SOUTHEAST REGIONAL PLANNING MODEL 6.5
New Time-of-Day and 24 Hour Subarea Models

TECHNICAL REPORT

Model Adjustment and Application Guideline

[DRAFT]

Submitted To:
Florida Department of Transportation - District IV

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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) uses Cube-Voyager (CV) and TRNBUILD as the modeling platform for highway and transit travel estimation. The original SERPM6.5 models include the FULL (i.e. both highway and transit modules) versions of 24-hour and Time-of-Day (TOD).

The Florida Department of Transportation (FDOT) issued a task order (No. 11 – SERPM6.5 Modeling Adjustment) for various adjustments to the SERPM6.5 TOD and Subarea versions [see References 1-3]. The efforts include testing and verification of validation results due to the changes of the following tasks:

- Windowed Area HEVAL and Re-scripting HEVAL
- Model Capacities
- Incorporate Road User Cost (RUC)
- Post-model Adjustment developed from Analyst

This technical report describes the adjustments that were implemented in the new TOD and subarea models and provides Guideline on the new elements of the models. The new versions of the subarea and TOD models, enhanced and adjusted in this study, were based on earlier releases (see References 1 and 2 for documentation). The major tasks and enhancements conducted in this work order include:

- Test runs to evaluate the model results of capacity related adjustments using the 2009 FDOT LOS handbook [Reference 7]
- Test of CV's reporting program capabilities
- Enhancements of the RMSE reporting program
- Development of HEVAL reporting scripted in Cube Voyager instead of FORTRAN
- Inclusion of a process to generate HEVAL reports for any windowed areas
- Development of road user cost reports in HEVAL
- Tests of Cube Analyst for post-model adjustments
- New applications were added to logically link modeling steps and to generate evaluation outputs
- Improvements in the seven-purpose non-motorized process using separate calibrated parameters for zero, 1 and 2+ car HHs for the home-based trip purposes
- Scripts and applications were debugged and tested
- A validation check was performed on assignments using LOS E capacities
- Time-reduction strategies were implemented in trip distribution and transit skims using interstep Cluster
- Automatic recognition of the number of available processor cores
- Incorporate changes to assignment scripts to allow reversible managed lanes
- Incorporation of a process to handle open road tolling
- Addition of scripting to check for the existence of output folders and to create them if necessary
- All input files and programs were checked for consistency
- All main input, output and report data were added to Cube's application catalog data section

This technical report assumes that reader is familiar with standard modeling techniques used in Florida, FSUTMS, and Cube Voyager and particularly with model and documentation of the subarea and TOD versions of the SERPM65 models (see References 1 & 2).

Report Organization

This report discusses the model adjustments and provides application guidelines for the new version of Time-of-Day (TOD) and Subarea models. All required new inputs are described in detail. The application guide assumes that the users have working knowledge of FSUTMS and Cube-Voyager and familiar with earlier versions of SERPM6.5 modes. This report contains four chapters and eight appendices.

- Chapter 1, **Introduction**, is an overview of this technical report and describes the model structure and operation. It presents a model flowchart.

- Chapter 2, **Model Run Instruction and Guideline**, is a brief description of the new SERPM6.5 models with an emphasis on subarea model options and the use of user-defined window area in modeling and HEVAL reporting. All new user input files are discussed in this chapter. It provides instructions on creating the new Road User Cost (RUC) reporting lookup tables.

- Chapter 3, **Model Adjustment and Result**, discusses the new and updated features of SERPM6.5 and system-wide results.

- Chapter 4, **List of References**, lists references used in this document.

- The formats and contents of the new input files pertaining to new capacity lookup tables and Cube based reporting are documented in **Appendix A** (**Description of New Input Files**). Users should consult Reference 2 for a complete description of all other input files.

- There are several new catalog keys that were added in these new versions of the models. Tables B-1 and B-2 of **Appendix B** (**Description of Cube Voyager Catalog Keys**) provide the description of all catalog keys for the new TOD and subarea models. The new catalog keys are numbered as 94-100 and 86-91 in Tables B-1 and B-2. These tables also list the values of the catalog keys used in all three model scenarios.

- Several attributes were added to the highway network. Table C-1 of **Appendix C (Description of Unloaded and Loaded Network Attributes)** has describes the new input fields. The loaded networks of the subarea models are described in Tables C-2 and C-3 for 24-hour highway-only and full model runs, respectively. The loaded network attributes of the TOD model run are described in Table C-4. Users should pay attention to the "**blue**" colored attributes. They refer to LOS C, D and E capacities and are new or revised in this version of the model.

- Numerous RMSE and HEVAL scripts were developed in this study to replace the FSUTMS' HEVAL and RMSE programs. **Appendix D** (**Listing of Highway Evaluation Report CV Scripts**) lists a few sample scripts. It should be noted that the new versions of the models use these scripts multiple times with minor customization to generate RMSE and HEVAL reports for all traffic, trucks, periods, regions and user-defined windowed areas.

- New CV based HEVAL reporting scripts produce three main types of outputs: (1) *Overall Summaries*, (2) *Detailed HEVAL data* by facility types, area types and lanes, and (3) *Detailed Screenline data*. Users should use the catalog data section to review these outputs. These ASCII outputs (see {OUTDIR} folder) could be also reviewed using a text editor. **Appendix E** (**Listing of HEVAL *Overall Summary* Report**) lists a few sample TOD model generated overall summary report files for the SERPM region. **Appendix F** (**Listing of HEVAL *Detailed* Report**) is a snippet of a sample TOD model generated detailed HEVAL report file for the SERPM

region. **Appendix G** (**Listing of *Screenline Detailed* Report**) is a snippet of a sample TOD model generated screenline detailed report file for the SERPM region.

- The CV based RMSE scripts were enhanced in the new versions of TOD and subarea models by adding several volume/count ratios. Reporting formats for the RMSE outputs were also enhanced. Four model runs (TOD and three options of subarea models) were tested in this study with all enhancements. **Appendix H** (**Listing of Selected RMSE and Other Volume/Count Summary Reports**) lists base year RMSE reports for all regions for four model runs.

Model Operation

SERPM6.5 organizes model files in folders at several levels. **Figure 1-1** shows the folder tree for three scenarios (Base, 2030 cost feasible and 2035 cost feasible). A SERPM6.5 model run uses the input files from the working folder as well as several other subfolders (namely, PBIN, BOIN, MIIN and TRANSIT).

Within the NS65TODMDL (New TOD version) and NS65SubArea (New 24-hour Subarea 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 these versions of releases. The users **must** use the following catalog keys to identify inputs and outputs for alternatives.

Catalog Key	**Value (for Subarea model – Base Scenario)**	**Comment**
{DATADIR}	E:\fsutms\d4\NS65SubArea\input\IN-05R	Main Input Folder
{OUTDIR}	E:\fsutms\d4\NS65SubArea\output\OUT-05R	Main Output Folder

Catalog Key	**Value (for TOD model – Base Scenario)**	**Comment**
{DATADIR}	E:\fsutms\d4\NS65TODMDL\input\IN-05R	Main Input Folder
{OUTDIR}	E:\fsutms\d4\NS65TODMDL\output\OUT-05R	Main Output Folder

The use of these catalog keys makes file management easier and more efficient.

Similar to other Cube FSUTMS models, the SERPM folders are located under a model-specific folder called NS65TODMDL or NS65SubArea (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 is a convenient location for 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 creating 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. A few sample CV based reporting script files implemented in the new version of the model are in the "**Reports**" folder.

Figure 1-1: **Model File Folder Tree and Description**

Directory Level								Description				
Level0	Level1	Level2	Level3	Level4	*Level5*	Level6	Level7	Level 3	Level 4	Level5	Level 6	Level 7
{Drive}	FSUTMS	D4						**SERPM65 Main Model Folder. It has the model catalog file.**				
			NS65TODMDL	**BASE**					**4.1 Base Scenario Folder**			
			(New TOD Version)		*FUTURE-CF*					*Future "child" Scenario Folder (2030 Cost Feasible)*		
					FUTURE-35R					*Future "child" Scenario Folder (2035 Cost Feasible)*		
			NS65SubArea	**CUBE**					**4.2 Cube scripts and applications Folder**			
			(24-Hour - New	**INPUT**					**4.3 Input Data Folder**			
			Sub-Area Version)		*IN-YYR*					*Year 20YY (YY=05, 30 or 35) Main Input Folder*		
						MPOIN					MPO's T/G Input Data Folder	
					(YY= 05, 30 & 35)		PBIN					Palm Beach Input Data Folder
							BOIN					Broward Input Data Folder
							MIIN					Miami-Dade Input Data Folder
						TRANSIT					MPO's T/G Input Data Folder	
				OUTPUT					**4.4 Output Folder**			
					OUT-YYR					*Year 20YY (YY=05, 30 or 35) Main Output Folder*		
						MPOOUT					MPO's T/G Output Folder	
					(YY= 05, 30 & 35)		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**			
				Reports					**4.6 Sample CV based Reporting Files**			

Note: Use CV catalog keys [({DATADIR} & {OUTDIR}] for scenario's input and output main folder name

The **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 running 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 several custom programs that are used in SERPM. These 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. 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, and 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 TAZ 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.

Output files are created in a 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 the 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.

All user-specified files (see **Table 2-4** 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) 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.

Macro Flow Charts and Catalog Keys

The overall structures of the TOD and subarea models are shown in the form of a flowchart in **Figures 1-2** and **1-3**. It has 12 component modules:

1. Pilot - Setup controls and file names
2. External – EE by period
3. Trip Gen – LSGEN by auto ownership and TOD
4. Highway – Includes speed and capacity calculators
5. Initial Highway Path & Skim – This step also includes Subarea network process
6. Distribution – Includes equilibration (FEEDBACK) of peak period highway speeds
7. Transit Nets – PT → Trnbuild and connectors, paths, skims and fares **("Dummy" in HO and Subarea model)**
8. Mode Choice
9. Transit Assignment by access path and TOD **("Dummy" in HO and Subarea model)**
10. Highway Trip Tables – Combines trip tables for assignment – 24 Hour & TOD
11. Highway Assignment – 24 Hour & by TOD
12. Highway Evaluation – HEVAL and RMSE by TOD and county & user-selected subarea

The macro flowchart identifies all the user-supplied input used by each of the modules. It also shows all the SERPM6.5 specific programs used in these modules.

The SERPM65 highway assignments are made at different levels depending on the type of model. All use multi-user class link constrained equilibrium assignment methodologies (with selected node penalties). The assignments are as follows:

- For the TOD Version
  - ✓ AM Peak (Warm-up & Final)
  - ✓ Off-Peak (Warm-up & Final)
  - ✓ PM Peak (Warm-up & Final)
  - ✓ Composite 24 Hours (add preceding)
- For the subarea Version
  - ✓ 24-Hour Assignment (Warm-up & Final)
- For the AM peak pre-assignment (Warm-up & Final) inside feedback loop

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 changed through the scenario manager. SERPM6.5 catalog keys may have different values for the base 2005 (validation), 2030 and 2035 cost-feasible model runs. **Appendix B** has complete description of each of the catalog keys and three scenarios.

Figure 1-2: **Model Macro Flow Chart for New TOD Model**

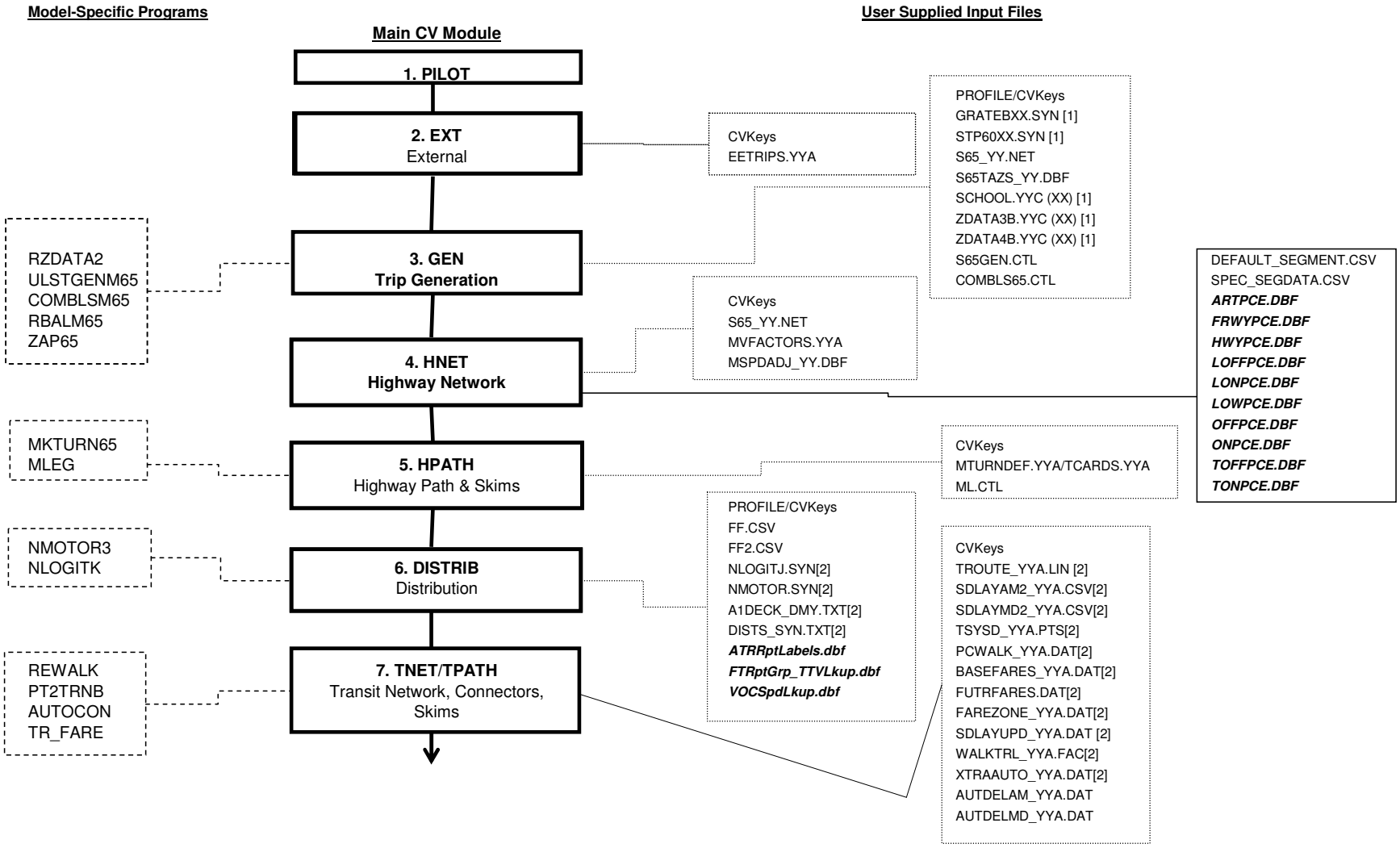
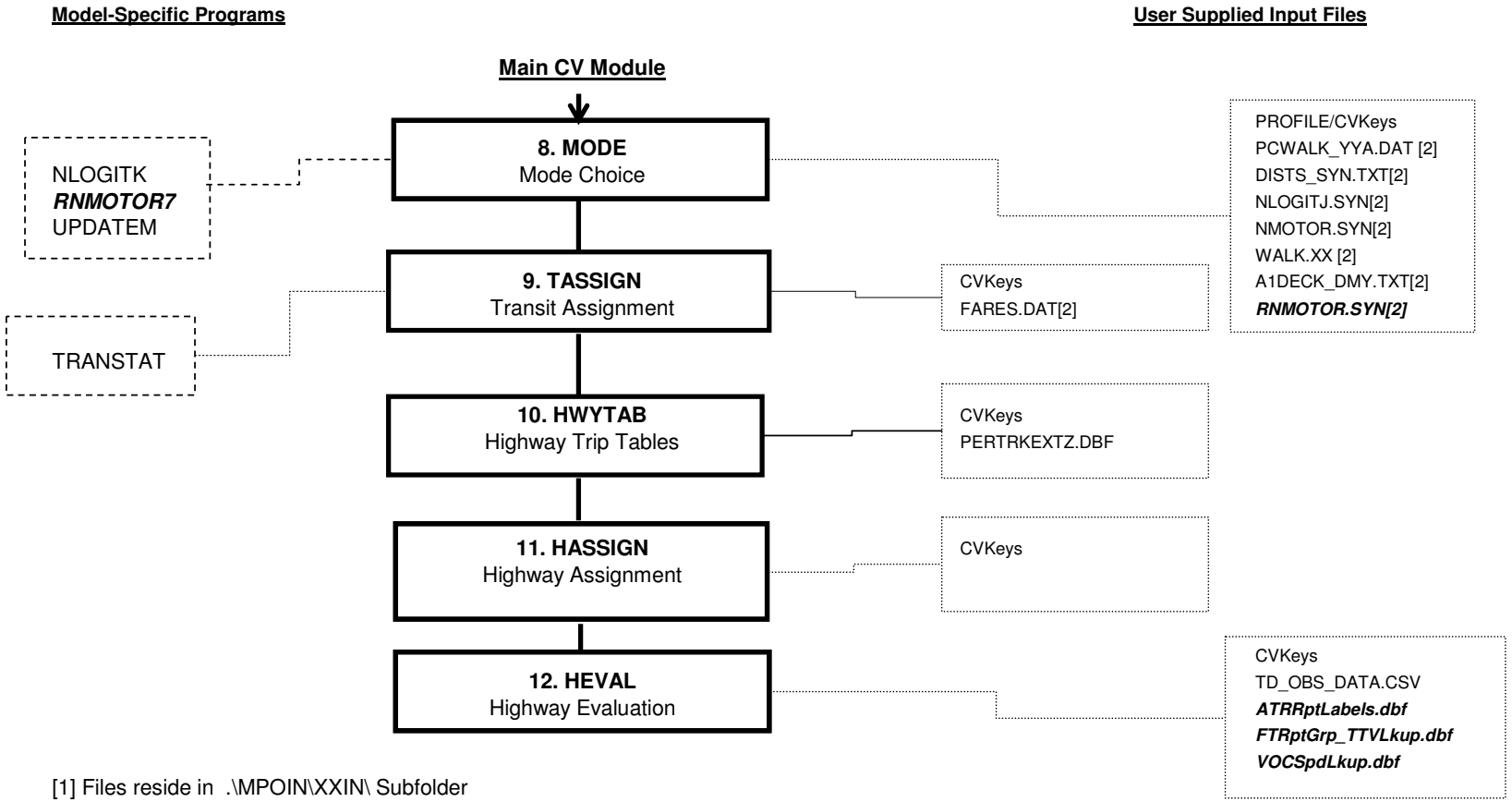


Figure 1-2 (continued): **Model Macro Flow Chart for New TOD Model**



[1] Files reside in .\MPOIN\XXIN\ Subfolder
[2] Files reside in .\TRANSIT\ Subfolder
XX = PB, BO & MI

Figure 1-3: **Model Macro Flow Chart for New Subarea Model**

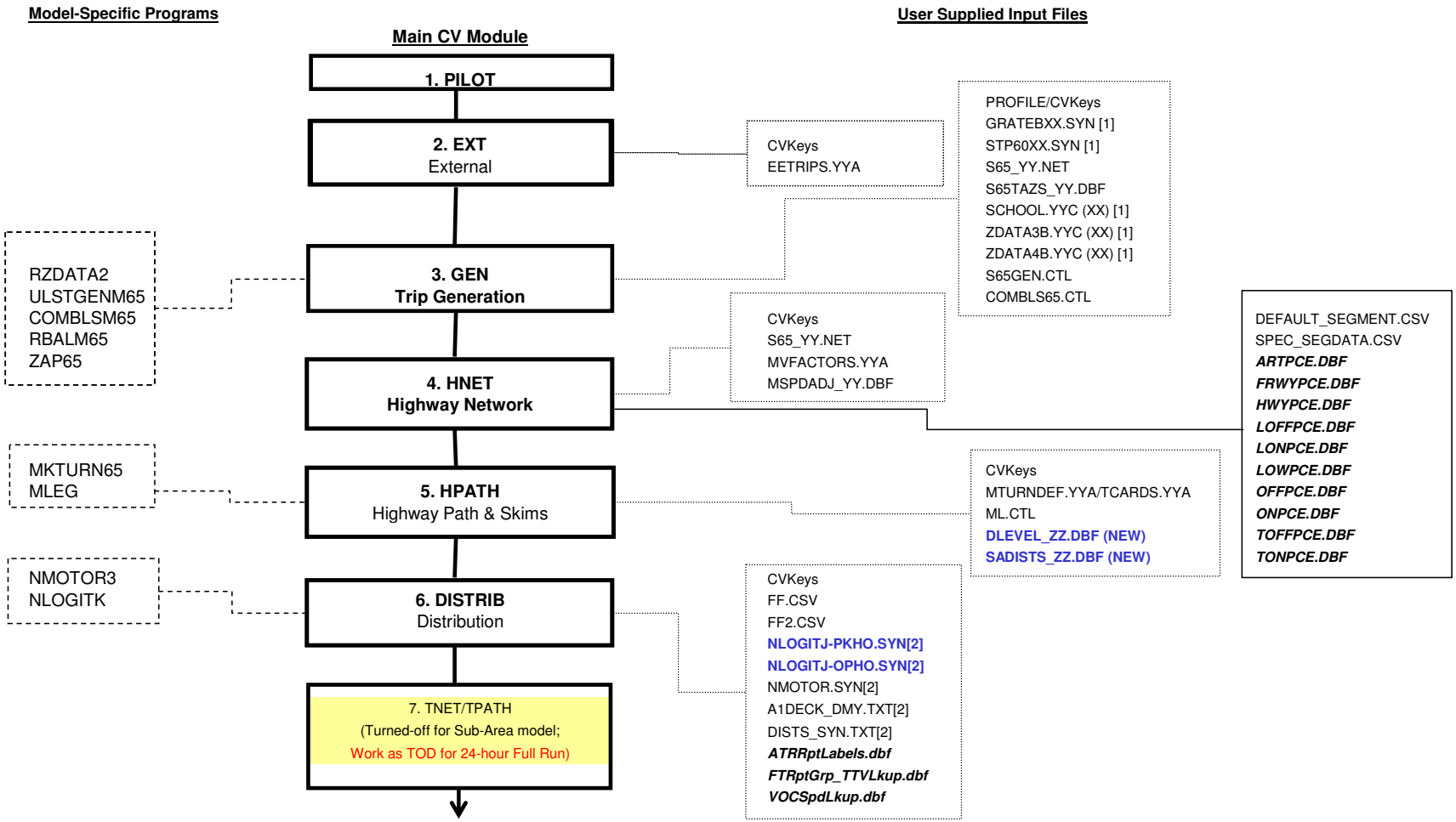
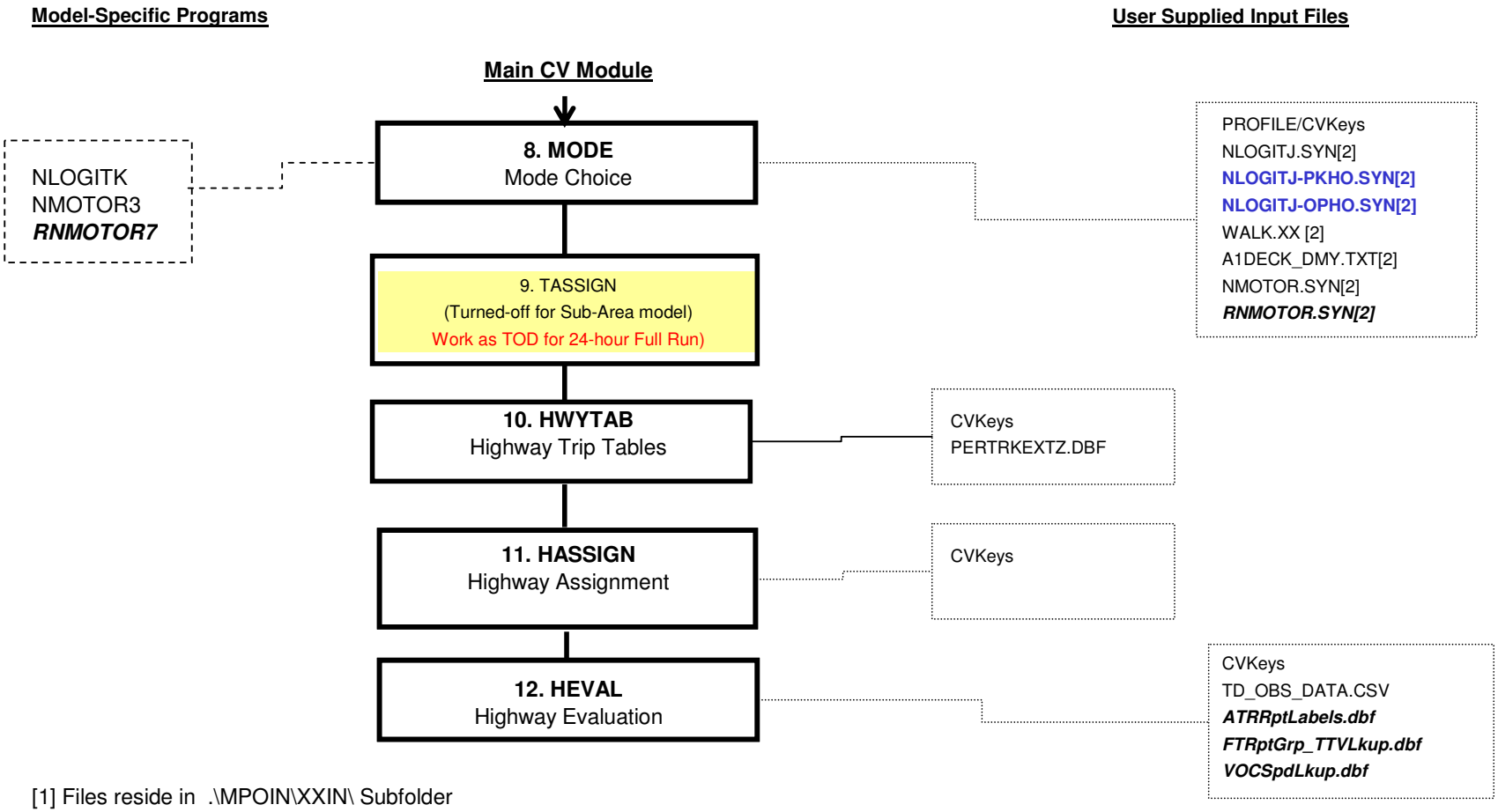


Figure 1-3 (continued): **Model Macro Flow Chart for New Subarea Model**



[1] Files reside in .\MPOIN\XXIN\ Subfolder
[2] Files reside in .\TRANSIT\ Subfolder
XX = PB, BO & MI
ZZ = AL, xx, PB, PB, BO & MD

Model Operation and Run Instruction

All versions of SERPM65 have separate distribution and mode-choice for the peak and off-peak periods. The TOD model performs three separate assignments, one for each period (AM, PM and off-peak). The 24-hour all-day assignment is made in subarea model 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 facilitate managed lane modeling, reversible lane modeling and open road tolling. The subarea models build on the 24-hour full model and can make both 24-hour full and highway only runs. All models also include a select link analysis process through a catalog key option. Options of subarea model runs are set through the several catalog keys. These model run options are described further in Chapter 2 and Reference 3.

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 two new versions of the SERPM65 models. Depending on the model years (2005 or 2030 or 2035) and the type of model runs, a working directory and its subdirectories may use from 10 to 18 GB of disk space for all input, output and binary files.

SERPM6.5 highway-only and subarea model development used the latest version of Cube (5.1.0). It has been structured to utilize Cube's parallel-processing capability, Cube Cluster, and runs optimally on a computer with a quad-core processor. 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-B (see Tables A-1 and B-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. 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. It is important that user not add last "backslash (\)" in the above path statement. Two 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. NLOGITK.EXE SERPM6.5 Mode choice model
b. MLEG.EXE SERPM6.5 Freeway Merge program

Users should read the "README-SETUP.TXT" file that was distributed with the model to understand the required changes in Cube's resource files (userprogs.rsc & twmenu.rsc).

Both new TOD and Subarea versions of models use FDOT's transit model framework version of the AUTOCON program. This program must be kept in the USER.PRG folder.

There are two other README files (Readme-ModelRuns.txt and Readme-ClusterSetup.txt) distributed with all releases of the model. They have instructions regarding setting up the Cluster run and model run in general. Contents of these readme files follow.

***Readme-Model-Runs.txt**:*

- Users can run all SERPM6.5 models (TOD FULL, 24-hour full and highway-only of subarea) using the same inputs. Two separate model folders ("NS65TODMDL" – TOD full, "NS65SubArea" – 24-hour full and highway-only of subarea) contain the inputs, programs, Cube applications, scripts and catalog. The model folder also includes output folder and will be created if they are not present.

- The model run uses catalog files (extension "CAT") from the respective model.

- When opening any catalog file for the first time, users should accept (or say yes) to any changes to path of 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-Cluster-Setup.txt**:*

- Both new versions of SERPM6.5 were scripted to use 4 intra-step (quad-core) nodes and selected inter-steps for trip distribution and development of transit skims, while the original SERPM6.5 model was scripted only for intra-step, and SERPM6 was scripted for inter-step nodes (Multiple machines). It is expected that most users would prefer to use one machine with dual/quad cores.

- The user should select the catalog file located in the model folder.

- The model scripts were revised to recognize the number of cores available in each machine. Users do not need to start Cube Cluster separately. The model run will automatically run Cluster. **Users should not rename/change the process ID (SERPM6ID) name in any of the script files**. It has been coded in the model scripts.

***Setting up a Model Run**:*

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 ranges 2.5 to 10 hours long depending on the speed of the computer used and the versions and scenario of the models and whether it uses 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), 2030 cost-feasible (Future-CF) and 2035 cost-feasible (Future-35R) model runs. **Appendix B** has a complete description of each of the catalog keys and three scenarios of a TOD and a subarea model option. SERPM6.5's PROFILE.MAS file only controls operations for the trip generation and a few mode choice parameters.

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 2005 (base) or 2030 or 2035 condition, the model must be run in its entirety. There are multiple ways users can run the CV application

and scenarios. Users should either consult CV documentation and/or References 2 and 3 to understand options of model runs.

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 chapter.
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" or "Add Sibling" option. The user 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 before running it. The outputs for the scenario/alternative will be mainly written to the output directory (OUT-{YEAR}{ALT}) and sub-directories.

The catalog file keeps tract of all scenarios in the model. The catalog file supplied with model should be opened access or create new scenarios. Once any catalog input is modified, it can be saved (**Save Catalog AS…**) as a new catalog file or it could replace the old catalog. 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 Run Instruction and Guideline

This study involved adjustments to the earlier releases of TOD and subarea versions of SERPM6.5. The enhanced SERPM6.5 models along with subarea model options are listed in **Table 2-1**. **The preferred method for a full time-of-day model run is #1**. Although the full model can be run using option #4F, its use in not recommended by FDOT for any major investment study, especially if transit is an important element. The preferred methods for highway-only runs are #4A - 4E and 4G using the subarea model.

Table 2-1: **New SERPM65 Model and Run Options**

- **1. Time-of-Day Model – NS65TODMDL**
- **4. 24-Hour Subarea – NS65Subarea**
  - ***A. User Defined (Focused) area***
  - B. Broward
  - C. Palm Beach
  - D. Miami-Dade
  - ***E. All region HO @ TAZ level***
  - ***F. Full Model***
  - G. All region HO @ District level

The subarea model uses three CV keys ({HighwayOnlyRun},{SubRegion}, and {UserDefinedSubArea}) to select the seven options (No. 4A to 4G) of model runs. **Figure 2-1** presents those options and CV key values for the options.

Figure 2-1: **New SERPM65 Subarea Model Run Options and CV keys**

Using NS65Subarea Folder & catalog	CV Keys & Values
4A. User-Defined Subarea	{HighwayOnlyRun}=1 {SubRegion}=AL **{UserDefinedSubArea}=1**
4B. Broward County Subarea	{HighwayOnlyRun}=1 {SubRegion}=BO {UserDefinedSubArea}=0
4C. Palm Beach County Subarea	{HighwayOnlyRun}=1 {SubRegion}=PB {UserDefinedSubArea}=0
4D. Miami-Dade County Subarea	{HighwayOnlyRun}=1 {SubRegion}=MD {UserDefinedSubArea}=0
4E. SERPM65 Highway-Only at TAZ level	{HighwayOnlyRun}=1 {SubRegion}=xx {UserDefinedSubArea}=0
4F. SERPM65 "FULL"	**{HighwayOnlyRun}=0** {SubRegion}=xx {UserDefinedSubArea}=0
4G. SERPM65 Highway-Only at District level	{HighwayOnlyRun}=1 {SubRegion}=AL {UserDefinedSubArea}=0

For the user-defined subarea model run options, the user must define the subarea network. Seven steps (see **Table 2-2**) describe the process to define any user-defined network of interest.

Table 2-2: **User-Defined Subarea Network Instructions for Subarea Model**

1. Edit the input network, which is {DATADIR}\S65_{Year}.NET. It is the Pink colored box "Starting Network" in Step 1 of the Network Sub-application (Step 5 of the main application)

2. Define/Save or Restore your Polygon of Subarea using the Polygon menu in the Cube network editor.
[Polygon - New/Save or - Restore]

3. Void the "Detail" node attribute of any subarea you defined for another analysis.
(Detail=0; Use Set1: Void Detail). The user should use "Set1" that was saved in network VPR file.
[Node-Compute-Apply/ok-Close]

4. Populate/compute "Detail" node attribute with "1"
(Detail=1; Use Set2: Populate Detail). The user should use "Set2" that was saved in network VPR file.
[Node-Compute-Apply/ok-Close]
(Use Applies To: "All items inside polygon NOW" & condition of "NODETYPE=1")

5. Void "DetailNet" link attribute of any subarea you defined for another analysis.
(DetailNet=0; Use Set1: Void DetailNet)
[Link-Compute-Apply/ok-Close]

6. Populate/compute "DetailNet" link attribute with "1"
(DetailNet=1; Use Set2: Populate DetailNet)
[Link-Compute-Apply/ok-Close]
(Use Applies To: "All items inside and crossing polygon NOW")

7. Save the network

For the user-defined subarea network, the user should verify that the input network has the following two attributes: (1) "**Detail**" (node attribute) and (2) "**DetailNet**" (link attribute). If they do not exit, they must be added using CV as follows:

- Open the starting input network
- For adding the link attribute, choose "Link-Attribute-Add-**DetailNet**-OK-N-OK-Cancel"
- For adding the node attribute, choose "Node-Attribute-Add-**Detail**-OK-N-OK-Cancel"
- Save the network

The process described in Table 2-2 essentially voids old values if they exist and then populates two network attributes ("Detail" & "DetailNet"). Users must do these subarea network steps before making user-defined subarea model runs. The CV network application (see NS65SubArea and NS65TODMDL models) as well as a README file distributed with subarea model also lists these instructions for easy reference.

For the TOD model, users also must define the windowed area for windowed-area HEVAL reporting. This could be defined in the starting network (see Network application of the model) or at the beginning of the "SubArea Evaluation" application of the TOD model. The instructions for the windowed area evaluation to the starting network (the preferred method), as they appear in the application is summarized in Table 2-3:

Table 2-3: **User-Defined Windowed Network Instructions for TOD Model**

1. Edit Input network ({DATADIR}\S65_{Year}.NET)
(Pink colored box "Starting Network - Step 1 of Network sub-application (Signal) or step 5 of main application)

2. Define/Save or Restore your Polygon of Subarea
[Polygon - New/Save or - Restore]

3. Void "DetailNet" link attribute of any pre-defined subarea
(DetailNet=0; Use Set1: Void DetailNet)
[Link-Compute-Apply/ok-Close]

4. Populate/compute "DetailNet" link attribute with "1"
(DetailNet=1; Use Set2: Populate DetailNet)
[Link-Compute-Apply/ok-Close]
(use Applies to as "All items inside and crossing polygon NOW")

5. Save the network

Note: Make sure that the 'UserDefinedSubarea' catalog key is set to 1 for windowed evaluation)

Users should follow the eight on-screen steps to define the windowed area at the start of the evaluation of a "SubArea Evaluation" application if reporting is desired for a new windowed area or if the window was not defined earlier in the network application.

Similar instructions for the subarea model are also presented in the "HO All Day Based Model Evaluation" application.

New 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). All user-specified files required for a model run are listed in **Table 2-4**. This section describes only the input files that are new in the new releases of the TOD and subarea models. For a description of the other files listed in Table 2-4, users should consult references 2 and 3.

Table 2-4: **User-Specified Input Files and Their Usage for New TOD and Subarea Models**

A. Main Level Input Files [File Location: ...\NS65TODMDL or NS65SubArea \Input\IN-YYR\ (YY=05 or 30 or 35)]

Sl No	Input Files	Description	NS65TODMDL	NS65SubArea	For Format, see …
1	A1DECK_DMY.TXT	A1Deck data for dummy zones	Y	Y	
2	**ARTPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Arterials**	**Y**	**Y**	**Table A-5**
3	**ATRRptLabels.dbf**	**Area Type for Reporting and Labels Lookup Table**	**Y**	**Y**	**Table A-1**
4	COMBLS65.CTL	A control file for COMBLSM65 program	Y	Y	
5	DEFAULT_SEGMENT.CSV	Default signal related segment data (Cycle length, GC & DF)	Y	Y	
6	**DLEVEL_ZZ.DBF**	**It specifies aggrgation status at the district level**		**Y**	
7	EETRIPS.{Year}{ALT}	External trip table	Y	Y	
8	FF.CSV	Free-Flow distribution Friction Factor file	Y	Y	
9	FF2.CSV	Congested distribution Friction Factor file	Y	Y	
10	**FRWYPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Freeways**	**Y**	**Y**	**Table A-6**
11	**FTRptGrp_TTVLkup.dbf**	**Facility Type Reporting Group and Travel Time Value Lookup Table**	**Y**	**Y**	**Table A-2**
12	**HWYPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Uninterrupted Roadways**	**Y**	**Y**	**Table A-7**
13	**LOFFPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Loop Off Ramps**	**Y**	**Y**	**Table A-8**
14	**LONPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Loop On Ramps**	**Y**	**Y**	**Table A-9**
15	**LOWPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Low Speed Roadways & Collectors (posted speed <35 mph)**	**Y**	**Y**	**Table A-10**
16	ML.CTL	A control file for MLEG program	Y	Y	
17	MSPDADJ_{Year}.DBF	Speed adjustment factors	Y	Y	
18	MTURNDEF.{Year}{ALT} / TCARDS.{Year}{ALT}	Turning prohibitor and penalty data	Y	Y	
19	MVFACTORS.{Year}{ALT}	Used for facility specific UROAD and volume-delay function by equilibrium assignment	Y	Y	
20	**OFFPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Off Ramps**	**Y**	**Y**	**Table A-11**
21	**ONPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for On Ramps**	**Y**	**Y**	**Table A-12**
22	PERTRKEXTZ.dbf	External zones truck trip percentages	Y	Y	
23	PROFILE.MAS	It contains substitution parameters used by many custom programs	Y	Y	
24	PROFILE-PK.MAS & PROFILE-OP.MAS	It contains substitution parameters used by many custom programs		**Y**	
25	**S65_{Year}.NET**	**Input cube-voyager highway network**	Y	Y	Table C-1
26	S65GEN.CTL	A control file for ULSTGENM65 program	Y	Y	
27	S65TAZS_{Year}.dbf	The DBF file of SERPM6.5 TAZ shape file	Y	Y	
28	**SADISTS_ZZ.DBF**	**It specifies district level TAZ (or Center TAZ)**		**Y**	
29	SPEC_SEGDATA.csv	User coded signal related segment data (Cycle length, GC & DF)	Y	Y	
30	TD_Obs_Data.csv	Observed travel time and delay study speed data by TDSECTION and periods	Y		
31	**TOFFPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Toll Off Ramps**	**Y**	**Y**	**Table A-13**
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.	Y	Y	
33	**TONPCE.DBF**	**Capacity (LOS-C,D,E) lookup table for Toll Off Ramps**	**Y**	**Y**	**Table A-14**
34	**VOCSpdLkup.dbf**	**Vehicle Operating Cost and Speed Lookup Table**	**Y**	**Y**	**Table A-3**

Table 2-4 (continued): **User-Specified Input Files and Their Usage for New TOD and Subarea Models**

B. MPO's Zonal Data and production/attraction rate Files
[File Location: \NS65TODMDL or NS65SubArea \Input\IN-YYR\MPOIN\XXIN (YY=00 or 30 or 35 & 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	NS65TODMDL	NS65SubArea	For Format, see …
35	grateb{XX}.syn	County Specific production rates, attraction rates and household stratification cureves	Y	Y	
36	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.	Y	Y	
37	stp60{XX}.syn	2000 Census special tabulation data (**Use MPO zone numbers**)	Y	Y	
38	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 production related data.	Y	Y	
39	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 attraction related data.	Y	Y	
40	zdata3b.{Year}{C}	Zonal special generator data (**Use MPO zone number**)	Y	Y	
41	zdata4b.{Year}{C}	External zone trip and travel data (**Use MPO zone numbers**)	Y	Y	

C. Transit Related Input Files [File Location: \NS65TODMDL or NS65SubArea\Input\IN-YYR\transit (YY=00 or 30 or 35)]

Sl No	Input Files	Description	NS65TODMDL	NS65SubArea	For Format, see …
42	AUTDELAM_{Year}{ALT}.DAT (see Note)	List of zones where auto connectors will be prohibited during peak period	Y	y	
43	AUTDELMD_{Year}{ALT}.DAT (see Note)	List of zones where auto connectors will be prohibited during off-peak period	Y	y	
44	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.	Y	y	
45	DISTS_SYN.TXT	Transit District-to-District added mode choice utility constants	Y	y	
46	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.	Y	y	
47	nlogitj.syn	Mode choice constants and coefficients file and use by NLOGITK program	Y	y	
48	NLOGIT-PKHO.SYN & NLOGIT-OPHO.SYN	Mode choice constants and coefficients file and use by NLOGITK program		**Y**	
49	NMOTOR.SYN	3-purpose Motorized/non-motorized parameters and use by NMOTOR3 program	Y	Y	
50	pcwalk_{Year}{ALT}.dat	Walk percentages for transit access	Y	y	
51	**RNMOTOR.SYN**	**7-purpose Motorized/non-motorized parameters and use by RNMOTOR7 program**	**Y**	**Y**	**Table A-4**
52	SDLAYAM2_{Year}{ALT}.CSV	Peak period highway-to-transit speed relationships	Y	y	
53	SDLAYMD2_{Year}{ALT}.CSV	Off-Peak period highway-to-transit speed relationships	Y	y	
54	sdlayupd_{Year}{ALT}.DAT	This standard FSUTMS file is used as input to extract highway-to-transit curves	Y	y	
55	TRFAREZONE_{Year}{ALT}.dat	Tri-Rail Zonal Fare Data	Y	y	
56	TROUTE_{Year}.LIN	Transit (both peak and off-peak) route data	Y	y	
57	TSYSD_{Year}{ALT}.PTS	PT system data file - "mode" and "operator" information	Y	y	
58	WALK.XX	Walkability Index data and use by NMOTOR3 and RNMOTOR7 programs	Y	Y	
59	WalkTRL_{Year}{ALT}.FAC	PT factor file	Y	y	
60	XTRAAUTO_{Year}{ALT}.DAT (see Note)	Required/additional auto connectors	Y	y	

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

CV Based HEVAL Reporting Lookup Files

The standard FSUTMS' HEVAL routine was replaced by CV based scripts. This scripting based reporting process uses three lookup tables to group the area type and facility type in the tabular report as well as to read the Travel Time Values (TTV) and Vehicle Operating Costs (VOC). The TTV is function of facility type and is combined with facility type grouping. The VOC values are a function of speed and separate values are used for cars and trucks. Three lookup tables used in the CV-based HEVAL reporting applications are:

- **ATRptLabels.dbf**: **Table A-1** presents the description of the fields of this new lookup table. If necessary, it could be used to combine area types. In SERPM6.5 models, five density based area types are used. A one-to-one correspondence is maintained in this lookup table. A listing of this file that is used in these new releases in TOD and subarea models is presented in **Figure 2-2**.

Figure 2-2: **ATRptLabels.dbf Lookup File Listing**

Area_Type	ATRptGrp	ATGrpDes
1	1	CBD(1)
2	2	NCBD-HiDen(2)
3	3	NCBD-MedDen(3)
4	4	NCBD-LowDen(4)
5	5	NCBD-VeryLowDen(5)

- **FTRptGrp_TTVLkup.dbf** : This file is used to group the facility type (FTC2= 11-12, 21, 41, 51-52, 61, 71-75, 81-82, 91-94 etc.) into logical nine groups (1-9). In addition, it is use to read the lookup values of TTV for car and truck as well as weights of those TTV in the AM, PM and off-peak periods for use in the TOD model. **Table A-2** presents the description of the fields of this new lookup table. A listing of this file that is used in these new releases in TOD and subarea models is presented in **Figure 2-3**.

Figure 2-3: **FTRptGrp_TTVLkup.dbf Lookup File Listing**

FTC2	FTRptGrp	TTVCarPrsn	TTVTrkPrsn	TTV_AM_Wt	TTV_PM_Wt	TTV_OP_Wt	FTGrpDes
11	1	6.79	12.08	1.015	1.006	0.992	Freeway(11)
12	1	6.79	12.08	1.015	1.006	0.992	Freeway(12)
21	2	6.79	12.08	1.015	1.006	0.992	UninterRd(21)
41	4	6.79	12.08	1.015	1.006	0.992	HiSpdArt(41)
51	5	6.79	12.08	1.015	1.006	0.992	Cencon(51-52)
52	5	6.79	12.08	1.015	1.006	0.992	Cencon(51-52)
61	6	6.79	12.08	1.015	1.006	0.992	LowSodCol(61)
71	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
72	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
73	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
74	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
75	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
93	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
94	7	6.79	12.08	1.015	1.006	0.992	Ramps(71+,93-94)
81	8	6.79	12.08	1.015	1.006	0.992	HOV(81-82)
82	8	6.79	12.08	1.015	1.006	0.992	HOV(81-82)
91	9	6.79	12.08	1.015	1.006	0.992	Toll(91-92)
92	9	6.79	12.08	1.015	1.006	0.992	Toll(91-92)

The TTV values shown in Figure 2-3 were compiled from "*Southeast Florida Road and Transit User Cost Study*" [Reference 5] and "*Assessment of Southeast Florida Road User Costs*" [Reference 4] reports.

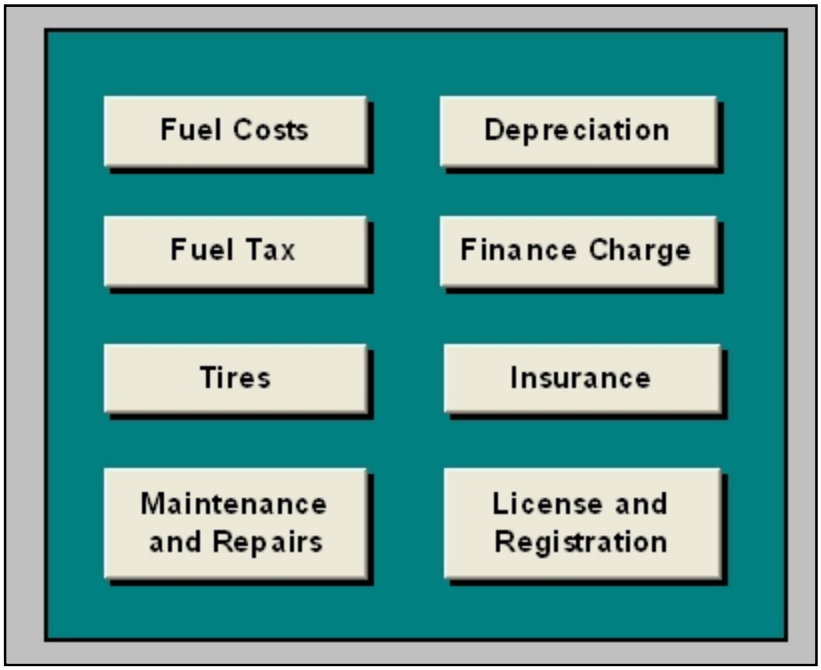
- **VOCSpdLkup.dbf**: This file is used to define Vehicle Operating Cost (VOC) values as a function of speeds. Separate values are read for cars and trucks. **Table A-3** presents the description of the fields of this new lookup table. A listing of this file that is used in these new releases in TOD and subarea models is presented in **Figure 2-4**.

Figure 2-4: **VOCSpdLkup.dbf Lookup File Listing**

SPEED	VOC_CARS	VOC_TRKS		SPEED	VOC_CARS	VOC_TRKS
1	1.660	1.958		41	0.449	0.592
2	1.378	1.327		42	0.448	0.603
3	1.194	1.043		43	0.448	0.615
4	1.066	0.881		44	0.447	0.628
5	0.970	0.777		45	0.446	0.642
6	0.915	0.716		46	0.446	0.706
7	0.867	0.670		47	0.446	0.706
8	0.827	0.632		48	0.446	0.706
9	0.793	0.602		49	0.446	0.706
10	0.763	0.577		50	0.446	0.706
11	0.733	0.559		51	0.447	0.719
12	0.706	0.543		52	0.448	0.734
13	0.683	0.529		53	0.448	0.750
14	0.662	0.516		54	0.449	0.768
15	0.643	0.505		55	0.450	0.787
16	0.625	0.498		56	0.452	0.802
17	0.609	0.493		57	0.454	0.819
18	0.595	0.488		58	0.456	0.837
19	0.582	0.483		59	0.458	0.856
20	0.569	0.478		60	0.460	0.877
21	0.558	0.479		61	0.464	0.896
22	0.547	0.479		62	0.468	0.914
23	0.537	0.480		63	0.472	0.934
24	0.528	0.481		64	0.477	0.955
25	0.520	0.481		65	0.482	0.978
26	0.512	0.485		66	0.487	0.998
27	0.504	0.489		67	0.493	1.019
28	0.497	0.493		68	0.499	1.041
29	0.491	0.497		69	0.506	1.065
30	0.485	0.502		70	0.513	1.090
31	0.479	0.508		71	0.517	1.103
32	0.474	0.515		72	0.521	1.117
33	0.469	0.522		73	0.525	1.131
34	0.465	0.529		74	0.530	1.146
35	0.460	0.537		75	0.535	1.161
36	0.454	0.545		76	0.539	1.177
37	0.452	0.554		77	0.545	1.193
38	0.450	0.563		78	0.550	1.210
39	0.450	0.572		79	0.556	1.227
40	0.450	0.583		80	0.562	1.246

Users interested in recreating this file for any revision of the VOC lookup file should use the spreadsheet program [see Reference 6]. It is highly recommended for users to save a version of the program before changing data or recreating a new VOC lookup table. There are number of components that affect the VOC calculation (see **Figure 2-5**).

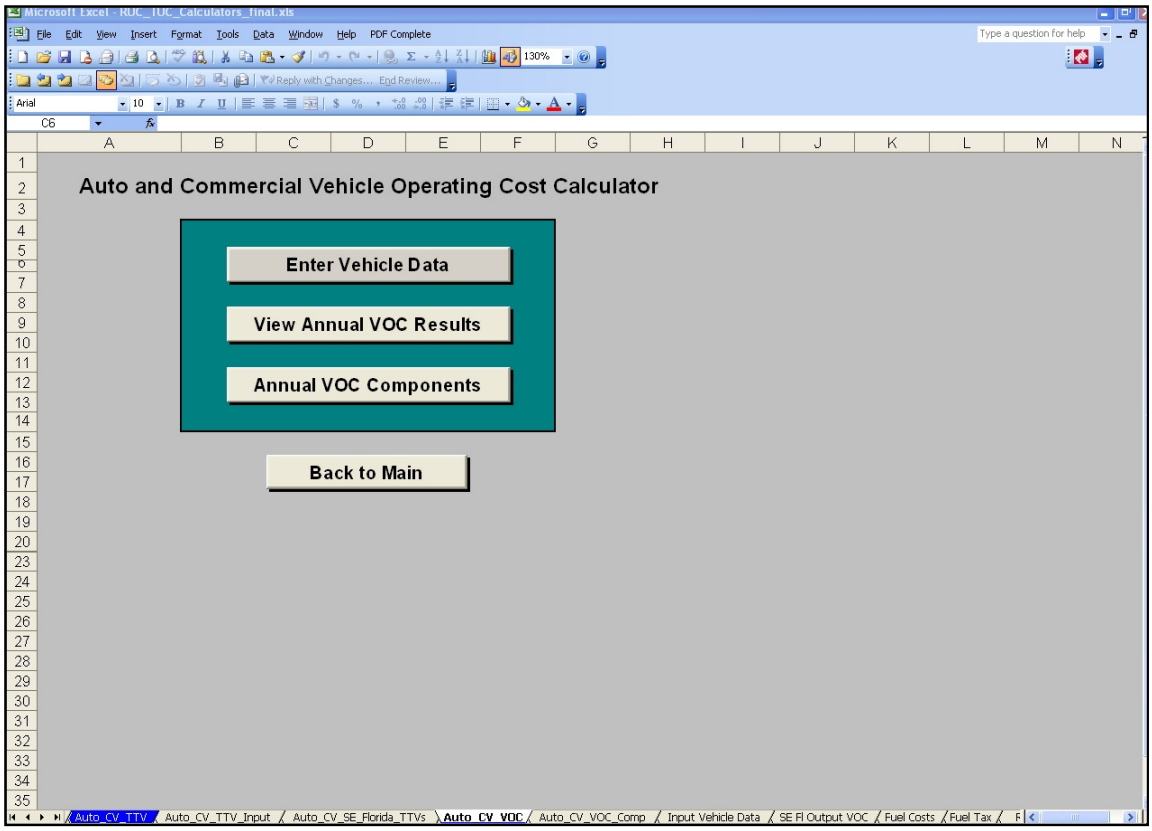
Figure 2-5: **Auto and Commercial Vehicle Operating Cost Components**
[Note: Copied from References 5 and 6]



Chapter 4 of Reference 5 ("*Southeast Florida Road and Transit User Cost Study*") has a description of the calculator program [Reference 6]. Corradino staff added a new tab ([**VOC_Lookup_Table**]) to this calculator program to facilitate the development of VOC lookup table. Users interested in testing alternate or new values for the VOC cost components should first change the appropriate values (for example, fuel costs) in the [**Auto_CV_TTV**] tab of this program and click the "**Enter Vehicle Data**" button. **Figure 2-6** presents the screen for this operation.

After the new or updated data are entered into the program, the user should go to the last tab ([**VOC_Lookup_Table**]) and click each of the buttons of the two steps. **Figure 2-7** presents a screen capture of this tab that shows the two step buttons. The step 1 button will create the data for the VOC lookup data for use in model reporting program. The step 2 button will write the data as a DBF file (VOC_Lookup_Table.DBF). Users should rename this DBF file as "VOCSpdLkup.dbf" and copy it to model input folder(s).

Figure 2-6: **Auto and Commercial Vehicle Operating Cost Calculators – Enter Vehicle Data**
[Note: Copied from References 5 and 6]



RNMOTOR.SYN

This file provides parameters for the logit-based non-motorized program (RNMOTOR7). RNMOTOR7 (replacement of the earlier NMOTOR7 program) performs the non-motorized trip analysis for seven purposes – HBW (Zero, 1 and 2+ cars), HBO (Zero, 1 and 2+ cars) and NHB. NMOTOR3 is used in the pre-assignment step of trip distribution for the three main purposes as well as for highway-only runs of the subarea model mode choice application. Both NMOTOR3 and RNMOTOR7 programs allocate total trips to either motorized or non-motorized trips. **Table A-4** presents the format for the RNMOTOR.SYN file. It contains the coefficients, constants and index coefficient of the utility functions for each of seven trip purposes. **Figure 2-8** presents a listing of the RNMOTOR.SYN file. Both RNMOTOR7 program and the calibration of the RMOTOR.SYN file was calibrated as part of a task order (Model Tech Support) issued by the FDOT District 4 staff.

Figure 2-7: **A Screen Capture of "VOC_Lookup_Table" tab of RUC_TUC_Calculators-final.xls**

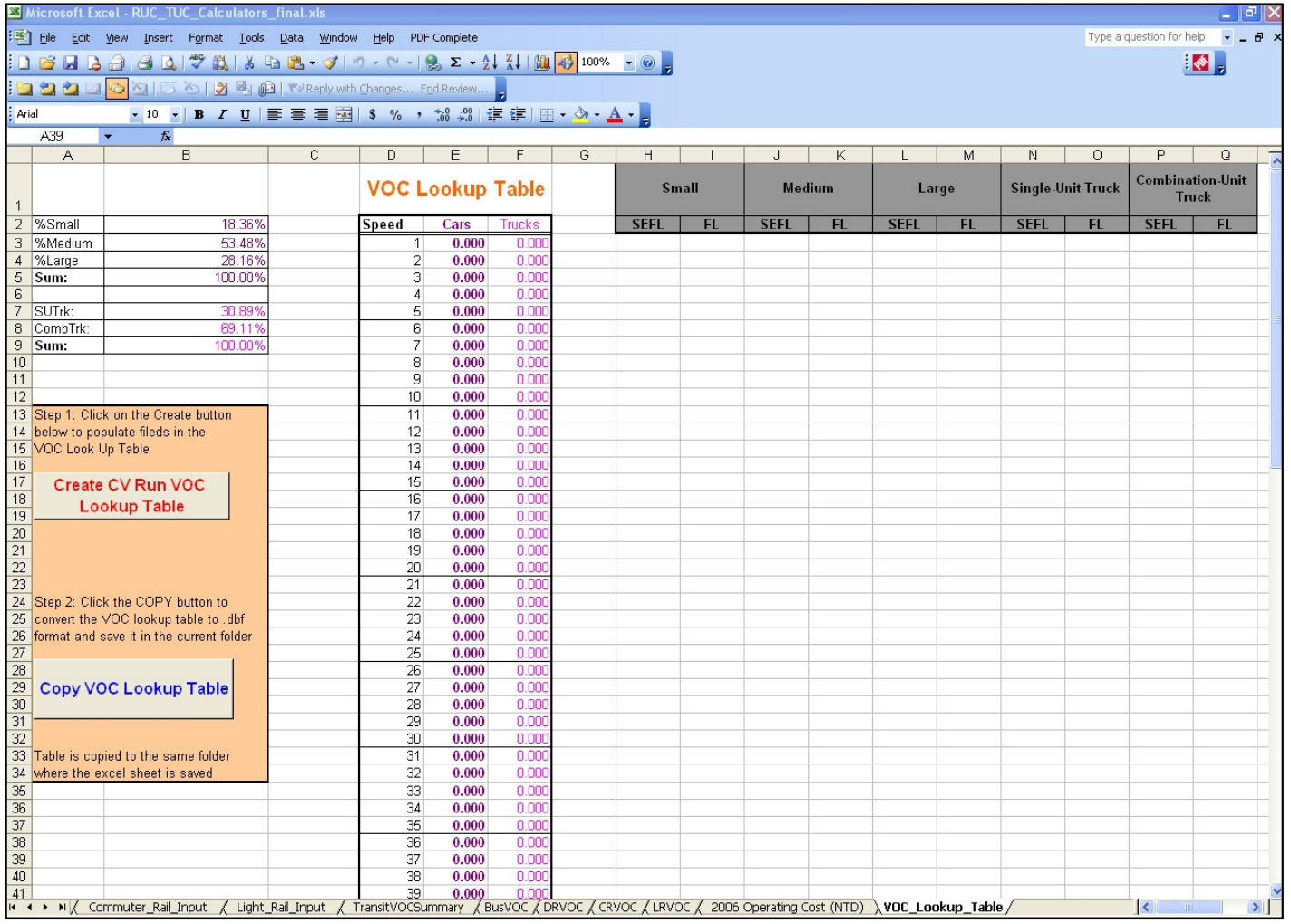


Figure 2-8: **RNMOTOR.SYN File Listing**

```
         3.00           3.00           3.00           2.50           2.50           2.50           2.00
-6.2864307191  -3.1515940584   0.1501971366  -6.3292383312  -0.4365741659   0.5211160032   0.4701605017
         0.25
```

Lookup Capacity Tables

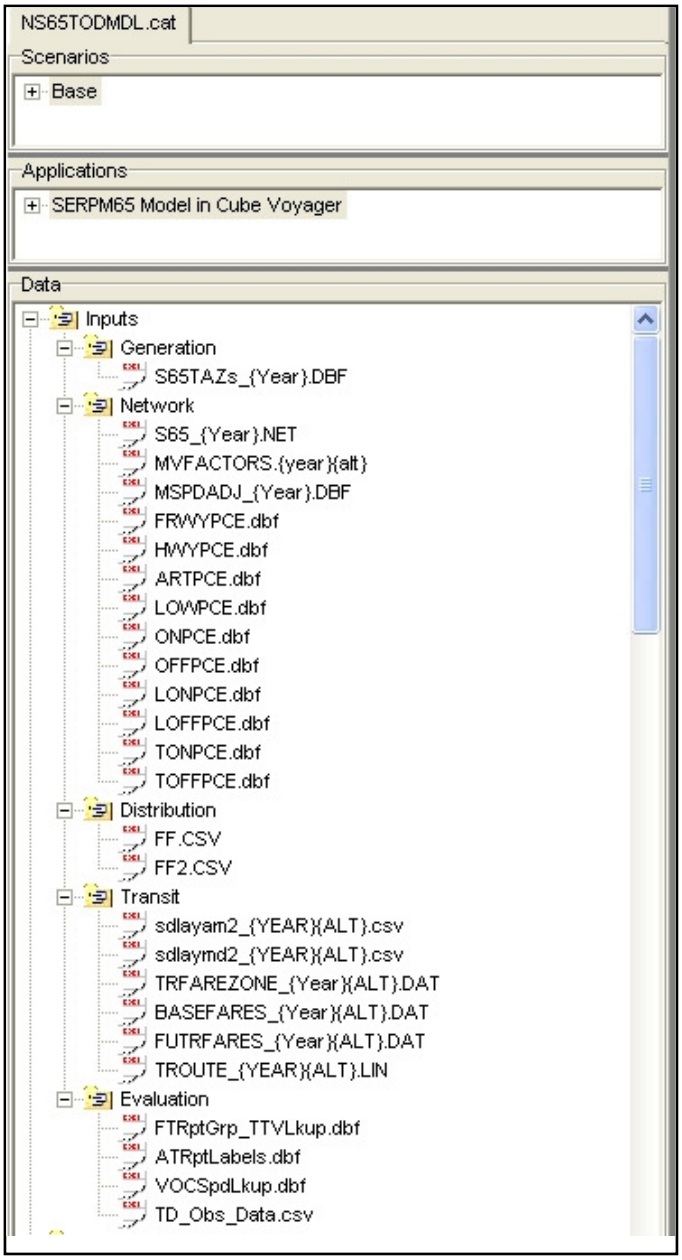
All ASCII based capacity lookup tables in the original releases of SERPM6.5 are replaced with the new DBF lookup capacity tables. Theses new capacity tables now include LOS C, D and E capacities for the HEVAL reporting. All highway assignments use LOS E capacities. It should be noted that the earlier releases of SERPM used only LOS E capacities that were converted to LOS C through UROAD factors before they were used in assignment. The new versions of the models do not use any UROAD factors and use LOS E capacities in assignment. The description and listing of these new lookup tables are shown in 10 tables (A-5 to A-14) and 10 figures (A-1 to A-10) in Appendix A for the following facilities:

Lookup Table	For Facilities	Description in Table & Figure…
ARTPCE.DBF	Arterials	Table A-5 & Figure A-1
FRWYPCE.DBF	Freeways	Table A-6 & Figure A-2
HWYPCE.DBF	Uninterrupted Roadways	Table A-7 & Figure A-3
LOFFPCE.DBF	Ramps – Loop Off	Table A-8 & Figure A-4
LONPCE.DBF	Ramps – Loop On	Table A-9 & Figure A-5
LOWPCE.DBF	Low Speed Roadways & Collectors	Table A-10 & Figure A-6
OFFPCE.DBF	Ramps – Off	Table A-11 & Figure A-7
ONPCE.DBF	Ramps – On	Table A-12 & Figure A-8
TOFFPCE.DBF	Ramps – Toll Off	Table A-13 & Figure A-9
TONPCE.DBF	Ramps – Toll On	Table A-14 & Figure A-10

Model Catalog Section Input and Output Files

All major input and output files were added to the input and output tabs of the catalog data section. Screen captures of the data included in the model catalog section are shown in **Figures 2-9** and **2-**. For a detailed description of these files, users should consult Tables 2-4, 3-1 and 3-2 of this report and references 1 and 2.

Figure 2-9: **Screen Captures of New TOD Model's Input and Output Catalog Data**



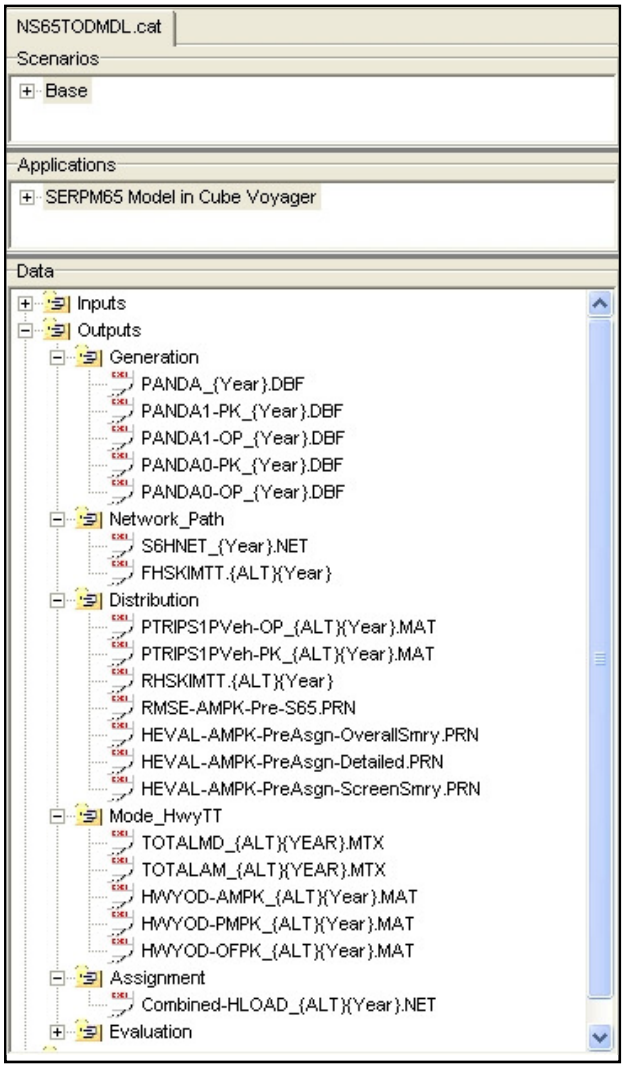


Figure 2-9 (continued): **Screen Captures of New TOD Model's Input and Output Catalog Data**

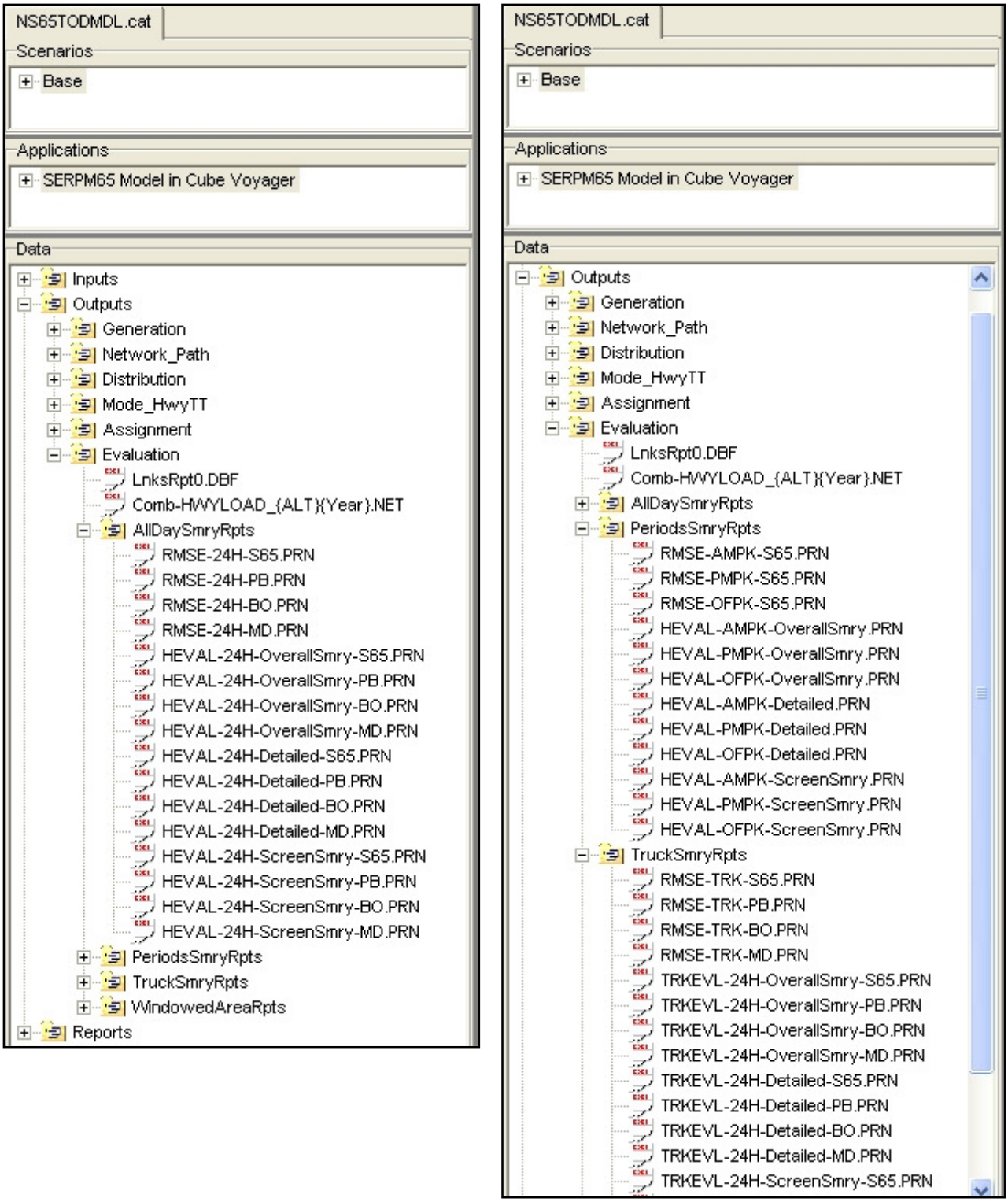


Figure 2-9 (continued): **Screen Captures of New TOD Model's Input and Output Catalog Data**

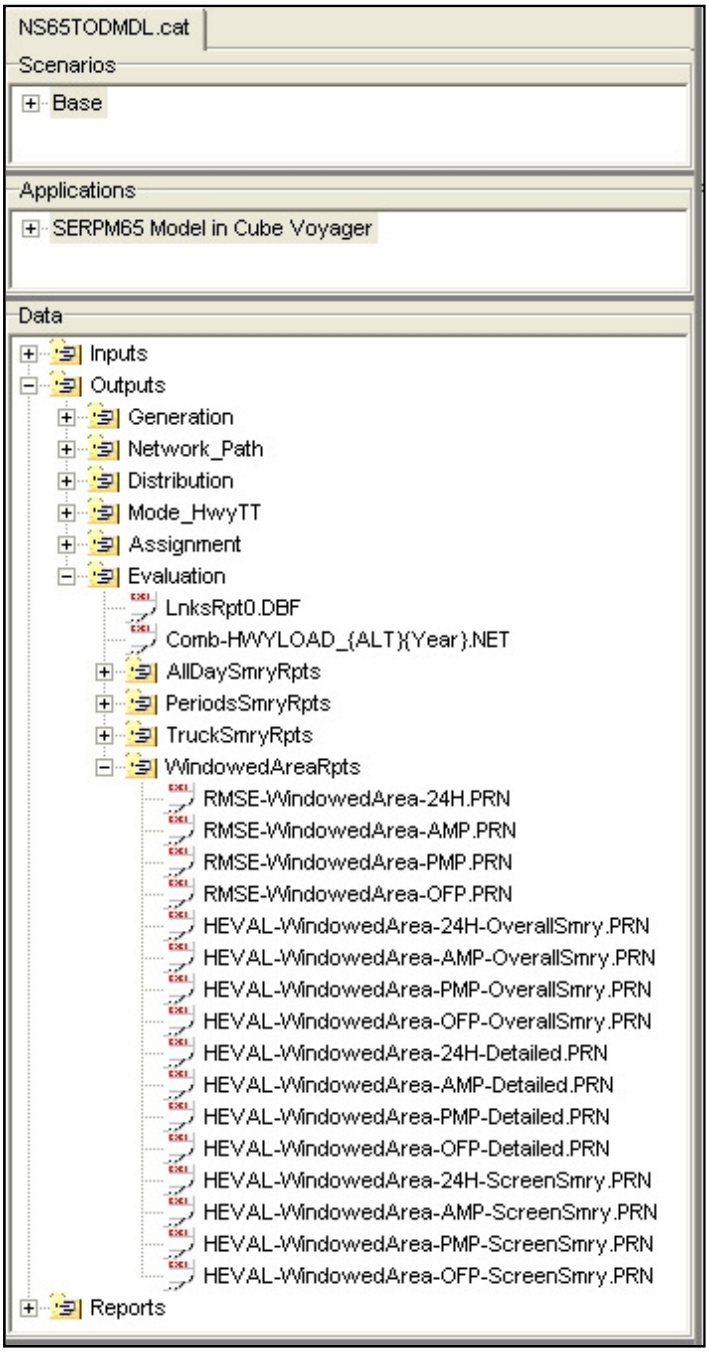
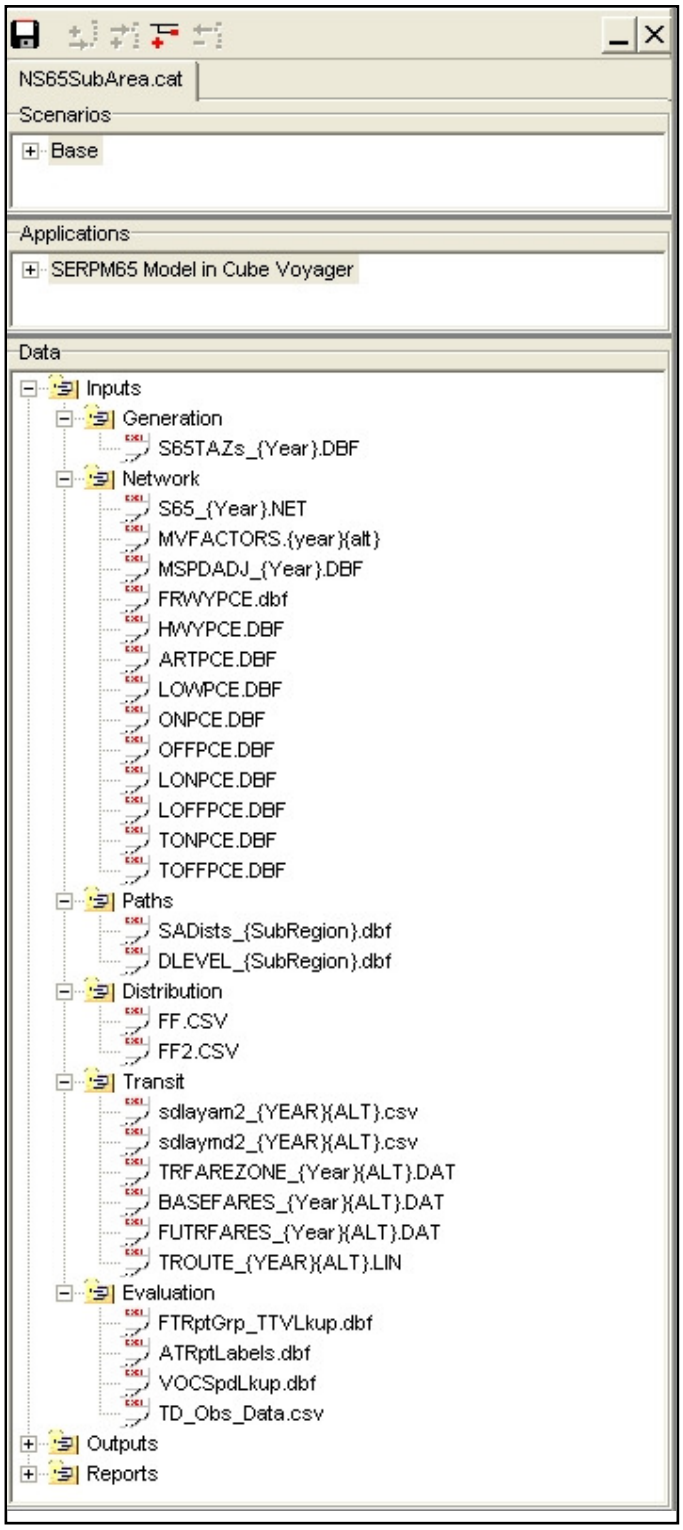


Figure 2-10: **Screen Captures of New Subarea Model's Input and Output Catalog Data**



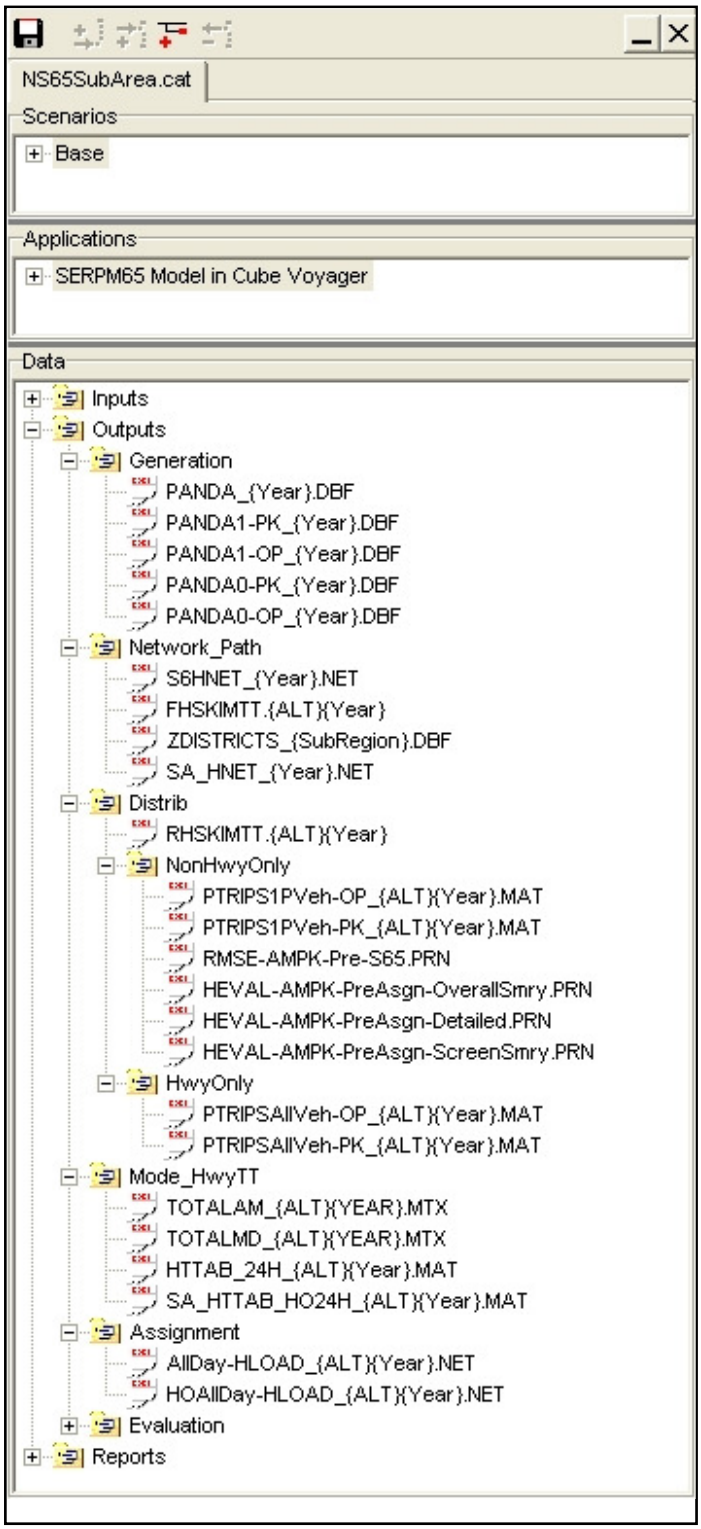
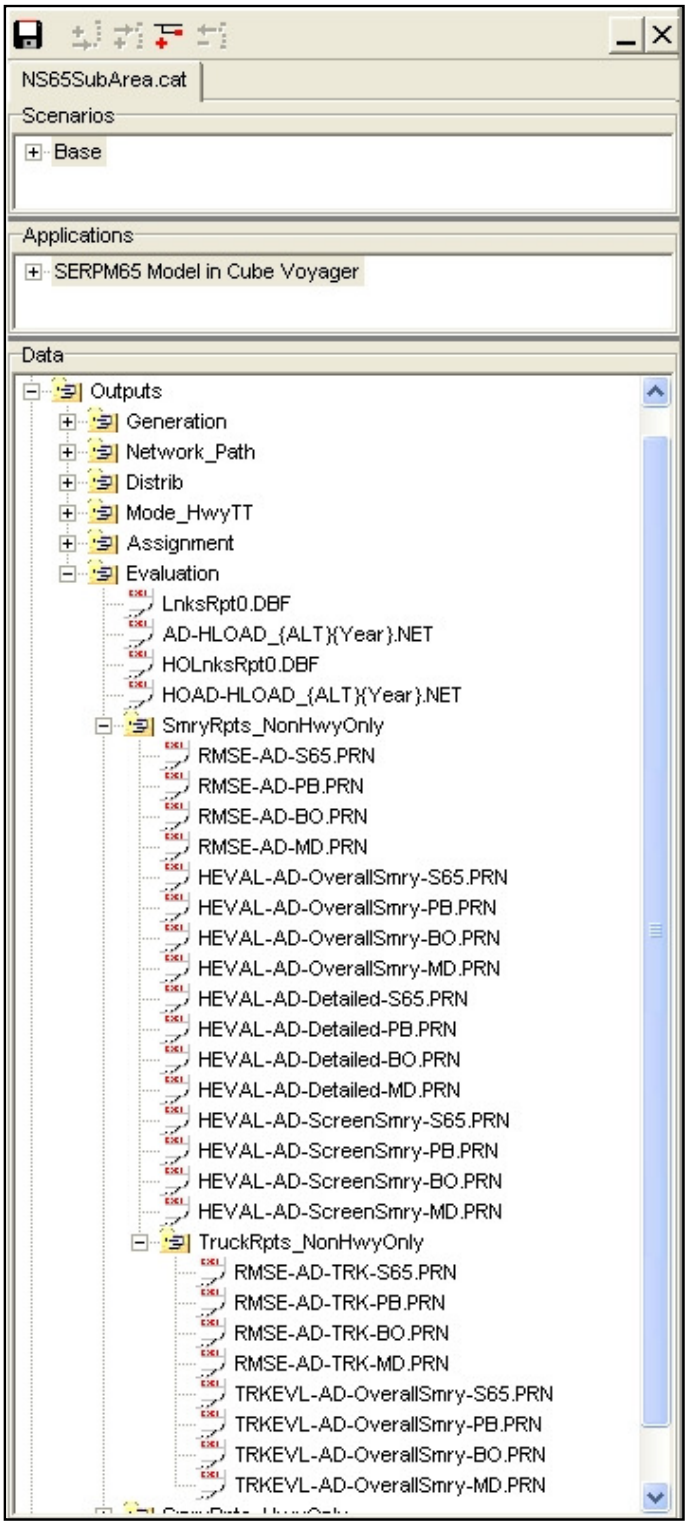
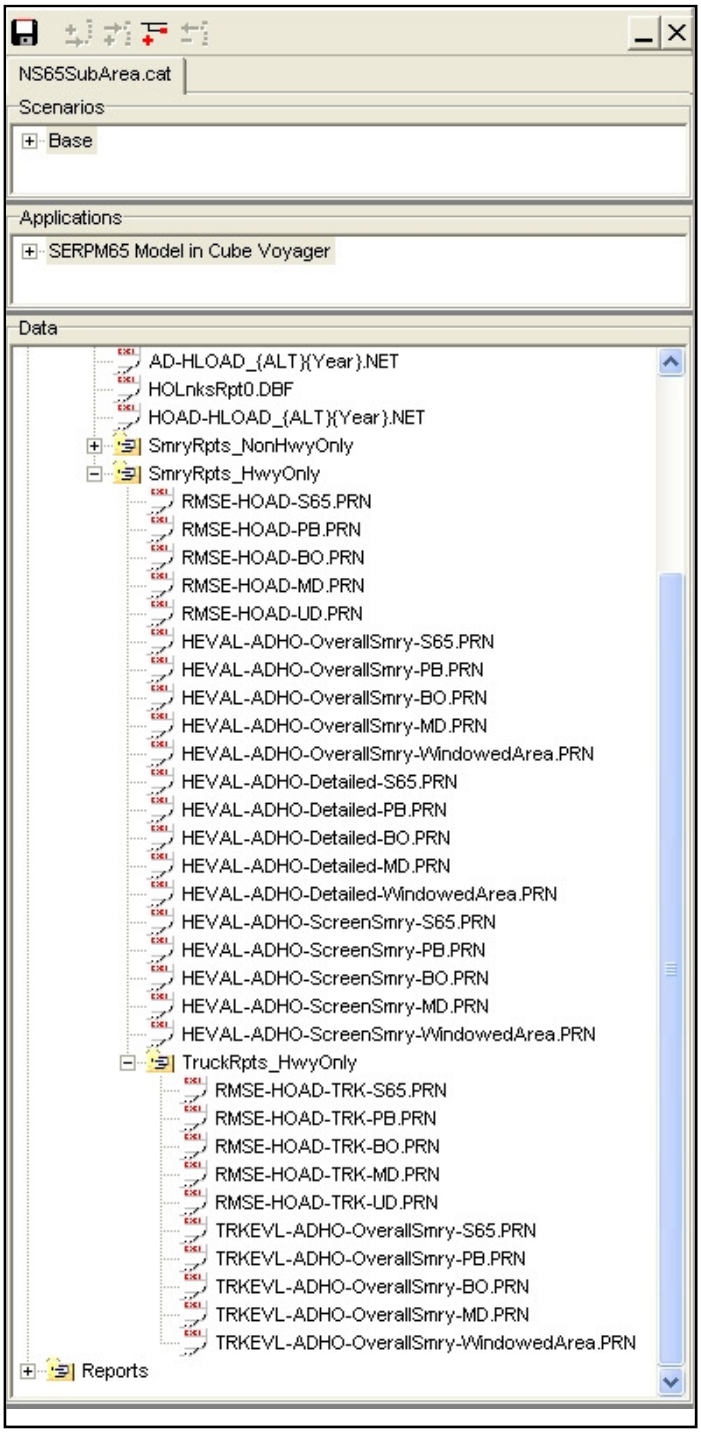


Figure 2-10 (continued): **Screen Captures of New Subarea Model's Input and Output Catalog Data**





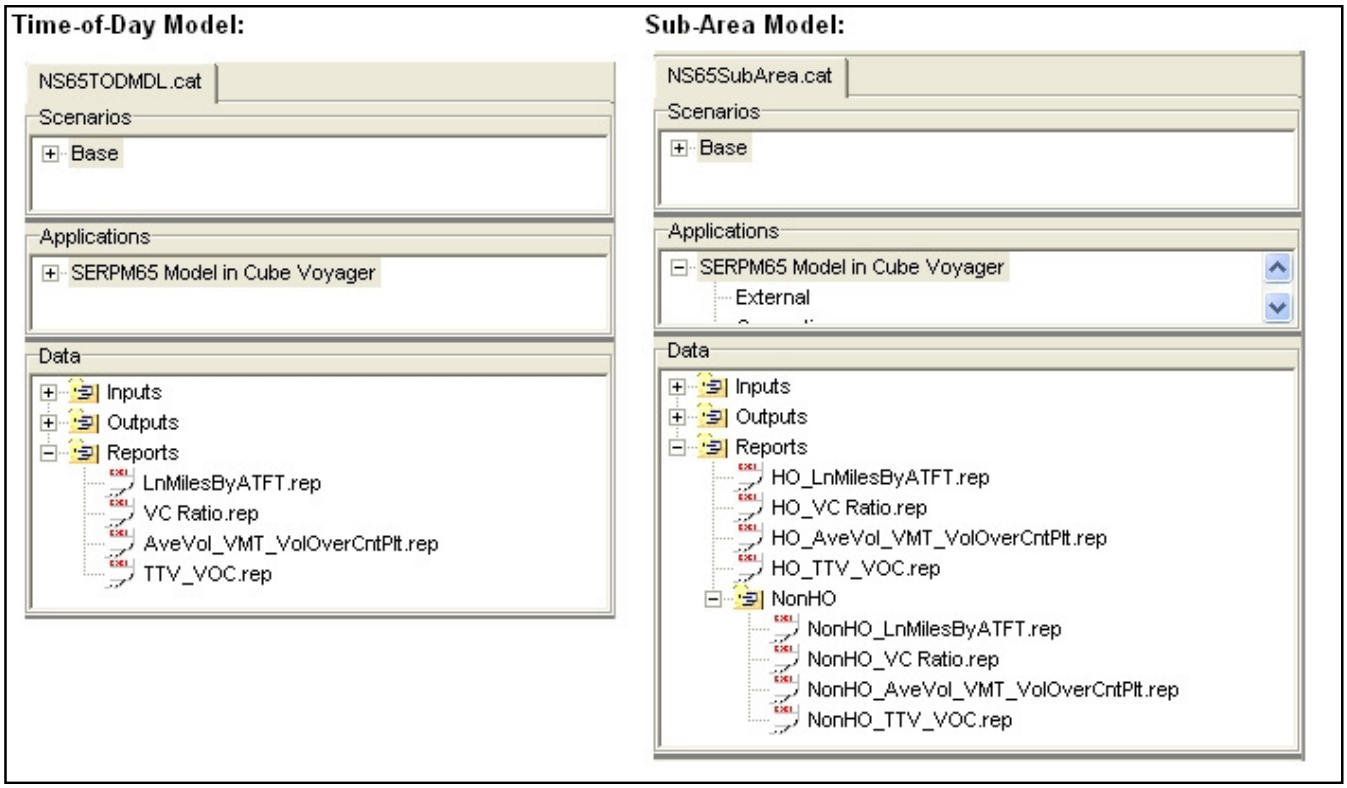
3. Model Adjustment and Result

This chapter provides a description of selected model adjustments and the selected summaries of model run options described in Chapter 2.

CV Scripted HEVAL with Windowed Area Reporting

One of the main tasks of this work order was to replace the Fortran Based HEVAL routine. The consultant also tested CV's report generator program to assess its capabilities and developed several reports, which were added to the catalog data section (see Data-Report of the catalog section): **Figure 3-1** is a screen capture of the reports that were added to the catalog section of both new models.

Figure 3-1: **CV Generated Sample Reports in Model's Catalog Section**



The sample CV reports for each of the model scenarios will be generated by invoking each of these REP files. Those reports are:

- Tabulation of Lane-Miles by facility and area type groups
- Tabulation of LOS C, D and E Volume_over_Capacity ratios by facility and area type groups and Volume/Count plot
- Tabulation of Average Volume and VMT by facility and area type groups as well as Volume/Count plot
- Tabulation of total travel time values and vehicle operating costs by facility and area type groups

Although the CV generated reports provide useful information, the reporting feature was not found to be a suitable replacement for the legacy HEVAL routine, primarily because of Cube Report's limited ability to perform calculations. Thus, CV Matrix and Network scripts were developed to replace the legacy FORTRAN HEVAL program.

CV scripts were developed to generate most of the useful ANALYSIS and VALIDATE mode HEVAL reports. The CV scripts do not use the ANALYSIS and/or VALIDATE keys. Instead, the scripts check the traffic counts on the loaded network and develop count related HEVAL reports. Otherwise count related reporting is omitted. The CV based scripts also generate additional reports not created in the FORTRAN based HEVAL program. In addition, CV's RMSE script developed in earlier models was enhanced by adding many volume/count metrics and the number of directional links for each case. Interested model users should review the three sample CV scripts for RMSE and HEVAL reporting in Appendix D. The complete scripts are not included in this report because of their size. Each of the HEVAL steps in the model will generate three distinct outputs:

- HEVAL **Overall Summary** report (see Appendix E)
- HEVAL **Detailed** report (see Appendix F)
- HEVAL **Detailed Screenline** report (see Appendix G)

These reports always contain capacity related statistics. The count related statistics are usually generated for the base year model with traffic counts in the loaded network. The detailed HEVAL reports contain summaries of a number of items separated by page numbers. The items and page numbers depend on whether or not traffic count related statistics are generated. **Figure 3-2** lists and describes the items in the detailed HEVAL report.

Figure 3-2: **Description of CV Based HEVAL Detailed Report Summary Table**

(A) With Counts:

Page No. 1 => Run Date & Time, FT and AT Group Description

Each page (**Nos. 2-30**) of Summary Tables for Loaded Network **With Counts** has statistics by...

(a) **AT Group** x **FT Group** x **No of Directional Lanes**
[Similar to FORTRAN based HEVAL "Validation" mode output tables]

(b) [*For **ALL** AT Groups*]: **FT Group** x **No of Directional Lanes**
[Similar to FORTRAN based HEVAL "Validation" mode output tables]

(c) **AT Group** x **FT Group**
[Similar to FORTRAN based HEVAL "Analysis" mode output tables]

[**Note**: *Centroid Connectors are excluded in all tabular summaries*]

Page	Items - Description of Table
2	**Number** of **Directional Links**
3	**Directional Miles**
4	**Directional Miles** for Links **with Counts**
5	**Percent Directional Miles** on Links **with Counts**
6	**Lane Miles**
7	Vehicle Miles Traveled (**VMT**) using **Volumes** on Links with Counts
8	Vehicle Miles Traveled (**VMT**) using **Counts** on Links with Counts
9	Ratio of **VMT Volume-over-Count** on Links with Counts

Figure 3-2 (continued): **Description of CV Based HEVAL Detailed Report Summary Table**

(A) With Counts: (contd.)

Page	Items - Description of Table
10	Vehicle Hours Traveled (**VHT**) using **Volumes** on Links with Counts
11	Vehicle Hours Traveled (**VHT**) using **Counts** on Links with Counts
12	Ratio of **VHT Volume-over-Count** on Links with Counts
13	Model Estimated Total **Volumes** on Links with Counts
14	Total **Counts** on Links with Counts
15	Ratio of **Volume-over-Count** on Links with Counts
16	**Total Volume** on All Links
17	**Average Volume** on All Links
18	**Volume Percentages** on All Links
19	**Total VMT** on All Links
20	**Total VHT** on All Links
21	**Posted Speed** (Weighted by Directional Miles) in MPH
22	**Original Speed** (Weighted by Directional Miles) in MPH
23	**Congested Speed** (Weighted by Directional Miles) in MPH
24	**Change in Speed** (Weighted by Directional Miles) in MPH
25	**Percent Change in Speed** (Weighted by Directional Miles) in MPH
26	**Volume-over-Capacity** Ratio for **LOS E**
27	**Volume-over-Capacity** Ratio for **LOS D**
28	**Volume-over-Capacity** Ratio for **LOS C**
29	Total **Travel Time Value (TTV, in year 20**xx**$)** on All Links
30	Total **Vehicle Operating Cost (VOC, in year 20**xx**$)** on All Links

(B) Without Counts:

Page No. 1 => Run Date & Time, FT and AT Group Description

Each page (**Nos. 2-19**) of Summary Tables for Loaded Network **Without Counts** has statistics by...

(a) **AT Group** x **FT Group** x **No of Directional Lanes**
[Similar to FORTRAN based HEVAL "Validation" mode output tables]

(b) [*For **ALL** AT Groups*]: **FT Group** x **No of Directional Lanes**
[Similar to FORTRAN based HEVAL "Validation" mode output tables]

(c) **AT Group** x **FT Group**
[Similar to FORTRAN based HEVAL "Analysis" mode output tables]

[**Note**: *Centroid Connectors excluded in all tabular summaries*]

Figure 3-2 (continued): **Description of CV Based HEVAL Detailed Report Summary Table**

(B) Without Counts: (contd.)

Page	Items - Description of Table
2	**Number** of **Directional Links**
3	**Directional Miles**
4	**Lane Miles**
5	**Total Volume** on All Links
6	**Average Volume** on All Links
7	**Volume Percentages** on All Links
8	**Total VMT** on All Links
9	**Total VHT** on All Links
10	**Posted Speed** (Weighted by Directional Miles) in MPH
11	**Original Speed** (Weighted by Directional Miles) in MPH
12	**Congested Speed** (Weighted by Directional Miles) in MPH
13	**Change in Speed** (Weighted by Directional Miles) in MPH
14	**Percent Change in Speed** (Weighted by Directional Miles) in MPH
15	**Volume-over-Capacity** Ratio for **LOS E**
16	**Volume-over-Capacity** Ratio for **LOS D**
17	**Volume-over-Capacity** Ratio for **LOS C**
18	Total **Travel Time Value (TTV, in year 20**xx**$)** on All Links
19	Total **Vehicle Operating Cost (VOC, in year 20**xx**$)** on All Links

Because of the large size of the detailed reports, Appendices F and G are only snippets of the reports. Users are should review the complete reports from the model output folder after a successful model run.

Both HEVAL and RMSE reports will be generated by each model application at different levels of geography as well as for user defined windowed areas. **Table 3-1** lists the name and description of HEVAL and RMSE reports that will be generated for a typical TOD model run. The windowed area reports (Nos. 25-36 and 49-52) will be generated if the catalog key {UserDefinedSubarea} is set to 1 and the area is defined. Users should consult either Table 2-3 or Cube on-screen annotation of user-defined windowed areas. Table B-1 has description of all catalog keys used in the new TOD model.

Table 3-2 lists the name and description of HEVAL and RMSE reports that will be generated for a non highway-only (often referred as "full" – see option 4F of Table 2-1 and Figure 2-1) run of the subarea model. All other options of subarea model runs employ highway-only run. **Table 3-3** lists the name and description of HEVAL and RMSE reports for highway-only subarea model runs. Similar to a TOD run, windowed area reports (Nos. 5, 10, 15, 28, 29, 34, 39, and 44) will be generated if the catalog key {UserDefinedSubarea} is set to 1 and the subarea is defined. Users should consult either Table 2-2 or CV model on-screen annotation for a description of the user-defined windowed areas. Table B-2 has description of all catalog keys of the new subarea model.

Table 3-1: **TOD Model Run – HEVAL and RMSE Related Filenames and Their Nomenclature**

		Description of Filename Notation				
No.	**FileName**	**Report Name**	**Vehicle**	**Period**	**Report Type**	**Area**
1	HEVAL-24H-Detailed-BO.PRN	HEVAL- Highway Evaluation Report		24H- Combined 3 Periods	Detailed- Detailed Report	BO- Broward County
2	HEVAL-24H-Detailed-MD.PRN					MD- Miami-Dade County
3	HEVAL-24H-Detailed-PB.PRN					PB- Palm Beach County
4	HEVAL-24H-Detailed-S65.PRN					S65- All Regions
5	HEVAL-24H-OverallSmry-BO.PRN				OverallSmry- Overall Summary	
6	HEVAL-24H-OverallSmry-MD.PRN					
7	HEVAL-24H-OverallSmry-PB.PRN					
8	HEVAL-24H-OverallSmry-S65.PRN					
9	HEVAL-24H-ScreenSmry-BO.PRN				ScreenSmry- Screenline Detailed Report	
10	HEVAL-24H-ScreenSmry-MD.PRN					
11	HEVAL-24H-ScreenSmry-PB.PRN					
12	HEVAL-24H-ScreenSmry-S65.PRN					
13	HEVAL-AMPK-Detailed.PRN			AMPK- AM Peak Period		
14	HEVAL-AMPK-OverallSmry.PRN					
15	HEVAL-AMPK-PreAsgn-Detailed.PRN			AMPK-PreAsgn - AM Peak Period @ Distribution Step (Preassignment)		
16	HEVAL-AMPK-PreAsgn-OverallSmry.PRN					
17	HEVAL-AMPK-PreAsgn-ScreenSmry.PRN					
18	HEVAL-AMPK-ScreenSmry.PRN					
19	HEVAL-OFPK-Detailed.PRN			OFPK- Off Peak Period		
20	HEVAL-OFPK-OverallSmry.PRN					
21	HEVAL-OFPK-ScreenSmry.PRN					
22	HEVAL-PMPK-Detailed.PRN			PMPK- PM Peak Period		
23	HEVAL-PMPK-OverallSmry.PRN					
24	HEVAL-PMPK-ScreenSmry.PRN					
25	HEVAL-WindowedArea-24H-Detailed.PRN					WindowedArea- User Defined Windowed Area
26	HEVAL-WindowedArea-24H-OverallSmry.PRN					
27	HEVAL-WindowedArea-24H-ScreenSmry.PRN					
28	HEVAL-WindowedArea-AMP-Detailed.PRN			AMP- AM Peak Period		
29	HEVAL-WindowedArea-AMP-OverallSmry.PRN					
30	HEVAL-WindowedArea-AMP-ScreenSmry.PRN					
31	HEVAL-WindowedArea-OFP-Detailed.PRN			OFP- Off Peak Period		
32	HEVAL-WindowedArea-OFP-OverallSmry.PRN					
33	HEVAL-WindowedArea-OFP-ScreenSmry.PRN					
34	HEVAL-WindowedArea-PMP-Detailed.PRN			PMP- PM Peak Period		
35	HEVAL-WindowedArea-PMP-OverallSmry.PRN					
36	HEVAL-WindowedArea-PMP-ScreenSmry.PRN					

Table 3-1(continued): **TOD Model Run – HEVAL and RMSE Related Filenames and Their Nomenclature**

		Description of Filename Notation				
No.	**FileName**	**Report Name**	**Vehicle**	**Period**	**Report Type**	**Area**
37	RMSE-24H-BO.PRN	RMSE- RMSE & Volume/Count Report				
38	RMSE-24H-MD.PRN					
39	RMSE-24H-PB.PRN					
40	RMSE-24H-S65.PRN					
41	RMSE-AMPK-Pre-S65.PRN			AMPK-Pre - AM Peak Period @ Distribution Step (Preassignment)		
42	RMSE-AMPK-S65.PRN					
43	RMSE-OFPK-S65.PRN					
44	RMSE-PMPK-S65.PRN					
45	RMSE-TRK-BO.PRN		TRK- Truck Traffic			
46	RMSE-TRK-MD.PRN					
47	RMSE-TRK-PB.PRN					
48	RMSE-TRK-S65.PRN					
49	RMSE-WindowedArea-24H.PRN					
50	RMSE-WindowedArea-AMP.PRN					
51	RMSE-WindowedArea-OFP.PRN					
52	RMSE-WindowedArea-PMP.PRN					
53	TRKEVL-24H-Detailed-BO.PRN	TRKEVL- Truck Evaluation Report				
54	TRKEVL-24H-Detailed-MD.PRN					
55	TRKEVL-24H-Detailed-PB.PRN					
56	TRKEVL-24H-Detailed-S65.PRN					
57	TRKEVL-24H-OverallSmry-BO.PRN					
58	TRKEVL-24H-OverallSmry-MD.PRN					
59	TRKEVL-24H-OverallSmry-PB.PRN					
60	TRKEVL-24H-OverallSmry-S65.PRN					
61	TRKEVL-24H-ScreenSmry-BO.PRN					
62	TRKEVL-24H-ScreenSmry-MD.PRN					
63	TRKEVL-24H-ScreenSmry-PB.PRN					
64	TRKEVL-24H-ScreenSmry-S65.PRN					

Table 3-2: **Subarea Non Highway-Only Model Run – HEVAL and RMSE Related Filenames and Their Nomenclature**

		Description of Filename Notation				
No.	**FileName**	**Report Name**	**Vehicle**	**Period & Model**	**Report Type**	**Area**
1	HEVAL-AD-Detailed-BO.PRN	HEVAL- Highway Evaluation Report		AD- All Day (non Highway-Only Run)	Detailed- Detailed Report	BO- Broward County
2	HEVAL-AD-Detailed-MD.PRN					MD- Miami-Dade County
3	HEVAL-AD-Detailed-PB.PRN					PB- Palm Beach County
4	HEVAL-AD-Detailed-S65.PRN					S65- All Regions
5	HEVAL-AD-OverallSmry-BO.PRN				OverallSmry- Overall Summary	
6	HEVAL-AD-OverallSmry-MD.PRN					
7	HEVAL-AD-OverallSmry-PB.PRN					
8	HEVAL-AD-OverallSmry-S65.PRN					
9	HEVAL-AD-ScreenSmry-BO.PRN				ScreenSmry- Screenline Detailed Report	
10	HEVAL-AD-ScreenSmry-MD.PRN					
11	HEVAL-AD-ScreenSmry-PB.PRN					
12	HEVAL-AD-ScreenSmry-S65.PRN					
13	HEVAL-AMPK-PreAsgn-Detailed.PRN			AMPK-PreAsgn - AM Peak Period @ Distribution Step (Preassignment)		
14	HEVAL-AMPK-PreAsgn-OverallSmry.PRN					
15	HEVAL-AMPK-PreAsgn-ScreenSmry.PRN					
16	RMSE-AD-BO.PRN	RMSE- RMSE & Volume/Count Report				
17	RMSE-AD-MD.PRN					
18	RMSE-AD-PB.PRN					
19	RMSE-AD-S65.PRN					
20	RMSE-AD-TRK-BO.PRN		TRK- Truck Traffic			
21	RMSE-AD-TRK-MD.PRN					
22	RMSE-AD-TRK-PB.PRN					
23	RMSE-AD-TRK-S65.PRN					
24	RMSE-AMPK-Pre-S65.PRN			AMPK-Pre - AM Peak Period @ Distribution Step (Preassignment)		
25	TRKEVL-AD-Detailed-BO.PRN	TRKEVL- Truck Evaluation Report				
26	TRKEVL-AD-Detailed-MD.PRN					
27	TRKEVL-AD-Detailed-PB.PRN					
28	TRKEVL-AD-Detailed-S65.PRN					
29	TRKEVL-AD-OverallSmry-BO.PRN					
30	TRKEVL-AD-OverallSmry-MD.PRN					
31	TRKEVL-AD-OverallSmry-PB.PRN					
32	TRKEVL-AD-OverallSmry-S65.PRN					
33	TRKEVL-AD-ScreenSmry-BO.PRN					
34	TRKEVL-AD-ScreenSmry-MD.PRN					
35	TRKEVL-AD-ScreenSmry-PB.PRN					
36	TRKEVL-AD-ScreenSmry-S65.PRN					

Table 3-3: **Subarea Highway-Only Model Run – HEVAL and RMSE Related Filenames and Their Nomenclature**

		Description of Filename Notation				
No.	**FileName**	**Report Name**	**Vehicle**	**Period & Model**	**Report Type**	**Area**
1	HEVAL-ADHO-Detailed-BO.PRN	HEVAL- Highway Evaluation Report		ADHO- All Day & Highway-Only	Detailed- Detailed Report	BO- Broward County
2	HEVAL-ADHO-Detailed-MD.PRN					MD- Miami-Dade County
3	HEVAL-ADHO-Detailed-PB.PRN					PB- Palm Beach County
4	HEVAL-ADHO-Detailed-S65.PRN					S65- All Regions
5	*HEVAL-ADHO-Detailed-WindowedArea.PRN*					*WindowedArea- User Defined Windowed Area*
6	HEVAL-ADHO-OverallSmry-BO.PRN				OverallSmry- Overall Summary	
7	HEVAL-ADHO-OverallSmry-MD.PRN					
8	HEVAL-ADHO-OverallSmry-PB.PRN					
9	HEVAL-ADHO-OverallSmry-S65.PRN					
10	*HEVAL-ADHO-OverallSmry-WindowedArea.PRN*					
11	HEVAL-ADHO-ScreenSmry-BO.PRN				ScreenSmry- Screenline Detailed Report	
12	HEVAL-ADHO-ScreenSmry-MD.PRN					
13	HEVAL-ADHO-ScreenSmry-PB.PRN					
14	HEVAL-ADHO-ScreenSmry-S65.PRN					
15	*HEVAL-ADHO-ScreenSmry-WindowedArea.PRN*					
16	HEVAL-AMPK-PreAsgn-Detailed.PRN			AMPK-PreAsgn - AM Peak Period @ Distribution Step (Preassignment)		
17	HEVAL-AMPK-PreAsgn-OverallSmry.PRN					
18	HEVAL-AMPK-PreAsgn-ScreenSmry.PRN					
19	RMSE-AMPK-Pre-S65.PRN	RMSE- RMSE & Volume/Count Report		AMPK-Pre - AM Peak Period @ Distribution Step (Preassignment)		
20	RMSE-HOAD-BO.PRN			HOAD- Highway-Only & All Day		
21	RMSE-HOAD-MD.PRN					
22	RMSE-HOAD-PB.PRN					
23	RMSE-HOAD-S65.PRN					
24	RMSE-HOAD-TRK-BO.PRN		TRK- Truck Traffic			
25	RMSE-HOAD-TRK-MD.PRN					
26	RMSE-HOAD-TRK-PB.PRN					
27	RMSE-HOAD-TRK-S65.PRN					
28	*RMSE-HOAD-TRK-UD.PRN*					*UD- User Defined Windowed Area*
29	*RMSE-HOAD-UD.PRN*					
30	TRKEVL-ADHO-Detailed-BO.PRN	TRKEVL- Truck Evaluation Report				
31	TRKEVL-ADHO-Detailed-MD.PRN					
32	TRKEVL-ADHO-Detailed-PB.PRN					
33	TRKEVL-ADHO-Detailed-S65.PRN					
34	*TRKEVL-ADHO-Detailed-WindowedArea.PRN*					
35	TRKEVL-ADHO-OverallSmry-BO.PRN					
36	TRKEVL-ADHO-OverallSmry-MD.PRN					
37	TRKEVL-ADHO-OverallSmry-PB.PRN					
38	TRKEVL-ADHO-OverallSmry-S65.PRN					
39	*TRKEVL-ADHO-OverallSmry-WindowedArea.PRN*					
40	TRKEVL-ADHO-ScreenSmry-BO.PRN					
41	TRKEVL-ADHO-ScreenSmry-MD.PRN					
42	TRKEVL-ADHO-ScreenSmry-PB.PRN					
43	TRKEVL-ADHO-ScreenSmry-S65.PRN					
44	*TRKEVL-ADHO-ScreenSmry-WindowedArea.PRN*					

Numerous CV applications and scripts were written for both new TOD and subarea models to generate all the reports described in Tables 3-1 to 3-3. Interested modelers proficient in scripting may want to study the model flowchart applications as well as the sample scripts identified in **Appendix D**.

RMSE and other volume/count ratios are very useful during model validation. Four sample RMSE reports for four base year model runs (TOD, subarea full model, subarea highway-only model and subarea highway-only model with user-defined windowed area) are shown in **Appendix H**. These RMSE reports represent only regional statistics. The complete simulation run will generate area, mode and period specific RMSE reports. A typical RMSE report (see Appendix H) contains:

- RMSE, total volume, total count, volume/count ratio and number of links for each of **13 volume groups**
- Total volume, total count and volume/count ratio, number of links **by facility type groups**
- Total volume, total count and volume/count ratio, number of links **by area type groups**
- Total volume, total count and volume/count ratio, number of links **by number of directional lanes**
- Total volume, total count and volume/count ratio, number of links **by screenlines, cutlines or corridors**
- Total volume, total count and volume/count ratio, number of links **by county**

RMSE reports are generated only if traffic counts exist in the network. Counts are expected only in the base year network.

Revised Model Capacities

The original scope of this work order was to revise the SERPM6.5 model to estimate link-by-link volume/capacity ratios at LOS C, D and E and to perform the volume/capacity calculation for capacity restraint on the basis of LOS E, as noted in the 2000 HCM. It should be noted that original SERPM6.5 models [Reference 1-3] read LOS E capacities from lookup tables and then converted them to LOS C capacities with UROAD factors before using the LOS C capacities in the assignment. The new versions of SERPM6.5 read LOS C, D and E capacities directly from lookup tables and use LOS E capacities in all traffic assignments. UROAD factors are NOT necessary in the new models and were removed from input files.

At the beginning of the work, it was found that the 2009 version of FDOT's LOS handbook [Reference 7] had replaced the 2002 version [Reference 8]. Although both versions of the LOS handbook refer to the 2000 HCM methodology, the general application tables in the 2009 version was found to be different from those in the 2002 version both in terms of values and adjustments. This was brought to the attention to FDOT staff and it was decided to implement the capacities from the 2009 version of FDOT's LOS handbook, which was the latest release. Table 7 (titled "*Generalized Peak Hour Directional Volumes for Florida's Urbanized Area*") of the 2009 LOS handbook was used to update SERPM6.5 capacities for freeways, uninterrupted flow highways and state and non-state signalized arterials. The adjustments shown in Table 7 of the 2009 LOS handbook were incorporated in the CV scripts. Excerpts of capacities and adjustments from Table 7 of the 2009 FDOT LOS handbook used in SERPM6.5 are shown in **Table 3-4**.

The assumptions on the percentage of heavy vehicles on each roadway class (see "Traffic Characteristics" sections of Table 7 of the 2009 FDOT LOS handbook) were used to derive capacities in passenger car units. The per-lane capacities were then entered into the model lookup tables (see Figures A-1 to A-3 of Appendix A for arterials, freeways and uninterrupted roadways, respectively). The adjustments that were implemented in CV's scripts are summarized in **Table 3-5**. Thus, capacities are not in vehicles with some assumption on the vehicle mix, but in passenger car units.

Table 3-4: **Excerpts from Table 7 of 2009 FDOT LOS Handbook [Reference 7]**

TABLE 7

Generalized **Peak Hour Directional** Volumes for Florida's **Urbanized Areas**[1]

9/4/09

STATE SIGNALIZED ARTERIALS

Class I (>0.00 to 1.99 signalized intersections per mile)

Lanes	Median	B	C	D	E
1	Undivided	510	820	880	***
2	Divided	1,560	1,890	1,960	***
3	Divided	2,400	2,860	2,940	***
4	Divided	3,240	3,830	3,940	***

Class II (2.00 to 4.50 signalized intersections per mile)

Lanes	Median	B	C	D	E
1	Undivided	**	560	810	860
2	Divided	**	1,330	1,770	1,870
3	Divided	**	2,080	2,680	2,830
4	Divided	**	2,830	3,590	3,780

Class III/IV (more than 4.50 signalized intersections per mile)

Lanes	Median	B	C	D	E
1	Undivided	**	270	630	790
2	Divided	**	670	1,500	1,700
3	Divided	**	1,050	2,330	2,570
4	Divided	**	1,440	3,170	3,450

FREEWAYS

Lanes	B	C	D	E
2	2,200	3,020	3,720	4,020
3	3,300	4,580	5,580	6,200
4	4,400	6,080	7,420	8,400
5	5,500	7,680	9,320	10,580
6	7,560	10,220	12,080	12,780

Freeway Adjustments

Auxiliary Lanes	Ramp Metering	Oversaturated Conditions*
+ 1,000	+ 5%	-10% of E

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
1	Undivided	400	800	1,140	1,440
2	Divided	1,770	2,560	3,320	3,760
3	Divided	2,660	3,840	4,980	5,650

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Major City/County Roadways - 10%
Other Signalized Roadways - 35%

State & Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Divided/Undivided & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 15%

One-Way Facility Adjustment

Multiply the corresponding volumes in this table by 1.20.

Table 3-5: **Summary of Capacity Adjustments Implemented in SERPM6.5 Models**

Freeways:

(a) Adjustments for Auxiliary Lanes:

(see Table 3-3 of 2009 FODT LOS Handbook)

Length (mi)	Capacity Increase (lanes)
<1.0	0.5
>=1.0 & <2.0	0.6
>=2.0 & <3.0	0.8
>= 3.0	1.0

Auxiliary Lanes Factor:
*(In script), +(0.5-1)*1000*
Func of Auxiliary Ln Dist
varies from 0.5-1.0 times
of 1000 (per direction)

(b) Adjustments for Ramp Metering:

RampMetering Factor:

Ramp_Meter_Fac(script) *(factor 1.05)*

Uninterrupted Roadways:

Uninterrupted Adjustments (In Script)

Lanes	Median	Exc Left Lns	Adj Factors
2	Divided	Yes	5%
Multi	Undiv	Yes	-5%
Multi	Undiv	No	-25%

Arterials:

Interrupted Adjustments (In Script)

One-Way Facility Adjustment:

Multiply the value by 1.20

Non-State Signalized Roadway Adjustments:

Major City/County Roadways => -10%

Other Signalized Roadways => -35%

State & Non-State Signalized Roadway Adjustments:

Divided/Undivided & Turn Lane Adjustments:

Lanes	Median	Exc Left Lns	Exc Right Lns	Adj Factors
2	Divided	Yes	No	5%
2	Undiv	No	No	-20%
Multi	Undiv	Yes	No	-5%
Multi	Undiv	No	No	-25%
-	-	-	Yes	15%

For the low speed collectors, the capacities in the original SERPM6.5 models [see References 1-3] were used as a basis for the LOS E capacities for each density based area type. LOS C-to-E and D-to-E factors of 0.75 and 0.875 were assumed to derive LOS C and LOS D capacities. The per-lane capacities for low speed roadways and collectors are presented in Figure A-6 in Appendix A.

Table C-1 provides a complete description of all unloaded highway network attributes. The CV script that includes all the capacity related adjustments are listed in **Figure A-11** of Appendix A. Interested modelers should review the adjusted CV scripts. The new versions of models require three new indicator type attributes in the highway network required by the 2009 LOS handbook for the adjustment of capacities. The attributes (see numbers 102 to 104 of Table C-1) are:

- **RmpMtrInd** - An indicator for Ramp metering
- **AuxLnDist** - Auxiliary Lane(s) Distance
- **RightTurn** – An indicator of exclusive Right Turn

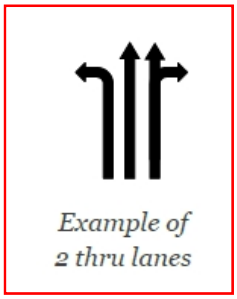
Currently, these three attributes are filled with the default values of zero. **Users MUST update these attributes with appropriate values (*see below*) in order to incorporate their effects in the capacities.** The capacity calculator script also uses other network attributes (see Table C-1: 8-Twoway, 68-Divided, 69-Leftturn) in capacity adjustments.

> ***Ramp Metering***: Freeway ramp metering has the positive benefit of smoothing out queues for traffic entering a freeway, particularly during peak travel times. This benefit is reflected by increasing the volumes shown in Tables 3-4 or 3-5 by 5 percent. Ramp metering strategies reduce amount of congestion by providing uniform gaps between entering vehicles and may therefore

reduce the probability of flow breakdown on the freeway mainline. Neither HCM 2000 nor the 2009 FDOT LOS handbook [Reference 7] has specific recommendations on the extent of the freeway links that should be identified to get the benefits of the ramp metering. In the absence of any specific recommendation, users should code "1" for **RmpMtrInd** on all through freeway general purpose links extending from the upstream interchange of the ramp where ramp metering is implemented.

Freeway Auxiliary Lane & Exclusive Turn Lanes: Auxiliary lanes are additional lanes on freeways that connect on ramps and off ramps of adjacent interchanges. In other words, an additional lane on a freeway connects an on ramp of one interchange to the off ramp of the downstream interchange. Auxiliary lanes are widely considered one of the most cost effective ways to increase the capacity and LOS of a freeway. Their effectiveness is largely dependent upon their length as vehicles weave and makes use of the lane between the ramps.

Freeway auxiliary lanes can have significant LOS and capacity benefits for freeways. The benefit depends primarily on the volumes entering/exiting the freeway facility and also upon the length of the lanes. The values shown in Table 3-4 apply only to the through lanes. The number of through lanes is clearly one of the most important variables when analyzing a roadway's capacity and LOS. **Emphasis is placed on "through" lanes, lanes that directly accommodate thru traffic. The number should include shared lanes (e.g., through /right or through /left), but should not include exclusive (left or right) turn lanes or two-way left turn lanes on arterials, auxiliary lanes on freeways, or passing lanes on two-lane highways.**



Example of 2 thru lanes

If there are exclusive left or right turn lanes, then users should be code "1" for "LeftTurn" or "RightTurn" attributes of the highway network. **User should also make sure that the number of auxiliary lane(s) is NOT counted in the directional (through) lanes**. The model capacity adjustment process will simply add the volumes shown in Table 3-5. Users should enter the auxiliary lane distance ("***AuxLnDist***" attribute of the network) in miles, extending from on-ramp to off-ramp, on all links of the directional freeways thru links.

For low speed collectors, the capacities in the original SERPM6.5 models [see Reference 1-3] were used as a basis for the LOS E capacities for each density based area type. LOS C-to-E and D-to-E factors of 0.75 and 0.875 were then used to derive LOS C and LOS D capacities. The per-lane capacities of low speed roadways and collectors are presented in Figure A-6 in Appendix A.

Ramp capacities were derived from those used in the FSUTMS 2-digit area type used in SERPM5. The following assumptions were made to derive the new SERPM6.5 ramp capacities:

- Use the SERPM5 summary table (TR 2, Table 2-6) for LOS E capacities in vehicles per hour
- Use 3-6% truck based on area types to derive the capacities in passenger cars (CBD & High density AT = 3%, Medium density AT= 4%, Low density AT=5% and very low density AT=6%)
- Assume that the 1-lane facility capacity/lane is 10% less than for multilane ramps
- Use LOS C-to-E and D-to-E factors of 0.75 and 0.875 to derive LOS C and LOS D capacities

The derived capacities were then entered in the SERPM6.5 lookup tables (see Figures A-4, A-5, and A-7 to A-10 of Appendix A). Although different files were maintained, only loop on/off ramps are different (smaller) than the non-loop off/on ramps capacities.

Road User Cost Tabulation

The new SERPM6.5 models include a process to estimate Road User Cost (RUC) on a link-by-link basis. The road user costs are separated in two major components: (1) Travel Time Value (TTV) and (2) Vehicle Operating Cost (VOC). Road user costs are based on values reported in reports [see References 4-5]. Users should review these reports and the calculator program [Reference 6] to understand the road user costs and component adopted for SERPM6.5.

The RUC calculation process was implemented in the new HEVAL reporting scripts to create tabulations similar to other HEVAL tables (see Figure 3-1). Overall systemwide values are also reported in the overall summary report (see Appendix E). Some systemwide values are reported later in this chapter. The TTV and VOC values used in the model are based on year 2004 dollars (see listing of two lookup tables in Figures 2-3 and 2-4). The process implemented in the model provides options to account for inflation. Two separate inflation factors were added for TTV and VOC. The values implemented in the model were based on the 2004 and 2030 data from the RUC calculator program [see Reference 6].

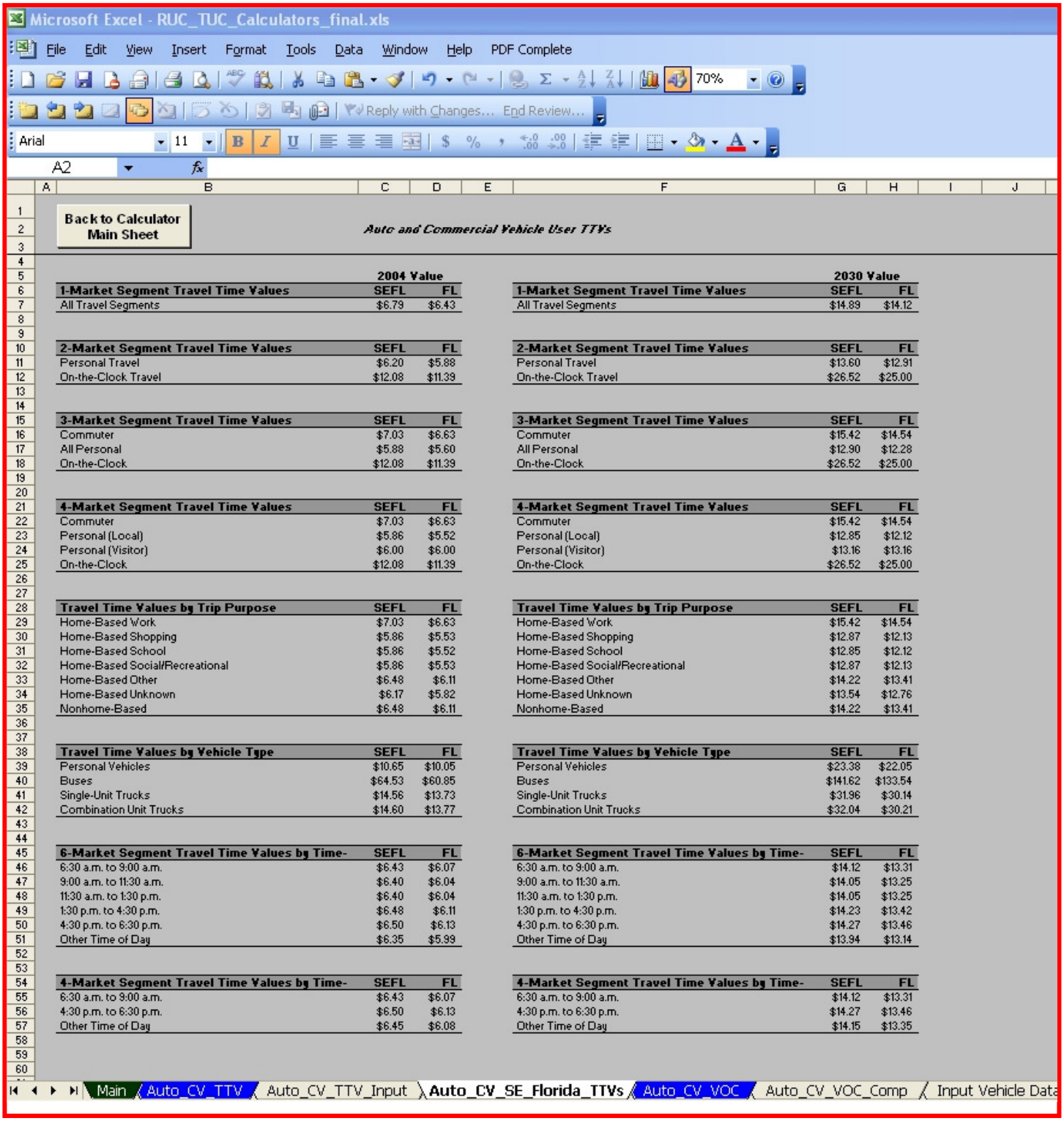
The value of the TTV inflation rate was derived by running the calculator program using 2004 and 2030 as base and target years in TTV input tab of the calculator program. Note that the TTV values are based mainly on wage rates. Users can input alternative wage values instead of the default values used in the program. The results of the TTV (see **Figure 3-3**) values of 2004 and 2030 for SEFL (Southeast Florida) were entered into the compound interest formula [Future value = Base Value (1+interest rate)^(Difference of Base and Future years)] to derive the inflation rate for the TTV. A representative value of 3.07 percent was selected as an inflation rate of the TTV by comparing the rates of different market segments, time of day, trip purpose, and vehicle type.

Figure 2-5 presents different components of the VOC. The values of VOC are primarily dependent on speed and cost of fuel. Users can enter the following data in the RUC calculator program to see the results of VOC:

- Current fuel price ($/gallon not including tax)
- Current year
- Target year (Later than 1980)
- Inflation factor over 2004 (if available)
- Southeast Florida (and average Florida) vehicle shares
- Total distance traveled (miles per year)
- EPA Fuel economy (miles per gallon at 45 mph)
- Speed (mph)
- Original starting manufacturer's suggested retail prices (MSRP)
- City/highway gas efficiency factor
- Proportion of highway mileage/total mileage

Similar to the TTV inflation rate, the value of VOC inflation rate was derived by running the calculator program using 2004 and 2030 as base and target years at speed of 45 mph with the values of cost of fuel, vehicles mixes and other permissible input, using program defaults. The weighted SEFL VOC values at years 2004 and 2030 (see **Figure 3-4**) were then entered into the compound interest formula. A representative value of 2.31 percent was selected as an inflation rate of the VOC.

Figure 3-3: **Output of Auto and Commercial Vehicle User TTVs Using 2004 (Base) and 2030 (Target) years [Note: *This output was generated by running the RUC calculator Program (see Reference 6)]***



Microsoft Excel - RUC_TUC_Calculators_final.xls

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Auto and Commercial Vehicle User TTVs

2004 Value		
1-Market Segment Travel Time Values	**SEFL**	**FL**
All Travel Segments	$6.79	$6.43

2030 Value		
1-Market Segment Travel Time Values	**SEFL**	**FL**
All Travel Segments	$14.89	$14.12

2-Market Segment Travel Time Values	**SEFL**	**FL**
Personal Travel	$6.20	$5.88
On-the-Clock Travel	$12.08	$11.39

2-Market Segment Travel Time Values	**SEFL**	**FL**
Personal Travel	$13.60	$12.91
On-the-Clock Travel	$26.52	$25.00

3-Market Segment Travel Time Values	**SEFL**	**FL**
Commuter	$7.03	$6.63
All Personal	$5.88	$5.60
On-the-Clock	$12.08	$11.39

3-Market Segment Travel Time Values	**SEFL**	**FL**
Commuter	$15.42	$14.54
All Personal	$12.90	$12.28
On-the-Clock	$26.52	$25.00

4-Market Segment Travel Time Values	**SEFL**	**FL**
Commuter	$7.03	$6.63
Personal (Local)	$5.86	$5.52
Personal (Visitor)	$6.00	$6.00
On-the-Clock	$12.08	$11.39

4-Market Segment Travel Time Values	**SEFL**	**FL**
Commuter	$15.42	$14.54
Personal (Local)	$12.85	$12.12
Personal (Visitor)	$13.16	$13.16
On-the-Clock	$26.52	$25.00

Travel Time Values by Trip Purpose	**SEFL**	**FL**
Home-Based Work	$7.03	$6.63
Home-Based Shopping	$5.86	$5.53
Home-Based School	$5.86	$5.52
Home-Based Social/Recreational	$5.86	$5.53
Home-Based Other	$6.48	$6.11
Home-Based Unknown	$6.17	$5.82
Nonhome-Based	$6.48	$6.11

Travel Time Values by Trip Purpose	**SEFL**	**FL**
Home-Based Work	$15.42	$14.54
Home-Based Shopping	$12.87	$12.13
Home-Based School	$12.85	$12.12
Home-Based Social/Recreational	$12.87	$12.13
Home-Based Other	$14.22	$13.41
Home-Based Unknown	$13.54	$12.76
Nonhome-Based	$14.22	$13.41

Travel Time Values by Vehicle Type	**SEFL**	**FL**
Personal Vehicles	$10.65	$10.05
Buses	$64.53	$60.85
Single-Unit Trucks	$14.56	$13.73
Combination Unit Trucks	$14.60	$13.77

Travel Time Values by Vehicle Type	**SEFL**	**FL**
Personal Vehicles	$23.38	$22.05
Buses	$141.62	$133.54
Single-Unit Trucks	$31.96	$30.14
Combination Unit Trucks	$32.04	$30.21

6-Market Segment Travel Time Values by Time-	**SEFL**	**FL**
6:30 a.m. to 9:00 a.m.	$6.43	$6.07
9:00 a.m. to 11:30 a.m.	$6.40	$6.04
11:30 a.m. to 1:30 p.m.	$6.40	$6.04
1:30 p.m. to 4:30 p.m.	$6.48	$6.11
4:30 p.m. to 6:30 p.m.	$6.50	$6.13
Other Time of Day	$6.35	$5.99

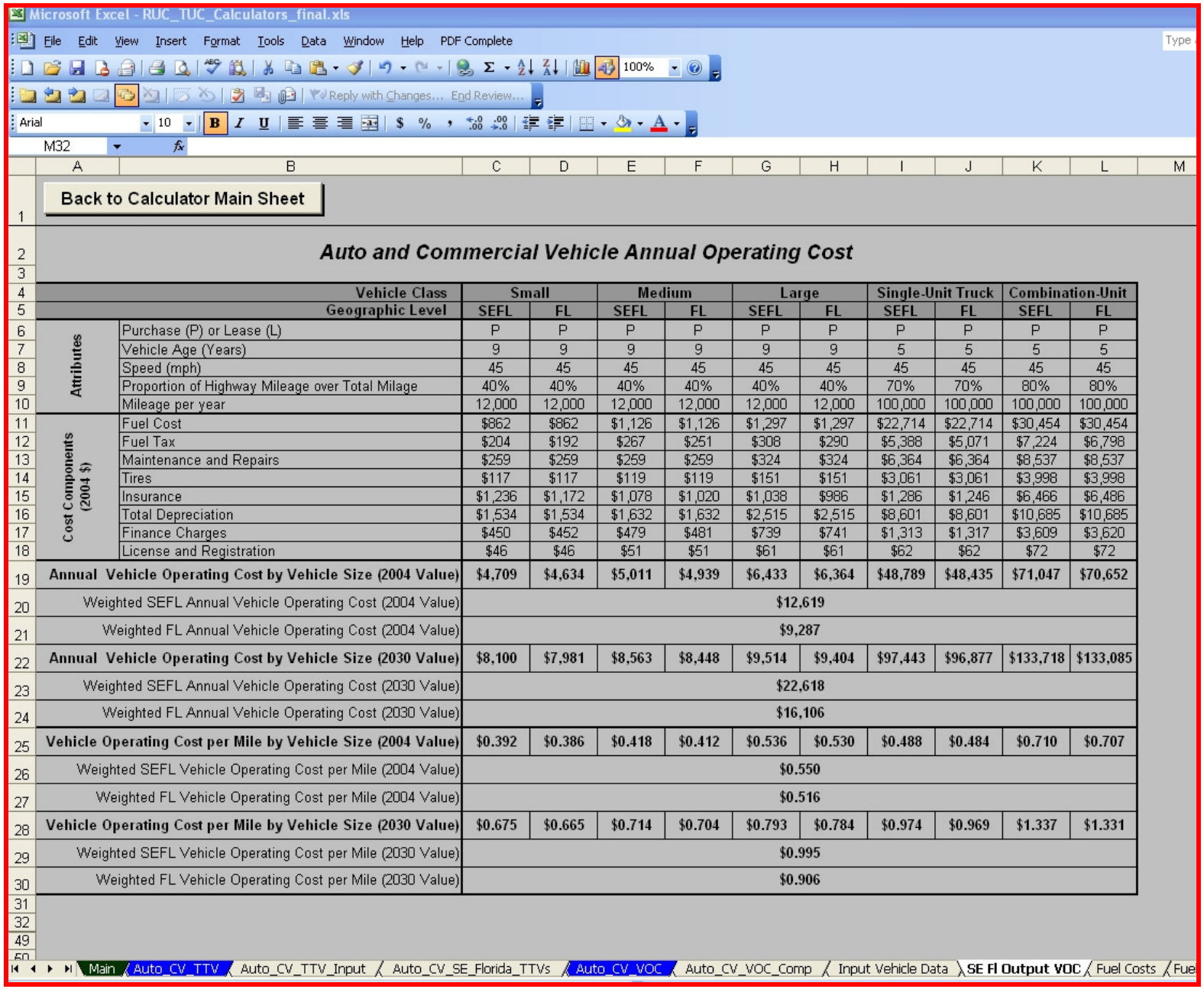
6-Market Segment Travel Time Values by Time-	**SEFL**	**FL**
6:30 a.m. to 9:00 a.m.	$14.12	$13.31
9:00 a.m. to 11:30 a.m.	$14.05	$13.25
11:30 a.m. to 1:30 p.m.	$14.05	$13.25
1:30 p.m. to 4:30 p.m.	$14.23	$13.42
4:30 p.m. to 6:30 p.m.	$14.27	$13.46
Other Time of Day	$13.94	$13.14

4-Market Segment Travel Time Values by Time-	**SEFL**	**FL**
6:30 a.m. to 9:00 a.m.	$6.43	$6.07
4:30 p.m. to 6:30 p.m.	$6.50	$6.13
Other Time of Day	$6.45	$6.08

4-Market Segment Travel Time Values by Time-	**SEFL**	**FL**
6:30 a.m. to 9:00 a.m.	$14.12	$13.31
4:30 p.m. to 6:30 p.m.	$14.27	$13.46
Other Time of Day	$14.15	$13.35

Main | Auto_CV_TTV | Auto_CV_TTV_Input | **Auto_CV_SE_Florida_TTVs** | Auto_CV_VOC | Auto_CV_VOC_Comp | Input Vehicle Data

Figure 3-4: **Output of Auto and Commercial Vehicle Annual Operating Cost Using 2004 (Base) and 2030 (Target) years at 45 mph Speed**
[Note: ***This output was generated by running the RUC calculator Program (see Reference 6)]***



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Auto and Commercial Vehicle Annual Operating Cost

	Vehicle Class	Small		Medium		Large		Single-Unit Truck		Combination-Unit	
	Geographic Level	SEFL	FL	SEFL	FL	SEFL	FL	SEFL	FL	SEFL	FL
Attributes	Purchase (P) or Lease (L)	P	P	P	P	P	P	P	P	P	P
Attributes	Vehicle Age (Years)	9	9	9	9	9	9	5	5	5	5
Attributes	Speed (mph)	45	45	45	45	45	45	45	45	45	45
Attributes	Proportion of Highway Mileage over Total Milage	40%	40%	40%	40%	40%	40%	70%	70%	80%	80%
Attributes	Mileage per year	12,000	12,000	12,000	12,000	12,000	12,000	100,000	100,000	100,000	100,000
Cost Components (2004 $)	Fuel Cost	$862	$862	$1,126	$1,126	$1,297	$1,297	$22,714	$22,714	$30,454	$30,454
Cost Components (2004 $)	Fuel Tax	$204	$192	$267	$251	$308	$290	$5,388	$5,071	$7,224	$6,798
Cost Components (2004 $)	Maintenance and Repairs	$259	$259	$259	$259	$324	$324	$6,364	$6,364	$8,537	$8,537
Cost Components (2004 $)	Tires	$117	$117	$119	$119	$151	$151	$3,061	$3,061	$3,998	$3,998
Cost Components (2004 $)	Insurance	$1,236	$1,172	$1,078	$1,020	$1,038	$986	$1,286	$1,246	$6,466	$6,486
Cost Components (2004 $)	Total Depreciation	$1,534	$1,534	$1,632	$1,632	$2,515	$2,515	$8,601	$8,601	$10,685	$10,685
Cost Components (2004 $)	Finance Charges	$450	$452	$479	$481	$739	$741	$1,313	$1,317	$3,609	$3,620
Cost Components (2004 $)	License and Registration	$46	$46	$51	$51	$61	$61	$62	$62	$72	$72
Annual Vehicle Operating Cost by Vehicle Size (2004 Value)		**$4,709**	**$4,634**	**$5,011**	**$4,939**	**$6,433**	**$6,364**	**$48,789**	**$48,435**	**$71,047**	**$70,652**
Weighted SEFL Annual Vehicle Operating Cost (2004 Value)		**$12,619**									
Weighted FL Annual Vehicle Operating Cost (2004 Value)		**$9,287**									
Annual Vehicle Operating Cost by Vehicle Size (2030 Value)		**$8,100**	**$7,981**	**$8,563**	**$8,448**	**$9,514**	**$9,404**	**$97,443**	**$96,877**	**$133,718**	**$133,085**
Weighted SEFL Annual Vehicle Operating Cost (2030 Value)		**$22,618**									
Weighted FL Annual Vehicle Operating Cost (2030 Value)		**$16,106**									
Vehicle Operating Cost per Mile by Vehicle Size (2004 Value)		**$0.392**	**$0.386**	**$0.418**	**$0.412**	**$0.536**	**$0.530**	**$0.488**	**$0.484**	**$0.710**	**$0.707**
Weighted SEFL Vehicle Operating Cost per Mile (2004 Value)		**$0.550**									
Weighted FL Vehicle Operating Cost per Mile (2004 Value)		**$0.516**									
Vehicle Operating Cost per Mile by Vehicle Size (2030 Value)		**$0.675**	**$0.665**	**$0.714**	**$0.704**	**$0.793**	**$0.784**	**$0.974**	**$0.969**	**$1.337**	**$1.331**
Weighted SEFL Vehicle Operating Cost per Mile (2030 Value)		**$0.995**									
Weighted FL Vehicle Operating Cost per Mile (2030 Value)		**$0.906**									

In the summary of the results in all model runs, the analysis year corresponds to the model scenario years (2005 base, 2030 and 2035 cost-feasible). These inflation rate values along with the Base and Analysis years for inflation rates are echoed in all overall HEVAL summary reports (see listings in Appendix E). The detailed HEVAL summary report also provides tabulations of the TTV and VOC (see Figure 3-2) by AT group, FT group and number of directional lanes. **Table 3-6** presents overall summaries of TTV and VOC for the TOD model run for all its scenarios. Users also have an option to generate the tabulations of TTV and VOC by FT and AT group through catalog reports:

- TOD model: TTV_VOC.rep
- Subarea model: HO_TTV_VOC.rep & NonHO_TTV_VOC.rep

The CV report generated for the base year TOD model run is shown in **Figure 3-5**. Users can change the analysis year as well as the inflation rates through the CV keys. An option to change the base year for the calculation of TTV and VOC was also added to the process. For changes in base year for TTV and VOC calculation, the user should make the appropriate changes to the two lookup tables (FTRptGrp_TTVLkup.dbf & VOCSpdLkup.dbf). Chapter 2 provides instructions for recreating the VOC lookup table. CV keys (see nos. 96-100 of Table B-1 and nos. 87-91 of Table B-2 for TOD and Subarea models, respectively) were added to the models to facilitate these changes.

Reversible Managed Lane and Open-Road Tolling Related Changes

The new SERPM6.5 models include a process for modeling reversible managed lanes and open-road tolling that was tested in regional LRTP model runs. A new attribute (Reversible, see Table C-1) was added in the network to allow proper modeling of reversible lanes in the TOD model. This attribute contains values of 0, 1 and 2. If "reversible" attribute is coded with a value of 1, the model will use the links for AM Peak Assignment only. For PM and off peak assignments, the links will not be used. If a link is coded with "Reversible" attribute with a value of 2, the model will use the links for PM peak assignment only. If "reversible" attribute is coded with a zero, the model will use the link for all time period assignments.

Scripts were changed in Highway Paths, Trip Distribution and Assignment steps so that appropriate traffic assignment will be applied on reversible lanes. The following methodology was used in the scripts:

- ✓ No traffic assigned to links with code of REVERSIBLE=2, in AM period
- ✓ No traffic assigned to links with codes of REVERSIBLE=1, in PM period
- ✓ No traffic assigned to links with codes of REVERSIBLE=1, 2, in Off-peak period.

Note that this procedure was used for an I-595 reversible lane alternative. However, this method can be applied elsewhere. The user is cautioned to review the characteristics of the reversible lanes operation before setting up the modeling method, and the user may need to make changes to scripts, if the operational characteristics are different from the I-595 assumptions.

A revised coding scheme was used for modeling Open Road Tolling (ORT) process and was tested in 2035 LRTP model runs. For ORT process, the following changes are required:

- ✓ All ORT toll entry links were coded with TOLLTYPE=3, which indicates "Sunpass only" links. SERPM6.5 has in-built scripts for handling "Sunpass only" links, limiting the service times to minimum.
- ✓ For all links with TOLLTYPE=3, the acceleration and deceleration flags were made zero in the scripts.
- ✓ SVCSECONDS field was populated with a value of 1second.
- ✓ The corresponding toll amounts are coded in CARTOLL field.

The model scripts were revised in network processing script, the AM peak pre-assignment and final distribution, and the assignment scripts of final AM, PM and off peak periods.

Table 3-6: **Systemwide TTV and VOC and Their Indices of TOD Model Scenarios**

ITEM		All (Car and Truck) Traffic: All Period Combined	AM Peak Period (1)	PM Peak Period (2)	Off Peak Period (3)	Truck Only: All Period Combined
Total VMT:	Year 2005	112,661,970	21,087,496	24,896,296	66,678,183	7,478,487
Total VHT:	Year 2005	3,106,717	589,001	737,941	1,779,774	194,690
Total Travel Time Value (TTV, in 2005$):	Year 2005	30,744,746	5,672,617	7,115,822	17,956,307	2,902,434
Total Vehicle Operating Cost (VOC, in 2005$):	Year 2005	55,994,784	10,453,419	12,473,864	33,067,501	5,144,126
TTV Per Vehicle Hour, in 2005$:	Year 2005	9.896	9.631	9.643	10.089	14.908
VOC Per Vehicle Mile, in 2005$:	Year 2005	0.497	0.496	0.501	0.496	0.688
Total VMT:	Year 2030	157,249,706	28,788,803	34,129,083	94,331,811	9,593,841
Total VHT:	Year 2030	4,544,302	829,433	1,086,155	2,628,714	260,986
Total Travel Time Value (TTV, in 2030$):	Year 2030	97,182,613	17,313,866	22,679,915	57,188,831	8,218,373
Total Vehicle Operating Cost (VOC, in 2030$):	Year 2030	139,422,835	25,401,193	30,675,925	83,345,717	11,656,567
TTV Per Vehicle Hour, in 2030$:	Year 2030	21.386	20.874	20.881	21.755	31.490
VOC Per Vehicle Mile, in 2030$:	Year 2030	0.887	0.882	0.899	0.884	1.215
Total VMT:	Year 2035	160,119,397	27,955,317	33,102,684	99,061,417	9,037,282
Total VHT:	Year 2035	4,953,123	836,583	1,076,678	3,039,862	257,198
Total Travel Time Value (TTV, in 2035$):	Year 2035	122,620,515	20,049,409	25,808,295	76,762,811	9,458,781
Total Vehicle Operating Cost (VOC, in 2035$):	Year 2035	161,196,696	27,865,409	33,443,041	99,888,245	12,225,618
TTV Per Vehicle Hour, in 2035$:	Year 2035	24.756	23.966	23.970	25.252	36.776
VOC Per Vehicle Mile, in 2035$:	Year 2035	1.007	0.997	1.010	1.008	1.353

Notes/Assumptions on TTV and VOC:

(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2005/2030/2035
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

Figure 3-5: **CV Report Generated TTV and VOC Tabulations for TOD Base Scenario**

Total Travel Time Value (TTV, in $) - Includes Centroid Connectors (FTG=5)

Cell Values: Sum of TTV

	Area Type Group					
Facility Type Group	**1**	**2**	**3**	**4**	**5**	**Total**
1	48,314	681,532	1,990,926	2,581,447	28,859	5,331,077
2	11,502	37,327	27,423	381,792	475,588	933,632
4	159,418	1,080,425	5,478,979	8,751,015	472,484	15,942,321
5	63,857	487,580	1,597,857	3,157,521	357,358	5,664,174
6	191,910	849,760	2,077,176	1,673,662	173,321	4,965,829
7	35,244	144,098	459,127	477,242	14,789	1,130,500
8			274,493	374,029		648,522
9	352	5,320	244,671	1,515,841	188,426	1,954,609
Total	510,596	3,286,042	12,150,652	18,912,549	1,710,825	36,570,664

Total Vehicle Operating Cost (VOC, in $) - Includes Centroid Connectors (FTG=5)

Cell Values: Sum of VOC

	Area Type Group					
Facility Type Group	**1**	**2**	**3**	**4**	**5**	**Total**
1	94,571	1,358,485	4,502,624	6,456,888	110,823	12,523,390
2	18,324	62,510	46,317	722,765	906,776	1,756,693
4	237,350	1,497,388	8,616,017	15,185,843	799,423	26,336,021
5	51,473	439,484	1,476,731	2,895,864	315,980	5,179,532
6	264,741	1,117,045	2,820,046	2,639,860	258,730	7,100,422
7	44,312	180,215	574,993	626,656	22,121	1,448,296
8			518,096	717,025		1,235,121
9	349	10,407	636,178	4,420,861	695,029	5,762,825
Total	711,119	4,665,535	19,191,002	33,665,763	3,108,883	61,342,301

Figure 3-5 (continued): **CV Report Generated TTV and VOC Tabulations for TOD Base Scenario**

Total Travel Time Value (TTV, in $) - Excludes Centroid Connectors (FTG=5)

Cell Values: Sum of TTV

	Area Type Group					
Facility Type Group	**1**	**2**	**3**	**4**	**5**	**Total**
1	48,314	681,532	1,990,926	2,581,447	28,859	5,331,077
2	11,502	37,327	27,423	381,792	475,588	933,632
4	159,418	1,080,425	5,478,979	8,751,015	472,484	15,942,321
6	191,910	849,760	2,077,176	1,673,662	173,321	4,965,829
7	35,244	144,098	459,127	477,242	14,789	1,130,500
8			274,493	374,029		648,522
9	352	5,320	244,671	1,515,841	188,426	1,954,609
Total	446,739	2,798,462	10,552,794	15,755,028	1,353,467	30,906,491

Total Vehicle Operating Cost (VOC, in $) - Excludes Centroid Connectors (FTG=5)

Cell Values: Sum of VOC

	Area Type Group					
Facility Type Group	**1**	**2**	**3**	**4**	**5**	**Total**
1	94,571	1,358,485	4,502,624	6,456,888	110,823	12,523,390
2	18,324	62,510	46,317	722,765	906,776	1,756,693
4	237,350	1,497,388	8,616,017	15,185,843	799,423	26,336,021
6	264,741	1,117,045	2,820,046	2,639,860	258,730	7,100,422
7	44,312	180,215	574,993	626,656	22,121	1,448,296
8			518,096	717,025		1,235,121
9	349	10,407	636,178	4,420,861	695,029	5,762,825
Total	659,646	4,226,051	17,714,271	30,769,899	2,792,902	56,162,769

Systemwide Highway Evaluation Results

Although there are many ways to run the subarea model, because of limited study resources, only three options were tested. In addition, a TOD model run was made for all scenarios. The 2035 CF scenario was added in both TOD and subarea models and its input and output data were carefully reviewed and updated. In addition, consistency in the model data and programs was evaluated throughout this task order work. The four model runs that were carried out to evaluate the validation results of the new versions of the TOD and Subarea models are:

- TOD model run for base (2005) and 2030 and 2035 CF scenarios
- (Option 4F) Subarea "Full" run for base (2005) and 2030 and 2035 CF scenarios
- (Option 4E) Subarea "Highway-Only" run for base (2005) and 2030 and 2035 CF scenarios
- (Option 4A) Subarea "Highway-Only" run with user-defined area for base (2005) and 2030 and 2035 CF scenarios

The loaded network attributes were named so that they are distinguishable among the three main types of the loaded networks:

(1) Subarea "Highway-Only" (see **Table C-2** for description of loaded network attributes),
(2) Subarea "Full" (see **Table C-3** for description of loaded network attributes), and
(3) TOD (see **Table C-4** for description of loaded network attributes).

Users should pay attention to the description of new capacity related attributes with LOS C, D and E in these tables. All models use the same input highway network. **Table C-1** of Appendix C provides description of the SERPM6.5 unloaded network. The new attributes that were added in the new versions of the models are highlighted in this table.

SERPM6.5 models generate numerous outputs at all steps of the model runs. Unlike, TR1 & 2 of original SERPM6.5 reports [References 1 & 3], this report presents only the overall systemwide highway model validation results of the four model runs. However, the results of all steps of the model chain were reviewed to make sure those results are reasonable and compare well with the results presented in earlier reports [see References 1 & 3]. Results of 2005 systemwide model validation statistics for TOD are summarized in **Table 3-7**. These results were summarized using the "Overall HEVAL Summary" outputs of the new CV scripted HEVAL. All volume/count ratios of all periods and that combined for 24 hour against 24-counts are in the ranges of 1.01 to 1.07. The ratios for the original model were in the range of 0.98 to 1.03. The overall volume/capacity ratios at LOS C, D and E are also reasonable. The overall RMSE is 35.96 percent. It was 31.8 percent in the original model.

Systemwide highway model statistics of 2030 and 2035 cost-feasible scenarios of the TOD run for each time period as well as 24-hour combined statistics are summarized in **Tables 3-8** and **3-9**, respectively. Once again, these results were summarized using the "Overall HEVAL Summary" outputs of new CV scripted HEVAL. Unlike the base year, the future year outputs do not contain count related statistics. The trends in the model statistics among the scenario years appear to be very reasonable.

Systemwide highway model validation statistics results of three base year subarea model runs for the 24-hour period are summarized and compared to those of the TOD model run in **Table 3-10**. The volume/count ratios vary 0.97 to 1.01; these ratios for the comparable options of the original model were 0.95 to 0.99. The overall RMSE of the three subarea model run options are 33.64, 33.98 and 37.4 and the corresponding values of the original subarea model runs were 31.1, 31.6 and 34.4; respectively. The systemwide highway model statistics of 2030 and 2035 cost-feasible scenarios of the subarea model run options are summarized in **Tables 3-11** and **3-12**, respectively. These results were also compared to corresponding TOD model run statistics. The results are very similar among the model run options for the same year and exhibit reasonable trends for the model scenario years.

In most cases, these systemwide highway assignment results compare very well among model options. Moreover, the trends in the key statistics (Average volume, VMT, VHT and congested speeds) of three model years are very reasonable. Changes in the model statistics are attributed to the numerous adjustments that were made to the model stream, particularly the use of LOS E capacities in assignments without changes to other validation parameters**.**

Post-Model Adjustment Using Analyst

A post-processing method using ANALYST is under development and will be delivered soon.

Table 3-7: **Year 2005 Systemwide Highway Model Validation Statistics of TOD Run**

ITEM		Year 2005 Time-of-Day Model Run				
		All Period (Combined) (**)	AM Peak Period (1)	PM Peak Period (2)	Off Peak Period (3)	Period Sums (1+2+3)
Total Number of Directional Links:		30,516		30,516		
Total Lane Miles:		14,859		14,859		
Total Directional Miles:		8,132		8,132		
Total Directional Miles with Counts:	(*)	1,946		1,278		
Total Percentage of Dir. Miles with Counts:		23.93%		15.72%		
Total VMT using Volumes:	(*)	35,624,526	4,419,946	5,169,370	13,835,494	23,424,810
Total VMT using Counts:	(*)	35,124,846	4,315,998	4,941,266	13,533,802	22,791,066
Total VMT Volume-over-Count Ratio:	(*)	**1.01**	**1.02**	**1.05**	**1.02**	**1.03**
Total VHT using Volumes:	(*)	924,650	116,822	144,003	349,342	610,167
Total VHT using Counts:	(*)	902,384	110,923	134,360	342,734	588,017
Total VHT Volume-over-Count Ratio:	(*)	**1.02**	**1.05**	**1.07**	**1.02**	**1.04**
Total (unweighted) Volumes:	(*)	99,169,124	12,350,548	14,512,862	38,198,025	65,061,435
Total (unweighted) Counts:	(*)	97,154,317	11,733,422	13,759,036	37,794,573	63,287,031
Total (unweighted) Volume-over-Count Ratio:	(*)	**1.02**	**1.05**	**1.05**	**1.01**	**1.03**
Total Volume All Links:		412,702,694	77,319,021	91,216,889	244,166,774	412,702,684
Average (Directional) Volumes of All Links:		**13,524**	**2,534**	**2,989**	**8,001**	**13,524**
Total VMT All Links:		**112,661,970**	**21,087,496**	**24,896,296**	**66,678,183**	**112,661,975**
Total VHT All Links:		**3,106,717**	**589,001**	**737,941**	**1,779,774**	**3,106,716**
Posted Speed (MPH, weighted by Dir. Miles):		**41.34**	**41.34**	**41.34**	**41.34**	
Original Speed (MPH, weighted by Dir. Miles):		**39.45**	**39.45**	**39.45**	**39.45**	
Congested Speed (MPH, weighted by Dir. Miles):		**36.73**	**37.23**	**36.25**	**37.43**	
Change in Speed (MPH, Congested-Original):		**-2.73**	**-2.23**	**-3.21**	**-2.03**	
Percent Change in Speed (Change/Original):		**-6.91%**	**-5.65%**	**-8.13%**	**-5.14%**	
Total Volume-to-Capacity Ratio at LOS E:		**0.58**	**0.46**	**0.54**	**0.47**	
Total Volume-to-Capacity Ratio at LOS D:		**0.64**	**0.50**	**0.59**	**0.51**	
Total Volume-to-Capacity Ratio at LOS C:		**0.76**	**0.60**	**0.71**	**0.62**	
Total Travel Time Value (TTV, in 2005$):		**30,744,746**	**5,672,617**	**7,115,822**	**17,956,307**	**30,744,746**
Total Vehicle Operating Cost (VOC, in 2005$):		**55,994,784**	**10,453,419**	**12,473,864**	**33,067,501**	**55,994,784**
TTV Per Vehicle Hour, in 2005$:		**9.896**	**9.631**	**9.643**	**10.089**	
VOC Per Vehicle Mile, in 2005$:		**0.497**	**0.496**	**0.501**	**0.496**	
Total Number of Directional Links with Counts		5,969		3,896		
Systemwide RMSE		**35.959**	**44.746**	**38.445**	**37.821**	

(*) Only for Links with Counts; (**) Use 24-hour Counts

Notes/Assumptions on TTV and VOC:	
(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2005
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

Table 3-8: **Year 2030 Systemwide Highway Model Statistics of TOD Run**

ITEM	Year 2030 Time-of-Day Model Run			
	All Period (Combined)	AM Peak Period (1)	PM Peak Period (2)	Off Peak Period (3)
Total Number of Directional Links:	32,070			
Total Lane Miles:	17,171			
Total Directional Miles:	8,605			
Total Volume All Links:	571,654,009	104,227,541	123,497,900	343,928,541
Average (Directional) Volumes of All Links:	**17,825**	**3,250**	**3,851**	**10,724**
Total VMT All Links:	**157,249,706**	**28,788,803**	**34,129,083**	**94,331,811**
Total VHT All Links:	**4,544,302**	**829,433**	**1,086,155**	**2,628,714**
Posted Speed (MPH, weighted by Dir. Miles):	**41.97**	**41.97**	**41.97**	**41.97**
Original Speed (MPH, weighted by Dir. Miles):	**40.22**	**40.22**	**40.22**	**40.22**
Congested Speed (MPH, weighted by Dir. Miles):	**36.11**	**37.08**	**35.57**	**36.98**
Change in Speed (MPH, Congested-Original):	**-4.11**	**-3.13**	**-4.64**	**-3.24**
Percent Change in Speed (Change/Original):	**-10.22%**	**-7.79%**	**-11.55%**	**-8.05%**
Total Volume-to-Capacity Ratio at LOS E:	**0.68**	**0.52**	**0.62**	**0.56**
Total Volume-to-Capacity Ratio at LOS D:	**0.74**	**0.57**	**0.68**	**0.61**
Total Volume-to-Capacity Ratio at LOS C:	**0.89**	**0.68**	**0.81**	**0.73**
Total Travel Time Value (TTV, in 2030$):	**97,182,613**	**17,313,866**	**22,679,915**	**57,188,831**
Total Vehicle Operating Cost (VOC, in 2030$):	**139,422,835**	**25,401,193**	**30,675,925**	**83,345,717**
TTV Per Vehicle Hour, in 2030$:	**21.386**	**20.874**	**20.881**	**21.755**
VOC Per Vehicle Mile, in 2030$:	**0.887**	**0.882**	**0.899**	**0.884**

Notes/Assumptions on TTV and VOC:	
(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2030
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

Table 3-9: **Year 2035 Systemwide Highway Model Statistics of TOD Run**

ITEM	Year 2035 Time-of-Day Model Run			
	All Period (Combined)	**AM Peak Period (1)**	**PM Peak Period (2)**	**Off Peak Period (3)**
Total Number of Directional Links:	32,716			
Total Lane Miles:	16,927			
Total Directional Miles:	8,621			
Total Volume All Links:	591,144,349	102,925,679	122,095,113	366,123,658
Average (Directional) Volumes of All Links:	**18,069**	**3,146**	**3,732**	**11,191**
Total VMT All Links:	**160,119,397**	**27,955,317**	**33,102,684**	**99,061,417**
Total VHT All Links:	**4,953,123**	**836,583**	**1,076,678**	**3,039,862**
Posted Speed (MPH, weighted by Dir. Miles):	**41.51**	**41.51**	**41.51**	**41.51**
Original Speed (MPH, weighted by Dir. Miles):	**39.89**	**39.89**	**39.89**	**39.89**
Congested Speed (MPH, weighted by Dir. Miles):	**35.31**	**36.73**	**35.31**	**35.94**
Change in Speed (MPH, Congested-Original):	**-4.58**	**-3.17**	**-4.58**	**-3.95**
Percent Change in Speed (Change/Original):	**-11.48%**	**-7.94%**	**-11.48%**	**-9.90%**
Total Volume-to-Capacity Ratio at LOS E:	**0.71**	**0.52**	**0.62**	**0.60**
Total Volume-to-Capacity Ratio at LOS D:	**0.78**	**0.57**	**0.68**	**0.66**
Total Volume-to-Capacity Ratio at LOS C:	**0.93**	**0.68**	**0.81**	**0.78**
Total Travel Time Value (TTV, in 2035$):	**122,620,515**	**20,049,409**	**25,808,295**	**76,762,811**
Total Vehicle Operating Cost (VOC, in 2035$):	**161,196,696**	**27,865,409**	**33,443,041**	**99,888,245**
TTV Per Vehicle Hour, in 2035$:	**24.756**	**23.966**	**23.970**	**25.252**
VOC Per Vehicle Mile, in 2035$:	**1.007**	**0.997**	**1.010**	**1.008**

Notes/Assumptions on TTV and VOC:	
(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2035
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

Table 3-10: **Comparison of Year 2005 Systemwide Highway Model Validation Statistics**

ITEM		Year 2005 24-Hour Systemwide Statistics			
		Time-of-Day Run	Sub-Area FULL Run *(Option 4F)*	Sub-Area Highway-Only Run *(Option 4E)*	Sub-Area Highway Run with User Defined Area *(Option 4A)*
Total Number of Directional Links:		30,516	30,454	30,516	30,516
Total Lane Miles:		14,859	14,838	14,859	14,859
Total Directional Miles:		8,132	8,111	8,132	8,132
Total Directional Miles with Counts:	(*)	1,946	1,946	1,946	1,946
Total Percentage of Dir. Miles with Counts:		23.93%	23.99%	23.93%	23.93%
Total VMT using Volumes:	(*)	35,624,526	35,081,932	34,343,028	34,214,826
Total VMT using Counts:	(*)	35,124,846	35,124,846	35,124,846	35,124,846
Total VMT Volume-over-Count Ratio:	(*)	1.01	1.00	0.98	0.97
Total VHT using Volumes:	(*)	924,650	937,593	914,770	948,106
Total VHT using Counts:	(*)	902,384	929,772	923,686	943,376
Total VHT Volume-over-Count Ratio:	(*)	1.02	1.01	0.99	1.01
Total (unweighted) Volumes:	(*)	99,169,124	97,307,893	95,651,476	95,238,078
Total (unweighted) Counts:	(*)	97,154,317	97,154,317	97,154,317	97,154,317
Total (unweighted) Volume-over-Count Ratio:	(*)	1.02	1.00	0.98	0.98
Total Volume All Links:		412,702,694	403,063,374	396,295,984	395,986,143
Average (Directional) Volumes of All Links:		13,524	13,235	12,987	12,976
Total VMT All Links:		112,661,970	109,870,596	107,681,238	107,875,848
Total VHT All Links:		3,106,717	3,146,536	3,075,709	3,254,533
Posted Speed (MPH, weighted by Dir. Miles):		41.34	41.41	41.34	41.34
Original Speed (MPH, weighted by Dir. Miles):		39.45	39.51	39.45	39.45
Congested Speed (MPH, weighted by Dir. Miles):		36.73	36.24	36.27	35.77
Change in Speed (MPH, Congested-Original):		-2.73	-3.26	-3.18	-3.69
Percent Change in Speed (Change/Original):		-6.91%	-8.26%	-8.06%	-9.34%
Total Volume-to-Capacity Ratio at LOS E:		0.58	0.57	0.56	0.56
Total Volume-to-Capacity Ratio at LOS D:		0.64	0.62	0.61	0.61
Total Volume-to-Capacity Ratio at LOS C:		0.76	0.74	0.73	0.73
Total Travel Time Value (TTV, in 2005$):		30,744,746	30,929,685	30,606,793	32,380,195
Total Vehicle Operating Cost (VOC, in 2005$):		55,994,784	54,858,981	53,789,278	54,459,052
TTV Per Vehicle Hour, in 2005$:		9.896	9.830	9.951	9.949
VOC Per Vehicle Mile, in 2005$:		0.497	0.499	0.500	0.505
Total Number of Directional Links with Counts		5,969			
Systemwide RMSE		35.959	33.641	33.978	37.343

(*) Only for Links with Counts

Notes/Assumptions on TTV and VOC:	
(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2005
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

Table 3-11: **Comparison of Year 2030 Systemwide Highway Model Statistics**

ITEM	Year 2030 24-Hour Systemwide Statistics			
	Time-of-Day Run	**Sub-Area FULL Run** *(Option 4F)*	**Sub-Area Highway-Only Run** *(Option 4E)*	**Sub-Area Highway Run with User Defined Area** *(Option 4A)*
Total Number of Directional Links:	**32,070**	**32,070**	**32,070**	**32,070**
Total Lane Miles:	**17,171**	**17,171**	**17,171**	**17,171**
Total Directional Miles:	**8,605**	**8,605**	**8,605**	**8,605**
Total Volume All Links:	571,654,009	553,932,804	540,689,005	548,688,629
Average (Directional) Volumes of All Links:	**17,825**	**17,273**	**16,860**	**17,109**
Total VMT All Links:	**157,249,706**	**151,886,793**	**147,509,529**	**149,596,460**
Total VHT All Links:	**4,544,302**	**4,700,857**	**4,522,620**	**5,931,631**
Posted Speed (MPH, weighted by Dir. Miles):	**41.97**	**41.97**	**41.97**	**41.97**
Original Speed (MPH, weighted by Dir. Miles):	**40.22**	**40.22**	**40.22**	**40.22**
Congested Speed (MPH, weighted by Dir. Miles):	**36.11**	**35.20**	**35.46**	**34.59**
Change in Speed (MPH, Congested-Original):	**-4.11**	**-5.01**	**-4.75**	**-5.63**
Percent Change in Speed (Change/Original):	**-10.22%**	**-12.47%**	**-11.82%**	**-14.00%**
Total Volume-to-Capacity Ratio at LOS E:	**0.68**	**0.66**	**0.64**	**0.65**
Total Volume-to-Capacity Ratio at LOS D:	**0.74**	**0.72**	**0.70**	**0.71**
Total Volume-to-Capacity Ratio at LOS C:	**0.89**	**0.86**	**0.84**	**0.85**
Total Travel Time Value (TTV, in 2030$):	**97,182,613**	**99,335,850**	**96,900,125**	**127,074,112**
Total Vehicle Operating Cost (VOC, in 2030$):	**139,422,835**	**136,023,231**	**132,097,145**	**137,614,921**
TTV Per Vehicle Hour, in 2030$:	**21.386**	**21.131**	**21.426**	**21.423**
VOC Per Vehicle Mile, in 2030$:	**0.887**	**0.896**	**0.896**	**0.920**

Notes/Assumptions on TTV and VOC:	
(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2030
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

Table 3-12: **Comparison of Year 2035 Systemwide Highway Model Statistics**

ITEM	Year 2035 24-Hour Systemwide Statistics			
	Time-of-Day Run	Sub-Area FULL Run *(Option 4F)*	Sub-Area Highway-Only Run *(Option 4E)*	Sub-Area Highway Run with User Defined Area *(Option 4A)*
Total Number of Directional Links:	32,716	32,712	32,716	32,716
Total Lane Miles:	16,927	16,926	16,927	16,927
Total Directional Miles:	8,621	8,620	8,621	8,621
Total Volume All Links:	591,144,349	569,273,263	557,033,941	565,973,104
Average (Directional) Volumes of All Links:	18,069	17,403	17,026	17,300
Total VMT All Links:	160,119,397	153,769,023	149,875,709	152,305,732
Total VHT All Links:	4,953,123	5,062,634	4,858,184	6,723,809
Posted Speed (MPH, weighted by Dir. Miles):	41.51	41.51	41.51	41.51
Original Speed (MPH, weighted by Dir. Miles):	39.89	39.79	39.78	39.78
Congested Speed (MPH, weighted by Dir. Miles):	35.31	34.41	34.67	33.78
Change in Speed (MPH, Congested-Original):	-4.58	-5.38	-5.11	-6.00
Percent Change in Speed (Change/Original):	-11.48%	-13.52%	-12.85%	-15.09%
Total Volume-to-Capacity Ratio at LOS E:	0.71	0.68	0.67	0.68
Total Volume-to-Capacity Ratio at LOS D:	0.78	0.75	0.73	0.74
Total Volume-to-Capacity Ratio at LOS C:	0.93	0.89	0.87	0.89
Total Travel Time Value (TTV, in 2035$):	122,620,515	123,763,372	120,995,483	167,310,023
Total Vehicle Operating Cost (VOC, in 2035$):	161,196,696	156,153,096	151,885,042	158,879,894
TTV Per Vehicle Hour, in 2035$:	24.756	24.446	24.905	24.883
VOC Per Vehicle Mile, in 2035$:	1.007	1.016	1.013	1.043

Notes/Assumptions on TTV and VOC:	
(Inflation) Base Year:	2004
(Inflation) Analysis Year:	2035
TTV Inflation Rate:	3.07%
VOC Inflation Rate:	2.31%

4. List of References

1. **Model Data, Calibration and Validation, Technical Reports 1 & 2, Southeast Regional Planning Model 6.5 (SERPM6.5) – 2005 and 2030 Models**, FDOT- District 4, Prepared by The Corradino Group, October 2008.
2. **Model Application Guideline, Technical Report 3, SERPM6.5 – 2005 and 2030 Models**, FDOT – District 4, Prepared by The Corradino Group, August 2008.
3. **Model Application Guideline & Validation of Highway-Only and Subarea Models, Technical Report,** FDOT – District 4, Prepared by The Corradino Group, June 2009.
4. **Assessment of Southeast Florida Road User Costs, Final Report,** FDOT – District 4, Prepared by Cambridge Systematics, February 2006.
5. **Southeast Florida Road and Transit User Cost Study, Draft Report,** FDOT – District 4, Prepared by Cambridge Systematics, March 2009.
6. **A Revised RUC Calculator Spreadsheet Program (RUC_TUC_Calculators_final.xls; see {VOC_Lookup_Table] tab),** FDOT – District 4, Updated the program by The Corradino Group, March 2010.
7. **2009 FDOT Quality/Level of Service Handbook,** State of Florida, Department of Transportation, 2009.
8. **2002 FDOT Quality/Level of Service Handbook,** State of Florida, Department of Transportation, 2002.

Note: For a complete list of SERPM6.5 model references, please see the "List of References" chapter of the references 1 & 2.

Appendix A

Description of New Input Files

Table A-1: **Description of Lookup Area Type in Highway Evaluation Reporting (ATRptLabels.dbf)**

Field	Name	Description
1	Area_Type	Density based Area types Codes (1-5)
2	ATRptGrp	Area Type Group (1-5) for Highway Evaluation Reporting
4	ATGrpDes	Description of Area Type Groups (Not used in model)

Table A-2: **Description of Lookup Facility Type and Travel Time Value in Highway Evaluation Reporting (FTRptGrp_TTVLkup.dbf)**

Field	Name	Description
1	FTC2	Facility Type Codes (11-12,21,41,51-52,61,71-75,81-82,91-94)
2	FTRPTGRP	Facility Type Group (1-9) for Highway Evaluation Reporting
3	TTVCARPRSN	Travel Time Value (TTV Car)-Dollars Per Person Per Hour - 24 Hour
4	TTVTRKPRSN	Travel Time Value (TTV Truck)-Dollars Per Person Per Hour - 24 Hour
5	TTV_AM_WT	TTV - AM Peak Period Weight
6	TTV_PM_WT	TTV - PM Peak Period Weight
7	TTV_OP_WT	TTV - Off Peak Period Weight
8	FTGRPDES	Description of Facility Type Groups (Not used in model)

Table A-3: **Description of Lookup Vehicle Operating Cost and Speed in Highway Evaluation Reporting (VOCSpdLkup.dbf)**

Field	Columns	Description
1	SPEED	Model estimated congested speed in mph (1-80)
2	VOC_CARS	Car Vehicle Operating Cost in Dollars Per Vehicle Per Mile
4	VOC_TRKS	Truck Vehicle Operating Costin Dollars Per Vehicle Per Mile

Table A-4: **Format of 7-purpose Non-motorized Utility Function (RNOMOTOR.SYN)**

Field	Columns	Description	Format
1 (record 1)	1-15	Zero car household & HBW Purpose - Coefficient (COEF) of Utility Functions	REAL NO
2 (record 1)	16-30	1 car household & HBW Purpose - Coefficient (COEF) of Utility Functions	REAL NO
3 (record 1)	31-45	2-or-more car hiousehold & HBW Purpose - Coefficient (COEF) of Utility Functions	REAL NO
4 (record 1)	46-60	Zero car household & HBNW Purpose - Coefficients (COEF) of Utility Functions	REAL NO
5 (record 1)	61-75	1 car household & HBNW Purpose - Coefficients (COEF) of Utility Functions	REAL NO
6 (record 1)	76-90	2-or-more car household & HBNW Purpose - Coefficients (COEF) of Utility Functions	REAL NO
7 (record 1)	91-105	NHB Purpose - Coefficients (COEF) of Utility Functions	REAL NO
1 (record 2)	1-15	Zero car household & HBW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
2 (record 2)	16-30	1 car household & HBW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
3 (record 2)	31-45	2-or-more car household & HBW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
4 (record 2)	46-60	Zero car household & HBNW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
5 (record 2)	61-75	1 car household & HBNW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
6 (record 2)	76-90	2-or-more car household & HBNW Purpose - Bias Constants (BIAS) of Utility Functions	REAL NO
7 (record 2)	91-105	NHB Purpose - BIAS COnstants (BIAS) of Utility Functions	REAL NO
1 (record 3)	1-15	ALL Purposes - Index Coefficient (INDCOEF) of Utility Functions	REAL NO

Table A-5: **Description of Lookup Capacity Table for Arterials (ARTPCE.DBF)**

Field	Name	Description
1	NUM_LANES	Number of Directional Lanes
2	ART1_PCE_C	LOS C Capacity (passenger cars/hour/lane) for Segment Signal Density of 0-1.99 signals/mile
3	ART1_PCE_D	LOS D Capacity (passenger cars/hour/lane) for Segment Signal Density of 0-1.99 signals/mile
4	ART1_PCE_E	LOS E Capacity (passenger cars/hour/lane) for Segment Signal Density of 0-1.99 signals/mile
5	ART2_PCE_C	LOS C Capacity (passenger cars/hour/lane) for Segment Signal Density of 1.99-4.5 signals/mile
6	ART2_PCE_D	LOS D Capacity (passenger cars/hour/lane) for Segment Signal Density of 1.99-4.5 signals/mile
7	ART2_PCE_E	LOS E Capacity (passenger cars/hour/lane) for Segment Signal Density of 1.99-4.5 signals/mile
8	ART3_PCE_C	LOS C Capacity (passenger cars/hour/lane) for Segment Signal Density of more than 4.5 signals/mile
9	ART3_PCE_D	LOS D Capacity (passenger cars/hour/lane) for Segment Signal Density of more than 4.5 signals/mile
10	ART3_PCE_E	LOS E Capacity (passenger cars/hour/lane) for Segment Signal Density of more than 4.5 signals/mile

Table A-6: **Description of Lookup Capacity Table for Freeways (FRWYPCE.DBF)**

Field	Name	Description
1	NUM_LANES	Number of Directional Lanes
2	FRW_PCE_C	LOS C Capacity (passenger cars/hour/lane)
3	FRW_PCE_D	LOS D Capacity (passenger cars/hour/lane)
4	FRW_PCE_E	LOS E Capacity (passenger cars/hour/lane)

Table A-7: **Description of Lookup Capacity Table for Uninterrupted Roadways (HWYPCE.DBF)**

Field	Name	Description
1	NUM_LANES	Number of Directional Lanes
2	HWY_PCE_C	LOS C Capacity (passenger cars/hour/lane)
3	HWY_PCE_D	LOS D Capacity (passenger cars/hour/lane)
4	HWY_PCE_E	LOS E Capacity (passenger cars/hour/lane)

Table A-8: **Description of Lookup Capacity Table for Loop Off-Ramps (LOFFPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	LOF_CBD_C	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
3	LOF_HD_C	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	LOF_MD_C	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	LOF_LD_C	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	LOF_VLD_C	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
7	LOF_CBD_D	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
8	LOF_HD_D	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
9	LOF_MD_D	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
10	LOF_LD_D	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
11	LOF_VLD_D	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
12	LOF_CBD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
13	LOF_HD_E	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
14	LOF_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
15	LOF_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
16	LOF_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table A-9: **Description of Lookup Capacity Table for Loop On-Ramps (LONPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	LON_CBD_C	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
3	LON_HD_C	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	LON_MD_C	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	LON_LD_C	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	LON_VLD_C	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
7	LON_CBD_D	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
8	LON_HD_D	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
9	LON_MD_D	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
10	LON_LD_D	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
11	LON_VLD_D	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
12	LON_CBD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
13	LON_HD_E	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
14	LON_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
15	LON_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
16	LON_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table A-10: **Description of Lookup Capacity Table for Low Speed Roadways and Collectors (LOWPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	LOW_HD_C	LOS C Capacity (passenger cars/hour/lane) for CBD (1) & "High Density Non-CBD" (2) area types
3	LOW_MD_C	LOS C Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
4	LOW_LD_C	LOS C Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	LOW_VLD_C	LOS C Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
6	LOW_HD_D	LOS D Capacity (passenger cars/hour/lane) for CBD (1) & "High Density Non-CBD" (2) area types
7	LOW_MD_D	LOS D Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
8	LOW_LD_D	LOS D Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
9	LOW_VLD_D	LOS D Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
10	LOW_HD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1) & "High Density Non-CBD" (2) area types
11	LOW_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
12	LOW_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
13	LOW_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table A-11: **Description of Lookup Capacity Table for Off-Ramps (OFFPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	OFF_CBD_C	LOS C Capacity (passenger cars/hour/lane) for CBD (1)
3	OFF_HD_C	LOS C Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	OFF_MD_C	LOS C Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	OFF_LD_C	LOS C Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	OFF_VLD_C	LOS C Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
7	OFF_CBD_D	LOS D Capacity (passenger cars/hour/lane) for CBD (1)
8	OFF_HD_D	LOS D Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
9	OFF_MD_D	LOS D Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
10	OFF_LD_D	LOS D Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
11	OFF_VLD_D	LOS D Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
12	OFF_CBD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
13	OFF_HD_E	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
14	OFF_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
15	OFF_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
16	OFF_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table A-12: **Description of Lookup Capacity Table for On-Ramps (ONPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	ON_CBD_C	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
3	ON_HD_C	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	ON_MD_C	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	ON_LD_C	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	ON_VLD_C	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
7	ON_CBD_D	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
8	ON_HD_D	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
9	ON_MD_D	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
10	ON_LD_D	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
11	ON_VLD_D	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
12	ON_CBD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
13	ON_HD_E	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
14	ON_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
15	ON_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
16	ON_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table A-13: **Description of Lookup Capacity Table for Toll Off-Ramps (TOFFPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	TOF_CBD_C	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
3	TOF_HD_C	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	TOF_MD_C	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	TOF_LD_C	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	TOF_VLD_C	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
7	TOF_CBD_D	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
8	TOF_HD_D	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
9	TOF_MD_D	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
10	TOF_LD_D	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
11	TOF_VLD_D	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
12	TOF_CBD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
13	TOF_HD_E	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
14	TOF_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
15	TOF_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
16	TOF_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Table A-14: **Description of Lookup Capacity Table for Toll On-Ramps (TONPCE.DBF)**

Field	Columns	Description
1	NUM_LANES	Number of Directional Lanes
2	TON_CBD_C	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
3	TON_HD_C	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
4	TON_MD_C	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
5	TON_LD_C	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
6	TON_VLD_C	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
7	TON_CBD_D	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
8	TON_HD_D	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
9	TON_MD_D	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
10	TON_LD_D	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
11	TON_VLD_D	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)
12	TON_CBD_E	LOS E Capacity (passenger cars/hour/lane) for CBD (1)
13	TON_HD_E	LOS E Capacity (passenger cars/hour/lane) for "High Density Non-CBD" area type (2)
14	TON_MD_E	LOS E Capacity (passenger cars/hour/lane) for "Medium Density Non-CBD" area type (3)
15	TON_LD_E	LOS E Capacity (passenger cars/hour/lane) for "Low Density Non-CBD" area type (4)
16	TON_VLD_E	LOS E Capacity (passenger cars/hour/lane) for "Very Low Density Non-CBD" area type (5)

Figure A-1: **Listing of ARTPCE.DBF (Arterials) File**

NUM_LANES	ART1_PCE_C	ART1_PCE_D	ART1_PCE_E	ART2_PCE_C	ART2_PCE_D	ART2_PCE_E	ART3_PCE_C	ART3_PCE_D	ART3_PCE_E
1	828	889	929	566	818	869	272	635	796
2	954	990	1030	672	894	944	338	756	856
3	963	990	1030	700	902	953	353	782	863
4	967	995	1035	715	906	954	363	798	869

Figure A-2: **Listing of FRWYPCE.DBF (Freeways) File**

NUM_LANES	FRW_PCE_C	FRW_PCE_D	FRW_PCE_E
1	1520	1877	2030
2	1540	1897	2050
3	1557	1897	2108
4	1561	1892	2142
5	1567	1901	2158
6	1737	2054	2173

Figure A-3: **Listing of HWYPCE.DBF (Uninterrupted Roadways) File**

NUM_LANES	HWY_PCE_C	HWY_PCE_D	HWY_PCE_E
1	808	1151	1454
2	1293	1677	1899
3	1293	1677	1902

Figure A-4: **Listing of LOFFPCE.DBF (Loop Off-Ramps) File**

NUM_LANES	LOF_CBD_C	LOF_HD_C	LOF_MD_C	LOF_LD_C	LOF_VLD_C	LOF_CBD_D	LOF_HD_D	LOF_MD_D	LOF_LD_D	LOF_VLD_D	LOF_CBD_E	LOF_HD_E	LOF_MD_E	LOF_LD_E	LOF_VLD_E
1	506	536	536	570	514	591	626	626	665	599	675	715	715	760	685
2	514	544	544	578	521	599	634	634	674	608	685	725	725	770	695

Figure A-5: **Listing of LONPCE.DBF (Loop On-Ramps) File**

NUM_LANES	LON_CBD_C	LON_HD_C	LON_MD_C	LON_LD_C	LON_VLD_C	LON_CBD_D	LON_HD_D	LON_MD_D	LON_LD_D	LON_VLD_D	LON_CBD_E	LON_HD_E	LON_MD_E	LON_LD_E	LON_VLD_E
1	506	536	536	570	514	591	626	626	665	599	675	715	715	760	685
2	514	544	544	578	521	599	634	634	674	608	685	725	725	770	695

Figure A-6: **Listing of LOWPCE.DBF (Low Speed Roadways & Collectors) File**

NUM_LANES	LOW_HD_C	LOW_MD_C	LOW_LD_C	LOW_VLD_C	LOW_HD_D	LOW_MD_D	LOW_LD_D	LOW_VLD_D	LOW_HD_E	LOW_MD_E	LOW_LD_E	LOW_VLD_E
1	473	473	563	570	551	551	656	665	630	630	750	760
2	488	488	563	570	569	569	656	665	650	650	750	760
3	488	488	563	570	569	569	656	665	650	650	750	760
4	488	488	563	570	569	569	656	665	650	650	750	760

Figure A-7: **Listing of OFFPCE.DBF (Off-Ramps) File**

NUM_LANES	OFF_CBD_C	OFF_HD_C	OFF_MD_C	OFF_LD_C	OFF_VLD_C	OFF_CBD_D	OFF_HD_D	OFF_MD_D	OFF_LD_D	OFF_VLD_D	OFF_CBD_E	OFF_HD_E	OFF_MD_E	OFF_LD_E	OFF_VLD_E
1	1095	1095	1099	1095	900	1278	1278	1282	1278	1050	1460	1460	1465	1460	1200
2	1103	1103	1106	1103	908	1286	1286	1291	1286	1059	1470	1470	1475	1470	1210

Figure A-8: **Listing of ONPCE.DBF (On Ramps) File**

NUM_LANES	ON_CBD_C	ON_HD_C	ON_MD_C	ON_LD_C	ON_VLD_C	ON_CBD_D	ON_HD_D	ON_MD_D	ON_LD_D	ON_VLD_D	ON_CBD_E	ON_HD_E	ON_MD_E	ON_LD_E	ON_VLD_E
1	1095	1095	1099	1095	900	1278	1278	1282	1278	1050	1460	1460	1465	1460	1200
2	1103	1103	1106	1103	908	1286	1286	1291	1286	1059	1470	1470	1475	1470	1210

Figure A-9: **Listing of TOFFPCE.DBF (Toll Off-Ramps) File**

NUM_LANES	TOF_CBD_C	TOF_HD_C	TOF_MD_C	TOF_LD_C	TOF_VLD_C	TOF_CBD_D	TOF_HD_D	TOF_MD_D	TOF_LD_D	TOF_VLD_D	TOF_CBD_E	TOF_HD_E	TOF_MD_E	TOF_LD_E	TOF_VLD_E
1	1095	1095	1099	1095	900	1278	1278	1282	1278	1050	1460	1460	1465	1460	1200
2	1103	1103	1106	1103	908	1286	1286	1291	1286	1059	1470	1470	1475	1470	1210

Figure A-10: **Listing of TONPCE.DBF (Toll On-Ramps) File**

NUM_LANES	TON_CBD_C	TON_HD_C	TON_MD_C	TON_LD_C	TON_VLD_C	TON_CBD_D	TON_HD_D	TON_MD_D	TON_LD_D	TON_VLD_D	TON_CBD_E	TON_HD_E	TON_MD_E	TON_LD_E	TON_VLD_E
1	1095	1095	1099	1095	900	1278	1278	1282	1278	1050	1460	1460	1465	1460	1200
2	1103	1103	1106	1103	908	1286	1286	1291	1286	1059	1470	1470	1475	1470	1210

Figure A-11: **Listing of a Capacity Calculator Script (CAPCALNET-D.S)**
[*Reference: see Step 5 of CAPCAL application of new versions of SERPM6.5 models*]

```
; Do not change filenames or add or remove FILEI/FILEO statements using an editor. Use Cube/Application Manager.
RUN PGM=NETWORK PRNFILE="E:\FSUTMS\D4\NS65SubArea\CUBE\CAPCALNET-D.PRN" MSG='LOS C, D and E Capacity Calculator'
FILEI LOOKUPI[10] = "{DATADIR}\TOFFPCE.DBF"
FILEI LOOKUPI[9] = "{DATADIR}\TONPCE.DBF"
FILEI LOOKUPI[8] = "{DATADIR}\LOFFPCE.DBF"
FILEI LOOKUPI[7] = "{DATADIR}\LONPCE.DBF"
FILEI LOOKUPI[6] = "{DATADIR}\OFFPCE.DBF"
FILEI LOOKUPI[5] = "{DATADIR}\ONPCE.DBF"
FILEI LINKI[1] = "{OUTDIR}\S6ATYPE_{Year}.NET"
FILEI LOOKUPI[1] = "{DATADIR}\FRWYPCE.dbf"
FILEI LOOKUPI[2] = "{DATADIR}\HWYPCE.DBF"
FILEI LOOKUPI[3] = "{DATADIR}\ARTPCE.DBF"
FILEI LOOKUPI[4] = "{DATADIR}\LOWPCE.DBF"
FILEO NETO = "{OUTDIR}\S6E_{Year}.NET",
 EXCLUDE=CAPALL,CAPALL_C,CAPALL_D,CAPALL_E


MERGE RECORD=T
PHASE=LINKMERGE

IF (SEGID>0 & NUMSIG>0)              ;SIGNALIZED ONLY
    SIG_RATE=NUMSIG/LENGTH           ;SIGNALS PER MILE FOR EACH SEGMENT
    SIG_SPACE=1/SIG_RATE             ;SPACE BETWEEN SIGNALS FOR EACH SEGMENT
ENDIF

;==(SKS 8/28-29/07)=============================================================================
;Populate Several Capacity Calculator Attributes (SKS 8/28/07)

IF (FTC2=81-86)             ;HOV FACILITIES
    HOV=1
    FTC1=80
ENDIF

IF (FTC2=91-95)             ;TOLL FACILITIES
    KTOLL=1
    FTC1=90
    IF (FTC2=95)
        TOLLPLAZA=1
    ENDIF
ENDIF
```

```
IF (FTC2=11,12,81-82,91-92,95)
    FRWY=1                 ;DESIGNATED FREEWAY SEGMENTS FOR CAPACITY CLACULATION PURPOSES
    IF (FTC2=11,12)
      FTC1=10
    ENDIF
ENDIF

IF (FTC2=21)                ;CDs, EXPRESSWAYS AND PARKKWAYS
    UNINTRP=1
    FTC1=20
ENDIF

IF (FTC2=41)                ;High Speed Arterials
   FTC1=40
ENDIF

IF (FTC2=61)                ;Low Speed Collectors (<35 mph)
   FTC1=60
   LOWSPD=1
ENDIF


IF (FTC2=71-75,83-86,93-94) ;ALL RAMPS
   RAMPS=1
   IF (FTC2=71-75)          ;ALL NON-HOV AND NON-TOLL RAMPS
       FTC1=70
       IF (FTC2=71)         ;NON-HOV AND NON-TOLL NON-LOOP ON-RAMPS, EXCLUDING FREEWAY-TO-FREEWAY
           ON=1
       ENDIF
       IF (FTC2=72)         ;NON-TOLL AND NON-HOV LOOP ON-RAMPS
           ONLOOP=1
       ENDIF
       IF (FTC2=73)         ;NON-HOV AND NON-TOLL OFF-RAMPS, EXCLUDING FREEWAY-TO-FREEWAY
           OFF=1
       ENDIF
       IF (FTC2=74)         ;NON-TOLL AND NON-HOV LOOP OFF-RAMPS
           OFFLOOP=1
       ENDIF
       IF (FTC2=75)         ;FREEWAY-TO-FREEWAY RAMPS
           FRWY2FRWY=1
           FRWY=1           ;CONSIDERED A FREEWAY SEGMENT FOR CAPACITY CALCULATION PURPOSES
       ENDIF
   ENDIF
ENDIF
```

```
   IF (FTC2=83-85)          ;PEAK ONLY HOV RAMPS
      HOVPEAK=1
   ENDIF
   IF (FTC2=86)             ;ALL-DAY HOV RAMPS
       HOVDAY=1
   ENDIF

  IF (FTC2=93,94)           ;TOLL RAMPS
       IF (FTC2=93)         ;TOLL ON-RAMPS
           TOLLON=1
       ENDIF
       IF (FTC2=94)         ;TOLL OFF-RAMPS
           TOLLOFF=1
       ENDIF
   ENDIF

;Important Note:
;(1) DIVIDED, (2) LEFTTURN and (3) TWOWAY should be directly coded
;IF (FT2_OLD=21-25,61-68,41,44,94)   DIVIDED=1                   ;DIVIDED
;IF (FT2_OLD=21-25,31-34,41-42,44,61-68 | DIVIDED=1)  LEFTTURN=1 ;LEFT-TURN LANES

IF (FTC2=51-52)      ;CENTROID CONNECTORS -51=INT CENTROID CONNECTORS, 52=EXT CENTROID CONNECTORS
    FTC1=50
ENDIF

IF (FTC2=59)      ;Transit Only Link Micro Connector
    FTC1=59
ENDIF

IF (FTC2=69)      ;Transit Only Link
    FTC1=69
ENDIF

;==(SKS 8/29/07)more checks

IF(!(FTC2=51,52,59,69))            ;Start-for non-centroid/non-transit-only links

 IF (SEGID>0 & NUMSIG>0)             ;SIGNALIZED ONLY
    SIG_RATE=NUMSIG/LENGTH           ;SIGNALS PER MILE FOR EACH SEGMENT
    SIG_SPACE=1/SIG_RATE             ;SPACE BETWEEN SIGNALS FOR EACH SEGMENT
 ENDIF

;UNINTERRUPTED CHECK
 IF (NUMSIG>0 & FRWY=0 & RAMPS=0 & POSTSPD>{UNINTSPEED} & SIG_SPACE>{SIG-SPACE}) ;SIGNALIZED
```

```
    UNINTRP=1
    FTC1=20
    FTC2=21
  ELSEIF (NUMSIG=0 & FRWY=0 & RAMPS=0 & POSTSPD>{UNINTSPEED})                    ;UNSIGNALIZED
    UNINTRP=1
    FTC1=20
    FTC2=21
 ENDIF

 IF (UNINTRP=0 & RAMPS=0 & POSTSPD<35 & KTOLL=0 & HOV=0 & (!(FTC2=59,69)))      ;LOW SPEED CHECK
   LOWSPD=1
   FTC1=60                                                          ;LOW SPEED ROADS
   FTC2=61
 ENDIF
ENDIF                              ;End- for non-centroid/non-transit-only links

;==(SKS 8/28-29/07)==================================================================================
;-test: if(FTC2=61) print,list='test1',FTC2(3.0),LOWSPD(2.0),NUM_LANES(3.0),NEWAREA(3.0)

;CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
;CALCULATE CAPACITIES

;sks -- IF(!(FT2_OLD=51-52))                 ; for non-centroid links
IF(!(FTC2=51-52,59,69))                 ; for non-centroid links


;-------------------------------------------------------------------------------------------
 IF (OVERIDE=0)                              ;IF NO MANUAL OVERIDE FOR CAPACITY

;-------------------------------------------------------------------------------------------
;MAINLINES FOR FREEWAYS / HOV / TOLL
 IF (FRWY=1)
; example of use: v=FRWYPCE(3,25)
; look for 25 in the NUM_LANES field and returns the FRW_PCE_E value
     LOOKUP LOOKUPI=1,
       NAME=FRWYPCE,
         LOOKUP[1]=NUM_LANES, RESULT=FRW_PCE_C,
         LOOKUP[2]=NUM_LANES, RESULT=FRW_PCE_D,
         LOOKUP[3]=NUM_LANES, RESULT=FRW_PCE_E,
         FAIL=0,0,0,
         INTERPOLATE=N
;       FAIL[3]=0

;Apply ramp meter correction factor (Note: Auxiliary lane factor will be applied when calculating per direction total FWY
capacity)
```

```
    if (RmpMtrInd=1)
        CAPALL_C=FRWYPCE(1,NUM_LANES)*1.05
        CAPALL_D=FRWYPCE(2,NUM_LANES)*1.05
        CAPALL_E=FRWYPCE(3,NUM_LANES)*1.05
        if (NUM_LANES>6)
           CAPALL_C=FRWYPCE(1,6)*1.05
           CAPALL_D=FRWYPCE(2,6)*1.05
           CAPALL_E=FRWYPCE(3,6)*1.05
        endif

      else
        CAPALL_C=FRWYPCE(1,NUM_LANES)*1.00
        CAPALL_D=FRWYPCE(2,NUM_LANES)*1.00
        CAPALL_E=FRWYPCE(3,NUM_LANES)*1.00
        if (NUM_LANES>6)
           CAPALL_C=FRWYPCE(1,6)*1.05
           CAPALL_D=FRWYPCE(2,6)*1.05
           CAPALL_E=FRWYPCE(3,6)*1.05
        endif
    endif
 ENDIF                                  ;END FREEWAY SECTION
;-------------------------------------------------------------------------------------------
;UNINTERRUPTED HIGHWAYS (NON-FREEWAYS) OR TOLL ARTERIALS
    IF (UNINTRP=1)
; example of use: v=HWYPCE(3,25)
; look for 25 in the NUM_LANES field and returns the HWY_PCE_E value

     LOOKUP LOOKUPI=2,
       NAME=HWYPCE,
         LOOKUP[1]=NUM_LANES, RESULT=HWY_PCE_C,
         LOOKUP[2]=NUM_LANES, RESULT=HWY_PCE_D,
         LOOKUP[3]=NUM_LANES, RESULT=HWY_PCE_E,
         FAIL=0,0,0,
       INTERPOLATE=N
;       FAIL[3]=0
        CAPALL_C=HWYPCE(1,NUM_LANES)
        CAPALL_D=HWYPCE(2,NUM_LANES)
        CAPALL_E=HWYPCE(3,NUM_LANES)

        IF (NUM_LANES>3)
           CAPALL_C=HWYPCE(1,3)
           CAPALL_D=HWYPCE(2,3)
           CAPALL_E=HWYPCE(3,3)
        ENDIF
```

```
    ENDIF ;END UNINTERRUPTED
;-------------------------------------------------------------------------------------------
;INTERRUPTED
    IF (FRWY=0 & RAMPS=0 & UNINTRP=0 & LOWSPD=0 & KTOLL=0) ;NO LOW SPEED, ARTERIALS, NON-TOLL
;sks start2
/*
        FTC1=40                          ;HIGH-SPEED ROADWAYS/ARTERIALS (INTERRUPTED)
        FTC2=41
*/
;sks end2
; example of use: v=ARTPCE(9,25)
; look for 25 in the NUM_LANES field and returns the ART3_PCE_E value
     LOOKUP LOOKUPI=3,
       NAME=ARTPCE,
         LOOKUP[1]=NUM_LANES, RESULT=ART1_PCE_C,
         LOOKUP[2]=NUM_LANES, RESULT=ART1_PCE_D,
         LOOKUP[3]=NUM_LANES, RESULT=ART1_PCE_E,
         LOOKUP[4]=NUM_LANES, RESULT=ART2_PCE_C,
         LOOKUP[5]=NUM_LANES, RESULT=ART2_PCE_D,
         LOOKUP[6]=NUM_LANES, RESULT=ART2_PCE_E,
         LOOKUP[7]=NUM_LANES, RESULT=ART3_PCE_C,
         LOOKUP[8]=NUM_LANES, RESULT=ART3_PCE_D,
         LOOKUP[9]=NUM_LANES, RESULT=ART3_PCE_E,
         FAIL=0,0,0,
       INTERPOLATE=N
;       FAIL[3]=0

         IF (NUMSIG>0)
            IF (SIG_RATE>0 & SIG_RATE<=1.99)          ;Class I
                CAPALL_C=ARTPCE(1,NUM_LANES)
                CAPALL_D=ARTPCE(2,NUM_LANES)
                CAPALL_E=ARTPCE(3,NUM_LANES)
                IF (NUM_LANES>4)
                    CAPALL_C=ARTPCE(1,4)
                    CAPALL_D=ARTPCE(2,4)
                    CAPALL_E=ARTPCE(3,4)
                ENDIF
            ELSEIF (SIG_RATE>1.99 & SIG_RATE<=4.5)    ;Class II
                CAPALL_C=ARTPCE(4,NUM_LANES)
                CAPALL_D=ARTPCE(5,NUM_LANES)
                CAPALL_E=ARTPCE(6,NUM_LANES)
                IF (NUM_LANES>4)
                    CAPALL_C=ARTPCE(4,4)
                    CAPALL_D=ARTPCE(5,4)
                    CAPALL_E=ARTPCE(6,4)
```

```
            ENDIF
         ELSEIF (SIG_RATE>4.5)                        ;Class III/IV
            CAPALL_C=ARTPCE(7,NUM_LANES)
            CAPALL_D=ARTPCE(8,NUM_LANES)
            CAPALL_E=ARTPCE(9,NUM_LANES)
            IF (NUM_LANES>4)
                CAPALL_C=ARTPCE(7,4)
                CAPALL_D=ARTPCE(8,4)
                CAPALL_E=ARTPCE(9,4)
            ENDIF
         ELSE                            ;OTHER SIGNALIZED(say,Non-State Roadways) = 65% of Class II (which is less than Cls
III)
            CAPALL_C=0.65*(ARTPCE(4,NUM_LANES))
            CAPALL_D=0.65*(ARTPCE(5,NUM_LANES))
            CAPALL_E=0.65*(ARTPCE(6,NUM_LANES))
            IF (NUM_LANES>4)
                CAPALL_C=0.65*(ARTPCE(4,4))
                CAPALL_D=0.65*(ARTPCE(5,4))
                CAPALL_E=0.65*(ARTPCE(6,4))
            ENDIF
         ENDIF                                        ;SIG_RATE ENDIF

       ELSE                                  ;UNSIGNALIZED, SEGID=0 AND NUMSIG=0 (=>Major City/Couty Roads) = 90% of Cls III
         CAPALL_C=0.90*(ARTPCE(7,NUM_LANES))
         CAPALL_D=0.90*(ARTPCE(8,NUM_LANES))
         CAPALL_E=0.90*(ARTPCE(9,NUM_LANES))
         IF (NUM_LANES>4)
            CAPALL_C=0.90*(ARTPCE(7,4))
            CAPALL_D=0.90*(ARTPCE(8,4))
            CAPALL_E=0.90*(ARTPCE(9,4))
         ENDIF
      ENDIF                                           ;NUMSIG ENDIF Block
   ENDIF                                              ;NO LOW SPEED endif Block

;-------------------------------------------------------------------------------------------
;-test: if(FTC2=61) print,list='test2',FTC2(3.0),LOWSPD(2.0),NUM_LANES(3.0),NEWAREA(3.0)
;LOW SPEED
    IF (LOWSPD=1)
;sks start3
/*
      FTC1=60                                         ;LOW SPEED / COLLECTORS
      FTC2=61
*/
;sks end3
```

```
; example of use: v=LOWPCE(10,25)
; look for 25 in the NUM_LANES field and returns the LOW_MD_E value
     LOOKUP LOOKUPI=4,
       NAME=LOWPCE,
         LOOKUP[1]=NUM_LANES, RESULT=LOW_HD_C,
         LOOKUP[2]=NUM_LANES, RESULT=LOW_MD_C,
         LOOKUP[3]=NUM_LANES, RESULT=LOW_LD_C,
         LOOKUP[4]=NUM_LANES, RESULT=LOW_VLD_C,
         LOOKUP[5]=NUM_LANES, RESULT=LOW_HD_D,
         LOOKUP[6]=NUM_LANES, RESULT=LOW_MD_D,
         LOOKUP[7]=NUM_LANES, RESULT=LOW_LD_D,
         LOOKUP[8]=NUM_LANES, RESULT=LOW_VLD_D,
         LOOKUP[9]=NUM_LANES, RESULT=LOW_HD_E,
         LOOKUP[10]=NUM_LANES, RESULT=LOW_MD_E,
         LOOKUP[11]=NUM_LANES, RESULT=LOW_LD_E,
         LOOKUP[12]=NUM_LANES, RESULT=LOW_VLD_E,
         FAIL=0,0,0,
       INTERPOLATE=N
;       FAIL[3]=0

           IF (NEWAREA=1-2)                          ;CBD & High Density AT
               CAPALL_C=LOWPCE(1,NUM_LANES)
               CAPALL_D=LOWPCE(5,NUM_LANES)
               CAPALL_E=LOWPCE(9,NUM_LANES)
               IF (NUM_LANES>4)
                   CAPALL_C=LOWPCE(1,4)
                   CAPALL_D=LOWPCE(5,4)
                   CAPALL_E=LOWPCE(9,4)
               ENDIF
           ELSEIF (NEWAREA=3)                        ;Medium Density AT
               CAPALL_C=LOWPCE(2,NUM_LANES)
               CAPALL_D=LOWPCE(6,NUM_LANES)
               CAPALL_E=LOWPCE(10,NUM_LANES)
               IF (NUM_LANES>4)
                   CAPALL_C=LOWPCE(2,4)
                   CAPALL_D=LOWPCE(6,4)
                   CAPALL_E=LOWPCE(10,4)
               ENDIF
           ELSEIF (NEWAREA=4)                        ;Low Density AT
               CAPALL_C=LOWPCE(3,NUM_LANES)
               CAPALL_D=LOWPCE(7,NUM_LANES)
               CAPALL_E=LOWPCE(11,NUM_LANES)
               IF (NUM_LANES>4)
                   CAPALL_C=LOWPCE(3,4)
                   CAPALL_D=LOWPCE(7,4)
```

```
                    CAPALL_E=LOWPCE(11,4)
                ENDIF
            ELSE                                        ;Very Low Density AT
                CAPALL_C=LOWPCE(4,NUM_LANES)
                CAPALL_D=LOWPCE(8,NUM_LANES)
                CAPALL_E=LOWPCE(12,NUM_LANES)
                IF (NUM_LANES>4)
                    CAPALL_C=LOWPCE(4,4)
                    CAPALL_D=LOWPCE(8,4)
                    CAPALL_E=LOWPCE(12,4)
                ENDIF
            ENDIF                                       ;AT IF block ends
;       print, list= 'LOWSPD',CAPALL(8.0)
    ENDIF                                               ;END LOW SPEED

;=============================================================================================
;CAPACITY ADJUSTMENTS
;---------------------------------------------------------------------------------------------
;Uninterrupted Adjustments...
;-------LEFT-TURN & MEDIAN ADJUSTMENTS FOR UNINTERRUPTED
     IF (FRWY=0 & RAMPS=0 & UNINTRP=1 & TOLLPLAZA=0)
         IF (NUM_LANES=1 & DIVIDED=1 & LEFTTURN=1)      ;Divided 2 lanes (1 lane thru per direction in model)- Exclusive LT
Lanes
             CAPALL_C=1.05*CAPALL_C                     ;         +5%
             CAPALL_D=1.05*CAPALL_D                     ;         +5%
             CAPALL_E=1.05*CAPALL_E                     ;         +5%
         ENDIF
         IF (NUM_LANES>1 & DIVIDED=0 & LEFTTURN=1)      ;Undivided multilanes (>1 lane thru per direction in model)-
Exclusive LT Lanes
             CAPALL_C=0.95*CAPALL_C                     ;         -5%
             CAPALL_D=0.95*CAPALL_D                     ;         -5%
             CAPALL_E=0.95*CAPALL_E                     ;         -5%
         ENDIF
         IF (NUM_LANES>1 & DIVIDED=0 & LEFTTURN=0)      ;Undivided multilanes (>1 lane thru per direction in model)- NO
Exclusive LT Lanes
             CAPALL_C=0.80*CAPALL_C                     ;         -25%
             CAPALL_D=0.80*CAPALL_D                     ;         -25%
             CAPALL_E=0.80*CAPALL_E                     ;         -25%
         ENDIF
     ENDIF                                             ;END Uninterrupted Adjustments
;---------------------------------------------------------------------------------------------
;Interrupted Adjustments...
      IF (FRWY=0 & RAMPS=0 & UNINTRP=0 & HOV=0 & KTOLL=0) ;CAPACITY ADJUSTMENTS FOR ARTERIAL/NON-STATE (Divided & Undivided)
 ;------Adjustment to 1-way facility...
         IF (TWOWAY=0)                                 ;ADD 20% TO ONE-WAY
```

```
            CAPALL_C=1.20*CAPALL_C
            CAPALL_D=1.20*CAPALL_D
            CAPALL_E=1.20*CAPALL_E
         ENDIF                                          ;END ONE-WAY

 ;------LEFT-TURN ADJUSTMENTS FOR Exclusive LT & RT TURN BAY FOR INTERRUPTED
         IF (NUM_LANES=1)                               ;Start 2-lane (i.e., 1 lane in model, per direction) LT bay adjustments
            IF (DIVIDED=1 & LEFTTURN=1)                 ;Divided with LT Bay and 2 through lanes (5% increase)
               CAPALL_C=1.05*CAPALL_C
               CAPALL_D=1.05*CAPALL_D
               CAPALL_E=1.05*CAPALL_E
            ENDIF
            IF (DIVIDED=0 & LEFTTURN=0)                 ;Undivided without LT Bay and 2 through lanes (20% decrease)
               CAPALL_C=0.80*CAPALL_C
               CAPALL_D=0.80*CAPALL_D
               CAPALL_E=0.80*CAPALL_E
            ENDIF
         ENDIF                                          ;End 2 lanes adjustments for LT bay

         IF (NUM_LANES>1)                               ;Start multi-lane (i.e., >1 lane in model, per direction) LT bay
adjustments
            IF (DIVIDED=0 & LEFTTURN=1)                 ;Undivided with LT Bay and >2 through lanes (5% decrease)
               CAPALL_C=0.95*CAPALL_C
               CAPALL_D=0.95*CAPALL_D
               CAPALL_E=0.95*CAPALL_E
            ENDIF
            IF (DIVIDED=0 & LEFTTURN=0)                 ;Undivided without LT Bay and >2 through lanes (25% decrease)
               CAPALL_C=0.75*CAPALL_C
               CAPALL_D=0.75*CAPALL_D
               CAPALL_E=0.75*CAPALL_E
            ENDIF
         ENDIF                                          ;End multi lanes adjustments for LT bay

;------Adjustment to Exclusive RT bay...
         IF (RIGHTTURN=1)                               ;Increase 15%
            CAPALL_C=1.15*CAPALL_C
            CAPALL_D=1.15*CAPALL_D
            CAPALL_E=1.15*CAPALL_E
         ENDIF                                          ;END exclusive RT bay adjustments
      ENDIF                                             ;END Interrupted Adjustments

;END ADJUSTMENTS
;=============================================================================================
;RAMPS
  IF (RAMPS=1 & HOV=0 & FRWY2FRWY=0 & TOLLPLAZA=0)
```

```
      IF (KTOLL=0)                                        ;Non-Toll Ramps Starts
         IF (ON=1)                                        ;Start ON Ramps

; example of use: v=ONPCE(10,25)
; look for 25 in the NUM_LANES field and returns the ON_VLD_D value
     LOOKUP LOOKUPI=5,
       NAME=ONPCE,
         LOOKUP[1]=NUM_LANES, RESULT=ON_CBD_C,
         LOOKUP[2]=NUM_LANES, RESULT=ON_HD_C,
         LOOKUP[3]=NUM_LANES, RESULT=ON_MD_C,
         LOOKUP[4]=NUM_LANES, RESULT=ON_LD_C,
         LOOKUP[5]=NUM_LANES, RESULT=ON_VLD_C,
         LOOKUP[6]=NUM_LANES, RESULT=ON_CBD_D,
         LOOKUP[7]=NUM_LANES, RESULT=ON_HD_D,
         LOOKUP[8]=NUM_LANES, RESULT=ON_MD_D,
         LOOKUP[9]=NUM_LANES, RESULT=ON_LD_D,
         LOOKUP[10]=NUM_LANES, RESULT=ON_VLD_D,
         LOOKUP[11]=NUM_LANES, RESULT=ON_CBD_E,
         LOOKUP[12]=NUM_LANES, RESULT=ON_HD_E,
         LOOKUP[13]=NUM_LANES, RESULT=ON_MD_E,
         LOOKUP[14]=NUM_LANES, RESULT=ON_LD_E,
         LOOKUP[15]=NUM_LANES, RESULT=ON_VLD_E,
        FAIL=0,0,0,
       INTERPOLATE=N
;       FAIL[3]=0
           IF (NEWAREA=1)                                ;CBD
              CAPALL_C=ONPCE(1,NUM_LANES)
              CAPALL_D=ONPCE(6,NUM_LANES)
              CAPALL_E=ONPCE(11,NUM_LANES)
              IF (NUM_LANES>2)
                  CAPALL_C=ONPCE(1,2)
                  CAPALL_D=ONPCE(6,2)
                  CAPALL_E=ONPCE(11,2)
              ENDIF
           ELSEIF (NEWAREA=2)                            ;High Density AT
              CAPALL_C=ONPCE(2,NUM_LANES)
              CAPALL_D=ONPCE(7,NUM_LANES)
              CAPALL_E=ONPCE(12,NUM_LANES)
              IF (NUM_LANES>2)
                  CAPALL_C=ONPCE(2,2)
                  CAPALL_D=ONPCE(7,2)
                  CAPALL_E=ONPCE(12,2)
              ENDIF
           ELSEIF (NEWAREA=3)                            ;Medium Density AT
              CAPALL_C=ONPCE(3,NUM_LANES)
```

```
            CAPALL_D=ONPCE(8,NUM_LANES)
            CAPALL_E=ONPCE(13,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=ONPCE(3,2)
                CAPALL_D=ONPCE(8,2)
                CAPALL_E=ONPCE(13,2)
            ENDIF
         ELSEIF (NEWAREA=4)                    ;Low Density AT
            CAPALL_C=ONPCE(4,NUM_LANES)
            CAPALL_D=ONPCE(9,NUM_LANES)
            CAPALL_E=ONPCE(14,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=ONPCE(4,2)
                CAPALL_D=ONPCE(9,2)
                CAPALL_E=ONPCE(14,2)
            ENDIF
         ELSE                                  ;Very Low Density AT
            CAPALL_C=ONPCE(5,NUM_LANES)
            CAPALL_D=ONPCE(10,NUM_LANES)
            CAPALL_E=ONPCE(15,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=ONPCE(5,2)
                CAPALL_D=ONPCE(10,2)
                CAPALL_E=ONPCE(15,2)
            ENDIF
         ENDIF                                 ;AT IF Block ends
      ENDIF                                          ;END ON Ramps
;-------------------------------------------------------------------------------------------
      IF (OFF=1)                                     ;Start OFF Ramps
; example of use: v=OFFPCE(10,25)
; look for 25 in the NUM_LANES field and returns the OFF_VLD_D value
   LOOKUP LOOKUPI=6,
     NAME=OFFPCE,
       LOOKUP[1]=NUM_LANES, RESULT=OFF_CBD_C,
       LOOKUP[2]=NUM_LANES, RESULT=OFF_HD_C,
       LOOKUP[3]=NUM_LANES, RESULT=OFF_MD_C,
       LOOKUP[4]=NUM_LANES, RESULT=OFF_LD_C,
       LOOKUP[5]=NUM_LANES, RESULT=OFF_VLD_C,
       LOOKUP[6]=NUM_LANES, RESULT=OFF_CBD_D,
       LOOKUP[7]=NUM_LANES, RESULT=OFF_HD_D,
       LOOKUP[8]=NUM_LANES, RESULT=OFF_MD_D,
       LOOKUP[9]=NUM_LANES, RESULT=OFF_LD_D,
       LOOKUP[10]=NUM_LANES, RESULT=OFF_VLD_D,
       LOOKUP[11]=NUM_LANES, RESULT=OFF_CBD_E,
       LOOKUP[12]=NUM_LANES, RESULT=OFF_HD_E,
```

```
          LOOKUP[13]=NUM_LANES, RESULT=OFF_MD_E,
          LOOKUP[14]=NUM_LANES, RESULT=OFF_LD_E,
          LOOKUP[15]=NUM_LANES, RESULT=OFF_VLD_E,
          FAIL=0,0,0,
        INTERPOLATE=N
;        FAIL[3]=0
            IF (NEWAREA=1)                          ;CBD
               CAPALL_C=OFFPCE(1,NUM_LANES)
               CAPALL_D=OFFPCE(6,NUM_LANES)
               CAPALL_E=OFFPCE(11,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=OFFPCE(1,2)
                   CAPALL_D=OFFPCE(6,2)
                   CAPALL_E=OFFPCE(11,2)
               ENDIF
            ELSEIF (NEWAREA=2)                      ;High Density AT
               CAPALL_C=OFFPCE(2,NUM_LANES)
               CAPALL_D=OFFPCE(7,NUM_LANES)
               CAPALL_E=OFFPCE(12,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=OFFPCE(2,2)
                   CAPALL_D=OFFPCE(7,2)
                   CAPALL_E=OFFPCE(12,2)
               ENDIF
            ELSEIF (NEWAREA=3)                      ;Medium Density AT
               CAPALL_C=OFFPCE(3,NUM_LANES)
               CAPALL_D=OFFPCE(8,NUM_LANES)
               CAPALL_E=OFFPCE(13,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=OFFPCE(3,2)
                   CAPALL_D=OFFPCE(8,2)
                   CAPALL_E=OFFPCE(13,2)
               ENDIF
            ELSEIF (NEWAREA=4)                      ;Low Density AT
               CAPALL_C=OFFPCE(4,NUM_LANES)
               CAPALL_D=OFFPCE(9,NUM_LANES)
               CAPALL_E=OFFPCE(14,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=OFFPCE(4,2)
                   CAPALL_D=OFFPCE(9,2)
                   CAPALL_E=OFFPCE(14,2)
               ENDIF
            ELSE                                    ;Very Low Density AT
               CAPALL_C=OFFPCE(5,NUM_LANES)
               CAPALL_D=OFFPCE(10,NUM_LANES)
```

```
               CAPALL_E=OFFPCE(15,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=OFFPCE(5,2)
                   CAPALL_D=OFFPCE(10,2)
                   CAPALL_E=OFFPCE(15,2)
               ENDIF
            ENDIF                                   ;AT IF Block ends
         ENDIF                                              ;END OFF Ramps
;-------------------------------------------------------------------------------------------
        IF (ONLOOP=1)                                       ;Start ON LOOP Ramps
; example of use: v=LONPCE(10,25)
; look for 25 in the NUM_LANES field and returns the LON_VLD_D value
     LOOKUP LOOKUPI=7,
       NAME=LONPCE,
         LOOKUP[1]=NUM_LANES, RESULT=LON_CBD_C,
         LOOKUP[2]=NUM_LANES, RESULT=LON_HD_C,
         LOOKUP[3]=NUM_LANES, RESULT=LON_MD_C,
         LOOKUP[4]=NUM_LANES, RESULT=LON_LD_C,
         LOOKUP[5]=NUM_LANES, RESULT=LON_VLD_C,
         LOOKUP[6]=NUM_LANES, RESULT=LON_CBD_D,
         LOOKUP[7]=NUM_LANES, RESULT=LON_HD_D,
         LOOKUP[8]=NUM_LANES, RESULT=LON_MD_D,
         LOOKUP[9]=NUM_LANES, RESULT=LON_LD_D,
         LOOKUP[10]=NUM_LANES, RESULT=LON_VLD_D,
         LOOKUP[11]=NUM_LANES, RESULT=LON_CBD_E,
         LOOKUP[12]=NUM_LANES, RESULT=LON_HD_E,
         LOOKUP[13]=NUM_LANES, RESULT=LON_MD_E,
         LOOKUP[14]=NUM_LANES, RESULT=LON_LD_E,
         LOOKUP[15]=NUM_LANES, RESULT=LON_VLD_E,
         FAIL=0,0,0,
       INTERPOLATE=N
;       FAIL[3]=0
            IF (NEWAREA=1)                          ;CBD
               CAPALL_C=LONPCE(1,NUM_LANES)
               CAPALL_D=LONPCE(6,NUM_LANES)
               CAPALL_E=LONPCE(11,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=LONPCE(1,2)
                   CAPALL_D=LONPCE(6,2)
                   CAPALL_E=LONPCE(11,2)
               ENDIF
            ELSEIF (NEWAREA=2)                      ;High Density AT
               CAPALL_C=LONPCE(2,NUM_LANES)
               CAPALL_D=LONPCE(7,NUM_LANES)
               CAPALL_E=LONPCE(12,NUM_LANES)
```

```
            IF (NUM_LANES>2)
                CAPALL_C=LONPCE(2,2)
                CAPALL_D=LONPCE(7,2)
                CAPALL_E=LONPCE(12,2)
            ENDIF
         ELSEIF (NEWAREA=3)                    ;Medium Density AT
            CAPALL_C=LONPCE(3,NUM_LANES)
            CAPALL_D=LONPCE(8,NUM_LANES)
            CAPALL_E=LONPCE(13,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=LONPCE(3,2)
                CAPALL_D=LONPCE(8,2)
                CAPALL_E=LONPCE(13,2)
            ENDIF
         ELSEIF (NEWAREA=4)                    ;Low Density AT
            CAPALL_C=LONPCE(4,NUM_LANES)
            CAPALL_D=LONPCE(9,NUM_LANES)
            CAPALL_E=LONPCE(14,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=LONPCE(4,2)
                CAPALL_D=LONPCE(9,2)
                CAPALL_E=LONPCE(14,2)
            ENDIF
         ELSE                                  ;Very Low Density AT
            CAPALL_C=LONPCE(5,NUM_LANES)
            CAPALL_D=LONPCE(10,NUM_LANES)
            CAPALL_E=LONPCE(15,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=LONPCE(5,2)
                CAPALL_D=LONPCE(10,2)
                CAPALL_E=LONPCE(15,2)
            ENDIF
         ENDIF                                 ;AT IF Block ends
      ENDIF                                          ;END ON LOOP Ramps
;-------------------------------------------------------------------------------------------
      IF (OFFLOOP=1)                                 ;Start OFF LOOP Ramps
; example of use: v=LOFFPCE(10,25)
; look for 25 in the NUM_LANES field and returns the LOF_VLD_D value
     LOOKUP LOOKUPI=8,
       NAME=LOFFPCE,
         LOOKUP[1]=NUM_LANES, RESULT=LOF_CBD_C,
         LOOKUP[2]=NUM_LANES, RESULT=LOF_HD_C,
         LOOKUP[3]=NUM_LANES, RESULT=LOF_MD_C,
         LOOKUP[4]=NUM_LANES, RESULT=LOF_LD_C,
         LOOKUP[5]=NUM_LANES, RESULT=LOF_VLD_C,
```

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          LOOKUP[6]=NUM_LANES, RESULT=LOF_CBD_D,
          LOOKUP[7]=NUM_LANES, RESULT=LOF_HD_D,
          LOOKUP[8]=NUM_LANES, RESULT=LOF_MD_D,
          LOOKUP[9]=NUM_LANES, RESULT=LOF_LD_D,
          LOOKUP[10]=NUM_LANES, RESULT=LOF_VLD_D,
          LOOKUP[11]=NUM_LANES, RESULT=LOF_CBD_E,
          LOOKUP[12]=NUM_LANES, RESULT=LOF_HD_E,
          LOOKUP[13]=NUM_LANES, RESULT=LOF_MD_E,
          LOOKUP[14]=NUM_LANES, RESULT=LOF_LD_E,
          LOOKUP[15]=NUM_LANES, RESULT=LOF_VLD_E,
          FAIL=0,0,0,
        INTERPOLATE=N
;        FAIL[3]=0
           IF (NEWAREA=1)                          ;CBD
               CAPALL_C=LOFFPCE(1,NUM_LANES)
               CAPALL_D=LOFFPCE(6,NUM_LANES)
               CAPALL_E=LOFFPCE(11,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=LOFFPCE(1,2)
                   CAPALL_D=LOFFPCE(6,2)
                   CAPALL_E=LOFFPCE(11,2)
               ENDIF
           ELSEIF (NEWAREA=2)                       ;High Density AT
               CAPALL_C=LOFFPCE(2,NUM_LANES)
               CAPALL_D=LOFFPCE(7,NUM_LANES)
               CAPALL_E=LOFFPCE(12,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=LOFFPCE(2,2)
                   CAPALL_D=LOFFPCE(7,2)
                   CAPALL_E=LOFFPCE(12,2)
               ENDIF
           ELSEIF (NEWAREA=3)                       ;Medium Density AT
               CAPALL_C=LOFFPCE(3,NUM_LANES)
               CAPALL_D=LOFFPCE(8,NUM_LANES)
               CAPALL_E=LOFFPCE(13,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=LOFFPCE(3,2)
                   CAPALL_D=LOFFPCE(8,2)
                   CAPALL_E=LOFFPCE(13,2)
               ENDIF
           ELSEIF (NEWAREA=4)                       ;Low Density AT
               CAPALL_C=LOFFPCE(4,NUM_LANES)
               CAPALL_D=LOFFPCE(9,NUM_LANES)
               CAPALL_E=LOFFPCE(14,NUM_LANES)
               IF (NUM_LANES>2)
```

```
                    CAPALL_C=LOFFPCE(4,2)
                    CAPALL_D=LOFFPCE(9,2)
                    CAPALL_E=LOFFPCE(14,2)
                 ENDIF
              ELSE                                    ;Very Low Density AT
                 CAPALL_C=LOFFPCE(5,NUM_LANES)
                 CAPALL_D=LOFFPCE(10,NUM_LANES)
                 CAPALL_E=LOFFPCE(15,NUM_LANES)
                 IF (NUM_LANES>2)
                    CAPALL_C=LOFFPCE(5,2)
                    CAPALL_D=LOFFPCE(10,2)
                    CAPALL_E=LOFFPCE(15,2)
                 ENDIF
              ENDIF                                   ;AT IF Block ends
           ENDIF                                             ;END OFF LOOP Ramps
        ENDIF                                                ;END NON-TOLL RAMPS
;-------------------------------------------------------------------------------------------
        IF (KTOLL=1)                                         ;TOLL RAMPS Starts
            IF (TOLLON=1)                                    ;Start Toll ON Ramps
; example of use: v=TONPCE(10,25)
; look for 25 in the NUM_LANES field and returns the TON_VLD_D value
      LOOKUP LOOKUPI=9,
         NAME=TONPCE,
           LOOKUP[1]=NUM_LANES, RESULT=TON_CBD_C,
           LOOKUP[2]=NUM_LANES, RESULT=TON_HD_C,
           LOOKUP[3]=NUM_LANES, RESULT=TON_MD_C,
           LOOKUP[4]=NUM_LANES, RESULT=TON_LD_C,
           LOOKUP[5]=NUM_LANES, RESULT=TON_VLD_C,
           LOOKUP[6]=NUM_LANES, RESULT=TON_CBD_D,
           LOOKUP[7]=NUM_LANES, RESULT=TON_HD_D,
           LOOKUP[8]=NUM_LANES, RESULT=TON_MD_D,
           LOOKUP[9]=NUM_LANES, RESULT=TON_LD_D,
           LOOKUP[10]=NUM_LANES, RESULT=TON_VLD_D,
           LOOKUP[11]=NUM_LANES, RESULT=TON_CBD_E,
           LOOKUP[12]=NUM_LANES, RESULT=TON_HD_E,
           LOOKUP[13]=NUM_LANES, RESULT=TON_MD_E,
           LOOKUP[14]=NUM_LANES, RESULT=TON_LD_E,
           LOOKUP[15]=NUM_LANES, RESULT=TON_VLD_E,
           FAIL=0,0,0,
         INTERPOLATE=N
;         FAIL[3]=0
            IF (NEWAREA=1)                               ;CBD
               CAPALL_C=TONPCE(1,NUM_LANES)
               CAPALL_D=TONPCE(6,NUM_LANES)
               CAPALL_E=TONPCE(11,NUM_LANES)
```

```
            IF (NUM_LANES>2)
                CAPALL_C=TONPCE(1,2)
                CAPALL_D=TONPCE(6,2)
                CAPALL_E=TONPCE(11,2)
            ENDIF
         ELSEIF (NEWAREA=2)                    ;High Density AT
            CAPALL_C=TONPCE(2,NUM_LANES)
            CAPALL_D=TONPCE(7,NUM_LANES)
            CAPALL_E=TONPCE(12,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=TONPCE(2,2)
                CAPALL_D=TONPCE(7,2)
                CAPALL_E=TONPCE(12,2)
            ENDIF
         ELSEIF (NEWAREA=3)                    ;Medium Density AT
            CAPALL_C=TONPCE(3,NUM_LANES)
            CAPALL_D=TONPCE(8,NUM_LANES)
            CAPALL_E=TONPCE(13,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=TONPCE(3,2)
                CAPALL_D=TONPCE(8,2)
                CAPALL_E=TONPCE(13,2)
            ENDIF
         ELSEIF (NEWAREA=4)                    ;Low Density AT
            CAPALL_C=TONPCE(4,NUM_LANES)
            CAPALL_D=TONPCE(9,NUM_LANES)
            CAPALL_E=TONPCE(14,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=TONPCE(4,2)
                CAPALL_D=TONPCE(9,2)
                CAPALL_E=TONPCE(14,2)
            ENDIF
         ELSE                                  ;Very Low Density AT
            CAPALL_C=TONPCE(5,NUM_LANES)
            CAPALL_D=TONPCE(10,NUM_LANES)
            CAPALL_E=TONPCE(15,NUM_LANES)
            IF (NUM_LANES>2)
                CAPALL_C=TONPCE(5,2)
                CAPALL_D=TONPCE(10,2)
                CAPALL_E=TONPCE(15,2)
            ENDIF
         ENDIF                                 ;AT IF Block ends
      ENDIF                                          ;END Toll ON Ramps
;-------------------------------------------------------------------------------------
      IF (TOLLOFF=1)                                 ;Start Toll OFF Ramps
```

```
; example of use: v=TOFFPCE(10,25)
; look for 25 in the NUM_LANES field and returns the TOF_VLD_D value
     LOOKUP LOOKUPI=10,
       NAME=TOFFPCE,
         LOOKUP[1]=NUM_LANES, RESULT=TOF_CBD_C,
         LOOKUP[2]=NUM_LANES, RESULT=TOF_HD_C,
         LOOKUP[3]=NUM_LANES, RESULT=TOF_MD_C,
         LOOKUP[4]=NUM_LANES, RESULT=TOF_LD_C,
         LOOKUP[5]=NUM_LANES, RESULT=TOF_VLD_C,
         LOOKUP[6]=NUM_LANES, RESULT=TOF_CBD_D,
         LOOKUP[7]=NUM_LANES, RESULT=TOF_HD_D,
         LOOKUP[8]=NUM_LANES, RESULT=TOF_MD_D,
         LOOKUP[9]=NUM_LANES, RESULT=TOF_LD_D,
         LOOKUP[10]=NUM_LANES, RESULT=TOF_VLD_D,
         LOOKUP[11]=NUM_LANES, RESULT=TOF_CBD_E,
         LOOKUP[12]=NUM_LANES, RESULT=TOF_HD_E,
         LOOKUP[13]=NUM_LANES, RESULT=TOF_MD_E,
         LOOKUP[14]=NUM_LANES, RESULT=TOF_LD_E,
         LOOKUP[15]=NUM_LANES, RESULT=TOF_VLD_E,
         FAIL=0,0,0,
       INTERPOLATE=N
;       FAIL[3]=0
           IF (NEWAREA=1)                          ;CBD
               CAPALL_C=TOFFPCE(1,NUM_LANES)
               CAPALL_D=TOFFPCE(6,NUM_LANES)
               CAPALL_E=TOFFPCE(11,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=TOFFPCE(1,2)
                   CAPALL_D=TOFFPCE(6,2)
                   CAPALL_E=TOFFPCE(11,2)
               ENDIF
            ELSEIF (NEWAREA=2)                      ;High Density AT
               CAPALL_C=TOFFPCE(2,NUM_LANES)
               CAPALL_D=TOFFPCE(7,NUM_LANES)
               CAPALL_E=TOFFPCE(12,NUM_LANES)
               IF (NUM_LANES>2)
                   CAPALL_C=TOFFPCE(2,2)
                   CAPALL_D=TOFFPCE(7,2)
                   CAPALL_E=TOFFPCE(12,2)
               ENDIF
            ELSEIF (NEWAREA=3)                      ;Medium Density AT
               CAPALL_C=TOFFPCE(3,NUM_LANES)
               CAPALL_D=TOFFPCE(8,NUM_LANES)
               CAPALL_E=TOFFPCE(13,NUM_LANES)
               IF (NUM_LANES>2)
```

```
                CAPALL_C=TOFFPCE(3,2)
                CAPALL_D=TOFFPCE(8,2)
                CAPALL_E=TOFFPCE(13,2)
             ENDIF
          ELSEIF (NEWAREA=4)                    ;Low Density AT
             CAPALL_C=TOFFPCE(4,NUM_LANES)
             CAPALL_D=TOFFPCE(9,NUM_LANES)
             CAPALL_E=TOFFPCE(14,NUM_LANES)
             IF (NUM_LANES>2)
                 CAPALL_C=TOFFPCE(4,2)
                 CAPALL_D=TOFFPCE(9,2)
                 CAPALL_E=TOFFPCE(14,2)
             ENDIF
          ELSE                                  ;Very Low Density AT
              CAPALL_C=TOFFPCE(5,NUM_LANES)
             CAPALL_D=TOFFPCE(10,NUM_LANES)
             CAPALL_E=TOFFPCE(15,NUM_LANES)
             IF (NUM_LANES>2)
                 CAPALL_C=TOFFPCE(5,2)
                 CAPALL_D=TOFFPCE(10,2)
                 CAPALL_E=TOFFPCE(15,2)
             ENDIF
          ENDIF                                 ;AT IF Block ends
        ENDIF                                           ;END Toll OFF Ramps
;-------------------------------------------------------------------------------------------
    ENDIF                                               ;END TOLL RAMPS

  ENDIF                                                 ;END RAMPS
;===========================================================================================

 ENDIF                                                   ;END NO OVERIDE
;===========================================================================================

;Per Lane Mainline Capacity
CAPACITY_C_LANE=CAPALL_C                    ;PER LANE DIRECTIONAL HOURLY CAPACITY (LOSC)
CAPACITY_D_LANE=CAPALL_D                    ;PER LANE DIRECTIONAL HOURLY CAPACITY (LOSD)
CAPACITY_E_LANE=CAPALL_E                    ;PER LANE DIRECTIONAL HOURLY CAPACITY (LOSE)
CAPACITY_LANE=CAPALL_E                      ;PER LANE DIRECTIONAL HOURLY CAPACITY (LOSE) same as CAPACITY_E_LANE

;Apply Auxiliary Lane Capacity adjustment based on length of auxiliary lane (AuxLnDist in miles)
if ((FRWY=1)&(AuxLnDist>0))
  if ((AuxLnDist>0) &(AuxLnDist<1)) CAPACITY_C_HR=(CAPACITY_C_LANE*NUM_LANES)+(0.5*1000)  ;TOTAL DIR HOURLY CAPACITY (LOSC)
  if ((AuxLnDist>=1)&(AuxLnDist<2)) CAPACITY_C_HR=(CAPACITY_C_LANE*NUM_LANES)+(0.6*1000)
  if ((AuxLnDist>=2)&(AuxLnDist<3)) CAPACITY_C_HR=(CAPACITY_C_LANE*NUM_LANES)+(0.8*1000)
  if (AuxLnDist>3)                  CAPACITY_C_HR=(CAPACITY_C_LANE*NUM_LANES)+(1.0*1000)
```

```
  if ((AuxLnDist>0) &(AuxLnDist<1)) CAPACITY_D_HR=(CAPACITY_D_LANE*NUM_LANES)+(0.5*1000)  ;TOTAL DIR HOURLY CAPACITY (LOSD)
  if ((AuxLnDist>=1)&(AuxLnDist<2)) CAPACITY_D_HR=(CAPACITY_D_LANE*NUM_LANES)+(0.6*1000)
  if ((AuxLnDist>=2)&(AuxLnDist<3)) CAPACITY_D_HR=(CAPACITY_D_LANE*NUM_LANES)+(0.8*1000)
  if (AuxLnDist>3)                  CAPACITY_D_HR=(CAPACITY_D_LANE*NUM_LANES)+(1.0*1000)

  if ((AuxLnDist>0) &(AuxLnDist<1)) CAPACITY_E_HR=(CAPACITY_E_LANE*NUM_LANES)+(0.5*1000)  ;TOTAL DIR HOURLY CAPACITY (LOSE)
  if ((AuxLnDist>=1)&(AuxLnDist<2)) CAPACITY_E_HR=(CAPACITY_E_LANE*NUM_LANES)+(0.6*1000)
  if ((AuxLnDist>=2)&(AuxLnDist<3)) CAPACITY_E_HR=(CAPACITY_E_LANE*NUM_LANES)+(0.8*1000)
  if (AuxLnDist>3)                  CAPACITY_E_HR=(CAPACITY_E_LANE*NUM_LANES)+(1.0*1000)

else
  CAPACITY_C_HR=(CAPACITY_C_LANE*NUM_LANES)          ;TOTAL DIR HOURLY CAPACITY (LOSC)
  CAPACITY_D_HR=(CAPACITY_D_LANE*NUM_LANES)          ;TOTAL DIR HOURLY CAPACITY (LOSD)
  CAPACITY_E_HR=(CAPACITY_E_LANE*NUM_LANES)          ;TOTAL DIR HOURLY CAPACITY (LOSE)

endif                                   ;END Auxiliary lane adjustment

  CAPACITY_HR=CAPACITY_E_HR             ;Capacity_HR or CAPACITY same as Capacity_E_HR
  CAPACITY=CAPACITY_E_HR                ;this will override the CAPACITY field if exists on network

;-test: if(LOWSPD=1) print,list='low again',CAPALL(8.0),CAPACITY_LANE(8.0),FTC2(3.0)
;-------------------------------------------------------------------------------------
;---- Toll Plaza (FTC2=95) Capacity Approximation...
 IF (TOLLPLAZA=1)                       ;TOLL PLAZA CAPACITY
    CAPALL=1300                         ;SAME AS OLD
    CAPACITY_C_LANE=CAPALL*0.75         ;PER LANE DIRECTIONAL HOURLY CAPACITY_LANE or CAPACITY - LOS C
    CAPACITY_D_LANE=CAPALL*0.90         ;------------------------------------------------------ LOS D
    CAPACITY_E_LANE=CAPALL*1.00         ;------------------------------------------------------ LOS E
    CAPACITY_LANE=CAPALL*1.00           ;------------------------------------------------------same as LOS E capacity

    CAPACITY_C_HR=CAPACITY_C_LANE*NUM_LANES   ;TOTAL DIRECTIONAL HOURLY CAPACITY -LOS C
    CAPACITY_D_HR=CAPACITY_D_LANE*NUM_LANES   ;-----------------------------------LOS D
    CAPACITY_E_HR=CAPACITY_E_LANE*NUM_LANES   ;-----------------------------------LOS E
    CAPACITY_HR=CAPACITY_E_HR           ;Capacity_HR or CAPACITY same as Capacity_E_HR
    CAPACITY=CAPACITY_E_HR              ;this will override the CAPACITY field that exists on network
 ENDIF

;---- HOV Slip Ramps (FTC2=83-86) Capacity Approximation...
 IF (HOVPEAK=1 | HOVDAY=1)              ;PEAK ONLY AND ALL-DAY HOV RAMPS
    CAPALL=4000                         ;SAME AS OLD
    CAPACITY_C_LANE=CAPALL*0.75         ;PER LANE DIRECTIONAL HOURLY CAPACITY_LANE or CAPACITY - LOS C
    CAPACITY_D_LANE=CAPALL*0.90         ;------------------------------------------------------ LOS D
    CAPACITY_E_LANE=CAPALL*1.00         ;------------------------------------------------------ LOS E
    CAPACITY_LANE=CAPALL*1.00           ;------------------------------------------------------same as LOS E capacity
```

```
    CAPACITY_C_HR=CAPACITY_C_LANE*NUM_LANES   ;TOTAL DIRECTIONAL HOURLY CAPACITY -LOS C
    CAPACITY_D_HR=CAPACITY_D_LANE*NUM_LANES   ;-----------------------------------LOS D
    CAPACITY_E_HR=CAPACITY_E_LANE*NUM_LANES   ;-----------------------------------LOS E
    CAPACITY_HR=CAPACITY_E_HR                 ;Capacity_HR or CAPACITY same as Capacity_E_HR
    CAPACITY=CAPACITY_E_HR                    ;this will override the CAPACITY field that exists on network
 ENDIF


ENDIF                                        ;END NON-CENTROID
;-------------------------------------------------------------------------------------------
;Centroid Connectors Capacities:
IF (FTC1=50,59)
  CAPALL=10000
  CAPACITY_C_LANE=CAPALL*0.75               ;PER LANE DIRECTIONAL HOURLY CAPACITY_LANE or CAPACITY - LOS C
  CAPACITY_D_LANE=CAPALL*0.90               ;------------------------------------------------------ LOS D
  CAPACITY_E_LANE=CAPALL*1.00               ;------------------------------------------------------ LOS E
  CAPACITY_LANE=CAPALL*1.00                 ;------------------------------------------------------same as LOS E capacity


  CAPACITY_C_HR=CAPACITY_C_LANE*NUM_LANES   ;TOTAL DIRECTIONAL HOURLY CAPACITY -LOS C
  CAPACITY_D_HR=CAPACITY_D_LANE*NUM_LANES   ;-----------------------------------LOS D
  CAPACITY_E_HR=CAPACITY_E_LANE*NUM_LANES   ;-----------------------------------LOS E
  CAPACITY_HR=CAPACITY_E_HR                 ;Capacity_HR or CAPACITY same as Capacity_E_HR
  CAPACITY=CAPACITY_E_HR                    ;this will override the CAPACITY field that exists on network
ENDIF
;-------------------------------------------------------------------------------------------

ENDPHASE

ENDRUN
```

Appendix B

Description of Cube Voyager Catalog Keys

Table B-1: **SERPM6.5 Cube-Voyager Catalog Keys – New Time-of-Day Model**

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)	Future-35R (2035 CF) Scenario Value (Note1)
1	Scen.Name	Scenario Name	Base	Future-CF	Future-35R
2	USER1		(Note)		
3	DESCR	Description of Alternative	SERPM65 SubArea Model		
4	Year	Year (2 digits)	05	30	35
5	ALT	Alternative (1 Letter)	R		
6	**CUBE**	**Cube Directory**	**E:\fsutms\d4\NS65TODMDL\Cube**		
7	**PATH1**	**Location of User Written Program**	**E:\fsutms\d4\NS65TODMDL\user.prg**		
8	**DATADIR**	**Input Data Directory**	**E:\fsutms\d4\NS65TODMDL\IN-05R**	**E:\fsutms\d4\NS65TODMDL\IN-30R**	**E:\fsutms\d4\NS65TODMDL\IN-35R**
9	**OUTDIR**	**Output Data Directory**	**E:\fsutms\d4\NS65TODMDL\out-05R**	**E:\fsutms\d4\NS65TODMDL\out-30R**	**E:\fsutms\d4\NS65TODMDL\out-35R**
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 SERPM65TOD**	**2030 SERPM65TOD**	**2035 SERPM65TOD**
14	ANALYSIS	Sets HEVAL to run in analysis mode if "YES" - Not Used in new version of models	NO	YES	YES
15	VALIDATE	Sets HEVAL to run in validate mode if "YES" - Not Used in new version of models	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	3151		
20	NODES	Highest node number permitted	35000	55000	35000
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**	**S65TOD 2005 Base Run**	**S65TOD 2030 CF Run**	**S65TOD 2035 CF 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**	**0.079**		
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	0.52250		
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		

Table B-1: **(Continued)**

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)	Future-CF (2030) Scenario Value (Note1)
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	0.4830		
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	0.80		
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	407, 408		
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	0.70		
92	**FacCtollLong**	CTOLL Adj Fac for Comparatively Longer Toll Facility (eg. Sawgrass Parkway), LI.NONTPKTOLL=2	0.75		
93	RUNSELLINK	Select Link Run (1=Yes. 0=No)	0		
94	**CountYear**	**Year of Traffic Count Used in HEVAL Validation Summary (eg. 2005)**	**2005**		
95	**UserDefinedSubarea**	**User Defined Windowed Sub Area (1=Yes, 0=No)**	**1**		
96	**BaseYr_TTV_VOC**	**Base Year for Calculation of TTV (Travel Time Values) and VOC (Vehicle Operating Cost)**	**2004**		
97	**AnalysisYr_TTV_VOC**	**Analysis Year for Calculation of TTV (Travel Time Values) and VOC (Vehicle Operating Cost)**	**2005**	**2030**	**2035**
98	**Infl_Note**	**Inflation Parameters Notes**	**(Note)**		
99	**Inflation_VOC**	**Yearly Inflation Rate for Calculation of VOC (Vehicle Operating Cost)**	**0.0231**		
100	**Inflation_TTV**	**Yearly Inflation Rate for Calculation of TTV (Travel Time Values)**	**0.0307**		

Note 1: Values for Future Year remain same as Base year unless specified.

Table B-2: **SERPM6.5 Cube-Voyager Catalog Keys – New Subarea Model**

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)	Future-35R (2035 CF) Scenario Value (Note1)
1	Scen.Name	Scenario Name	Base	Future-CF	Future-35R
2	USER1		(Note)		
3	DESCR	Description of Alternative	SERPM65 SubArea Model		
4	Year	Year (2 digits)	05	30	35
5	ALT	Alternative (1 Letter)	R		
6	**CUBE**	**Cube Directory**	**E:\fsutms\d4\NS65SubArea\Cube**		
7	**PATH1**	**Location of User Written Program**	**E:\fsutms\d4\NS65SubArea\user.prg**		
8	**DATADIR**	**Input Data Directory**	**E:\fsutms\d4\NS65SubArea\IN-05R**	**E:\fsutms\d4\NS65SubArea\IN-30R**	**E:\fsutms\d4\NS65SubArea\IN-35R**
9	**OUTDIR**	**Output Data Directory**	**E:\fsutms\d4\NS65SubArea\out-05R**	**E:\fsutms\d4\NS65SubArea\out-30R**	**E:\fsutms\d4\NS65SubArea\out-35R**
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**	**2035 SERPM**
14	ANALYSIS	Sets HEVAL to run in analysis mode if "YES" - Not Used in new version of models	NO	YES	YES
15	VALIDATE	Sets HEVAL to run in validate mode if "YES" - Not Used in new version of models	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	3151		
20	NODES	Highest node number permitted	35000	55000	35000
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 Subarea -Highway Only Run**	**S65 2030 CF Highway Only**	**S65 Subarea - 2035 CF Highway Only 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**	**0.079**		
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		

Table B-2: **(Continued)**

Sl No	Keys Name	Keys Description	Base (2005) Scenario Value	Future-CF (2030) Scenario Value (Note1)	Future-CF (2030) Scenario Value (Note1)
47	HBSCH-PK	HB School (Private School and College/University) Trip Peak Period Factor	0.52250		
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	0.4830		
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	0.80		
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	RUNSELLINK	Select Link Run (1=Yes. 0=No)	0		
83	**HighwayOnlyRun**	**Highway Only Run (1=Yes, 0=NO)**	**1**		
84	**SubRegion**	**Enter SubRegion County (PB=Palm Beach, BO=Broward, MD=Miami-Dade, xx=None, AL=All Counties)**	**xx**		
85	**UserDefinedSubarea**	**User Defined Windowed Sub Area (1=Yes, 0=No)**	**0**		
86	**CountYear**	**Year of Traffic Count Used in HEVAL Validation Summary (eg. 2005)**	**2005**		
87	**BaseYr_TTV_VOC**	**Base Year for Calculation of TTV (Travel Time Values) and VOC (Vehicle Operating Cost)**	**2004**		
88	**AnalysisYr_TTV_VOC**	**Analysis Year for Calculation of TTV (Travel Time Values) and VOC (Vehicle Operating Cost)**	**2005**	**2030**	**2035**
89	**Infl_Note**	**Inflation Parameters Notes**	**(Note)**		
90	**Inflation_VOC**	**Yearly Inflation Rate for Calculation of VOC (Vehicle Operating Cost)**	**0.0231**		
91	**Inflation_TTV**	**Yearly Inflation Rate for Calculation of TTV (Travel Time Values)**	**0.0307**		

Note 1: Values for Future Year remain same as Base year unless specified.

Note 2: The three CV keys (No. 83-84) are Sub-area model specific. Their combination defines the model options of sub-area run.

Appendix C

Description of Unloaded and Loaded Network Attributes

Table C-1: **Description of Selected Attributes of Unloaded Highway Network (S65_05.NET)**

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	CYC_LEN	User coded Signal Cycle Length (secs)	
18	NODETYPE	Node Type (1=Centroid, 2=External , 3=Int Dummy , 4=Ext Dummy)	This must be checked & updated (if necessary) for Sub-area model
19	DETAIL	An indicator of user defined sub-area centroids (1=yes in UD sub-area, 0=no in UD sub-area)	More Instruction on this in report and in CV model

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)***	**Used in Capacity Calculation Adjustment**
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 C-1: **(Continued)**

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 Adjustment**
69	**LEFTTURN**	**Presence of a left-turn bay (1=yes,0=no)**	**Used in Capacity Calculation Adjustment**
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)**	
101	**DetailNet**	**An indicator of user defined sub-area ploygon link (1=yes, 0=no)**	**More Instruction on this in report and in CV model**
102	**RmpMtrInd**	**An indicator for Ramp Metering (1=yes, 0=no); Default values=0**	**The supplied network has default values of "0" for all these three new capacity adjustment factors. Users should update the network links with appropriate values to effect any of their adjustments in capacity calculation. See Chapter 3 for more information on these attributes.**
103	**AuxLnDist**	**Auxiliary Lane(s) Distance in miles ; Dafault values=0**	
104	**RighTurn**	**An indicator of exclusive Right Turn (1=yes, 0=no); Dafault values=0**	
105	**Reversible**	**Reversible Codes for no traffic assigned in a period (1=PM, 2= AM and 1 or 2 in off-peak); Default=0.**	**Used in TOD model only**

Table C-2: **Description of Selected Attributes of Loaded 24-Hour Highway-Only Network (HOAllDay-HLOAD_AYY.NET)**

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	Area Type (Density Based)
5	SPGEN	Special Generator 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	**DETAIL**	**An indicator of user defined sub-area centroids (1=yes in UD sub-area, 0=no in UD sub-area)**
8	**SA_Centroid**	**An indicator of centroids of the loaded network (1=yes, 0=no)**
9	AD_RMPMRGLNFAC	All Day - Merge Ramp Volume Factor
10	AD_RAMPFACVOL	All Day - Merge Ramp Hourly Volume
11	AD_FWYMRGLNFAC	All Day - Merge Freeway Volume Factor
12	AD_FWYMRGLNVOL	All Day - Merge Freeway Hourly Volume
13	AD_JCTMRGHRVOL	All Day - Merge Ramp & Freeway Hourly Volume
14	AD_JCTMRGDELAY	All Day - Merge Ramp & Freeway Delay (min)
15	AD_JCTFWYDELAY	All Day - Merge Freeway Delay (min)
16	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 (Per 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	CONFAC24H	24-Hour "confac" factor
25	BPRCOEFFICIENT	BPR Coefficient (alpha)
26	BPREXPONENT	BPR Exponent (beta)
27	CONFACAMP	AM Peak Period "confac" factor
28	CONFACPMP	PM Peak Period "confac" factor
29	CONFACOFP	All Day - "confac" factor
30	CAPACITY_C_LANE	Per Lane LOS C Capacity
31	CAPACITY_D_LANE	Per Lane LOS D Capacity
32	CAPACITY_E_LANE (CAPACITY_LANE)	Per Lane LOS E Capacity
33	LOSECAP (CAPACITY_E_HR or CAPACITY_HR))	LOS E Capacity (Peak Hour)
34	LOSECAP_AMPKPD	LOS E Capacity (AM Peak Period)
35	LOSECAP_PMPKPD	LOS E Capacity (PM Peak Period)
36	LOSECAP_OFPKPD	LOS E Capacity (Off-peakPeak Period)

Table C-2: **(Continued)**

Sl No	Link Attributes	Description
37	LOSDCAP (CAPACITY_D_HR)	LOS D Capacity (Peak Hour)
38	LOSDCAP_AMPKPD	LOS D Capacity (AM Peak Period)
39	LOSDCAP_PMPKPD	LOS D Capacity (PM Peak Period)
40	LOSDCAP_OFPKPD	LOS D Capacity (Off-peakPeak Period)
41	LOSCCAP (CAPACITY_C_HR)	LOS C Capacity (Peak Hour)
42	LOSCCAP_AMPKPD	LOS C Capacity (AM Peak Period)
43	LOSCCAP_PMPKPD	LOS C Capacity (PM Peak Period)
44	LOSCCAP_OFPKPD	LOS C Capacity (Off-peakPeak Period)
45	**DetailNet**	**An indicator of user defined sub-area link (1=yes in UD sub-area, 0=no in UD sub-area)**
46	**SANETLNK**	**An indicator of sub-area link (1=yes, 0=no)**
47	TOLL_ACC	Toll Acceleration Link
48	TOLL_DEC	Toll Decelleration Link
49	RCTOLL	CTOLL values
50	POSTEDSPEED	Posted Speed (mph)
51	FFOLD	Initial Unadjusted Free-Flow Speed (mph)
52	FREEFLOWSPEED	Free Flow Speed (mph)
53	POSTEDTIME	Posted Time (min)
54	FREEFLOWTIME	Free Flow Time (min)
55	ROUNDNODECLS	Approach Link of Freeway-Ramp Jct Nodes (1=yes,0=no)
56	AD_LNKJCTDELAY	All Day - Fwy/Ramp Merge Delay
57	ADHO_VCLOSC	All Day Highway Only - Vol/LOSC Capacity Ratio (directional)
58	ADHO_VCLOSD	All Day Highway Only - Vol/LOSD Capacity Ratio (directional)
59	ADHO_VCLOSE	All Day Highway Only - Vol/LOSE Capacity Ratio (directional)
60	ADHO_CONGTIME	All Day Highway Only - Congested time in min (directional)
61	ADHO_CONGSPD	All Day Highway Only - Congested Speed in mph (directional)
62	ADHO_VHT	All Day Highway Only - Vehicle-Hours-Travel (directional)
63	ADHO_VMT	All Day Highway Only - Vehicle-Miles-Travel (directional)
64	ADHO_TOTVOL	All Day Highway Only - Total Volume (directional)
65	ADHO_VOLCNT	All Day Highway Only - Vol/Count Ratio (directional)
66	ADHO_DAVOL	All Day Highway Only - Drive-Alone Volume (directional)
67	ADHO_SRVOL	All Day Highway Only - Shared-Ride Volume (directional)
68	ADHO_TRKVOL	All Day Highway Only - Truck Volume (directional)
69	ADHO_TOTVOL2	All Day Highway Only - Total Volume (2-way)
70	ADHO_DAVOL2	All Day Highway Only - Drive-Alone Volume (2-way)
71	ADHO_SRVOL2	All Day Highway Only - Shared-Ride Volume (2-way)
72	ADHO_TRKVOL2	All Day Highway Only - Truck Volume (2-way)
73	ADHO_SEL_TOTVOL	All Day Highway Only - Selected Links Total Volume (directional)
74	ADHO_SEL_DAVOL	All Day Highway Only - Selected Links Drive-Alone Volume (directional)
75	ADHO_SEL_SRVOL	All Day Highway Only - Selected Links Shared-Ride Volume (directional)
76	ADHO_SEL_TRKVOL	All Day Highway Only - Selected Links Truck Volume (directional)
77	ADHO_SEL_TOTVOL2	All Day Highway Only - Selected Links Total Volume (2-way)
78	ADHO_SEL_DAVOL2	All Day Highway Only - Selected Links Drive-Alone Volume (2-way)
79	ADHO_SEL_SRVOL2	All Day Highway Only - Selected Links Shared-Ride Volume (2-way)
80	ADHO_SEL_TRKVOL2	All Day Highway Only - Selected Links Truck Volume (2-way)

Table C-3: **Description of Selected Attributes of Loaded 24-Hour Network (AllDay-HLOAD_AYY.NET)**

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	Area Type (Density Based)
5	SPGEN	Special Generator 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	**DETAIL**	**An indicator of user defined sub-area centroids (1=yes in UD sub-area, 0=no in UD sub-area)**
8	**SA_Centroid**	**An indicator of centroids of the loaded network (1=yes, 0=no)**
9	AD_RMPMRGLNFAC	All Day - Merge Ramp Volume Factor
10	AD_RAMPFACVOL	All Day - Merge Ramp Hourly Volume
11	AD_FWYMRGLNFAC	All Day - Merge Freeway Volume Factor
12	AD_FWYMRGLNVOL	All Day - Merge Freeway Hourly Volume
13	AD_JCTMRGHRVOL	All Day - Merge Ramp & Freeway Hourly Volume
14	AD_JCTMRGDELAY	All Day - Merge Ramp & Freeway Delay (min)
15	AD_JCTFWYDELAY	All Day - Merge Freeway Delay (min)
16	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 (Per 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	CONFAC24H	24-Hour "confac" factor
25	BPRCOEFFICIENT	BPR Coefficient (alpha)
26	BPREXPONENT	BPR Exponent (beta)
27	CONFACAMP	AM Peak Period "confac" factor
28	CONFACPMP	PM Peak Period "confac" factor
29	CONFACOFP	All Day - "confac" factor
30	CAPACITY_C_LANE	Per Lane LOS C Capacity
31	CAPACITY_D_LANE	Per Lane LOS D Capacity
32	CAPACITY_E_LANE (CAPACITY_LANE)	Per Lane LOS E Capacity
33	LOSECAP (CAPACITY_E_HR or CAPACITY_HR))	LOS E Capacity (Peak Hour)
34	LOSECAP_AMPKPD	LOS E Capacity (AM Peak Period)
35	LOSECAP_PMPKPD	LOS E Capacity (PM Peak Period)
36	LOSECAP_OFPKPD	LOS E Capacity (Off-peakPeak Period)

Table C-3: **(Continued)**

Sl No	Link Attributes	Description
37	LOSDCAP (CAPACITY_D_HR)	LOS D Capacity (Peak Hour)
38	LOSDCAP_AMPKPD	LOS D Capacity (AM Peak Period)
39	LOSDCAP_PMPKPD	LOS D Capacity (PM Peak Period)
40	LOSDCAP_OFPKPD	LOS D Capacity (Off-peakPeak Period)
41	LOSCCAP (CAPACITY_C_HR)	LOS C Capacity (Peak Hour)
42	LOSCCAP_AMPKPD	LOS C Capacity (AM Peak Period)
43	LOSCCAP_PMPKPD	LOS C Capacity (PM Peak Period)
44	LOSCCAP_OFPKPD	LOS C Capacity (Off-peakPeak Period)
45	**DetailNet**	**An indicator of user defined sub-area link (1=yes in UD sub-area, 0=no in UD sub-area)**
46	TOLL_ACC	Toll Acceleration Link
47	TOLL_DEC	Toll Deceleration Link
48	RCTOLL	CTOLL values
49	POSTEDSPEED	Posted Speed (mph)
50	FFOLD	Initial Unadjusted Free-Flow Speed (mph)
51	FREEFLOWSPEED	Free Flow Speed (mph)
52	POSTEDTIME	Posted Time (min)
53	FREEFLOWTIME	Free Flow Time (min)
54	ROUNDNODECLS	Approach Link of Freeway-Ramp Jct Nodes (1=yes,0=no)
55	AD_LNKJCTDELAY	All Day - Fwy/Ramp Merge Delay
56	AD_VCLOSC	All Day - Vol/LOSC Capacity Ratio (directional)
57	AD_VCLOSD	All Day - Vol/LOSD Capacity Ratio (directional)
58	AD_VCLOSE	All Day - Vol/LOSE Capacity Ratio (directional)
59	AD_CONGTIME	All Day - Congested time in min (directional)
60	AD_CONGSPD	All Day - Congested Speed in mph (directional)
61	AD_VHT	All Day - Vehicle-Hours-Travel (directional)
62	AD_VMT	All Day - Vehicle-Miles-Travel (directional)
63	AD_TOTVOL	All Day - Total Volume (directional)
64	AD_VOLCNT	All Day - Vol/Count Ratio (directional)
65	AD_DAVOL	All Day - Drive-Alone Volume (directional)
66	AD_SRVOL	All Day - Shared-Ride Volume (directional)
67	AD_TRKVOL	All Day - Truck Volume (directional)
68	AD_TOTVOL2	All Day - Total Volume (2-way)
69	AD_DAVOL2	All Day - Drive-Alone Volume (2-way)
70	AD_SRVOL2	All Day - Shared-Ride Volume (2-way)
71	AD_TRKVOL2	All Day - Truck Volume (2-way)
72	AD_SEL_TOTVOL	All Day - Selected Links Total Volume (directional)
73	AD_SEL_DAVOL	All Day - Selected Links Drive-Alone Volume (directional)
74	AD_SEL_SRVOL	All Day - Selected Links Shared-Ride Volume (directional)
75	AD_SEL_TRKVOL	All Day - Selected Links Truck Volume (directional)
76	AD_SEL_TOTVOL2	All Day - Selected Links Total Volume (2-way)
77	AD_SEL_DAVOL2	All Day - Selected Links Drive-Alone Volume (2-way)
78	AD_SEL_SRVOL2	All Day - Selected Links Shared-Ride Volume (2-way)
79	AD_SEL_TRKVOL2	All Day - Selected Links Truck Volume (2-way)

Table C-4: **Description of Selected Attributes of Loaded Time-of-Day Highway Network (Combined-HLOAD_AYY.NET)**

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	Area Type (Density Based)
5	SPGEN	Special Generator 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	**DETAIL**	**An indicator of user defined sub-area centroids (1=yes in UD sub-area, 0=no in UD sub-area)**
8	AM_RMPMRGLNFAC	AM Peak Period - Merge Ramp Volume Factor
9	AM_RAMPFACVOL	AM Peak Period - Merge Ramp Hourly Volume
10	AM_FWYMRGLNFAC	AM Peak Period - Merge Freeway Volume Factor
11	AM_FWYMRGLNVOL	AM Peak Period - Merge Freeway Hourly Volume
12	AM_JCTMRGHRVOL	AM Peak Period - Merge Ramp & Freeway Hourly Volume
13	AM_JCTMRGDELAY	AM Peak Period - Merge Ramp & Freeway Delay (min)
14	AM_JCTFWYDELAY	AM Peak Period - Merge Freeway Delay (min)
15	AM_JCTRAMPDELAY	AM Peak Period - Merge Ramp Delay (min)
16	PM_RMPMRGLNFAC	PM Peak Period - Merge Ramp Volume Factor
17	PM_RPMPFACVOL	PM Peak Period - Merge Ramp Hourly Volume
18	PM_FWYMRGLNFAC	PM Peak Period - Merge Freeway Volume Factor
19	PM_FWYMRGLNVOL	PM Peak Period - Merge Freeway Hourly Volume
20	PM_JCTMRGHRVOL	PM Peak Period - Merge Ramp & Freeway Hourly Volume
21	PM_JCTMRGDELAY	PM Peak Period - Merge Ramp & Freeway Delay (min)
22	PM_JCTFWYDELAY	PM Peak Period - Merge Freeway Delay (min)
23	PM_JCTRPMPDELAY	PM Peak Period - Merge Ramp Delay (min)
24	OF_RMPMRGLNFAC	Off Peak Period - Merge Ramp Volume Factor
25	OF_RPMPFACVOL	Off Peak Period - Merge Ramp Hourly Volume
26	OF_FWYMRGLNFAC	Off Peak Period - Merge Freeway Volume Factor
27	OF_FWYMRGLNVOL	Off Peak Period - Merge Freeway Hourly Volume
28	OF_JCTMRGHRVOL	Off Peak Period - Merge Ramp & Freeway Hourly Volume
29	OF_JCTMRGDELAY	Off Peak Period - Merge Ramp & Freeway Delay (min)
30	OF_JCTFWYDELAY	Off Peak Period - Merge Freeway Delay (min)
31	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 (Per 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 C-4: **(Continued)**

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	CONFAC24H	24-Hour "confac" factor
25	BPRCOEFFICIENT	BPR Coefficient (alpha)
26	BPREXPONENT	BPR Exponent (beta)
27	CONFACAMP	AM Peak Period "confac" factor
28	CONFACPMP	PM Peak Period "confac" factor
29	CONFACOFP	All Day - "confac" factor
30	CAPACITY_C_LANE	Per Lane LOS C Capacity
31	CAPACITY_D_LANE	Per Lane LOS D Capacity
32	CAPACITY_E_LANE (CAPACITY_LANE)	Per Lane LOS E Capacity
33	LOSECAP (CAPACITY_E_HR or CAPACITY_HR))	LOS E Capacity (Peak Hour)
34	LOSECAP_AMPKPD	LOS E Capacity (AM Peak Period)
35	LOSECAP_PMPKPD	LOS E Capacity (PM Peak Period)
36	LOSECAP_OFPKPD	LOS E Capacity (Off-peakPeak Period)
37	LOSDCAP (CAPACITY_D_HR)	LOS D Capacity (Peak Hour)
38	LOSDCAP_AMPKPD	LOS D Capacity (AM Peak Period)
39	LOSDCAP_PMPKPD	LOS D Capacity (PM Peak Period)
40	LOSDCAP_OFPKPD	LOS D Capacity (Off-peakPeak Period)
41	LOSCCAP (CAPACITY_C_HR)	LOS C Capacity (Peak Hour)
42	LOSCCAP_AMPKPD	LOS C Capacity (AM Peak Period)
43	LOSCCAP_PMPKPD	LOS C Capacity (PM Peak Period)
44	LOSCCAP_OFPKPD	LOS C Capacity (Off-peakPeak Period)
45	**DetailNet**	**An indicator of user defined sub-area link (1=yes in UD sub-area, 0=no in UD sub-area)**
46	TOLL_ACC	Toll Acceleration Link
47	TOLL_DEC	Toll Decelleration Link
48	RCTOLL	CTOLL values
49	POSTEDSPEED	Posted Speed (mph)
50	FFOLD	Initial Unadjusted Free-Flow Speed (mph)
51	FREEFLOWSPEED	Free Flow Speed (mph)
52	POSTEDTIME	Posted Time (min)
53	FREEFLOWTIME	Free Flow Time (min)
54	ROUNDNODECLS	Approach Link of Freeway-Ramp Jct Nodes (1=yes,0=no)
55	AM_LNKJCTDELAY	AM Peak Period - Fwy/Ramp Merge Delay
56	AM_VCLOSC	AM Peak Period - Vol/LOSC Capacity Ratio (directional)
57	AM_VCLOSD	AM Peak Period - Vol/LOSD Capacity Ratio (directional)
58	AM_VCLOSE	AM Peak Period - Vol/LOSE Capacity Ratio (directional)
59	AM_CONGTIME	AM Peak Period - Congested time in min (directional)
60	AM_CONGSPD	AM Peak Period - Congested Speed in mph (directional)
61	AM_VHT	AM Peak Period - Vehicle-Hours-Travel (directional)
62	AM_VMT	AM Peak Period - Vehicle-Miles-Travel (directional)
63	AM_TOTVOL	AM Peak Period - Total Volume (directional)
64	AM_VOLCNT	AM Peak Period - Vol/Count Ratio (directional)
65	AM_DAVOL	AM Peak Period - Drive-Alone Volume (directional)
66	AM_SR2VOL	AM Peak Period - Shared-Ride (2 persons) Volume (directional)
67	AM_SR3VOL	AM Peak Period - Shared-Ride (3+ persons) Volume (directional)
68	AM_TRKVOL	AM Peak Period - Truck Volume (directional)
69	AM_TOTVOL2	AM Peak Period - Total Volume (2-way)
70	AM_DAVOL2	AM Peak Period - Drive-Alone Volume (2-way)
71	AM_SR2VOL2	AM Peak Period - Shared-Ride (2 persons) Volume (2-way)
72	AM_SR3VOL2	AM Peak Period - Shared-Ride (3+ persons) Volume (2-way)
73	AM_TRKVOL2	AM Peak Period - Truck Volume (2-way)
74	AM_SEL_TOTVOL	AM Peak Period - Selected Links Total Volume (directional)
75	AM_SEL_DAVOL	AM Peak Period - Selected Links Drive-Alone Volume (directional)
76	AM_SEL_SR2VOL	AM Peak Period - Selected Links Shared-Ride (2 persons) Volume (directional)
77	AM_SEL_SR3VOL	AM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (directional)
78	AM_SEL_TRKVOL	AM Peak Period - Selected Links Truck Volume (directional)
79	AM_SEL_TOTVOL2	AM Peak Period - Selected Links Total Volume (2-way)
80	AM_SEL_DAVOL2	AM Peak Period - Selected Links Drive-Alone Volume (2-way)
81	AM_SEL_SR2VOL2	AM Peak Period - Selected Links Shared-Ride (2 persons) Volume (2-way)
82	AM_SEL_SR3VOL2	AM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (2-way)
83	AM_SEL_TRKVOL2	AM Peak Period - Selected Links Truck Volume (2-way)

Table C-4: **(Continued)**

Sl No	Link Attributes	Description
84	PM_LNKJCTDELAY	PM Peak Period - Fwy/Ramp Merge Delay
85	PM_VCLOSC	PM Peak Period - Vol/LOSC Capacity Ratio (directional)
86	PM_VCLOSD	PM Peak Period - Vol/LOSD Capacity Ratio (directional)
87	PM_VCLOSE	PM Peak Period - Vol/LOSE Capacity Ratio (directional)
88	PM_CONGTIME	PM Peak Period - Congested time in min (directional)
89	PM_CONGSPD	PM Peak Period - Congested Speed in mph (directional)
90	PM_VHT	PM Peak Period - Vehicle-Hours-Travel (directional)
91	PM_VMT	PM Peak Period - Vehicle-Miles-Travel (directional)
92	PM_TOTVOL	PM Peak Period - Total Volume (directional)
93	PM_VOLCNT	PM Peak Period - Vol/Count Ratio (directional)
94	PM_DAVOL	PM Peak Period - Drive-Alone Volume (directional)
95	PM_SR2VOL	PM Peak Period - Shared-Ride (2 persons) Volume (directional)
96	PM_SR3VOL	PM Peak Period - Shared-Ride (3+ persons) Volume (directional)
97	PM_TRKVOL	PM Peak Period - Truck Volume (directional)
98	PM_TOTVOL2	PM Peak Period - Total Volume (2-way)
99	PM_DAVOL2	PM Peak Period - Drive-Alone Volume (2-way)
100	PM_SR2VOL2	PM Peak Period - Shared-Ride (2 persons) Volume (2-way)
101	PM_SR3VOL2	PM Peak Period - Shared-Ride (3+ persons) Volume (2-way)
102	PM_TRKVOL2	PM Peak Period - Truck Volume (2-way)
103	PM_SEL_TOTVOL	PM Peak Period - Selected Links Total Volume (directional)
104	PM_SEL_DAVOL	PM Peak Period - Selected Links Drive-Alone Volume (directional)
105	PM_SEL_SR2VOL	PM Peak Period - Selected Links Shared-Ride (2 persons) Volume (directional)
106	PM_SEL_SR3VOL	PM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (directional)
107	PM_SEL_TRKVOL	PM Peak Period - Selected Links Truck Volume (directional)
108	PM_SEL_TOTVOL2	PM Peak Period - Selected Links Total Volume (2-way)
109	PM_SEL_DAVOL2	PM Peak Period - Selected Links Drive-Alone Volume (2-way)
110	PM_SEL_SR2VOL2	PM Peak Period - Selected Links Shared-Ride (2 persons) Volume (2-way)
111	PM_SEL_SR3VOL2	PM Peak Period - Selected Links Shared-Ride (3+ persons) Volume (2-way)
112	PM_SEL_TRKVOL2	PM Peak Period - Selected Links Truck Volume (2-way)
113	OF_LNKJCTDELAY	Off Peak Period - Fwy/Ramp Merge Delay
114	OF_VCLOSC	Off Peak Period - Vol/LOSC Capacity Ratio (directional)
115	OF_VCLOSD	Off Peak Period - Vol/LOSD Capacity Ratio (directional)
116	OF_VCLOSE	Off Peak Period - Vol/LOSE Capacity Ratio (directional)
117	OF_CONGTIME	Off Peak Period - Congested time in min (directional)
118	OF_CONGSPD	Off Peak Period - Congested Speed in mph (directional)
119	OF_VHT	Off Peak Period - Vehicle-Hours-Travel (directional)
120	OF_VMT	Off Peak Period - Vehicle-Miles-Travel (directional)
121	OF_TOTVOL	Off Peak Period - Total Volume (directional)
122	OF_VOLCNT	Off Peak Period - Vol/Count Ratio (directional)
123	OF_DAVOL	Off Peak Period - Drive-Alone Volume (directional)
124	OF_SR2VOL	Off Peak Period - Shared-Ride (2 persons) Volume (directional)
125	OF_SR3VOL	Off Peak Period - Shared-Ride (3+ persons) Volume (directional)
126	OF_TRKVOL	Off Peak Period - Truck Volume (directional)

Table C-4: **(Continued)**

Sl No	Link Attributes	Description
127	OF_TOTVOL2	Off Peak Period - Total Volume (2-way)
128	OF_DAVOL2	Off Peak Period - Drive-Alone Volume (2-way)
129	OF_SR2VOL2	Off Peak Period - Shared-Ride (2 persons) Volume (2-way)
130	OF_SR3VOL2	Off Peak Period - Shared-Ride (3+ persons) Volume (2-way)
131	OF_TRKVOL2	Off Peak Period - Truck Volume (2-way)
132	OF_SEL_TOTVOL	Off Peak Period - Selected Links Total Volume (directional)
133	OF_SEL_DAVOL	Off Peak Period - Selected Links Drive-Alone Volume (directional)
134	OF_SEL_SR2VOL	Off Peak Period - Selected Links Shared-Ride (2 persons) Volume (directional)
135	OF_SEL_SR3VOL	Off Peak Period - Selected Links Shared-Ride (3+ persons) Volume (directional)
136	OF_SEL_TRKVOL	Off Peak Period - Selected Links Truck Volume (directional)
137	OF_SEL_TOTVOL2	Off Peak Period - Selected Links Total Volume (2-way)
138	OF_SEL_DAVOL2	Off Peak Period - Selected Links Drive-Alone Volume (2-way)
139	OF_SEL_SR2VOL2	Off Peak Period - Selected Links Shared-Ride (2 persons) Volume (2-way)
140	OF_SEL_SR3VOL2	Off Peak Period - Selected Links Shared-Ride (3+ persons) Volume (2-way)
141	OF_SEL_TRKVOL2	Off Peak Period - Selected Links Truck Volume (2-way)
142	AL_TOTVOL	24-Hour (Combined Periods) - Total Volume (directional)
143	AL_VOLCNT	24-Hour (Combined Periods) - Vol/Count Ratio (directional)
144	AL_VHT	24-Hour (Combined Periods) - Vehicle-Hours-Travel (directional)
145	AL_VMT	24-Hour (Combined Periods) - Vehicle-Miles-Travel (directional)
146	AL_DAVOL	24-Hour (Combined Periods) - Drive-Alone Volume (directional)
147	AL_SR2VOL	24-Hour (Combined Periods) - Shared-Ride (2 persons) Volume (directional)
148	AL_SR3VOL	24-Hour (Combined Periods) - Shared-Ride (3+ persons) Volume (directional)
149	AL_TRKVOL	24-Hour (Combined Periods) - Truck Volume (directional)
150	AL_TOTVOL2	24-Hour (Combined Periods) - Total Volume (2-way)
151	AL_DAVOL2	24-Hour (Combined Periods) - Drive-Alone Volume (2-way)
152	AL_SR2VOL2	24-Hour (Combined Periods) - Shared-Ride (2 persons) Volume (2-way)
153	AL_SR3VOL2	24-Hour (Combined Periods) - Shared-Ride (3+ persons) Volume (2-way)
154	AL_TRKVOL2	24-Hour (Combined Periods) - Truck Volume (2-way)
155	AL_VCLOSC	24-Hour (Combined Periods) - Vol/LOSC Capacity Ratio (directional)
156	AL_VCLOSD	24-Hour (Combined Periods) - Vol/LOSD Capacity Ratio (directional)
157	AL_VCLOSE	24-Hour (Combined Periods) - Vol/LOSE Capacity Ratio (directional)
158	AL_CONGTIME	24-Hour (Combined Periods) - Congested time in min (directional)
159	AL_CONGSPD	24-Hour (Combined Periods) - Congested Speed in mph (directional)
160	AL_SEL_TOTVOL	24-Hour (Combined Periods) - Selected Links Total Volume (directional)
161	AL_SEL_DAVOL	24-Hour (Combined Periods) - Selected Links Drive-Alone Volume (directional)
162	AL_SEL_SR2VOL	24-Hour (Combined Periods) - Selected Links Shared-Ride (2 persons) Volume (directional)
163	AL_SEL_SR3VOL	24-Hour (Combined Periods) - Selected Links Shared-Ride (3+ persons) Volume (directional)
164	AL_SEL_TRKVOL	24-Hour (Combined Periods) - Selected Links Truck Volume (directional)
165	AL_SEL_TOTVOL2	24-Hour (Combined Periods) - Selected Links Total Volume (2-way)
166	AL_SEL_DAVOL2	24-Hour (Combined Periods) - Selected Links Drive-Alone Volume (2-way)
167	AL_SEL_SR2VOL2	24-Hour (Combined Periods) - Selected Links Shared-Ride (2 persons) Volume (2-way)
168	AL_SEL_SR3VOL2	24-Hour (Combined Periods) - Selected Links Shared-Ride (3+ persons) Volume (2-way)
169	AL_SEL_TRKVOL2	24-Hour (Combined Periods) - Selected Links Truck Volume (2-way)

Appendix D

Listing of Highway Evaluation Report CV Scripts

See Time of Day Model's

- **EVNET00J.S – RMSE CV Script**
- **EVNET00H.S – HEVAL (Part 1/2) CV Script**
- **EVNET00I.S – HEVAL (Part 2/2) CV Script**

Appendix E

Listing of HEVAL Overall Summary Report

- **(List E-1) Time-of-Day Model Run – All Regions (Base Scenario):**
  {OUTDIR}\ HEVAL-24H-OverallSmry-S65.PRN

- **(List E-2) Time-of-Day Model Run – All Regions (2035 CF Scenario):**
  {OUTDIR}\ HEVAL-24H-OverallSmry-S65.PRN

(List E-1) Time-of-Day Model Run – All Regions (Base Scenario): {OUTDIR}\ HEVAL-24H-OverallSmry-S65.PRN

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Highway Analysis and Evaluation Report - SERPM Version 1.0

Run Date: Wed 04/21/2010
Run Time: 12:40:48.13
SERPM65 Model  - All Region - 24-Hour Period (Sum of Three Periods)
Note: All traffic count related summaries are 2005 counts
Scenario/Alternative: Base

*****************************************************************************************************************************
*                                                                                                                           *
*                                          Overall (Systemwide) Summary Statistics                                          *
*                                            [Note: Centroid Connectors Excluded]                                           *
*                                                                                                                           *
*****************************************************************************************************************************

 Total Number of Directional Links:                    30,516
 Total Lane Miles:                                  14,858.57
 Total Directional Miles:                            8,131.55

 Total Directional Miles with Counts:                1,946.24    (Only for Links with Counts)
 Total Percentage of Dir. Miles with Counts:            23.93%

 Total VMT using Volumes:                           35,624,526    (Only for Links With Counts)
 Total VMT using Counts:                            35,124,846    (Only for Links With Counts)
 Total VMT Volume-over-Count Ratio:                       1.01    (Only for Links With Counts)

 Total VHT using Volumes:                              924,650    (Only for Links With Counts)
 Total VHT using Counts:                               902,384    (Only for Links With Counts)
 Total VHT Volume-over-Count Ratio:                       1.02    (Only for Links With Counts)

 Total (unweighted) Volumes:                        99,169,124    (Only for Links With Counts)
 Total (unweighted) Counts:                         97,154,317    (Only for Links With Counts)
 Total (unweighted) Volume-over-Count Ratio:              1.02    (Only for Links With Counts)

 Total Volume All Links:                           412,702,694
 Average (Directional) Volumes of All Links:        13,524.14
 Total VMT All Links:                              112,661,970
 Total VHT All Links:                                3,106,717

 Posted Speed (MPH, weighted by Dir. Miles):              41.34
 Original Speed (MPH, weighted by Dir. Miles):            39.45
 Congested Speed (MPH, weighted by Dir. Miles):           36.73
 Change in Speed (MPH, Congested-Original):               -2.73
 Percent Change in Speed (Change/Original):               -6.91%

 Total Volume-to-Capacity Ratio at LOS E:                 0.58
 Total Volume-to-Capacity Ratio at LOS D:                 0.64
 Total Volume-to-Capacity Ratio at LOS C:                 0.76

 Total Travel Time Value (TTV, in 2005$):          30,744,746
 Total Vehicle Operating Cost (VOC, in 2005$):     55,994,784
 TTV Per Vehicle, in 2005$:                             9.896
 VOC Per Vehicle, in 2005$:                             0.497
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 Important Notes/Assumptions on TTV and VOC:
 ===========================================
 (Inflation) Base Year:     2004
 (Inflation) Analysis Year: 2005
 TTV Inflation Rate:          3.07%
 VOC Inflation Rate:          2.31%

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Screenline Statistics
[Note: Centroid Connectors Excluded]

COUNT STATISTICS				CAPACITY STATISTICS						
(Totals calculated only for links with counts)					LOS E		LOS D		LOS C	
Screen No	Volume	Count	Volume/Count	Volume	Capacity	Volume/Cap	Capacity	Volume/Cap	Capacity	Volume/Cap
2	523,826	450,762	1.16	523,826	859,440	0.61	790,504	0.66	666,346	0.79
3	449,275	402,208	1.12	716,052	1,323,280	0.54	1,202,758	0.60	1,013,078	0.71
4	628,056	608,886	1.03	634,969	1,080,952	0.59	1,005,796	0.63	880,468	0.72
5	428,147	433,098	0.99	436,463	742,782	0.59	675,565	0.65	575,570	0.76
6	272,889	261,378	1.04	272,889	694,000	0.39	633,102	0.43	540,110	0.51
7	164,825	163,292	1.01	164,825	650,492	0.25	572,868	0.29	447,466	0.37
8	98,921	70,008	1.41	98,921	206,238	0.48	190,282	0.52	156,124	0.63
9	130,359	158,926	0.82	140,378	220,702	0.64	207,202	0.68	163,158	0.86
10	178,090	171,700	1.04	178,090	264,514	0.67	253,242	0.70	233,224	0.76
11	165,053	160,242	1.03	165,053	294,088	0.56	280,624	0.59	243,256	0.68
12	263,659	257,340	1.02	276,351	387,994	0.71	366,650	0.75	304,848	0.91
13	132,095	111,646	1.18	132,095	185,908	0.71	174,790	0.76	144,896	0.91
14	81,168	95,704	0.85	81,168	182,912	0.44	173,808	0.47	143,294	0.57
15	230,088	212,012	1.09	230,088	322,226	0.71	299,318	0.77	238,506	0.96
17	193,543	238,482	0.81	193,543	433,498	0.45	411,686	0.47	349,330	0.55
18	287,488	310,140	0.93	287,488	647,578	0.44	599,095	0.48	486,637	0.59
21	758,174	686,698	1.10	926,814	1,503,962	0.62	1,381,796	0.67	1,140,934	0.81
22	951,649	950,792	1.00	1,119,347	1,741,058	0.64	1,605,288	0.70	1,337,800	0.84
23	955,254	807,498	1.18	962,345	1,418,596	0.68	1,283,926	0.75	1,069,964	0.90
24	558,820	603,100	0.93	613,535	1,233,372	0.50	1,146,266	0.54	1,007,966	0.61
25	1,136,982	1,047,300	1.09	1,281,134	1,896,168	0.68	1,765,432	0.73	1,463,498	0.88
26	283,753	286,522	0.99	283,753	545,966	0.52	513,888	0.55	400,774	0.71
27	566,921	489,142	1.16	566,921	861,960	0.66	791,288	0.72	647,786	0.88
28	960,782	874,930	1.10	960,782	1,306,472	0.74	1,184,266	0.81	965,934	0.99
29	23,274	23,672	0.98	23,274	117,546	0.20	108,772	0.21	88,302	0.26
32	343,735	300,508	1.14	403,848	639,098	0.63	584,248	0.69	446,500	0.90
33	411,278	487,000	0.84	424,289	841,710	0.50	786,752	0.54	690,548	0.61
34	989,184	1,009,300	0.98	989,184	1,413,884	0.70	1,323,326	0.75	1,071,490	0.92
42	701,106	776,582	0.90	1,070,169	1,817,554	0.59	1,662,944	0.64	1,411,582	0.76
43	893,210	886,058	1.01	1,105,326	1,744,056	0.63	1,580,949	0.70	1,304,999	0.85

(List E-1) Time-of-Day Model Run – All Regions (Base Scenario): {OUTDIR}\ HEVAL-24H-OverallSmry-S65.PRN

44	1,006,085	1,133,904	0.89	1,209,451	1,685,038	0.72	1,552,485	0.78	1,261,135	0.96
45	978,668	859,740	1.14	1,059,754	1,416,484	0.75	1,285,291	0.82	1,058,841	1.00
46	935,343	915,842	1.02	1,309,011	1,951,828	0.67	1,773,676	0.74	1,446,731	0.90
47	1,003,107	920,300	1.09	1,436,451	1,921,911	0.75	1,725,281	0.83	1,417,932	1.01
48	514,003	516,290	1.00	581,348	832,296	0.70	761,106	0.76	612,392	0.95
49	495,639	511,332	0.97	616,072	1,071,298	0.58	969,151	0.64	801,243	0.77
50	948,649	853,692	1.11	1,487,931	2,552,803	0.58	2,320,133	0.64	1,866,654	0.80
51	292,808	301,008	0.97	357,025	521,766	0.68	475,462	0.75	406,314	0.88
52	380,974	330,398	1.15	674,422	1,495,318	0.45	1,350,012	0.50	1,116,594	0.60
53	221,342	217,146	1.02	277,184	500,030	0.55	456,414	0.61	386,385	0.72
59	713,444	812,784	0.88	713,444	938,707	0.76	842,706	0.85	692,129	1.03
71	36,440	36,598	1.00	36,440	47,806	0.76	38,136	0.96	16,336	2.23
75	523,788	526,500	0.99	523,788	1,227,580	0.43	1,086,582	0.48	895,586	0.58
86	376,754	418,700	0.90	376,754	1,035,946	0.36	938,784	0.40	767,626	0.49
91	439,589	510,330	0.86	819,065	1,628,414	0.50	1,461,496	0.56	1,200,444	0.68
95	7,089,343	6,471,418	1.10	9,012,106	11,700,251	0.77	10,524,329	0.86	8,651,088	1.04
96	281,492	319,100	0.88	862,669	1,641,174	0.53	1,514,264	0.57	1,230,686	0.70
99	68,985,459	67,998,009	1.01	375,506,896	649,297,360	0.58	595,014,977	0.63	497,391,133	0.75

(List E-2) Time-of-Day Model Run – All Regions (2035 CF Scenario): {OUTDIR}\ HEVAL-24H-OverallSmry-S65.PRN

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Highway Analysis and Evaluation Report - SERPM Version 1.0

Run Date: Sun 04/04/2010
Run Time:  0:03:29.08
SERPM65 Model  - All Region - 24-Hour Period (Sum of Three Periods)
Note: All traffic count related summaries are 2005 counts
Scenario/Alternative: Future-35R

*****************************************************************************************************************************
*                                                                                                                           *
*                                          Overall (Systemwide) Summary Statistics                                          *
*                                            [Note: Centroid Connectors Excluded]                                           *
*                                                                                                                           *
*****************************************************************************************************************************

 Total Number of Directional Links:                    32,716
 Total Lane Miles:                                  16,926.99
 Total Directional Miles:                            8,621.27

 Total Volume All Links:                          591,144,349
 Average (Directional) Volumes of All Links:        18,068.97
 Total VMT All Links:                             160,119,397
 Total VHT All Links:                               4,953,123

 Posted Speed (MPH, weighted by Dir. Miles):            41.51
 Original Speed (MPH, weighted by Dir. Miles):          39.89
 Congested Speed (MPH, weighted by Dir. Miles):         35.31
 Change in Speed (MPH, Congested-Original):             -4.58
 Percent Change in Speed (Change/Original):            -11.48%

 Total Volume-to-Capacity Ratio at LOS E:               0.71
 Total Volume-to-Capacity Ratio at LOS D:               0.78
 Total Volume-to-Capacity Ratio at LOS C:               0.93

 Total Travel Time Value (TTV, in 2035$):         122,620,515
 Total Vehicle Operating Cost (VOC, in 2035$):    161,196,696
 TTV Per Vehicle, in 2035$:                            24.756
 VOC Per Vehicle, in 2035$:                             1.007

 Important Notes/Assumptions on TTV and VOC:
 ==========================================
 (Inflation) Base Year:     2004
 (Inflation) Analysis Year: 2035
 TTV Inflation Rate:          3.07%
 VOC Inflation Rate:          2.31%
```

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Screenline Statistics
[Note: Centroid Connectors Excluded]

CAPACITY STATISTICS

Screen No	Volume	LOS E Capacity	LOS E Volume/Cap	LOS D Capacity	LOS D Volume/Cap	LOS C Capacity	LOS C Volume/Cap
2	717,127	1,003,684	0.71	919,064	0.78	775,584	0.92
3	3,856,215	4,910,467	0.79	4,484,012	0.86	3,656,367	1.05
4	861,922	1,460,020	0.59	1,333,006	0.65	1,131,384	0.76
5	583,734	895,544	0.65	814,651	0.72	698,662	0.84
6	395,158	820,012	0.48	746,416	0.53	638,136	0.62
7	298,251	687,622	0.43	608,776	0.49	477,014	0.63
8	164,310	290,868	0.56	260,998	0.63	201,558	0.82
9	171,083	229,722	0.74	215,902	0.79	169,492	1.01
10	254,783	418,742	0.61	387,330	0.66	332,294	0.77
11	167,887	244,994	0.69	233,436	0.72	197,784	0.85
12	387,494	458,490	0.85	434,000	0.89	364,358	1.06
13	162,883	188,362	0.86	177,150	0.92	147,170	1.11
14	97,248	208,174	0.47	198,046	0.49	163,680	0.59
15	262,296	365,744	0.72	340,690	0.77	270,108	0.97
17	243,796	497,274	0.49	473,080	0.52	409,816	0.59
18	333,944	627,626	0.53	578,407	0.58	473,411	0.71
21	1,534,093	2,000,294	0.77	1,842,534	0.83	1,572,732	0.98
22	1,411,353	1,886,260	0.75	1,733,356	0.81	1,443,500	0.98
23	1,682,808	2,090,598	0.80	1,881,914	0.89	1,572,404	1.07
24	857,391	1,499,287	0.57	1,385,774	0.62	1,201,161	0.71
25	1,783,422	2,287,668	0.78	2,131,485	0.84	1,796,333	0.99
26	322,960	567,160	0.57	531,318	0.61	404,474	0.80
27	796,114	1,100,962	0.72	1,006,398	0.79	819,868	0.97
28	1,408,846	1,475,606	0.95	1,336,680	1.05	1,076,310	1.31
29	44,708	117,546	0.38	108,772	0.41	88,302	0.51
32	536,430	634,902	0.84	577,670	0.93	430,580	1.25
33	545,031	931,996	0.58	864,038	0.63	743,672	0.73
34	1,179,081	1,544,294	0.76	1,443,010	0.82	1,177,030	1.00
42	1,982,573	2,936,067	0.68	2,683,265	0.74	2,245,587	0.88
43	2,019,836	2,481,402	0.81	2,241,551	0.90	1,846,066	1.09
44	1,659,282	1,933,405	0.86	1,774,850	0.93	1,447,427	1.15
45	1,342,339	1,436,872	0.93	1,293,489	1.04	1,081,241	1.24
46	1,764,506	1,950,536	0.90	1,765,953	1.00	1,463,286	1.21
47	1,986,750	1,938,873	1.02	1,733,811	1.15	1,417,100	1.40
48	738,135	898,166	0.82	816,913	0.90	662,023	1.11
49	1,130,495	1,426,794	0.79	1,284,140	0.88	1,080,450	1.05

(List E-2) Time-of-Day Model Run – All Regions (2035 CF Scenario): {OUTDIR}\ HEVAL-24H-OverallSmry-S65.PRN

50	2,011,805	2,726,463	0.74	2,467,571	0.82	1,992,453	1.01
51	762,033	767,240	0.99	724,122	1.05	647,598	1.18
52	1,048,790	1,495,318	0.70	1,350,012	0.78	1,116,594	0.94
53	540,603	552,179	0.98	504,528	1.07	443,228	1.22
59	939,762	1,498,912	0.63	1,333,044	0.70	1,096,976	0.86
71	54,394	47,806	1.14	38,136	1.43	16,336	3.33
75	778,647	1,227,580	0.63	1,086,582	0.72	895,586	0.87
86	850,144	1,577,874	0.54	1,408,176	0.60	1,158,464	0.73
91	1,914,993	2,684,753	0.71	2,374,717	0.81	1,957,235	0.98
95	11,506,889	14,240,370	0.81	12,767,313	0.90	10,506,672	1.10
96	1,386,525	1,876,464	0.74	1,723,128	0.80	1,403,052	0.99
99	534,519,286	757,991,201	0.71	693,265,863	0.77	581,645,657	0.92

Appendix F

Listing of HEVAL Detailed Report

- **(List F-1) Time-of-Day Model Run – All Regions (Base Scenario):**
  {OUTDIR}\ HEVAL-24H-Detailed-S65.PRN (SNIPPET)

- **(List F-2) Time-of-Day Model Run – All Regions (2035 CF Scenario):**
  {OUTDIR}\ HEVAL-24H-Detailed-S65.PRN (SNIPPET)

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Total VMT on All Links
(Note: *Centroid Connectors Excluded*)

Area Type 1

FTypeGrp	Number of Lanes per Direction 1	2	3	4	5	6	7	8	9	Totals
1	0	17,037	38,648	142,859	0	0	0	0	0	198,544
2	0	0	38,827	0	0	0	0	0	0	38,827
4	7,131	278,356	161,356	24,063	0	0	0	0	0	470,906
6	106,447	231,752	110,817	61,621	0	0	0	0	0	510,638
7	39,742	44,960	0	0	0	0	0	0	0	84,702
9	0	552	0	0	0	0	0	0	0	552
Totals	153,320	572,657	349,649	228,544	0	0	0	0	0	1,304,169

Area Type 2

FTypeGrp	Number of Lanes per Direction 1	2	3	4	5	6	7	8	9	Totals
1	0	65,326	1,255,207	931,852	90,232	496,188	0	0	0	2,838,806
2	0	1,894	132,125	0	0	0	0	0	0	134,019
4	193,485	1,235,434	1,321,233	124,502	0	0	0	0	0	2,874,654
6	519,808	1,101,635	452,153	19,912	0	0	0	0	0	2,093,508
7	205,215	115,225	11,850	6,012	0	0	0	0	0	338,302
9	3,796	1,351	13,892	0	0	0	0	0	0	19,040
Totals	922,304	2,520,865	3,186,460	1,082,279	90,232	496,188	0	0	0	8,298,329

Area Type 3

FTypeGrp	Number of Lanes per Direction 1	2	3	4	5	6	7	8	9	Totals
1	0	429,611	3,756,626	3,830,911	1,270,567	22,696	0	0	0	9,310,410
2	4,504	10,575	82,401	0	0	0	0	0	0	97,480
4	896,408	7,669,308	8,358,947	493,402	0	0	0	0	0	17,418,065
6	2,254,278	2,485,535	660,895	39,225	0	0	0	0	0	5,439,934
7	580,110	408,736	81,759	11,805	0	0	0	0	0	1,082,409
8	1,046,592	0	0	0	0	0	0	0	0	1,046,592
9	0	35,836	1,009,207	98,016	73,598	0	0	0	0	1,216,657
Totals	4,781,892	11,039,600	13,949,836	4,473,360	1,344,164	22,696	0	0	0	35,611,548

Area Type 4

FTypeGrp	Number of Lanes per Direction 1	2	3	4	5	6	7	8	9	Totals

(List F-1) Time-of-Day Model Run – All Regions (Base Scenario): {OUTDIR}\ HEVAL-24H-Detailed-S65.PRN **(SNIPPET)**

1	0	255,601	6,585,523	4,603,653	1,545,479	31,346	0	0	0	13,021,602
2	302,870	823,657	396,974	5,300	0	0	0	0	0	1,528,800
4	3,031,260	11,740,380	16,552,079	360,775	0	0	0	0	0	31,684,494
6	3,340,716	1,795,009	186,929	5,039	0	0	0	0	0	5,327,693
7	602,027	536,267	46,935	8,923	0	0	0	0	0	1,194,152
8	1,434,808	0	0	0	0	0	0	0	0	1,434,808
9	48,878	3,373,380	3,517,368	922,830	131,400	0	0	0	0	7,993,856
Totals	8,760,558	18,524,294	27,285,809	5,906,518	1,676,879	31,346	0	0	0	62,185,404

Area Type 5

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	0	16,059	164,881	0	0	0	0	0	0	180,940
2	678,609	1,018,377	95,482	0	0	0	0	0	0	1,792,467
4	1,032,842	371,904	215,486	0	0	0	0	0	0	1,620,233
6	434,885	83,283	0	0	0	0	0	0	0	518,168
7	35,350	8,025	0	0	0	0	0	0	0	43,375
9	0	390,249	617,240	99,846	0	0	0	0	0	1,107,335
Totals	2,181,687	1,887,896	1,093,090	99,846	0	0	0	0	0	5,262,519

Total Area Types

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	0	783,634	11,800,886	9,509,275	2,906,278	550,229	0	0	0	25,550,302
2	985,983	1,854,502	745,810	5,300	0	0	0	0	0	3,591,594
4	5,161,126	21,295,382	26,609,101	1,002,743	0	0	0	0	0	54,068,352
6	6,656,134	5,697,215	1,410,795	125,798	0	0	0	0	0	13,889,941
7	1,462,444	1,113,213	140,544	26,740	0	0	0	0	0	2,742,941
8	2,481,400	0	0	0	0	0	0	0	0	2,481,400
9	52,674	3,801,367	5,157,708	1,120,692	204,998	0	0	0	0	10,337,440
Totals	16,799,761	34,545,312	45,864,843	11,790,548	3,111,276	550,229	0	0	0	112,661,970

Total Summary Area Types by Facility Types

	Facility Types Group									
AType	1	2	3	4	5	6	7	8	9	Totals
1	198,544	38,827	0	470,906	0	510,638	84,702	0	552	1,304,169
2	2,838,806	134,019	0	2,874,654	0	2,093,508	338,302	0	19,040	8,298,329
3	9,310,410	97,480	0	17,418,065	0	5,439,934	1,082,409	1,046,592	1,216,657	35,611,548
4	13,021,602	1,528,800	0	31,684,494	0	5,327,693	1,194,152	1,434,808	7,993,856	62,185,404
5	180,940	1,792,467	0	1,620,233	0	518,168	43,375	0	1,107,335	5,262,519
Totals	25,550,302	3,591,594	0	54,068,352	0	13,889,941	2,742,941	2,481,400	10,337,440	112,661,970

(List F-2) Time-of-Day Model Run – All Regions (2035 CF Scenario): {OUTDIR}\ HEVAL-24H-Detailed-S65.PRN **(SNIPPET)**

Total VMT on All Links
(Note: *Centroid Connectors Excluded*)

Area Type 1

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	0	20,123	48,306	202,320	0	0	0	0	0	270,749
2	0	0	23,385	18,899	0	0	0	0	0	42,285
4	7,925	379,174	185,873	40,325	0	0	0	0	0	613,296
6	143,688	327,070	169,100	91,521	0	0	0	0	0	731,378
7	46,519	40,014	3,493	0	0	0	0	0	0	90,027
9	0	1,704	0	0	0	0	0	0	0	1,704
Totals	198,132	768,084	430,157	353,065	0	0	0	0	0	1,749,439

Area Type 2

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	83,375	136,190	1,883,484	2,936,549	596,663	808,149	0	0	0	6,444,411
2	35,643	131,666	249,264	0	0	0	0	0	0	416,573
4	351,231	2,897,086	3,533,908	579,087	2,825	0	0	0	0	7,364,136
6	1,391,648	3,181,127	1,136,420	115,134	29,306	0	0	0	0	5,853,636
7	503,440	446,447	143,574	12,287	0	0	0	0	0	1,105,748
8	26,054	492,362	6,070	0	0	0	0	0	0	524,486
9	6,069	92,915	189,892	185,230	0	0	0	0	0	474,106
Totals	2,397,461	7,377,792	7,142,611	3,828,287	628,794	808,149	0	0	0	22,183,095

Area Type 3

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	778	112,874	1,825,653	9,765,443	2,852,183	266,283	0	0	0	14,823,214
2	10,663	100,676	31,279	44,124	0	0	0	0	0	186,742
4	1,776,657	12,144,200	17,063,756	809,150	0	0	0	0	0	31,793,763
6	3,698,530	4,270,191	1,196,094	20,686	0	0	0	0	0	9,185,501
7	798,900	523,603	295,005	16,520	0	0	0	0	0	1,634,028
8	1,007,749	1,672,679	14,088	0	0	0	0	0	0	2,694,515
9	33,344	907,950	2,019,891	3,001,804	158,341	821,954	0	0	0	6,943,284
Totals	7,326,621	19,732,173	22,445,766	13,657,728	3,010,524	1,088,236	0	0	0	67,261,048

Area Type 4

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals

1	8,685	56,479	1,663,611	7,626,561	2,137,602	109,103	0	0	0	11,602,041
2	339,384	1,079,913	1,222,647	698,608	0	0	0	0	0	3,340,552
4	2,323,155	8,958,074	14,141,532	1,163,593	2,105	0	0	0	0	26,588,459
6	3,101,677	2,417,310	266,086	11,511	0	0	0	0	0	5,796,584
7	641,603	542,278	39,341	12,725	0	0	0	0	0	1,235,947
8	1,173,785	438,149	33,330	0	0	0	0	0	0	1,645,264
9	45,751	3,920,143	5,796,666	1,533,814	697,774	0	0	0	0	11,994,148
Totals	7,634,040	17,412,346	23,163,212	11,046,812	2,837,481	109,103	0	0	0	62,202,995

Area Type 5

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	0	30,849	142,599	0	0	0	0	0	0	173,447
2	682,783	2,937,732	289,938	0	0	0	0	0	0	3,910,453
4	477,344	863,704	451,165	0	0	0	0	0	0	1,792,213
6	380,636	67,296	19,498	0	0	0	0	0	0	467,430
7	5,303	9,481	0	0	0	0	0	0	0	14,784
9	0	152,785	211,708	0	0	0	0	0	0	364,493
Totals	1,546,066	4,061,847	1,114,908	0	0	0	0	0	0	6,722,821

Total Area Types

	Number of Lanes per Direction									
FTypeGrp	1	2	3	4	5	6	7	8	9	Totals
1	92,838	356,514	5,563,652	20,530,874	5,586,448	1,183,536	0	0	0	33,313,862
2	1,068,474	4,249,986	1,816,514	761,631	0	0	0	0	0	7,896,604
4	4,936,312	25,242,238	35,376,234	2,592,154	4,930	0	0	0	0	68,151,868
6	8,716,179	10,262,994	2,787,197	238,852	29,306	0	0	0	0	22,034,530
7	1,995,765	1,561,824	481,413	41,532	0	0	0	0	0	4,080,534
8	2,207,588	2,603,189	53,487	0	0	0	0	0	0	4,864,264
9	85,163	5,075,497	8,218,157	4,720,849	856,115	821,954	0	0	0	19,777,735
Totals	19,102,320	49,352,242	54,296,654	28,885,893	6,476,799	2,005,489	0	0	0	160,119,397

Total Summary Area Types by Facility Types

	Facility Types Group									
AType	1	2	3	4	5	6	7	8	9	Totals
1	270,749	42,285	0	613,296	0	731,378	90,027	0	1,704	1,749,439
2	6,444,411	416,573	0	7,364,136	0	5,853,636	1,105,748	524,486	474,106	22,183,095
3	14,823,214	186,742	0	31,793,763	0	9,185,501	1,634,028	2,694,515	6,943,284	67,261,048
4	11,602,041	3,340,552	0	26,588,459	0	5,796,584	1,235,947	1,645,264	11,994,148	62,202,995
5	173,447	3,910,453	0	1,792,213	0	467,430	14,784	0	364,493	6,722,821
Totals	33,313,862	7,896,604	0	68,151,868	0	22,034,530	4,080,534	4,864,264	19,777,735	160,119,397

Appendix G

Listing of Screenline Detailed Report

- **(List G-1) Time-of-Day Model Run – All Regions (Base Scenario):**
  {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

- **(List G-2) Time-of-Day Model Run – All Regions (2035 CF Scenario):**
  {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

(List G-1) Time-of-Day Model Run – All Regions (Base Scenario): {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

			COUNT STATISTICS			CAPACITY STATISTICS					
			(Totals for links with counts)			LOS E		LOS D		LOS C	
Scrn	ANODE	BNODE	Volume	Count	Vol/Cnt	Volume	Capacity	Vol/Cap	Capacity	Vol/Cap	Capacity	Vol/Cap
4	5338	5342	3,166	0	--	3,166	6,969	0.45	6,096	0.52	5,232	0.61
4	5342	5338	3,270	0	--	3,270	6,969	0.47	6,096	0.54	5,232	0.63
4	5459	7938	2,465	2,766	0.89	2,465	8,284	0.30	7,798	0.32	5,396	0.46
4	5705	7952	9,385	8,520	1.10	9,385	23,320	0.40	22,414	0.42	21,599	0.43
4	5707	7976	10,036	11,409	0.88	10,036	18,410	0.55	17,695	0.57	17,052	0.59
4	6507	6509	1,714	6,709	0.26	1,714	44,504	0.04	39,302	0.04	30,302	0.06
4	6509	6507	1,661	6,709	0.25	1,661	44,504	0.04	39,302	0.04	30,302	0.05
4	7626	7890	238	0	--	238	8,788	0.03	7,687	0.03	6,597	0.04
4	7628	10968	4,582	4,536	1.01	4,582	18,410	0.25	17,695	0.26	17,052	0.27
4	7634	7740	8,141	5,016	1.62	8,141	18,410	0.44	17,695	0.46	17,052	0.48
4	7740	7634	8,596	5,016	1.71	8,596	18,410	0.47	17,695	0.49	17,052	0.50
4	7752	7788	9,672	10,993	0.88	9,672	13,068	0.74	11,430	0.85	9,810	0.99
4	7788	7752	9,471	10,993	0.86	9,471	13,068	0.72	11,430	0.83	9,810	0.97
4	7880	7942	1,982	1,175	1.69	1,982	6,969	0.28	6,096	0.33	5,232	0.38
4	7890	7626	239	0	--	239	8,788	0.03	7,687	0.03	6,597	0.04
4	7892	7972	4,457	3,558	1.25	4,457	8,856	0.50	8,475	0.53	7,893	0.56
4	7916	7946	6,507	7,005	0.93	6,507	6,969	0.93	6,096	1.07	5,232	1.24
4	7920	7958	16,124	20,750	0.78	16,124	34,068	0.47	32,245	0.50	25,024	0.64
4	7930	7964	6,251	4,636	1.35	6,251	8,856	0.71	8,475	0.74	7,893	0.79
4	7936	8002	23,275	24,750	0.94	23,275	27,616	0.84	26,543	0.88	25,819	0.90
4	7938	5459	3,792	2,766	1.37	3,792	8,284	0.46	7,798	0.49	5,396	0.70
4	7942	7880	1,314	1,175	1.12	1,314	6,969	0.19	6,096	0.22	5,232	0.25
4	7944	7968	32,233	22,902	1.41	32,233	36,821	0.88	35,391	0.91	34,426	0.94
4	7946	7916	6,694	7,005	0.96	6,694	6,969	0.96	6,096	1.10	5,232	1.28
4	7950	12204	23,547	23,253	1.01	23,547	36,821	0.64	35,391	0.67	34,426	0.68
4	7952	5705	9,176	8,520	1.08	9,176	23,320	0.39	22,414	0.41	21,599	0.42
4	7958	7920	16,478	20,750	0.79	16,478	34,068	0.48	32,245	0.51	25,024	0.66
4	7960	8020	4,663	4,950	0.94	4,663	11,624	0.40	11,123	0.42	10,360	0.45
4	7964	7930	5,671	4,636	1.22	5,671	8,856	0.64	8,475	0.67	7,893	0.72
4	7966	12126	11,609	13,250	0.88	11,609	21,373	0.54	20,241	0.57	15,214	0.76
4	7968	7944	32,233	22,902	1.41	32,233	36,821	0.88	35,391	0.91	34,426	0.94
4	7970	11374	2,804	4,361	0.64	2,804	8,712	0.32	7,620	0.37	6,540	0.43
4	7972	7892	4,681	3,558	1.32	4,681	8,856	0.53	8,475	0.55	7,893	0.59
4	7976	5707	9,852	11,409	0.86	9,852	18,410	0.54	17,695	0.56	17,052	0.58
4	8002	7936	22,764	24,750	0.92	22,764	27,616	0.82	26,543	0.86	25,819	0.88
4	8020	7960	4,240	4,950	0.86	4,240	11,624	0.36	11,123	0.38	10,360	0.41
4	10000	10004	26,673	34,900	0.76	26,673	56,427	0.47	52,216	0.51	42,389	0.63
4	10002	9998	28,070	34,900	0.80	28,070	56,427	0.50	52,216	0.54	42,389	0.66
4	10262	10266	97,154	77,000	1.26	97,154	90,654	1.07	81,580	1.19	66,958	1.45
4	10264	10260	96,767	77,000	1.26	96,767	90,654	1.07	81,580	1.19	66,958	1.45
4	10968	7628	4,566	4,536	1.01	4,566	18,410	0.25	17,695	0.26	17,052	0.27
4	11002	11004	11,157	12,004	0.93	11,157	24,547	0.45	23,594	0.47	22,736	0.49
4	11004	11002	11,057	12,004	0.92	11,057	24,547	0.45	23,594	0.47	22,736	0.49
4	11374	7970	3,271	4,361	0.75	3,271	8,712	0.38	7,620	0.43	6,540	0.50
4	12126	7966	10,624	13,250	0.80	10,624	21,373	0.50	20,241	0.52	15,214	0.70
4	12204	7950	22,647	23,253	0.97	22,647	36,821	0.62	35,391	0.64	34,426	0.66
Totals			628,056	608,886	1.03	634,969	1,080,952	0.59	1,005,796	0.63	880,468	0.72

(List G-1) Time-of-Day Model Run – All Regions (Base Scenario): {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

			COUNT STATISTICS			CAPACITY STATISTICS					
			(Totals for links with counts)			LOS E		LOS D		LOS C	
Scrn	ANODE	BNODE	Volume	Count	Vol/Cnt	Volume	Capacity	Vol/Cap	Capacity	Vol/Cap	Capacity	Vol/Cap
5	5589	10890	5,219	7,537	0.69	5,219	17,038	0.31	13,487	0.39	9,468	0.55
5	6181	6183	2,180	1,300	1.68	2,180	17,038	0.13	13,487	0.16	9,468	0.23
5	6183	6181	2,191	1,300	1.69	2,191	17,038	0.13	13,487	0.16	9,468	0.23
5	6269	6319	3,285	3,850	0.85	3,285	17,038	0.19	13,487	0.24	9,468	0.35
5	6403	6405	1,333	3,450	0.39	1,333	17,038	0.08	13,487	0.10	9,468	0.14
5	6405	6403	1,329	3,450	0.39	1,329	17,038	0.08	13,487	0.10	9,468	0.14
5	6470	6740	8,276	8,432	0.98	8,276	8,856	0.93	8,475	0.98	7,893	1.05
5	6684	10842	28,722	15,907	1.81	28,722	36,821	0.78	35,391	0.81	34,426	0.83
5	6716	6788	9,065	11,490	0.79	9,065	24,547	0.37	23,594	0.38	22,736	0.40
5	6722	10900	3,977	0	--	3,977	7,062	0.56	6,180	0.64	5,297	0.75
5	6740	6470	8,164	8,432	0.97	8,164	8,856	0.92	8,475	0.96	7,893	1.03
5	6756	6808	7,575	6,892	1.10	7,575	24,547	0.31	23,594	0.32	22,736	0.33
5	6764	6804	7,915	9,947	0.80	7,915	11,070	0.71	10,593	0.75	9,867	0.80
5	6768	6812	19,107	17,750	1.08	19,107	24,547	0.78	23,594	0.81	22,736	0.84
5	6784	6844	1,214	1,219	1.00	1,214	5,854	0.21	5,120	0.24	4,395	0.28
5	6788	6716	8,929	11,490	0.78	8,929	24,547	0.36	23,594	0.38	22,736	0.39
5	6804	6764	7,919	9,947	0.80	7,919	11,070	0.72	10,593	0.75	9,867	0.80
5	6808	6756	7,613	6,892	1.10	7,613	24,547	0.31	23,594	0.32	22,736	0.33
5	6812	6768	20,836	17,750	1.17	20,836	24,547	0.85	23,594	0.88	22,736	0.92
5	6820	6906	12,861	13,250	0.97	12,861	21,373	0.60	20,241	0.64	15,214	0.85
5	6844	6784	1,220	1,219	1.00	1,220	5,854	0.21	5,120	0.24	4,395	0.28
5	6906	6820	12,328	13,250	0.93	12,328	21,373	0.58	20,241	0.61	15,214	0.81
5	9952	9956	33,691	30,200	1.12	33,691	56,427	0.60	52,216	0.65	42,389	0.79
5	9954	9950	33,780	30,200	1.12	33,780	56,427	0.60	52,216	0.65	42,389	0.80
5	10186	10190	75,746	87,250	0.87	75,746	90,654	0.84	81,580	0.93	66,958	1.13
5	10188	10184	71,638	87,250	0.82	71,638	90,654	0.79	81,580	0.88	66,958	1.07
5	10842	6684	30,670	15,907	1.93	30,670	36,821	0.83	35,391	0.87	34,426	0.89
5	10890	5589	5,341	7,537	0.71	5,341	17,038	0.31	13,487	0.40	9,468	0.56
5	10900	6722	4,339	0	--	4,339	7,062	0.61	6,180	0.70	5,297	0.82
Totals			428,147	433,098	0.99	436,463	742,782	0.59	675,565	0.65	575,570	0.76

			COUNT STATISTICS			CAPACITY STATISTICS					
			(Totals for links with counts)			LOS E		LOS D		LOS C	
Scrn	ANODE	BNODE	Volume	Count	Vol/Cnt	Volume	Capacity	Vol/Cap	Capacity	Vol/Cap	Capacity	Vol/Cap
6	5260	5520	7,445	5,304	1.40	7,445	8,856	0.84	8,475	0.88	7,893	0.94
6	5500	5532	2,543	2,630	0.97	2,543	17,038	0.15	13,487	0.19	9,468	0.27
6	5520	5260	7,755	5,304	1.46	7,755	8,856	0.88	8,475	0.92	7,893	0.98
6	5532	5500	2,515	2,630	0.96	2,515	17,038	0.15	13,487	0.19	9,468	0.27
6	5576	5596	1,714	1,822	0.94	1,714	17,038	0.10	13,487	0.13	9,468	0.18
6	5596	5576	1,644	1,822	0.90	1,644	17,038	0.10	13,487	0.12	9,468	0.17
6	5625	6606	1,964	5,195	0.38	1,964	44,504	0.04	39,302	0.05	30,302	0.06
6	5648	11990	20,451	13,516	1.51	20,451	36,821	0.56	35,391	0.58	34,426	0.59
6	5652	5688	10,654	10,495	1.02	10,654	24,547	0.43	23,594	0.45	22,736	0.47
6	5660	5724	108	2,526	0.04	108	8,856	0.01	8,475	0.01	7,893	0.01
6	5688	5652	9,688	10,495	0.92	9,688	24,547	0.39	23,594	0.41	22,736	0.43
6	5708	10790	3,547	2,508	1.41	3,547	8,856	0.40	8,475	0.42	7,893	0.45
6	5720	6186	13,602	14,500	0.94	13,602	24,547	0.55	23,594	0.58	22,736	0.60

(List G-1) Time-of-Day Model Run – All Regions (Base Scenario): {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

6	5724	5660	108	2,526	0.04	108	8,856	0.01	8,475	0.01	7,893	0.01
6	6186	5720	14,314	14,500	0.99	14,314	24,547	0.58	23,594	0.61	22,736	0.63
6	6606	5625	1,748	5,195	0.34	1,748	44,504	0.04	39,302	0.04	30,302	0.06
6	6606	11994	2,917	3,500	0.83	2,917	8,856	0.33	8,475	0.34	7,893	0.37
6	9924	9928	26,146	22,200	1.18	26,146	56,427	0.46	52,216	0.50	42,389	0.62
6	9926	9922	26,205	22,200	1.18	26,205	56,427	0.46	52,216	0.50	42,389	0.62
6	10122	10126	44,115	46,493	0.95	44,115	90,654	0.49	81,580	0.54	66,958	0.66
6	10124	10120	49,641	46,493	1.07	49,641	90,654	0.55	81,580	0.61	66,958	0.74
6	10790	5708	3,822	2,508	1.52	3,822	8,856	0.43	8,475	0.45	7,893	0.48
6	11990	5648	17,512	13,516	1.30	17,512	36,821	0.48	35,391	0.49	34,426	0.51
6	11994	6606	2,731	3,500	0.78	2,731	8,856	0.31	8,475	0.32	7,893	0.35
Totals			272,889	261,378	1.04	272,889	694,000	0.39	633,102	0.43	540,110	0.51

(List G-2) Time-of-Day Model Run – All Regions (2035 CF Scenario): {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

CAPACITY STATISTICS

Scrn	ANODE	BNODE	Volume	LOS E Capacity	LOS E Vol/Cap	LOS D Capacity	LOS D Vol/Cap	LOS C Capacity	LOS C Vol/Cap
4	5338	5342	6,586	6,969	0.95	6,096	1.08	5,232	1.26
4	5342	5338	6,997	6,969	1.00	6,096	1.15	5,232	1.34
4	5459	7938	4,991	8,284	0.60	7,798	0.64	5,396	0.92
4	5705	7952	9,250	23,320	0.40	22,414	0.41	21,599	0.43
4	5707	7976	15,328	18,410	0.83	17,695	0.87	17,052	0.90
4	6507	6509	7,065	44,504	0.16	39,302	0.18	30,302	0.23
4	6509	6507	6,844	44,504	0.15	39,302	0.17	30,302	0.23
4	7037	7039	22,524	71,319	0.32	62,883	0.36	48,484	0.46
4	7037	8002	22,557	71,319	0.32	62,883	0.36	48,484	0.47
4	7039	7037	15,852	71,319	0.22	62,883	0.25	48,484	0.33
4	7626	7890	521	8,788	0.06	7,687	0.07	6,597	0.08
4	7628	10968	10,053	24,547	0.41	23,594	0.43	22,736	0.44
4	7634	7740	10,531	18,410	0.57	17,695	0.60	17,052	0.62
4	7740	7634	8,206	18,410	0.45	17,695	0.46	17,052	0.48
4	7752	7788	12,500	17,424	0.72	15,240	0.82	13,079	0.96
4	7788	7752	12,535	17,424	0.72	15,240	0.82	13,079	0.96
4	7880	7942	2,455	6,969	0.35	6,096	0.40	5,232	0.47
4	7890	7626	524	8,788	0.06	7,687	0.07	6,597	0.08
4	7892	7972	4,982	8,856	0.56	8,475	0.59	7,893	0.63
4	7916	7946	6,607	6,969	0.95	6,096	1.08	5,232	1.26
4	7920	7958	20,515	34,068	0.60	32,245	0.64	25,024	0.82
4	7930	7964	7,813	8,856	0.88	8,475	0.92	7,893	0.99
4	7938	5459	6,138	8,284	0.74	7,798	0.79	5,396	1.14
4	7942	7880	1,454	6,969	0.21	6,096	0.24	5,232	0.28
4	7944	7968	35,928	36,821	0.98	35,391	1.02	34,426	1.04
4	7946	7916	6,959	6,969	1.00	6,096	1.14	5,232	1.33
4	7950	12204	25,089	36,821	0.68	35,391	0.71	34,426	0.73
4	7952	5705	9,711	23,320	0.42	22,414	0.43	21,599	0.45
4	7958	7920	21,092	34,068	0.62	32,245	0.65	25,024	0.84
4	7960	8020	5,527	11,624	0.48	11,123	0.50	10,360	0.53
4	7964	7930	7,457	8,856	0.84	8,475	0.88	7,893	0.94
4	7966	12126	14,681	21,373	0.69	20,241	0.73	15,214	0.96
4	7968	7944	35,764	36,821	0.97	35,391	1.01	34,426	1.04
4	7970	11374	2,229	8,712	0.26	7,620	0.29	6,540	0.34
4	7972	7892	4,774	8,856	0.54	8,475	0.56	7,893	0.60
4	7976	5707	15,946	18,410	0.87	17,695	0.90	17,052	0.94
4	8002	7037	23,839	71,319	0.33	62,883	0.38	48,484	0.49
4	8020	7960	4,870	11,624	0.42	11,123	0.44	10,360	0.47
4	10000	10004	40,064	56,427	0.71	52,216	0.77	42,389	0.95
4	10002	9998	43,266	56,427	0.77	52,216	0.83	42,389	1.02
4	10262	10266	131,015	154,673	0.85	136,253	0.96	112,314	1.17
4	10264	10260	133,780	154,673	0.86	136,253	0.98	112,314	1.19
4	10968	7628	9,071	24,547	0.37	23,594	0.38	22,736	0.40
4	11002	11004	13,249	24,547	0.54	23,594	0.56	22,736	0.58
4	11004	11002	11,905	24,547	0.48	23,594	0.50	22,736	0.52
4	11374	7970	3,711	8,712	0.43	7,620	0.49	6,540	0.57
4	12126	7966	14,990	21,373	0.70	20,241	0.74	15,214	0.99
4	12204	7950	24,177	36,821	0.66	35,391	0.68	34,426	0.70
Totals			861,922	1,460,020	0.59	1,333,006	0.65	1,131,384	0.76

CAPACITY STATISTICS

Scrn	ANODE	BNODE	Volume	LOS E Capacity	LOS E Vol/Cap	LOS D Capacity	LOS D Vol/Cap	LOS C Capacity	LOS C Vol/Cap
5	5589	10890	9,734	35,603	0.27	31,441	0.31	24,242	0.40
5	6181	6183	5,122	17,038	0.30	13,487	0.38	9,468	0.54
5	6183	6181	5,105	17,038	0.30	13,487	0.38	9,468	0.54
5	6269	6319	3,375	17,038	0.20	13,487	0.25	9,468	0.36
5	6403	6405	3,624	17,038	0.21	13,487	0.27	9,468	0.38
5	6405	6403	3,550	17,038	0.21	13,487	0.26	9,468	0.37
5	6470	6740	7,580	8,856	0.86	8,475	0.89	7,893	0.96
5	6684	10842	34,278	36,821	0.93	35,391	0.97	34,426	1.00
5	6716	6788	12,406	24,547	0.51	23,594	0.53	22,736	0.55
5	6722	10900	1,662	7,062	0.24	6,180	0.27	5,297	0.31
5	6740	6470	7,964	8,856	0.90	8,475	0.94	7,893	1.01
5	6756	6808	10,791	24,547	0.44	23,594	0.46	22,736	0.47
5	6764	6804	8,110	23,320	0.35	22,414	0.36	21,599	0.38
5	6768	6812	34,193	36,821	0.93	35,391	0.97	34,426	0.99
5	6784	6844	1,953	5,854	0.33	5,120	0.38	4,395	0.44
5	6788	6716	11,047	24,547	0.45	23,594	0.47	22,736	0.49
5	6804	6764	8,045	23,320	0.34	22,414	0.36	21,599	0.37
5	6808	6756	10,732	24,547	0.44	23,594	0.45	22,736	0.47
5	6812	6768	34,033	36,821	0.92	35,391	0.96	34,426	0.99
5	6820	6906	15,527	22,498	0.69	21,306	0.73	16,015	0.97
5	6844	6784	1,944	5,854	0.33	5,120	0.38	4,395	0.44
5	6906	6820	15,019	22,498	0.67	21,306	0.70	16,015	0.94
5	9952	9956	48,554	56,427	0.86	52,216	0.93	42,389	1.15
5	9954	9950	46,810	56,427	0.83	52,216	0.90	42,389	1.10
5	10186	10190	98,780	122,821	0.80	108,486	0.91	89,507	1.10
5	10188	10184	94,178	122,821	0.77	108,486	0.87	89,507	1.05
5	10842	6684	36,264	36,821	0.98	35,391	1.02	34,426	1.05
5	10890	5589	11,372	35,603	0.32	31,441	0.36	24,242	0.47
5	10900	6722	1,982	7,062	0.28	6,180	0.32	5,297	0.37
Totals			583,734	895,544	0.65	814,651	0.72	698,662	0.84

CAPACITY STATISTICS

Scrn	ANODE	BNODE	Volume	LOS E Capacity	LOS E Vol/Cap	LOS D Capacity	LOS D Vol/Cap	LOS C Capacity	LOS C Vol/Cap
6	5260	5520	9,276	8,856	1.05	8,475	1.09	7,893	1.18
6	5500	5532	11,634	35,603	0.33	31,441	0.37	24,242	0.48
6	5520	5260	9,571	8,856	1.08	8,475	1.13	7,893	1.21
6	5532	5500	11,550	35,603	0.32	31,441	0.37	24,242	0.48
6	5576	5596	6,039	17,038	0.35	13,487	0.45	9,468	0.64
6	5596	5576	5,870	17,038	0.34	13,487	0.44	9,468	0.62
6	5625	6606	9,133	44,504	0.21	39,302	0.23	30,302	0.30
6	5648	11990	30,682	36,821	0.83	35,391	0.87	34,426	0.89
6	5652	5688	12,589	36,821	0.34	35,391	0.36	34,426	0.37

(List G-2) Time-of-Day Model Run – All Regions (2035 CF Scenario): {OUTDIR}\ HEVAL-24H-ScreenSmry-S65.PRN (SNIPPET)

6	5660	5724	103	8,856	0.01	8,475	0.01	7,893	0.01
6	5688	5652	10,763	36,821	0.29	35,391	0.30	34,426	0.31
6	5708	10790	4,990	8,856	0.56	8,475	0.59	7,893	0.63
6	5720	6186	15,999	24,547	0.65	23,594	0.68	22,736	0.70
6	5724	5660	306	8,856	0.03	8,475	0.04	7,893	0.04
6	6186	5720	16,667	24,547	0.68	23,594	0.71	22,736	0.73
6	6606	5625	7,557	44,504	0.17	39,302	0.19	30,302	0.25
6	6606	11994	6,429	8,856	0.73	8,475	0.76	7,893	0.81
6	9924	9928	38,510	56,427	0.68	52,216	0.74	42,389	0.91
6	9926	9922	38,763	56,427	0.69	52,216	0.74	42,389	0.91
6	10122	10126	50,827	122,821	0.41	108,486	0.47	89,507	0.57
6	10124	10120	56,789	122,821	0.46	108,486	0.52	89,507	0.63
6	10790	5708	5,558	8,856	0.63	8,475	0.66	7,893	0.70
6	11990	5648	29,277	36,821	0.80	35,391	0.83	34,426	0.85
6	11994	6606	6,276	8,856	0.71	8,475	0.74	7,893	0.80
Totals			395,158	820,012	0.48	746,416	0.53	638,136	0.62

Appendix H

Listing of Selected RMSE and Other Volume/Count Summary Reports

- **(List H-1) Time-of-Day Model Run – All Areas:**
  {OUTDIR}\RMSE-24H-S65.PRN
- **(List H-2) Subarea (24-Hour) FULL Model Run – All Areas:**
  {OUTDIR}\RMSE-AD-S65.PRN
- **(List H-3) Subarea (24-Hour) Highway Only Model Run – All Areas:**
  {OUTDIR}\RMSE-HOAD-S65.PRN
- **(List H-4) Subarea (24-Hour) Highway Only Model Run with User-Defined Subarea – All Areas:**
  {OUTDIR}\RMSE-HOAD-S65.PRN

(List H-1) Time-of-Day Model Run – All Areas: {OUTDIR}\RMSE-24H-S65.PRN

========== SERPM65 (All Three Counties) RMSE and Other Volume/Count Evaluation Summary ==========
Note: Year 2005 traffic counts are used in all evaluation summaries.
Run Date: Wed 04/21/2010

********** RMSE and Volume/Count By Volume Group **********

Vol Grp	Count Range	Model RMSE(%)	Allow RMSE Range	Volume	Count	Volume/Count	No of Links
1	1- 5,000	84.852%	45 - 55%	3,758,133	3,152,078	1.19	972
2	5,000- 10,000	56.005%	35 - 45%	11,834,435	11,108,729	1.07	1,478
3	10,000- 20,000	38.323%	27 - 35%	32,011,458	30,246,526	1.06	2,043
4	20,000- 30,000	27.681%	24 - 27%	22,804,410	23,415,928	0.97	977
5	30,000- 40,000	24.299%	22 - 24%	5,781,390	5,985,618	0.97	177
6	40,000- 50,000	21.805%	20 - 22%	3,135,501	3,288,562	0.95	72
7	50,000- 60,000	18.635%	18 - 20%	2,657,475	2,816,460	0.94	52
8	60,000- 70,000	23.271%	17 - 18%	2,009,638	1,929,182	1.04	29
9	70,000- 80,000	17.038%	16 - 17%	4,139,912	4,090,676	1.01	55
10	80,000- 90,000	17.104%	15 - 16%	3,642,931	3,521,510	1.03	42
11	90,000-100,000	15.746%	14 - 15%	2,434,908	2,488,082	0.98	26
12	100,000-500,000	12.450%	LT 14 %	4,958,933	5,110,966	0.97	46
ALL	1-500,000	35.959%	32 - 39%	99,169,124	97,154,317	1.02	5,969

********** VOLUME AND COUNT SUMMARY BY FACILITY TYPE **********

FT Grp	Volume	Count	Volume/Count	No of Links
1	19,490,091	19,302,911	1.01	258
2	1,573,325	1,746,488	0.90	209
4	57,307,534	54,453,408	1.05	3,511
6	7,938,762	8,669,157	0.92	1,142
7	6,255,860	6,127,625	1.02	633
8	1,789,852	1,556,618	1.15	76
9	4,813,700	5,298,110	0.91	140
ALL	99,169,124	97,154,317	1.02	5,969

********** VOLUME AND COUNT SUMMARY BY AREA TYPE **********

AT Grp	Volume	Count	Volume/Count	No of Links
1	2,022,607	2,066,214	0.98	174
2	7,826,276	7,783,214	1.01	388
3	35,923,831	35,210,174	1.02	1,902
4	51,151,446	49,668,285	1.03	3,209
5	2,244,964	2,426,430	0.93	296
ALL	99,169,124	97,154,317	1.02	5,969

(List H-1) Time-of-Day Model Run – All Areas: {OUTDIR}\RMSE-24H-S65.PRN

********** VOLUME AND COUNT SUMMARY BY LANES PER DIRECTION **********

Lanes/Direction	Volume	Count	Volume/Count	No of Links
1	12,145,204	12,288,378	0.99	1,820
2	30,404,019	29,748,030	1.02	2,330
3	43,130,121	41,500,024	1.04	1,615
4	9,723,750	9,900,469	0.98	166
5	3,329,864	3,227,416	1.03	33
6	436,166	490,000	0.89	5
ALL	99,169,124	97,154,317	1.02	5,969

********** VOLUME AND COUNT SUMMARY BY SCREENLINE & CUTLINE **********

Screen/Cut-Line	Volume	Count	Volume/Count	No of Links
2	523,826	450,762	1.16	24
3	449,275	402,208	1.12	26
4	628,056	608,886	1.03	42
5	428,147	433,098	0.99	27
6	272,889	261,378	1.04	24
7	164,825	163,292	1.01	18
8	98,921	70,008	1.41	6
9	130,359	158,926	0.82	8
10	178,090	171,700	1.04	8
11	165,053	160,242	1.03	10
12	263,659	257,340	1.02	16
13	132,095	111,646	1.18	8
14	81,168	95,704	0.85	6
15	230,088	212,012	1.09	14
17	193,543	238,482	0.81	20
18	287,488	310,140	0.93	38
21	758,174	686,698	1.10	34
22	951,649	950,792	1.00	42
23	955,254	807,498	1.18	38
24	558,820	603,100	0.93	32
25	1,136,982	1,047,300	1.09	46
26	283,753	286,522	0.99	24
27	566,921	489,142	1.16	24
28	960,782	874,930	1.10	40
29	23,274	23,672	0.98	2
32	343,735	300,508	1.14	18
33	411,278	487,000	0.84	36
34	989,184	1,009,300	0.98	46
42	701,106	776,582	0.90	32
43	893,210	886,058	1.01	47

(List H-1) Time-of-Day Model Run – All Areas: {OUTDIR}\RMSE-24H-S65.PRN

44	1,006,085	1,133,904	0.89	37
45	978,668	859,740	1.14	38
46	935,343	915,842	1.02	38
47	1,003,107	920,300	1.09	29
48	514,003	516,290	1.00	20
49	495,639	511,332	0.97	33
50	948,649	853,692	1.11	52
51	292,808	301,008	0.97	10
52	380,974	330,398	1.15	16
53	221,342	217,146	1.02	18
59	713,444	812,784	0.88	10
71	36,440	36,598	1.00	6
75	523,788	526,500	0.99	10
86	376,754	418,700	0.90	14
91	439,589	510,330	0.86	10
95	7,089,343	6,471,418	1.10	106
96	281,492	319,100	0.88	10
99	68,985,459	67,998,009	1.01	4,729
ALL	99,169,124	97,154,317	1.02	5,969

********** VOLUME AND COUNT SUMMARY BY COUNTY **********

County	Volume	Count	Volume/Count	No of Links
1	26,389,631	25,737,947	1.03	1,961
2	37,238,476	35,625,002	1.05	2,225
3	35,541,017	35,791,368	0.99	1,783
ALL	99,169,124	97,154,317	1.02	5,969

(List H-2) Subarea (24-Hour) FULL Model Run – All Areas: {OUTDIR}\RMSE-AD-S65.PRN

========== SERPM65 (All Three Counties) RMSE and Other Volume/Count Evaluation Summary ==========
Note: Year 2005 traffic counts are used in all evaluation summaries.
Run Date: Wed 04/21/2010

********** RMSE and Volume/Count By Volume Group **********

Vol Grp	Count Range	Model RMSE(%)	Allow RMSE Range	Volume	Count	Volume/Count	No of Links
1	1- 5,000	94.318%	45 - 55%	3,881,478	3,152,078	1.23	972
2	5,000- 10,000	52.717%	35 - 45%	11,789,102	11,108,729	1.06	1,478
3	10,000- 20,000	34.402%	27 - 35%	31,689,608	30,246,526	1.05	2,043
4	20,000- 30,000	25.047%	24 - 27%	22,310,083	23,415,928	0.95	977
5	30,000- 40,000	25.544%	22 - 24%	5,502,555	5,985,618	0.92	177
6	40,000- 50,000	20.642%	20 - 22%	3,191,521	3,288,562	0.97	72
7	50,000- 60,000	18.571%	18 - 20%	2,758,290	2,816,460	0.98	52
8	60,000- 70,000	16.635%	17 - 18%	1,958,067	1,929,182	1.01	29
9	70,000- 80,000	15.845%	16 - 17%	3,779,576	4,090,676	0.92	55
10	80,000- 90,000	14.917%	15 - 16%	3,445,962	3,521,510	0.98	42
11	90,000-100,000	14.136%	14 - 15%	2,382,383	2,488,082	0.96	26
12	100,000-500,000	14.695%	LT 14 %	4,619,268	5,110,966	0.90	46
ALL	1-500,000	33.641%	32 - 39%	97,307,893	97,154,317	1.00	5,969

********** VOLUME AND COUNT SUMMARY BY FACILITY TYPE **********

FT Grp	Volume	Count	Volume/Count	No of Links
1	18,635,823	19,302,911	0.97	258
2	1,591,056	1,746,488	0.91	209
4	55,952,974	54,453,408	1.03	3,511
6	7,791,090	8,669,157	0.90	1,142
7	6,440,534	6,127,625	1.05	633
8	1,832,969	1,556,618	1.18	76
9	5,063,447	5,298,110	0.96	140
ALL	97,307,893	97,154,317	1.00	5,969

********** VOLUME AND COUNT SUMMARY BY AREA TYPE **********

AT Grp	Volume	Count	Volume/Count	No of Links
1	2,066,472	2,066,214	1.00	174
2	7,788,226	7,783,214	1.00	388
3	34,983,346	35,210,174	0.99	1,902
4	50,128,109	49,668,285	1.01	3,209
5	2,341,740	2,426,430	0.97	296
ALL	97,307,893	97,154,317	1.00	5,969

(List H-2) Subarea (24-Hour) FULL Model Run – All Areas: {OUTDIR}\RMSE-AD-S65.PRN

********** VOLUME AND COUNT SUMMARY BY LANES PER DIRECTION **********

Lanes/Direction	Volume	Count	Volume/Count	No of Links
1	12,038,612	12,288,378	0.98	1,820
2	30,089,421	29,748,030	1.01	2,330
3	41,936,575	41,500,024	1.01	1,615
4	9,653,910	9,900,469	0.98	166
5	3,147,335	3,227,416	0.98	33
6	442,040	490,000	0.90	5
ALL	97,307,893	97,154,317	1.00	5,969

********** VOLUME AND COUNT SUMMARY BY SCREENLINE & CUTLINE **********

Screen/Cut-Line	Volume	Count	Volume/Count	No of Links
2	483,918	450,762	1.07	24
3	420,569	402,208	1.05	26
4	569,781	608,886	0.94	42
5	368,680	433,098	0.85	27
6	250,439	261,378	0.96	24
7	191,888	163,292	1.18	18
8	99,966	70,008	1.43	6
9	141,174	158,926	0.89	8
10	180,509	171,700	1.05	8
11	167,026	160,242	1.04	10
12	265,355	257,340	1.03	16
13	133,336	111,646	1.19	8
14	83,830	95,704	0.88	6
15	225,741	212,012	1.06	14
17	198,540	238,482	0.83	20
18	288,780	310,140	0.93	38
21	731,088	686,698	1.06	34
22	917,253	950,792	0.96	42
23	920,453	807,498	1.14	38
24	568,070	603,100	0.94	32
25	1,113,348	1,047,300	1.06	46
26	277,808	286,522	0.97	24
27	524,409	489,142	1.07	24
28	947,142	874,930	1.08	40
29	26,094	23,672	1.10	2
32	339,278	300,508	1.13	18
33	412,701	487,000	0.85	36
34	957,509	1,009,300	0.95	46
42	738,143	776,582	0.95	32
43	915,074	886,058	1.03	47

(List H-2) Subarea (24-Hour) FULL Model Run – All Areas: {OUTDIR}\RMSE-AD-S65.PRN

44	1,012,281	1,133,904	0.89	37
45	959,757	859,740	1.12	38
46	959,014	915,842	1.05	38
47	998,750	920,300	1.09	29
48	500,608	516,290	0.97	20
49	503,991	511,332	0.99	33
50	938,708	853,692	1.10	52
51	303,836	301,008	1.01	10
52	403,031	330,398	1.22	16
53	226,188	217,146	1.04	18
59	673,160	812,784	0.83	10
71	36,160	36,598	0.99	6
75	559,336	526,500	1.06	10
86	399,860	418,700	0.96	14
91	452,342	510,330	0.89	10
95	6,306,358	6,471,418	0.97	106
96	219,376	319,100	0.69	10
99	68,215,526	67,998,009	1.00	4,729
ALL	97,307,893	97,154,317	1.00	5,969

********** VOLUME AND COUNT SUMMARY BY COUNTY **********

County	Volume	Count	Volume/Count	No of Links
1	25,530,251	25,737,947	0.99	1,961
2	36,282,910	35,625,002	1.02	2,225
3	35,494,732	35,791,368	0.99	1,783
ALL	97,307,893	97,154,317	1.00	5,969

(List H-3) Subarea (24-Hour) Highway Only Model Run – All Areas: {OUTDIR}\RMSE-HOAD-S65.PRN

========== SERPM65 (All Three Counties) RMSE and Other Volume/Count Evaluation Summary ==========
Note: Year 2005 traffic counts are used in all evaluation summaries.
Run Date: Wed 04/21/2010

********** RMSE and Volume/Count By Volume Group **********

Vol Grp	Count Range	Model RMSE(%)	Allow RMSE Range	Volume	Count	Volume/Count	No of Links
1	1- 5,000	92.689%	45 - 55%	3,810,567	3,152,078	1.21	972
2	5,000- 10,000	52.287%	35 - 45%	11,608,601	11,108,729	1.04	1,478
3	10,000- 20,000	34.032%	27 - 35%	31,208,531	30,246,526	1.03	2,043
4	20,000- 30,000	25.010%	24 - 27%	21,978,929	23,415,928	0.94	977
5	30,000- 40,000	26.094%	22 - 24%	5,387,326	5,985,618	0.90	177
6	40,000- 50,000	21.690%	20 - 22%	3,140,760	3,288,562	0.96	72
7	50,000- 60,000	18.742%	18 - 20%	2,653,453	2,816,460	0.94	52
8	60,000- 70,000	15.899%	17 - 18%	1,922,727	1,929,182	1.00	29
9	70,000- 80,000	16.549%	16 - 17%	3,715,672	4,090,676	0.91	55
10	80,000- 90,000	15.449%	15 - 16%	3,380,552	3,521,510	0.96	42
11	90,000-100,000	15.053%	14 - 15%	2,335,189	2,488,082	0.94	26
12	100,000-500,000	16.287%	LT 14 %	4,509,169	5,110,966	0.88	46
ALL	1-500,000	33.978%	32 - 39%	95,651,476	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY FACILITY TYPE **********

FT Grp	Volume	Count	Volume/Count	No of Links
1	18,240,497	19,302,911	0.94	258
2	1,546,880	1,746,488	0.89	209
4	55,162,042	54,453,408	1.01	3,511
6	7,746,620	8,669,157	0.89	1,142
7	6,351,973	6,127,625	1.04	633
8	1,759,319	1,556,618	1.13	76
9	4,844,145	5,298,110	0.91	140
ALL	95,651,476	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY AREA TYPE **********

AT Grp	Volume	Count	Volume/Count	No of Links
1	2,086,867	2,066,214	1.01	174
2	7,766,640	7,783,214	1.00	388
3	34,542,451	35,210,174	0.98	1,902
4	49,003,248	49,668,285	0.99	3,209
5	2,252,270	2,426,430	0.93	296
ALL	95,651,476	97,154,317	0.98	5,969

(List H-3) Subarea (24-Hour) Highway Only Model Run – All Areas: {OUTDIR}\RMSE-HOAD-S65.PRN

********** VOLUME AND COUNT SUMMARY BY LANES PER DIRECTION **********

Lanes/Direction	Volume	Count	Volume/Count	No of Links
1	11,798,994	12,288,378	0.96	1,820
2	29,649,822	29,748,030	1.00	2,330
3	41,264,750	41,500,024	0.99	1,615
4	9,440,135	9,900,469	0.95	166
5	3,057,867	3,227,416	0.95	33
6	439,908	490,000	0.90	5
ALL	95,651,476	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY SCREENLINE & CUTLINE **********

Screen/Cut-Line	Volume	Count	Volume/Count	No of Links
2	467,047	450,762	1.04	24
3	409,657	402,208	1.02	26
4	560,145	608,886	0.92	42
5	360,466	433,098	0.83	27
6	237,583	261,378	0.91	24
7	175,714	163,292	1.08	18
8	97,424	70,008	1.39	6
9	137,813	158,926	0.87	8
10	177,917	171,700	1.04	8
11	163,631	160,242	1.02	10
12	260,650	257,340	1.01	16
13	131,437	111,646	1.18	8
14	81,964	95,704	0.86	6
15	223,039	212,012	1.05	14
17	196,534	238,482	0.82	20
18	283,103	310,140	0.91	38
21	711,538	686,698	1.04	34
22	895,990	950,792	0.94	42
23	892,183	807,498	1.10	38
24	553,864	603,100	0.92	32
25	1,096,274	1,047,300	1.05	46
26	277,429	286,522	0.97	24
27	505,629	489,142	1.03	24
28	911,395	874,930	1.04	40
29	24,410	23,672	1.03	2
32	333,783	300,508	1.11	18
33	406,313	487,000	0.83	36
34	948,649	1,009,300	0.94	46
42	721,424	776,582	0.93	32
43	894,199	886,058	1.01	47
44	1,001,872	1,133,904	0.88	37

(List H-3) Subarea (24-Hour) Highway Only Model Run – All Areas: {OUTDIR}\RMSE-HOAD-S65.PRN

45	950,680	859,740	1.11	38
46	958,482	915,842	1.05	38
47	1,000,851	920,300	1.09	29
48	487,647	516,290	0.94	20
49	498,462	511,332	0.97	33
50	939,697	853,692	1.10	52
51	298,113	301,008	0.99	10
52	406,367	330,398	1.23	16
53	218,979	217,146	1.01	18
59	664,702	812,784	0.82	10
71	33,568	36,598	0.92	6
75	539,038	526,500	1.02	10
86	384,845	418,700	0.92	14
91	420,723	510,330	0.82	10
95	6,111,256	6,471,418	0.94	106
96	207,495	319,100	0.65	10
99	67,213,605	67,998,009	0.99	4,729
ALL	95,651,476	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY COUNTY **********

County	Volume	Count	Volume/Count	No of Links
1	24,954,511	25,737,947	0.97	1,961
2	35,575,224	35,625,002	1.00	2,225
3	35,121,741	35,791,368	0.98	1,783
ALL	95,651,476	97,154,317	0.98	5,969

(List H-4) Subarea (24-Hour) Highway Only Model Run With User Defined Subarea – All Areas: {OUTDIR}\RMSE-HOAD-S65.PRN

========== SERPM65 (All Three Counties) RMSE and Other Volume/Count Evaluation Summary ==========
Note: Year 2005 traffic counts are used in all evaluation summaries.
Run Date: Wed 04/21/2010

********** RMSE and Volume/Count By Volume Group **********

Vol Grp	Count Range	Model RMSE(%)	Allow RMSE Range	Volume	Count	Volume/Count	No of Links
1	1- 5,000	106.969%	45 - 55%	3,907,260	3,152,078	1.24	972
2	5,000- 10,000	62.071%	35 - 45%	11,461,154	11,108,729	1.03	1,478
3	10,000- 20,000	38.693%	27 - 35%	31,005,085	30,246,526	1.03	2,043
4	20,000- 30,000	26.977%	24 - 27%	21,944,290	23,415,928	0.94	977
5	30,000- 40,000	26.849%	22 - 24%	5,442,013	5,985,618	0.91	177
6	40,000- 50,000	22.234%	20 - 22%	3,127,634	3,288,562	0.95	72
7	50,000- 60,000	18.101%	18 - 20%	2,630,578	2,816,460	0.93	52
8	60,000- 70,000	16.579%	17 - 18%	1,899,121	1,929,182	0.98	29
9	70,000- 80,000	19.185%	16 - 17%	3,638,255	4,090,676	0.89	55
10	80,000- 90,000	14.980%	15 - 16%	3,381,798	3,521,510	0.96	42
11	90,000-100,000	16.356%	14 - 15%	2,325,708	2,488,082	0.93	26
12	100,000-500,000	16.497%	LT 14 %	4,475,182	5,110,966	0.88	46
ALL	1-500,000	37.343%	32 - 39%	95,238,078	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY FACILITY TYPE **********

FT Grp	Volume	Count	Volume/Count	No of Links
1	18,007,831	19,302,911	0.93	258
2	1,410,975	1,746,488	0.81	209
4	54,905,549	54,453,408	1.01	3,511
6	7,887,773	8,669,157	0.91	1,142
7	6,366,963	6,127,625	1.04	633
8	1,757,701	1,556,618	1.13	76
9	4,901,286	5,298,110	0.93	140
ALL	95,238,078	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY AREA TYPE **********

AT Grp	Volume	Count	Volume/Count	No of Links
1	1,943,004	2,066,214	0.94	174
2	7,652,271	7,783,214	0.98	388
3	34,612,546	35,210,174	0.98	1,902
4	48,853,012	49,668,285	0.98	3,209
5	2,177,245	2,426,430	0.90	296
ALL	95,238,078	97,154,317	0.98	5,969

(List H-4) Subarea (24-Hour) Highway Only Model Run With User Defined Subarea – All Areas: {OUTDIR}\RMSE-HOAD-S65.PRN

********** VOLUME AND COUNT SUMMARY BY LANES PER DIRECTION **********

Lanes/Direction	Volume	Count	Volume/Count	No of Links
1	11,822,777	12,288,378	0.96	1,820
2	29,505,002	29,748,030	0.99	2,330
3	41,210,699	41,500,024	0.99	1,615
4	9,225,169	9,900,469	0.93	166
5	3,034,583	3,227,416	0.94	33
6	439,848	490,000	0.90	5
ALL	95,238,078	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY SCREENLINE & CUTLINE **********

Screen/Cut-Line	Volume	Count	Volume/Count	No of Links
2	467,271	450,762	1.04	24
3	415,401	402,208	1.03	26
4	570,745	608,886	0.94	42
5	393,316	433,098	0.91	27
6	219,475	261,378	0.84	24
7	175,702	163,292	1.08	18
8	75,540	70,008	1.08	6
9	149,656	158,926	0.94	8
10	172,082	171,700	1.00	8
11	142,797	160,242	0.89	10
12	249,968	257,340	0.97	16
13	153,683	111,646	1.38	8
14	82,665	95,704	0.86	6
15	224,823	212,012	1.06	14
17	194,896	238,482	0.82	20
18	233,526	310,140	0.75	38
21	717,480	686,698	1.04	34
22	910,835	950,792	0.96	42
23	888,368	807,498	1.10	38
24	596,375	603,100	0.99	32
25	1,110,727	1,047,300	1.06	46
26	281,588	286,522	0.98	24
27	505,855	489,142	1.03	24
28	932,639	874,930	1.07	40
29	24,210	23,672	1.02	2
32	336,232	300,508	1.12	18
33	420,370	487,000	0.86	36
34	948,378	1,009,300	0.94	46
42	750,395	776,582	0.97	32
43	897,701	886,058	1.01	47

44	1,035,003	1,133,904	0.91	37
45	1,021,326	859,740	1.19	38
46	949,346	915,842	1.04	38
47	1,004,047	920,300	1.09	29
48	478,080	516,290	0.93	20
49	470,633	511,332	0.92	33
50	908,002	853,692	1.06	52
51	283,353	301,008	0.94	10
52	390,421	330,398	1.18	16
53	221,077	217,146	1.02	18
59	644,918	812,784	0.79	10
71	33,656	36,598	0.92	6
75	527,078	526,500	1.00	10
86	402,583	418,700	0.96	14
91	424,064	510,330	0.83	10
95	6,084,778	6,471,418	0.94	106
96	200,681	319,100	0.63	10
99	66,727,467	67,998,009	0.98	4,729
ALL	95,238,078	97,154,317	0.98	5,969

********** VOLUME AND COUNT SUMMARY BY COUNTY **********

County	Volume	Count	Volume/Count	No of Links
1	24,330,718	25,737,947	0.95	1,961
2	35,535,441	35,625,002	1.00	2,225
3	35,371,919	35,791,368	0.99	1,783
ALL	95,238,078	97,154,317	0.98	5,969