continued)

Description of Selected Attributes of Loaded Highway Network – TOD Model (Combined-HLOAD-AYY.NET)

Southeast Regional Planning Model 6.5

Sl No	Link Attributes	Description
20	HOVPEAK	HOV peak (AM or PM) only ramps (1=yes, 0=no) - Used in Capacity Calculation
21	HOVDAY	HOV all-day ramps (1=yes, 0=no) - Used in Capacity Calculation
22	TOLLON	Toll Facilities on-ramps (1=yes, 0=no) - Used in Capacity Calculation
23	TOLLOFF	Toll Facilities off-ramps (1=yes, 0=no) - Used in Capacity Calculation
24	UROADFACTOR	UROADFAC Factors (LOS-C/LOS-E Capacities)
25	CONFAC24H	24-Hour "confac" factor
26	BPRCOEFFICIENT	BPR Coefficient (alpha)
27	BPREXPONENT	BPR Exponent (beta)
28	CONFACAMP	AM Peak Period "confac" factor
29	CONFACPMP	PM Peak Period "confac" factor
30	CONFACOFP	All Day - "confac" factor
31	LOSCCAP	LOS C Capacity (24 Hour)
32	LOSCCAP_AMPKPD	LOS C Capacity (AM Peak Period)
33	LOSCCAP_PMPKPD	LOS C Capacity (PM Peak Period)
34	LOSCCAP_OFPKPD	LOS C Capacity (Off-peakPeak Period)
35	TOLL_ACC	Toll Acceleration Link
36	TOLL_DEC	Toll Decelleration Link
37	RCTOLL	CTOLL values
38	POSTEDSPEED	Posted Speed (mph)
39	FFOLD	Initial Unadjusted Free-Flow Speed (mph)
40	FREEFLOWSPEED	Free Flow Speed (mph)
41	POSTEDTIME	Posted Time (min)
42	FREEFLOWTIME	Free Flow Time (min)
43	ROUNDNODECLS	Approach Link of Freeway-Ramp Jct Nodes (1=yes,0=no)
44	AM_LNKJCTDELAY	AM Peak Period - Fwy/Ramp Merge Delay
45	AM_VCLOSC	AM Peak Period - Vol/LOSC Capacity Ratio (directional)
46	AM_VCLOSE	AM Peak Period - Vol/LOSE Capacity Ratio (directional)
47	AM_CONGTIME	AM Peak Period - Congested time in min (directional)
48	AM_CONGSPD	AM Peak Period - Congested Speed in mph (directional)
49	AM_VHT	AM Peak Period - Vehicle-Hours-Travel (directional)
50	AM_VMT	AM Peak Period - Vehicle-Miles-Travel (directional)
51	AM_TOTVOL	AM Peak Period - Total Volume (directional)
52	AM_VOLCNT	AM Peak Period - Vol/Count Ratio (directional)
53	AM_DAVOL	AM Peak Period - Drive-Alone Volume (directional)
54	AM_SR2VOL	AM Peak Period - Shared-Ride (2 persons) Volume (directional)
55	AM_SR3VOL	AM Peak Period - Shared-Ride (3+ persons) Volume (directional)
56	AM_TRKVOL	AM Peak Period - Truck Volume (directional)
57	AM_TOTVOL2	AM Peak Period - Total Volume (2-way)
58	AM_DAVOL2	AM Peak Period - Drive-Alone Volume (2-way)
59	AM_SR2VOL2	AM Peak Period - Shared-Ride (2 persons) Volume (2-way)
60	AM_SR3VOL2	AM Peak Period - Shared-Ride (3+ persons) Volume (2-way)
61	AM_TRKVOL2	AM Peak Period - Truck Volume (2-way)
62	AM_SEL_TOTVOL	AM Peak Period - Selected Links Total Volume (directional)
63	AM_SEL_DAVOL	AM Peak Period - Selected Links Drive-Alone Volume (directional)
64	AM_SEL_SR2VOL	AM Peak Period - Selected Links Shared-Ride (2 persons) Volume (directional)
65	AM_SEL_SR3VOL	AM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (directional)
66	AM_SEL_TRKVOL	AM Peak Period - Selected Links Truck Volume (directional)
67	AM_SEL_TOTVOL2	AM Peak Period - Selected Links Total Volume (2-way)
68	AM_SEL_DAVOL2	AM Peak Period - Selected Links Drive-Alone Volume (2-way)
69	AM_SEL_SR2VOL2	AM Peak Period - Selected Links Shared-Ride (2 persons) Volume (2-way)
70	AM_SEL_SR3VOL2	AM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (2-way)
71	AM_SEL_TRKVOL2	AM Peak Period - Selected Links Truck Volume (2-way)

Table G-5 (continued)

Description of Selected Attributes of Loaded Highway Network – TOD Model (Combined-HLOAD-AYY.NET)

Southeast Regional Planning Model 6.5

Sl No	Link Attributes	Description
72	PM_LNKJCTDELAY	PM Peak Period - Fwy/Ramp Merge Delay
73	PM_VCLOSC	PM Peak Period - Vol/LOSC Capacity Ratio (directional)
74	PM_VCLOSE	PM Peak Period - Vol/LOSE Capacity Ratio (directional)
75	PM_CONGTIME	PM Peak Period - Congested time in min (directional)
76	PM_CONGSPD	PM Peak Period - Congested Speed in mph (directional)
77	PM_VHT	PM Peak Period - Vehicle-Hours-Travel (directional)
78	PM_VMT	PM Peak Period - Vehicle-Miles-Travel (directional)
79	PM_TOTVOL	PM Peak Period - Total Volume (directional)
80	PM_VOLCNT	PM Peak Period - Vol/Count Ratio (directional)
81	PM_DAVOL	PM Peak Period - Drive-Alone Volume (directional)
82	PM_SR2VOL	PM Peak Period - Shared-Ride (2 persons) Volume (directional)
83	PM_SR3VOL	PM Peak Period - Shared-Ride (3+ persons) Volume (directional)
84	PM_TRKVOL	PM Peak Period - Truck Volume (directional)
85	PM_TOTVOL2	PM Peak Period - Total Volume (2-way)
86	PM_DAVOL2	PM Peak Period - Drive-Alone Volume (2-way)
87	PM_SR2VOL2	PM Peak Period - Shared-Ride (2 persons) Volume (2-way)
88	PM_SR3VOL2	PM Peak Period - Shared-Ride (3+ persons) Volume (2-way)
89	PM_TRKVOL2	PM Peak Period - Truck Volume (2-way)
90	PM_SEL_TOTVOL	PM Peak Period - Selected Links Total Volume (directional)
91	PM_SEL_DAVOL	PM Peak Period - Selected Links Drive-Alone Volume (directional)
92	PM_SEL_SR2VOL	PM Peak Period - Selected Links Shared-Ride (2 persons) Volume (directional)
93	PM_SEL_SR3VOL	PM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (directional)
94	PM_SEL_TRKVOL	PM Peak Period - Selected Links Truck Volume (directional)
95	PM_SEL_TOTVOL2	PM Peak Period - Selected Links Total Volume (2-way)
96	PM_SEL_DAVOL2	PM Peak Period - Selected Links Drive-Alone Volume (2-way)
97	PM_SEL_SR2VOL2	PM Peak Period - Selected Links Shared-Ride (2 persons) Volume (2-way)
98	PM_SEL_SR3VOL2	PM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (2-way)
99	PM_SEL_TRKVOL2	PM Peak Period - Selected Links Truck Volume (2-way)
100	OF_LNKJCTDELAY	Off Peak Period - Fwy/Ramp Merge Delay
101	OF_VCLOSC	Off Peak Period - Vol/LOSC Capacity Ratio (directional)
102	OF_VCLOSE	Off Peak Period - Vol/LOSE Capacity Ratio (directional)
103	OF_CONGTIME	Off Peak Period - Congested time in min (directional)
104	OF_CONGSPD	Off Peak Period - Congested Speed in mph (directional)
105	OF_VHT	Off Peak Period - Vehicle-Hours-Travel (directional)
106	OF_VMT	Off Peak Period - Vehicle-Miles-Travel (directional)
107	OF_TOTVOL	Off Peak Period - Total Volume (directional)
108	OF_VOLCNT	Off Peak Period - Vol/Count Ratio (directional)
109	OF_DAVOL	Off Peak Period - Drive-Alone Volume (directional)
110	OF_SR2VOL	Off Peak Period - Shared-Ride (2 persons) Volume (directional)
111	OF_SR3VOL	Off Peak Period - Shared-Ride (3+ persons) Volume (directional)
112	OF_TRKVOL	Off Peak Period - Truck Volume (directional)

Table G-5 (continued)

Description of Selected Attributes of Loaded Highway Network – TOD Model (Combined-HLOAD-AYY.NET)

Southeast Regional Planning Model 6.5

Sl No	Link Attributes	Description
113	OF_TOTVOL2	Off Peak Period - Total Volume (2-way)
114	OF_DAVOL2	Off Peak Period - Drive-Alone Volume (2-way)
115	OF_SR2VOL2	Off Peak Period - Shared-Ride (2 persons) Volume (2-way)
116	OF_SR3VOL2	Off Peak Period - Shared-Ride (3+ persons) Volume (2-way)
117	OF_TRKVOL2	Off Peak Period - Truck Volume (2-way)
118	OF_SEL_TOTVOL	Off Peak Period - Selected Links Total Volume (directional)
119	OF_SEL_DAVOL	Off Peak Period - Selected Links Drive-Alone Volume (directional)
120	OF_SEL_SR2VOL	Off Peak Period - Selected Links Shared-Ride (2 persons) Volume (directional)
121	OF_SEL_SR3VOL	Off Peak Period - Selected Links Shared-Ride (3+ persons) Volume (directional)
122	OF_SEL_TRKVOL	Off Peak Period - Selected Links Truck Volume (directional)
123	OF_SEL_TOTVOL2	Off Peak Period - Selected Links Total Volume (2-way)
124	OF_SEL_DAVOL2	Off Peak Period - Selected Links Drive-Alone Volume (2-way)
125	OF_SEL_SR2VOL2	Off Peak Period - Selected Links Shared-Ride (2 persons) Volume (2-way)
126	OF_SEL_SR3VOL2	Off Peak Period - Selected Links Shared-Ride (3+ persons) Volume (2-way)
127	OF_SEL_TRKVOL2	Off Peak Period - Selected Links Truck Volume (2-way)
128	AL_TOTVOL	24-Hour (Combined Periods) - Total Volume (directional)
129	AL_VOLCNT	24-Hour (Combined Periods) - Vol/Count Ratio (directional)
130	AL_VHT	24-Hour (Combined Periods) - Vehicle-Hours-Travel (directional)
131	AL_VMT	24-Hour (Combined Periods) - Vehicle-Miles-Travel (directional)
132	AL_DAVOL	24-Hour (Combined Periods) - Drive-Alone Volume (directional)
133	AL_SR2VOL	24-Hour (Combined Periods) - Shared-Ride (2 persons) Volume (directional)
134	AL_SR3VOL	24-Hour (Combined Periods) - Shared-Ride (3+ persons) Volume (directional)
135	AL_TRKVOL	24-Hour (Combined Periods) - Truck Volume (directional)
136	AL_TOTVOL2	24-Hour (Combined Periods) - Total Volume (2-way)
137	AL_DAVOL2	24-Hour (Combined Periods) - Drive-Alone Volume (2-way)
138	AL_SR2VOL2	24-Hour (Combined Periods) - Shared-Ride (2 persons) Volume (2-way)
139	AL_SR3VOL2	24-Hour (Combined Periods) - Shared-Ride (3+ persons) Volume (2-way)
140	AL_TRKVOL2	24-Hour (Combined Periods) - Truck Volume (2-way)
141	AL_VCLOSC	24-Hour (Combined Periods) - Vol/LOSC Capacity Ratio (directional)
142	AL_VCLOSE	24-Hour (Combined Periods) - Vol/LOSE Capacity Ratio (directional)
143	AL_CONGTIME	24-Hour (Combined Periods) - Congested time in min (directional)
144	AL_CONGSPD	24-Hour (Combined Periods) - Congested Speed in mph (directional)
145	AL_SEL_TOTVOL	24-Hour (Combined Periods) - Selected Links Total Volume (directional)
146	AL_SEL_DAVOL	24-Hour (Combined Periods) - Selected Links Drive-Alone Volume (directional)
147	AL_SEL_SR2VOL	24-Hour (Combined Periods) - Selected Links Shared-Ride (2 persons) Volume (directional)
148	AL_SEL_SR3VOL	24-Hour (Combined Periods) - Selected Links Shared-Ride (3+ persons) Volume (directional)
149	AL_SEL_TRKVOL	24-Hour (Combined Periods) - Selected Links Truck Volume (directional)
150	AL_SEL_TOTVOL2	24-Hour (Combined Periods) - Selected Links Total Volume (2-way)
151	AL_SEL_DAVOL2	24-Hour (Combined Periods) - Selected Links Drive-Alone Volume (2-way)
152	AL_SEL_SR2VOL2	24-Hour (Combined Periods) - Selected Links Shared-Ride (2 persons) Volume (2-way)
153	AL_SEL_SR3VOL2	24-Hour (Combined Periods) - Selected Links Shared-Ride (3+ persons) Volume (2-way)
154	AL_SEL_TRKVOL2	24-Hour (Combined Periods) - Selected Links Truck Volume (2-way)

Table G-6

Description of Selected Attributes of Loaded Highway Network – 24-Hour Model (AllDay-HLOAD-AYY.NET)

Southeast Regional Planning Model 6.5

Sl No	Node Attributes	Description
1	N	Node Number
2	FWYRNDNODE	Freeway-Ramp Junction Node (1=Yes,0=No)
3	NODETYPE	Node Type (1=Centroid, 2=External , 3=Int Dummy , 4=Ext Dummy, 5=Fwy-Ramp-Jct)
4	ITAZNAT	Revised Area Type
5	SPGEN	Special Generatir Indicator (1=yes, 0=no)
6	DISTRICT	User Specified Districts (1-20=Palm Beach,21-35=Broward,51-66=Miami-Dade) to compare model vs. CTPP trips
7	AD_RMPMRGLNFAC	All Day - Merge Ramp Volume Factor
8	AD_RAMPFACVOL	All Day - Merge Ramp Hourly Volume
9	AD_FWYMRGLNFAC	All Day - Merge Freeway Volume Factor
10	AD_FWYMRGLNVOL	All Day - Merge Freeway Hourly Volume
11	AD_JCTMRGHRVOL	All Day - Merge Ramp & Freeway Hourly Volume
12	AD_JCTMRGDELAY	All Day - Merge Ramp & Freeway Delay (min)
13	AD_JCTFWYDELAY	All Day - Merge Freeway Delay (min)
14	AD_JCTRAMPDELAY	All Day - Merge Ramp Delay (min)

Sl No	Link Attributes	Description
1	A	A-Node
2	B	B-Node
3	AREA_TYPE (NEWAREA)	Revised Activity Based Area Types
4	CAPACITY	LOS E Capacity (24 Hour)
5	CYCLELENGTH	Approach Node Cycle Length (secs)
6	CYCLE	Approach Node Cycle Length (secs)
7	FTC1	Revised Facility Type (Minor Classification)
8	HOV	All HOV facilities including ramps (1=yes,0=no) - Used in Capacity Calculation
9	KTOLL	All Toll facilities including rams & Plazas (1=yes, 0=no) - Used in Capacity Calculation
10	TOLLPLAZA	Toll Plazas (1=yes, 0=no) - Used in Capacity Calculation
11	FRWY	Freeway Segments (1=yes, 0=no) - Used in Capacity Calculation
12	UNINTRP	Uninterrupted Roadways (1=yes, 0=no) - Used in Capacity Calculation
13	LOWSPD	Roadways with posted speed less than 35 mph (1=yes, 0=no) - Used in Capacity Calculation
14	RAMPS	AllRamps including HOV and Toll (1=yes, 0=no) - Used in Capacity Calculation
15	ON	Non-HOV and non-toll non-loop on-ramps (1=yes, 0=no) - Used in Capacity Calculation
16	ONLOOP	Non-HOV and non-toll loop on-ramps (1=yes, 0=no) - Used in Capacity Calculation
17	OFF	Non-HOV and non-toll non-loop off-ramps (1=yes, 0=no) - Used in Capacity Calculation
18	OFFLOOP	Non-HOV and non-toll loop off-ramps (1=yes, 0=no) - Used in Capacity Calculation
19	FRWY2FRWY	Freeway-to-freeway ramps (1=yes, 0=no) - Used in Capacity Calculation
20	HOVPEAK	HOV peak (AM or PM) only ramps (1=yes, 0=no) - Used in Capacity Calculation
21	HOVDAY	HOV all-day ramps (1=yes, 0=no) - Used in Capacity Calculation
22	TOLLON	Toll Facilities on-ramps (1=yes, 0=no) - Used in Capacity Calculation
23	TOLLOFF	Toll Facilities off-ramps (1=yes, 0=no) - Used in Capacity Calculation
24	UROADFACTOR	UROADFAC Factors (LOS-C/LOS-E Capacities)
25	CONFAC24H	24-Hour "confac" factor
26	BPRCOEFFICIENT	BPR Coefficient (alpha)
27	BPREXPONENT	BPR Exponent (beta)

Table G-6 (continued)

Description of Selected Attributes of Loaded Highway Network – 24-Hour Model (AllDay-HLOAD-AYY.NET)

Southeast Regional Planning Model 6.5

Sl No	Link Attributes	Description
28	CONFACAMP	AM Peak Period "confac" factor
29	CONFACPMP	PM Peak Period "confac" factor
30	CONFACOFP	All Day - "confac" factor
31	LOSCCAP	LOS C Capacity (24 Hour)
32	LOSCCAP_AMPKPD	LOS C Capacity (AM Peak Period)
33	LOSCCAP_PMPKPD	LOS C Capacity (PM Peak Period)
34	LOSCCAP_OFPKPD	LOS C Capacity (Off-peakPeak Period)
35	TOLL_ACC	Toll Acceleration Link
36	TOLL_DEC	Toll Decelleration Link
37	RCTOLL	CTOLL values
38	POSTEDSPEED	Posted Speed (mph)
39	FFOLD	Initial Unadjusted Free-Flow Speed (mph)
40	FREEFLOWSPEED	Free Flow Speed (mph)
41	POSTEDTIME	Posted Time (min)
42	FREEFLOWTIME	Free Flow Time (min)
43	ROUNDNODECLS	Approach Link of Freeway-Ramp Jct Nodes (1=yes,0=no)
44	AD_LNKJCTDELAY	All Day - Fwy/Ramp Merge Delay
45	AD_VCLOSC	All Day - Vol/LOSC Capacity Ratio (directional)
46	AD_VCLOSE	All Day - Vol/LOSE Capacity Ratio (directional)
47	AD_CONGTIME	All Day - Congested time in min (directional)
48	AD_CONGSPD	All Day - Congested Speed in mph (directional)
49	AD_VHT	All Day - Vehicle-Hours-Travel (directional)
50	AD_VMT	All Day - Vehicle-Miles-Travel (directional)
51	AD_TOTVOL	All Day - Total Volume (directional)
52	AD_VOLCNT	All Day - Vol/Count Ratio (directional)
53	AD_DAVOL	All Day - Drive-Alone Volume (directional)
54	AD_SRVOL	All Day - Shared-Ride Volume (directional)
55	AD_TRKVOL	All Day - Truck Volume (directional)
56	AD_TOTVOL2	All Day - Total Volume (2-way)
57	AD_DAVOL2	All Day - Drive-Alone Volume (2-way)
58	AD_SRVOL2	All Day - Shared-Ride Volume (2-way)
59	AD_TRKVOL2	All Day - Truck Volume (2-way)
60	AD_SEL_TOTVOL	All Day - Selected Links Total Volume (directional)
61	AD_SEL_DAVOL	All Day - Selected Links Drive-Alone Volume (directional)
62	AD_SEL_SRVOL	All Day - Selected Links Shared-Ride Volume (directional)
63	AD_SEL_TRKVOL	All Day - Selected Links Truck Volume (directional)
64	AD_SEL_TOTVOL2	All Day - Selected Links Total Volume (2-way)
65	AD_SEL_DAVOL2	All Day - Selected Links Drive-Alone Volume (2-way)
66	AD_SEL_SRVOL2	All Day - Selected Links Shared-Ride Volume (2-way)
67	AD_SEL_TRKVOL2	All Day - Selected Links Truck Volume (2-way)

Figure G-1
Sample Listing of TASNAMx.TXT and TASNMDx.TXT Files
Southeast Regional Planning Model 6.5

M4L1PI	125	15.0	5000	7358	4	57	12	0	0	747	0	0	0	0
M4L1PO	80	15.0	5000	7446	4	150	40	0	1	181	0	0	14	17
M4L44PI	64	40.0	5004	7460	4	51	12	1	1	23	0	0	5	13
M4L3PO	96	20.0	5006	7460	4	80	18	1	1	110	1	18	18	4
M4L3PI	57	20.0	5006	7528	4	73	17	1	0	68	1	12	0	0
M4L44PI	66	40.0	5006	7528	4	73	17	1	1	18	6	3	0	1
M4L45PO	18	40.0	5014	7602	4	149	47	0	1	47	0	0	0	3
M4L45PI	23	40.0	5014	7704	4	81	27	0	1	21	0	0	1	0
M4L1PO	88	15.0	5016	7706	4	83	27	1	0	149	22	21	0	0
M4L1PI	117	15.0	5016	12298	4	117	35	1	0	719	86	27	0	0
M4L61PO	12	40.0	5024	8022	4	123	27	1	1	90	6	3	33	34
M4L61PI	46	40.0	5024	8026	4	107	25	1	1	33	1	4	4	1
M4L102PB	37	70.0	5026	8034	4	147	32	1	1	1	0	0	1	0
M4L61PI	24	40.0	5028	8279	4	28	6	1	0	104	12	1	0	0
M4L61PO	34	40.0	5028	11088	4	101	22	1	1	105	6	1	1	1
M4L64PI	13	40.0	5030	8492	4	137	32	1	0	5	0	3	0	0
M4L64PO	14	40.0	5030	12214	4	111	26	1	0	13	1	4	0	0
M4L2PO	93	20.0	5032	8504	4	141	33	1	1	66	13	1	18	8
M4L2PI	132	20.0	5032	8532	4	109	25	1	0	114	14	1	0	0
M4L2PO	90	20.0	5034	8544	4	141	33	1	1	48	7	4	8	1
M4L2PI	135	20.0	5034	8574	4	73	17	1	0	124	10	9	0	0
M4L71PI	33	40.0	5036	8578	4	64	15	1	0	31	11	0	0	0
M4L71PO	43	40.0	5036	8578	4	64	15	0	1	7	0	0	6	0
M4L71PI	13	40.0	5036	12350	4	47	11	0	1	37	0	0	2	3
M4L71PO	23	40.0	5036	12350	4	47	11	1	0	16	1	2	0	0

Figure G-2
Sample Listing of TASROUTE.PRN File
Southeast Regional Planning Model 6.5

SERPM65 Model

Route: M8L1S65 Mode: 8 Freq: 30.0 Freq: 60.0

Node	Dist (Miles)	Cum Dist (Miles)	Time (Min)	Cum Time (Min)	Peak On	Peak Off	Peak Ride	OP Time (Min)	Cum Time (Min)	Off-Peak On	Off-Peak Off	Off-Peak Ride	Daily On	Daily Off	Daily Ride
30500	0.79	0.79	1.05	1.05	74	0	74	1.05	1.05	85	0	85	159	0	159
-31059	2.64	3.43	3.52	4.57	0	0	74	3.52	4.57	0	0	85	0	0	159
30501	0.88	4.31	1.17	5.74	122	29	166	1.17	5.74	100	45	141	222	74	307
-31060	0.71	5.02	0.95	6.69	0	0	166	0.95	6.69	0	0	141	0	0	307
-30502	1.77	6.79	2.36	9.05	0	0	166	2.36	9.05	0	0	141	0	0	307
-30523	1.48	8.27	1.97	11.02	0	0	166	1.97	11.02	0	0	141	0	0	307
-30524	1.97	10.24	2.63	13.65	0	0	166	2.63	13.65	0	0	141	0	0	307
30503	1.60	11.84	2.13	15.78	160	26	300	2.13	15.78	123	27	237	283	53	537
-31061	2.86	14.70	3.81	19.59	0	0	300	3.81	19.59	0	0	237	0	0	537
30504	1.06	15.76	1.41	21.00	223	77	447	1.41	21.00	122	57	300	345	134	747
-31054	1.81	17.57	2.41	23.41	0	0	447	2.41	23.41	0	0	300	0	0	747
-31055	0.51	18.08	0.68	24.09	0	0	447	0.68	24.09	0	0	300	0	0	747
-31056	2.44	20.52	3.25	27.34	0	0	447	3.25	27.34	0	0	300	0	0	747
-31053	0.76	21.28	1.01	28.35	0	0	447	1.01	28.35	0	0	300	0	0	747
30505	4.34	25.62	6.08	34.43	130	182	395	6.08	34.43	134	97	337	264	279	732
-31052	0.85	26.47	0.65	35.08	0	0	395	0.65	35.08	0	0	337	0	0	732
30506	2.03	28.50	3.33	38.41	144	143	396	3.33	38.41	154	93	397	298	236	793
-30507	3.12	31.62	4.16	42.57	0	0	396	4.16	42.57	0	0	397	0	0	793
-30508	0.63	32.25	1.08	43.65	0	0	396	1.08	43.65	0	0	397	0	0	793
30509	3.00	35.25	5.14	48.79	260	108	548	5.14	48.79	173	107	463	433	215	1011
30510	7.43	42.68	12.91	61.70	103	236	415	12.91	61.70	54	192	325	157	428	740
30511	4.31	46.99	7.30	69.00	129	210	334	7.30	69.00	88	132	282	217	342	616
30512	7.08	54.07	10.52	79.52	244	150	430	10.52	79.52	151	103	330	395	253	760
30513	0.38	54.45	0.80	80.32	124	73	480	0.80	80.32	95	45	381	219	118	861
30514	1.57	56.02	3.14	83.46	137	48	569	3.14	83.46	88	31	438	225	79	1007
30515	2.21	58.23	4.42	87.88	341	73	838	4.42	87.88	233	42	628	574	115	1466
-30516	0.48	58.71	0.72	88.60	0	0	838	0.72	88.60	0	0	628	0	0	1466
-30517	4.58	63.29	6.11	94.71	0	0	838	6.11	94.71	0	0	628	0	0	1466
30518	2.80	66.09	3.73	98.44	237	346	728	3.73	98.44	26	124	530	263	470	1258
30519	3.82	69.91	5.09	103.53	109	84	752	5.09	103.53	9	56	483	118	140	1235
30520	2.42	72.33	3.23	106.76	80	490	342	3.23	106.76	0	330	153	80	820	495
30521	1.07	73.40	1.43	108.19	2	31	312	1.43	108.19	0	52	101	2	83	413
30522						312					101			413	
Total	73.40		108.19			2618		108.19			1634			4252	

Figure G-3
Sample Listing of TASSUM.PRN File
Southeast Regional Planning Model 6.5

SERPM65 Model

Route	Mode	Dist (Miles)	Time (Min)	Peak Freq	Peak Pax	Peak Max	OP Time (Min)	Off-Peak Freq	Off-Peak Pax	Off-Peak Max	Daily Pax	Daily Max
M5L109MI	15	16.04	48.30	15.00	148	124	41.08	60.00	4	4	152	128
M5L109MO	15	17.09	49.32	20.00	87	87	43.94	60.00	2	2	89	89
M5L110MD	15	17.00	54.12	15.00	616	541						
M5L111MD	15	20.08	63.26	30.00	271	234						
M5L112MD	15	25.36	93.37	30.00	74	29						
M5L113MD	15	20.49	68.06	30.00	263	225						
M5L114MD	15	5.40	23.08	60.00	0	0	22.71	60.00	0	0	0	0
M5L114MD-	15	5.40	25.69	60.00	0	0	22.85	60.00	0	0	0	0
M4L441BI	18	25.20	85.39	15.00	230	170	72.95	25.00	199	162	429	332
M4L441BO	18	25.20	80.56	15.00	392	285	70.06	25.00	395	334	787	617
M5L96MI	5	38.42					154.76	60.00	240	56		
M5L96MO	5	39.46					158.53	60.00	253	48		
M5L170MO	5	14.68					61.54	30.00	175	112		
M5L181MI	5	24.99					92.61	60.00	861	298		
M5L181MO	5	25.15					93.84	60.00	939	293		
M5L182MI	13	24.66					74.81	60.00	0	0		
M5L182MO	13	24.40					74.28	60.00	0	0		

SERPM65 Model

Mode	Dist (Miles)	Time (Min)	Peak Pax	OP Time (Min)	Off-Peak Pax	Daily Pax
4	1087.91	4555.34	21974	4058.53	8428	30402
5	2952.61	13584.23	108850	11118.32	125294	234144
6	116.37	404.64	158	0.00	0	158
7	44.80	89.60	32710	89.60	27964	60674
8	146.80	216.38	7351	216.38	4035	11386
9	12.38	34.48	7932	34.48	6832	14764
12	123.90	561.52	975	455.98	355	1330
13	418.66	1203.80	11916	692.95	5049	16965
14	1856.19	7586.83	81325	6636.84	62421	143746
15	200.08	715.92	5397	130.58	6	5403
18	50.40	165.95	622	143.01	594	1216

Figure G-4

Listing of Mode Choice Constants and Coefficients from MODEFINAL.OUT File

Southeast Regional Planning Model 6.5

INPUT LOGIT CONSTANTS

	HBWRK PK	HBNW PK	NHB PK	HBWRK OP	HBNW OP	NHB OP
Shared Ride - Zero Car HH	0.00000	0.00000	-0.50660	0.00000	0.00000	-0.54160
Shared Ride - One Car HH	-1.37780	-0.01810	-0.50660	-1.37490	-0.03090	-0.54160
Shared Ride - Two+ Car HH	-1.93910	-0.00260	-0.50660	-1.94130	-0.01460	-0.54160
Shared Ride 3 - Zero Car HH	-0.30420	-0.17590	-0.20130	-0.29910	-0.17160	-0.21160
Shared Ride 3 - One Car HH	-0.35550	-0.20760	-0.20130	-0.34990	-0.21190	-0.21160
Shared Ride 3 - Two+ Car HH	-0.34710	-0.10930	-0.20130	-0.34470	-0.11300	-0.21160
Walk to Transit - Zero Car HH	2.02750	-0.15740	-2.02850	2.39090	0.10070	-2.19920
Walk to Transit - One Car HH	-0.18690	-1.21720	-2.02850	0.24990	-0.87800	-2.19920
Walk to Transit - Two+ Car HH	-2.40660	-2.88650	-2.02850	-1.99630	-2.55460	-2.19920
BRT/LRT	0.24000	0.18000	0.21600	0.24000	0.18000	0.21600
Metrorail	0.43650	0.44040	0.54420	0.72800	0.77220	0.46000
Tri Rail	0.07840	0.36920	0.66890	0.27230	1.07220	1.23550
Park/Ride - Zero Car HH	-5.40620	-5.08290	-2.70660	-5.24360	-5.04440	-3.09790
Park/Ride - One Car HH	-0.60400	-1.92400	-2.70660	-0.49650	-1.86750	-3.09790
Park/Ride - Two+ Car HH	-2.53430	-3.31310	-2.70660	-2.45710	-3.30340	-3.09790
Kiss/Ride - Zero Car HH	-5.40620	-5.08290	-2.61160	-5.24360	-5.04440	-2.99570
Kiss/Ride - One Car HH	-0.54970	-1.81980	-2.61160	-0.43870	-1.75300	-2.99570
Kiss/Ride - Two+ Car HH	-2.53140	-3.22330	-2.61160	-2.44810	-3.19540	-2.99570

NEW COEFFICIENTS AS RUN TIME MINUTES

	HBWRK PK	HBNW PK	NHB PK	HBWRK OP	HBNW OP	NHB OP
Shared Ride - Zero Car HH	0.0	0.0	-28.1	0.0	0.0	-30.1
Shared Ride - One Car HH	-68.9	-1.2	-28.1	-68.7	-2.1	-30.1
Shared Ride - Two+ Car HH	-97.0	-0.2	-28.1	-97.1	-1.0	-30.1
Shared Ride 3 - Zero Car HH	-15.2	-11.7	-11.2	-15.0	-11.4	-11.8
Shared Ride 3 - One Car HH	-17.8	-13.8	-11.2	-17.5	-14.1	-11.8
Shared Ride 3 - Two + Car HH	-17.4	-7.3	-11.2	-17.2	-7.5	-11.8
Walk to Transit - Zero Car HH	101.4	-10.5	-112.7	119.5	6.7	-122.2
Walk to Transit - One Car HH	-9.3	-81.1	-112.7	12.5	-58.5	-122.2
Walk to Transit - Two+ Car HH	-120.3	-192.4	-112.7	-99.8	-170.3	-122.2
BRT/LRT	12.0	12.0	12.0	12.0	12.0	12.0
Metrorail	21.8	29.4	30.2	36.4	51.5	25.6
Tri Rail	3.9	24.6	37.2	13.6	71.5	68.6
Park/Ride - Zero Car HH	-270.3	-338.9	-150.4	-262.2	-336.3	-172.1
Park/Ride - One Car HH	-30.2	-128.3	-150.4	-24.8	-124.5	-172.1
Park/Ride - Two+ Car HH	-126.7	-220.9	-150.4	-122.9	-220.2	-172.1
Kiss/Ride - Zero Car HH	-270.3	-338.9	-145.1	-262.2	-336.3	-166.4
Kiss/Ride - One Car HH	-27.5	-121.3	-145.1	-21.9	-116.9	-166.4
Kiss/Ride - Two+ Car HH	-126.6	-214.9	-145.1	-122.4	-213.0	-166.4

Figure G-4 (continued)

INPUT LOGIT CONSTANTS

	HBWRK PK	HBNW PK	NHB PK	HBWRK OP	HBNW OP	NHB OP
Transit Walk Time	-0.04500	-0.03500	-0.04500	-0.04500	-0.03500	-0.04500
Transit Auto Access Time	-0.02000	-0.01500	-0.01800	-0.02000	-0.01500	-0.01800
Transit Run Time	-0.02000	-0.01500	-0.01800	-0.02000	-0.01500	-0.01800
Transit First Wait Time < 7 min	-0.04500	-0.03500	-0.04500	-0.04500	-0.03500	-0.04500
Transit First Wait Time > 7 min	-0.02300	-0.03500	-0.04500	-0.02300	-0.03500	-0.04500
Transit Transfer (2nd Wait) Time	-0.04500	-0.03500	-0.04500	-0.04500	-0.03500	-0.04500
Transit Number of Transfers	-0.04500	-0.03500	-0.04500	-0.04500	-0.03500	-0.04500
Transit Fare	-0.00320	-0.00480	-0.00480	-0.00320	-0.00480	-0.00480
Highway Terminal Time	-0.04500	-0.03500	-0.04500	-0.04500	-0.03500	-0.04500
Highway Run Time	-0.02000	-0.01500	-0.01800	-0.02000	-0.01500	-0.01800
Auto Operating Costs	-0.00250	-0.00480	-0.00480	-0.00250	-0.00480	-0.00480
Highway Parking Costs	-0.00320	-0.00480	-0.00480	-0.00320	-0.00480	-0.00480
Hov Time Difference	-0.01800	-0.01500	-0.01800	-0.01800	-0.01500	-0.01800
Walk to Local Transit Coefficients						
- for Zero Car Households	2.02750	-0.15740	-2.02850	2.39090	0.10070	-2.19920
- for One Car Households	-0.18690	-1.21720	-2.02850	0.24990	-0.87800	-2.19920
- for Two+ Car Households	-2.40660	-2.88650	-2.02850	-1.99630	-2.55460	-2.19920
Walk to BRT/LRT Bus Transit Coefficients						
- for Zero Car Households	2.26750	0.02260	-1.81250	2.63090	0.28070	-1.98320
- for One Car Households	0.05310	-1.03720	-1.81250	0.48990	-0.69800	-1.98320
- for Two+ Car Households	-2.16660	-2.70650	-1.81250	-1.75630	-2.37460	-1.98320
Walk to Metro Rail Transit Coefficients						
- for Zero Car Households	2.46400	0.28300	-1.48430	3.11890	0.87290	-1.73920
- for One Car Households	0.24960	-0.77680	-1.48430	0.97790	-0.10580	-1.73920
- for Two+ Car Households	-1.97010	-2.44610	-1.48430	-1.26830	-1.78240	-1.73920
Walk to Tri Rail Transit Coefficients						
- for Zero Car Households	2.10590	0.21180	-1.35960	2.66320	1.17290	-0.96370
- for One Car Households	-0.10850	-0.84800	-1.35960	0.52220	0.19420	-0.96370
- for Two+ Car Households	-2.32820	-2.51730	-1.35960	-1.72400	-1.48240	-0.96370
Premium Bus Coefficients	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Park-Ride to Bus Transit Coefficients						
- for Zero Car Households	-5.40620	-5.08290	-2.70660	-5.24360	-5.04440	-3.09790
- for One Car Households	-0.60400	-1.92400	-2.70660	-0.49650	-1.86750	-3.09790
- for Two+ Car Households	-2.53430	-3.31310	-2.70660	-2.45710	-3.30340	-3.09790
Park-Ride to BRT/LRT Transit Coefficients						
- for Zero Car Households	-5.16620	-4.90290	-2.49060	-5.00360	-4.86440	-2.88190
- for One Car Households	-0.36400	-1.74400	-2.49060	-0.25650	-1.68750	-2.88190
- for Two+ Car Households	-2.29430	-3.13310	-2.49060	-2.21710	-3.12340	-2.88190
Park-Ride to Metro Rail Transit Coefficients						
- for Zero Car Households	-4.96970	-4.64250	-2.16240	-4.51560	-4.27220	-2.63790
- for One Car Households	-0.16750	-1.48360	-2.16240	0.23150	-1.09530	-2.63790
- for Two+ Car Households	-2.09780	-2.87270	-2.16240	-1.72910	-2.53120	-2.63790
Park-Ride to Tri Rail Transit Coefficients						
- for Zero Car Households	-5.32780	-4.71370	-2.03770	-4.97130	-3.97220	-1.86240
- for One Car Households	-0.52560	-1.55480	-2.03770	-0.22420	-0.79530	-1.86240
- for Two+ Car Households	-2.45590	-2.94390	-2.03770	-2.18480	-2.23120	-1.86240

Figure G-4 (continued)

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INPUT LOGIT CONSTANTS

 Kiss-Ride to Bus Transit Coefficients
 - for Zero Car Households            -5.40620  -5.08290  -2.61160  -5.24360  -5.04440  -2.99570
 - for One Car Households             -0.54970  -1.81980  -2.61160  -0.43870  -1.75300  -2.99570
 - for Two+ Car Households            -2.53140  -3.22330  -2.61160  -2.44810  -3.19540  -2.99570
 Kiss-Ride to BRT/LRT Transit Coefficients
 - for Zero Car Households            -5.16620  -4.90290  -2.39560  -5.00360  -4.86440  -2.77970
 - for One Car Households             -0.30970  -1.63980  -2.39560  -0.19870  -1.57300  -2.77970
 - for Two+ Car Households            -2.29140  -3.04330  -2.39560  -2.20810  -3.01540  -2.77970
 Kiss-Ride to Metro Rail Transit Coefficients
 - for Zero Car Households            -4.96970  -4.64250  -2.06740  -4.51560  -4.27220  -2.53570
 - for One Car Households             -0.11320  -1.37940  -2.06740   0.28930  -0.98080  -2.53570
 - for Two+ Car Households            -2.09490  -2.78290  -2.06740  -1.72010  -2.42320  -2.53570
 Kiss-Ride to Tri Rail Transit Coefficients
 - for Zero Car Households            -5.32780  -4.71370  -1.94270  -4.97130  -3.97220  -1.76020
 - for One Car Households             -0.47130  -1.45060  -1.94270  -0.16640  -0.68080  -1.76020
 - for Two+ Car Households            -2.45300  -2.85410  -1.94270  -2.17580  -2.12320  -1.76020

 INPUT LOGIT CONSTANTS
                                        HBWRK PK  HBNW PK   NHB PK    HBWRK OP  HBNW OP   NHB OP
 Auto Drive Alone Coefficients
 - for Zero Car Households             0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
 - for One Car Households              0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
 - for Two+ Car Households             0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
 Auto One Passenger Coefficients
 - for Zero Car Households             0.00000   0.00000  -0.50660   0.00000   0.00000  -0.54160
 - for One Car Households             -1.37780  -0.01810  -0.50660  -1.37490  -0.03090  -0.54160
 - for Two+ Car Households            -1.93910  -0.00260  -0.50660  -1.94130  -0.01460  -0.54160
 Auto Two+ Passengers Coefficients
 - for Zero Car Households            -0.30420  -0.17590  -0.70790  -0.29910  -0.17160  -0.75320
 - for One Car Households             -1.73330  -0.22570  -0.70790  -1.72480  -0.24280  -0.75320
 - for Two+ Car Households            -2.28620  -0.11190  -0.70790  -2.28600  -0.12760  -0.75320
 Nesting Coefficients
 Transit Nesting                       0.50000   0.50000   0.50000   0.50000   0.50000   0.50000
 Walk Access Local Bus Nesting         0.30000   0.30000   0.30000   0.30000   0.30000   0.30000
 Walk Access Local Bus Nesting         0.30000   0.30000   0.30000   0.30000   0.30000   0.30000
 Auto Access Nesting                   0.30000   0.30000   0.30000   0.30000   0.30000   0.30000
 Park "N" Ride                         0.30000   0.30000   0.30000   0.30000   0.30000   0.30000
 Kiss "N" Ride                         0.30000   0.30000   0.30000   0.30000   0.30000   0.30000
 Highway Nesting                       0.80000   0.80000   0.80000   0.80000   0.80000   0.80000
 Shared Ride Nesting                   0.20000   0.20000   0.20000   0.20000   0.20000   0.20000
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Figure G-4 (continued)

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DISTRICT CONSTANTS:

 DISTRICT  1  Miami CBD
 DISTRICT  2  Fort Lauderdale CBD
 DISTRICT  3  Outlying CBD'S
 DISTRICT  4  Metro-Dade Other
 DISTRICT  5  Broward Other
 DISTRICT  6  West Palm Other

 DISTRICT TO DISTRICT CONSTANTS
  I1  I2  J1  J2  P1  P2  VALUE:

   1   1   1   1   1   1    0.0000    0.0000
   1   1   1   1   2   2    0.0000    0.0000
   1   1   1   1   3   3    0.0000    0.0000
   4   4   1   1   1   1    0.0000    0.0000
   4   4   1   1   2   2    0.0000    0.0000
   4   4   1   1   3   3    0.0000    0.0000
   1   1   2   3   1   1    0.0000    0.0000
   1   1   2   3   2   2    0.0000    0.0000
   1   1   2   3   3   3    0.0000    0.0000
   4   4   2   3   1   1    0.0000    0.0000
   4   4   2   3   2   2    0.0000    0.0000
   4   4   2   3   3   3    0.0000    0.0000
   2   3   1   3   1   1    0.0000    0.0000
   2   3   1   3   2   2    0.0000    0.0000
   2   3   1   3   3   3    0.0000    0.0000
   5   6   1   3   1   1    0.0000    0.0000
   5   6   1   3   2   2    0.0000    0.0000
   5   6   1   3   3   3    0.0000    0.0000
```