National Capital Region Transportation Planning Board

TPB Version 2.3 Travel Forecasting Model for the 3,722-Zone Area System: User’s Guide

Draft Report

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Credits	
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Abstract: This report describes the application of a travel forecasting process, known as the Version 2.3 model, for the Washington, D.C. region. Version 2.3 is distinguished from prior TPB travel models in that it has been developed over a new 3,722 transportation analysis zone system, and it has been calibrated and validated with several sources of recently collected travel data, including the COG/TPB 2007/08 Household Travel Survey. TPB Travel Forecasting Subcommittee provided oversight for the Version 2.3 model development effort.

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Chapter 1 Model application overview

The Version 2.3 travel model can be executed on a personal computer, a workstation, or a server running the 32-bit versions of Microsoft Windows XP, Windows 7, or Windows Server (2003 or 2008). The Version 2.2 travel model would not run under a 64-bit version of Windows because several of the Fortran programs, including mode choice model application program (COGMC.EXE), were compiled as 16-bit programs. By contrast, the Version 2.3 travel model should run successfully under a 64-bit Windows operating system, though TPB staff has not specifically tested the model on such a platform. Many of the Fortran programs used in the Version 2.2 travel model have been converted to Cube Voyager scripts. Of the two remaining Fortran programs (See Table 3), both are compiled as 32-bit executables, so they should run under a 64-bit operating system.

To run the Version 2.3 travel model, a user will need to have a copy of Cube Voyager software, which is available for purchase from Citilabs, Inc. (www.citilabs.com). To prepare or edit the highway and transit networks needed as inputs to the travel model, a user will need to have a copy of Cube Base, the graphical user interface, or GUI, of the Cube suite of software. The Version 2.3 travel model was developed using Cube Voyager version 5.1.2 and Cube Base version 5.1.2. If one uses a different version of Cube Voyager, it is possible that the modeled results will be slightly different from those published in this report. The version of Cube Base is not as critical, since this is used only for editing the networks. Cube Voyager is the replacement for TP+. Although there is much overlap between Cube Voyager and TP+, Citilabs does not plan to make any more updates to TP+. Furthermore, some features are not available in TP+, like Cube Cluster, which is used to implement distributed processing. Although the Version 2.3 travel model does not, at this time, use Cube Cluster, TPB staff intends to add this capability in the near future to the Version 2.3 travel model to help decrease the model run times, which are currently about three times longer than was the case for the Version 2.2 travel model (about 52 hours vs. 18 hours). The increase in run times is due to primarily four factors: the increased size of the matrices (by a factor of about 2.86), the increased convergence thresholds used in traffic assignment, the addition of a sixth user class in traffic assignment, and the increase in the number of time-of-day periods used in traffic assignment (four vs. the three used in the Version 2.2 travel model). For reference, when model run times are discussed, the specifications or "specs" of the travel model server used by the models development staff to develop the Version 2.3 model are shown in Table 1.

Table 1 Specs of the models development travel model server (TMS3)

Item	Spec
Processor name and speed	Intel Xeon W5580 CPU @ 3.20GHz
Number of processors in system	2
Active cores per processor	4
Total number of cores	8
L2 Cache	4 x 256 KB
System Bus Frequency	133 MHz
Memory	4.0 GB
Hard drive	Network attached storage (NAS, O drive), 1.99 TB
Operating system	Windows Server Standard, SP2, 32-bit

Ref: O:\model_dev\computer_specs_2011-01.xlsx

The use of older (pre-5.1.2) versions of Cube Voyager is not recommended. To determine the version of Cube Voyager, select Start => All Programs => Citilabs => Cube Voyager Models and Utilities => Cube Voyager. Click the button labeled "About Voyager…". All of the modules listed (e.g., TPMAIN, HWYLOAD, HWYNET, MATRIX, TRNBUILD, LIBRARY, PT, PTPROCESSES, JUNCTION) should explicitly indicate Version 5.1.2, as shown in Figure 1.

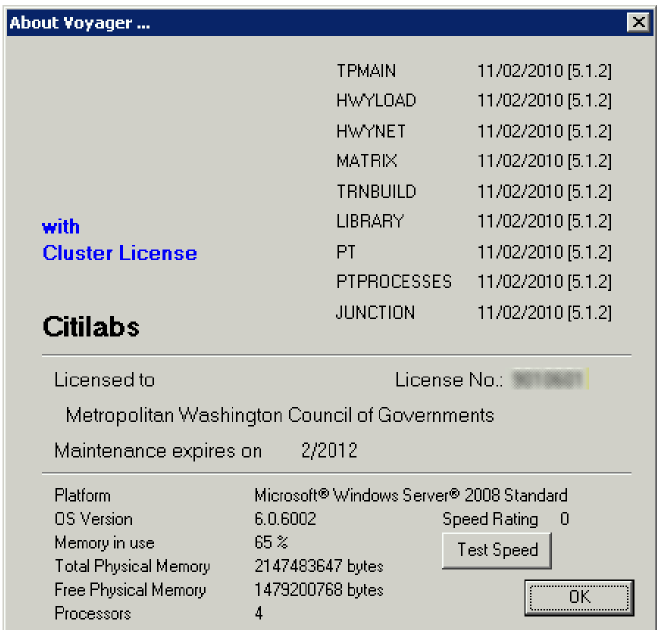

Figure 1 Version 5.1.2 of the modules that make up Cube Voyager

Computers running the Version 2.3 model should be equipped with at least 2 GB of RAM memory and a minimum hard drive size of 100 GB. Running the Version 2.3 travel model for one scenario/year generates about 1,600 files, which takes up about 22 GB of space. Many of these are temporary or intermediate files, but these temporary files are not automatically deleted, since the user may want to use the information in some of these files. It is preferable to have a workstation or serve with multiple cores or CPUs, so that one can run multiple model runs at once or run one model run and still be able to use the computer for other tasks while the model run completes. It is preferable to use a computer with the fastest CPU possible (above 3 GHz, if possible).

A powerful text editor is also strongly recommended to support modeling work. TPB staff tend to use one of the three text editors: KEDIT, a commercial package (www.kedit.com); PSPad, a freeware text editor (www.pspad.com); and/or Notepad++, an open source text editor (http://notepad-plus-plus.org/). PSPad can be configured to highlight (color code) syntax for various languages (e.g., SAS, Fortran, and Cube Voyager). Color coding of syntax can help eliminate syntax errors. Cube Base also has its own script editor that includes color coding of syntax. TPB also recommends using the following utility software:

- Windows “Open Command Window Here” PowerToy (CmdHere.exe), which allows one to right-click a folder in Windows Explorer and then open a command window at that folder/subdirectory location. In Windows 7, this capability is built in by using shift-click.
- TimeThis.exe: Allows one to time a command. This is a tool found in the “Windows 2000 Resource Kit.” This software utility is used in the standard batch files used to apply the model, and is included is with TPB model transmittals.
- Tee.exe: Splits standard output (normally sent to either the screen or a file) to both the screen and a file at the same time. This is part of the Windows 2000 Resource Kit. This is also used in the standard application batch files and is included with TPB transmittals.

The application steps of the model are graphically portrayed on Figure 2. The model uses a speed feedback loop to ensure that the travel times and speeds coming out of traffic assignment are consistent with the travel times and speeds going into trip distribution and mode choice. Before the loop is begun, there is an initialization phase, known as the “pump-prime” iteration. In the pump prime iteration, a first pass of the four-step travel model is performed using *initial* AM and off-peak highway speeds, and *initial* mode choice percentages (i.e., the mode choice model is not executed in the pump prime iteration). The “skimmed” highway times are used to develop zone–to-PNR-lot links as part of the transit network. After the transit network is built and skimmed, trip generation and trip distribution are executed. The resulting person trips are converted to vehicle trips on the basis of default zone-level mode choice and car occupancy percentages, and are assigned to the highway network.

The next series of “standard” iterations (1 through 4) involve the execution of the complete four-step travel model which includes: 1) a mode choice model execution and 2) the use of recycled traffic assignment-based speeds as input. The AM peak and off-peak restrained highway times are used to update the zone-to-PNR link speeds, and the transit network is re-built and skimmed. The highway and transit time skims are used as inputs to the mode choice model. The auto driver trips produced from the mode choice model are processed through the time-of-day model, which apportions the auto drivers among four time-of-day periods: AM peak period (6 - 9 AM), midday period (9 AM – 3 PM), PM peak period (3 - 7 PM), and the night/early morning period (7 PM – 6 AM). The four time-of-day trip tables are subsequently loaded onto the highway network in separate traffic assignment procedures. The loaded link volumes are successively averaged using the method of successive averages, or MSA, to facilitate the convergence of the final link speeds. The averaging occurs individually for each of the four time-of-day periods at the link level, as follows:

- The “final” first iteration link volumes are equal to the “raw” assigned link volumes from the pump-prime iteration.
- The “final” second iteration link volume equals one half of the first iteration link volume plus one half of the second iteration assigned link volume.
- The “final” third iteration link volume equals 2/3 of the “final” second iteration link volume plus 1/3 of the third iteration assigned volume.
- The “final” fourth iteration link volume equals 3/4 of the “final” fifth iteration link volume plus 1/4 of the fourth iteration assigned volume.

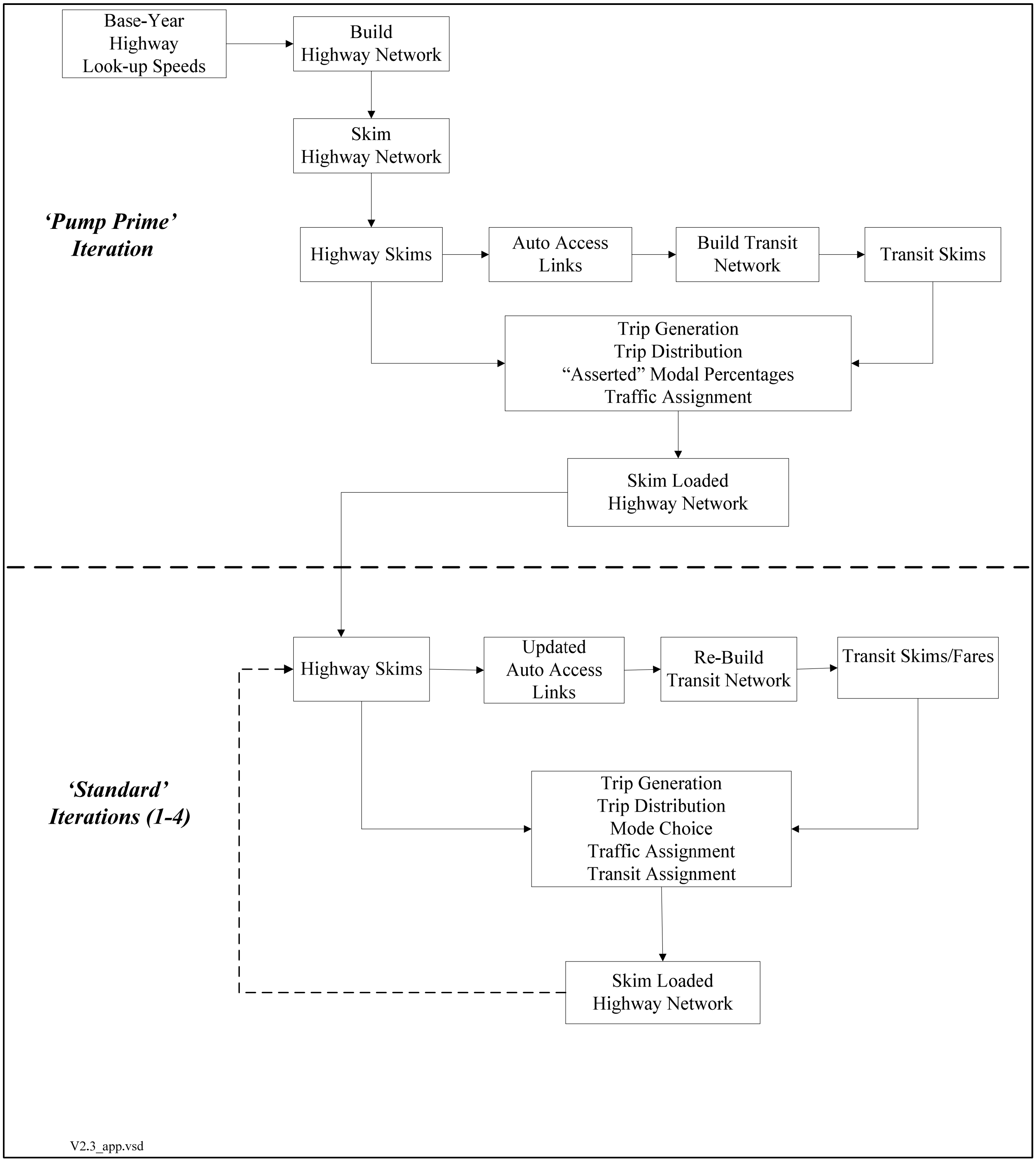

Figure 2 Application process of the Version 2.3 travel model

In both the Version 2.2 and 2.3 travel models, a fixed number of speed-feedback iterations are used. In the Version 2.2 model, it was six speed feedback iterations (in addition to the pump prime iteration). In the Version 2.3 model, we are using four speed feedback iterations (in addition to the pump prime iteration). TPB staff felt that it made sense to reduce the number of speed feedback iterations, given that the traffic assignment itself is now more converged. The Version 2.2 model traffic assignment was achieving relative gaps between 10^{-4} (0.0001) and 10^{-2} (0.01), depending on the user class:

- about 10^{-2} (ca. 0.01 to 0.02) for the AM and PM non-HOV 3+ assignments
- about 10^{-3} (ca. 0.002) for the off-peak assignment
- about 10^{-4} (ca. 0.0001 to 0.0002) for the AM and PM HOV 3+ assignments

By contrast, the Version 2.3 travel model is reaching a relative gap of 10^{-3} (0.001) across all six user classes and each of the six is equally converged, which is not the case for the Version 2.2 travel model. In this case of the two HOV3+ assignments (AM and PM), it takes only about 20 user equilibrium (UE) iterations to reach a relative gap of 10^{-3}. In the case of the two peak-period non-HOV assignments, it takes about 150 to 170 UE iterations to reach a relative gap of 10^{-3}. The modeler can check the relative gap by consulting the highway assignment report file for the final speed feedback iteration (i.e., i4_Highway_Assignment.rpt). The variable is called RELGAP.

1.1 Preparing for a model run

A structured application procedure has been established for applying the Version 2.3 model from a command-prompt window. The procedure involves:

- A series of pre-established batch files;
- A standardized subdirectory system, in which input files, output files, Cube Voyager scripts, and other files are rigidly organized; and
- The use of generically named input and output files, which are stored in designated locations in the subdirectory system.

An example subdirectory structure for applying the Version 2.3 model is shown in Figure 3. The "root" subdirectory appears at the top of the structure. The root subdirectory may exist anywhere on the computer hard drive and may be arbitrarily named by the analyst, but it recommended that the name of the root subdirectory include information about both the travel model being used (e.g. Ver2.3.9_3722TAZ)[1] and the modeling project being undertaken. For example, an analyst performing model runs to support the Air Quality Conformity Determination of the 2011 Constrained Long-Range Plan and the FY 2012-2018 Transportation Improvement Program might name the root subdirectory as follows:

`C:\model_dev\`**`Ver2.3.9_3722TAZ_aqc_2011clrp`**

Note that the root subdirectory need not be located directly off the root of the C drive (or D drive, etc.). In the example above, the root subdirectory is below the "model_dev" subdirectory. On the left side of Figure 3, there are four specially designated subdirectories under the root which are established specifically for

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[1] The "9" in the version number (2.3.9) refers to the fact that is the 9th "build" of the Version 2.3 model.

- Fortran executables (\SOFTWARE),
- Control files that are required by some of the executables (\CONTROLS),
- Cube Voyager scripts (\SCRIPTS), and
- General parameter files used by the scripts or executables (\SUPPORT).

The SUPPORT subdirectory is reserved for parameter files that generally do not change by modeled scenario such as K-factors, F-factors, and the like. These four subdirectories must exist under the root, and must be named as shown. Furthermore, the files residing in these four subdirectories should not generally be altered or renamed.

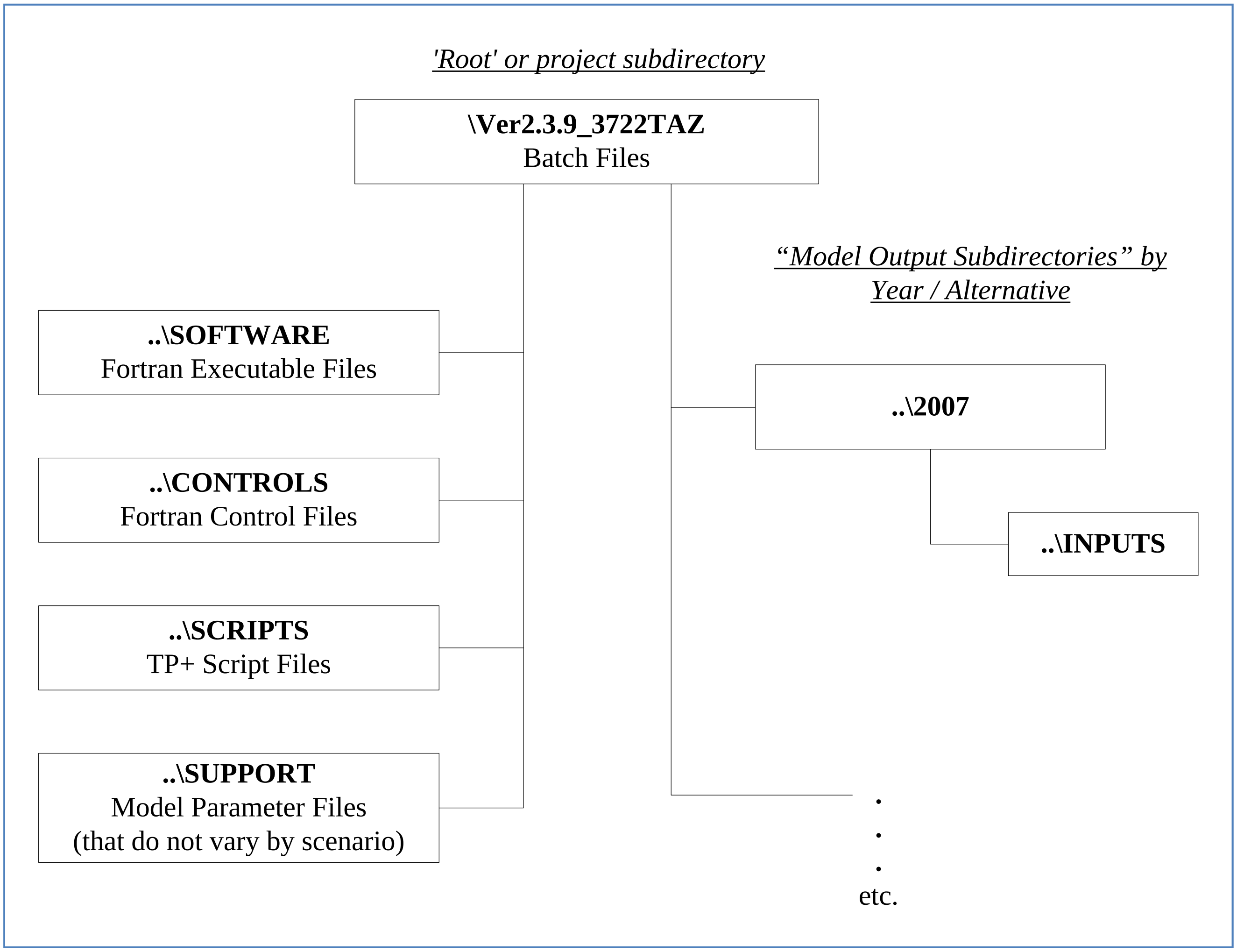

Figure 3 Subdirectory structure for executing the Version 2.3 travel model

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\01_calib\directoryStruct_v23_model.vsd

The right side of Figure 3 shows one subdirectory, named "2007", in this case. This subdirectory is the output subdirectory (a.k.a. the scenario-specific subdirectory). The user is free to choose any name for output subdirectories. A travel demand modeling project would typically have two or more scenarios or alternatives. Each alternative would get its own output subdirectory for scenario-specific outputs from the travel model. For example, a modeling project with four alternatives might have output scenarios with the following names:

- 2007
- 2030base
- 2030lowGrowth
- 2030highGrowth

Under each scenario-specific subdirectory that exists, there is an INPUTS subdirectory, which must be named "inputs" (names are case insensitive). The input subdirectory is where one stores all necessary model inputs, which are generically named (e.g., land use data is stored in a file named zone.asc; network link data is stored in a file named link.asc, etc.). The user may establish an unlimited number of output subdirectories, as long as each one contains one INPUTS subdirectory. INPUTS subdirectories cannot be shared among more than one alternative.

If one is running multiple scenarios, it is recommended that the analyst set up an electronic spreadsheet to keep track of metadata associated with each model run. The metadata of importance will vary from study to study, but might contain items such as:

- Run number/ID (a unique sequence number to quickly name a model run)
- Parent run number/ID (indicates the run number of the run that formed the basis for the current run). Useful in figuring which run was derived from which other runs.
- Subdirectory name (i.e., the name of the root folder/subdirectory)
- Key modeling assumption parameters, such as the network year, land use year, land use round (e.g., Round 7.2a), WMATA tariff number, etc.
- Key modeling output parameters, such as model run time, regional VMT, total transit, etc.

Pre-established "parent" and "child" batch files for executing the model reside in the root subdirectory. Typically "parent" batch files are edited to correspond to each modeled scenario, while "child" batch files remain unaltered. The parent batch files can be named as the user likes. The two main parent batch files are the "wrapper" and the "run all" file. Details about these two files can be found in section 1.2.1 on page 13 and section 1.2.2 on page 17. The child batch files are the ones that actually execute individual modeling steps, such as the trip generation step (e.g., Trip_Generation.bat) or the traffic assignment step (e.g., Highway_Assignment.bat). Child batch files generally call the Cube Voyager scripts and/or Fortran programs. The child batch files also assign names to report files that result from each model step. Listing files are typically assigned file extensions of RPT or TAB. The former refers to Cube Voyager report or listing files, while the latter refers to a subset tabulation of the report file containing only trip table totals or jurisdictional summaries. Parent batch files are used to string child batch files together so that the entire model execution can be initiated with a single command or batch file. The parent batch files also establish Windows environment variables that are used in the child batch files and Cube Voyager scripts, such as the iteration number, the model year, and the model description.

All of the files in the INPUTS subdirectory are assigned generic filenames as listed on Table 2. It is the user's responsibility to make sure that the generically named files are appropriate for the modeled scenario and are in the prescribed format (described later). Additionally, all of the files shown on Table 2 must exist unless they are listed as optional. The advantage of using generic filenames is that the input and output filenames referenced in each Cube Voyager script and control file do not need to be tailored to match the different scenarios that are run. The disadvantage of using generic filenames is that, when moving or sharing files, two files with the same name could be quite different (e.g., zone.dbf for the year 2007 has the same name as zone.dbf for the year 2040). Thus, the metadata that describes the scenario name is stored in the name of the output subdirectory (e.g., "2007"), not in the filenames. A list of the Fortran executables and the dynamic-link library (DLL) files residing in the \SOFTWARE subdirectory is shown in Table 3. There are fewer executables (only two) used by the Versions 2.3 model than have been used in previous TPB models, since several Fortran routines have been converted to Cube Voyager scripts.

A listing of child batch files is provided in Table 4. The table also indicates the programs and/or Cube Voyager scripts that are invoked and the purpose of each batch file. Given the iterative application process of the model, most of the batch files are called multiple times during a model run. The sequence of batch file applications, by iteration, is shown in Table 5. The table indicates that there are 47 batch steps called during a standard application of the model. Some of the batch files are called once, while others (e.g., trip_generation.bat) are called during the pump-prime and all four standard iterations. A parent batch file is used to string each of the 47 child batch files together during a typical model execution. The parent batch files, like child batch files, reside in the root subdirectory. Two parent batch files are typically prepared for each individual model run. The process for executing a model is addressed in the next section. The remaining chapters address the specific details of each modeling step.

Table 2 Input files required for running the Version 2.3 travel model

	Input Type	File Name	Description	Text or Binary
1	LU	zone.dbf	Zonal Land use	Text
2	HWY	hwy_assign_toll_skm.s	Toll parameters used in traffic assignment	Text
3	HWY	Link.dbf	Highway Links	Dbf
4	HWY	Node.dbf	Highway Node file	Dbf
5	HWY	TOLL.ESC	Highway Toll Value / Deflator File	Text
6	HWY	TOLL.INC	Highway Toll /Time Equivalent by Income Grp.	Text
7	HWY	TOLL.skm	Highway Toll/Time Equivalent by Veh. Type	Text
8	TRN	MODE1AM.TB,…MODE10AM.tb	AM Transit Line Files, Mode 1 to 10	Text
9	TRN	MODE1OP.TB,…MODE10OP.tb	Off-peak Transit Line Files, Mode 1 to 10	Text
10	TRN	BUS_PNRL.TB,COM_PNRL.TB, MET_PNRL.TB,	Transit PNR-to-Station transfer link files	Text
11	TRN	Bus_PNRN.tb, Com_PNRN.tb, Met_PNRN.tb	Transit PNR node files	Text
12	TRN	Com_Bus.tb, Met_Bus.tb	Transit station-to-bus transfer link files	Text
13	TRN	Com_Link.tb, Met_Link.tb, LIG_LINK.TB	Transit station link files	Text
14	TRN	Com_Node.tb, LIG_node.tb, Met_Node.tb	Transit station node files	Text

	Input Type	File Name	Description	Text or Binary
15	TRN	MetLnkM1.tb, MetNodM1.tb	Metrorail link & node files	Text
16	TRN	areadef3722.prn	Input Zonal TAZ-Mode choice district equiv.	Text
17	TRN	AreaWalk.txt	Zonal walk shed file	Text
18	TRN	BUSFARAM.ASC	MFARE2 AM Bus Fare Zone Matrix	Text
19	TRN	BUSFAROP.ASC	MFARE2 Off-peak Bus Fare Zone Matrix	Text
20	TRN	CPI_File.txt	Historical CPI file	Text
21	TRN	tariff.txt	WMATA Tariff policy control file	Text
22	TRN	TAZFRZN.ASC	TAZ/Bus Fare Zone Equivalency	Text
23	TRN	TRNPEN.DAT	Metrorail Station Network Turn Penalty File	Text
24	TRN	Mfare1.a1	Mfare1 Metrorail station attribute file	Text
25	TRN	mfare1_Sta_Disc.ASC	Metrorail Station Discount File	Text
26	TRN	HBWV2a1.dbf	Zonal percent short/long walk area file	Dbf
27	TRN	HBW_NL_MC.MTT	HBW Mode Choice file	Binary
28	TRN	HBS_NL_MC.MTT	HBS Mode Choice file	Binary
29	TRN	HBO_NL_MC.MTT	HBO Mode Choice file	Binary
30	TRN	NHW_NL_MC.MTT	NHW Mode Choice file	Binary
31	TRN	NHO_NL_MC.MTT	NHO Mode Choice file	Binary
32	TRN	Station.dbf	Rail Station/PNR attribute File	dbf
33	TRN	StaAcc.dbf	Station access type code parameter file	dbf
34	TRN	LBUS_TimFtrs.ASC	Local Bus Time Degradation Factors	Text
35	TRN	Pen.dbf	List of TAZs in the Pentagon's "slug" shed	dbf
36	TRN	NLwalkPCT.txt	Zonal file of long walk area pcts. To Metrorail	Text
37	TRN	xtrawalk.dbf	User defined transit walk link adds/deletes	dbf
38	TRIP	Ext_PsAs.dbf	Zonal External Productions and Attractions	dbf
39	TRIP	Airpax.ADR	Air Passenger Auto Dr. Trips	Binary
40	TRIP	schl.ADR	School Auto Dr. Trips	Binary
41	TRIP	taxi.ADR	Taxi Auto Dr. Trips	Binary
42	TRIP	visi.ADR	Visitor/Tourist Auto Dr. Trips	Binary
43	TRIP	xxaut.vtt	Through Auto Drivers	Binary
44	TRIP	XXCVT.vtt	Through Trucks and Commercial Vehicles trips	Binary

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\V23_inputs_v2.xlsx

Table 3 Fortran executable files and dynamic-link library files required for running the Version 2.3 travel model

Executable Name	Size (bytes)	Date	Program Function	Requires a Control File?
AEMS.exe	163,536	9/3/2004	Mode choice application program	Yes
cw3240.dll	827,392	2/9/1998	Dynamic-link library file associated w/ AEMS.exe	No
DFORMD.dll	425,984	8/2/1999	Dynamic-link library file associated w/ AEMS.exe	No
Tppdlibx.dll	126,976	4/23/2002	Dynamic-link library file associated w/ AEMS.exe	No
Tputlib.dll	570,880	5/9/2002	Dynamic-link library file associated w/ AEMS.exe	No
EXTRTAB.EXE	24,663	11/23/2010	Extracts sections from TP+ report files.	No

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\v23_software_v2.xlsx

Table 4 "Child" batch files used for running the Version 2.3 travel model

Batch File	Scripts / Programs	Purpose
Set_Factors.bat	Set_Factors.s	Create K-factors and time penalties.
Set_CPI.bat	Set_CPI.s	Create highway and transit cost deflators.
PP_Highway_Build.bat	AreaType_File.s V2.3_highway_build.s	Build highway networks.
PP_Highway_Skims.bat	Highway_Skims.s, modnet.s Highway_Skims_mod.s joinskims.s	Create initial AM/ off-peak highway skims.
Transit_Skim_All_Modes.bat	PARKER.s WALKACC.s AUTOACC4.s Transit_skims_CR.s Transit_skims_MR.s Transit_skims_AB.s Transit_skims_BM.s transit_Accessibility.s	Create transit networks.
Transit_Fare.bat	prefarV23.s Metrorail_Skims.s Mfare1.s Mfare2.s Assemble_Skims_CR.s Assemble_Skims_MR.s Assemble_Skims_AB.s Assemble_Skims_BM.s	Create current iteration transit fares.
Trip_Generation.bat	Demo_models.s Trip_Generation.s Trip_Generation_Summary.s Truck_Com_Trip_Generation.s	Execute daily trip generation.
Trip_Distribution.bat	Prepare_Ext_Auto_Ends.s Prepare_Ext_ComTrk_Ends.s Trip_Distribution.s	Execute daily trip distribution.
Mode_Choice.bat	AEMS.EXE mc_NL_summary.s	Execute daily mode choice model (optionally execute mode choice model with the Transit Constraint (TC) and/or with HOV Skim Replacement (HSR)).
Auto_Driver.bat	MC_Auto_Drivers.s	Generate initial auto drivers after mode

Batch File	Scripts / Programs	Purpose
		choice model.
PP_Auto_Drivers.bat	PP_Auto_Drivers.s	Generate initial auto drivers (without mode choice model).
Time-of-Day.bat	Time-of-Day.s Misc_Time-of-Day.s Prepare_Trip_Tables_for_ Assignment.s	Convert daily modeled trips to AM, PM, and Off-peak.
Highway_Assignment.bat	Highway_Assignment.s	Execute user equilibrium highway assignment for three time periods.
Highway_Skims.bat	Highway_Skims.s modnet.s Highway_Skims_mod.s joinskims.s	Create highway skims from assignment.
Transit_Assignment.bat	Combine_Tables_For_ TrAssign.s Transit_assignment_CR.s Transit_assignment_MR.s Transit_assignment_AB.s Transit_assignment_BM.s	Execute transit assignment for peak and off-peak periods.

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Table 5 Sequence of the child batch files in the Version 2.3 travel model

		Initial (Pump Prime) Iteration				
			Standard Iterations			
Batch File	**Scripts / Programs**	**PP**	**1**	**2**	**3**	**4**
Set_CPI.bat	Set_CPI.s	1				
PP_Highway_Build.bat	Staprotp.exe Highway_Build_Toll.s	2				
PP_Highway_Skims.bat	Highway_Skims.s modnet.s Highway_Skims_mod.s joinskims.s	3				
Transit_Skim_All_Modes.bat	prefarV23.s Highway_Unbuild.s STAPROTP_V1.EXE PARKER.EXE WALKACC.EXE AUTOACC4.EXE transit_skims_CR.s transit_skims_MR.s transit_skims_AB.s transit_skims_BM.s	4	11	20	29	38
Transit_Fare.bat	Metrorail_Skims.s Mfare1.s Mfare2.s Assemble_Skims_CR.s Assemble_Skims_MR.s Assemble_Skims_AB.s Assemble_Skims_BM.s		12	21	30	39
Trip_Generation.bat	Demo_models.s Trip_Generation.s	5	13	22	31	40
Trip_Distribution.bat	Trip_Distribution.s	6	14	23	32	41
Mode_Choice.bat	AEMS.EXE mc_NL_summary.s		15	24	33	42
Auto_Driver.bat	MC_Auto_Drivers.s		16	25	34	43
PP_Auto_Drivers.bat	PP_Auto_Drivers.s	7				
Time-of-Day.bat	Time-of-Day.s Misc_Time-of-Day.s	8	17	26	35	44
Highway_Assignment.bat	Highway_Assignment.s	9	18	27	36	45
Highway_Skims.bat	Highway_Skims.s modnet.s Highway_Skims_mod.s joinskims.s	10	19	28	37	46
Transit_Assignment.bat	Combine_Tables_For_ TrAssign.s Transit_assignment_CR.s Transit_assignment_MR.s Transit_assignment_AB.s Transit_assignment_BM.s					47

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\V23_Flowchart_Table_v3.xlsx

1.2 Running the travel model

To run the Version 2.3 travel model the user must edit two batch files and then run one of the batch files, which, in turn, will call the other file. These two batch files are known as the parent batch files. The first batch file is called the "wrapper" batch file (see Figure 4) and the second is called the "run all" batch file (see Figure 7). In computer programming, the term "wrapper function" is used for a function whose main purpose is to call a second function. We are using this term in a similar vein, since the main purpose of our wrapper batch file is to call a second batch file (the "run all" batch file) and set up the running environment for the model run. Once the user has edited the two parent batch files with a text editor, the user launches the model run by launching the wrapper batch file within a command prompt window that is pointing to the root directory. For example, if the root directory is

```
C:\model_dev\Ver2.3.9_3722TAZ_aqc_2011clrp
```

Then the user would open a command prompt window at this location and type the name of the wrapper batch file an press Enter to execute it. One can open Windows Explorer and navigate to the root directory, and then select the root subdirectory. In Windows XP and Windows Server 2003 (if one has installed the Windows "Open Command Window Here" PowerToy -- CmdHere.exe), one right-clicks the root folder and selects "Open Command Window Here." In Windows 7 and Windows Server 2008, where this feature is built into the operating system, one selects the folder in the left pane, and then, with nothing selected in the right pane, one uses the mouse to shift-right-click in the right pane, selecting "Open Command Window Here."

1.2.1 Wrapper batch file

The first part of the "wrapper" batch file (Figure 4), lines 3-6, sets up some Windows environment variables (root, scenar, runbat, fullpth), described below:

- Root: The name of the root folder, e.g., C:\model_dev\Ver2.3.9_3722TAZ_aqc_2011clrp
- Scenar: The name of the run scenario. This is the name of the output folder/subdirectory. Typical names are four-digit years (e.g., 2007, 2040), but user is free to use any name, provided it matches the name of the output subdirectory (e.g., 2007, 2040_households_out, 2040_jobs_in).
- Runbat: This is the name of the "run all" batch file, e.g., run_ModelSteps_2007.bat
- Fullpth: This is the full path to the model outputs (scenario-specific) subdirectory. The user need not change anything here, since this is made up of two environment variables that are have already been defined.

Note that comments in batch files are indicated by lines that start with either REM or a double colon (::). **Before launching a model run, the user should make sure that each of these variables is set to the correct values.**

```
1 :: run_Model_2007.bat, 2011-02-16 Wed 11:44:43
2
3 set root=C:\model_dev\Ver2.3.9_3722TAZ_aqc_2011clrp
4 set scenar=2007
5 set runbat=run_ModelSteps_2007.bat
6 set fullpth=%root%\%scenar%
7
8 :: Std error redirected to a file; Std output split between file and screen
9 timethis "cmd /c %runbat%  %scenar%  2> %fullpth%\%scenar%_errs.txt" | tee %fullpth%\%scenar%_output.txt
10
11 if exist %fullpth%\%scenar%_errs.txt   start %fullpth%\%scenar%_errs.txt
12 if exist %fullpth%\%scenar%_output.txt start %fullpth%\%scenar%_output.txt
13
14 if exist %fullpth%\i4_Highway_Assignment.rpt start %fullpth%\i4_Highway_Assignment.rpt
15 if exist %fullpth%\i4_mc_NL_summary.txt      start %fullpth%\i4_mc_NL_summary.txt
16
17 :: Cleanup
18 set root=
19 set scenar=
20 set fullpth=
21 set runbat=
```

Figure 4 Wrapper batch file (run_Model_2007.bat), used to call the second parent batch file ("run all")

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\run_Model_2007.bat

The next part of the "wrapper" batch file, line 9, is the command that actually calls the second parent batch files (which then runs the travel model):

```
timethis "cmd /c %runbat%  %scenar%  2> %fullpth%\%scenar%_errs.txt" | tee
       %fullpth%\%scenar%_output.txt
```

The utility "`timethis`" is used to time the length of time for the entire model run. The command "`cmd`" tells Windows to start a new instance of the command interpreter, Cmd.exe. The option "`/c`" tells the command interpreter to carry out the command requested (in this case "`%runbat% %scenar%`") and then stop. The two Windows environment variables, `%runbat%` and `%scenar%`, will get expanded to their full values (e.g., `run_ModelSteps_2007.bat` and `2007`). The option "`2>`" tells the command interpreter to redirect standard output and standard error to a file (in this case, the file `%fullpth%\%scenar%_errs.txt`, which will expand to something like `C:\model_dev\Ver2.3.9_3722TAZ_aqc_2011clrp\2007_errs.txt`. The vertical bar (|) is known as a pipe and it passes the output of one command to another. In this case, the output of the command is passed to the "`tee`" utility, which splits the standard output stream to two places (in this case the computer monitor and the file `%fullpth%\%scenar%_output.txt`, which expands to something like C:\model_dev\Ver2.3.9_3722TAZ_aqc_2011clrp\2007_output.txt.

"Standard output" is the information that is normally written to the screen as a model run is in progress. "Standard error" includes any error messages that may be generated during the running of a model. For example, if a batch file tries to delete a file that does not exist, it will generate the error message "File not found," and this message is sent to the screen, since standard error is sent to the screen by default. Standard output includes any non-error messages, such as "1 file copied." Without using a command to re-direct the standard output and standard error to a set of files, a model user could still launch a travel model run, but the information about the progress of the travel model run would be sent to the monitor/computer screen only. By using the aforementioned command, the information about the travel model run goes to both the monitor and separate text files. When the model run is finished, the user should open and review the output.txt file (see Figure 6) and errs.txt file (see Figure 5) in a text editor to make sure that there were no abnormalities during the run. Without these two files, one would have to watch the computer monitor during the entire model run. In Figure 5, we can see that there were no errors during the running of the model. The output.txt file is typically over 3,000 lines long, so only an excerpt of it is shown in Figure 6.

```
Normal Completion
Normal Completion
Normal Completion
Normal Completion
Normal Completion
Normal Completion

Normal Completion
Normal Completion
Normal Completion
Normal Completion
Normal Completion
```

Figure 5 An example of the standard error file that is created during a model run

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\2007_errs.txt

```
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>set _year_=2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>set _alt_=Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>cd 2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>set _HOV3PATH_=
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>cd..
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>rem ====== Pump Prime Iteration ==========================================
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>set _iter_=pp
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>set _prev_=pp
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>call Set_CPI.bat                2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>cd 2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>REM  CPI Establishment
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist voya*.* del voya*.*
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist set_CPI.rpt del set_CPI.rpt
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>start /w Voyager.exe  ..\scripts\set_CPI.s /start -Pvoya -S..\2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if errorlevel 1 goto error
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist voya*.prn copy voya*.prn set_CPI.rpt
voya0001.PRN
        1 file(s) copied.
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>goto end
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>cd..
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>call PP_Highway_Build.bat       2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br>cd 2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>REM  Highway Network Building
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist voya*.* del voya*.*
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist AreaType_File.rpt del AreaType_File.rpt
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>start /w Voyager.exe  ..\scripts\AreaType_File.s /start -Pvoya -S..\2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if errorlevel 1 goto error
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist voya*.prn copy voya*.prn  AreaType_File.rpt
voya0002.PRN
        1 file(s) copied.
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist voya*.* del voya*.*
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist highway_build_toll.rpt del V2.3_highway_build.rpt
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>start /w Voyager.exe      ..\scripts\V2.3_highway_build.s /start -Pvoya -S..\2007
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if errorlevel 1 goto error
O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br\2007>if exist voya*.prn copy voya*.prn    V2.3_highway_build.rpt
voya0003.PRN
        1 file(s) copied.
```

Figure 6 An excerpt from an example of the standard output file that is created during a model run

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\2007_output.txt

1.2.2 "Run all" batch file

The second of the two parent batch files is called the "run all" batch file (see Figure 7), since this is the one that actually runs all the steps of the travel model. **This file begins with two Windows environment variables, "`_year_`" and "`_alt_`", which the user should update before launching a model run**. The command "`set _HOV3PATH_=`" is used only if one is going to perform a model run with HOV/HOT lanes that requires the "double run of the travel model to address Northern Virginia HOV/HOT lane policy," also known as the "HOV 3+ skim substitution option." (This is discussed in Chapter 8). In the "run all" batch file shown in Figure 7, this is not being done, so the command is left blank.

Figure 7 "Run all" batch file (run_ModelSteps_2007.bat), used to call the child batch files (spans multiple pages)

```
:: run_ModelSteps_2007.bat
:: 2011-02-16 Wed 11:45:55

:: Version 2.3 TPB Travel Model on 3722 TAZ System

set _year_=2007
set _alt_=Ver2.3.9_3722TAZ_aqc_2011clrp_2007

:: Location of substitute HOV 3+ skims/ null location for this year
cd %1
set _HOV3PATH_=
cd..

rem ====== Pump Prime Iteration ==========================================

set _iter_=pp
set _prev_=pp
call Set_CPI.bat                %1
call PP_Highway_Build.bat       %1
call PP_Highway_Skims.bat       %1
call Transit_Skim_All_Modes.bat %1
call Trip_Generation.bat        %1
call Trip_Distribution.bat      %1
call PP_Auto_Drivers.bat        %1
call Time-of-Day.bat            %1
call Highway_Assignment.bat     %1
call Highway_Skims.bat          %1

:: rem ====== Iteration 1 ===================================================

set _iter_=i1
set _prev_=pp
call Transit_Skim_All_Modes.bat %1
call Transit_Fare.bat           %1
call Trip_Generation.bat        %1
call Trip_Distribution.bat      %1
```

```
call Mode_Choice.bat            %1
call Auto_Driver.bat            %1
call Time-of-Day.bat            %1
call Highway_Assignment.bat     %1
call Highway_Skims.bat          %1

:: rem ====== Iteration 2 ===================================================

set _iter_=i2
set _prev_=i1
call Transit_Skim_All_Modes.bat %1
call Transit_Fare.bat           %1
call Trip_Generation.bat        %1
call Trip_Distribution.bat      %1
call Mode_Choice.bat            %1
call Auto_Driver.bat            %1
call Time-of-Day.bat            %1
call Highway_Assignment.bat     %1
call Average_Link_Speeds.bat    %1
call Highway_Skims.bat          %1

:: rem ====== Iteration 3 ===================================================

set _iter_=i3
set _prev_=i2
call Transit_Skim_All_Modes.bat %1
call Transit_Fare.bat           %1
call Trip_Generation.bat        %1
call Trip_Distribution.bat      %1
call Mode_Choice.bat            %1
call Auto_Driver.bat            %1
call Time-of-Day.bat            %1
call Highway_Assignment.bat     %1
call Average_Link_Speeds.bat    %1
call Highway_Skims.bat          %1

:: rem ====== Iteration 4 ===================================================

set _iter_=i4
set _prev_=i3
call Transit_Skim_All_Modes.bat %1
call Transit_Fare.bat           %1
call Trip_Generation.bat        %1
call Trip_Distribution.bat      %1
call Mode_Choice.bat            %1
call Auto_Driver.bat            %1
call Time-of-Day.bat            %1
call Highway_Assignment.bat     %1
call Average_Link_Speeds.bat    %1
```

```
call Highway_Skims.bat          %1

:: rem ====== End of batch file =============================================

set _year_=
set _alt_=
set _iter_=
set _prev_=
```

Figure 7 "Run all" batch file (run_ModelSteps_2007.bat), used to call the child batch files

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\02_userGuide\run_ModelSteps_2007.bat

Chapter 2 Set-Up Programs and Highway Network Building

User Provided Input(s):

CPI schedule and parameter file	\Inputs\CPI_File.txt	Text
Zonal Land Use File	\Inputs\ZONE.DBF	DBF
Node Coordinate File	\Inputs\NODE.DBF	DBF
Link File	\Inputs\LINK.DBF	DBF
Initial Speed Lookup Files	\Support\AMSPD.LKP, \Support\MDSPD.LKP	Text
Toll Parameter File	\Inputs\TOLL.ESC	Text

Key Output(s):

Highway, Transit deflator files	`Trn_Deflator.txt` `Hwy_Deflator.txt`	Text
Summary text file of Fare CPI assumptions used	`MFARE2_CPItxt`	Text
	`TAZ_XYs.dbf`	DBF
	`Floating_LU.dbf`	DBF
	`AreaType_File.dbf`	DBF
Unloaded/Built Highway Network File	`ZONEHWY.NET`	Binary
Summary text file of Fare CPI assumptions used	`MFARE2_CPI.txt`	Text

Program File(s):

CUBE VOYAGER

Control/Support File(s):

SET_CPI.S, AreaType_File.S, V2.3_HIGHWAY_BUILD.S (CUBE VOYAGER scripts)

Application Details:

Input File Descriptions and Formats:

1. Land Use File (zone.dbf)

Table 6 Land Use File Format Description (zone.dbf)

File Name	Variable Name	Description
Zone.dbf	TAZ	TAZ (1-3,722)
	HH	Households
	HHPOP	Household Population
	GQPOP	Group Quarters Population
	TOTPOP	Total Population
	TOTEMP	Total Employment
	INDEMP	Industrial Employment
	RETEMP	Retail Employment
	OFFEMP	Office Employment
	OTHEMP	Other Employment
	JURCODE	Jurisdictiojn Code (0-23)
	LANDAREA	Gross Land Area (in sq. miles)
	HHINCIDX	Ratio of zonal HH median income to regional median HH income in tenths (i.e. 10 = 1.0), per 2000 CTPP.
	ADISTTOX	Airline distance to the nearest external station in whole miles.
	TAZXCRD	TAZ X-Coordintes (NAD83-based in whole feet)
	TAZYCRD	TAZ Y-Coordintes (NAD83-based in whole feet)

2. Node Coordinate File (node.dbf)

Table 7 Node Coordinate File Format Description (node.dbf)

File Name	Variable Name	Description
Node.dbf	N	Highway Node Number
	X	X - Coordintes (NAD83-based in whole feet)
	Y	Y- Coordinates (NAD83-based in whole feet)

3. Base Highway Link File (link.dbf)

Table 8 Base Highway Link File Format Description (link.dbf)

File Name	Variable Name	Description
Link.dbf	A	A-Node
	B	B_Node
	DISTANCE	Link distance (in 1/100th s of miles)
	SPDC	Speed Class
	CAPC	Capacity Class
	JUR	Jurisdiction Code (0-23)
		0/dc, 1/mtg, 2/pg, 3/alr/, 4/alx,5, ffx, 6/ldn, 7/ pw, 8/(unused), 9/ frd, 10/how, 11/aa, 12/chs, 13/(unused), 14/car, 15/cal, 16/stm, 17/ kg, 18/fbg, 19/stf, 20/spts, 21/fau, 22/clk, 23/jef
	SCREEN	Screenline Code
	FTYPE	Link Facility Type Code (0-6)
		0/centroids, 1/Freeways, 2/Major Art., 3/Minor Art, 4/ Collector, 5/ Expressway, 6/ Ramp
	TOLL	Toll Value in current year dollars
	TOLLGROUP	Toll Group Code
	AMLANE	AM Peak No. of Lanes
	AMLIMIT	AM Peak Limit Code (0-9)
	PMLANE	PM Peak No. of Lanes
	PMLIMIT	PM Peak Limit Code (0-9)
	OPLANE	Off-Peak No. of Lanes
	OPLIMIT	Off-Peak Limit Code (0-9)
	EDGEID	Geometry network link identifier
	LINKID	Logical network link identifier
	NETWORKYEARLink	Planning year of network link
	SHAPE_LENGTLink	Geometry length of network link (in feet)
	PROJECTID	Project identifier
	CODE	Unused (place marker to flag network edits)

Notes:

- *The mode choice model requires that all costs be in 1994 dollars.*
- *Limit Codes are 0,1 = General Use, 2 = HOV2,3+ only, 3 = HOV 3+ Only, 4 = Truck Prohibited, 5 = Non-Airport Vehicles Prohibited, 6-8 = (unused), 9 = 'Transit Only' link (links used to more accurately depict coded transit routes, but are below the grain of the zone system; these links are not included in the highway assignment process).*
- ** The speed class, capacity class, and TAZ are added to the highway network during the highway network building phase, so they are not used in the input file link.dbf.*

File Name	Variable Name	Description
AreaType_File.dbf	TAZ	TAZ Number (1-3,722)
	POP_10	One-mile "floating" Population density
	EMP_10	One-mile "floating" Employment density
	AREA_10	One-mile "floating" Area
	POPDEN	One-mile "floating" Population density
	EMPDEN	One-mile "floating" Employment density
	POPCODE	Population density code (1-7)
	EMPCODE	Employment density code (1-7)
	ATYPE	Area Type (1-6)

Chapter 3 Highway Skim File Development

Input(s):

Built Highway Network File	ZoneHWY.NET	Binary
Time / Toll Value Equivalent File	Hwy_Assign_Toll_SKM.s	Text

Output(s): <ITER> =PP, i1…i4, <PP>= AM and MD

HIGHWAY_SKIMS.S	SKIMTOT<ITER>.DAT TRK<ITER>MD.SKM SOV<ITER><PP>.SKM HOV2<ITER><PP>.SKM HOV3<ITER><PP>.SKM SOV<ITER><PP>_MC.SKM HOV2<ITER><PP>_MC.SKM HOV3<ITER><PP>_MC.SKM	
JOINSKIMS.S	HWY<ITER>AM.SKM HWY<ITER>OP.SKM	
MODNET.S	<ITER>HWYMOD.NET WalkAcc_Links.dbf	
Highway_Skims_mod.S	SOVM<ITER><*PP*>.SKM HOV2M<ITER><PP>.SKM HOV3M<ITER><PP>.SKM	
RemovePPSpeed.S	ZoneHWY.NET	

Program File(s):

CUBE VOYAGER

Control/Support File(s):

HIGHWAY_SKIMS.S, JOINSKIMS.S, MODNET.S, and Highway_Skims_mod.S , RemovePPSpeed.S

Application Details:

(Section to be added)

Chapter 4 Auto Driver Trip Development

Input(s): ??? = HBW, HBS, HBO, NHW, and NHO <ITER> =PP, i1…i4

Pre-existing final iteration AEMS mode choice model output modal trip tables	???_NL_MC.MTT	Binary
Pump Prime iteration person trip tables	???_PP.PTT	Binary
Current iteration AEMS mode choice model output modal trip tables	???_NL_MC.MTT	Binary

Output(s): ??? = HBW, HBS, HBO, NHW, and NHO <ITER> =PP, i1…i4,

PP_AUTO_DRIVERS.S	???<ITER>.ADR	
MC_AUTO_DRIVERS.S	???<ITER>.ADR	

Program File(s):

CUBE VOYAGER

Control/Support File(s):

PP_AUTO_DRIVERS.S and MC_AUTO_DRIVERS.S

Chapter 5 Pre-Transit Network Processing

Input(s):

Built Highway Network File	ZONEHWY.NET	Binary
Station – PNR lot data file	Station.dbf	dbf
Highway network link file	LINK.dbf	dbf
Highway node file	NODE.dbf	dbf
HBW zonal parking costs/terminal time file	HBWV2a1.dbf	dbf
Supplemental walk link file	xtrawalk.dbf	dbf
List of zones connected to the Pentagon Metrorail station for the purpose of creating long-distance kiss-and-ride (KNR) links, which represent "slugging" or casual carpooling	Pen.dbf	dbf
SOV AM/Off-peak highway time skims file	SOVMAM.SKM, SOVMMD.SKM	Binary

Output(s):

Transit Support Files in Inputs Sub Directory	MET_LINK.TB, MET_PNRL.TB, LRT_PNRN.TB, METLNKM1.TB, COM_PNRL.TB, LRT_PNRL.TB, COM_LINK.TB, BUS_PNRL.TB,LRT_BUS.TB, MET_NODE.TB, MET_BUS.TB, LRT_LINK.TB METNODEM1.TB, COM_BUS.TB,NEW_NODE.TB, COM_NODE.TB, TAZPNR.ASC, NEW_PNRN.TB,MET_PNRN.TB, MFARE1.A1, NEW_PNRL.TB, COM_PNRN.TB, STAPNR.XYS, NEW_BUS.TB,BUS_PNRN.TB, LRT_NODE.TB, NEW_LINK.TB	Text
WALKACC.S	SIDEWALK.ASC WALKACC.ASC SUPPORT.ASC	Text
PARKER.S	mrpram.asc, mrprop.asc, mrkram.asc, mrkrop.asc, cram.asc, crop.asc, buspram.asc, busprop.asc, buskram.asc, buskrop.asc, lrtam.asc, lrtop.asc, newam.asc, newop.asc, lrtkram.asc, lrtkrop.asc, newkram.asc, newkrop.asc, autoall.asc	Text
AUTOACC4.S	mrpram.asc, mrprop.asc, mrkram.asc, mrkrop.asc, cram.asc, crop.asc, buspram.asc, busprop.asc, buskram.asc, buskrop.asc, lrtam.asc, lrtop.asc, newam.asc, newop.asc, lrtkram.asc, lrtkrop.asc, newkram.asc, newkrop.asc, autoall.asc	Text
PREFARV23.S	FARE_A2.ASC	Text

	ZONEV2.A2F, HBWV2.A1F	

Program File(s):

WALKACC.S, PARKER.S, AUTOACC4.S

CUBE VOYAGER

Application Details:

(To be completed)

Input Files:

File Name	Variable Name	Description
HBWV2a1.dbf	TAZ	TAZ (1-3,722)
	PCTWKSH	Percent short walk to transit
	PCTWKLG	Percent long walk to transit
	AREA	in sq. mile

File Name	Variable Name	Description
WalkAcc_Links.dbf	A	A-Node
	B	B_Node
	DISTANCE	Link distance (in 1/100ths of miles)
	FTYPE	Link Facility Type Code (0-6)
		0/centroids, 1/Freeways, 2/Major Art., 3/Minor Art, 4/ Collector, 5/ Expressway, 6/ Ramp
	TAZ	TAZ (1-3,722)

Chapter 6 Transit Skim File Development

Input(s):

Local bus future time degradation factors	LBUSTIMFTRS.ASC	Text
Transit line files	MODE1,MODE2AM,...MODE10AM.TB MODE1,MODE2OP,...MODE10OP.TB	
Transit path tracing selection criteria	PATHTRACE.S	
Binary highway network	ZONEHWY.NET	Binary
Transit network support files- Transit nodes and links files	MET_LINK.TB, MET_PNRL.TB, LRT_PNRN.TB, METLNKM1.TB, COM_PNRL.TB, LRT_PNRL.TB, COM_LINK.TB, US_PNRL.TB, LRT_BUS.TB, MET_NODE.TB, MET_BUS.TB, LRT_LINK.TB METNODEM1.TB, COM_BUS.TB, NEW_NODE.TB, COM_NODE.TB, TAZPNR.ASC, EW_PNRN.TB, MET_PNRN.TB, MFARE1.A1, NEW_PNRL.TB, COM_PNRN.TB, STAPNR.XYS, NEW_BUS.TB, BUS_PNRN.TB, LRT_NODE.TB, NEW_LINK.TB	Text
Transit network Walk link files	SIDEWALK.ASC WALKACC.ASC SUPPORT.ASC	Text
PNR node files	METAMPNR.TB, METOPPNR.TB, COMAMPNR.TB, COMOPPNR.TB, BUSAMPNR.TB, BUSOPPNR.TB, LRTAMPNR.TB, LRTOPPNR.TB, NEWAMPNR.TB, NEWOPPNR.TB	Text
Transit access link files	mrpram.asc, mrprop.asc, mrkram.asc, mrkrop.asc, cram.asc, crop.asc, buspram.asc, busprop.asc, buskram.asc, buskrop.asc, lrtam.asc, lrtop.asc, newam.asc, newop.asc, lrtkram.asc, lrtkrop.asc, newkram.asc, newkrop.asc, autoall.asc	Text

Output(s): <PP>= AM and OP <AA>= WK, DR, KR <ITER> =PP, i1…i4

TRANSIT_SKIMS_CR.S	SUPLCR<AA><PP>.ASC SUPNCR<AA><PP>.DBF TRNLCR<AA><PP>.DBF <ITER>_<PP><AA>_CR.STA <ITER>_<PP><AA>_CR.SKM <ITER>_<PP><AA>_CR.TTT	Text Text Text Binary Binary Binary
TRANSIT_SKIMS_MR.S	SUPLMR<AA><PP>.ASC SUPNMR<AA><PP>.DBF TRNLMR<AA><PP>.DBF <ITER>_<PP><AA>_MR.STA <ITER>_<PP><AA>_MR.SKM	Text Text Text Binary Binary

	<ITER>_<*PP*><*AA*>_MR.TTT	Binary
TRANSIT_SKIMS_AB.S	SUPLAB<*AA*><*PP*>.ASC SUPNAB<*AA*><*PP*>.DBF TRNLAB<*AA*><*PP*>.DBF <ITER>_<*PP*><*AA*>_AB.STA <ITER>_<*PP*><*AA*>_AB.SKM <ITER>_<*PP*><*AA*>_AB.TTT	Text Text Text Binary Binary Binary
TRANSIT_SKIMS_BM.S	SUPLBM<*AA*><*PP*>.ASC SUPNBM<*AA*><*PP*>.DBF TRNLBM<*AA*><*PP*>.DBF <ITER>_<*PP*><*AA*>_BM.STA <ITER>_<*PP*><*AA*>_BM.SKM <ITER>_<*PP*><*AA*>_BM.TTT	Text Text Text Binary Binary Binary
Transit_Accessibility.S	<ITER>_<PP><AA>_<Path>_JobAcc.dbf	dbf

Program File(s):

CUBE VOYAGER

Control/Support File(s):

TRANSIT_SKIMS_CR.S, TRANSIT_SKIMS_MR.S, TRANSIT_SKIMS_AB.S, TRANSIT_SKIMS_BM.S, Transit_Accessibility.S

Application Details:

(Section to be completed)

<ITER> =PP , i1, i2,...i4, <PP> = AM, OP, <AA> =WK, DR, <Path> = BM, MR		
File Name	Variable Name	Description
<ITER>_<PP>_<Acc>_<Path>_JOBACC.dbf	TAZ	TAZ (1-3,722)
	EMP35	Transit accessibility to jobs With in 35 minutes
	EMP40	Transit accessibility to jobs With in 40 minutes
	EMP45	Transit accessibility to jobs With in 45 minutes
	EMP50	Transit accessibility to jobs With in 50 minutes
	EMPTOT	Transit accessibility to total regional jobs

Chapter 7 Transit Fare Development

Input(s): <PP>= AM and OP <AA>= WK, DR, KR <ITER> =PP, i1…i4

Zonal Transit Walk Pcts	Inputs\NLwalkPct.txt	Text
Zonal TAZ-to-bus fare zone equivalence	**Inputs\TAZFRZN.ASC**	Text
Zonal Area Type file	**AreaType_File.dbf**	dbf
Zonal land use file	zone.dbf	dbf
Zonal TAZ-Mode choice district equiv.	**areadef3722.prn**	Text
Metro Station Link File	METLNKM1.TB	Text
Metro Station XY File	METNODM1.TB	Text
Metrorail turn penalty file	INPUTS\TRNPEN.DAT	Text
MFARE1 A1 (Coordinate) File	MFARE1.A1	Text
Metrorail station discount file	Inputs\MFARE1_STA_DISC.ASC	Text
WMATA tariff parameters	Inputs\TARRIF.TXT	Text
Deflation factor file	Trn_deflator.txt	Text
	<ITER>_<PP><AA>_CR.STA <ITER>_<PP><AA>_CR.SKM <ITER>_<PP><AA>_MR.STA <ITER>_<PP><AA>_MR.SKM <ITER>_<PP><AA>_AB.STA <ITER>_<PP><AA>_AB.SKM <ITER>_<PP><AA>_BM.STA <ITER>_<PP><AA>_BM.SKM	Binary
	<ITER>_<PP>_<AA>_CR.FAR <ITER>_<PP>_<AA>_MR.FAR <ITER>_<PP>_<AA>_AB.FAR <ITER>_<PP>_<AA>_BM.FAR	
Peak / Off-Peak MFARE2 Bus Fare Matrix	Inputs\busfaram.asc Inputs\busfarop.asc	Text
Peak /Off-Peak MFARE2 A2 File	FARE_A2.ASC	Text

Output(s):

PREFARV23.S	Prepare_MC_Zfile.txt ZONEV2.A2F Fare_a2.asc	Text
METRORAIL_SKIMS.S	RLDIST.SKM	Text
MFARE1.S	AM_Metrorail_Fares.TXT OP_Metrorail_Fares.TXT	Text
MFARE2.S	<ITER>_<PP>_<AA>_CR.FAR <ITER>_<PP>_<AA>_CR.FR5 <ITER>_<PP>_<AA>_CR.TXT <ITER>_<PP>_<AA>_MR.FAR <ITER>_<PP>_<AA>_MR.FR5 <ITER>_<PP>_<AA>_MR.TXT <ITER>_<PP>_<AA>_AB.FAR	

	<ITER>_<*PP*>_<*AA*>_AB.FR5 <ITER>_<*PP*>_<*AA*>_AB.TXT <ITER>_<*PP*>_<*AA*>_BM.FAR <ITER>_<*PP*>_<*AA*>_BM.FR5 <ITER>_<*PP*>_<*AA*>_BM.TXT	
Assemble_Skims_CR.s	<ITER>_TRNAM_CR.SKM <ITER>_TRNOP_CR.SKM	Binary
Assemble_Skims_MR.s	<ITER>_TRNAM_MR.SKM <ITER>_TRNOP_MR.SKM	Binary
Assemble_Skims_AB.s	<ITER>_TRNAM_AB.SKM <ITER>_TRNOP_AB.SKM	Binary
Assemble_Skims_BM.s	<ITER>_TRNAM_BM.SKM <ITER>_TRNOP_BM.SKM	Binary

Control/Support File(s):

METRORAIL_SKIMS.S, MFARE1.S, MFARE2.S, Assemble_Skims_CR.s, Assemble_Skims_MR.s, Assemble_Skims_AB.s, Assemble_Skims_BM.s

Application Details:

(To be completed)

TAZ / Bus Fare Zone Equivalency File Format Description (TAZFRZN.ASC)

Columns	Format	Field Description
Zonal data (All lines in the file)		
1-8	I4	TAZ Number (1-3,675) and Metrorail Station No. (1-150)
9-16	I4	1st Bus fare zone 1 (currently numbered 1 to 21)
17-24	I4	2nd Bus fare zone 2 (currently numbered 1 to 21)
Station data (first 150 lines of the file only)		
41-48	I4	1st Bus Fare Zone (currently numbered 1 to 21)
49-56	I4	2nd Bus Fare Zone (currently numbered 1 to 21)
57-64	I8	Jurisdiction code
65-72	I8	P discount
73-80	I8	A discount

Chapter 8 Demographic Submodels

Input(s): <ITER> =PP, i1…i4

Zonal Land Use File	Inputs\ZONE.DBF	dbf
Zonal Area Type File	AreaType_File.dbf	dbf
Transit Accessibility File (Metrorail only and Bus & Metrorail service)	<ITER>_AM_WK_MR_JOBACC.dbf <ITER>_AM_DR_MR_JOBACC.dbf <ITER>_AM_WK_BM_JOBACC.dbf <ITER>_AM_DR_BM_JOBACC.dbf	dbf

Output(s):

Zonal HHs of Income Level 1, Stratified by Size and Vehicle Avail.	HHI1_SV.txt	Text
Zonal HHs of Income Level 2, Stratified by Size and Vehicle Avail.	HHI2_SV.txt	Text
Zonal HHs of Income Level 3, Stratified by Size and Vehicle Avail.	HHI3_SV.txt	Text
Zonal HHs of Income Level 4, Stratified by Size and Vehicle Avail.	HHI4_SV.txt	Text
Interim Output: Zonal Households stratified by Income Level, household Size, and vehicle available (64 cross-classes)	Demo_Models_HHbyISV_<iter>.dbf	dbf

Program File(s):

Control/Support File(s):

DEMO_MODELS.S

Application Details:

(To be completed)

Chapter 9 Trip Generation

Input(s):

Zonal Land Use File	ZONE.dbf	dbf
Zonal Area Type File	AreaType_File.dbf	dbf
Zonal Households stratified by Income Level, household Size, and vehicle available	Demo_Models_HHbyISV_<iter>.dbf	dbf
Zonal GIS variable File	GIS_variables.DBF	dbf
Trip Prod. rates	weighted_trip_rates.dbf	dbf
External Production and Attraction File	Ext_PsAs.dbf	dbf
NonMotorized trips Production share model coeffs.	NMPrates.dbf	dbf
NonMotorized trips Attraction share model coeffs.	NMArates.dbf	dbf
Trip attraction rates	AttrRates.dbf	dbf
HB income shares	HBINCRAT.dbf	dbf
Consolidated zonal land use file	TripGen_LUFile.dbf	Text
Truck and commercial vehicles trip rates	\Support\truck_com_trip_rates.dbf	dbf
Zonal access verification file	Skimtot<iter>.dat	text

Output(s):

Zonal Trip productions by purpose	Trip_Gen_Productions_<ITER>.dbf	
Zonal Trip Attractions	Trip_Gen_Attractions_Final_<iter>.dbf	
Truck and commercial vehicles trip ends	Com_Veh_Truck_ends_<Iter>.dbf	
Trip generation summary report	TRIP_GENERATION_Summary_<iter>.txt	

Control/Support File(s):

TRIP_GENERATION.S, TRIP_GENERATION_Summary.S, Truck_Com_Trip_Generation.s

Application Details:

(To be completed)

File Name	Variable Name	Description
Trip_Gen_Productions_<iter>.dbf	TAZ	TAZ Number (1-3,722)
<ITER> =PP , i1, i2,...i4	HBW_MTR_PS	Home Based Work motorized person trips productions
	HBW_NMT_PS	Home Based Work non-motorized person trips productions
	HBW_ALL_PS	Home Based Work total person trips productions
	HBWMTRP_<iter>	Home Based Work motorized person trips productions by iterations (<iter>)
	HBS_MTR_PS	Home Based Shop motorized person trips productions
	HBS_NMT_PS	Home Based Shop non-motorized person trips productions
	HBS_ALL_PS	Home Based Shop total person trips productions
	HBSMTRP_<iter>	Home Based Shop motorized person trips productions by iterations (<iter>)
	HBO_MTR_PS	Home Based Other motorized person trips productions
	HBO_NMT_PS	Home Based Other non-motorized person trips productions
	HBO_ALL_PS	Home Based Other total person trips productions
	HBOMTRP_<iter>	Home Based Other motorized person trips productions by iterations (<iter>)
	NHW_MTR_PS	Non-Home-Work motorized person trips productions
	NHW_NMT_PS	Non-Home-Work non-motorized person trips productions
	NHW_ALL_PS	Non-Home-Work total person trips productions
	NHO_MTR_PS	Non-Home-Other motorized person trips productions
	NHO_NMT_PS	Non-Home-Other non-motorized person trips productions
	NHO_ALL_PS	Non-Home-Other total person trips productions

File Name	Variable Name	Description
Trip_Gen_Attractions_Final_<iter>.dbf	TAZ	TAZ Number (1-3,722)
<ITER> =PP , i1, i2,...i4	HBW_MTR_AS	Home Based Work motorized person trips attractions
	HBW_NMT_AS	Home Based Work non-motorized person trips attractions
	HBW_ALL_AS	Home Based Work total person trips attractions
	HBWMTRA_<iter>	Home Based Work motorized person trips attractions by iterations (<iter>)
	HBS_MTR_AS	Home Based Shop motorized person trips attractions
	HBS_NMT_AS	Home Based Shop non-motorized person trips attractions
	HBS_ALL_AS	Home Based Shop total person trips attractions
	HBSMTRA_<iter>	Home Based Shop motorized person trips attractions by iterations (<iter>)
	HBO_MTR_AS	Home Based Other motorized person trips attractions
	HBO_NMT_AS	Home Based Other non-motorized person trips attractions
	HBO_ALL_AS	Home Based Other total person trips attractions
	HBOMTRA_<iter>	Home Based Other motorized person trips attractions by iterations (<iter>)
	NHW_MTR_AS	Non-Home-Work motorized person trips attractions
	NHW_NMT_AS	Non-Home-Work non-motorized person trips attractions
	NHW_ALL_AS	Non-Home-Work total person trips attractions
	NHO_MTR_AS	Non-Home-Other motorized person trips attractions
	NHO_NMT_AS	Non-Home-Other non-motorized person trips attractions
	NHO_ALL_AS	Non-Home-Other total person trips attractions

Input Files:

File Name	Variable Name	Description
Ext_PsAs.dbf	TAZ	TAZ Number (1-3,722)
	FACILITY	Facility name
	AAWT_CTL	Annua Average Weekday Traffic control total
	CNTFTR	<Not Used>
	AUTO_XI	Auto driver external-internal (X-I) trips
	AUTO_IX	Auto driver internal-external (I-X) trips
	AUTO_XX	Auto driver through trips (X-X)
	CV_XX	Commercial Vehicles through trips (X-X)
	HBW_XI	Home based Work (HBW) external-internal (X-I) trips
	HBS_XI	Home based Shop (HBS) external-internal (X-I) trips
	HBO_XI	Home based Other (HBO) external-internal (X-I) trips
	NHB_XI	Non-Home based (NHB) external-internal (X-I) trips
	CV_XI	Commercial Vehicles external-internal (X-I) trips
	HBW_IX	Home based Work (HBW) internal-external- (I-X) trips
	HBS_IX	Home based Shop (HBS) internal-external- (I-X) trips
	HBO_IX	Home based Other (HBO) internal-external- (I-X) trips
	NHB_IX	Non-Home based (NHB) internal-external- (I-X) trips
	CV_IX	Commercila Vehicles internal-external- (I-X) trips
	TRCK_XX	Truck through trips (X-X)
	TRCK_XI	Truck external-internal (X-I) trips
	TRCK_IX	Truck internal-external- (I-X) trips
	MTK_XI	Medium Trucks external-internal (X-I) trips
	HTK_XI	HeavyTrucks external-internal (X-I) trips

File Name	Variable Name	Description
TripGen_LUFile.dbf	TAZ	TAZ Number (1-3,722)
	HH	Number of house holds
	TOTPOP	Total Population
	TOTEMP	Total employment
	RETEMP	Retail employment
	NRETEMP	Non-retail employment
	OFFEMP	Office employment
	OTHEMP	Other employment
	INDEMP	Industrial employment
	HHPOP	House hold population
	GQPOP	Group quarter population
	LANDAREA	Land area (sq. mi.)
	POP_10	Number of population within one "floating" mile
	EMP_10	Number of employment within one "floating" mile
	AREA_10	Zonal Area within one "floating" mile
	POPDEN10	Population density within one "floating" mile
	EMPDEN10	Employment density within one "floating" mile
	ADISTTOX	Distance to the nearest external station
	BLOCKS05	Blocks within 0.5 mile "floating" blocks
	AREA05	Area within 0.5 mile "floating" blocks
	BLOCKDEN05	Block density within 0.5 mile "floating" blocks
	JURCODE	Jurisdiction code (0-23)
	ATYPE	Area Type (1-6)

File Name	Variable Name	Description
ComVeh_Truck_Ends_<ITER>.dbf	TAZ	TAZ Number (1-3,722)
	COMM_VEH	
	MED_TRUCK	
	HVY_TRUCK	
	ICOMM_VEH	
	IMED_TRUCK	
	IHVY_TRUCK	

Chapter 10 Trip Distribution

input(s):

Trip End, Production-Attraction Files	Trip_Gen_Productions_<iter>.dbf Trip_Gen_Attractions_Final_<iter>.dbf ComVeh_Truck_Ends_<iter>.dbf Ext_Trip_Gen_PsAs_<iter>.dbf Ext_CVTruck_Gen_PsAs_pp.dbf	dbf
SOV Peak, Off-Peak Highway Skims	SOV<ITER>AM.SKM, SOV<ITER>MD.SKM	Binary
	<iter>_am_wk_MR.ttt **<iter>_am_dr_MR.ttt** **<iter>_op_wk_MR.ttt** **<iter>_op_dr_MR.ttt**	Binary
Land Use File	Inputs\ZONE.dbf	dbf
Zonal Area Type File	AreaType_File.dbf	dbf
Highway Terminal Time File	ZTERMTM.ASC	Text
F-Factor Files	Version_23_ffactors.dbf	dbf
K-Factor Files	HBWK.DAT, HBSK.DAT, HBOK.DAT, NHWK.DAT, NHOK.DAT	Binary
Income level Toll/Time Equivalent File	TOLL.INC	Text

Output(s): <ITER> =PP, i1…i4, PP= AM & OP

8 Trip Tables (HBW, HBS, HBO, NHW, NHO, Med Truck, Heavy Truck)	HBW_<iter>.PTT, HBS_<iter>.PTT, HBO_<iter>.PTT, NHW_<iter>.PTT, NHO_<iter>.PTT, COM_<iter>.PTT, MTK_<iter>.PTT, HTK_<iter>.PTT	Binary
Output matrices for mode choice model	<iter>_hbw_NL.ptt, <iter>_hbs_NL.ptt, <iter>_hbo_NL.ptt, <iter>_nhw_NL.ptt, <iter>_nho_NL.ptt	Binary

Program File(s):

CUBE VOYAGER, EXTRTAB.EXE

Control/Support File(s):

TRIP_DISTRIBUTION.S

Application Details:

(To be completed)

Work & Non-Work Time – Dollar Equivalents by Income Level

Time Valuation (Minutes/2007$) by Purpose and Income Level

HH Income Quartile Range (1)	Mid-Point of HH Income Range	Hourly Rate per Worker (2)	2007 Time Valuation (Minutes per Dollar) Work Trips (75% V.O.T.)	Non-work (50% V.O.T.)
$ 0 - $ 50,000	$25,000	$9.23	8.7	13.0
$ 50,000 - $ 100,000	$75,000	$27.70	2.9	4.3
$100,000 - $150,000	$125,000	$46.17	1.7	2.6
$150,000 +	$175,000	$64.64	1.2	1.9

Notes:

(1) Income groups based on 2007 ACS-based quartiles

(2) Hourly rate based on 1,920 annual hours/worker * 1.41 workers/HH = 2,707 hrs/HH

(3) Median 2007 Annual Income for modeled area is $84,280

Chapter 11 Mode Choice

Input(s):

Daily person trips, stratified by income group (1, 2, 3, 4), in production/attraction format (INFILE 1)	hbw_income.ptt, hbs_income.ptt, hbo_income.ptt, nhw_income.ptt, nho_income.ptt (person trip tables)	Binary
Highway skims, nine tables – SOV, HOV2, HOV3+ for time, distance, and tolls on non-variably-priced facilities (INFILE 2)	hwyam.skm, hwyop.skm	Binary
Commuter rail transit skims (INFILE 3)	trnam_cr.skm, trnop_cr.skm	Binary
All bus transit skims (INFILE 4)	trnam_ab.skm, trnop_ab.skm	Binary
Metrorail transit skims (INFILE 5)	trnam_mr.skm, trnop_mr.skm	Binary
Bus/Metrorail transit skims (INFILE 6)	trnam_bm.skm, trnop_bm.skm	Binary
Zonal data (INFILE 8)	zonev2.a2f	Text

Output(s):

Daily person trips, stratified by travel mode (14 tables): 1. DR ALONE 2. SR2 3. SR3+ 4. WK-CR 5. WK-BUS 6. WK-BU/MR 7. WK-MR 8. PNR-CR & KNR-CR 9. PNR-BUS 10. KNR-BUS 11. PNR-BU/MR 12. KNR-BU/MR 13. PNR-MR 14. KNR-MR	hbw_nl_mc.mtt, hbs_nl_mc.mtt, hbs_nl_mc.mtt, nhw_nl_mc.mtt, nho_nl_mc.mtt (Modal trip tables)	(CUBE VOYAGER) Binary
Print file	hbw_nl_mc.prn, hbs_nl_mc.prn, hbs_nl_mc.prn, nhw_nl_mc.prn, nho_nl_mc.prn	Text

Program File(s):

AEMS.EXE (AEMS.FOR), EXTRTAB.EXE

Control/Support File(s):

Control Files: HBW_NL_MC.CTL, HBS_NL_MC.CTL, HBS_NL_MC.CTL, NHW_NL_MC.CTL, and NHO_NL_MC.CTL

Scripts: MC_NL_Summary.s, MC_NL_St_Summary.s

Introduction

Table 9 Transit sub-modes represented in the Version 2.3 travel model

Mode #	Transit sub-mode	Mode code in consolidated station file
1	Local Metrobus	(None, not represented)
2	Express Metrobus	B
3	Metrorail	M
4	Commuter rail	C
5	Light rail transit (LRT)	L
6	Other local bus in the WMATA service area	(None, not represented)
7	Other express bus in the WMATA service area	B
8	Other local bus beyond the WMATA service area	(None, not represented)
9	Other express bus beyond the WMATA service area	B
10	Bus rapid transit (BRT) and street car	N (for New mode)

Source: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board. (2007, June 30). *FY–2007 Network Documentation: Highway and Transit Network Development*, DRAFT. June 30, 2007, p. 3-14.

Treatment of LRT, BRT, and streetcar

Revised transit access coding

Consolidated station file/database (sta_tpp.bse)

(Sections to be added)

Sidewalk links and zonal walk links

Zonal auto-access links

Station transfer links

Zonal percent walk to transit calculations

Nested-logit mode choice model control files

Application Details:

The mode choice model is run separately for each of the four trip purposes. The inputs are

- A control file (HBW_NL_MC.CTL, HBS_NL_MC.CTL, HBS_NL_MC.CTL, and NHB_NL_MC.CTL)

Chapter 12 Time-of-Day Processing

Input(s): <ITER> =PP, i1…i4, PP= AM & OP

Daily Auto Driver Trips, by Occupancy Levels	HBW??.ADR, HBS??.ADR, HBO??.ADR, NHW??.ADR, NHO??.ADR	Binary
Daily Miscellaneous and Truck Trips (From the \Inputs subdirectory)	VISI.ADR, TAXI.ADR, SCHL.ADR, AIRPAX.ADR, XXCVT.VTT, XXAUT.VTT,	Binary
Truck and commercial vehicle trip tables	MTKEST<ITER>.VTT, HTKEST<ITER>.VTT, COMEST<ITER>.VTT	Binary
Adjustment or 'delta' trip tables used for commercial and truck models	CVDelta_3722.trp TKDelta_3722.trp	
Time of Day Percent File by Purpose, Mode, and Direction	todcomp_2008HTS.dbf	DBF

Output(s):

Trip Tables by Time Period	AM<ITER>.ADR, MD<ITER>.ADR, PM<ITER>.ADR, NT<ITER>.ADR,	Binary
Miscellaneous Time-of-Day Files	MISCAM<ITER>.TT, MISCMD<ITER>.TT, MISCPM<ITER>.TT, MISCNT<ITER>.TT COM_<ITER>.Ptt, MED_<ITER>.ptt, HVY_<ITER>.ptt	Binary

Program File(s):

CUBE VOYAGER, EXTRTAB.EXE

Control/Support File(s):

TIME-OF-DAY.S, MISC_TIME-OF-DAY.S

Application Details:

(To be completed)

Chapter 13 Traffic Assignment

Input(s): <ITER> =PP, i1…i4, PP= AM & OP

Volume delay parameters and Freeflow Speeds Assumptions	..\support\hwy_assign_Conical_VDF.s ..\support\hwy_assign_capSpeedLookup.s	
Modeled vehicle trip tables by occupant level and time period	AM<ITER>.ADR, MD<ITER>.ADR, PM<ITER>.ADR, NT<ITER>.ADR,	Binary
Non-modeled vehicle and truck trip tables by time period	MISCAM<ITER>.TT, MISCMD<ITER>.TT, MISCPM<ITER>.TT MISCNT<ITER>.TT	Binary
	Inputs\hwy_assign_toll_skm.s	
Network File	ZONEHWY.NET, PPHWY.NET, I1HWY.NET, ETC., I5HWY.NET	Binary

Output(s): <ITER> =PP, i1…i4, PP= AM & OP

Highway assignment output files		
Total Vehicle Trip by 6 Markets T1 – SOVs, Commercial vehicles T2 – HOV- 2 occ. vehicles T3 – HOV- 3+occ. Vehicles T4- Medium trucks T5- Airport passenger vehicles T6-Heavy trucks	<iter>AM.VTT, <iter>MD.VTT, <iter>PM.VTT, <iter>NT.VTT	Binary
	<ITER>AMLLNK.ASC, ITER>MDLLNK.ASC, ITER>PMLLNK.ASC, <ITER>NTLLNK.ASC	Text
Loaded Links Files by Time Period	<iter>HWY.NET	Binary

Program File(s):

CUBE VOYAGER

Control/Support File(s):

HIGHWAY_ASSIGNMENT.S

Application Details:

(To be completed)

Time Valuation (Minutes/2007$) by Vehicle Type and Time Period

Mode	Equivalent Minutes per Dollar AM Peak	Midday	PM Peak	Night
SOV	2.5	3.0	3.0	3.0
HOV 2-occupant auto	1.5	4.0	2.0	4.0
HOV 3+occupant auto	1.0	4.0	1.0	4.0
Light duty commercial vehicle	2.0	2.0	2.0	2.0
Truck	2.0	2.0	2.0	2.0
Auto serving airport passenger	2.0	2.0	2.0	2.0

(Time_Valuation_V2.3.xls)

Chapter 14 Transit Assignment

Input(s): <ITER> =PP, i1…i4, PP= AM & OP

Combine_Tables_For_ TrAssign.s	Inputs\<iter>_HBW_NL_MC.MTT Inputs\<iter>_HBS_NL_MC.MTT Inputs\<iter>_HBO_NL_MC.MTT Inputs\<iter>_NHB_NL_MC.MTT	Binary
	Inputs\LBus_TimFTRS.ASC <iter>_PPMS.TRP ZONEHWY.NET	
transit_assignment_CR.s	Inputs\MODE1,3,4,5,6,8,10*PP*.TB met_node.tb, met_bus.tb met_link.tb, com_bus.tb com_node.tb, lrt_bus.tb com_link.tb, new_bus.tb lrt_node.tb, walkacc.asc lrt_link.tb, crPP.asc new_node.tb, sidewalk.asc new_link.tb, com_pnrn.tb comPPpnr.tb	
transit_assignment_MR.s	Inputs\MODE3,5*PP*.TB met_node.tb, lrt_bus.tb, met_link.tb, mrprPP.asc, lrt_node.tb, lrtPP.asc, lrt_link.tb, mrkrPP.asc, Met_pnrn.tb, lrtkrPP.asc, Lrt_pnrn.tb, sidewalk.asc, metPPpnr.tb, lrtPPpnr.tb, met_bus.tb	
transit_assignment_AB.s	Inputs\MODE1,2,6-10PP.TB new_node.tb, busPP.asc, new_link.tb, lrtPP.asc, bus_pnrn.tb, newPP.asc, met_pnrn.tb, mrkrPP.asc, lrt_pnrn.tb, busPP.asc, new_pnrn.tb, lrtkrPP.asc, busPPpnr.tb, newkrPP.asc, metPPpnr.tb, newPPpnr.tb, lrtPPpnr.tb, busPPpnr.tb, newPPpnr.tb, sidewalk.asc, new_bus.tb, walkacc.asc, mrprPP.asc	
Transit_assignment_BM.s	Inputs\MODE1-3,5-10*PP*.TB met_node.tb, walkacc.asc, met_link.tb, mrprpp.asc, lrt_node.tb, busPP.asc, lrt_link.tb, lrtPP.asc, new_node.tb, newPP.asc, new_link.tb, mrkrPP.asc, bus_pnrn.tb, lrtkrPP.asc, met_pnrn.tb, newkrPP.asc, lrt_pnrn.tb, lrtPPpnr.tb,	Binary

	new_pnrn.tb, newPPpnr.tb, busPPpnr.tb, busPPpnr.tb, metPPpnr.tb, sidewalk.asc, lrtPPpnr.tb, newPPpnr.tb, met_bus.tb, lrt_bus.tb, new_bus.tb	

Output(s): <ITER> =PP, i1…i4, <AA>= WK, DR, KR ??= CR, MR, AB, BM

<PP>= AM, OP

	<iter>_<PP>MS.TRP	Binary
	Node file <iter>_*<AA>??<PP>*node.dbf Link file <iter>_*<AA>??<PP>*link.dbf Supl??*<AA><PP>*.asc	DBF DBF Text

Program File(s):

CUBE VOYAGER

Control/Support File(s):

Combine_Tables_For_TrAssign.s, transit_assignment_CR.s, transit_assignment_MR.s, transit_assignment_AB.s, transit_assignment_BM.s,

Application Details:

Appendix A. Flowcharts

Ref: Interrim_V2.3_January2011.vsd

Flowchart Numbers associated with Flowchart Steps

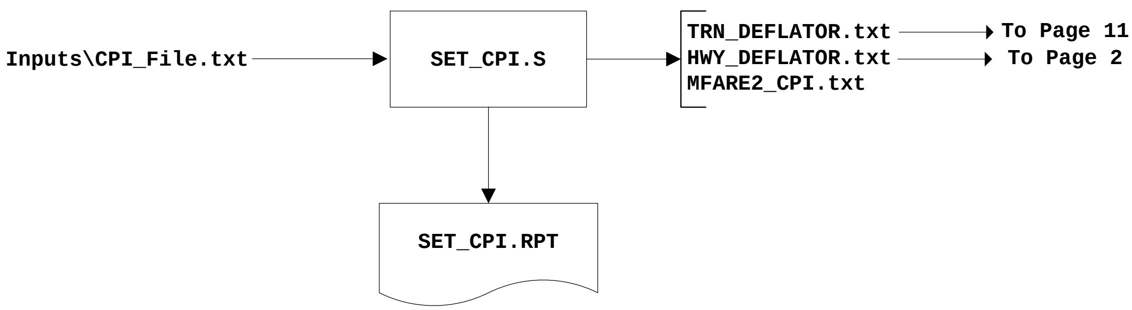
This Appendix contains detailed data processing flow charts showing the relationship of input and output files to the processing steps comprising the Version 2.3 travel model. The flowcharts are arranged on the basis of the 14 batch files used in the model application. Many of the batch files are reused during the application of the model. The table below describes the sequence of each batch file used by iteration. The flowcharts are numbered in accordance with the numbering system (1-14), shown in the table below.

	Initial (Pump Prime) Iteration				
		Standard Iterations			
Batch File	PP	1	2	3	4
Set_CPI.bat	1				
PP_Highway_Build.bat	2				
PP_Highway_Skims.bat	3				
Transit_Skim_All_Modes.bat				4	
Transit_Fare.bat				11	
Trip_Generation.bat				5	
Trip_Distribution.bat				6	
Mode_Choice.bat				12	
Auto_Driver.bat				13	
PP_Auto_Drivers.bat	7				
Time-of-Day.bat				8	
Highway_Assignment.bat				9	
Highway_Skims.bat				10	
Transit_Assignment.bat				14	

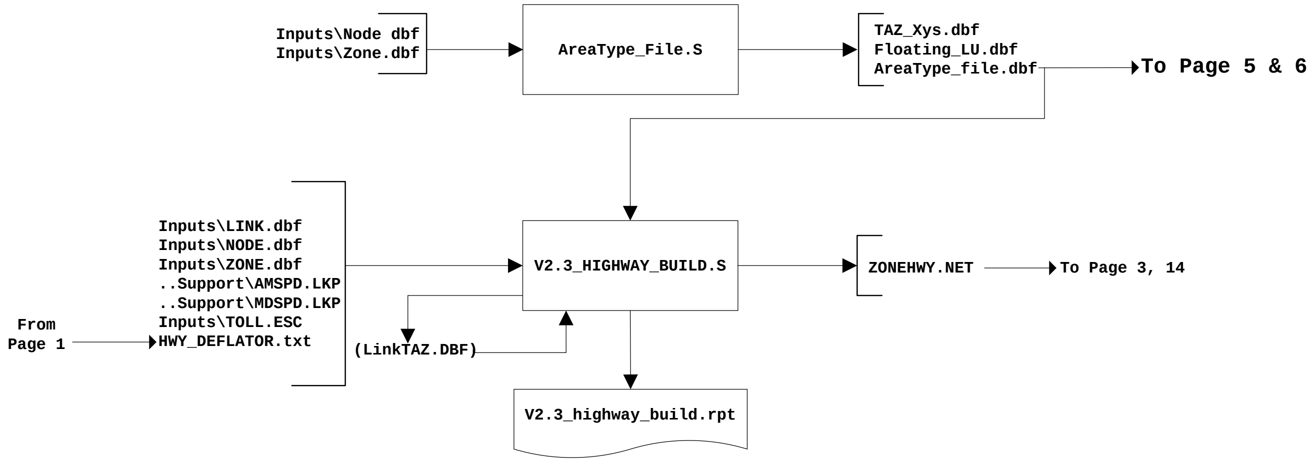
Ref: V2.3_Flowchart_Table.xls

TITLE:	**Version 2.3 Model Application**
COMPANY: **COG/TPB**	**CREATOR:** **RM/MS**
DATE: February 2011	PG: 1 OF 14
FILENAME: Interrrim_V2.3_February2011.VSD	

Set_CPI.bat

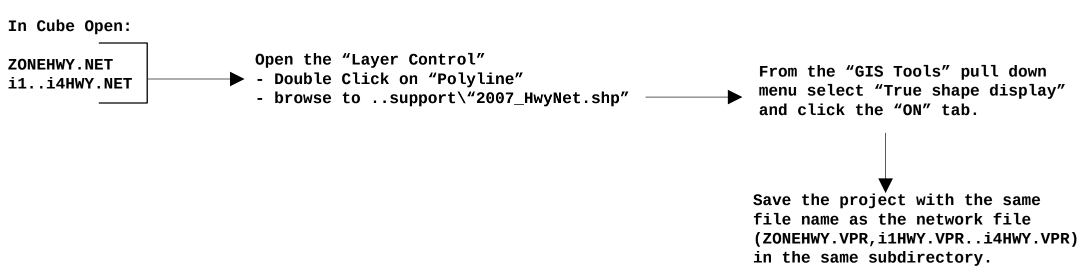


PP_Highway_Build.bat: Highway Network Preparation



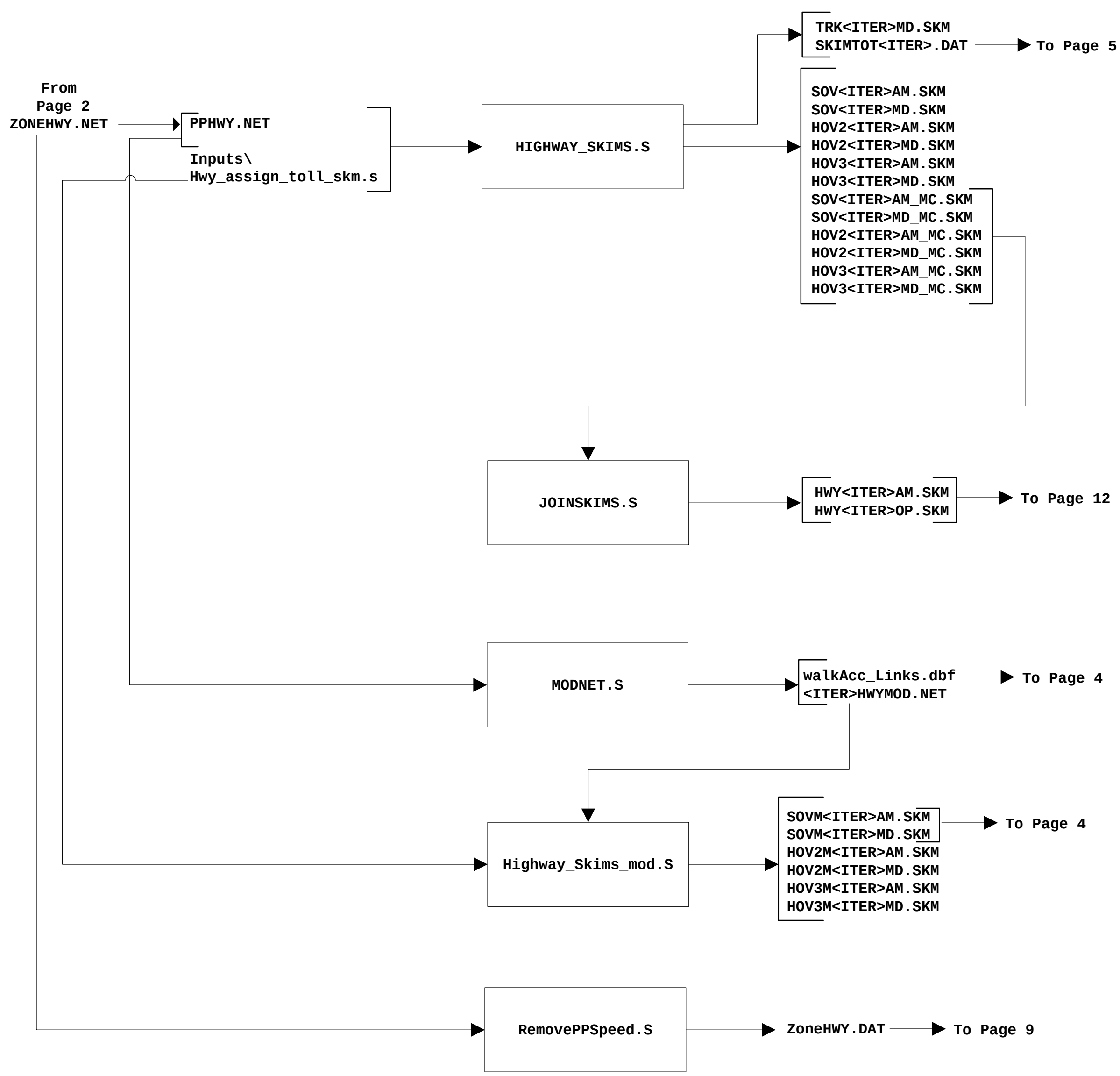
Optional

True shape display



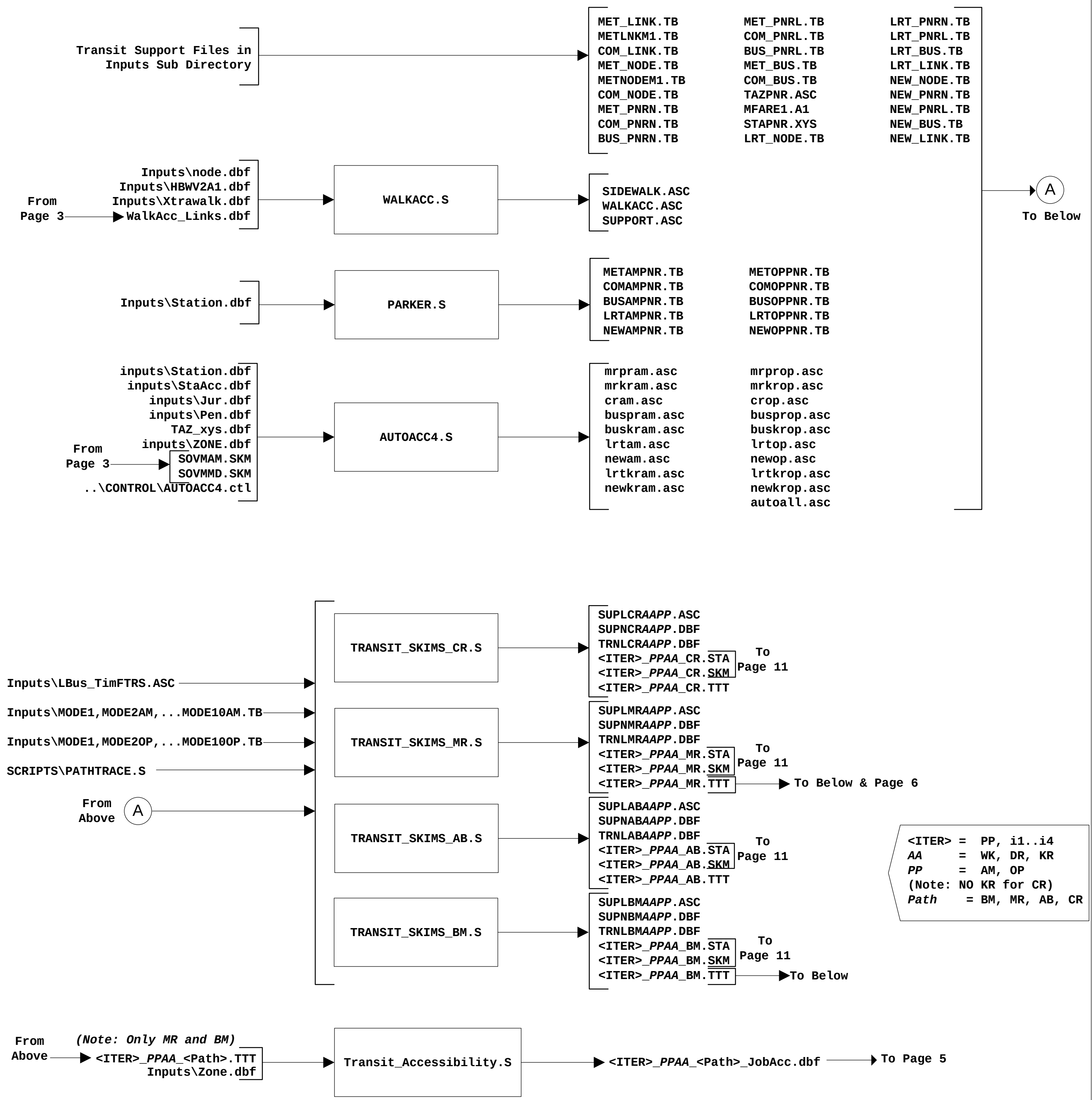
TITLE:	**Version 2.3 Model Application**		
COMPANY:	**COG/TPB**	**CREATOR:**	**RM/MS**
DATE:	February 2011	PG: 3	OF 14
FILENAME:	Interrrim_V2.3_February2011.VSD		

PP_Highway_Skims.bat

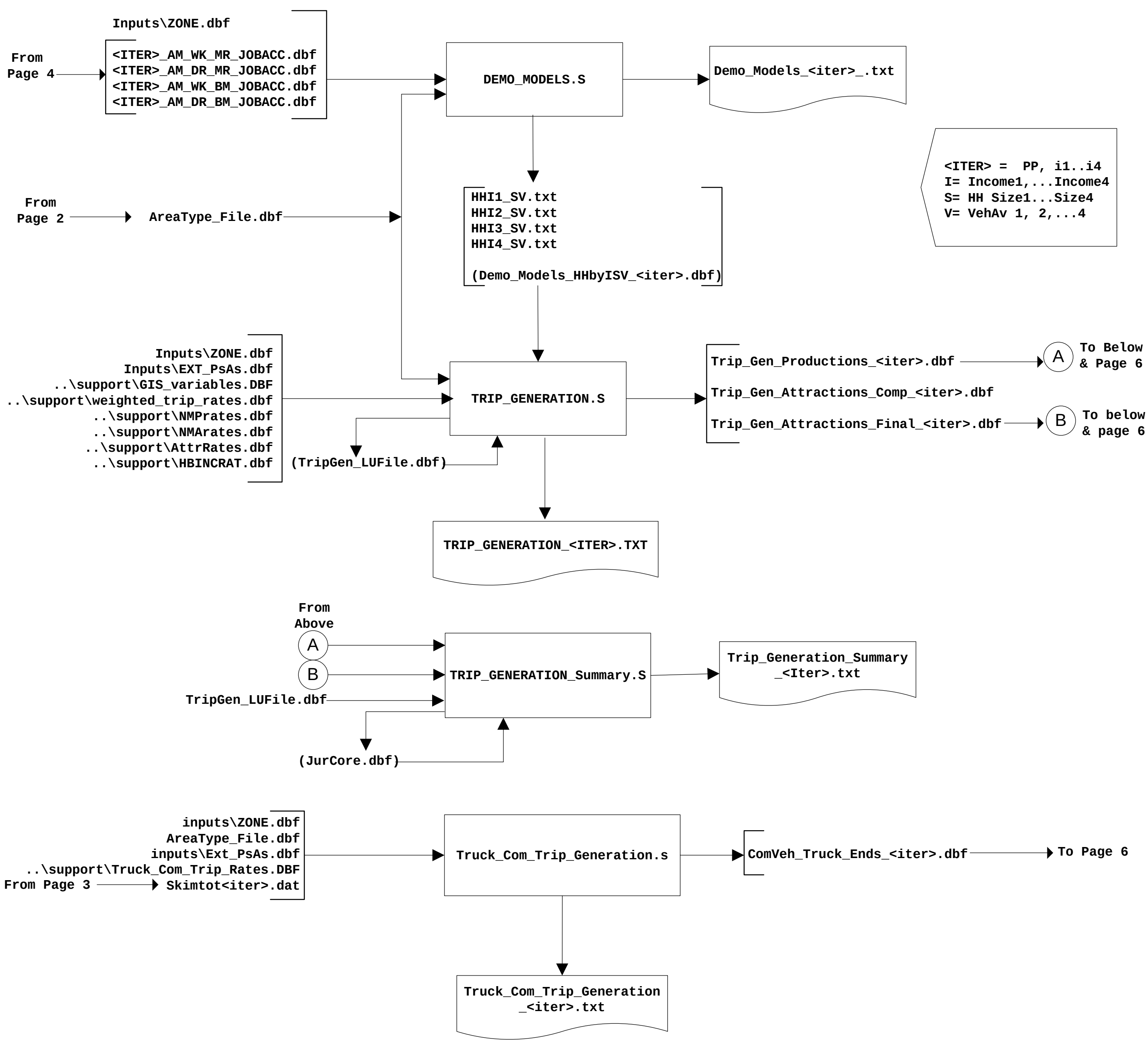


TITLE:	Version 2.3 Model Application
COMPANY: COG/TPB	CREATOR: RM/MS
DATE: February 2011	PG: 4 OF 14
FILENAME: Interrrim_V2.3_February2011.VSD	

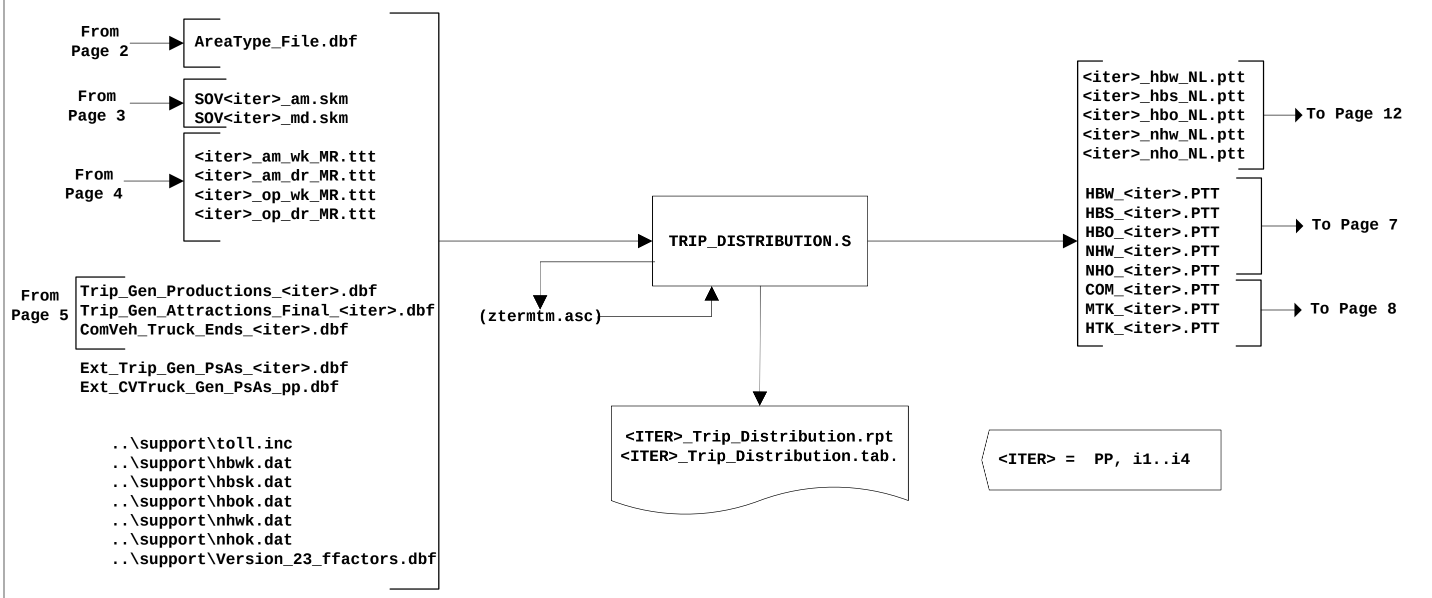
TRANSIT_Skim_All_Modes.bat



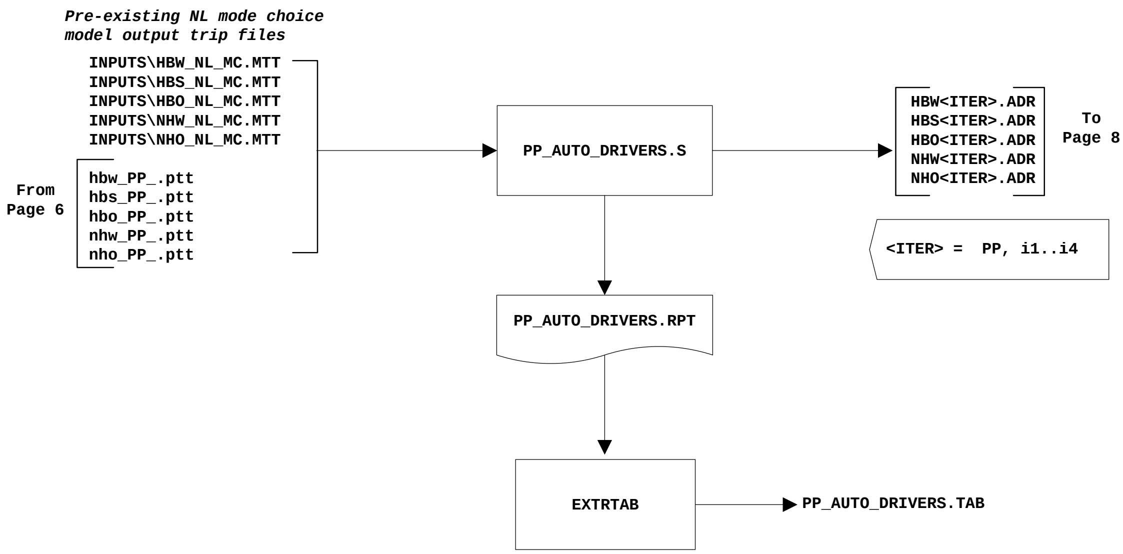
Trip_Generation.bat: Trip Generation



Trip_Distribution.bat: Trip Distribution

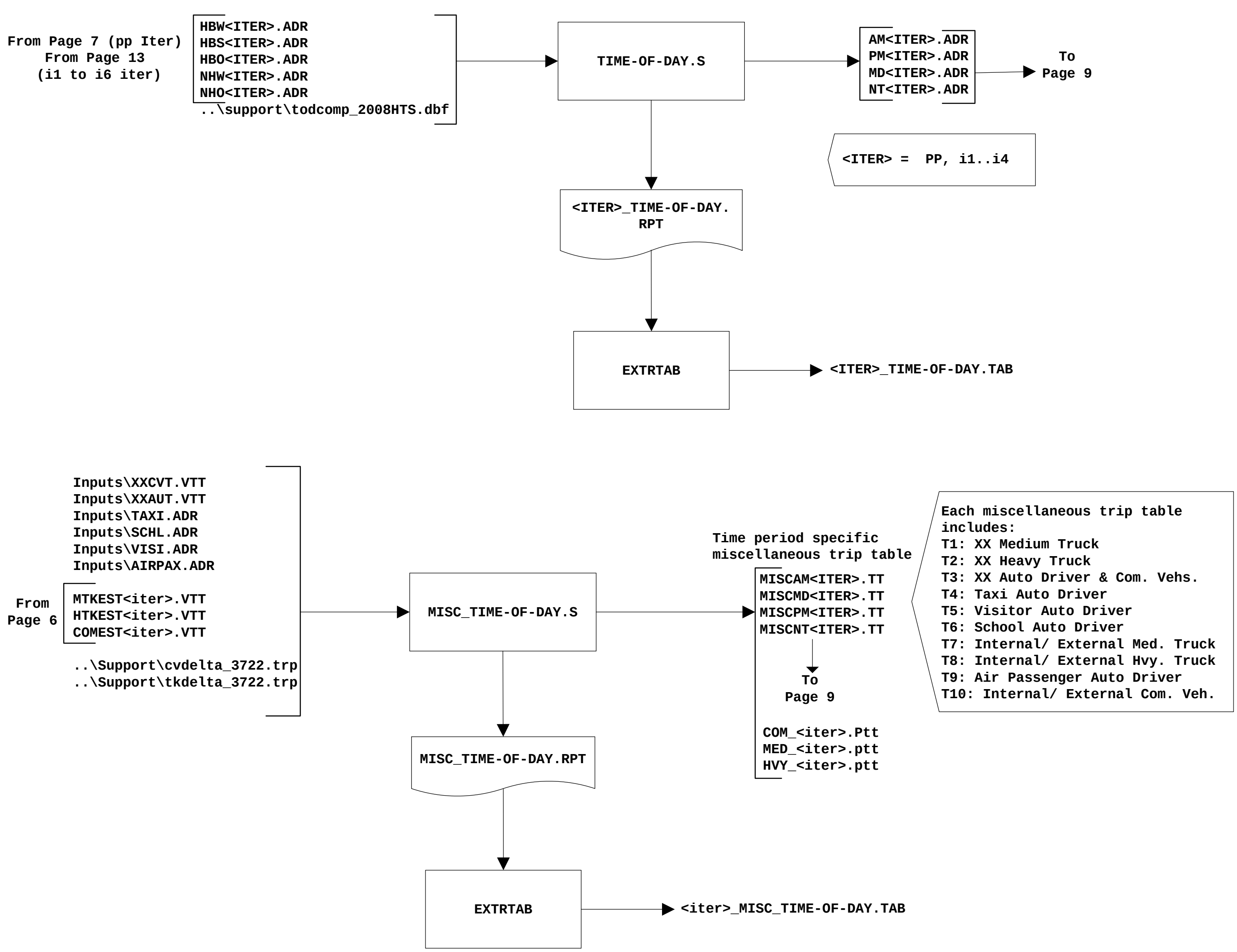


PP_Auto_Drivers.bat: Pump Prime Auto Driver Trips

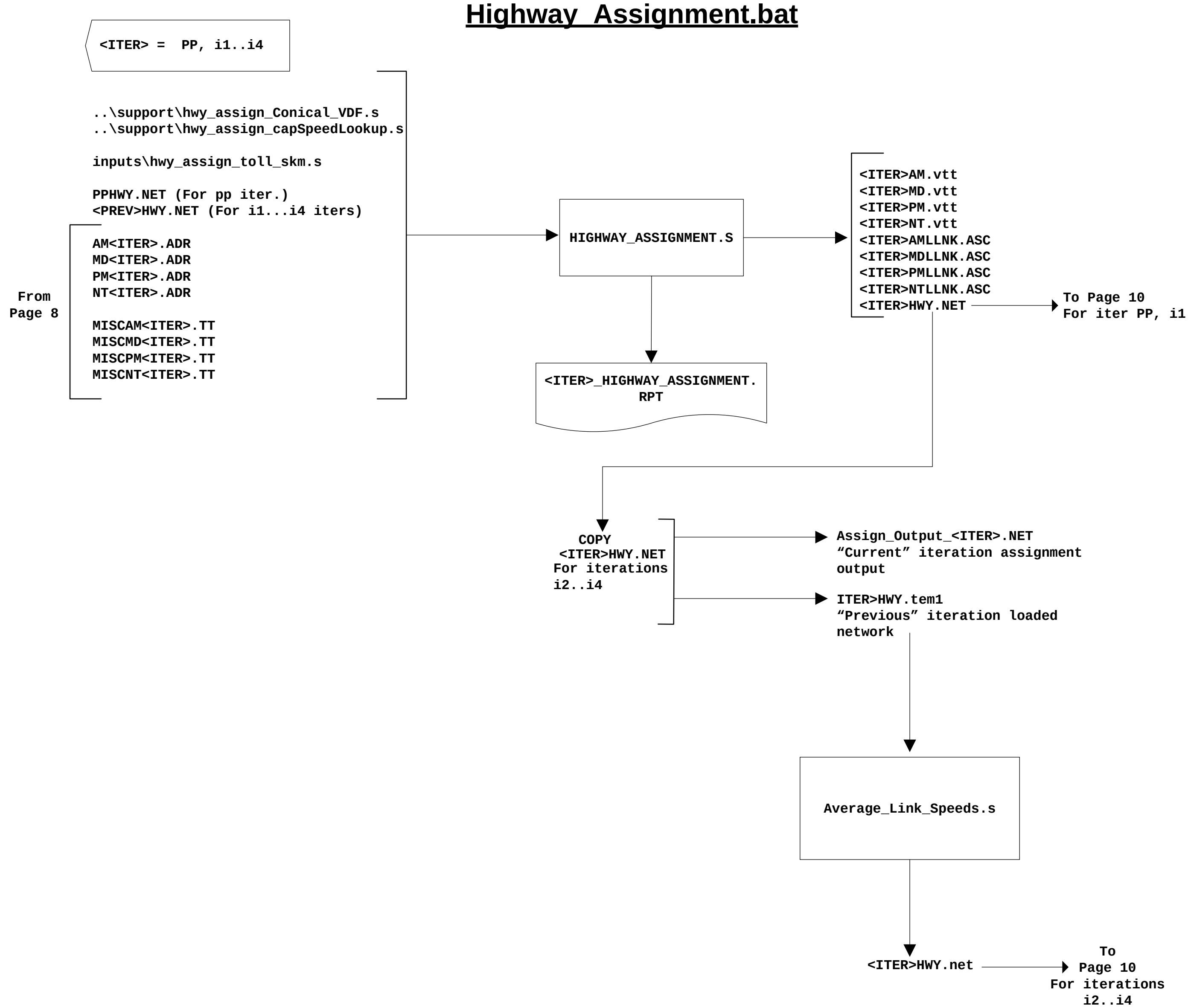


TITLE:	**Version 2.3 Model Application**
COMPANY: COG/TPB	**CREATOR:** RM/MS
DATE: February 2011	PG: 8 OF 14
FILENAME: Interrrim_V2.3_February2011.VSD	

Time-of-Day.bat



Highway_Assignment.bat



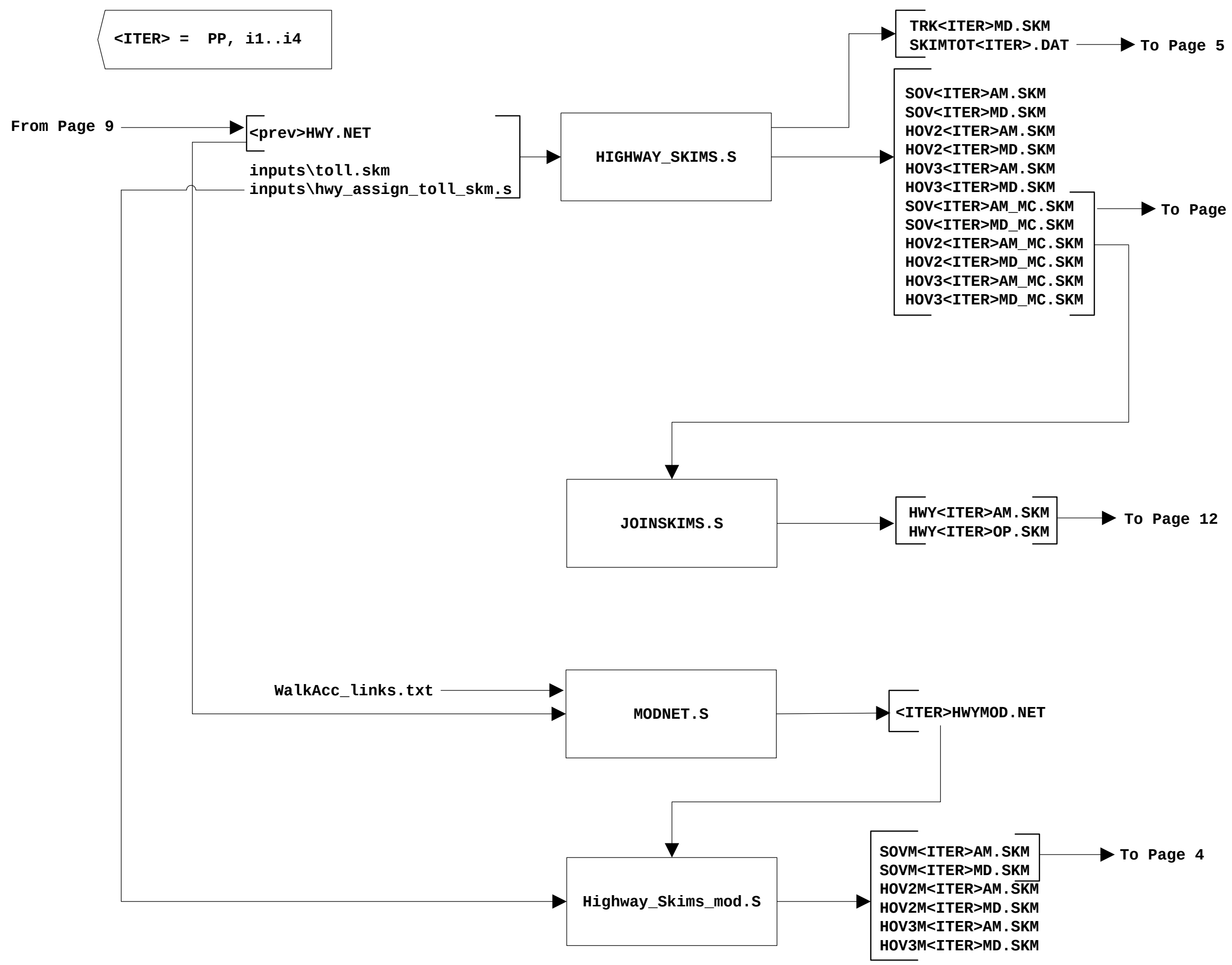
TITLE: Version 2.3 Model Application

COMPANY: COG/TPB **CREATOR: RM/MS**

DATE: February 2011 PG: 10 OF 14

FILENAME: Interrrim_V2.3_February2011.VSD

Highway_Skims.bat



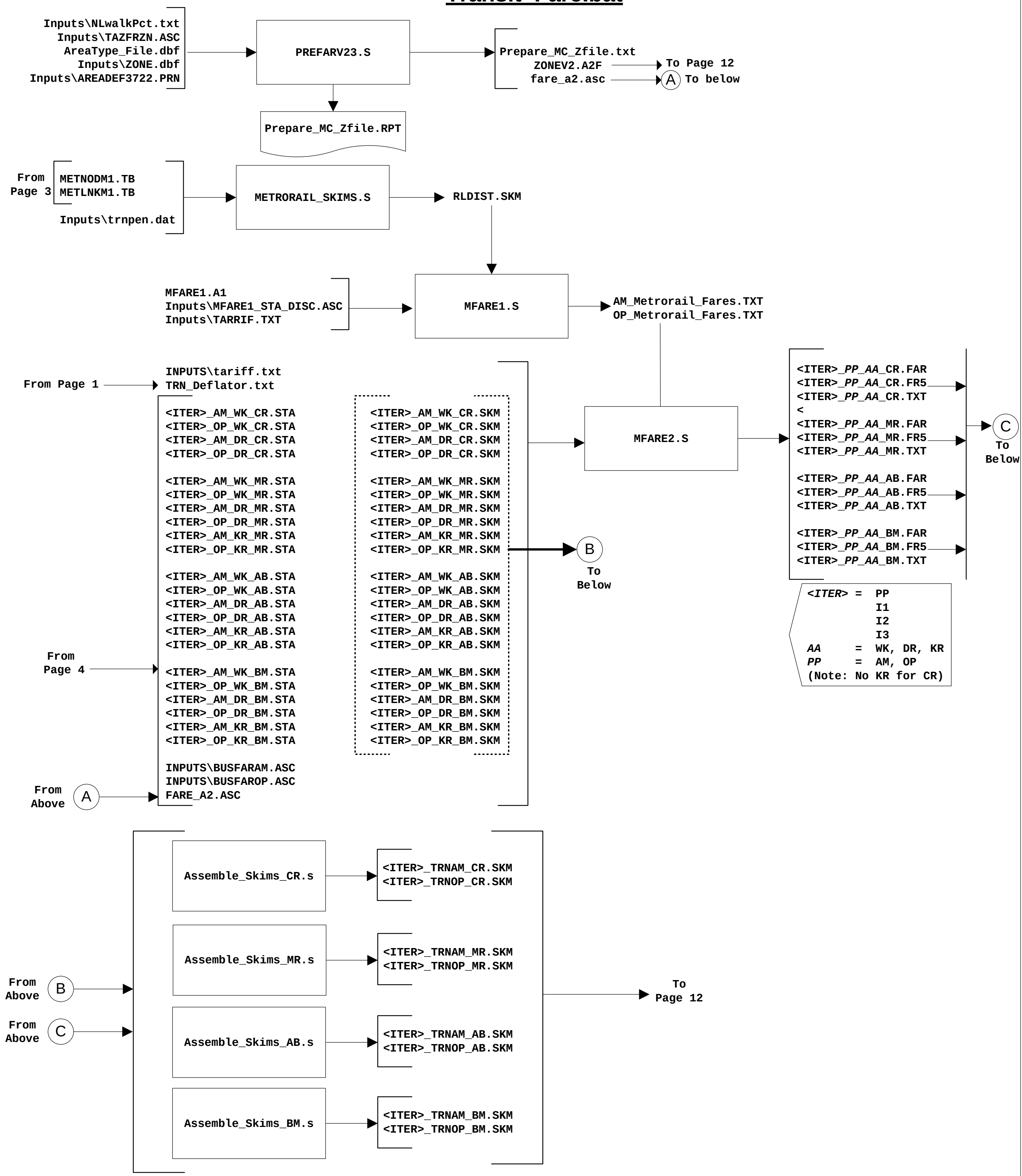
TITLE: Version 2.3 Model Application

COMPANY: COG/TPB CREATOR: RM/MS

DATE: February 2011 PG: 11 OF 14

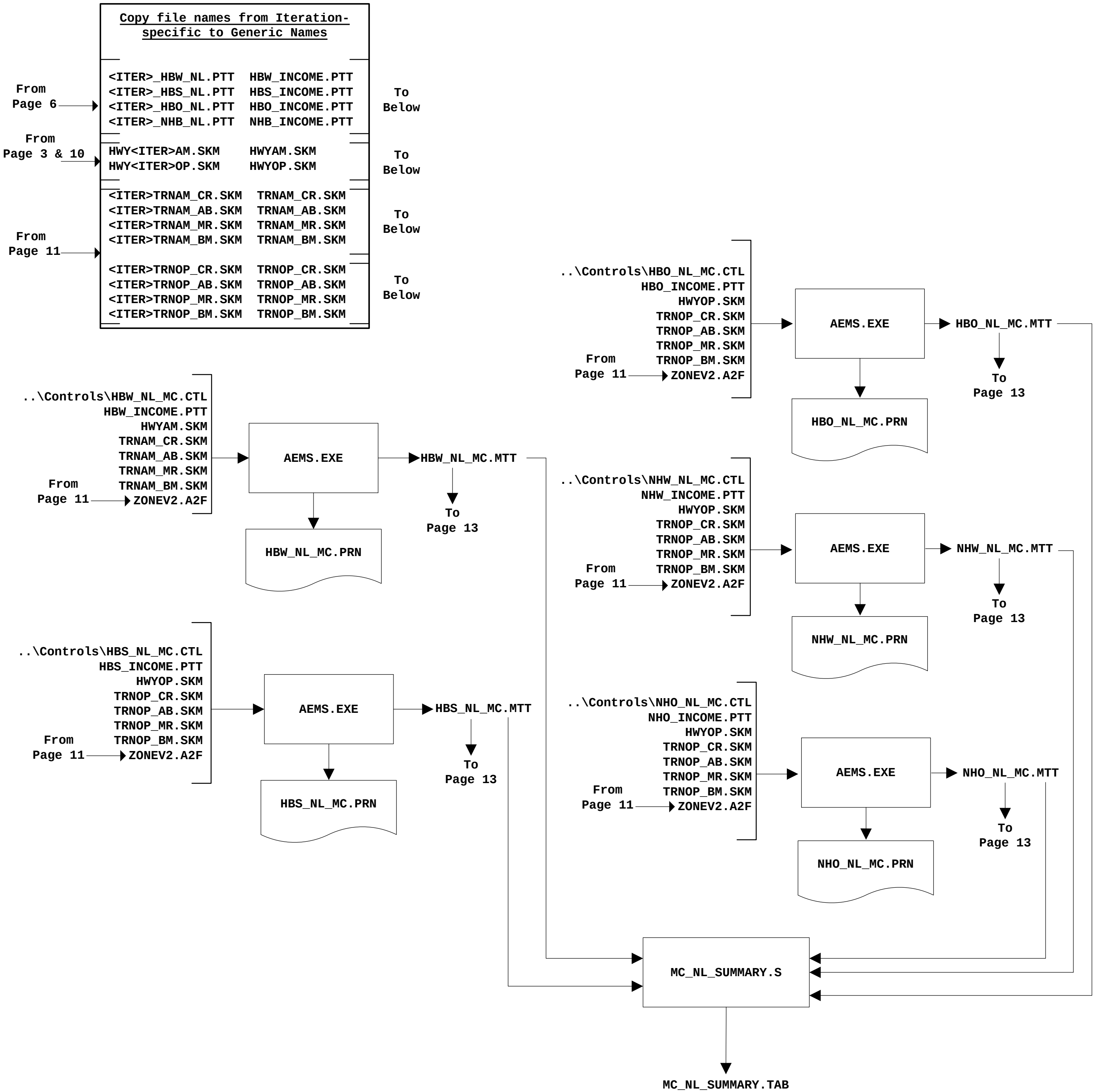
FILENAME: Interrrim_V2.3_February2011.VSD

Transit_Fare.bat

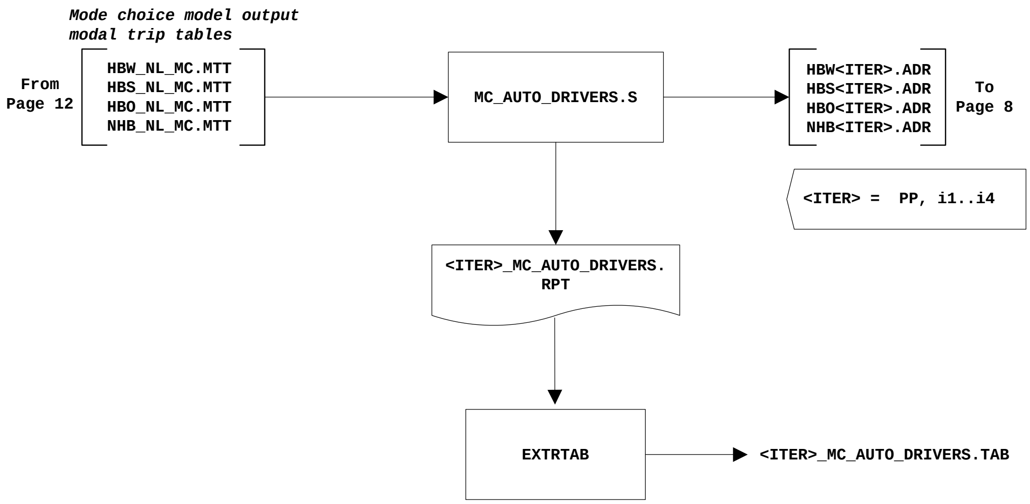


TITLE:	**Version 2.3 Model Application**
COMPANY: COG/TPB	**CREATOR:** RM/MS
DATE: February 2011	PG: 12 OF 14
FILENAME: Interrrim_V2.3_February2011.VSD	

Mode_Choice.bat



Auto_Driver.bat



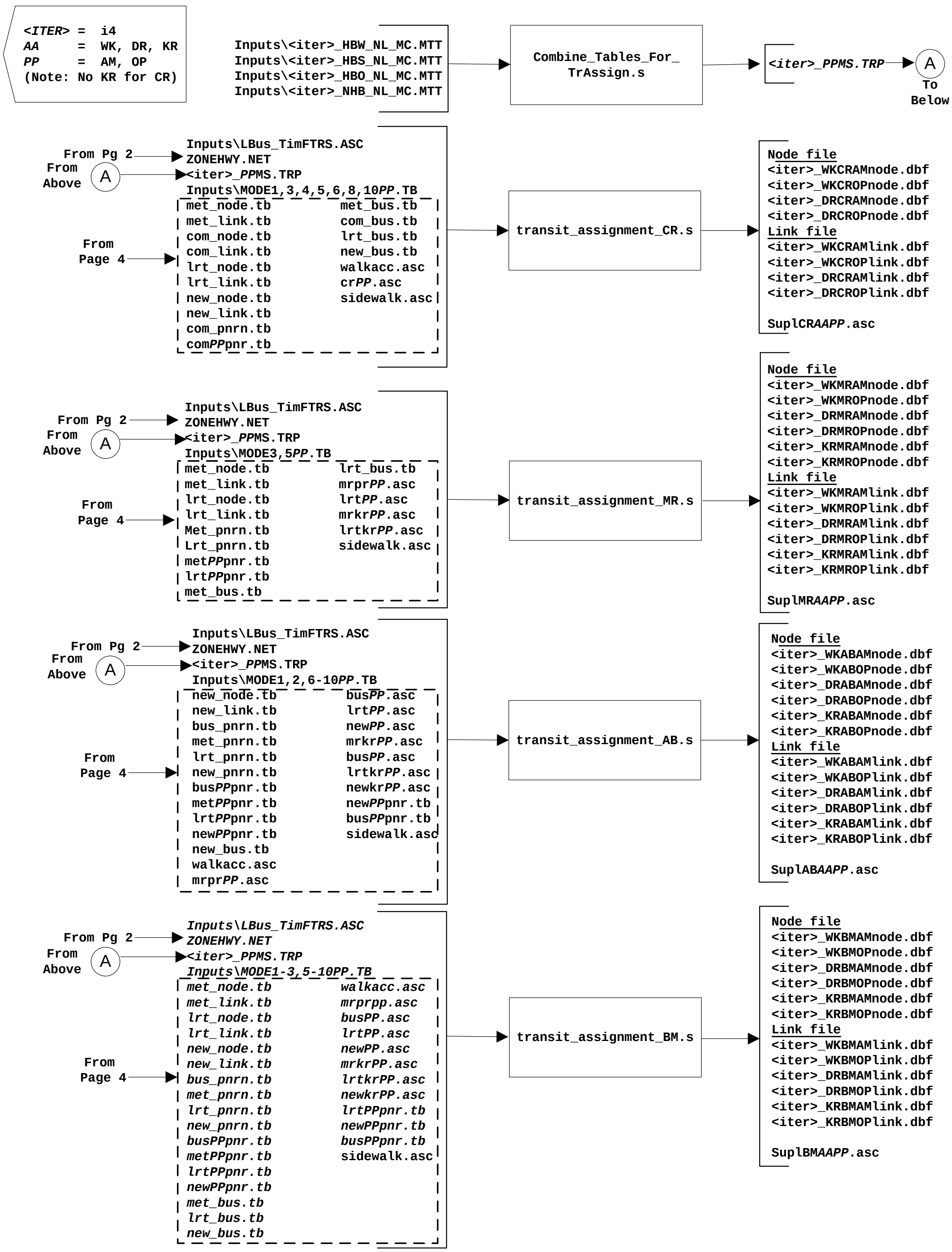
TITLE: Version 2.3 Model Application

COMPANY: COG/TPB **CREATOR: RM/MS**

DATE: February 2011 PG: 14 OF 14

FILENAME: Interrrim_V2.3_February2011.VSD

Transit_Assignment.bat



Appendix B. Batch files

1 Runall

1.1 run_Model_2007.bat

```
:: run_Model_2007.bat, 2011-02-16 Wed 11:44:43

set root=O:\model_dev\Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br
set scenar=2007
set runbat=run_ModelSteps_2007.bat
set fullpth=%root%\%scenar%

:: Std error redirected to a file; Std output split between file and screen
timethis "cmd /c %runbat%  %scenar%  2> %fullpth%\%scenar%_errs.txt" | tee
%fullpth%\%scenar%_output.txt

if exist %fullpth%\%scenar%_errs.txt   start %fullpth%\%scenar%_errs.txt
if exist %fullpth%\%scenar%_output.txt start %fullpth%\%scenar%_output.txt

if exist %fullpth%\i6_Highway_Assignment.rpt start
%fullpth%\i4_Highway_Assignment.rpt
if exist %fullpth%\i6_mc_NL_summary.txt      start %fullpth%\i4_mc_NL_summary.txt

:: Cleanup
set root=
set scenar=
set fullpth=
set runbat=
```

1.2 run_ModelSteps_2007.bat

```
:: run_ModelSteps_2007.bat
:: 2011-02-16 Wed 11:45:55

:: Version 2.3 TPB Travel Model on 3722 TAZ System

set _year_=2007
set _alt_=Ver2.3.Hotel_22_1.0nw_200ue_adjpa_kFac2Br

:: Location of substitute HOV 3+ skims/ null location for this year
cd %1
set _HOV3PATH_=
cd..

rem ====== Pump Prime Iteration ==========================================

set _iter_=pp
set _prev_=pp

call Set_CPI.bat                %1

call PP_Highway_Build.bat       %1

call PP_Highway_Skims.bat       %1

call Transit_Skim_All_Modes.bat %1

call Trip_Generation.bat        %1

call Trip_Distribution.bat      %1

call PP_Auto_Drivers.bat        %1

call Time-of-Day.bat            %1

call Highway_Assignment.bat     %1

call Highway_Skims.bat          %1

:: rem ====== Iteration 1 ===================================================

set _iter_=i1
set _prev_=pp

call Transit_Skim_All_Modes.bat %1

call Transit_Fare.bat           %1

call Trip_Generation.bat        %1

call Trip_Distribution.bat      %1

call Mode_Choice.bat            %1

call Auto_Driver.bat            %1

call Time-of-Day.bat            %1

call Highway_Assignment.bat     %1

call Highway_Skims.bat          %1

:: rem ====== Iteration 2 ===================================================

set _iter_=i2
set _prev_=i1

call Transit_Skim_All_Modes.bat %1

call Transit_Fare.bat           %1

call Trip_Generation.bat        %1

call Trip_Distribution.bat      %1

call Mode_Choice.bat            %1

call Auto_Driver.bat            %1

call Time-of-Day.bat            %1

call Highway_Assignment.bat     %1

call Average_Link_Speeds.bat    %1

call Highway_Skims.bat          %1

:: rem ====== Iteration 3 ===================================================

set _iter_=i3
set _prev_=i2

call Transit_Skim_All_Modes.bat %1

call Transit_Fare.bat           %1

call Trip_Generation.bat        %1

call Trip_Distribution.bat      %1
```

```
call Mode_Choice.bat           %1

call Auto_Driver.bat           %1

call Time-of-Day.bat           %1

call Highway_Assignment.bat    %1

call Average_Link_Speeds.bat   %1

call Highway_Skims.bat         %1

:: rem ====== Iteration 4 ===================================================

set _iter_=i4
set _prev_=i3

call Transit_Skim_All_Modes.bat %1

call Transit_Fare.bat          %1

call Trip_Generation.bat       %1

call Trip_Distribution.bat     %1

call Mode_Choice.bat           %1

call Auto_Driver.bat           %1

call Time-of-Day.bat           %1

call Highway_Assignment.bat    %1

call Average_Link_Speeds.bat   %1

call Highway_Skims.bat         %1

:: rem ====== Iteration 5 ===================================================

REM set _iter_=i5
REM set _prev_=i4
REM
REM call Transit_Skim_All_Modes.bat %1
REM
REM call Transit_Fare.bat          %1
REM
REM call Trip_Generation.bat       %1
REM
REM call Trip_Distribution.bat     %1
REM
REM call Mode_Choice.bat           %1
REM
REM call Auto_Driver.bat           %1
REM
REM call Time-of-Day.bat           %1
REM
REM call Highway_Assignment.bat    %1
REM
REM call Average_Link_Speeds.bat   %1
REM
REM call Highway_Skims.bat         %1
REM
REM :: rem ====== Iteration 6 ===================================================
REM
REM set _iter_=i6
REM set _prev_=i5
REM
REM call Transit_Skim_All_Modes.bat %1
REM
REM call Transit_Fare.bat          %1
REM
REM call Trip_Generation.bat       %1
REM
REM call Trip_Distribution.bat     %1
REM
REM call Mode_Choice.bat           %1
REM
REM call Auto_Driver.bat           %1
REM
REM call Time-of-Day.bat          %1
REM
REM call Highway_Assignment.bat   %1
REM
REM call Highway_Skims.bat        %1

:: End No Averaging

:: rem ====== End of batch file =============================================

set _year_=
set _alt_=
set _iter_=
set _prev_=
```

2 ‘Pump-Prime’ Iterations

2.1 set_CPI.bat

```
cd %1

REM  CPI Establishment

if exist voya*.*      del voya*.*
if exist set_CPI.rpt  del set_CPI.rpt
start /w Voyager.exe  ..\scripts\set_CPI.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
        if exist voya*.prn  copy voya*.prn set_CPI.rpt
goto end

:error
REM  Processing Error.....
PAUSE
:end
cd..
```

2.2 PP_Highway_Build.bat

```
cd %1

REM  Highway Network Building

if exist voya*.*             del voya*.*
if exist AreaType_File.rpt   del AreaType_File.rpt
```

```
start /w Voyager.exe  ..\scripts\AreaType_File.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn  AreaType_File.rpt



if exist voya*.*            del voya*.*
if exist highway_build_toll.rpt  del V2.3_highway_build.rpt
start /w Voyager.exe      ..\scripts\V2.3_highway_build.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn copy voya*.prn    V2.3_highway_build.rpt
if exist temp.net           del temp.net

goto end


:error
REM  Processing Error.....
PAUSE
:end
cd..
```

2.3 PP_Highway_Skims.bat

```
CD %1

REM  Highway Skims

:: COPY ZONEHWY.NET TEMPORARILY TO PPHWY.NET

if exist ZONEHWY.NET  COPY ZONEHWY.NET PPHWY.NET

if exist voya*.*  del voya*.*
if exist %_iter_%_Highway_Skims.rpt  del %_iter_%_Highway_Skims.rpt
start /w Voyager.exe  ..\scripts\Highway_Skims.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Highway_Skims.rpt


:: Additional Steps per the Nested Logit
:: modnet.bat / Highway_Skims_Mod.bat / JoinSkims.bat ===

REM  Utility - Convert dummy centroid connectors

if exist voya*.*  del voya*.*
if exist %_iter_%ModNet.rpt  del %_iter_%ModNet.rpt
start /w Voyager.exe  ..\scripts\modnet.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%ModNet.rpt

if exist voya*.*  del voya*.*
if exist %_iter_%_Highway_Skims_mod.rpt  del %_iter_%_Highway_Skims_mod.rpt
start /w Voyager.exe  ..\scripts\Highway_Skims_mod.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Highway_Skims_Mod.rpt

:: ----- Save initial highway skims to special names for later checking

if exist SOVPP??.SKM   copy SOVPP??.SKM     SOVPP??_Initial.SKM
if exist HOV2PP??.SKM  copy HOV2PP??.SKM    HOV2PP??_Initial.SKM
if exist HOV3PP??.SKM  copy HOV3PP??.SKM    HOV3PP??_Initial.SKM

if exist SOVMPP??.SKM   copy SOVMPP??.SKM     SOVMPP??_Initial.SKM
if exist HOV2MPP??.SKM  copy HOV2MPP??.SKM    HOV2MPP??_Initial.SKM
if exist HOV3MPP??.SKM  copy HOV3MPP??.SKM    HOV3MPP??_Initial.SKM

::  ----- the PP??.SKM files will be overwritten after the skimming
::  ----- of the PP Highway assignment network

REM  Utility - Join Highway Skims

if exist voya*.*  del voya*.*
if exist %_iter_%_JoinSkims.rpt  del %_iter_%_JoinSkims.rpt
start /w Voyager.exe  ..\scripts\joinskims.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_JoinSkims.rpt

:: DELETE TEMPORARY ppHWY.NET, THIS WILL BE CREATED AFTER the PP HIGHWAY ASSIGNMENT

if exist PPHWY.NET del PPHWY.NET


if exist voya*.*  del voya*.*
if exist %_iter_%_RemovePPSpeed.rpt  del %_iter_%_RemovePPSpeed.rpt
start /w Voyager.exe  ..\scripts\RemovePPSpeed.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_RemovePPSpeed.rpt


goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

2.4 PP_Auto_Drivers.bat

```
CD %1

REM  Pump Prime Auto Driver Trips

del Voya*.*
del             %_iter_%_Auto_Drivers.rpt

start /w Voyager.exe  ..\scripts\PP_Auto_Drivers.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Auto_Drivers.rpt

..\software\extrtab    %_iter_%_Auto_Drivers.rpt
copy extrtab.out       %_iter_%_Auto_Drivers.tab
del  extrtab.out


goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3 'Standard' Iterations (1-4)

3.1 Transit_Skim_All_Modes.bat

```
::  Transit Skimming for All Submodes
::  updated 4/27/07  copy sta_tpp.bse from inputs to output subdir.

CD %1

::copy transit lines and support files from the inputs subdir.
copy inputs\*.TB
copy inputs\mfare1.a1

:: Delete previous iteration highway skim files for Transit Skimming (if files
exist)

if exist sovmam.skm   del sovmam.skm
if exist sovmmd.skm   del sovmmd.skm


:: Set up current iteration highway skim files for transit Skimming

if exist sovm%_prev_%am.skm  copy /Y  sovm%_prev_%am.skm  sovmam.skm
if exist sovm%_prev_%MD.skm  copy /Y  sovm%_prev_%md.skm  sovmmd.skm


if exist voya*.*  del voya*.*
if exist parker.rpt  del parker.rpt
start /w Voyager.exe  ..\scripts\parker.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn parker.rpt

if exist voya*.*  del voya*.*
if exist walkacc.rpt  del walkacc.rpt
start /w Voyager.exe  ..\scripts\walkacc.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn walkacc.rpt


if exist voya*.*  del voya*.*
if exist autoacc4.rpt  del autoacc4.rpt
start /w Voyager.exe  ..\scripts\autoacc4.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn autoacc4.rpt


rem ---------- Do some cleaning up ----------
:: del /F ..\%1\hov2m%_prev_%am.skm
:: del /F ..\%1\hov2m%_prev_%op.skm
:: del /F ..\%1\hov3m%_prev_%am.skm
:: del /F ..\%1\hov3m%_prev_%op.skm
:: del /F ..\%1\tppl*.*

CD..

:: ======================================
:: = Transit Skimming Section            =
:: ======================================

::  Transit Network Building (Final) Commuter Rail

CD %1

if exist voya*.*  del voya*.*
if exist %_iter_%_TRANSIT_SKIMS_CR.RPT  del %_iter_%_TRANSIT_SKIMS_CR.RPT
start /w Voyager.exe  ..\scripts\transit_skims_CR.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn  %_iter_%_TRANSIT_SKIMS_CR.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end
CD..



CD %1

REM  Transit Network Building (Final) Metrorail

if exist voya*.*  del voya*.*
if exist %_iter_%_TRANSIT_SKIMS_MR.RPT  del %_iter_%_TRANSIT_SKIMS_MR.RPT
start /w Voyager.exe  ..\scripts\transit_skims_MR.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.*  copy voya*.prn %_iter_%_TRANSIT_SKIMS_MR.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end
CD..



CD %1

REM  Transit Network Building (Final) All Bus

if exist voya*.*  del voya*.*
if exist %_iter_%_TRANSIT_SKIMS_AB.RPT  del %iter_%_TRANSIT_SKIMS_AB.RPT
start /w Voyager.exe  ..\scripts\transit_skims_AB.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_TRANSIT_SKIMS_AB.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end
CD..


CD %1

REM  Transit Network Building (Final) Bus+Rail

if exist voya*.*  del voya*.*
if exist %_iter_%_TRANSIT_SKIMS_BM.RPT  del %_iter_%_TRANSIT_SKIMS_BM.RPT
start /w Voyager.exe  ..\scripts\transit_skims_BM.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_TRANSIT_SKIMS_BM.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end

CD..
```

```
CD %1

REM  Transit Network Accessibility File developement (For Demographic Models)

if exist voya*.*  del voya*.*
if exist %_iter_%_TRANSIT_Accessibility.RPT  del %_iter_%_TRANSIT_Accessibility.RPT
start /w Voyager.exe  ..\scripts\transit_Accessibility.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_TRANSIT_Accessibility.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end

CD..
```

3.2 Transit_Fare.bat

```
::----------------------------------------
::  Version 2.3 Transit Fare Process
::----------------------------------------

CD %1



if exist voya*.*  del voya*.*
if exist %_iter_%_prefarV23.rpt  del %_iter_%_prefarV23.rpt
start /w Voyager.exe  ..\scripts\prefarV23.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_prefarV23.rpt



if exist voya*.*  del voya*.*
if exist %_iter_%_Metrorail_skims.rpt  del %_iter_%_Metrorail_skims.rpt
start /w Voyager.exe  ..\scripts\Metrorail_skims.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Metrorail_skims.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_MFARE1.rpt  del %_iter_%_MFARE1.rpt
start /w Voyager.exe  ..\scripts\MFARE1.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_MFARE1.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_MFARE2.rpt  del %_iter_%_MFARE2.rpt
start /w Voyager.exe  ..\scripts\MFARE2.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_MFARE2.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Assemble_Skims_MR.rpt  del %_iter_%_Assemble_Skims_MR.rpt
start /w Voyager.exe  ..\scripts\Assemble_Skims_MR.s  /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Assemble_Skims_MR.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Assemble_Skims_BM.rpt  del %_iter_%_Assemble_Skims_BM.rpt
start /w Voyager.exe  ..\scripts\Assemble_Skims_BM.s  /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Assemble_Skims_BM.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Assemble_Skims_AB.rpt  del %_iter_%_Assemble_Skims_AB.rpt
start /w Voyager.exe  ..\scripts\Assemble_Skims_AB.s  /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Assemble_Skims_AB.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Assemble_Skims_CR.rpt  del %_iter_%_Assemble_Skims_CR.rpt
start /w Voyager.exe  ..\scripts\Assemble_Skims_CR.s  /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Assemble_Skims_CR.rpt

goto end


:error
REM  Processing Error......
PAUSE
:end

CD..
```

3.3 Trip_Generation.bat

```
::------------------------------------------
::  Version 2.3 Trip Generation Process --
::------------------------------------------

CD %1


if exist voya*.*  del voya*.*
if exist %_iter_%_Demo_Models.rpt  del %_iter_%_Demo_Models.rpt
start /w Voyager.exe  ..\scripts\Demo_Models.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Demo_Models.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Trip_Generation.rpt  del %_iter_%_Trip_Generation.rpt
start /w Voyager.exe  ..\scripts\Trip_Generation.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Trip_Generation.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Trip_Generation_Summary.rpt  del
%_iter_%_Trip_Generation_Summary.rpt
start /w Voyager.exe  ..\scripts\Trip_Generation_Summary.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Trip_Generation_Summary.rpt


if exist voya*.*  del voya*.*
if exist %_iter_%_Truck_Com_Trip_Generation.rpt  del
%_iter_%_Truck_Com_Trip_Generation.rpt
start /w Voyager.exe  ..\scripts\Truck_Com_Trip_Generation.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Truck_Com_Trip_Generation.rpt
```

```
goto end


:error
REM  Processing Error......
PAUSE
:end

CD..
```

3.4 Trip_Distribution.bat

```
::---------------------------------------
::  Version 2.3 Trip Distribution Process
::---------------------------------------

CD %1

if exist voya*.*  del voya*.*
if exist %_iter_%_Prepare_Ext_Auto_Ends.rpt  del %_iter_%_Prepare_Ext_Auto_Ends.rpt
start /w Voyager.exe  ..\scripts\Prepare_Ext_Auto_Ends.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Prepare_Ext_Auto_Ends.rpt

if exist voya*.*  del voya*.*
if exist %_iter_%_Prepare_Ext_ComTrk_Ends.rpt  del
%_iter_%_Prepare_Ext_ComTrk_Ends.rpt
start /w Voyager.exe  ..\scripts\Prepare_Ext_ComTrk_Ends.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Prepare_Ext_ComTrk_Ends.rpt

if exist voya*.*  del voya*.*
if exist %_iter_%_Trip_Distribution.rpt  del %_iter_%_Trip_Distribution.rpt
start /w Voyager.exe  ..\scripts\Trip_Distribution.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Trip_Distribution.rpt
..\software\extrtab  %_iter_%_Trip_Distribution.rpt
copy   extrtab.out   %_iter_%_Trip_Distribution.tab
del    extrtab.out


goto end

:error
REM  Processing Error......
PAUSE
:end

CD..
```

3.5 Mode_Choice.bat

```
::  Nested Logit Mode Choice Model Application

CD %1

:: Copy iteration-specific inputs to generic names

if exist %_iter_%_hbw_NL.ptt  copy  %_iter_%_hbw_NL.ptt   HBW_INCOME.PTT
if exist %_iter_%_hbs_NL.ptt  copy  %_iter_%_hbs_NL.ptt   HBS_INCOME.PTT
if exist %_iter_%_hbo_NL.ptt  copy  %_iter_%_hbo_NL.ptt   HBO_INCOME.PTT
if exist %_iter_%_nhw_NL.ptt  copy  %_iter_%_nhw_NL.ptt   NHW_INCOME.PTT
if exist %_iter_%_nho_NL.ptt  copy  %_iter_%_nho_NL.ptt   NHO_INCOME.PTT

if exist Hwy%_prev_%AM.SKM  copy Hwy%_prev_%AM.SKM        HWYAM.SKM
if exist Hwy%_prev_%OP.SKM  copy Hwy%_prev_%OP.SKM        HWYOP.SKM

if exist %_iter_%_TRNAM_CR.SKM copy %_iter_%_TRNAM_CR.SKM TRNAM_CR.SKM
if exist %_iter_%_TRNAM_AB.SKM copy %_iter_%_TRNAM_AB.SKM TRNAM_AB.SKM
if exist %_iter_%_TRNAM_MR.SKM copy %_iter_%_TRNAM_MR.SKM TRNAM_MR.SKM
if exist %_iter_%_TRNAM_BM.SKM copy %_iter_%_TRNAM_BM.SKM TRNAM_BM.SKM

if exist %_iter_%_TRNOP_CR.SKM copy %_iter_%_TRNOP_CR.SKM TRNOP_CR.SKM
if exist %_iter_%_TRNOP_AB.SKM copy %_iter_%_TRNOP_AB.SKM TRNOP_AB.SKM
if exist %_iter_%_TRNOP_MR.SKM copy %_iter_%_TRNOP_MR.SKM TRNOP_MR.SKM
if exist %_iter_%_TRNOP_BM.SKM copy %_iter_%_TRNOP_BM.SKM TRNOP_BM.SKM


if exist hbw_NL_MC.* del hbw_NL_MC.*
..\software\AEMS   ..\controls\HBW_NL_MC.ctl
if errorlevel 1 goto error

if exist hbs_NL_MC.* del hbs_NL_MC.*
..\software\AEMS   ..\controls\HBS_NL_MC.ctl
if errorlevel 1 goto error

if exist hbo_NL_MC.* del hbo_NL_MC.*
..\software\AEMS   ..\controls\hbo_NL_MC.ctl
if errorlevel 1 goto error

if exist nhw_NL_MC.* del nhw_NL_MC.*
..\software\AEMS   ..\controls\nhw_NL_MC.ctl
if errorlevel 1 goto error

if exist nho_NL_MC.* del nho_NL_MC.*
..\software\AEMS   ..\controls\nho_NL_MC.ctl
if errorlevel 1 goto error

::
::  COPY GENERIC MODE CHOICE OUTPUT FILES
::  TO INTERATION-SPECIFIC NAMES

if exist HBW_NL_MC.MTT copy  HBW_NL_MC.MTT  %_iter_%_HBW_NL_MC.MTT /y
if exist HBS_NL_MC.MTT copy  HBS_NL_MC.MTT  %_iter_%_HBS_NL_MC.MTT /y
if exist HBO_NL_MC.MTT copy  HBO_NL_MC.MTT  %_iter_%_HBO_NL_MC.MTT /y
if exist NHW_NL_MC.MTT copy  NHW_NL_MC.MTT  %_iter_%_NHw_NL_MC.MTT /y
if exist NHO_NL_MC.MTT copy  NHO_NL_MC.MTT  %_iter_%_NHO_NL_MC.MTT /y


if exist voya*.*  del voya*.*
if exist %_iter_%_MC_NL_SUMMARY.rpt del                 %_iter_%_MC_NL_SUMMARY.rpt
start /w Voyager.exe  ..\scripts\mc_NL_summary.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn copy voya*.prn      %_iter_%_mc_NL_summary.rpt
if exist voya*.prn copy voya*.prn      temp.rpt
..\software\extrtab temp.rpt
if exist extrtab.out copy extrtab.out    %_iter_%_mc_NL_summary.tab
if exist extrtab.out del  extrtab.out
if exist temp.rpt del  temp.rpt
if exist *.tb1 copy *.tb1         %_iter_%_mc_NL_summary.txt
if exist *.tb1 del  *.tb1

goto end
```

```
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.6 Auto_Driver.bat

```
CD %1

REM  Auto Driver Trips

if exist voya*.*  del voya*.*
if exist %_iter_%_mc_Auto_Drivers.rpt  del  %_iter_%_mc_Auto_Drivers.rpt
start /w Voyager.exe  ..\scripts\mc_Auto_Drivers.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_mc_Auto_Drivers.rpt
if exist %_iter_%_mc_Auto_Drivers.rpt  copy %_iter_%_mc_Auto_Drivers.rpt temp.dat
..\software\extrtab    temp.dat
if exist extrtab.out  copy extrtab.out       %_iter_%_mc_Auto_Drivers.tab
if exist extrtab.out  del  extrtab.out
if exist temp.out     del  temp.out

goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.7 Time-of-Day.bat

```
CD %1
REM --  Time of Day Process ---

REM ----------------------------------------
REM  Modeled Auto Driver Time-of-Day Trips
REM ----------------------------------------

if exist voya*.*  del voya*.*
if exist %_iter_%_Time-of-Day.rpt   del %_iter_%_Time-of-Day.rpt
start /w Voyager.exe  ..\scripts\Time-of-Day.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
copy voya*.prn          %_iter_%_Time-of-Day.rpt
        copy           %_iter_%_Time-of-Day.rpt temp.dat
        ..\software\extrtab     temp.dat
        copy    extrtab.out     %_iter_%_Time-of-Day.tab
        del     temp.dat



REM ----------------------------------------
REM  Truck and Exogenous Time-of-Day Trips
REM ----------------------------------------

if exist voya*.*  del voya*.*
if exist %_iter_%_Misc_Time-of-Day.rpt  del %_iter_%_%_iter_%_Misc_Time-of-Day.rpt
start /w Voyager.exe  ..\scripts\Misc_Time-of-Day.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
copy voya*.prn            %_iter_%_Misc_Time-of-Day.rpt
copy                      %_iter_%_Misc_Time-of-Day.rpt temp.dat
..\software\extrtab       temp.dat
copy extrtab.out          %_iter_%_Misc_Time-of-Day.tab
del  extrtab.out
del  temp.dat

REM ----------------------------------------
REM  Prepare trips for highway assignment
REM ----------------------------------------

if exist voya*.*  del voya*.*
if exist %_iter_%_Prepare_Trip_Tables_for_Assignment.rpt   del
%_iter_%_Prepare_Trip_Tables_for_Assignment.rpt
start /w Voyager.exe  ..\scripts\Prepare_Trip_Tables_for_Assignment.s /start -Pvoya
-S..\%1
if errorlevel 1 goto error
copy voya*.prn            %_iter_%_Prepare_Trip_Tables_for_Assignment.rpt
copy                      %_iter_%_Prepare_Trip_Tables_for_Assignment.rpt temp.dat
..\software\extrtab       temp.dat
copy extrtab.out          %_iter_%_Prepare_Trip_Tables_for_Assignment.tab
del  extrtab.out
del  temp.dat

goto end

:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.8 Highway_Assignment.bat

```
CD %1

REM  Highway Assignment

if exist voya*.*  del voya*.*
if exist %_iter_%_Highway_Assignment.rpt   del %_iter_%_Highway_Assignment.rpt
start /w Voyager.exe ..\scripts\Highway_Assignment.s  /start -Pvoya -S..\%1
if errorlevel 1 goto error

copy Voya*.prn       %_iter_%_Highway_Assignment.rpt

goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.9 Average_Link_Speeds.bat - Iterations (2- 4)

```
CD %1

REM  Average Link Speeds

:: Write loaded links file from assignment to new file
:: current iteration speeds will be removed and rewritten with averaged speeds below

if exist %_iter_%HWY.net   copy   %_iter_%HWY.net    Assign_Output_%_iter_%.net
if exist %_iter_%HWY.net   copy   %_iter_%HWY.net    %_iter_%HWY.tem1


if exist voya*.*  del voya*.*
if exist %_iter_%_Average_Link_Speeds.rpt  del  %_iter_%_Average_Link_Speeds.rpt
start /w Voyager.exe  ..\scripts\Average_Link_Speeds.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Average_Link_Speeds.rpt

:: Now copy over the original Loaded file with revised file containing new/avg
speeds
:: Note: the original file from assignment is maintained as Assigned_%_iter_%HWY.net

if exist  Averaged_%_iter_%HWY.net  copy Averaged_%_iter_%HWY.net %_iter_%HWY.net


goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.10 Highway_Skims.bat

```
CD %1

REM  Highway Skims

if exist voya*.*  del voya*.*
if exist %_iter_%_Highway_Skims.rpt  del %_iter_%_Highway_Skims.rpt
start /w Voyager.exe  ..\scripts\Highway_Skims.s /start -Pvoya -S..\%1
if errorlevel 2 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Highway_Skims.rpt



: Additional Steps per the Nested Logit
:: modnet.bat / Highway_Skims_Mod.bat / JoinSkims.bat ===

REM  Utility - Convert dummy centroid connectors

if exist voya*.*  del voya*.*
if exist %_iter_%ModNet.rpt  del %_iter_%ModNet.rpt
start /w Voyager.exe  ..\scripts\modnet.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%ModNet.rpt

if exist voya*.*  del voya*.*
if exist %_iter_%_Highway_Skims_mod.rpt  del %_iter_%_Highway_Skims_mod.rpt
start /w Voyager.exe  ..\scripts\Highway_Skims_mod.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_Highway_Skims_Mod.rpt


REM  Utility - Join Highway Skims

if exist voya*.*  del voya*.*
if exist %_iter_%_JoinSkims.rpt  del %_iter_%_JoinSkims.rpt
start /w Voyager.exe  ..\scripts\joinskims.s /start -Pvoya -S..\%1
if errorlevel 1 goto error
if exist voya*.prn  copy voya*.prn %_iter_%_JoinSkims.rpt


goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

Appendix C. Cube Voyager Scripts

1 AreaType_File.s

```
; AreaType_File.S
;
;=========================================================================
;  Accumulate zonal HHs and Jobs  around each TAZ based on 1.0 mile
;  straightline distances between centroids, and then develop area types
;  for each TAZ
;;========================================================================
;
;
;Define Inputs Files:
nodefile='inputs\node.dbf'
LUFile  ='inputs\zone.DBF'

;Output Files:
TAZxys  = 'TAZ_XYs.dbf'
FloatLU = 'Floating_LU.dbf'
ATFile  = 'AreaType_File.dbf'


RUN PGM=MATRIX

ZONES=1

FILEI DBI[1]  = "@nodefile@", sort = N
FILEO RECO[1] = "@TAZxys@", Fields = N(5),X(10),Y(10)

 LOOP L= 1,dbi.1.NUMRECORDS
        x=DBIReadRecord(1,L)
        if (DI.1.N <= 3722 )
           ro.N  = di.1.N         ; Node Number
           ro.X  = di.1.X         ; X-Coordinate (feet NAD/83)
           ro.Y  = di.1.Y         ; Y-Coordinate (feet NAD/83)
           WRITE RECO=1 ;
        endif
ENDLOOP
ENDRUN

;--------------------------------------------------------------------------------

 RUN PGM=MATRIX
 ZONES=1

 FILEO RECO[1]    = "@FloatLU@",
                    fields = TAZ(5),HH00(10),POP00(10),EMP00(10),AREA00(10.4),
                                    HH10(10),POP10(10),EMP10(10),AREA10(10.4)

 FileI LOOKUPI[1] = "@TAZxys@"
 LOOKUP LOOKUPI=1, NAME=tazxys,
        LOOKUP[1] = N, RESULT=x,   ;
a2
        LOOKUP[2] = N, RESULT=y,   ;
a2
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N

 FileI LOOKUPI[2] = "@LUFILE@"
 LOOKUP LOOKUPI=2, NAME=Landuse,
        LOOKUP[1] = taz, RESULT= HH,
        LOOKUP[2] = taz, RESULT= TOTPOP,
        LOOKUP[3] = taz, RESULT= TOTEMP,
        LOOKUP[4] = taz, RESULT= landarea,
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N

ARRAY HH00     =3722, HH10     =3722,
      POP00    =3722, POP10    =3722,
      EMP00    =3722, EMP10    =3722,
      AREA00   =3722, AREA10   =3722


 LOOP L = 1,3675  ;  Loop through each zone
   Xi      = tazxys(1,L)
   Yi      = tazxys(2,L)
   IF (Xi  = 0.00)  Continue


      LOOP M= 1,3675  ; Loop through all proximate zones
           Xj      = tazxys(1,M)
           Yj      = tazxys(2,M)
           IF (Xj  = 0.00)  Continue

           Xdiff   = abs(Xi-Xj)
           Ydiff   = abs(Yi-Yj)

           d_ft    = sqrt(xdiff*xdiff + Ydiff*Ydiff)
           d_mi    = d_ft/5280.0

           IF (d_mi >= 1.000)  Continue
           ;debug1
           If (l=1)
                print form=10  list = l,m,xi,yi,xj,yj,d_ft,d_mi(6.2),
file=debug1.txt
           endif
           ;debug1


           IF    (D_mi <  1.000)
                 HH10[L]      = HH10[L]         +  Landuse(1,m)
                 POP10[L]     = POP10[L]        +  Landuse(2,m)
                 EMP10[L]     = EMP10[L]        +  Landuse(3,m)
                 AREA10[L]    = AREA10[L]       +  Landuse(4,m)
           ENDIF

           IF    (D_mi =  0.000)
                 HH00[L]      = HH00[L]         +  Landuse(1,m)
                 POP00[L]     = POP00[L]        +  Landuse(2,m)
                 EMP00[L]     = EMP00[L]        +  Landuse(3,m)
                 AREA00[L]    = AREA00[L]       +  Landuse(4,m)
           ENDIF
           ;debug2
           If (L=1)
                     print form=8.2  list = l,m, d_mi(6.2),
                     HH00[L],POP00[L],EMP00[L],AREA00[L],
                     HH10[L],POP10[L],EMP10[L],AREA10[L],
                     file=debug2.txt
           endif
           ;debug2
       ENDLOOP

 ENDLOOP


LOOP M= 1, 3675
       ro.TAZ      = M

       ro.HH00     = HH00[M]
       ro.POP00    = POP00[M]
       ro.EMP00    = EMP00[M]
       ro.AREA00   = AREA00[M]

       ro.HH10     = HH10[M]
       ro.POP10    = POP10[M]
       ro.EMP10    = EMP10[M]
```

```
       ro.AREA10   = AREA10[M]

       WRITE RECO= 1

 ENDLOOP
 endrun

;;=======================================================================
;  Compute Area Type  based on updated 1-mile floating Pop/Emp density
;  doucumented by M. Martchouk on June 10, 2010
;;=======================================================================
;

 RUN PGM=MATRIX
 ZONES=1

 FILEO RECO[1]    = "@ATFile@",fields =
                    TAZ(5), POP_10(10.0), EMP_10(10.0), area_10(10.2),
                            POPden(10.2), Empden(10.2),
                            POPcode(5),   EMPcode(5),
                            Atype(5)


 FileI LOOKUPI[1] = "@FloatLU@"      ; One-mile floating land use
 LOOKUP LOOKUPI=1, NAME=PopEmpArea10,
        LOOKUP[1] = TAZ, RESULT=POP10,     ;
a2
        LOOKUP[2] = TAZ, RESULT=EMP10,     ;
a2
        LOOKUP[3] = TAZ, RESULT=Area10,    ;
a2
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N


ARRAY ATYPEMtx = 7,7  EmpClassDen=6     POPClassDen=6  , atcount= 7

;; Define Area type code matrix
   ATYPEMtx[1][1]=6  ATYPEMtx[1][2]=6 ATYPEMtx[1][3]=5 ATYPEMtx[1][4]=3
ATYPEMtx[1][5]=3 ATYPEMtx[1][6]=3  ATYPEMtx[1][7]=2
   ATYPEMtx[2][1]=6  ATYPEMtx[2][2]=5 ATYPEMtx[2][3]=5 ATYPEMtx[2][4]=3
ATYPEMtx[2][5]=3 ATYPEMtx[2][6]=3  ATYPEMtx[2][7]=2
   ATYPEMtx[3][1]=6  ATYPEMtx[3][2]=5 ATYPEMtx[3][3]=5 ATYPEMtx[3][4]=3
ATYPEMtx[3][5]=3 ATYPEMtx[3][6]=2  ATYPEMtx[3][7]=2
   ATYPEMtx[4][1]=6  ATYPEMtx[4][2]=4 ATYPEMtx[4][3]=4 ATYPEMtx[4][4]=3
ATYPEMtx[4][5]=2 ATYPEMtx[4][6]=2  ATYPEMtx[4][7]=1
   ATYPEMtx[5][1]=4  ATYPEMtx[5][2]=4 ATYPEMtx[5][3]=4 ATYPEMtx[5][4]=2
ATYPEMtx[5][5]=2 ATYPEMtx[5][6]=2  ATYPEMtx[5][7]=1
   ATYPEMtx[6][1]=4  ATYPEMtx[6][2]=4 ATYPEMtx[6][3]=4 ATYPEMtx[6][4]=2
ATYPEMtx[6][5]=2 ATYPEMtx[6][6]=2  ATYPEMtx[6][7]=1
   ATYPEMtx[7][1]=2  ATYPEMtx[7][2]=2 ATYPEMtx[7][3]=2 ATYPEMtx[7][4]=2
ATYPEMtx[7][5]=2 ATYPEMtx[7][6]=1  ATYPEMtx[7][7]=1

;; Define top end of pop, emp. density ranges for classes 1-6
   PopClassDen[1] =     750.0
   PopClassDen[2] =    1500.0
   PopClassDen[3] =    3500.0
   PopClassDen[4] =    6000.0
   PopClassDen[5] =   10000.0
   PopClassDen[6] =   15000.0


   EmpClassDen[1] =     100.0
   EmpClassDen[2] =     350.0
   EmpClassDen[3] =    1500.0
   EmpClassDen[4] =    3550.0
   EmpClassDen[5] =   13750.0
   EmpClassDen[6] =   15000.0
```

```
  LOOP L = 1,3675  ;  Loop through each zone, read one-mile floating land use, area

      _pop         = PopEmpArea10(1,L)
      _emp         = PopEmpArea10(2,L)
      _area        = PopEmpArea10(3,L)

      IF (_area > 0)  _popden    = Round(_pop/_area)    ; calc. densities
      IF (_area > 0)  _empden    = Round(_emp/_area)    ;


        popcode  = 1                                    ; initialize density classes
        empcode  = 1                                    ;

         LOOP M= 1,6   ; slot TAZ into the higher pop/emp density classes as
appropriate

              IF (_popden > PopClassDen[M]) Popcode = M + 1.0
              IF (_empden > EmpClassDen[M]) Empcode = M + 1.0

         ENDLOOP

         IF (popcode < 0 || popcode > 7) abort
         IF (empcode < 0 || empcode > 7) abort

         _Atype = AtypeMtx[PopCode][EmpCode]

         atcount[_Atype] = atcount[_Atype] + 1.0
         totcnt          = totcnt          + 1.0

         Ro.TAZ     = L
         Ro.POP_10  = _pop
         Ro.EMP_10  = _emp
         Ro.area_10 = _area
         Ro.POPden  = _popden
         Ro.Empden  = _empden
         Ro.POPcode = POPCode
         RO.EMPcode = EmpCode
         RO.Atype   = _Atype
         WRITE RECO=1


  ENDLOOP

  loop kk= 1,6
       print list= 'area type ', kk(5), ' TAZ Count is: ', atcount[KK](6.0), file =
AreaType_File.txt
  endloop
       print list= 'total     ','     ',' TAZ Count is: ', totcnt(6.0),     file =
AreaType_File.txt

 endrun
```

2 Assemble_Skims_AB.s

```
;-----------------------------------------------------------------------------
;-----------------------------------------------------------------------------
;Assemble_Skims_AB.s
;MWCOG Version 2.3  Model
;Assemble Transit Skims by Time Period
; Input Files:
```

```
;   iteration (%_iter_%) = 'i1',..,'i6'
;   period    (@period@) = 'am'/'op'
;
;  Transit Skim Files           = <iteration>_<period>_AB.skm
;  Transit Fare Files           = <iteration>_<period>_AB.FAR
; Output File:
;  Combined Transit Skims       = <iteration>TRN<Period>_AB.SKM, MO = 1-48,
;--------------------------------------------------------------------------

;--------------------------------------------------------------------------
;Loop through each period
;--------------------------------------------------------------------------

; Read Deflation Factor
READ FILE=TRN_Deflator.txt

LOOP PERIOD=1,2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
 ELSE
  TIME_PERIOD = 'OP'
 ENDIF

;--------------------------------------------------------------------------
;Assemble Skims & Fares into Files for Mode Choice
;--------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=%_iter_%_@TIME_PERIOD@_WK_AB.SKM
 MATI[2]=%_iter_%_@TIME_PERIOD@_WK_AB.FAR
 MATI[3]=%_iter_%_@TIME_PERIOD@_DR_AB.SKM
 MATI[4]=%_iter_%_@TIME_PERIOD@_DR_AB.FAR
 MATI[5]=%_iter_%_@TIME_PERIOD@_KR_AB.SKM
 MATI[6]=%_iter_%_@TIME_PERIOD@_KR_AB.FAR
 MATO[1]=%_iter_%_TRN@TIME_PERIOD@_AB.SKM, MO = 1-48,
  FORMAT = MINUTP,
  NAME = WWAET, WWLKT, WINIT, WXFRT, WIVTT, WIVCR, WIVXB, WIVMR, WIVN1,
  WIVN2, WIVLB, WNXFR, WFARE, WXPEN,
         DWAET, DWLKT, DINIT, DXFRT, DIVTT, DIVCR, DIVXB, DIVMR, DIVN1,
  DIVN2, DIVLB, DNXFR, DFARE, DXPEN, DACCT, DACCD, DPRKC, DPRKT,
         KWAET, KWLKT, KINIT, KXFRT, KIVTT, KIVCR, KIVXB, KIVMR, KIVN1,
  KIVN2, KIVLB, KNXFR, KFARE, KXPEN, KACCT, KACCD
MW[1] = MI.1.9    ;---- wlk walk acc time    (0.01 min)
MW[2] = MI.1.10   ;---- wlk other walk time  (0.01 min)
MW[3] = MI.1.7    ;---- wlk ini.wait time    (0.01 min)
MW[4] = MI.1.8    ;---- wlk xfr wait time    (0.01 min)
MW[5] = MI.1.3    ;---- wlk ivt-total        (0.01 min)
MW[6] = MI.1.4    ;---- wlk ivt-commuter rail(0.01 min)
MW[7] = MI.1.2    ;---- wlk ivt-exp bus      (0.01 min)
MW[8] = MI.1.3    ;---- wlk ivt-metrorail    (0.01 min)
MW[9] = MI.1.5    ;---- wlk ivt-new rail mode(0.01 min)
MW[10] = MI.1.6   ;---- wlk ivt-new bus mode (0.01 min)
MW[11] = MI.1.1   ;---- wlk ivt-local bus    (0.01 min)
MW[12] = MI.1.12  ;---- wlk transfers        (0+)
MW[13] = MI.2.1   ;---- wlk fare             (2007 cents)
MW[14] = MI.1.11  ;---- wlk added board time (0.01 min)
MW[15] = MI.3.9   ;---- drv walk acc time    (0.01 min)
MW[16] = MI.3.10  ;---- drv other walk time  (0.01 min)
MW[17] = MI.3.7   ;---- drv ini.wait time    (0.01 min)
MW[18] = MI.3.8   ;---- drv xfr wait time    (0.01 min)
MW[19] = MI.3.3   ;---- drv ivt-total        (0.01 min)
MW[20] = MI.3.4   ;---- drv ivt-commuter rail(0.01 min)
MW[21] = MI.3.2   ;---- drv ivt-exp bus      (0.01 min)
MW[22] = MI.3.3   ;---- drv ivt-metrorail    (0.01 min)
MW[23] = MI.3.5   ;---- drv ivt-new rail mode(0.01 min)
MW[24] = MI.3.6   ;---- drv ivt-new bus mode (0.01 min)
MW[25] = MI.3.1   ;---- drv ivt-local bus    (0.01 min)
MW[26] = MI.3.12  ;---- drv transfers        (0+)
MW[27] = MI.4.1   ;---- drv fare             (2007 cents)
MW[28] = MI.3.11  ;---- drv added board time (0.01 min)
MW[29] = MI.3.13  ;---- drv acc time         (0.01 min)
MW[30] = MI.3.14  ;---- drv acc distance     (0.01 mile)
MW[31] = MI.3.16  ;---- drv park cost        (2007 cents)
MW[32] = MI.3.15  ;---- drv park time        (0.01 min)
MW[33] = MI.5.9   ;---- knr walk acc time    (0.01 min)
MW[34] = MI.5.10  ;---- knr other walk time  (0.01 min)
MW[35] = MI.5.7   ;---- knr ini.wait time    (0.01 min)
MW[36] = MI.5.8   ;---- knr xfr wait time    (0.01 min)
MW[37] = MI.5.3   ;---- knr ivt-total        (0.01 min)
MW[38] = MI.5.4   ;---- knr ivt-commuter rail(0.01 min)
MW[39] = MI.5.2   ;---- knr ivt-exp bus      (0.01 min)
MW[40] = MI.5.3   ;---- knr ivt-metrorail    (0.01 min)
MW[41] = MI.5.5   ;---- knr ivt-new rail mode(0.01 min)
MW[42] = MI.5.6   ;---- knr ivt-new bus mode (0.01 min)
MW[43] = MI.5.1   ;---- knr ivt-local bus    (0.01 min)
MW[44] = MI.5.12  ;---- knr transfers        (0+)
MW[45] = MI.6.1   ;---- knr fare             (2007 cents)
MW[46] = MI.5.11  ;---- knr added board time (0.01 min)
MW[47] = MI.5.13  ;---- knr acc time         (0.01 min)
MW[48] = MI.5.14  ;---- knr acc distance     (0.01 mile)

JLOOP
; assemble total IVTT

  MW[05] = MW[06]+MW[07]+MW[08]+MW[09]+MW[10]+MW[11]
  MW[19] = MW[20]+MW[21]+MW[22]+MW[23]+MW[24]+MW[25]
  MW[37] = MW[38]+MW[39]+MW[40]+MW[41]+MW[42]+MW[43]

; zero-out fares for IVTT=0

  IF (MW[05]=0 ) MW[13]=0
  IF (MW[19]=0 ) MW[27]=0
  IF (MW[37]=0 ) MW[45]=0

; deflate parking costs to 2007

  MW[31] = @DEFLATIONFTR@*MW[31]

ENDJLOOP

ENDRUN

ENDLOOP ;---- PERIOD ----
```

3 Assemble_Skims_BM.s

```
;--------------------------------------------------------------------------
;Assemble_Skims_BM.s
;MWCOG Version 2.3  Model
;Assemble Transit Skims by Time Period
; Input Files:
;   iteration (%_iter_%) = 'i1',..,'i6'
;   period    (@period@) = 'am'/'op'
;
;  Transit Skim Files           = <iteration>_<period>_BM.skm
;  Transit Fare Files           = <iteration>_<period>_BM.FAR
; Output File:
;  Combined Transit Skims       = <iteration>TRN<Period>_BM.SKM, MO = 1-48,
;--------------------------------------------------------------------------


;--------------------------------------------------------------------------
```

```
;Loop through each period
;---------------------------------------------------------------------------
; Read Deflation Factor
READ FILE=TRN_Deflator.txt

LOOP PERIOD=1,2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
 ELSE
  TIME_PERIOD = 'OP'
 ENDIF

;---------------------------------------------------------------------------
;Assemble Skims & Fares into Files for Mode Choice
;---------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=%_iter_%_@TIME_PERIOD@_WK_BM.SKM
 MATI[2]=%_iter_%_@TIME_PERIOD@_WK_BM.FAR
 MATI[3]=%_iter_%_@TIME_PERIOD@_DR_BM.SKM
 MATI[4]=%_iter_%_@TIME_PERIOD@_DR_BM.FAR
 MATI[5]=%_iter_%_@TIME_PERIOD@_KR_BM.SKM
 MATI[6]=%_iter_%_@TIME_PERIOD@_KR_BM.FAR
 MATO[1]=%_iter_%_TRN@TIME_PERIOD@_BM.SKM, MO = 1-48,
  FORMAT = MINUTP,
  NAME = WWAET, WWLKT, WINIT, WXFRT, WIVTT, WIVCR, WIVXB, WIVMR, WIVN1,
  WIVN2, WIVLB, WNXFR, WFARE, WXPEN,
         DWAET, DWLKT, DINIT, DXFRT, DIVTT, DIVCR, DIVXB, DIVMR, DIVN1,
  DIVN2, DIVLB, DNXFR, DFARE, DXPEN, DACCT, DACCD, DPRKC, DPRKT,
         KWAET, KWLKT, KINIT, KXFRT, KIVTT, KIVCR, KIVXB, KIVMR, KIVN1,
  KIVN2, KIVLB, KNXFR, KFARE, KXPEN, KACCT, KACCD
MW[1] = MI.1.9    ;---- wlk walk acc time    (0.01 min)
MW[2] = MI.1.10   ;---- wlk other walk time  (0.01 min)
MW[3] = MI.1.7    ;---- wlk ini.wait time    (0.01 min)
MW[4] = MI.1.8    ;---- wlk xfr wait time    (0.01 min)
MW[5] = MI.1.3    ;---- wlk ivt-total        (0.01 min)
MW[6] = MI.1.4    ;---- wlk ivt-commuter rail(0.01 min)
MW[7] = MI.1.2    ;---- wlk ivt-exp bus      (0.01 min)
MW[8] = MI.1.3    ;---- wlk ivt-metrorail    (0.01 min)
MW[9] = MI.1.5    ;---- wlk ivt-new rail mode(0.01 min)
MW[10] = MI.1.6   ;---- wlk ivt-new bus mode (0.01 min)
MW[11] = MI.1.1   ;---- wlk ivt-local bus    (0.01 min)
MW[12] = MI.1.12  ;---- wlk transfers        (0+)
MW[13] = MI.2.1   ;---- wlk fare             (2007 cents)
MW[14] = MI.1.11  ;---- wlk added board time (0.01 min)
MW[15] = MI.3.9   ;---- drv walk acc time    (0.01 min)
MW[16] = MI.3.10  ;---- drv other walk time  (0.01 min)
MW[17] = MI.3.7   ;---- drv ini.wait time    (0.01 min)
MW[18] = MI.3.8   ;---- drv xfr wait time    (0.01 min)
MW[19] = MI.3.3   ;---- drv ivt-total        (0.01 min)
MW[20] = MI.3.4   ;---- drv ivt-commuter rail(0.01 min)
MW[21] = MI.3.2   ;---- drv ivt-exp bus      (0.01 min)
MW[22] = MI.3.3   ;---- drv ivt-metrorail    (0.01 min)
MW[23] = MI.3.5   ;---- drv ivt-new rail mode(0.01 min)
MW[24] = MI.3.6   ;---- drv ivt-new bus mode (0.01 min)
MW[25] = MI.3.1   ;---- drv ivt-local bus    (0.01 min)
MW[26] = MI.3.12  ;---- drv transfers        (0+)
MW[27] = MI.4.1   ;---- drv fare             (2007 cents)
MW[28] = MI.3.11  ;---- drv added board time (0.01 min)
MW[29] = MI.3.13  ;---- drv acc time         (0.01 min)
MW[30] = MI.3.14  ;---- drv acc distance     (0.01 mile)
MW[31] = MI.3.16  ;---- drv park cost        (2007 cents)
MW[32] = MI.3.15  ;---- drv park time        (0.01 min)
MW[33] = MI.5.9   ;---- knr walk acc time    (0.01 min)
MW[34] = MI.5.10  ;---- knr other walk time  (0.01 min)
MW[35] = MI.5.7   ;---- knr ini.wait time    (0.01 min)
MW[36] = MI.5.8   ;---- knr xfr wait time    (0.01 min)
MW[37] = MI.5.3   ;---- knr ivt-total        (0.01 min)
MW[38] = MI.5.4   ;---- knr ivt-commuter rail(0.01 min)
MW[39] = MI.5.2   ;---- knr ivt-exp bus      (0.01 min)
MW[40] = MI.5.3   ;---- knr ivt-metrorail    (0.01 min)
MW[41] = MI.5.5   ;---- knr ivt-new rail mode(0.01 min)
MW[42] = MI.5.6   ;---- knr ivt-new bus mode (0.01 min)
MW[43] = MI.5.1   ;---- knr ivt-local bus    (0.01 min)
MW[44] = MI.5.12  ;---- knr transfers        (0+)
MW[45] = MI.6.1   ;---- knr fare             (2007 cents)
MW[46] = MI.5.11  ;---- knr added board time (0.01 min)
MW[47] = MI.5.13  ;---- knr acc time         (0.01 min)
MW[48] = MI.5.14  ;---- knr acc distance     (0.01 mile)

JLOOP

; assemble total IVTT

  MW[05] = MW[06]+MW[07]+MW[08]+MW[09]+MW[10]+MW[11]
  MW[19] = MW[20]+MW[21]+MW[22]+MW[23]+MW[24]+MW[25]
  MW[37] = MW[38]+MW[39]+MW[40]+MW[41]+MW[42]+MW[43]

; zero-out fares for IVTT=0

  IF (MW[05]=0 ) MW[13]=0
  IF (MW[19]=0 ) MW[27]=0
  IF (MW[37]=0 ) MW[45]=0

; deflate parking costs to 2007

  MW[31] = @DEFLATIONFTR@*MW[31]

ENDJLOOP

ENDRUN

ENDLOOP ;---- PERIOD ----
```

4 Assemble_Skims_CR.s

```
;---------------------------------------------------------------------------
;Assemble_Skims_CR.s
;MWCOG Version 2.3  Model
;Assemble Transit Skims by Time Period
; Input Files:
;   iteration (%_iter_%) = 'i1',..,'i6'
;   period    (@period@) = 'am'/'op'
;
;  Transit Skim Files           = <iteration>_<period>_CR.skm
;  Transit Fare Files           = <iteration>_<period>_CR.FAR
; Output File:
;  Combined Transit Skims       = <iteration>TRN<Period>_CR.SKM, MO = 1-32,
;---------------------------------------------------------------------------

;---------------------------------------------------------------------------
;Loop through each period
;---------------------------------------------------------------------------
; Read Deflation Factor
READ FILE=TRN_Deflator.txt

LOOP PERIOD=1,2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
 ELSE
  TIME_PERIOD = 'OP'
 ENDIF
```

```
;---------------------------------------------------------------------------
;Assemble Skims & Fares into Files for Mode Choice
;---------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=%_iter_%_@TIME_PERIOD@_WK_CR.SKM
 MATI[2]=%_iter_%_@TIME_PERIOD@_WK_CR.FAR
 MATI[3]=%_iter_%_@TIME_PERIOD@_DR_CR.SKM
 MATI[4]=%_iter_%_@TIME_PERIOD@_DR_CR.FAR
 MATO[1]=%_iter_%_TRN@TIME_PERIOD@_CR.SKM, MO = 1-32,
  FORMAT = MINUTP,
  NAME = WWAET, WWLKT, WINIT, WXFRT, WIVTT, WIVCR, WIVXB, WIVMR, WIVN1,
  WIVN2, WIVLB, WNXFR, WFARE, WXPEN,
         DWAET, DWLKT, DINIT, DXFRT, DIVTT, DIVCR, DIVXB, DIVMR, DIVN1,
  DIVN2, DIVLB, DNXFR, DFARE, DXPEN, DACCT, DACCD, DPRKC, DPRKT

MW[1] = MI.1.9    ;---- wlk walk acc time    (0.01 min)
MW[2] = MI.1.10   ;---- wlk other walk time  (0.01 min)
MW[3] = MI.1.7    ;---- wlk ini.wait time    (0.01 min)
MW[4] = MI.1.8    ;---- wlk xfr wait time    (0.01 min)
MW[5] = MI.1.3    ;---- wlk ivt-total        (0.01 min)
MW[6] = MI.1.4    ;---- wlk ivt-commuter rail(0.01 min)
MW[7] = MI.1.2    ;---- wlk ivt-exp bus      (0.01 min)
MW[8] = MI.1.3    ;---- wlk ivt-metrorail    (0.01 min)
MW[9] = MI.1.5    ;---- wlk ivt-new rail mode(0.01 min)
MW[10] = MI.1.6   ;---- wlk ivt-new bus mode (0.01 min)
MW[11] = MI.1.1   ;---- wlk ivt-local bus    (0.01 min)
MW[12] = MI.1.12  ;---- wlk transfers        (0+)
MW[13] = MI.2.1   ;---- wlk fare             (2007 cents)
MW[14] = MI.1.11  ;---- wlk added board time (0.01 min)
MW[15] = MI.3.9   ;---- drv walk acc time    (0.01 min)
MW[16] = MI.3.10  ;---- drv other walk time  (0.01 min)
MW[17] = MI.3.7   ;---- drv ini.wait time    (0.01 min)
MW[18] = MI.3.8   ;---- drv xfr wait time    (0.01 min)
MW[19] = MI.3.3   ;---- drv ivt-total        (0.01 min)
MW[20] = MI.3.4   ;---- drv ivt-commuter rail(0.01 min)
MW[21] = MI.3.2   ;---- drv ivt-exp bus      (0.01 min)
MW[22] = MI.3.3   ;---- drv ivt-metrorail    (0.01 min)
MW[23] = MI.3.5   ;---- drv ivt-new rail mode(0.01 min)
MW[24] = MI.3.6   ;---- drv ivt-new bus mode (0.01 min)
MW[25] = MI.3.1   ;---- drv ivt-local bus    (0.01 min)
MW[26] = MI.3.12  ;---- drv transfers        (0+)
MW[27] = MI.4.1   ;---- drv fare             (2007 cents)
MW[28] = MI.3.11  ;---- drv added board time (0.01 min)
MW[29] = MI.3.13  ;---- drv acc time         (0.01 min)
MW[30] = MI.3.14  ;---- drv acc distance     (0.01 mile)
MW[31] = MI.3.16  ;---- drv park cost        (1980 cents)
MW[32] = MI.3.15  ;---- drv park time        (0.01 min)
JLOOP

; assemble total IVTT

  MW[05] = MW[06]+MW[07]+MW[08]+MW[09]+MW[10]+MW[11]
  MW[19] = MW[20]+MW[21]+MW[22]+MW[23]+MW[24]+MW[25]

; zero-out fares for IVTT=0

  IF (MW[05]=0 ) MW[13]=0
  IF (MW[19]=0 ) MW[27]=0

; deflate parking costs to 2007

  MW[31] = @DEFLATIONFTR@*MW[31]

ENDJLOOP

ENDRUN

ENDLOOP ;---- PERIOD ----
```

5 Assemble_Skims_MR.s

```
;---------------------------------------------------------------------------
;Assemble;---------------------------------------------------------------------------
-
;Assemble_Skims_MR.s
;MWCOG Version 2.3  Model
;Assemble Transit Skims by Time Period
; Input Files:
;   iteration (%_iter_%) = 'i1',..,'i6'
;   period    (@period@) = 'am'/'op'
;
;  Transit Skim Files           = <iteration>_<period>_MR.skm
;  Transit Fare Files           = <iteration>_<period>_MR.FAR
; Output File:
;  Combined Transit Skims       = <iteration>TRN<Period>_MR.SKM, MO = 1-48,
;---------------------------------------------------------------------------

;---------------------------------------------------------------------------
;Loop through each period
;---------------------------------------------------------------------------
; Read Deflation Factor
READ FILE=TRN_Deflator.txt

LOOP PERIOD=1,2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
 ELSE
  TIME_PERIOD = 'OP'
 ENDIF

;---------------------------------------------------------------------------
;Assemble Skims & Fares into Files for Mode Choice
;---------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=%_iter_%_@TIME_PERIOD@_WK_MR.SKM
 MATI[2]=%_iter_%_@TIME_PERIOD@_WK_MR.FAR
 MATI[3]=%_iter_%_@TIME_PERIOD@_DR_MR.SKM
 MATI[4]=%_iter_%_@TIME_PERIOD@_DR_MR.FAR
 MATI[5]=%_iter_%_@TIME_PERIOD@_KR_MR.SKM
 MATI[6]=%_iter_%_@TIME_PERIOD@_KR_MR.FAR
 MATO[1]=%_iter_%_TRN@TIME_PERIOD@_MR.SKM, MO = 1-48,
  FORMAT = MINUTP,
  NAME = WWAET, WWLKT, WINIT, WXFRT, WIVTT, WIVCR, WIVXB, WIVMR, WIVN1,
  WIVN2, WIVLB, WNXFR, WFARE, WXPEN,
         DWAET, DWLKT, DINIT, DXFRT, DIVTT, DIVCR, DIVXB, DIVMR, DIVN1,
  DIVN2, DIVLB, DNXFR, DFARE, DXPEN, DACCT, DACCD, DPRKC, DPRKT,
         KWAET, KWLKT, KINIT, KXFRT, KIVTT, KIVCR, KIVXB, KIVMR, KIVN1,
  KIVN2, KIVLB, KNXFR, KFARE, KXPEN, KACCT, KACCD
MW[1] = MI.1.9    ;---- wlk walk acc time    (0.01 min)
MW[2] = MI.1.10   ;---- wlk other walk time  (0.01 min)
MW[3] = MI.1.7    ;---- wlk ini.wait time    (0.01 min)
MW[4] = MI.1.8    ;---- wlk xfr wait time    (0.01 min)
MW[5] = MI.1.3    ;---- wlk ivt-total        (0.01 min)
MW[6] = MI.1.4    ;---- wlk ivt-commuter rail(0.01 min)
MW[7] = MI.1.2    ;---- wlk ivt-exp bus      (0.01 min)
MW[8] = MI.1.3    ;---- wlk ivt-metrorail    (0.01 min)
MW[9] = MI.1.5    ;---- wlk ivt-new rail mode(0.01 min)
MW[10] = MI.1.6   ;---- wlk ivt-new bus mode (0.01 min)
MW[11] = MI.1.1   ;---- wlk ivt-local bus    (0.01 min)
MW[12] = MI.1.12  ;---- wlk transfers        (0+)
MW[13] = MI.2.1   ;---- wlk fare             (2007 cents)
MW[14] = MI.1.11  ;---- wlk added board time (0.01 min)
MW[15] = MI.3.9   ;---- drv walk acc time    (0.01 min)
MW[16] = MI.3.10  ;---- drv other walk time  (0.01 min)
```

```
MW[17] = MI.3.7   ;---- drv ini.wait time    (0.01 min)
MW[18] = MI.3.8   ;---- drv xfr wait time    (0.01 min)
MW[19] = MI.3.3   ;---- drv ivt-total        (0.01 min)
MW[20] = MI.3.4   ;---- drv ivt-commuter rail(0.01 min)
MW[21] = MI.3.2   ;---- drv ivt-exp bus      (0.01 min)
MW[22] = MI.3.3   ;---- drv ivt-metrorail    (0.01 min)
MW[23] = MI.3.5   ;---- drv ivt-new rail mode(0.01 min)
MW[24] = MI.3.6   ;---- drv ivt-new bus mode (0.01 min)
MW[25] = MI.3.1   ;---- drv ivt-local bus    (0.01 min)
MW[26] = MI.3.12  ;---- drv transfers        (0+)
MW[27] = MI.4.1   ;---- drv fare             (2007 cents)
MW[28] = MI.3.11  ;---- drv added board time (0.01 min)
MW[29] = MI.3.13  ;---- drv acc time         (0.01 min)
MW[30] = MI.3.14  ;---- drv acc distance     (0.01 mile)
MW[31] = MI.3.16  ;---- drv park cost        (2007 cents)
MW[32] = MI.3.15  ;---- drv park time        (0.01 min)
MW[33] = MI.5.9   ;---- knr walk acc time    (0.01 min)
MW[34] = MI.5.10  ;---- knr other walk time  (0.01 min)
MW[35] = MI.5.7   ;---- knr ini.wait time    (0.01 min)
MW[36] = MI.5.8   ;---- knr xfr wait time    (0.01 min)
MW[37] = MI.5.3   ;---- knr ivt-total        (0.01 min)
MW[38] = MI.5.4   ;---- knr ivt-commuter rail(0.01 min)
MW[39] = MI.5.2   ;---- knr ivt-exp bus      (0.01 min)
MW[40] = MI.5.3   ;---- knr ivt-metrorail    (0.01 min)
MW[41] = MI.5.5   ;---- knr ivt-new rail mode(0.01 min)
MW[42] = MI.5.6   ;---- knr ivt-new bus mode (0.01 min)
MW[43] = MI.5.1   ;---- knr ivt-local bus    (0.01 min)
MW[44] = MI.5.12  ;---- knr transfers        (0+)
MW[45] = MI.6.1   ;---- knr fare             (2007 cents)
MW[46] = MI.5.11  ;---- knr added board time (0.01 min)
MW[47] = MI.5.13  ;---- knr acc time         (0.01 min)
MW[48] = MI.5.14  ;---- knr acc distance     (0.01 mile)

JLOOP

; assemble total IVTT

  MW[05] = MW[06]+MW[07]+MW[08]+MW[09]+MW[10]+MW[11]
  MW[19] = MW[20]+MW[21]+MW[22]+MW[23]+MW[24]+MW[25]
  MW[37] = MW[38]+MW[39]+MW[40]+MW[41]+MW[42]+MW[43]

; zero-out fares for IVTT=0

  IF (MW[05]=0 ) MW[13]=0
  IF (MW[19]=0 ) MW[27]=0
  IF (MW[37]=0 ) MW[45]=0

; deflate parking costs to 2007

  MW[31] = @DEFLATIONFTR@*MW[31]


ENDJLOOP

ENDRUN

ENDLOOP ;---- PERIOD ----
```

6 Auto_Access.s

```
*del voya*.prn
; AutoAcc4.s - auto access link development - based on AutoAcc4.for from AECOM
; 2010-10-22  Previously, only bus PNR links were built to bus PNR & bus KNR paths.
;             Now, we have created bus KNR access links from TAZ to bus stop node,
;             instead of TAZ to PNR node (rjm/msm)


; Dimensions:
;
TAZSTASize  = 7000
IZsize      = 3675
FrstStaCen  = 5001
Stasize     = 1000


;;Input Files:
  AMSkimFile  =  'sovmam.skm'
  OPSkimFile  =  'sovmmd.skm'
;
  Sta_File    =  'inputs\Station.dbf'  ; Std. Station file
  StaAccFile  =  'inputs\StaAcc.dbf'   ; Station mode-station type-max access dist.
lookup
  JurisFile   =  'inputs\Jur.dbf'      ; juris code- juris group lookup
  PentFile    =  'inputs\Pen.dbf'      ; TAZ in Pentagon's 'slug' shed
  TNodeFile   =  'TAZ_xys.dbf'         ; TAZ XY Crd. file
  Zonefile    =  'inputs\ZONE.dbf'     ; zonal land use file w/ jur code
;
; Output Files:
  M_Pnr_AM    =  'mrpram.asc  ' ;unit 21
  M_Knr_AM    =  'mrkram.asc  ' ;     22
  C_Pnr_AM    =  'cram.asc    ' ;     23
  B_Pnr_AM    =  'buspram.asc ' ;     24 renamed file
  B_Knr_AM    =  'buskram.asc ' ;     new file
  L_Pnr_AM    =  'lrtam.asc   ' ;     25
  N_Pnr_AM    =  'newam.asc   ' ;     26
  L_Knr_AM    =  'lrtkram.asc ' ;     43
  N_Knr_AM    =  'newkram.asc ' ;     44

  M_Pnr_OP    =  'mrprop.asc  ' ;     31
  M_Knr_OP    =  'mrkrop.asc  ' ;     32
  C_Pnr_OP    =  'crop.asc    ' ;     33
  B_Pnr_OP    =  'busprop.asc ' ;     34 renamed file
  B_Knr_OP    =  'buskrop.asc ' ;     new file
  L_Pnr_OP    =  'lrtop.asc   ' ;     35
  N_Pnr_OP    =  'newop.asc   ' ;     36
  L_Knr_OP    =  'lrtkrop.asc ' ;     47
  N_Knr_OP    =  'newkrop.asc ' ;     48
;
  AutoAll     =  'autoall.asc' ;      40
;
; Params:
  BackD   = 1000.00
  BackPC  =    0.30
  Divpc   =    1.30
  NCBD    =   35.00       ; Representative TAZ of the region's CBD

RUN PGM=MATRIX

ZONES=@TAZStaSize@
FILEI DBI[1]     ="@Sta_File@"
FILEI DBI[2]     ="@ZoneFile@"
FILEI DBI[3]     ="@TNODEFILE@"
FILEI DBI[4]     ="@StaAccFile@"
```

```
FileI LOOKUPI[1] = "@PentFile@"
FileI LOOKUPI[2] = "@JurisFile@"

FILEI MATI[1]    =  @AMSKIMFile@
FILEI MATI[2]    =  @OPSKIMFile@

MW[101]  = mi.1.1  mw[102] = mi.1.2    ; am time, dist
MW[201]  = mi.2.1  mw[202] = mi.2.2    ; op time, dist


FILEO PRINTO[1] = @AutoAll@

FILEO PRINTO[2]  =@M_Knr_AM@
FILEO PRINTO[3]  =@M_Knr_OP@

FILEO PRINTO[4]  =@M_Pnr_AM@
FILEO PRINTO[5]  =@M_Pnr_OP@

FILEO PRINTO[6]  =@C_Pnr_AM@
FILEO PRINTO[7]  =@C_Pnr_OP@

FILEO PRINTO[8]  =@B_Pnr_AM@
FILEO PRINTO[9]  =@B_Pnr_OP@

FILEO PRINTO[10] =@L_Pnr_AM@
FILEO PRINTO[11] =@L_Pnr_OP@
FILEO PRINTO[12] =@L_Knr_AM@
FILEO PRINTO[13] =@L_Knr_OP@

FILEO PRINTO[14] =@N_Pnr_AM@
FILEO PRINTO[15] =@N_Pnr_OP@
FILEO PRINTO[16] =@N_Knr_AM@
FILEO PRINTO[17] =@N_Knr_OP@

FILEO PRINTO[18]  =@B_Knr_AM@
FILEO PRINTO[19]  =@B_Knr_OP@

ARRAY  Type=c1  MM          = @STASize@,
                STAPARK     = @STASize@,
                STAUSE      = @STASize@,
                MODE        = 14

ARRAY  NCT         = @STASize@,
       STAT        = @STASize@,
       STAP        = @STASize@,
       STAN1       = @STASize@,
       STAC        = @STASize@,
       STAZ        = @STASize@,
       STAX        = @STASize@,
       STAY        = @STASize@,
       STAD        = @STASize@,
       ST_J        = @STASize@

      ;SNAME       = @STASize@,   ;c27
      ;STAN2       = @STASize@,
      ;STAN3       = @STASize@,
      ;STAN4       = @STASize@,
      ;STAPCAP     = @STASize@,
      ;STAC        = @STASize@,
      ;STAZ        = @STASize@,
      ;STAPKCost   = @STASize@,
      ;STAOPCost   = @STASize@,
      ;STAPKShad   = @STASize@,
      ;STAOPShad   = @STASize@,
      ;FirstYr     = @STASize@

ARRAY  JurCode     = @IZSIZE@,
       JurGrp      = @IZSize@,
       JurAcc      = @IZSize@,
       PentTAZ     = @IZSize@,
       TazX        = @IZSize@,
       TazY        = @IZSize@,
       AccDIST     = 14,
       AccCode     = 14


;; Lookup list of origin TAZ's in the 'slug shed' of the Pentagon
   Lookup Lookupi=1, name = PentNodes,
          Lookup[1] = PentNode, result=Seqn, Interpolate=N, List=Y , fail=0,0,0


;; Lookup equivalence of Juris codes (0-23) and Access Groups
   Lookup Lookupi=2, name = JurAcceqv,
                    Lookup[1] = Jur_Code, result=AccGrp, Interpolate=N, List=Y,
fail=0,0,0

; Fill Access Code/distance 'lookup' Array
LOOP K = 1,dbi.4.NUMRECORDS
       x = DBIReadRecord(4,k)
          idx              = dbi.4.recno

          Mode[idx]        = di.4.Mode
          AccCode[idx]     = di.4.AccCode
          AccDist[idx]     = di.4.AccDist
ENDLOOP

; Fill in  Station Array
LOOP K = 1,dbi.1.NUMRECORDS
      x = DBIReadRecord(1,k)
          idx         = dbi.1.recno
          STACx       = di.1.STAC
          STAZx       = di.1.STAZ
          MMx         = di.1.MM


          IF (MMx = 'M' || MMx = 'C')
                  Ino  = STACx
           ELSE
                  Ino  = STAZx
          ENDIF

          MM[idx]     = di.1.MM
          NCT[idx]    = di.1.NCT
          STAPARK[idx]= di.1.STAPARK
          STAUSE[idx] = di.1.STAUSE
          STAT[idx]   = di.1.STAT
          STAZ[idx]   = di.1.STAZ
          STAC[idx]   = di.1.STAC
          STAN1[idx]  = di.1.STAN1
          STAP[idx]   = di.1.STAP
          STAX[idx]   = di.1.STAX
          STAY[idx]   = di.1.STAY
          ST_J[idx]   = Ino

          STACnt      =  dbi.1.NUMRECORDS
ENDLOOP

IF (I=1)    ;---;
Loop fdx = 1,STACnt
          ;; put in default driv

          ;; Add Acc. dist to Station Array with lookup array
          STAD[fdx] = 0
          Loop L = 1,dbi.4.NUMRECORDS ; 13
```

```
               IF (MM[fDX] = Mode[L] && NCT[fdx] = AccCode[L])  STAD[fdx] =
AccDist[L]

          ENDLOOP
               IF (STAPARK[fdx] != 'Y')                         STAD[fdx] = 300
               IF (STAUSE[fdx]  != 'Y')                         STAD[fdx] =   0

          IF (NCT[fdx] =  8)
                    Pentsta  = STAC[fdx]
                    Pentnode = STAT[fdx]

          ENDIF

          ;; write out transit XYs for used nodes

          IF (MM[fdx] = 'M' || MM[fdx] = 'C')
              IF (STAUSE[fdx] = 'Y')
                  print list = STAT[fDX](6), STAX[fDX](10), STAY[fDX](10),' ;  Final
index: ',fdx(5), File= extra1.XY
              ENDIF
              IF (STAPARK[fdx] = 'Y')
                  print list = STAP[fDX](6), STAX[fDX](10), STAY[fDX](10),' ;  Final
index: ',fdx(5), File= extra2.XY
              ENDIF
          ENDIF
          IF (MM[fdx] = 'B')
              IF (STAUSE[fdx] = 'Y')
                  print list = STAN1[fDX](6), STAX[fDX](10), STAY[fDX](10), ' ;
Final index: ',fdx(5),File= extra3.XY
              ENDIF
          ENDIF

        ;;debug1     - echo print out station data
          if (STAX[fdx] > 0)
          print form= 5.0 list =
                ' fdx: ', fdx(4),
                ' MM[fdx] ', MM[fdx],
                ' NCT[fdx] ', NCT[fdx],
                ' STAPARK[fdx] ', STAPARK[fdx],
                ' STAUSE[fdx]  ', STAUSE[fdx],
                ' STAT[fdx] ', STAT[fdx],
                ' STAZ[fdx] ', STAZ[fdx],
                ' STAC[fdx]  ', STAC[fdx],
                ' STAN1[fdx] ', STAN1[fdx],
                ' STAP[fdx]  ', STAP[fdx],
                ' STAX[fdx]  ', STAX[fdx](10),
                ' STAY[fdx]  ', STAY[fdx](10),
                ' ST_J[fdx]  ', ST_j[fdx],
                ' STAD[fdx]  ', STAD[fdx],file= debug1.asc
           endif
        ;; End debug1


 ENDLOOP

;
; Fill in  TAZ Array - jurCodes
 LOOP K = 1,dbi.2.NUMRECORDS
      x = DBIReadRecord(2,k)

          tdx           = di.2.TAZ
          IF (tdx <= @IZSize@)
            JurCode[tdx]  = di.2.JurCode               ; std juris code (0-23)
          ENDIF
 ENDLOOP

; Fill in  TAZ Array - X,Ys
 LOOP K = 1,dbi.3.NUMRECORDS
      x = DBIReadRecord(3,k)

          tdx           = di.3.N
          IF (tdx <= @IZSize@)
            TAZX[tdx]     = di.3.X
            TAZY[tdx]     = di.3.Y

            IF (tdx = @NCBD@)                         ;
                CBDX =  di.3.X                        ; X crd of CBD Taz
                CBDY =  di.3.Y                        ; Y crd of CBD TAZ
            ENDIF
            print list = tdx, tazx[tdx],tazy[tdx],pentnode, file= tazxys.dbg

          PentTAZ[tdx]= PentNodes(1,tdx)
          ENDIF
 ENDLOOP
          print list = 'CBD TAZ X,Y = ', @NCBD@,' ' cbdx,' ', cbdy ,' Pent Sta Node=
', pentsta,  file= cbd.dbg
ENDIF       ;---;

;;---------------------------------------------------------------------------
;; Now begin zonal I-Loop with binary matrices
;;---------------------------------------------------------------------------


IF  (I <= @IZSize@ )        ; if 'I's are internal TAZs'
IF  (TAZX[I] >  0)          ; if 'I's are 'Used'



LOOP STADX  =1,StaCnt     ; STADX LOOP

CurrJ=  ST_j[stadx]

IJur      = jurcode[I]
IJurAcc   = JurAcceqv(1,IJur)  ; Origin TAZ-  juris group code 1-4 (determines river
crossings)

JTAZ      = STAZ[stadx]
JJur      = Jurcode[JTAZ]
JStaAcc   = JurAcceqv(1,JJur)  ; Stat.TAZ- juris group code 1-4 (determines river
crossings)


;1 1 0 1 0 - original crossing array
;2 0 1 0 1
;3 1 0 1 0
;4 0 1 1 1
                                                                              ;
       IF ((IJurAcc = 1 && JStaAcc = 1) || (IJurAcc = 1 && JStaAcc = 3) ||    ;1 1 0
1 0
           (IJurAcc = 2 && JStaAcc = 2) || (IJurAcc = 2 && JStaAcc = 4) ||    ;2 0 1
0 1
           (IJurAcc = 3 && JStaAcc = 1) || (IJurAcc = 3 && JStaAcc = 3) ||    ;3 1 0
1 0
           (IJurAcc = 4 && JStaAcc = 2) || (IJurAcc = 4 && JStaAcc = 3) ||    ;4 0 1
1 1
           (IJurAcc = 4 && JStaAcc = 4) )  ; If station doesn't cross river   ;


 ;;  debug 4
      IF (I= 35  )
        print list = 'i: ', i,' St_j: ',ST_j[stadx],' Sta Cen: ',STAC[stadx],'
StaPark: ',STAP[stadx],' Ijuracc: ',Ijuracc ,' JSTAAcc: ',JStaAcc, file =debug4.asc
      ENDIF
 ;;  debug4
```

```
;; Clear all variables in the Jloop
amdist     = 0
amtime     = 0
amspd      = 0

opdist     = 0
optime     = 0
opspd      = 0


Xdiff      = 0
Ydiff      = 0
xback      = 0
xi         = 0
xj         = 0
dcbd       = 0
TAZCBDDist = 0
STACBDDist = 0
TSdist     = 0
TAZSTADist = 0
xdiv       = 0
xback      = 0

;;----------------------------------------------------------------------------
JLOOP ; process J stations for each I-TAZ
;;----------------------------------------------------------------------------


;; Skip all j's not equal to current station/taz
IF (j != CurrJ) CONTINUE

       amdist = max(10.0,(mw[102][j] * 10.00))
       amtime = mw[101][j]
       amspd  = 0.0
       IF (AMtime > 0) amspd =0.60 * amdist/AMtime
       IF (AMtime = 0)
                amspd  = 25
                amdist = 50
       endif

      opdist = max(10.0,(mw[202][j] * 10.00))
      optime = mw[201][j]
      opspd  = 0.0
      IF (optime > 0) opspd =0.60 * opdist/optime
      IF (optime = 0)
                opspd  = 25
                opdist = 50
      endif

;;----------------------------------------------------------------------------
;; Print out special AM/OP Pentagon KNR Access links --------------------------
;;----------------------------------------------------------------------------
     IF (PentTAZ[I] > 0 && j = pentsta)

         Print Printo=1 list = ' SUPPLINK N=',I(5),'-',Pentnode(5),'
DIST=',AMDIST(6),
                      ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

         Print Printo=2 list = ' SUPPORT N=',I(5),'-',Pentnode(5),'
DIST=',AMDIST(6),
                      ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)


         Print Printo=3 list = ' SUPPORT N=',I(5),'-',Pentnode(5),'
DIST=',OPDIST(6),
                      ' ONEWAY=Y MODE=11 SPEED=',OPSPD(4)
     ENDIF
;;  end  AM/OP Pentagon Links-------------------------------------------
```

```
;; ENDJLOOP
;;

;;----------------------------------------------------------------------------
;; Calculate  TAZ-CBD, Sta-CBD, TAZ-Sta  distances & diversion ratio
;;----------------------------------------------------------------------------


                       xback      = 0
                       xi         = abs(TAZx[I] - CBDX )
                       xj         = abs(TAZy[I] - CBDY )
                       dcbd       = sqrt(xi*xi+xj*xj)
                       TAZCBDDist =  dcbd/52.8

                       Xi         = abs(STAX[STADX] - CBDX)
                       xj         = abs(STAY[STADX] - CBDY)
                       dscbd      = sqrt(xi*xi+xj*xj)
                       STACBDDist = dscbd/52.8

                       xi         = abs(TAZx[I] - STAX[STADX])
                       xj         = abs(TAZY[I] - STAY[STADX])
                       dtsta      = sqrt(xi*xi+xj*xj)
                       TAZSTADist = round(dtsta/52.8)
                       xdiv       = 0.0
                       if(TAZCBDDIST > 0.0)   xdiv=  (STACBDDist +
TAZSTADist)/TAZCBDDIST
                       if(xdiv  > @divpc@) xback=1

           ;; debug 7
             if ((i=  241 && stap[stadx] =7310) || (i=  397 && stap[stadx] =7523) ||
                 (i=  483 && stap[stadx] =7302) || (i=  491 && stap[stadx] =7803) ||
                 (i=  499 && stap[stadx] =8004) || (i=  680 && stap[stadx] =8008) ||
                 (i=  746 && stap[stadx] =7543) || (i=  753 && stap[stadx] =7340) ||
                 (i=  878 && stap[stadx] =8007) || (i=  964 && stap[stadx] =8034) ||
                 (i= 1217 && stap[stadx] =7545) || (i= 1425 && stap[stadx] =7363) ||
                 (i= 1935 && stap[stadx] =8210))


                           print form = 8.2 list =  'ITAZ: ', i,' JTAZ: ',j,
                              ,' ',MM[stadx],' ',' STATION: ', stat[STADX], '
STAPARK: ',staP[STADX],
                             ' IJURACC ', IJURACC,' JSTAACC ', JSTAACC,' TAZCBDDist:
', tazcbddist,
                              '  ',' STACBDDist: ',STACBDDist, ' TAZSTADist:
',TAZSTADist,' Z-S dist.max: ', STAd[stadx], ' div.ratio:  ',xdiv(6.4), file
=debug7.asc
                          endif
           ;;  debug7

               IF (xback = 0 && TAZStaDist <= STAD[stadx])   ; If diversion factor
and TAZ-station distance is acceptable


;;----------------------------------------------------------------------------
;; Print out Standard Auto Access Links ----------------------------------
;;----------------------------------------------------------------------------


                         ;;-----------------------------------------------------
------------
                           IF (MM[STADX] = 'M' && STAPARK[STADX] = 'Y') ;;; print
am/op metro PNR links

                               Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                            ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)
```

```
                    Print PRINTO=4 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=5 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',opDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                 ENDIF                            ;;; end print am/op
metro PNR links

                ;;-------------------------------------------------------
------------

                ;;-------------------------------------------------------
------------

                 IF ((MM[STADX] = 'M' && STAPARK[STADX] !='Y'  &&
NCT[STADX] !=9 && TAZSTADist <= 300.0) ||
                    (MM[STADX] = 'M' && STAPARK[STADX] = 'Y'  &&
TAZSTADist <= 300.0))       ;;; print am/op metro KNR links

                    Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stat[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=2 list = ' SUPPORT N=',I(5),'-
',stat[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=3 list = ' SUPPORT N=',I(5),'-
',stat[STADX](5),' DIST=',opDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                 ENDIF                            ;;; end print am/op
metro KNR links

                ;;-------------------------------------------------------
------------
                ;;-------------------------------------------------------
------------
                 IF (MM[STADX] = 'C' && STAPARK[STADX] = 'Y') ;;; print
am/op Comm Rail PNR links

                    Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=6 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=7 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',opDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                 ENDIF                            ;;; end print am/op
comm Rail PNR links

                ;;-------------------------------------------------------
------------
                ;;-------------------------------------------------------
------------
                 IF (MM[STADX] = 'B' && STAPARK[STADX] = 'Y') ;;; print
am/op Bus PNR links

                    Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)
```

```
                    Print PRINTO= 8 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO= 9 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',opDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                 ENDIF                            ;;; end print am/op
BUS PNR links

                ;;-------------------------------------------------------
------------
                ;;-------------------------------------------------------
------------
                 IF (MM[STADX] = 'B' && STAPARK[STADX] = 'Y') ;;; print
am/op Bus KNR links

                    Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stan1[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO= 18 list = ' SUPPORT N=',I(5),'-
',stan1[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO= 19 list = ' SUPPORT N=',I(5),'-
',stan1[STADX](5),' DIST=',opDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                 ENDIF                            ;;; end print am/op
BUS KNR links


                ;;-------------------------------------------------------
------------
                ;;-------------------------------------------------------
------------
                 IF (MM[STADX] = 'L' && STAPARK[STADX] = 'Y') ;;; print
am/op Light Rail PNR links

                    Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=10 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=11 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',opDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                 ENDIF                            ;;; end print am/op
Light Rail PNR links

                ;;-------------------------------------------------------
------------
                ;;-------------------------------------------------------
------------
                 IF (MM[STADX] = 'L' && STAPARK[STADX] !='Y'  &&
NCT[STADX] !=9 && TAZSTADist < 300.0 ) ;;; print am/op Light Rail KNR links

                    Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stat[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                    Print PRINTO=12 list = ' SUPPORT N=',I(5),'-
',stat[STADX](5),' DIST=',AMDIST(6),
                                 ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)
```

```
                                Print PRINTO=13 list = ' SUPPORT N=',I(5),'-
',stat[STADX](5),' DIST=',opDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                           ENDIF                                ;;; end print am/op
Comm KNR links

                         ;;-------------------------------------------------------
------------

                         ;;-------------------------------------------------------
------------
                           IF (MM[STADX] = 'N' && STAPARK[STADX] = 'Y') ;;; print
am/op New PNR links

                               Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                               Print PRINTO=14 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',AMDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                               Print PRINTO=15 list = ' SUPPORT N=',I(5),'-
',stap[STADX](5),' DIST=',opDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                           ENDIF                                ;;; end print am/op
New PNR links

                         ;;-------------------------------------------------------
------------
                         ;;-------------------------------------------------------
------------
                           IF (MM[STADX] = 'N' && STAPARK[STADX] !='Y'  &&
NCT[STADX] !=9 && TAZSTADist < 300.0 ) ;;; print am/op New KNR links


                               Print Printo=1 list = ' SUPPLINK N=',I(5),'-
',stat[STADX](5),' DIST=',AMDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)

                               Print PRINTO=16 list = ' SUPPORT N=',I(5),'-
',stat[STADX](5),' DIST=',AMDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',AMSPD(4)


                               Print PRINTO=17 list = ' SUPPORT N=',I(5),'-
',stat[STADX](5),' DIST=',opDIST(6),
                                             ' ONEWAY=Y MODE=11 SPEED=',opSPD(4)
                           ENDIF                                ;;; end print am/op
New KNR links

                         ;;-------------------------------------------------------
------------

                ENDIF                        ;   endif diversion factor and TAZ-Sta
distance is acceptable

ENDJLOOP

ENDIF                            ; endif station doesn't cross river


ENDLOOP              ; STATION (STADX) Loop
ENDIF                ; endif 'I's are Used
ENDIF                ; endif 'I's are internal


ENDRUN
```

```
*copy voya*.prn AutoAcc4.rpt
*copy extra1.xy+extra2.XY+extra3.xy extra.xy
*del  extra1.xy
*del  extra2.xy
*del  extra3.xy
```

7 Average_Link_Speeds.s

```
;;  Average the restrained speeds on highway links using MSA
;;
VDF_File  ='..\support\hwy_assign_Conical_VDF.s'        ;;     Volume Delay
Functions file
Iter ='%_iter_%'
Prev ='%_prev_%'

AMPctadt = 41.7
PMPctadt = 29.4
MDPctadt = 17.7
NTPctadt = 35.0

IF (iter    ='pp') itrno = 0
IF (iter    ='i1') itrno = 1
IF (iter    ='i2') itrno = 2
IF (iter    ='i3') itrno = 3
IF (iter    ='i4') itrno = 4
IF (iter    ='i5') itrno = 5
IF (iter    ='i6') itrno = 6

;; Remove VOLUME,VMT,SPEED-relate variables from a copy of original loaded links
file
RUN PGM=NETWORK
 NETI[1] = @iter@HWY.tem1
 NETO    = @iter@HWY.tem2,
           exclude= @iter@AMVOL,    @iter@PMVOL,    @iter@MDVOL,
@iter@NTVOL,@iter@24Vol,
                     @iter@AMVMT,    @iter@PMVMT,    @iter@MDVMT,    @iter@NTVMT,
                     @iter@AMFFSPD,  @iter@PMFFSPD,  @iter@MDFFSPD,  @iter@NTFFSPD,

@iter@AMHRLKCAP,@iter@PMHRLKCAP,@iter@MDHRLKCAP,@iter@NTHRLKCAP,

@iter@AMHRLNCAP,@iter@PMHRLNCAP,@iter@MDHRLNCAP,@iter@NTHRLNCAP,
                     @iter@AMVC,     @iter@PMVC,     @iter@MDVC,     @iter@NTVC,
                     @iter@AMVDF,    @iter@PMVDF,    @iter@MDVDF,    @iter@NTVDF,
                     @iter@AMSPD,    @iter@PMSPD,    @iter@MDSPD,    @iter@NTSPD
ENDRUN


RUN PGM=NETWORK
      NETI[1] = @iter@HWY.tem2                        ;; original LL file with speeds
removed
      NETI[2] = @prev@HWY.net                         ;; previous iteration LL file w/
final speeds
      NETI[3] = Assign_Output_@iter@.net              ;; current  iteration LL file w/
traffic assigned speeds
NETO = Averaged_@iter@HWY.net

_@prev@AMVOL = LI.2.@prev@AMVOL
_@prev@MDVOL = LI.2.@prev@MDVOL
_@prev@PMVOL = LI.2.@prev@PMVOL
_@prev@NTVOL = LI.2.@prev@NTVOL

_@iter@AMVOL = LI.3.@iter@AMVOL
_@iter@MDVOL = LI.3.@iter@MDVOL
_@iter@PMVOL = LI.3.@iter@PMVOL
```

```
_@iter@NTVOL = LI.3.@iter@NTVOL


;; Define averaging proportions based on iteration no.

IF     (@itrno@ = 1)
   _@prev@_VOL_Shr =  0.000
   _@iter@_VOL_Shr =  1.000
ELSEIF (@itrno@ = 2)
   _@prev@_VOL_Shr =  0.500
   _@iter@_VOL_Shr =  0.500
ELSEIF (@itrno@ = 3)
   _@prev@_VOL_Shr =  0.666
   _@iter@_VOL_Shr =  0.334
ELSEIF (@itrno@ = 4)
   _@prev@_VOL_Shr =  0.750
   _@iter@_VOL_Shr =  0.250
ELSEIF (@itrno@ = 5)
   _@prev@_VOL_Shr =  0.800
   _@iter@_VOL_Shr =  0.200
ELSEIF (@itrno@ = 6)
   _@prev@_VOL_Shr =  0.833
   _@iter@_VOL_Shr =  0.167
ENDIF

;
;-----------------------------------------------------$
;    VDF (Volume Delay Function) establishment:       $
;-----------------------------------------------------$
; Note:  curves updated 2/16/06 rjm/msm
;
LOOKUP NAME=VCRV,
       lookup[1] = 1,result = 2,  ;Centroids   old VCRV1
       lookup[2] = 1,result = 3,  ;Fwys        old VCRV2
       lookup[3] = 1,result = 4,  ;MajArts     old VCRV3
       lookup[4] = 1,result = 5,  ;MinArts     old VCRV4
       lookup[5] = 1,result = 6,  ;Colls       old VCRV5
       lookup[6] = 1,result = 7,  ;Expways     old VCRV6
       lookup[7] = 1,result = 8,  ;Rmps
       FAIL=0.00,0.00,0.00, INTERPOLATE=T,file=@VDF_File@


  @iter@AMVOL = _@prev@AMVOL * _@prev@_VOL_Shr +  _@iter@AMVOL * _@iter@_VOL_Shr  ;
Final AM Link Volume
  @iter@PMVOL = _@prev@PMVOL * _@prev@_VOL_Shr +  _@iter@PMVOL * _@iter@_VOL_Shr  ;
Final PM Link Volume
  @iter@MDVOL = _@prev@MDVOL * _@prev@_VOL_Shr +  _@iter@MDVOL * _@iter@_VOL_Shr  ;
Final MD Link Volume
  @iter@NTVOL = _@prev@NTVOL * _@prev@_VOL_Shr +  _@iter@NTVOL * _@iter@_VOL_Shr  ;
Final NT Link Volume
  @iter@24VOL =  @iter@AMVOL + @iter@MDVOL +@iter@PMVOL +@iter@NTVOL              ;
Final 24hr Link Volume

     @iter@AMVMT = @iter@AMVOL * distance
;  Final AM link VMT
     @iter@PMVMT = @iter@PMVOL * distance
;  Final PM link VMT
     @iter@MDVMT = @iter@MDVOL * distance
;  Final MD link VMT
     @iter@NTVMT = @iter@NTVOL * distance
;  Final NT link VMT
     @iter@24VMT =(@iter@AMVol + @iter@MDVol + @iter@PMVol + @iter@NTVol)* distance
;  Final daily   VMT


  @iter@AMFFSPD  =SPEEDFOR(AMLANE,SPDCLASS)                                       ;
Freeflow AM speed
  @iter@PMFFSPD  =SPEEDFOR(PMLANE,SPDCLASS)                                       ;
Freeflow PM speed
  @iter@MDFFSPD  =SPEEDFOR(OPLANE,SPDCLASS)                                       ;
Freeflow MD speed
  @iter@NTFFSPD  =SPEEDFOR(OPLANE,SPDCLASS)                                       ;
Freeflow NT speed

  AMHRLKCAP=CAPACITYFOR(AMLANE,CAPCLASS)                                          ;
Hrly Link capacity
  PMHRLKCAP=CAPACITYFOR(PMLANE,CAPCLASS)                                          ;
Hrly Link capacity
  MDHRLKCAP=CAPACITYFOR(OPLANE,CAPCLASS)                                          ;
Hrly Link capacity
  NTHRLKCAP=CAPACITYFOR(OPLANE,CAPCLASS)                                          ;
Hrly Link capacity

  AMHRLNCAP=CAPACITYFOR(1,CAPCLASS)                                               ;
Hrly Lane capacity
  PMHRLNCAP=CAPACITYFOR(1,CAPCLASS)                                               ;
Hrly Lane capacity
  MDHRLNCAP=CAPACITYFOR(1,CAPCLASS)                                               ;
Hrly Lane capacity
  NTHRLNCAP=CAPACITYFOR(1,CAPCLASS)                                               ;
Hrly Lane capacity

  @iter@AMVC=(@iter@AMVOL*(@AMpctadt@/100.0)/AMHRLKCAP)                           ;
AM VC  ratio
  @iter@PMVC=(@iter@PMVOL*(@PMpctadt@/100.0)/PMHRLKCAP)                           ;
PM VC  ratio
  @iter@MDVC=(@iter@MDVOL*(@MDpctadt@/100.0)/MDHRLKCAP)                           ;
MD VC  ratio
  @iter@NTVC=(@iter@NTVOL*(@NTpctadt@/100.0)/NTHRLKCAP)                           ;
NT VC  ratio

  @iter@AMVDF = VCRV((Ftype + 1), @iter@AMVC)                                     ;
AM VDF
  @iter@PMVDF = VCRV((Ftype + 1), @iter@PMVC)                                     ;
PM VDF
  @iter@MDVDF = VCRV((Ftype + 1), @iter@MDVC)                                     ;
MD VDF
  @iter@NTVDF = VCRV((Ftype + 1), @iter@NTVC)                                     ;
NT VDF

  @iter@AMSPD = @iter@AMFFSPD                                                     ;
AM restrained speed
  @iter@PMSPD = @iter@PMFFSPD                                                     ;
PM restrained speed
  @iter@MDSPD = @iter@MDFFSPD                                                     ;
MD restrained speed
  @iter@NTSPD = @iter@NTFFSPD                                                     ;
NT restrained speed

  if (@iter@AMVDF > 0)  @iter@AMSPD = @iter@AMFFSPD / @iter@AMVDF                 ;
AM restrained speed
  if (@iter@PMVDF > 0)  @iter@PMSPD = @iter@PMFFSPD / @iter@PMVDF                 ;
PM restrained speed
  if (@iter@MDVDF > 0)  @iter@MDSPD = @iter@MDFFSPD / @iter@MDVDF                 ;
MD restrained speed
  if (@iter@NTVDF > 0)  @iter@NTSPD = @iter@NTFFSPD / @iter@NTVDF                 ;
NT restrained speed

  _ATYPE=SPDCLASS%10                                                              ;
Area Type
  _cnt = 1.0
  ;

  ;; debug section   - select some links to check with ;;
    IF (li.1.a =1-13,23000-23100,33000-33200)
```

```
     print form=5.2  list = a(6), b(6),
           ' AM_Prev_Vol >  ', _@prev@AMVol,
           ' AM_Prev_Shr >  ', _@prev@_VOL_Shr,
           ' AM_Curr_Vol >  ', _@iter@AMVol,
           ' AM_Curr_Shr >  ', _@iter@_VOL_shr,
           ' AMAvgVOL    >  ',  @iter@AMVOL,
           ' AMLnkCap    >  ',  AMHRLKCAP,
           ' AMVC        >  ',  @iter@AMVC,
           ' AMVDF       >  ',  @iter@AMVDF,
           ' AMSpd       >  ',  @iter@AMSPD,

           ' PM_Prev_Vol >  ', _@prev@PMVol,
           ' PM_Prev_Shr >  ', _@prev@_VOL_Shr,
           ' PM_Curr_Vol >  ', _@iter@PMVol,
           ' PM_Curr_Shr >  ', _@iter@_VOL_shr,
           ' PMAvgVOL    >  ',  @iter@PMVOL,
           ' PMLnkCap    >  ',  PMHRLKCAP,
           ' PMVC        >  ',  @iter@PMVC,
           ' PMVDF       >  ',  @iter@PMVDF,
           ' PMSpd       >  ',  @iter@PMSPD,

           ' MD_Prev_Vol >  ', _@prev@MDVol,
           ' MD_Prev_Shr >  ', _@prev@_VOL_Shr,
           ' MD_Curr_Vol >  ', _@iter@MDVol,
           ' MD_Curr_Shr >  ', _@iter@_VOL_shr,
           ' MDAvgVOL    >  ',  @iter@MDVOL,
           ' MDLnkCap    >  ',  MDHRLKCAP,
           ' MDVC        >  ',  @iter@MDVC,
           ' MDVDF       >  ',  @iter@MDVDF,
           ' MDSpd       >  ',  @iter@MDSPD,

           ' NT_Prev_Vol >  ', _@prev@NTVol,
           ' NT_Prev_Shr >  ', _@prev@_VOL_Shr,
           ' NT_Curr_Vol >  ', _@iter@NTVol,
           ' NT_Curr_Shr >  ', _@iter@_VOL_shr,
           ' NTAvgVOL    >  ',  @iter@NTVOL,
           ' NTLnkCap    >  ',  NTHRLKCAP,
           ' NTVC        >  ',  @iter@NTVC,
           ' NTVDF       >  ',  @iter@NTVDF,
           ' NTSpd       >  ',  @iter@NTSPD,

             file= Average_Link_Speeds_@iter@.txt

    ENDIF



;;compute WEIGHTED restrained and freeflow SPEEDS for Aggregate summaries

   _AMWRSPD =ROUND(@iter@AMVMT * @iter@AMSPD)
   _AMWFFSPD=ROUND(@iter@AMVMT * @iter@AMFFSPD)

   _PMWRSPD =ROUND(@iter@PMVMT * @iter@PMSPD)
   _PMWFFSPD=ROUND(@iter@PMVMT * @iter@PMFFSPD)

   _MDWRSPD =ROUND(@iter@MDVMT * @iter@MDSPD)
   _MDWFFSPD=ROUND(@iter@MDVMT * @iter@MDFFSPD)

   _NTWRSPD =ROUND(@iter@NTVMT * @iter@NTSPD)
   _NTWFFSPD=ROUND(@iter@NTVMT * @iter@NTFFSPD)

;;=================================================================================
;;  AM X-Tabs
;;=================================================================================
;;  Crosstab AM  VMT,Weighted Restrained Speed, Weighted FF Speed by JUR and FTYPE
    CROSSTAB VAR=@iter@AMVMT,_AMWRSPD,_AMWFFSPD, FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_AMWRSPD/@iter@AMVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_AMWFFSPD/@iter@AMVMT, FORM=12.2cs     ; AVG FINAL SPD

;;  Crosstab AM  VMT,Weighted Restrained Speed, Weighted FF Speed by ATYPE and FTYPE
     CROSSTAB VAR=@iter@AMVMT,_AMWRSPD,_AMWFFSPD, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_AMWRSPD/@iter@AMVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_AMWFFSPD/@iter@AMVMT, FORM=12.2cs     ; AVG FINAL SPD


;;  Crosstab AM  VMT,Weighted Restrained Speed, Weighted FF Speed by AM V/C and
FTYPE
     CROSSTAB VAR=@iter@AMVMT,_AMWRSPD,_AMWFFSPD, FORM=12cs,
     ROW=@iter@AMVC, RANGE=0-2-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_AMWRSPD/@iter@AMVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_AMWFFSPD/@iter@AMVMT, FORM=12.2cs     ; AVG FINAL SPD

;;
;;=================================================================================
;;  PM X-Tabs
;;=================================================================================
;;  Crosstab PM  VMT,Weighted Restrained Speed, Weighted FF Speed by JUR and FTYPE
    CROSSTAB VAR=@iter@PMVMT,_PMWRSPD,_PMWFFSPD, FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_PMWRSPD/@iter@PMVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_PMWFFSPD/@iter@PMVMT, FORM=12.2cs     ; AVG FINAL SPD

;;  Crosstab PM  VMT,Weighted Restrained Speed, Weighted FF Speed by ATYPE and FTYPE
     CROSSTAB VAR=@iter@PMVMT,_PMWRSPD,_PMWFFSPD, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_PMWRSPD/@iter@PMVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_PMWFFSPD/@iter@PMVMT, FORM=12.2cs     ; AVG FINAL SPD


;;  Crosstab PM  VMT,Weighted Restrained Speed, Weighted FF Speed by AM V/C and
FTYPE
     CROSSTAB VAR=@iter@PMVMT,_PMWRSPD,_PMWFFSPD, FORM=12cs,
     ROW=@iter@PMVC, RANGE=0-2-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_PMWRSPD/@iter@PMVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_PMWFFSPD/@iter@PMVMT, FORM=12.2cs     ; AVG FINAL SPD

;;
;;=================================================================================
;;  MD X-Tabs
;;=================================================================================
;;  Crosstab MD  VMT,Weighted Restrained Speed, Weighted FF Speed by JUR and FTYPE
    CROSSTAB VAR=@iter@MDVMT,_MDWRSPD,_MDWFFSPD, FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_MDWRSPD/@iter@MDVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_MDWFFSPD/@iter@MDVMT, FORM=12.2cs     ; AVG FINAL SPD

;;  Crosstab MD  VMT,Weighted Restrained Speed, Weighted FF Speed by ATYPE and FTYPE
     CROSSTAB VAR=@iter@MDVMT,_MDWRSPD,_MDWFFSPD, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_MDWRSPD/@iter@MDVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_MDWFFSPD/@iter@MDVMT, FORM=12.2cs     ; AVG FINAL SPD


;;  Crosstab MD  VMT,Weighted Restrained Speed, Weighted FF Speed by AM V/C and
FTYPE
     CROSSTAB VAR=@iter@MDVMT,_MDWRSPD,_MDWFFSPD, FORM=12cs,
```

```
     ROW=@iter@MDVC, RANGE=0-2-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_MDWRSPD/@iter@MDVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_MDWFFSPD/@iter@MDVMT, FORM=12.2cs     ; AVG FINAL SPD

;;
;;=================================================================================
;;  NT X-Tabs
;;=================================================================================
;;  Crosstab NT  VMT,Weighted Restrained Speed, Weighted FF Speed by JUR and FTYPE
    CROSSTAB VAR=@iter@NTVMT,_NTWRSPD,_NTWFFSPD, FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_NTWRSPD/@iter@NTVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_NTWFFSPD/@iter@NTVMT, FORM=12.2cs     ; AVG FINAL SPD

;;  Crosstab NT  VMT,Weighted Restrained Speed, Weighted FF Speed by ATYPE and FTYPE
     CROSSTAB VAR=@iter@NTVMT,_NTWRSPD,_NTWFFSPD, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_NTWRSPD/@iter@NTVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_NTWFFSPD/@iter@NTVMT, FORM=12.2cs     ; AVG FINAL SPD


;;  Crosstab NT  VMT,Weighted Restrained Speed, Weighted FF Speed by AM V/C and
FTYPE
     CROSSTAB VAR=@iter@NTVMT,_NTWRSPD,_NTWFFSPD, FORM=12cs,
     ROW=@iter@NTVC, RANGE=0-2-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=_NTWRSPD/@iter@NTVMT,  FORM=12.2cs,    ; AVG INITIAL SPD
     COMP=_NTWFFSPD/@iter@NTVMT, FORM=12.2cs     ; AVG FINAL SPD


;;
;;=================================================================================
;; DAILY X-Tabs
;;=================================================================================
;;  Crosstab DAILY  VMT by JUR and FTYPE
    CROSSTAB VAR=@iter@24VMT,  FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6

;;  Crosstab DAILY VMT by ATYPE and FTYPE
     CROSSTAB VAR=@iter@24VMT, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6


ENDRUN
```

8 Demo_Models.s

```
;=================================================================
;  Demo_Models.S
;
;   Version 2.3, 3722 TAZ System  - Demographic Model
;
;   The models have been updated using the 2007 ACS
;   Program to Allocation Total Zonal Households among 64 Classes:
;   4 HH Size groups by 4 Income Groups by 4 Veh. Avail. groups
;
;   Programmer: Milone
;   Date:      09/3/10
;
;   Test: BASE
;=================================================================
;
;


;
ZONESIZE    =  3722                  ;  No. of TAZs
LastIZn     =  3675                  ;  Last Internal TAZ no.

JrCl        =  24                    ;  No. of Juris. Classes (transformed JURIS.
Code 0-23 becomes 1-24)
ArCl        =   6                    ;  No. of Area Classe (ATypes)
SzCl        =   4                    ;  No. of HH Size   Classes
InCl        =   4                    ;  No. of Income    Classes
VaCl        =   4                    ;  No. of Veh Avail Classes

ZNFILE_IN1  = 'inputs\ZONE.dbf'   ;  Input  Zonal Land Use File

ZNFILE_IN2  = 'AreaType_File.dbf'    ;  Input  Zonal Area Type File from network
building

Rept        = 'Demo_Models_%_iter_%.txt'      ;  Summary Reports

ZNFILE_INa1  = '%_iter_%_AM_WK_MR_JOBACC.dbf'  ;  Input  Jobs accessible within 45
min. by AM WalkAcc  Metrorail Only Service
ZNFILE_INa2  = '%_iter_%_AM_DR_MR_JOBACC.dbf'  ;  Input  Jobs accessible within 45
min. by AM DriveAcc Metrorail Only Service
ZNFILE_INa3  = '%_iter_%_AM_WK_BM_JOBACC.dbf'  ;  Input  Jobs accessible within 45
min. by AM WalkAcc  Bus&Metrorail  Service
ZNFILE_INa4  = '%_iter_%_AM_DR_BM_JOBACC.dbf'  ;  Input  Jobs accessible within 45
min. by AM DriveAcc Bus&Metrorail  Service

ZNFILE_OU1  = 'HHI1_SV.txt'              ;  Output Zonal Income 1 HH by Size& VehAv
Classes: i1s1v1,i1s1v2,...,i1s4v4
ZNFILE_OU2  = 'HHI2_SV.txt'              ;  Output Zonal Income 2 HH by Size& VehAv
Classes: i2s1v1,i2s1v2,...,i2s4v4
ZNFILE_OU3  = 'HHI3_SV.txt'              ;  Output Zonal Income 3 HH by Size& VehAv
Classes: i3s1v1,i3s1v2,...,i3s4v4
ZNFILE_OU4  = 'HHI4_SV.txt'              ;  Output Zonal Income 4 HH by Size& VehAv
Classes: i4s1v1,i4s1v2,...,i4s4v4

ZonalCCHHs  = 'Demo_Models_HHbyISV_%_iter_%.dbf' ; output zonal HHs by 64 cross-
classes

Ofmt        = '(12.2)'               ;  Format of Output file data  Note:
Integer/real Spec. Here!


RUN PGM=MATRIX
ZONES=@ZONESIZE@

pageheight=32767  ; Preclude header breaks

; Set up zone arrays for accumulating I/O variables
;


ARRAY  ISZA       =@SzCl@,                  ;  Initial  Marginal HH Totals by size
levels
       IINA       =@InCl@,                  ;  Initial  Marginal HH Totals by income
levels
       AreaA      =@ArCl@,                  ;  Area Type class size
```

```
       CSZA       =@SzCl@,                  ;  Computed Marginal HH Totals by size
levels
       CINA       =@InCl@,                  ;  Computed Marginal HH Totals by income
levels
       CSZAdjA    =@SzCl@,                  ;  Marginal HH  adjustment ftr by Income
class
       CINAdjA    =@InCl@,                  ;  Marginal Inc adjustment ftr by HH
size class

       P_VA       =@VaCl@,                  ;  Veh Avail  probabilities
       CVAA       =@VaCl@,                  ;  Veh Avail  Totals
       JurA       =@JrCl@,                  ;  Juris. HH Totals  array
       RegSzA     =@SzCl@,                  ;  Regional HH by Size array
       RegInA     =@InCl@,                  ;  Regional HH by Inc  array
       RegVaA     =@VaCl@,                  ;  Regional HH by VeAv array
       HH_ArCoopT =@ArCl@

ARRAY  CSZINA     =@SzCL@,@InCl@            ;  HH Size by Income level Matrix,
11,12,13,...,44
ARRAY  JurSzA     =@JrCl@,@SzCl@            ;  Juris. HH by size array
ARRAY  JurInA     =@JrCl@,@InCl@            ;  Juris. HH by Inc  array
ARRAY  JurVaA     =@JrCl@,@VaCl@            ;  Juris. HH by VeAv array
ARRAY  RegSzInA   =@SzCL@,@InCl@            ;  Regional Size by Inc  array
ARRAY  RegVaSzA   =@VaCl@,@SzCl@            ;  Regional V    by Size  matrix
ARRAY  RegVaInA   =@VaCl@,@InCl@            ;  Regional V1   by Inc   matrix

ARRAY ArSzA       =@ArCl@,@SzCl@            ;  Area Type by size array
ARRAY ArInA       =@ArCl@,@InCl@            ;  Area Type by Inc  array
ARRAY ArVaA       =@ArCl@,@VaCl@            ;  Area Type by VeAv array

ARRAY CSZINVAA    =@SzCl@,@InCl@,@VaCl@     ;  Veh Avail by HH Size by Inc Matrix,
111,112,113,...,444
ARRAY RegSzInVaA  =@SzCl@,@InCl@,@VaCl@     ;  Regional Size by Inc  by vehav array

;=========================
; Define Loop-up Tables  =
;=========================
;
;==============================================================
; HH Size Distribution from 2000 CTPP                         =
;==============================================================
;
      LOOKUP Name=SZPCTA,
             LOOKUP[1]   = 1,Result = 2,
             LOOKUP[2]   = 1,Result = 3,
             LOOKUP[3]   = 1,Result = 4,
             LOOKUP[4]   = 1,Result = 5,
             Interpolate = N, FAIL=0,0,0,
 ;     Avg HHSize   PctHH1psn PctHH2psn PctHH3Psn PctHH4+Psn

   R="   1.0,          100.0,     0.0,     0.0,     0.0",
     "   1.1,           86.7,    10.5,     1.0,     1.8",
     "   1.2,           78.2,    15.8,     4.1,     1.9",
     "   1.3,           72.7,    20.4,     4.9,     2.0",
     "   1.4,           67.1,    24.7,     5.8,     2.4",
     "   1.5,           63.0,    27.1,     6.7,     3.2",
     "   1.6,           59.0,    28.9,     7.9,     4.2",
     "   1.7,           55.2,    30.2,     8.7,     5.9",
     "   1.8,           50.9,    31.1,    10.1,     7.9",
     "   1.9,           46.7,    31.7,    11.5,    10.1",
     "   2.0,           42.8,    32.1,    12.7,    12.4",
     "   2.1,           39.0,    32.3,    14.0,    14.7",
     "   2.2,           35.5,    32.4,    15.0,    17.1",
     "   2.3,           32.2,    32.4,    16.0,    19.4",
     "   2.4,           29.1,    32.3,    16.9,    21.7",
     "   2.5,           26.3,    32.1,    17.6,    24.0",
     "   2.6,           23.8,    31.9,    18.2,    26.1",
     "   2.7,           21.5,    31.5,    18.7,    28.3",
     "   2.8,           19.4,    31.1,    19.2,    30.3",
     "   2.9,           17.4,    30.5,    19.8,    32.3",
     "   3.0,           15.6,    29.8,    20.3,    34.3",
     "   3.1,           14.0,    28.9,    20.7,    36.4",
     "   3.2,           12.6,    27.9,    20.8,    38.7",
     "   3.3,           11.3,    26.6,    20.9,    41.2",
     "   3.4,           10.2,    25.0,    20.8,    44.0",
     "   3.5,           09.2,    23.2,    20.4,    47.2",
     "   3.6,           08.3,    21.2,    19.6,    50.9",
     "   3.7,           07.5,    18.9,    18.4,    55.2",
     "   3.8,           06.7,    15.6,    17.4,    60.3",
     "   3.9,           05.9,    11.2,    16.5,    66.4"


;==============================================================
;    income level distribution from 2000 CTPP                 =
;    adjusted by rjm 9/5/10 per 2007 ACS                      =
;==============================================================
;
      LOOKUP Name=INPCTA,
             LOOKUP[1]   = 1,Result = 2,
             LOOKUP[2]   = 1,Result = 3,
             LOOKUP[3]   = 1,Result = 4,                    ;
             LOOKUP[4]   = 1,Result = 5,                    ;  proportion of
             Interpolate = N, FAIL=0,0,0,                   ;  zonal median inc.
; inc level:   QRT1      QRT2     QRT3     QRT4             ; to regional median
income
 R= "   0,   100.00      0.00     0.00     0.00  ",     ;    0 inc ratio
    "   1,    88.83      8.19     2.34     0.64  ",     ;  0.1 inc ratio
    "   2,    80.54     14.73     3.13     1.60  ",     ;  0.2 inc ratio
    "   3,    73.42     20.29     4.23     2.05  ",     ;  0.3 inc ratio
    "   4,    65.32     25.44     6.44     2.80  ",     ;  0.4 inc ratio
    "   5,    56.93     29.97     9.32     3.78  ",     ;  0.5 inc ratio
    "   6,    48.78     33.41    12.51     5.30  ",     ;  0.6 inc ratio
    "   7,    41.27     35.85    15.69     7.19  ",     ;  0.7 inc ratio
    "   8,    34.56     36.96    18.64     9.84  ",     ;  0.8 inc ratio
    "   9,    28.84     36.84    21.22    13.10  ",     ;  0.9 inc ratio
    "  10,    24.27     35.69    23.28    16.77  ",     ;    1 inc ratio
    "  11,    20.63     33.70    24.75    20.92  ",     ;  1.1 inc ratio
    "  12,    17.89     30.95    25.59    25.56  ",     ;  1.2 inc ratio
    "  13,    16.00     27.91    25.83    30.27  ",     ;  1.3 inc ratio
    "  14,    14.63     24.78    25.45    35.15  ",     ;  1.4 inc ratio
    "  15,    13.72     21.74    24.71    39.83  ",     ;  1.5 inc ratio
    "  16,    12.99     19.13    23.53    44.35  ",     ;  1.6 inc ratio
    "  17,    12.23     17.04    22.16    48.57  ",     ;  1.7 inc ratio
    "  18,    11.39     15.65    20.67    52.29  ",     ;  1.8 inc ratio
    "  19,    10.50     14.70    19.19    55.61  ",     ;  1.9 inc ratio
    "  20,     9.71     14.35    17.77    58.17  ",     ;    2 inc ratio
    "  21,     8.74     14.16    16.60    60.50  ",     ;  2.1 inc ratio
    "  22,     8.05     14.11    15.46    62.38  ",     ;  2.2 inc ratio
    "  23,     7.79     14.02    14.54    63.65  ",     ;  2.3 inc ratio
    "  24,     7.37     13.77    14.08    64.77  ",     ;  2.4 inc ratio
    "  25,     7.25     13.49    13.60    65.66  ",     ;  2.5 inc ratio
    "  26,     7.17     12.55    13.54    66.75  ",     ;  2.6 inc ratio
    "  27,     6.89     12.26    13.34    67.51  ",     ;  2.7 inc ratio
    "  28,     6.93     11.97    12.74    68.36  ",     ;  2.8 inc ratio
    "  29,     6.52     11.03    12.90    69.55  ",     ;  2.9 inc ratio
    "  30,     5.96     10.06    13.19    70.78  ",     ;    3 inc ratio
    "  31,     5.21      9.27    13.49    72.04  ",     ;  3.1 inc ratio
    "  32,     5.26      8.78    13.01    72.96  ",     ;  3.2 inc ratio
    "  33,     4.97      8.30    12.75    73.98  ",     ;  3.3 inc ratio
    "  34,     4.69      7.64    12.62    75.05  ",     ;  3.4 inc ratio
    "  35,     4.41      6.96    12.49    76.14  ",     ;  3.5 inc ratio
    "  36,     3.95      6.27    12.50    77.28  ",     ;  3.6 inc ratio
    "  37,     3.66      5.56    12.40    78.38   "     ;  3.7 inc ratio

;==============================================================
; Initial Joint HH Size x Income Distribution from 2000 CTPP  =
```

```
;============================================================

      LOOKUP Name=I_SPCTA, LOOKUP[1] = 1,Result = 2,
             Interpolate = N, FAIL=0,0,0,
;            Size_Inc Initial
;             Class   Pct                Pct of Size 'X' HHs in Inc group 'Y'
;             -----   ----                    'X'          'Y'
          R="  11,    45.51 ",  ;              1            1
            "  12,    29.18 ",  ;              1            2
            "  13,    18.47 ",  ;              1            3
            "  14,     6.84 ",  ;              1            4
            "  21,    18.77 ",  ;              2            1
            "  22,    22.26 ",  ;              2            2
            "  23,    29.81 ",  ;              2            3
            "  24,    29.16 ",  ;              2            4
            "  31,    16.61 ",  ;              3            1
            "  32,    20.66 ",  ;              3            2
            "  33,    31.27 ",  ;              3            3
            "  34,    31.46 ",  ;              3            4
            "  41,    13.32 ",  ;              4            1
            "  42,    19.65 ",  ;              4            2
            "  43,    32.53 ",  ;              4            3
            "  44,    34.50 "   ;              4            4


;============================================================
; Final Size and Income adjustments by   area type           =
; Factors are Unused (set to 1.0) but available if needed     =
;============================================================

      LOOKUP Name=AreaSizFtr,
       LOOKUP[1] = 1,Result = 2,
       LOOKUP[2] = 1,Result = 3,
       LOOKUP[3] = 1,Result = 4,
       LOOKUP[4] = 1,Result = 5,
             Interpolate = N, FAIL=0,0,0,
;             Area    Size1  Size2  Size3  Size4
;             Type    Factor Factor Factor Factor
;             -----   -----  -----  -----  -----
          R="  1,     1.00    1.00   1.00   1.00   ",
            "  2,     1.00    1.00   1.00   1.00   ",
            "  3,     1.00    1.00   1.00   1.00   ",
            "  4,     1.00    1.00   1.00   1.00   ",
            "  5,     1.00    1.00   1.00   1.00   ",
            "  6,     1.00    1.00   1.00   1.00   ",
            "  7,     1.00    1.00   1.00   1.00   "

      LOOKUP Name=AreaIncFtr,
       LOOKUP[1] = 1,Result = 2,
       LOOKUP[2] = 1,Result = 3,
       LOOKUP[3] = 1,Result = 4,
       LOOKUP[4] = 1,Result = 5,
             Interpolate = N, FAIL=0,0,0,
;             Area    Inc1   Inc2   Inc3   Inc4
;             Type    Factor Factor Factor Factor
;             -----  -----  -----  -----  -----
          R="  1,     1.00   1.00   1.00   1.00    ",
            "  2,     1.00   1.00   1.00   1.00    ",
            "  3,     1.00   1.00   1.00   1.00    ",
            "  4,     1.00   1.00   1.00   1.00    ",
            "  5,     1.00   1.00   1.00   1.00    ",
            "  6,     1.00   1.00   1.00   1.00    " ,
            "  7,     1.00   1.00   1.00   1.00    "


;==================================================================================
==

;   Coefficients for the Veh Avail Model - provided as variables instead of lookups
=
;==================================================================================
==

;; v1_constant= 0  v2_constant= 1.05719498    v3_constant =-2.70675604   v4_constant
=-6.03433686 Estimated  Constants
;; v1_constant= 0  v2_constant= 0.4512        v3_constant =-3.1838       v4_constant
=-6.9323     Calibrated Constants/Try 1
;; v1_constant= 0  v2_constant= 0.5173        v3_constant =-3.1112       v4_constant
=-6.8805     Calibrated Constants/Try 2
;; v1_constant= 0  v2_constant= 0.5334        v3_constant =-3.0902       v4_constant
=-6.8599     Calibrated Constants/Try 3
;; v1_constant= 0  v2_constant= 0.5382        v3_constant =-3.0820       v4_constant
=-6.8508     Calibrated Constants/Try 4



;; Estimated Coefficients --updated by M. Martchouk 11/02/10
;; Calibrated constants updated     by Milone       11/02/10
v1_constant= 0  v2_constant= 0.5382       v3_constant =-3.0820       v4_constant =-
6.8508
v1_idum1   = 0  v2_idum1   = 0.0          v3_idum1    = 0.0          v4_idum1    =
0.0
v1_idum2   = 0  v2_idum2   = 1.45353047   v3_idum2    = 1.84315742   v4_idum2    =
2.46187933
v1_idum3   = 0  v2_idum3   = 2.25891102   v3_idum3    = 3.42089498   v4_idum3    =
4.62339172
v1_idum4   = 0  v2_idum4   = 2.65576393   v3_idum4    = 3.91630481   v4_idum4    =
5.54022044
v1_hh      = 0  v2_hh      = 0.16933726   v3_hh       = 1.3438729    v4_hh       =
1.69095555
v1_TrnAcc  = 0  v2_TrnAcc  =-1.20E-06     v3_TrnAcc   =-2.04E-06     v4_TrnAcc   =-
2.37E-06
v1_Atype   = 0  v2_Atype   = 0.20915613   v3_Atype    = 0.47716419   v4_Atype    =
0.77921942
v1_DcDum   = 0  v2_DcDum   =-0.94482292   v3_DcDum    =-1.39768896   v4_DcDum    =-
1.52940323




;==================================================================================
==================
; End of Lookups-  Now read the input files
=
;==================================================================================
==================


;
; read Zonal land use files  into Z-File
;

ZDATI[1] = @ZNFILE_IN1@ ;; variables in DBF file: TAZ,  HH, HHPOP, JURCODE, HHINCIDX

; Zonal Area Type File
ZDATI[2] = @ZNFILE_IN2@ ;; variables in DBF file: TAZ, ATYPE


; Zonal Transit Access. Files
  ZDATI[3] = @ZNFILE_INa1@ ;   TAZ, emp45
  ZDATI[4] = @ZNFILE_INa2@ ;   TAZ, emp45
  ZDATI[5] = @ZNFILE_INa3@ ;   TAZ, emp45
  ZDATI[6] = @ZNFILE_INa4@ ;   TAZ, emp45

  ; Jobs within 45 min by AM Transit (Metrorail), use the Maximum Accessibility
  ; of all the AM Metrorail related path options
```

```
  TrnAcc = MAX(zi.3.emp45, zi.4.emp45, zi.5.emp45, zi.6.emp45)

;
; establish variables
;
                       HH      =  zi.1.HH[I]
                       HHPOP   =  zi.1.HHPOP[I]
                       IncRat  =  zi.1.HHINCIDX[I]
                       Atype   =  zi.2.ATYPE[I]
                         IF (I > @LastIzn@) Atype=6 ; temporarily assign externals
to AT 6
                                                    ; so input value ('0') doesn't
violate array dimensions
                       ;; TrnAcc  =  zi.3.TrnAcc[I]

                       IF( HH>HHPOP)
                           HH=HHPOP
                       ENDIF

                       HH_IP_Total = HH_IP_Total + HH  ; Input HH Total (to check
O/P Total)

; Compute HH Size rounded to nearest 1/10th (K.Vaughn fix)
                       If (HH == 0)
                              AvHHSz = 1.0
                          Else
                              AvHHsz10ths = Round(HHPOP/HH * 10.0)
; compute Avg HH Size in tenths
                              AvHHsztrue  = AvHHsz10ths/10.0
; compute Avg HH Size actual
                              AvHHSz      = MIN(AvHHsztrue,3.9)
;
                       Endif


; Compute Juris. index 1-24 / compute DC dummy code for VA model

                       Jdx = zi.1.JURCODE + 1

                       IF (zi.1.JURCODE  = 0)
                            DCDUM = 1
                          ELSE
                            DCDUM = 0
                       ENDIF

; Accumulate jurisdiction level & total land use values
;

;-----------------------------------------------------------------------
;Begin Matrix Work Now ...
;-----------------------------------------------------------------------


; Clear all initial/computed arrays, establish initial marginal controls

Loop sz = 1, @SzCl@
     Loop in = 1, @InCl@

          CSZINA[sz][in] = 0      ; initial matrix cell value
     EndLoop
EndLoop

Loop IDX=1,@SzCl@
         ISZA[IDX] = 0
         CSZA[IDX] = 0
         ISZA[IDX] = HH * (SZPCTA(IDX,AvHHSz)/100.0)
EndLOOP
```

```
Loop IDX=1,@InCl@
         IInA[IDX] = 0
         CInA[IDX] = 0
         IInA[IDX] = HH * (INPCTA(IDX,IncRat)/100.0)
EndLOOP

;** Debug 1 On **
;* if (I==1)
;*     Print List = I(5),HHPOP(10),HH(10.0),Incrat(10.2),
AvHHSz(10.2),file=debug.txt
;*  loop idx = 1,4
;*      spct =SZPCTA(IDX,AvHHSz)
;*      ipct =INPCTA(IDX,IncRat)
;*      Print List = HH(10),
AvHHSz(10.2),Incrat(10.2),SPCT,IPCT,ISZA[IDX],IINA[IDX], file=debug1.txt
;*  endloop
;* endif
;** Debug 1 Off**


;
; Setup Initial HH Size by Income Matrix with PUMS seed Pcts
;   and accumulate Size, Income marginals

Loop sz = 1, @SzCl@
     Loop in = 1, @InCl@
          IDX = sz * 10.0 + in ; 2-digit index, 1st=HHsize& 2nd=Inc.level
          CSZINA[sz][in] = ISZA[sz] * (I_SPCTA(1,IDX)/100.00)  ; initial matrix cell
value
          CSZA[sz]    = CSZA[sz] + CSZINA[sz][in]    ; initial/'control' marginal
size total
          CINA[in]    = CINA[in] + CSZINA[sz][in]    ; initial/'control' marginal
Inc  total

;** Debug 2 On **
;* if (I==1)
;*      IF (sz <= 4 &&  in<=4)
;*         print list =' init matrix: inc: ', in(3),' hhs: ', sz(3),
cszina[idx](7.3) , file=debug2.txt
;*      Endif
;* endif
;*
;*
;** Debug 2 Off**
     EndLoop
EndLoop


; Initial matrix now established, now
; begin fratar process
;
;

LOOP FRAT= 1,3
  OddEve   = FRAT%2  ; Modulo function to check Odd/Even
iteration:0=even/nonzero=odd
  IF (OddEve != 0) ; if an odd iteration then adjust cols ...
;
       Loop in=1,@InCl@
            IF  (CINA[in] == 0 )
                     CINADJA[in] = 0
               ELSE
                     CINADJA[in] = IINA[in] / CINA[in]
            ENDIF
       EndLoop


       Loop IDX=1,@SzCl@
```

```
              CSZA[IDX] = 0
       EndLOOP

       Loop IDX=1,@InCl@
              CINA[IDX] = 0
       EndLOOP

       Loop sz= 1,@SzCl@
         Loop in= 1,@InCl@

               CSZINA[sz][in] = CSZINA[sz][in] * CINADJA[in]
               CSZA[sz]      = CSZA[sz]    + CSZINA[sz][in]    ; computed/current
marginal size total
               CINA[in]      = CINA[in]    + CSZINA[sz][in]    ; computed/current
marginal Inc  total
         EndLoop
       EndLoop
       ;
    ELSE
       ; begin computing of row (size) adjustments
       ; and apply adjustments to the matrix...
       ;

       Loop sz=1,@SzCl@
            IF  (CSZA[sz] == 0 )
                   CSZADJA[sz] = 0
               ELSE
                   CSZADJA[sz] = ISZA[sz] / CSZA[sz]
            ENDIF
       EndLoop

       Loop IDX=1,@SzCl@
              CSZA[IDX] = 0
       EndLOOP

       Loop IDX=1,@InCl@
              CINA[IDX] = 0
       EndLOOP

       Loop sz= 1,@SzCl@
         Loop in= 1,@InCl@

               CSZINA[sz][in] = CSZINA[sz][in] * CSZADJA[sz]
               CSZA[sz]    = CSZA[sz]    + CSZINA[sz][in]    ; computed/current
marginal size total
               CINA[in]    = CINA[in]    + CSZINA[sz][in]    ; computed/current
marginal Inc  total
         EndLoop
       EndLoop
  ENDIF
ENDLOOP

;
====================================================================================
========
; Apply final Size/Income adjustments (if desired) and then
; accumulate final Jurisdictional/ Regional marginals and totals
;
====================================================================================
========

       Loop sz= 1,@SzCl@
         Loop in= 1,@InCl@

               temp         =  CSZINA[sz][in] * AreaSizFtr(Sz,Atype) *
AreaIncFtr(In,Atype) ; Apply Final Size/Income Adjustment
               CSZINA[sz][in]      =  temp                         ; and store
back in CSZINA array
               RegSzInA[sz][in]    =  RegSzInA[sz][in]     +  CSZINA[sz][in]
               JurSzA[jdx][sz]     =  JurSzA[jdx][sz]      +  CSZINA[sz][in]
               JurInA[jdx][in]     =  JurInA[jdx][in]      +  CSZINA[sz][in]
               RegSzA[sz]          =  RegSzA[sz]           +  CSZINA[sz][in]
               RegInA[in]          =  RegInA[in]           +  CSZINA[sz][in]
               ArSzA[Atype][sz]    =  ArSzA[Atype][sz]     +  CSZINA[sz][in]
               ArInA[Atype][in]    =  ArInA[Atype][in]     +  CSZINA[sz][in]
               AreaA[Atype]        =  AreaA[Atype]         +  CSZINA[sz][in]
               JurA[Jdx]         =  JurA[Jdx]              +  CSZINA[sz][in]
               SITotal           =  SITotal                +  CSZINA[sz][in]
         EndLoop
       EndLoop

;
====================================================================================
========
; Summarize/Print HHs by size groups and HHs by Income groups for zonal checking
;
;
====================================================================================
========
        HH_Sz1   =  CSZINA[1][1] + CSZINA[1][2] + CSZINA[1][3] + CSZINA[1][4]
        HH_Sz2   =  CSZINA[2][1] + CSZINA[2][2] + CSZINA[2][3] + CSZINA[2][4]
        HH_Sz3   =  CSZINA[3][1] + CSZINA[3][2] + CSZINA[3][3] + CSZINA[3][4]
        HH_Sz4   =  CSZINA[4][1] + CSZINA[4][2] + CSZINA[4][3] + CSZINA[4][4]
;
        HH_In1   =  CSZINA[1][1] + CSZINA[2][1] + CSZINA[3][1] + CSZINA[4][1]
        HH_In2   =  CSZINA[1][2] + CSZINA[2][2] + CSZINA[3][2] + CSZINA[4][2]
        HH_In3   =  CSZINA[1][3] + CSZINA[2][3] + CSZINA[3][3] + CSZINA[4][3]
        HH_In4   =  CSZINA[1][4] + CSZINA[2][4] + CSZINA[3][4] + CSZINA[4][4]
;
;
    Print List=
I(4),HH_Sz1@ofmt@,HH_Sz2@ofmt@,HH_Sz3@ofmt@,HH_Sz4@ofmt@,file=Est_Zonal_HH_Size.TXT
    Print List=
I(4),HH_In1@ofmt@,HH_In2@ofmt@,HH_In3@ofmt@,HH_In4@ofmt@,file=Est_Zonal_HH_Inc.TXT

;===================================================================================
==========
; All Done with Size and Income computations - Now apply Veh. Availability Model
; Loop through size and income cell and further disggregate among veh.av. groups
;===================================================================================
========

  Loop sz=1,@SzCl@
    Loop in=1,@InCl@



                  P_VA[1] = 0
                  P_VA[2] = 0
                  P_VA[3] = 0
                  P_VA[4] = 0
                  IncDum1 = 0
                  IncDum2 = 0
                  IncDum3 = 0
                  IncDum4 = 0
                  If (in == 1)  IncDum1 = 1
                  If (in == 2)  IncDum2 = 1
                  If (in == 3)  IncDum3 = 1
                  If (in == 4)  IncDum4 = 1

                  ;;compute VA utilities
                   u_1  = v1_constant                       +
                          v1_idum1     * IncDum1            +
                          v1_idum2     * IncDum2            +
                          v1_idum3     * IncDum3            +
                          v1_idum4     * IncDum4            +
```

```
                        v1_hh       * SZ               +
                        v1_TrnAcc   * TrnAcc           +
                        v1_Atype    * AType            +
                        v1_DcDum    * DCDUM

                  u_2  = v2_constant                   +
                        v2_idum1    * IncDum1          +
                        v2_idum2    * IncDum2          +
                        v2_idum3    * IncDum3          +
                        v2_idum4    * IncDum4          +
                        v2_hh       * SZ               +
                        v2_TrnAcc   * TrnAcc           +
                        v2_Atype    * AType            +
                        v2_DcDum    * DCDUM

                  u_3  = v3_constant                   +
                        v3_idum1    * IncDum1          +
                        v3_idum2    * IncDum2          +
                        v3_idum3    * IncDum3          +
                        v3_idum4    * IncDum4          +
                        v3_hh       * SZ               +
                        v3_TrnAcc   * TrnAcc           +
                        v3_Atype    * AType            +
                        v3_DcDum    * DCDUM

                  u_4  = v4_constant                   +
                        v4_idum1    * IncDum1          +
                        v4_idum2    * IncDum2          +
                        v4_idum3    * IncDum3          +
                        v4_idum4    * IncDum4          +
                        v4_hh       * SZ               +
                        v4_TrnAcc   * TrnAcc           +
                        v4_Atype    * AType            +
                        v4_DcDum    * DCDUM

             ;;compute VA probabilities
                    P_VA[1] =  exp(u_1) / (exp(u_1) + exp(u_2) + exp(u_3) +
exp(u_4))
                    P_VA[2] =  exp(u_2) / (exp(u_1) + exp(u_2) + exp(u_3) +
exp(u_4))
                    P_VA[3] =  exp(u_3) / (exp(u_1) + exp(u_2) + exp(u_3) +
exp(u_4))
                    P_VA[4] =  exp(u_4) / (exp(u_1) + exp(u_2) + exp(u_3) +
exp(u_4))


             ;; apply Veh Avail. probabilities
                    CSZINVAA[Sz][In][1]  =   CSZINA[Sz][In]  *  P_VA[1] ;


                    CSZINVAA[Sz][In][2]  =   CSZINA[Sz][In]  *  P_VA[2] ;


                    CSZINVAA[Sz][In][3]  =   CSZINA[Sz][In]  *  P_VA[3] ;


                    CSZINVAA[Sz][In][4]  =   CSZINA[Sz][In]  *  P_VA[4] ;

         EndLoop
       EndLoop


      ; accumulate HHs in Vehicle Available groups (0,1,2+) for current TAZ
      ; also accumulate regional totals for checking

                    HHw0Vehs =  CSZINVAA[1][1][1] +  CSZINVAA[1][2][1] +
CSZINVAA[1][3][1] +  CSZINVAA[1][4][1] +
                                CSZINVAA[2][1][1] +  CSZINVAA[2][2][1] +
CSZINVAA[2][3][1] +  CSZINVAA[2][4][1] +
                                CSZINVAA[3][1][1] +  CSZINVAA[3][2][1] +
CSZINVAA[3][3][1] +  CSZINVAA[3][4][1] +
                                CSZINVAA[4][1][1] +  CSZINVAA[4][2][1] +
CSZINVAA[4][3][1] +  CSZINVAA[4][4][1]


                    HHw1Vehs =  CSZINVAA[1][1][2] +  CSZINVAA[1][2][2] +
CSZINVAA[1][3][2] +  CSZINVAA[1][4][2] +
                                CSZINVAA[2][1][2] +  CSZINVAA[2][2][2] +
CSZINVAA[2][3][2] +  CSZINVAA[2][4][2] +
                                CSZINVAA[3][1][2] +  CSZINVAA[3][2][2] +
CSZINVAA[3][3][2] +  CSZINVAA[3][4][2] +
                                CSZINVAA[4][1][2] +  CSZINVAA[4][2][2] +
CSZINVAA[4][3][2] +  CSZINVAA[4][4][2]


                    HHw2Vehs =  CSZINVAA[1][1][3] +  CSZINVAA[1][2][3] +
CSZINVAA[1][3][3] +  CSZINVAA[1][4][3] +
                                CSZINVAA[2][1][3] +  CSZINVAA[2][2][3] +
CSZINVAA[2][3][3] +  CSZINVAA[2][4][3] +
                                CSZINVAA[3][1][3] +  CSZINVAA[3][2][3] +
CSZINVAA[3][3][3] +  CSZINVAA[3][4][3] +
                                CSZINVAA[4][1][3] +  CSZINVAA[4][2][3] +
CSZINVAA[4][3][3] +  CSZINVAA[4][4][3]


                    HHw3Vehs =  CSZINVAA[1][1][4] +  CSZINVAA[1][2][4] +
CSZINVAA[1][3][4] +  CSZINVAA[1][4][4] +
                                CSZINVAA[2][1][4] +  CSZINVAA[2][2][4] +
CSZINVAA[2][3][4] +  CSZINVAA[2][4][4] +
                                CSZINVAA[3][1][4] +  CSZINVAA[3][2][4] +
CSZINVAA[3][3][4] +  CSZINVAA[3][4][4] +
                                CSZINVAA[4][1][4] +  CSZINVAA[4][2][4] +
CSZINVAA[4][3][4] +  CSZINVAA[4][4][4]

                    HHw2PVehs = HHw2Vehs + HHw3Vehs


                   Tot_HHw0Vehs =  Tot_HHw0Vehs +  HHw0Vehs
                   Tot_HHw1Vehs =  Tot_HHw1Vehs +  HHw1Vehs
                   Tot_HHw2Vehs =  Tot_HHw2Vehs +  HHw2Vehs
                   Tot_HHw3Vehs =  Tot_HHw3Vehs +  HHw3Vehs

                   Tot_HHw2PVehs =  Tot_HHw2PVehs +  HHw2PVehs

;==================================================================================
========
;  --Print out
;     zonal Household file for Mode Choice Model HHs by 0 , 1, 2+     Groups
;     and   Household file for Mode Choice Model HHs by 0 , 1, 2, 3+  Groups
;==================================================================================
========

;;  Print List=  I(5),
;;               HHw0Vehs(6),HHw1Vehs(6),HHw2PVehs(6),file=@ZNFILE_OU5@

    Print List=  I(4), HHw0Vehs@ofmt@, HHw1Vehs@ofmt@, HHw2Vehs@ofmt@,
HHw3Vehs@ofmt@,file=Est_Zonal_HH_VehAv.TXT

;==================================================================================
========
; The Calculations are complete for the current zone
; and let's accumulate Veh Av. related Jurisdictional/ Regional marginals and totals
;==================================================================================
========
```

```
  Loop sz=1,@SzCl@
    Loop in=1,@InCl@
      Loop Va=1,@VaCl@
                    RegSzInVaA[Sz][In][Va] = RegSzInVaA[Sz][In][Va] +
CSZINVAA[Sz][In][Va]
                    JurVaA[Jdx][Va]        = JurVaA[Jdx][Va]        +
CSZINVAA[Sz][In][Va]
                    ArVaA[Atype][va]       = ArVaA[Atype][va]       +
CSZINVAA[Sz][In][Va]
                    RegVaA[VA]             = RegVaA[VA]             +
CSZINVAA[Sz][In][Va]
                    RegVaSzA[va][sz]       = RegVaSzA[va][sz]       +
CSZINVAA[Sz][In][Va]
                    RegVaInA[va][in]       = RegVaInA[va][in]       +
CSZINVAA[Sz][In][Va]
                    SIVTotal               = SIVTotal               +
CSZINVAA[Sz][In][Va]
     EndLoop
   EndLoop
 EndLoop



;====================================================================================
========
; Now We're at the end of the Iloop
;  --Print out input files to Trip Generation
;     4 income based files written in text form TAZ, HH by size&VeAv
s1v1,s1v2,...,s4v4
;====================================================================================
========

;Income 1 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[1][1][1]@ofmt@, CSZINVAA[1][1][2]@ofmt@,
CSZINVAA[1][1][3]@ofmt@, CSZINVAA[1][1][4]@ofmt@,
                 CSZINVAA[2][1][1]@ofmt@, CSZINVAA[2][1][2]@ofmt@,
CSZINVAA[2][1][3]@ofmt@, CSZINVAA[2][1][4]@ofmt@,
                 CSZINVAA[3][1][1]@ofmt@, CSZINVAA[3][1][2]@ofmt@,
CSZINVAA[3][1][3]@ofmt@, CSZINVAA[3][1][4]@ofmt@,
                 CSZINVAA[4][1][1]@ofmt@, CSZINVAA[4][1][2]@ofmt@,
CSZINVAA[4][1][3]@ofmt@, CSZINVAA[4][1][4]@ofmt@,file=@ZNFILE_OU1@

;Income 2 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[1][2][1]@ofmt@, CSZINVAA[1][2][2]@ofmt@,
CSZINVAA[1][2][3]@ofmt@, CSZINVAA[1][2][4]@ofmt@,
                 CSZINVAA[2][2][1]@ofmt@, CSZINVAA[2][2][2]@ofmt@,
CSZINVAA[2][2][3]@ofmt@, CSZINVAA[2][2][4]@ofmt@,
                 CSZINVAA[3][2][1]@ofmt@, CSZINVAA[3][2][2]@ofmt@,
CSZINVAA[3][2][3]@ofmt@, CSZINVAA[3][2][4]@ofmt@,
                 CSZINVAA[4][2][1]@ofmt@, CSZINVAA[4][2][2]@ofmt@,
CSZINVAA[4][2][3]@ofmt@, CSZINVAA[4][2][4]@ofmt@,file=@ZNFILE_OU2@

;Income 3 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[1][3][1]@ofmt@, CSZINVAA[1][3][2]@ofmt@,
CSZINVAA[1][3][3]@ofmt@, CSZINVAA[1][3][4]@ofmt@,
                 CSZINVAA[2][3][1]@ofmt@, CSZINVAA[2][3][2]@ofmt@,
CSZINVAA[2][3][3]@ofmt@, CSZINVAA[2][3][4]@ofmt@,
                 CSZINVAA[3][3][1]@ofmt@, CSZINVAA[3][3][2]@ofmt@,
CSZINVAA[3][3][3]@ofmt@, CSZINVAA[3][3][4]@ofmt@,
                 CSZINVAA[4][3][1]@ofmt@, CSZINVAA[4][3][2]@ofmt@,
CSZINVAA[4][3][3]@ofmt@, CSZINVAA[4][3][4]@ofmt@,file=@ZNFILE_OU3@

;Income 4 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[1][4][1]@ofmt@, CSZINVAA[1][4][2]@ofmt@,
CSZINVAA[1][4][3]@ofmt@, CSZINVAA[1][4][4]@ofmt@,
                 CSZINVAA[2][4][1]@ofmt@, CSZINVAA[2][4][2]@ofmt@,
CSZINVAA[2][4][3]@ofmt@, CSZINVAA[2][4][4]@ofmt@,
                 CSZINVAA[3][4][1]@ofmt@, CSZINVAA[3][4][2]@ofmt@,
CSZINVAA[3][4][3]@ofmt@, CSZINVAA[3][4][4]@ofmt@,
                 CSZINVAA[4][4][1]@ofmt@, CSZINVAA[4][4][2]@ofmt@,
CSZINVAA[4][4][3]@ofmt@, CSZINVAA[4][4][4]@ofmt@,file=@ZNFILE_OU4@

;;
;; write out dbf files for HHs by cross-class
;; Define output variables

FILEO RECO[1]    = "@ZonalCCHHs@",fields =
                 I(5),
                 HHsISV111@ofmt@, HHsISV112@ofmt@, HHsISV113@ofmt@, HHsISV114@ofmt@,
                 HHsISV211@ofmt@, HHsISV212@ofmt@, HHsISV213@ofmt@, HHsISV214@ofmt@,
                 HHsISV311@ofmt@, HHsISV312@ofmt@, HHsISV313@ofmt@, HHsISV314@ofmt@,
                 HHsISV411@ofmt@, HHsISV412@ofmt@, HHsISV413@ofmt@, HHsISV414@ofmt@,
                 HHsISV121@ofmt@, HHsISV122@ofmt@, HHsISV123@ofmt@, HHsISV124@ofmt@,
                 HHsISV221@ofmt@, HHsISV222@ofmt@, HHsISV223@ofmt@, HHsISV224@ofmt@,
                 HHsISV321@ofmt@, HHsISV322@ofmt@, HHsISV323@ofmt@, HHsISV324@ofmt@,
                 HHsISV421@ofmt@, HHsISV422@ofmt@, HHsISV423@ofmt@, HHsISV424@ofmt@,
                 HHsISV131@ofmt@, HHsISV132@ofmt@, HHsISV133@ofmt@, HHsISV134@ofmt@,
                 HHsISV231@ofmt@, HHsISV232@ofmt@, HHsISV233@ofmt@, HHsISV234@ofmt@,
                 HHsISV331@ofmt@, HHsISV332@ofmt@, HHsISV333@ofmt@, HHsISV334@ofmt@,
                 HHsISV431@ofmt@, HHsISV432@ofmt@, HHsISV433@ofmt@, HHsISV434@ofmt@,
                 HHsISV141@ofmt@, HHsISV142@ofmt@, HHsISV143@ofmt@, HHsISV144@ofmt@,
                 HHsISV241@ofmt@, HHsISV242@ofmt@, HHsISV243@ofmt@, HHsISV244@ofmt@,
                 HHsISV341@ofmt@, HHsISV342@ofmt@, HHsISV343@ofmt@, HHsISV344@ofmt@,
                 HHsISV441@ofmt@, HHsISV442@ofmt@, HHsISV443@ofmt@, HHsISV444@ofmt@


;;
;; write out dbf files for HHs by cross class (Corrected 10/30/10)
;;
 ro.HHsISV111 = CSZINVAA[1][1][1]   ro.HHsISV112 = CSZINVAA[1][1][2]  ro.HHsISV113 =
CSZINVAA[1][1][3]  ro.HHsISV114 = CSZINVAA[1][1][4]
 ro.HHsISV211 = CSZINVAA[1][2][1]   ro.HHsISV212 = CSZINVAA[1][2][2]  ro.HHsISV213 =
CSZINVAA[1][2][3]  ro.HHsISV214 = CSZINVAA[1][2][4]
 ro.HHsISV311 = CSZINVAA[1][3][1]   ro.HHsISV312 = CSZINVAA[1][3][2]  ro.HHsISV313 =
CSZINVAA[1][3][3]  ro.HHsISV314 = CSZINVAA[1][3][4]
 ro.HHsISV411 = CSZINVAA[1][4][1]   ro.HHsISV412 = CSZINVAA[1][4][2]  ro.HHsISV413 =
CSZINVAA[1][4][3]  ro.HHsISV414 = CSZINVAA[1][4][4]

 ro.HHsISV121 = CSZINVAA[2][1][1]   ro.HHsISV122 = CSZINVAA[2][1][2]  ro.HHsISV123 =
CSZINVAA[2][1][3]  ro.HHsISV124 = CSZINVAA[2][1][4]
 ro.HHsISV221 = CSZINVAA[2][2][1]   ro.HHsISV222 = CSZINVAA[2][2][2]  ro.HHsISV223 =
CSZINVAA[2][2][3]  ro.HHsISV224 = CSZINVAA[2][2][4]
 ro.HHsISV321 = CSZINVAA[2][3][1]   ro.HHsISV322 = CSZINVAA[2][3][2]  ro.HHsISV323 =
CSZINVAA[2][3][3]  ro.HHsISV324 = CSZINVAA[2][3][4]
 ro.HHsISV421 = CSZINVAA[2][4][1]   ro.HHsISV422 = CSZINVAA[2][4][2]  ro.HHsISV423 =
CSZINVAA[2][4][3]  ro.HHsISV424 = CSZINVAA[2][4][4]

 ro.HHsISV131 = CSZINVAA[3][1][1]   ro.HHsISV132 = CSZINVAA[3][1][2]  ro.HHsISV133 =
CSZINVAA[3][1][3]  ro.HHsISV134 = CSZINVAA[3][1][4]
 ro.HHsISV231 = CSZINVAA[3][2][1]   ro.HHsISV232 = CSZINVAA[3][2][2]  ro.HHsISV233 =
CSZINVAA[3][2][3]  ro.HHsISV234 = CSZINVAA[3][2][4]
 ro.HHsISV331 = CSZINVAA[3][3][1]   ro.HHsISV332 = CSZINVAA[3][3][2]  ro.HHsISV333 =
CSZINVAA[3][3][3]  ro.HHsISV334 = CSZINVAA[3][3][4]
 ro.HHsISV431 = CSZINVAA[3][4][1]   ro.HHsISV432 = CSZINVAA[3][4][2]  ro.HHsISV433 =
CSZINVAA[3][4][3]  ro.HHsISV434 = CSZINVAA[3][4][4]

 ro.HHsISV141 = CSZINVAA[4][1][1]   ro.HHsISV142 = CSZINVAA[4][1][2]  ro.HHsISV143 =
CSZINVAA[4][1][3]  ro.HHsISV144 = CSZINVAA[4][1][4]
 ro.HHsISV241 = CSZINVAA[4][2][1]   ro.HHsISV242 = CSZINVAA[4][2][2]  ro.HHsISV243 =
CSZINVAA[4][2][3]  ro.HHsISV244 = CSZINVAA[4][2][4]
```

```
 ro.HHsISV341 = CSZINVAA[4][3][1]   ro.HHsISV342 = CSZINVAA[4][3][2]  ro.HHsISV343 =
CSZINVAA[4][3][3]  ro.HHsISV344 = CSZINVAA[4][3][4]
 ro.HHsISV441 = CSZINVAA[4][4][1]   ro.HHsISV442 = CSZINVAA[4][4][2]  ro.HHsISV443 =
CSZINVAA[4][4][3]  ro.HHsISV444 = CSZINVAA[4][4][4]
 WRITE RECO=1

;=================================================================================
========
; Finally accumulate Size, Inc, Veh.Av variables by area type for reporting
;=================================================================================
========


If (I <= @LastIZN@)



   HH_S1  = HH_S1     + CSZINA[1][1] + CSZINA[1][2] + CSZINA[1][3] + CSZINA[1][4]
   HH_S2  = HH_S2     + CSZINA[2][1] + CSZINA[2][2] + CSZINA[2][3] + CSZINA[2][4]
   HH_S3  = HH_S3     + CSZINA[3][1] + CSZINA[3][2] + CSZINA[3][3] + CSZINA[3][4]
   HH_S4  = HH_S4     + CSZINA[4][1] + CSZINA[4][2] + CSZINA[4][3] + CSZINA[4][4]

   HH_I1  = HH_I1     + CSZINA[1][1] + CSZINA[2][1] + CSZINA[3][1] + CSZINA[4][1]
   HH_I2  = HH_I2     + CSZINA[1][2] + CSZINA[2][2] + CSZINA[3][2] + CSZINA[4][2]
   HH_I3  = HH_I3     + CSZINA[1][3] + CSZINA[2][3] + CSZINA[3][3] + CSZINA[4][3]
   HH_I4  = HH_I4     + CSZINA[1][4] + CSZINA[2][4] + CSZINA[3][4] + CSZINA[4][4]

   HH_V1  = HH_V1     + HHw0Vehs
   HH_V2  = HH_V2     + HHw1Vehs
   HH_V3  = HH_V3     + HHw2Vehs
   HH_V4  = HH_V4     + HHw3Vehs

   HH_S   = HH_S      + CSZINA[1][1] + CSZINA[1][2] + CSZINA[1][3] + CSZINA[1][4] +
                        CSZINA[2][1] + CSZINA[2][2] + CSZINA[2][3] + CSZINA[2][4] +
                        CSZINA[3][1] + CSZINA[3][2] + CSZINA[3][3] + CSZINA[3][4] +
                        CSZINA[4][1] + CSZINA[4][2] + CSZINA[4][3] + CSZINA[4][4]

   HH_I   = HH_I      + CSZINA[1][1] + CSZINA[2][1] + CSZINA[3][1] + CSZINA[4][1] +
                        CSZINA[1][2] + CSZINA[2][2] + CSZINA[3][2] + CSZINA[4][2] +
                        CSZINA[1][3] + CSZINA[2][3] + CSZINA[3][3] + CSZINA[4][3] +
                        CSZINA[1][4] + CSZINA[2][4] + CSZINA[3][4] + CSZINA[4][4]



   HH_V   = HH_V      + HHw0Vehs +
                        HHw1Vehs +
                        HHw2Vehs +
                        HHw3Vehs



Endif

;=================================================================================
========
;  If we're at the last Zone, it's time to printout the listings and we're done.
;=================================================================================
========

IF (I=@ZONESIZE@)

   Print LIST= '  Demographic Model Report ', file=@Rept@ ;
   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@

   Print LIST= '   ',file=@Rept@
   Print LIST= '      Untransformed - Household Total from the Input File:',
HH_IP_Total(12.0),file=@Rept@ ;
```

```
   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@
   PRINT LIST =' Regional Households by Size and Income Summary ',file=@Rept@
   PRINT LIST ='   Size      Inc_1         Inc_2      Inc_3       Inc_4      Total
',file=@Rept@
   PRINT LIST ='          ------------ ----------- ----------- ----------- ---------
--   ',file=@Rept@

   Print form=12.csv LIST= '      1
',RegSzInA[1][1],RegSzInA[1][2],RegSzInA[1][3],RegSzInA[1][4],RegSzA[1],file=@Rept@
;
   Print form=12.csv LIST= '      2
',RegSzInA[2][1],RegSzInA[2][2],RegSzInA[2][3],RegSzInA[2][4],RegSzA[2],file=@Rept@
;
   Print form=12.csv LIST= '      3
',RegSzInA[3][1],RegSzInA[3][2],RegSzInA[3][3],RegSzInA[3][4],RegSzA[3],file=@Rept@
;
   Print form=12.csv LIST= '      4+
',RegSzInA[4][1],RegSzInA[4][2],RegSzInA[4][3],RegSzInA[4][4],RegSzA[4],file=@Rept@
;
   Print LIST= '   ',file=@Rept@
   Print form=12.csv LIST= ' Total    ',RegInA[1],   RegInA[2],   RegInA[3],
RegInA[4],   SITotal,file=@Rept@ ;
   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@

;=================================================================================
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   PRINT LIST =' Jurisdictional Households by Size ',file=@Rept@
   PRINT LIST ='  Juris.    Size_1        Size_2     Size_3      Size_4      Total
',file=@Rept@
   PRINT LIST ='          ------------ ----------- ----------- ----------- ---------
--   ',file=@Rept@

   Print form=12.csv LIST= '    0_DC
',JurSzA[01][1],JurSzA[01][2],JurSzA[01][3],JurSzA[01][4],JurA[01],file=@Rept@ ;
   Print form=12.csv LIST= '    1_Mtg
',JurSzA[02][1],JurSzA[02][2],JurSzA[02][3],JurSzA[02][4],JurA[02],file=@Rept@ ;
   Print form=12.csv LIST= '    2_PG
',JurSzA[03][1],JurSzA[03][2],JurSzA[03][3],JurSzA[03][4],JurA[03],file=@Rept@ ;
   Print form=12.csv LIST= '    3_Arl
',JurSzA[04][1],JurSzA[04][2],JurSzA[04][3],JurSzA[04][4],JurA[04],file=@Rept@ ;
   Print form=12.csv LIST= '    4_Alx
',JurSzA[05][1],JurSzA[05][2],JurSzA[05][3],JurSzA[05][4],JurA[05],file=@Rept@ ;
   Print form=12.csv LIST= '    5_Ffx
',JurSzA[06][1],JurSzA[06][2],JurSzA[06][3],JurSzA[06][4],JurA[06],file=@Rept@ ;
   Print form=12.csv LIST= '    6_Ldn
',JurSzA[07][1],JurSzA[07][2],JurSzA[07][3],JurSzA[07][4],JurA[07],file=@Rept@ ;
   Print form=12.csv LIST= '    7_PW
',JurSzA[08][1],JurSzA[08][2],JurSzA[08][3],JurSzA[08][4],JurA[08],file=@Rept@ ;
   Print form=12.csv LIST= '    8_ -
',JurSzA[09][1],JurSzA[09][2],JurSzA[09][3],JurSzA[09][4],JurA[09],file=@Rept@ ;
   Print form=12.csv LIST= '    9_Frd
',JurSzA[10][1],JurSzA[10][2],JurSzA[10][3],JurSzA[10][4],JurA[10],file=@Rept@ ;
   Print form=12.csv LIST= '   10_How
',JurSzA[11][1],JurSzA[11][2],JurSzA[11][3],JurSzA[11][4],JurA[11],file=@Rept@ ;
   Print form=12.csv LIST= '   11_AA
',JurSzA[12][1],JurSzA[12][2],JurSzA[12][3],JurSzA[12][4],JurA[12],file=@Rept@ ;
   Print form=12.csv LIST= '   12_Chs
',JurSzA[13][1],JurSzA[13][2],JurSzA[13][3],JurSzA[13][4],JurA[13],file=@Rept@ ;
   Print form=12.csv LIST= '   13_ -
',JurSzA[14][1],JurSzA[14][2],JurSzA[14][3],JurSzA[14][4],JurA[14],file=@Rept@ ;
   Print form=12.csv LIST= '   14_Car
',JurSzA[15][1],JurSzA[15][2],JurSzA[15][3],JurSzA[15][4],JurA[15],file=@Rept@ ;
   Print form=12.csv LIST= '   15_Cal
',JurSzA[16][1],JurSzA[16][2],JurSzA[16][3],JurSzA[16][4],JurA[16],file=@Rept@ ;
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   Print form=12.csv LIST= '   16_SM
',JurSzA[17][1],JurSzA[17][2],JurSzA[17][3],JurSzA[17][4],JurA[17],file=@Rept@ ;
   Print form=12.csv LIST= '
17_KGeo',JurSzA[18][1],JurSzA[18][2],JurSzA[18][3],JurSzA[18][4],JurA[18],file=@Rept
@ ;
   Print form=12.csv LIST= '   18_Fbg
',JurSzA[19][1],JurSzA[19][2],JurSzA[19][3],JurSzA[19][4],JurA[19],file=@Rept@ ;
   Print form=12.csv LIST= '   19_Sta
',JurSzA[20][1],JurSzA[20][2],JurSzA[20][3],JurSzA[20][4],JurA[20],file=@Rept@ ;
   Print form=12.csv LIST= '   20_Spt
',JurSzA[21][1],JurSzA[21][2],JurSzA[21][3],JurSzA[21][4],JurA[21],file=@Rept@ ;
   Print form=12.csv LIST= '   21_Fau
',JurSzA[22][1],JurSzA[22][2],JurSzA[22][3],JurSzA[22][4],JurA[22],file=@Rept@ ;
   Print form=12.csv LIST= '   22_Clk
',JurSzA[23][1],JurSzA[23][2],JurSzA[23][3],JurSzA[23][4],JurA[23],file=@Rept@ ;
   Print form=12.csv LIST= '   23_Jef
',JurSzA[24][1],JurSzA[24][2],JurSzA[24][3],JurSzA[24][4],JurA[24],file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print form=12.csv LIST= ' Total    ',RegSzA[1],  RegSzA[2],  RegSzA[3],
RegSzA[4],  SITotal,file=@Rept@ ;
   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@
;=====================================================================================
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   PRINT LIST =' Jurisdictional Households by Income ',file=@Rept@
   PRINT LIST ='  Juris.    Inc_1         Inc_2       Inc_3       Inc_4      Total
',file=@Rept@
   PRINT LIST ='          ------------ ----------- ----------- ----------- ---------
--   ',file=@Rept@

   Print form=12.csv LIST= '    0_DC
',JurInA[01][1],JurInA[01][2],JurInA[01][3],JurInA[01][4],JurA[01],file=@Rept@ ;
   Print form=12.csv LIST= '    1_Mtg
',JurInA[02][1],JurInA[02][2],JurInA[02][3],JurInA[02][4],JurA[02],file=@Rept@ ;
   Print form=12.csv LIST= '    2_PG
',JurInA[03][1],JurInA[03][2],JurInA[03][3],JurInA[03][4],JurA[03],file=@Rept@ ;
   Print form=12.csv LIST= '    3_Arl
',JurInA[04][1],JurInA[04][2],JurInA[04][3],JurInA[04][4],JurA[04],file=@Rept@ ;
   Print form=12.csv LIST= '    4_Alx
',JurInA[05][1],JurInA[05][2],JurInA[05][3],JurInA[05][4],JurA[05],file=@Rept@ ;
   Print form=12.csv LIST= '    5_Ffx
',JurInA[06][1],JurInA[06][2],JurInA[06][3],JurInA[06][4],JurA[06],file=@Rept@ ;
   Print form=12.csv LIST= '    6_Ldn
',JurInA[07][1],JurInA[07][2],JurInA[07][3],JurInA[07][4],JurA[07],file=@Rept@ ;
   Print form=12.csv LIST= '    7_PW
',JurInA[08][1],JurInA[08][2],JurInA[08][3],JurInA[08][4],JurA[08],file=@Rept@ ;
   Print form=12.csv LIST= '    8_ -
',JurInA[09][1],JurInA[09][2],JurInA[09][3],JurInA[09][4],JurA[09],file=@Rept@ ;
   Print form=12.csv LIST= '    9_Frd
',JurInA[10][1],JurInA[10][2],JurInA[10][3],JurInA[10][4],JurA[10],file=@Rept@ ;
   Print form=12.csv LIST= '   10_How
',JurInA[11][1],JurInA[11][2],JurInA[11][3],JurInA[11][4],JurA[11],file=@Rept@ ;
   Print form=12.csv LIST= '   11_AA
',JurInA[12][1],JurInA[12][2],JurInA[12][3],JurInA[12][4],JurA[12],file=@Rept@ ;
   Print form=12.csv LIST= '   12_Chs
',JurInA[13][1],JurInA[13][2],JurInA[13][3],JurInA[13][4],JurA[13],file=@Rept@ ;
   Print form=12.csv LIST= '   13_ -
',JurInA[14][1],JurInA[14][2],JurInA[14][3],JurInA[14][4],JurA[14],file=@Rept@ ;
   Print form=12.csv LIST= '   14_Car
',JurInA[15][1],JurInA[15][2],JurInA[15][3],JurInA[15][4],JurA[15],file=@Rept@ ;
   Print form=12.csv LIST= '   15_Cal
',JurInA[16][1],JurInA[16][2],JurInA[16][3],JurInA[16][4],JurA[16],file=@Rept@ ;
   Print form=12.csv LIST= '   16_SM
',JurInA[17][1],JurInA[17][2],JurInA[17][3],JurInA[17][4],JurA[17],file=@Rept@ ;
   Print form=12.csv LIST= '
17_KGeo',JurInA[18][1],JurInA[18][2],JurInA[18][3],JurInA[18][4],JurA[18],file=@Rept
@ ;
   Print form=12.csv LIST= '   18_Fbg
',JurInA[19][1],JurInA[19][2],JurInA[19][3],JurInA[19][4],JurA[19],file=@Rept@ ;
   Print form=12.csv LIST= '   19_Sta
',JurInA[20][1],JurInA[20][2],JurInA[20][3],JurInA[20][4],JurA[20],file=@Rept@ ;
   Print form=12.csv LIST= '   20_Spt
',JurInA[21][1],JurInA[21][2],JurInA[21][3],JurInA[21][4],JurA[21],file=@Rept@ ;
   Print form=12.csv LIST= '   21_Fau
',JurInA[22][1],JurInA[22][2],JurInA[22][3],JurInA[22][4],JurA[22],file=@Rept@ ;
   Print form=12.csv LIST= '   22_Clk
',JurInA[23][1],JurInA[23][2],JurInA[23][3],JurInA[23][4],JurA[23],file=@Rept@ ;
   Print form=12.csv LIST= '   23_Jef
',JurInA[24][1],JurInA[24][2],JurInA[24][3],JurInA[24][4],JurA[24],file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print form=12.csv LIST= ' Total    ',RegInA[1],  RegInA[2],  RegInA[3],
RegInA[4],  SITotal,file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@

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   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@
   PRINT LIST =' Regional Households by Vehicles Available and Size Summary
',file=@Rept@
   PRINT LIST ='   VeAv     Size_1        Size_2     Size_3      Size_4      Total
',file=@Rept@
   PRINT LIST ='          ------------ ----------- ----------- ----------- ---------
--   ',file=@Rept@

   Print form=12.csv LIST= '      1
',RegVaSzA[1][1],RegVaSzA[1][2],RegVaSzA[1][3],RegVaSzA[1][4],RegVaA[1],file=@Rept@
;
   Print form=12.csv LIST= '      2
',RegVaSzA[2][1],RegVaSzA[2][2],RegVaSzA[2][3],RegVaSzA[2][4],RegVaA[2],file=@Rept@
;
   Print form=12.csv LIST= '      3
',RegVaSzA[3][1],RegVaSzA[3][2],RegVaSzA[3][3],RegVaSzA[3][4],RegVaA[3],file=@Rept@
;
   Print form=12.csv LIST= '      4+
',RegVaSzA[4][1],RegVaSzA[4][2],RegVaSzA[4][3],RegVaSzA[4][4],RegVaA[4],file=@Rept@
;
   Print LIST= '   ',file=@Rept@
   Print form=12.csv LIST= ' Total    ',RegSzA[1],   RegSzA[2],   RegSzA[3],
RegSzA[4],   SITotal,file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@

   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@
   PRINT LIST =' Regional Households by Vehicles Available Groups 1, 2, 3&4  ','\n',
             ' HHs w/ 0 Vehs:  ', Tot_HHw0Vehs(12.0),'\n',
             ' HHs w/ 1 Vehs:  ', Tot_HHw1Vehs(12.0),'\n',
             ' HHs w/ 2+Vehs:  ', Tot_HHw2PVehs(12.0),'\n', file=@Rept@
;=====================================================================================
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   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@
   PRINT LIST =' Regional Households by Vehicles Available and Income Summary
',file=@Rept@
```

```
   PRINT LIST =' VeAv      Inc_1        Inc_2      Inc_3       Inc_4      Total
',file=@Rept@
   PRINT LIST ='          ------------ ----------- ----------- ----------- ---------
--   ',file=@Rept@

   Print form=12.csv LIST= '      1
',RegVaInA[1][1],RegVaInA[1][2],RegVaInA[1][3],RegVaInA[1][4],RegVaA[1],file=@Rept@
;
   Print form=12.csv LIST= '      2
',RegVaInA[2][1],RegVaInA[2][2],RegVaInA[2][3],RegVaInA[2][4],RegVaA[2],file=@Rept@
;
   Print form=12.csv LIST= '      3
',RegVaInA[3][1],RegVaInA[3][2],RegVaInA[3][3],RegVaInA[3][4],RegVaA[3],file=@Rept@
;
   Print form=12.csv LIST= '      4+
',RegVaInA[4][1],RegVaInA[4][2],RegVaInA[4][3],RegVaInA[4][4],RegVaA[4],file=@Rept@
;
   Print form=12.csv LIST= '   ',file=@Rept@
   Print form=12.csv LIST= ' Total    ',RegInA[1],   RegInA[2],   RegInA[3],
RegInA[4],   SITotal,file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@

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=======================

   PRINT LIST =' Jurisdictional Households by Vehicles Available ',file=@Rept@
   PRINT LIST ='  Juris.    Veh_0         Veh_1       Veh_2       Veh_3+     Total
',file=@Rept@
   PRINT LIST ='          ------------ ----------- ----------- ----------- ---------
--   ',file=@Rept@

   Print form=12.csv LIST= '    0_DC
',JurVaA[01][1],JurVaA[01][2],JurVaA[01][3],JurVaA[01][4],JurA[01],file=@Rept@ ;
   Print form=12.csv LIST= '    1_Mtg
',JurVaA[02][1],JurVaA[02][2],JurVaA[02][3],JurVaA[02][4],JurA[02],file=@Rept@ ;
   Print form=12.csv LIST= '    2_PG
',JurVaA[03][1],JurVaA[03][2],JurVaA[03][3],JurVaA[03][4],JurA[03],file=@Rept@ ;
   Print form=12.csv LIST= '    3_Arl
',JurVaA[04][1],JurVaA[04][2],JurVaA[04][3],JurVaA[04][4],JurA[04],file=@Rept@ ;
   Print form=12.csv LIST= '    4_Alx
',JurVaA[05][1],JurVaA[05][2],JurVaA[05][3],JurVaA[05][4],JurA[05],file=@Rept@ ;
   Print form=12.csv LIST= '    5_Ffx
',JurVaA[06][1],JurVaA[06][2],JurVaA[06][3],JurVaA[06][4],JurA[06],file=@Rept@ ;
   Print form=12.csv LIST= '    6_Ldn
',JurVaA[07][1],JurVaA[07][2],JurVaA[07][3],JurVaA[07][4],JurA[07],file=@Rept@ ;
   Print form=12.csv LIST= '    7_PW
',JurVaA[08][1],JurVaA[08][2],JurVaA[08][3],JurVaA[08][4],JurA[08],file=@Rept@ ;
   Print form=12.csv LIST= '    8_ -
',JurVaA[09][1],JurVaA[09][2],JurVaA[09][3],JurVaA[09][4],JurA[09],file=@Rept@ ;
   Print form=12.csv LIST= '    9_Frd
',JurVaA[10][1],JurVaA[10][2],JurVaA[10][3],JurVaA[10][4],JurA[10],file=@Rept@ ;
   Print form=12.csv LIST= '   10_How
',JurVaA[11][1],JurVaA[11][2],JurVaA[11][3],JurVaA[11][4],JurA[11],file=@Rept@ ;
   Print form=12.csv LIST= '   11_AA
',JurVaA[12][1],JurVaA[12][2],JurVaA[12][3],JurVaA[12][4],JurA[12],file=@Rept@ ;
   Print form=12.csv LIST= '   12_Chs
',JurVaA[13][1],JurVaA[13][2],JurVaA[13][3],JurVaA[13][4],JurA[13],file=@Rept@ ;
   Print form=12.csv LIST= '   13_ -
',JurVaA[14][1],JurVaA[14][2],JurVaA[14][3],JurVaA[14][4],JurA[14],file=@Rept@ ;
   Print form=12.csv LIST= '   14_Car
',JurVaA[15][1],JurVaA[15][2],JurVaA[15][3],JurVaA[15][4],JurA[15],file=@Rept@ ;
   Print form=12.csv LIST= '   15_Cal
',JurVaA[16][1],JurVaA[16][2],JurVaA[16][3],JurVaA[16][4],JurA[16],file=@Rept@ ;
   Print form=12.csv LIST= '   16_SM
',JurVaA[17][1],JurVaA[17][2],JurVaA[17][3],JurVaA[17][4],JurA[17],file=@Rept@ ;
   Print form=12.csv LIST= '
17_KGeo',JurVaA[18][1],JurVaA[18][2],JurVaA[18][3],JurVaA[18][4],JurA[18],file=@Rept
@ ;
   Print form=12.csv LIST= '   18_Fbg
',JurVaA[19][1],JurVaA[19][2],JurVaA[19][3],JurVaA[19][4],JurA[19],file=@Rept@ ;
   Print form=12.csv LIST= '   19_Sta
',JurVaA[20][1],JurVaA[20][2],JurVaA[20][3],JurVaA[20][4],JurA[20],file=@Rept@ ;
   Print form=12.csv LIST= '   20_Spt
',JurVaA[21][1],JurVaA[21][2],JurVaA[21][3],JurVaA[21][4],JurA[21],file=@Rept@ ;
   Print form=12.csv LIST= '   21_Fau
',JurVaA[22][1],JurVaA[22][2],JurVaA[22][3],JurVaA[22][4],JurA[22],file=@Rept@ ;
   Print form=12.csv LIST= '   22_Clk
',JurVaA[23][1],JurVaA[23][2],JurVaA[23][3],JurVaA[23][4],JurA[23],file=@Rept@ ;
   Print form=12.csv LIST= '   23_Jef
',JurVaA[24][1],JurVaA[24][2],JurVaA[24][3],JurVaA[24][4],JurA[24],file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print form=12.csv LIST= ' Total    ',RegVaA[1],  RegVaA[2],  RegVaA[3],
RegVaA[4],  SITotal,file=@Rept@ ;

   Print LIST= '   ',file=@Rept@
   Print LIST= '   ',file=@Rept@


   PRINT LIST =' Estimated Households By Size Level by Area Type  ','\n',
file=@Rept@

   PRINT LIST =           '   Area_Tp  HHs_Size1    HHs_Size2   HHs_Size3
HHs_Size4    Total     ' ,file=@Rept@
   PRINT LIST =           '    ----   ----------- ----------- ----------- --------
--- ----------  ' ,file=@Rept@
   Print form=12.csv LIST= '      1   ',ArSzA[1][1], ArSzA[1][2] , ArSzA[1][3],
ArSzA[1][4] , AreaA[1],file =@Rept@ ;
   Print form=12.csv LIST= '      2   ',ArSzA[2][1], ArSzA[2][2] , ArSzA[2][3],
ArSzA[2][4] , AreaA[2],file =@Rept@ ;
   Print form=12.csv LIST= '      3   ',ArSzA[3][1], ArSzA[3][2] , ArSzA[3][3],
ArSzA[3][4] , AreaA[3],file =@Rept@ ;
   Print form=12.csv LIST= '      4   ',ArSzA[4][1], ArSzA[4][2] , ArSzA[4][3],
ArSzA[4][4] , AreaA[4],file =@Rept@ ;
   Print form=12.csv LIST= '      5   ',ArSzA[5][1], ArSzA[5][2] , ArSzA[5][3],
ArSzA[5][4] , AreaA[5],file =@Rept@ ;
   Print form=12.csv LIST= '      6   ',ArSzA[6][1], ArSzA[6][2] , ArSzA[6][3],
ArSzA[6][4] , AreaA[6],file =@Rept@ ;
   Print LIST= '    ',file=@Rept@
   Print form=12.csv LIST= '     Sum  ',  RegSzA[1],   RegSzA[2] , RegSzA[3],
RegSzA[4] ,  SITotal, file =@Rept@ ;
   Print LIST= '   ','\n',file=@Rept@



   PRINT LIST =' Estimated Households By Income Level by Area Type  ','\n',
file=@Rept@

   PRINT LIST =           '   Area_Tp  Income_1     Income_2    Income_3
Income_4     Total      ',file=@Rept@
   PRINT LIST =           '    ----   ----------- ----------- ----------- --------
--- -----------  ',file=@Rept@
   Print form=12.csv LIST= '      1   ',ArInA[1][1], ArInA[1][2] , ArInA[1][3],
ArInA[1][4] , AreaA[1],file =@Rept@ ;
   Print form=12.csv LIST= '      2   ',ArInA[2][1], ArInA[2][2] , ArInA[2][3],
ArInA[2][4] , AreaA[2],file =@Rept@ ;
   Print form=12.csv LIST= '      3   ',ArInA[3][1], ArInA[3][2] , ArInA[3][3],
ArInA[3][4] , AreaA[3],file =@Rept@ ;
   Print form=12.csv LIST= '      4   ',ArInA[4][1], ArInA[4][2] , ArInA[4][3],
ArInA[4][4] , AreaA[4],file =@Rept@ ;
   Print form=12.csv LIST= '      5   ',ArInA[5][1], ArInA[5][2] , ArInA[5][3],
ArInA[5][4] , AreaA[5],file =@Rept@ ;
```

```
   Print form=12.csv LIST= '      6   ',ArInA[6][1], ArInA[6][2] , ArInA[6][3],
ArInA[6][4] , AreaA[6],file =@Rept@ ;
   Print LIST= '    ',file=@Rept@
   Print form=12.csv LIST= '     Sum  ',  RegInA[1],   RegInA[2] , RegInA[3],
RegInA[4] ,  SITotal, file =@Rept@ ;
   Print LIST= '   ','\n',file=@Rept@



   PRINT LIST =' Estimated Households By Vehicle Availability Level by Area Type
','\n', file=@Rept@

   PRINT LIST =           '   Area_Tp  0 Vehs.Av.   1 Veh.Av.   2 Vehs.Av.  3+
Vehs.Av.  Total      ',file=@Rept@
   PRINT LIST =           '   ----   ----------- ------------ ----------- --------
--- -----------  ',file=@Rept@
   Print form=12.csv LIST= '      1   ',ArVaA[1][1], ArVaA[1][2] , ArVaA[1][3],
ArVaA[1][4] , AreaA[1],file =@Rept@ ;
   Print form=12.csv LIST= '      2   ',ArVaA[2][1], ArVaA[2][2] , ArVaA[2][3],
ArVaA[2][4] , AreaA[2],file =@Rept@ ;
   Print form=12.csv LIST= '      3   ',ArVaA[3][1], ArVaA[3][2] , ArVaA[3][3],
ArVaA[3][4] , AreaA[3],file =@Rept@ ;
   Print form=12.csv LIST= '      4   ',ArVaA[4][1], ArVaA[4][2] , ArVaA[4][3],
ArVaA[4][4] , AreaA[4],file =@Rept@ ;
   Print form=12.csv LIST= '      5   ',ArVaA[5][1], ArVaA[5][2] , ArVaA[5][3],
ArVaA[5][4] , AreaA[5],file =@Rept@ ;
   Print form=12.csv LIST= '      6   ',ArVaA[6][1], ArVaA[6][2] , ArVaA[6][3],
ArVaA[6][4] , AreaA[6],file =@Rept@ ;
   Print LIST= '    ',file=@Rept@
   Print form=12.csv LIST= '     Sum  ',  RegVaA[1],   RegVaA[2] , RegVaA[3],
RegVaA[4] ,  SIVTotal, file =@Rept@ ;
   Print LIST= '   ','\n',file=@Rept@

ENDIF   ; -end of printing section


;
;
;
ENDRUN
```

9 Highway_Assignment.s

```
/*
-----------------------------------------------------------------------------
CTP2step_Highway_Assignment_v2.3.S  - Version 2.3 / 3722 TAZ traffic assignment
(File renamed to O:\model_dev\Ver2.3.Alpha_traffAssign\v23_hwy_assign_v4.s)
Developed from the assignment process from V2.2 CTP2step_Highway_Assignment.S
(1/7/11 rjm)
-----------------------------------------------------------------------------
Four time-of-day trip tables are used:
   AM peak period   3 Hrs. (6 AM - 9 AM)  AM
   Midday  period   6 Hrs. (9 AM - 3 PM)  MD
   PM peak period   4 Hrs. (3 PM - 7 PM)  PM
   Night   period  11 Hrs. (7 PM - 6 AM)  NT

The AM and PM periods are considered "peak"
The MD and NT periods are considered "off peak"

Tables on input trip table file:
          1- SOV
          2- HOV2-Occ
          3- HOV3+Occ
          4- Commercial Vehicles
          5- Medium/Heavy Truck
          6- Airport Auto Driver

Structure of the script:

  Step 1: Execute peak-period traffic assignments (AM & PM)
          NonHOV3+ traffic assignment
          HOV3+    traffic assignment

  Step 2: Execute off-peak-period traffic assignments (midday/MD & evening/OP)
          Off-peak (midday & evening) traffic assignment

  Step 3: Calculate restrained speed/perform MSA volume averaging
          Loop thru 1 (AM) and 2 (PM);  Each pk per. includes NonHOV3+ and HOV3+
          Loop thru 3 (midday, NT) and 4 (evening/off-peak, OP)

  Step 4: Summarize 24-hour VMT of current AM, PM, MD & NT assignments

Traffic assignment is done on a period-specific basis (not peak hour), so hourly
capacities are converted to period-specific capacities.  By contrast, all period-
specific speeds actually represent the peak hour of the given period.

Period-specific trip tables representing more than one hour are assigned, but
link capacities are specified in vehicles per hour.  A peak-hour factor (PHF),
which is the percent of traffic in the peak hour of the period, is used to relate
the hourly capacities to the multiple-hour trip tables.  See Barton-Aschman
Associates, Inc. and Cambridge Systematics, Inc., Model Validation and
Reasonableness Checking Manual, February 1997, pp. 78-81.

Environment Variables:
   _iter_  (Iteration indicator = 'pp','i1' - 'i6')

2011-02-11 msm  V/C ratio tabulation now goes from 0 to 5 (was 0 to 2), i.e., "0-5-
0.1"

*/

PAGEHEIGHT=32767 ; preclude insertion of page headers

;;;*****************************************************************************
;;; Step 1: Execute peak-period traffic assignments (AM & PM)
;;;         AM nonHOV, HOV and PM nonHOV and HOV Assignemnts
;;;*****************************************************************************


itr = '%_iter_%'   ;;

; The Input Network Depends on the previous Iteration network

;; IF     (itr      = 'pp')
;;   INPNET = 'ZONEHWY.NET'
;; ELSE
;;   INPNET = '%_prev_%HWY.NET'
;;ENDIF

INPNET = 'ZONEHWY.NET'

LOOP PERIOD = 1,2  ; Loop thru 1 (AM) and 2 (PM);  Each pk per. includes NonHOV3+
and HOV3+

IF     (Period==1)         ; AM Peak Period
    PRD    =  'AM'         ;
    PCTADT =   41.7        ; %_AMPF_%  AM PHF (% of traffic in pk hr of period)

ELSE                       ; PM Peak Period
    PRD    =  'PM'         ;
```

```
    PCTADT =   29.4       ; %_PMPF_%  PM PHF (% of traffic in pk hr of period)

ENDIF


   CAPFAC=1/(PCTADT/100)     ;  Capacity Factor = 1/(PCTADT/100)
   rel_gap = 0.001           ;  Relative gap threshold
   mxIters =   200           ;;  normally set to 200  set to 60 for testing


in_tskm   = 'inputs\hwy_assign_toll_skm.s'                  ;;     Toll param file
in_capSpd = '..\support\hwy_assign_capSpeedLookup_fwyCap5.s' ;;     FT x AT Speed &
Capacity lookup
VDF_File  = '..\support\hwy_assign_Conical_VDF.s'           ;;     Volume Delay
Functions file
;

;;;*****************************************************************************
;;; Step 1.1: Assign NonHOV3+ trip tables only
;;;          (SOV, HOV2, CV, TRUCK & AIRPORT PASSENGER TRIPS)
;;;*****************************************************************************

  RUN PGM=HIGHWAY  ; NonHOV3+ traffic assignment
  FILEI NETI     =  @INPNET@                        ; TP+ Network
  ;
  ;  The input trip table has 6 Vehicle Tables:
  ;     1 - 1-Occ Auto Drivers
  ;     2 - 2-Occ Auto Drivers
  ;     3 - 3+Occ Auto Drivers
  ;     4 - Commercial Vehicles
  ;     5 - Trucks
  ;     6 - Airport Pass. Auto Driver Trips

  FILEI MATI=%_iter_%@prd@.VTT ;
  ;
  FILEO NETO=TEMP1@PRD@.NET          ; Output loaded network of current iter/time
prd.
  PARAMETERS COMBINE=EQUI ENHANCE=2  ; Equilibrium assign, Bi-conj. Frank-Wolfe
algor.
  PARAMETERS RELATIVEGAP=@rel_gap@   ; Set a relative gap tolerance
  PARAMETERS MAXITERS=@mxIters@      ; We control on relative gap.  This is backup
criterion

  ;------------------------------------------------------$
  ;    Read in LOS'E' Capacities and Freeflow Speeds     $
  ;------------------------------------------------------$
  READ FILE = @in_capSpd@
  ;
  ;------------------------------------------------------$
  ;    Read in Toll Parameters:                          $
  ;------------------------------------------------------$
  READ FILE = @in_tskm@
  ;
  ;
  ;------------------------------------------------------$
  ;    VDF (Volume Delay Function) establishment:        $
  ;------------------------------------------------------$
  ;
  ;
  LOOKUP NAME=VCRV,
         lookup[1] = 1,result = 2,  ;Centroids   old VCRV1
         lookup[2] = 1,result = 3,  ;Fwys        old VCRV2
         lookup[3] = 1,result = 4,  ;MajArts     old VCRV3
         lookup[4] = 1,result = 5,  ;MinArts     old VCRV4
         lookup[5] = 1,result = 6,  ;Colls       old VCRV5
         lookup[6] = 1,result = 7,  ;Expways     old VCRV6
         lookup[7] = 1,result = 8,  ;Ramps       old VCRV2
         FAIL=0.00,0.00,0.00, INTERPOLATE=T,file=@VDF_File@
```

```
  FUNCTION {                                                      ; Congested Time
(TC)specification:
    V = VOL[1] + VOL[2] + VOL[4] +VOL[5]
    TC[1]= T0*VCRV(1,V/C)  ; TC(LINKCLASS) =
    TC[2]= T0*VCRV(2,V/C)  ;   Uncongested Time(T0) *
    TC[3]= T0*VCRV(3,V/C)  ;   Volume Delay Funtion(VDF)Value
    TC[4]= T0*VCRV(4,V/C)  ;   VDF function is based on ((V/C)
    TC[5]= T0*VCRV(5,V/C)  ; Note: the LINKCLASS is defined
    TC[6]= T0*VCRV(6,V/C)  ; during the LINKREAD phase below.
    TC[7]= T0*VCRV(7,V/C)  ; during the LINKREAD phase below.
  }
  ;
  ;
  CAPFAC=@CAPFAC@  ;
;  MAXITERS=3      ;
;  GAP  = 0.0      ;
;  AAD  = 0.0      ;
;  RMSE = 0.0      ;
;  RAAD = 0.0      ;


PHASE=LINKREAD
      C     = CAPACITYFOR(LI.@PRD@LANE,LI.CAPCLASS) * @CAPFAC@  ; Convert hourly
capacities to period-specific
      SPEED = SPEEDFOR(LI.@PRD@LANE,LI.SPDCLASS)
      T0    = (LI.DISTANCE/SPEED)*60.0
       ;  Since there is no "DISTANCE =" statement, this assumes that DISTANCE is
avail. on input network


   IF (ITERATION = 0)
     ; Define        link level tolls by vehicle type here:
        LW.SOV@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(1,LI.TOLLGRP)  ; SOV       TOLLS
in 2007 cents
        LW.HV2@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(2,LI.TOLLGRP)  ; HOV 2 occ TOLLS
in 2007 cents
;;      LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP)  ; HOV 3+occ TOLLS
in 2007 cents
        LW.CV@PRD@TOLL  = LI.@PRD@TOLL * @PRD@_TFAC(4,LI.TOLLGRP)  ; CV        TOLLS
in 2007 cents
        LW.TRK@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(5,LI.TOLLGRP)  ; Truck     TOLLS
in 2007 cents
        LW.APX@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(6,LI.TOLLGRP)  ; AP Pax    TOLLS
in 2007 cents

     ; Initial Iteration LINK IMPEDANCE (HIGHWAY TIME + Equiv.Toll/Time) by vehicle
type here:
         LW.SOV@PRD@IMP = T0    + (LW.SOV@PRD@TOLL/100.0)* SV@PRD@EQM ;SOV   IMP
         LW.HV2@PRD@IMP = T0    + (LW.HV2@PRD@TOLL/100.0)* H2@PRD@EQM ;HOV 2 IMP
;;       LW.HV3@PRD@IMP = T0    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP
         LW.CV@PRD@IMP  = T0    + (LW.CV@PRD@TOLL/100.0)*  CV@PRD@EQM ;CV IMP
         LW.TRK@PRD@IMP = T0    + (LW.TRK@PRD@TOLL/100.0)* TK@PRD@EQM ;Truck IMP
         LW.APX@PRD@IMP = T0    + (LW.APX@PRD@TOLL/100.0)* AP@PRD@EQM ;APAX  IMP

         IF (LI.@PRD@TOLL > 0)
            PRINT LIST = 'iteration: ',iteration(3),' A: ',A(7),' B: ',B(7),
          ' DISTANCE: ',LI.DISTANCE(6.2),
          ' LI.@PRD@TOLL: ',                        LI.@PRD@TOLL(5.2),
          ' FFSPEED: ',                                    SPEED(5.2),
          ' @PRD@_TFAC(1,LI.TOLLGRP): ',@PRD@_TFAC(1,LI.TOLLGRP)(5.1),
          ' SV@PRD@EQM: ',                             SV@PRD@EQM(5.1),
          ' LW.SOV@PRD@TOLL: ',                   LW.SOV@PRD@TOLL(5.2),
          ' T0: ',                                            T0(5.2),
          ' LW.SOV@PRD@IMP',                       LW.SOV@PRD@IMP(5.2),
            file = @prd@CHK.LKREAD
         ENDIF
```

```
    ENDIF

;$
    ;
    ;   The highway network is coded with limit codes from 1 to 9
    ;     LimitCode addGrp  Definition
    ;     --------  -----   ------------------------------------------------------
    ;        1       1      All vehicles accepted
    ;        2       2      Only HOV2 (or greater) vehicles accepted only
    ;        3       3      Only HOV3 vehicles accepted only
    ;        4       4      Med,Hvy Trks not accepted, all other traffic is accepted
    ;        5       5      Airport Passenger Veh. Trips
    ;        6-8     6      (Unused)
    ;        9       7      No vehicles are accepted at all
    ;
    IF     (LI.@PRD@LIMIT==1)
      ADDTOGROUP=1
    ELSEIF (LI.@PRD@LIMIT==2)
      ADDTOGROUP=2
    ELSEIF (LI.@PRD@LIMIT==3)
      ADDTOGROUP=3
    ELSEIF (LI.@PRD@LIMIT==4)
      ADDTOGROUP=4
    ELSEIF (LI.@PRD@LIMIT==5)
      ADDTOGROUP=5
    ELSEIF (LI.@PRD@LIMIT==6-8)
      ADDTOGROUP=6
    ELSEIF (LI.@PRD@LIMIT==9)
      ADDTOGROUP=7
    ENDIF

    IF (LI.FTYPE = 0)      ;  LinkClass related to TC[?] above
       LINKCLASS = 1       ;
    ELSEIF (LI.FTYPE = 1)  ;
       LINKCLASS= 2        ;
    ELSEIF (LI.FTYPE = 2)  ;
       LINKCLASS= 3        ;
    ELSEIF (LI.FTYPE = 3)  ;
       LINKCLASS= 4        ;
    ELSEIF (LI.FTYPE = 4)  ;
       LINKCLASS= 5        ;
    ELSEIF (LI.FTYPE = 5)  ;
       LINKCLASS= 6        ;
    ELSEIF (LI.FTYPE = 6)  ;
       LINKCLASS= 7        ;
    ENDIF

ENDPHASE

PHASE=ILOOP

   IF (I=1)
     LINKLOOP
       ; Initial Iteration LINK IMPEDANCE (HIGHWAY TIME + Equiv.Toll/Time) by
vehicle type here:
         LW.SOV@PRD@IMP = TIME    + (LW.SOV@PRD@TOLL/100.0)* SV@PRD@EQM ;SOV   IMP
         LW.HV2@PRD@IMP = TIME    + (LW.HV2@PRD@TOLL/100.0)* H2@PRD@EQM ;HOV 2 IMP
;        LW.HV3@PRD@IMP = TIME    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP
;;-->>   LW.HV3@PRD@IMP = TIME    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP
         LW.CV@PRD@IMP  = TIME    + (LW.CV@PRD@TOLL/100.0) * CV@PRD@EQM ;CV    IMP
         LW.TRK@PRD@IMP = TIME    + (LW.TRK@PRD@TOLL/100.0)* TK@PRD@EQM ;Truck IMP
         LW.APX@PRD@IMP = TIME    + (LW.APX@PRD@TOLL/100.0)* AP@PRD@EQM ;APAX  IMP

          IF (LI.@PRD@TOLL > 0)
               PRINT LIST = 'iteration: ',iteration(3),' A: ',A(7),' B: ',B(7),
              ' DISTANCE: ',LI.DISTANCE(6.2),
              ' LI.@PRD@TOLL: ',                        LI.@PRD@TOLL(5.2),
              ' FFSPEED: ',                                       SPEED(5.2),
              ' @PRD@_TFAC(1,LI.TOLLGRP): ',@PRD@_TFAC(1,LI.TOLLGRP)(5.1),
              ' SV@PRD@EQM: ',                               SV@PRD@EQM(5.1),
              ' LW.SOV@PRD@TOLL: ',                     LW.SOV@PRD@TOLL(5.2),
              ' T0: ',                                               T0(5.2),
              ' TIME: ',                                           TIME(5.2),
              ' LW.SOV@PRD@IMP',                         LW.SOV@PRD@IMP(5.2),
               file = @prd@CHK.LKLOOP
          ENDIF
     ENDLINKLOOP

   ENDIF

; Multi-user class or multiclass assignment implemented through volume sets (vol[#])

    PATHLOAD PATH=LW.SOV@PRD@IMP,  EXCLUDEGROUP=2,3,5,6,7,  VOL[1]=MI.1.1   ;  SOV
veh
    PATHLOAD PATH=LW.HV2@PRD@IMP,  EXCLUDEGROUP=3,5,6,7,    VOL[2]=MI.1.2   ;  HOV 2
;;  PATHLOAD PATH=LW.HV3@PRD@IMP,  EXCLUDEGROUP=5,6,7,      VOL[3]=MI.1.3   ;  HOV 3
    PATHLOAD PATH=LW.CV@PRD@IMP,   EXCLUDEGROUP=2,3,5,6,7,  VOL[4]=MI.1.4   ;  CVs
    PATHLOAD PATH=LW.TRK@PRD@IMP,  EXCLUDEGROUP=2,3,4,5,6,7,VOL[5]=MI.1.5   ;
Trucks
    PATHLOAD PATH=LW.APX@PRD@IMP,  EXCLUDEGROUP=6,7,        VOL[6]=MI.1.6   ;
Airport

ENDPHASE

PHASE=ADJUST

ENDPHASE

PHASE=CONVERGE
  if (rgap < rgapcutoff)
  balance=1
  endif
ENDPHASE

ENDRUN

;;;*****************************************************************************
;;; Step 1.2: Assign HOV3+ only
;;;*****************************************************************************

;;Turnpen  = 'inputs\turnpen.pen'                ; turn penalty file

  RUN PGM=HIGHWAY  ; HOV3+    traffic assignment
  FILEI NETI     = TEMP1@PRD@.NET                    ; TP+ Network
  ;;  TURNPENI = @TURNPEN@                         ; HOV turn penalty at Gallows
Road Ramp
  ;
  ;  The input trip table has 6 Vehicle Tables:
  ;     1 - 1-Occ Auto Drivers
  ;     2 - 2-Occ Auto Drivers
  ;     3 - 3+Occ Auto Drivers
  ;     4 - Commercial Vehicles
  ;     5 - Trucks
  ;     6 - Airport Pass. Auto Driver Trips

  FILEI MATI=%_iter_%@prd@.VTT ;
  ;
  FILEO NETO=TEMP2@PRD@.NET          ; Output loaded network of current iter/time
prd.
  PARAMETERS COMBINE=EQUI ENHANCE=2  ; Equilibrium assign, bi-conj. Frank-Wolfe
algor.
  PARAMETERS RELATIVEGAP=@rel_gap@   ; Set a relative gap tolerance
  PARAMETERS MAXITERS=@mxIters@      ; We control on relative gap.  This is backup
criterion
  ;
```

```
  ;----------------------------------------------------$
  ;    Read in LOS'E' Capacities and Freeflow Speeds    $
  ;----------------------------------------------------$
  READ FILE = @in_capSpd@

;$
  ;----------------------------------------------------$
  ;    Read in Toll Parameters:                         $
  ;----------------------------------------------------$
  READ FILE = @in_tskm@

  ;
  ;----------------------------------------------------$
  ;    VDF (Volume Delay Function) establishment:       $
  ;----------------------------------------------------$
  ; Note:  curves updated 2/16/06 rjm/msm
  ;
  LOOKUP NAME=VCRV,
         lookup[1] = 1,result = 2,  ;Centroids   old VCRV1
         lookup[2] = 1,result = 3,  ;Fwys        old VCRV2
         lookup[3] = 1,result = 4,  ;MajArts     old VCRV3
         lookup[4] = 1,result = 5,  ;MinArts     old VCRV4
         lookup[5] = 1,result = 6,  ;Colls       old VCRV5
         lookup[6] = 1,result = 7,  ;Expways     old VCRV6
         lookup[7] = 1,result = 8,  ;Ramps       old VCRV2
         FAIL=0.00,0.00,0.00, INTERPOLATE=T,file=@VDF_File@

  FUNCTION {                                                                              ;
Congested Time (TC)specification:
    V = VOL[3]                                                                            ;
    TC[1]= T0*VCRV(1,((V+LI.V_1)/C))   ; TC(LINKCLASS) =
    TC[2]= T0*VCRV(2,((V+LI.V_1)/C))   ;   Uncongested Time(T0) *
    TC[3]= T0*VCRV(3,((V+LI.V_1)/C))   ;   Volume Delay Funtion(VDF)Value
    TC[4]= T0*VCRV(4,((V+LI.V_1)/C))   ;   VDF function is based on (V+LI.V_1)/C
    TC[5]= T0*VCRV(5,((V+LI.V_1)/C))   ; Note: the LINKCLASS is defined
    TC[6]= T0*VCRV(6,((V+LI.V_1)/C))   ; during the LINKREAD phase below.
    TC[7]= T0*VCRV(7,((V+LI.V_1)/C))   ; during the LINKREAD phase below.
  }
  ;
  ;
  CAPFAC=@CAPFAC@  ;
  ;MAXITERS=3      ;
  ;GAP  = 0.0      ;
  ;AAD  = 0.0      ;
  ;RMSE = 0.0      ;
  ;RAAD = 0.0      ;


PHASE=LINKREAD
      C     = CAPACITYFOR(LI.@PRD@LANE,LI.CAPCLASS) * @CAPFAC@  ; Convert hourly
capacities to period-specific
      SPEED = SPEEDFOR(LI.@PRD@LANE,LI.SPDCLASS)
      T0    = (LI.DISTANCE/SPEED)*60.0
      T1    = LI.TIME_1
      ;  Since there is no "DISTANCE =" statement, this assumes that DISTANCE is
avail. on input network


   IF (ITERATION = 0)
     ; Define        link level tolls by vehicle type here:
       LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP) ; HOV 3+occ TOLLS
in 2007 cents

     ; Initial Iteration LINK IMPEDANCE (HIGHWAY TIME + Equiv.Toll/Time) by vehicle
type here:
         LW.HV3@PRD@IMP = T0    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP

         IF (LI.@PRD@TOLL > 0)
```

```
            PRINT LIST = 'iteration: ',iteration(3),' A: ',A(7),' B: ',B(7),
           ' DISTANCE: ',LI.DISTANCE(6.2),
           ' LI.@PRD@TOLL: ',                        LI.@PRD@TOLL(5.2),
           ' FFSPEED: ',                                     SPEED(5.2),
           ' @PRD@_TFAC(1,LI.TOLLGRP): ',@PRD@_TFAC(1,LI.TOLLGRP)(5.1),
           ' SV@PRD@EQM: ',                              SV@PRD@EQM(5.1),
           ' LW.HV3@PRD@TOLL: ',                  LW.HV3@PRD@TOLL(5.2),
           ' T0: ',                                             T0(5.2),
           ' LW.HV3@PRD@IMP',                      LW.HV3@PRD@IMP(5.2),
            file = @prd@CHK.LKREAD
         ENDIF

    ENDIF


;$
    ;
    ;   The highway network is coded with limit codes from 1 to 9
    ;     LimitCode addGrp  Definition
    ;     --------  -----   ------------------------------------------------------
    ;        1        1     All vehicles accepted
    ;        2        2     Only HOV2 (or greater) vehicles accepted only
    ;        3        3     Only HOV3 vehicles accepted only
    ;        4        4     Med,Hvy Trks not accepted, all other traffic is accepted
    ;        5        5     Airport Passenger Veh. Trips
    ;        6-8      6     (Unused)
    ;        9        7     No vehicles are accepted at all
    ;
    IF     (LI.@PRD@LIMIT==1)
      ADDTOGROUP=1
    ELSEIF (LI.@PRD@LIMIT==2)
      ADDTOGROUP=2
    ELSEIF (LI.@PRD@LIMIT==3)
      ADDTOGROUP=3
    ELSEIF (LI.@PRD@LIMIT==4)
      ADDTOGROUP=4
    ELSEIF (LI.@PRD@LIMIT==5)
      ADDTOGROUP=5
    ELSEIF (LI.@PRD@LIMIT==6-8)
      ADDTOGROUP=6
    ELSEIF (LI.@PRD@LIMIT==9)
      ADDTOGROUP=7
    ENDIF

    IF (LI.FTYPE = 0)      ;  LinkClass related to TC[?] above
       LINKCLASS = 1       ;
    ELSEIF (LI.FTYPE = 1)  ;
       LINKCLASS= 2        ;
    ELSEIF (LI.FTYPE = 2)  ;
       LINKCLASS= 3        ;
    ELSEIF (LI.FTYPE = 3)  ;
       LINKCLASS= 4        ;
    ELSEIF (LI.FTYPE = 4)  ;
       LINKCLASS= 5        ;
    ELSEIF (LI.FTYPE = 5)  ;
       LINKCLASS= 6        ;
    ELSEIF (LI.FTYPE = 6)  ;
       LINKCLASS= 7        ;
    ENDIF

ENDPHASE

PHASE=ILOOP

   IF (I=1)
     LINKLOOP
       ; Initial Iteration LINK IMPEDANCE (HIGHWAY TIME + Equiv.Toll/Time) by
vehicle type here:
```

```
        LW.HV3@PRD@IMP = TIME    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP

       IF (LI.@PRD@TOLL > 0)
              PRINT LIST = 'iteration: ',iteration(3),' A: ',A(7),' B: ',B(7),
             ' DISTANCE: ',LI.DISTANCE(6.2),
             ' LI.@PRD@TOLL: ',                     LI.@PRD@TOLL(5.2),
             ' FFSPEED: ',                                 SPEED(5.2),
             ' @PRD@_TFAC(1,LI.TOLLGRP): ',@PRD@_TFAC(1,LI.TOLLGRP)(5.1),
             ' SV@PRD@EQM: ',                         SV@PRD@EQM(5.1),
             ' LW.HV3@PRD@TOLL: ',                 LW.HV3@PRD@TOLL(5.2),
             ' T0: ',                                         T0(5.2),
             ' TIME: ',                                     TIME(5.2),
             ' LW.HV3@PRD@IMP',                     LW.HV3@PRD@IMP(5.2),
              file = @prd@CHK.LKLOOP
         ENDIF

     ENDLINKLOOP

   ENDIF
;
;

; There is only one volume set, so this is not a multi-user class or multiclass
assignm.

    PATHLOAD PATH=LW.HV3@PRD@IMP,  EXCLUDEGROUP=5,6,7,      VOL[3]=MI.1.3   ;  HOV 3


ENDPHASE

PHASE=ADJUST

ENDPHASE

PHASE=CONVERGE
  if (rgap < rgapcutoff)
  balance=1
  endif
ENDPHASE

ENDRUN


ENDLOOP            ; Loop thru 1 (AM) and 2 (PM);  Each pk per. includes NonHOV3+
and HOV3+

;;;*****************************************************************************
;;; Step 2: Execute off-peak-period traffic assignments (midday/MD & night/NT)
;;;         All 6 trip tables are assigned together.
;;;*****************************************************************************


LOOP PERIOD = 3,4  ; Loop thru 3 (midday, MD) and 4 (Night, NT)

IF  (period==3)            ; Off-Peak Period
    PRD    =  'MD'         ;
    PCTADT =   17.7        ; %_MDPF_%  Midday PHF (% of traffic in pk hr of period)
ENDIF
IF  (period==4)            ; Off-Peak Period
    PRD    =  'NT'         ;
    PCTADT =   35.0        ; %_NTPF_%  NT PHF (% of traffic in pk hr of period)
ENDIF

CAPFAC=1/(PCTADT/100)                  ; Capacity Factor = 1/(PCTADT/100)
; Turnpen  = 'inputs\turnpen.pen'        ; Turn penalty

  RUN PGM=HIGHWAY  ; Off-peak (midday & evening) traffic assignment
  FILEI NETI     = @INPNET@                          ; TP+ Network
```

```
  ;; TURNPENI = @TURNPEN@                         ; HOV turn penalty at Gallows Road
Ramp
  ;
  ;  The input trip table has 6 Vehicle Tables:
  ;     1 - 1-Occ Auto Drivers
  ;     2 - 2-Occ Auto Drivers
  ;     3 - 3+Occ Auto Drivers
  ;     4 - Commercial Vehicles
  ;     5 - Trucks
  ;     6 - Airport Pass. Auto Driver Trips

  FILEI MATI=%_iter_%@prd@.VTT ;
  ;
  FILEO NETO=temp2@PRD@.net          ; Output loaded network of current iter/time
prd. FOR OFF PEAK
  PARAMETERS COMBINE=EQUI ENHANCE=2  ; Equilibrium assign, bi-conj. Frank-Wolfe
algor.
  PARAMETERS RELATIVEGAP=@rel_gap@   ; Set a relative gap tolerance
  PARAMETERS MAXITERS=@mxIters@      ; We control on relative gap.  This is backup
criterion
  ;
  ;-----------------------------------------------------$
  ;    Read in LOS'E' Capacities and Freeflow Speeds     $
  ;-----------------------------------------------------$
  READ FILE = @in_capSpd@

;$
  ;-----------------------------------------------------$
  ;    Read in Toll Parameters:                          $
  ;-----------------------------------------------------$
  READ FILE = @in_tskm@
  ;
  ;-----------------------------------------------------$
  ;    VDF (Volume Delay Function) establishment:        $
  ;-----------------------------------------------------$
  ; Note:  curves updated 2/16/06 rjm/msm
  ;
  LOOKUP NAME=VCRV,
         lookup[1] = 1,result = 2,  ;Centroids   old VCRV1
         lookup[2] = 1,result = 3,  ;Fwys        old VCRV2
         lookup[3] = 1,result = 4,  ;MajArts     old VCRV3
         lookup[4] = 1,result = 5,  ;MinArts     old VCRV4
         lookup[5] = 1,result = 6,  ;Colls       old VCRV5
         lookup[6] = 1,result = 7,  ;Expways     old VCRV6
         lookup[7] = 1,result = 8,  ;Ramps       old VCRV2
         FAIL=0.00,0.00,0.00, INTERPOLATE=T,file=@VDF_File@

  FUNCTION {                                ; Congested Time (TC)specification:
    TC[1]= T0*VCRV(1,VC)   ; TC(LINKCLASS) =
    TC[2]= T0*VCRV(2,VC)   ;   Uncongested Time(T0) *
    TC[3]= T0*VCRV(3,VC)   ;   Volume Delay Funtion(VDF)Value
    TC[4]= T0*VCRV(4,VC)   ;   VDF function is based on VC
    TC[5]= T0*VCRV(5,VC)   ; Note: the LINKCLASS is defined
    TC[6]= T0*VCRV(6,VC)   ; during the LINKREAD phase below.
    TC[7]= T0*VCRV(7,VC)   ; during the LINKREAD phase below.
  }
  ;
  ;
  CAPFAC=@CAPFAC@  ;
  ;MAXITERS=3      ;
  ;GAP  = 0.0      ;
  ;AAD  = 0.0      ;
  ;RMSE = 0.0      ;
  ;RAAD = 0.0      ;


PHASE=LINKREAD
```

```
      C     = CAPACITYFOR(LI.@PRD@LANE,LI.CAPCLASS) * @CAPFAC@  ; Convert hourly
capacities to period-specific
      SPEED = SPEEDFOR(LI.@PRD@LANE,LI.SPDCLASS)
      T0    = (LI.DISTANCE/SPEED)*60.0
      ;  Since there is no "DISTANCE =" statement, this assumes that DISTANCE is
avail. on input network


   IF (ITERATION = 0)
     ; Define        link level tolls by vehicle type here:
        LW.SOV@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(1,LI.TOLLGRP) ; SOV       TOLLS
in 2007 cents
        LW.HV2@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(2,LI.TOLLGRP) ; HOV 2 occ TOLLS
in 2007 cents
        LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP) ; HOV 3+occ TOLLS
in 2007 cents
        LW.CV@PRD@TOLL  = LI.@PRD@TOLL * @PRD@_TFAC(4,LI.TOLLGRP) ; CV        TOLLS
in 2007 cents
        LW.TRK@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(5,LI.TOLLGRP) ; Truck     TOLLS
in 2007 cents
        LW.APX@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(6,LI.TOLLGRP) ; AP Pax    TOLLS
in 2007 cents

     ; Initial Iteration LINK IMPEDANCE (HIGHWAY TIME + Equiv.Toll/Time) by vehicle
type here:
         LW.SOV@PRD@IMP = T0    + (LW.SOV@PRD@TOLL/100.0)* SV@PRD@EQM ;SOV   IMP
         LW.HV2@PRD@IMP = T0    + (LW.HV2@PRD@TOLL/100.0)* H2@PRD@EQM ;HOV 2 IMP
         LW.HV3@PRD@IMP = T0    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP
         LW.CV@PRD@IMP  = T0    + (LW.CV@PRD@TOLL /100.0)* CV@PRD@EQM ;CV    IMP
         LW.TRK@PRD@IMP = T0    + (LW.TRK@PRD@TOLL/100.0)* TK@PRD@EQM ;Truck IMP
         LW.APX@PRD@IMP = T0    + (LW.APX@PRD@TOLL/100.0)* AP@PRD@EQM ;APAX  IMP

         IF (LI.@PRD@TOLL > 0)
            PRINT LIST = 'iteration: ',iteration(3),' A: ',A(7),' B: ',B(7),
           ' DISTANCE: ',LI.DISTANCE(6.2),
           ' LI.@PRD@TOLL: ',                          LI.@PRD@TOLL(5.2),
           ' FFSPEED: ',                                      SPEED(5.2),
           ' @PRD@_TFAC(1,LI.TOLLGRP): ',@PRD@_TFAC(1,LI.TOLLGRP)(5.1),
           ' SV@PRD@EQM: ',                              SV@PRD@EQM(5.1),
           ' LW.SOV@PRD@TOLL: ',                    LW.SOV@PRD@TOLL(5.2),
           ' T0: ',                                             T0(5.2),
           ' LW.SOV@PRD@IMP',                        LW.SOV@PRD@IMP(5.2),
            file = @prd@CHK.LKREAD
         ENDIF

    ENDIF


;$
    ;
    ;   The highway network is coded with limit codes from 1 to 9
    ;     LimitCode addGrp  Definition
    ;     --------  -----   -------------------------------------------------------
    ;        1       1      All vehicles accepted
    ;        2       2      Only HOV2 (or greater) vehicles accepted only
    ;        3       3      Only HOV3 vehicles accepted only
    ;        4       4      Med,Hvy Trks not accepted, all other traffic is accepted
    ;        5       5      Airport Passenger Veh. Trips
    ;        6-8     6      (Unused)
    ;        9       7      No vehicles are accepted at all
    ;
    IF     (LI.@PRD@LIMIT==1)
      ADDTOGROUP=1
    ELSEIF (LI.@PRD@LIMIT==2)
      ADDTOGROUP=2
    ELSEIF (LI.@PRD@LIMIT==3)
      ADDTOGROUP=3
    ELSEIF (LI.@PRD@LIMIT==4)
      ADDTOGROUP=4
    ELSEIF (LI.@PRD@LIMIT==5)
      ADDTOGROUP=5
    ELSEIF (LI.@PRD@LIMIT==6-8)
      ADDTOGROUP=6
    ELSEIF (LI.@PRD@LIMIT==9)
      ADDTOGROUP=7
    ENDIF

    IF (LI.FTYPE = 0)      ;  LinkClass related to TC[?] above
       LINKCLASS = 1       ;
    ELSEIF (LI.FTYPE = 1)  ;
       LINKCLASS= 2        ;
    ELSEIF (LI.FTYPE = 2)  ;
       LINKCLASS= 3        ;
    ELSEIF (LI.FTYPE = 3)  ;
       LINKCLASS= 4        ;
    ELSEIF (LI.FTYPE = 4)  ;
       LINKCLASS= 5        ;
    ELSEIF (LI.FTYPE = 5)  ;
       LINKCLASS= 6        ;
    ELSEIF (LI.FTYPE = 6)  ;
       LINKCLASS= 7        ;
    ENDIF

ENDPHASE

PHASE=ILOOP

   IF (I=1)
     LINKLOOP
       ; Initial Iteration LINK IMPEDANCE (HIGHWAY TIME + Equiv.Toll/Time) by
vehicle type here:
         LW.SOV@PRD@IMP = TIME    + (LW.SOV@PRD@TOLL/100.0)* SV@PRD@EQM ;SOV   IMP
         LW.HV2@PRD@IMP = TIME    + (LW.HV2@PRD@TOLL/100.0)* H2@PRD@EQM ;HOV 2 IMP
         LW.HV3@PRD@IMP = TIME    + (LW.HV3@PRD@TOLL/100.0)* H3@PRD@EQM ;HOV 3+IMP
         LW.CV@PRD@IMP  = TIME    + (LW.CV@PRD@TOLL /100.0)* CV@PRD@EQM ;CV    IMP
         LW.TRK@PRD@IMP = TIME    + (LW.TRK@PRD@TOLL/100.0)* TK@PRD@EQM ;Truck IMP
         LW.APX@PRD@IMP = TIME    + (LW.APX@PRD@TOLL/100.0)* AP@PRD@EQM ;APAX  IMP

          IF (LI.@PRD@TOLL > 0)
               PRINT LIST = 'iteration: ',iteration(3),' A: ',A(7),' B: ',B(7),
              ' DISTANCE: ',LI.DISTANCE(6.2),
              ' LI.@PRD@TOLL: ',                          LI.@PRD@TOLL(5.2),
              ' FFSPEED: ',                                      SPEED(5.2),
              ' @PRD@_TFAC(1,LI.TOLLGRP): ',@PRD@_TFAC(1,LI.TOLLGRP)(5.1),
              ' SV@PRD@EQM: ',                              SV@PRD@EQM(5.1),
              ' LW.SOV@PRD@TOLL: ',                    LW.SOV@PRD@TOLL(5.2),
              ' T0: ',                                             T0(5.2),
              ' TIME: ',                                         TIME(5.2),
              ' LW.SOV@PRD@IMP',                        LW.SOV@PRD@IMP(5.2),
               file = @prd@CHK.LKLOOP
          ENDIF

     ENDLINKLOOP

   ENDIF

; Multi-user class or multiclass assignment implemented through volume sets (vol[#])

    PATHLOAD PATH=LW.SOV@PRD@IMP,  EXCLUDEGROUP=2,3,5,6,7,  VOL[1]=MI.1.1   ;  SOV
veh
    PATHLOAD PATH=LW.HV2@PRD@IMP,  EXCLUDEGROUP=3,5,6,7,    VOL[2]=MI.1.2   ;  HOV 2
    PATHLOAD PATH=LW.HV3@PRD@IMP,  EXCLUDEGROUP=5,6,7,      VOL[3]=MI.1.3   ;  HOV 3
    PATHLOAD PATH=LW.CV@PRD@IMP,   EXCLUDEGROUP=2,3,5,6,7,  VOL[4]=MI.1.4   ;  CVs
    PATHLOAD PATH=LW.TRK@PRD@IMP,  EXCLUDEGROUP=2,3,4,5,6,7,VOL[5]=MI.1.5   ;
Trucks
```

```
    PATHLOAD PATH=LW.APX@PRD@IMP,  EXCLUDEGROUP=6,7,        VOL[6]=MI.1.6   ;
Airport

;$

ENDPHASE

PHASE=ADJUST

ENDPHASE

PHASE=CONVERGE
  if (rgap < rgapcutoff)
  balance=1
  endif
ENDPHASE

ENDRUN

ENDLOOP            ; Loop thru 3 (midday, MD) and 4 (evening/off-peak, OP)

;
; END OF MIDDAY and OFF PEAK ASSIGNMENT
;

;;;*****************************************************************************
;;; Step 3: Calculate restrained final Volumes, speeds, V/Cs (No MSA)
;;;*****************************************************************************

;;;*****************************************************************************
;;; Step 3.1: Loop thru 1 (AM) and 2 (PM)
;;;*****************************************************************************

LOOP PERIOD = 1,2  ; Loop thru 1 (AM) and 2 (PM);  Each pk per. includes NonHOV3+
and HOV3+

IF (PERIOD==1)
            PRD    =  'AM'         ;
            PCTADT =   41.7
ELSE
            PRD    =  'PM'         ;
            PCTADT =   29.4
ENDIF
;

CAPFAC=1/(PCTADT/100)      ; Capacity Factor = 1/(PCTADT/100)

  RUN PGM=HWYNET                 ; Calculate restrained speed/perform MSA volume
averaging
  FILEI NETI=temp2@PRD@.net       ; input network from highway assignment
  FILEO NETO=temp@prd@.net,       ; output/@PRD@ network with updated speeds
       EXCLUDE=V_1,TIME_1,VC_1,V1_1, V2_1, V3_1, V4_1,V5_1,  V6_1,
               VT_1,V1T_1,V2T_1,V3T_1,V4T_1,V5T_1,V6T_1,
               CSPD_1,VDT_1,VHT_1,
               V_2,TIME_2,VC_2,V1_2, V2_2,V3_2,V4_2,V5_2,V6_2,
               VT_2,V1T_2,V2T_2,V3T_2,V4T_2,V5T_2,V6T_2,
               WRSPD,WFFSPD
  ;
  ;-----------------------------------------------------$
  ;    VDF (Volume Delay Function) establishment:       $
  ;-----------------------------------------------------$
  ; Note:  curves updated 2/16/06 rjm/msm
  ;
  LOOKUP NAME=VCRV,
         lookup[1] = 1,result = 2,  ;Centroids   old VCRV1
         lookup[2] = 1,result = 3,  ;Fwys        old VCRV2
         lookup[3] = 1,result = 4,  ;MajArts     old VCRV3
         lookup[4] = 1,result = 5,  ;MinArts     old VCRV4
         lookup[5] = 1,result = 6,  ;Colls       old VCRV5
         lookup[6] = 1,result = 7,  ;Expways     old VCRV6
         lookup[7] = 1,result = 8,  ;Rmps
         FAIL=0.00,0.00,0.00, INTERPOLATE=T,file=@VDF_File@


  ;
  ;
  %_iter_%@prd@VOL = V_1 + V_2                                             ;  Final
AM/PM Link Volume
  %_iter_%@prd@VMT = %_iter_%@prd@VOL * distance                           ;  Final
AM/PM link VMT
  %_iter_%@prd@FFSPD  =SPEEDFOR(@prd@LANE,SPDCLASS)                        ;
Freeflow speed
  @prd@HRLKCAP=CAPACITYFOR(@prd@LANE,CAPCLASS)                             ;  Hrly
Link capacity
  @prd@HRLNCAP=CAPACITYFOR(1,CAPCLASS)                                     ;  Hrly
Lane capacity
  %_iter_%@prd@VC=(%_iter_%@prd@VOL*(@pctadt@/100.0)/@prd@HRLKCAP)        ;  AM/PM
VC  ratio
  %_iter_%@prd@VDF = VCRV((Ftype + 1), %_iter_%@prd@VC)                    ;  AM/PM
VDF
  if (%_iter_%@prd@VDF > 0)  %_iter_%@prd@SPD = %_iter_%@prd@FFSPD /
%_iter_%@prd@VDF  ; AM/PM speed (No queuing)
  ATYPE=SPDCLASS%10                                                        ; Area
Type
  _cnt = 1.0
  ;
  ;



;;
; compute WEIGHTED restrained and freeflow SPEEDS for Aggregate summaries

      WRSPD =ROUND(%_iter_%@prd@VMT * %_iter_%@prd@SPD)
      WFfSPD=ROUND(%_iter_%@prd@VMT * %_iter_%@prd@FFSPD)

; Crosstab VMT,WrSPD,WffSPD, by FTYPE and JUR
    CROSSTAB VAR=%_iter_%@prd@VMT,WrSPD,WffSPD,_CNT,FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WrSPD/%_iter_%@prd@VMT, FORM=12.2cs,   ; AVG INITIAL SPD
     COMP=WffSPD/%_iter_%@prd@VMT, FORM=12.2cs     ; AVG FINAL SPD

; Crosstab %_iter_%@prd@VMT,WOSPD,WNSPD,_CNT2 by ATYPE and FTYPE
     CROSSTAB VAR=%_iter_%@prd@VMT,WrSPD,WffSPD,_CNT, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WrSPD/%_iter_%@prd@VMT, FORM=12.2cs,   ; AVG INITIAL SPD
     COMP=WffSPD/%_iter_%@prd@VMT, FORM=12.2cs     ; AVG FINAL SPD


; Crosstab VMT,WOSPD,WNSPD,WFSPD,_CNT2 by EVC and FTYPE
    CROSSTAB VAR=%_iter_%@prd@VMT,WrSPD,WffSPD,_CNT, FORM=12cs,
     ROW=%_iter_%@prd@VC, RANGE=0-5-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WrSPD/%_iter_%@prd@VMT, FORM=12.2cs,   ;  AVG INITIAL SPD
     COMP=WFfSPD/%_iter_%@prd@VMT, FORM=12.2cs     ; Freeflow Speed


    ; PRINT TO check

 print LIST=A(5),' ',B(5),DISTANCE(7.2),' ',@PCTADT@(4.3),' ',@prd@LANE(2.0),' ',
     @prd@HRLKCAP(5.0),' ',@prd@HRLNCAP(5.0),' ',
     %_iter_%@prd@VOL(8.2),' ',
     %_iter_%@prd@ffspd(5.1),' ',%_iter_%@prd@VC(6.4),' ',%_iter_%@prd@VDF(6.4),' ',
     ftype(3.0),' ',ATYPE(3.0), ' ',%_iter_%@prd@SPD(5.1),
```

```
     FILE=%_iter_%@prd@LLNK.ASC

;;

ENDRUN
ENDLOOP            ; Loop thru 1 (AM) and 2 (PM);  Each pk per. includes NonHOV3+
and HOV3+

;;;****************************************************************************
;;; Step 3.2: Loop thru 3 (MD) and 4 (OP)
;;;****************************************************************************

LOOP PERIOD = 3,4  ; Loop thru 1 (midday, MD) and 2 (evening/off-peak, OP)
IF (PERIOD==3)
            PRD    =  'MD'         ;
            PCTADT =   17.7
ELSE
            PRD    =  'NT'         ;
            PCTADT =   35.0
ENDIF
;

CAPFAC=1/(PCTADT/100)      ; Capacity Factor = 1/(PCTADT/100)

  RUN PGM=HWYNET   ; Calculate restrained speed/perform MSA volume averaging
  FILEI NETI=temp2@PRD@.net             ; input network from highway assignment
  FILEO NETO=temp@prd@.net,       ; output/@PRD@ network with updated speeds
       EXCLUDE=V_1,TIME_1,VC_1,V1_1, V2_1, V3_1, V4_1,V5_1,V6_1,
                          VT_1,V1T_1,V2T_1,V3T_1,V4T_1,V5T_1,V6T_1,
                          CSPD_1,VDT_1,VHT_1,WRSPD,WFFSPD

  ;
  ;-----------------------------------------------------$
  ;    VDF (Volume Delay Function) establishment:       $
  ;-----------------------------------------------------$
  ; Note:  curves updated 2/16/06 rjm/msm
  ;
  LOOKUP NAME=VCRV,
         lookup[1] = 1,result = 2,  ;Centroids   old VCRV1
         lookup[2] = 1,result = 3,  ;Fwys        old VCRV2
         lookup[3] = 1,result = 4,  ;MajArts     old VCRV3
         lookup[4] = 1,result = 5,  ;MinArts     old VCRV4
         lookup[5] = 1,result = 6,  ;Colls       old VCRV5
         lookup[6] = 1,result = 7,  ;Expways     old VCRV6
         lookup[7] = 1,result = 8,  ;Rmps
         FAIL=0.00,0.00,0.00, INTERPOLATE=T,file=@VDF_File@


;;
 %_iter_%@prd@VOL = V_1
; Final Link Volume
 %_iter_%@prd@VMT = %_iter_%@prd@VOL * distance
; Final Link VMT
 %_iter_%@prd@FFSPD  =SPEEDFOR(@prd@LANE,SPDCLASS)
; Freeflow speed
 @prd@HRLKCAP=CAPACITYFOR(@prd@LANE,CAPCLASS)
; Hrly LINK capacity
 @prd@HRLNCAP=CAPACITYFOR(1,CAPCLASS)
; Hrly LANE capacity
 %_iter_%@prd@VC=(%_iter_%@prd@VOL*(@pctadt@/100.0)/@prd@HRLKCAP)
; Period VC ratio
 %_iter_%@prd@VDF = VCRV((Ftype + 1), %_iter_%@prd@VC)
; Period VDF value
 if (%_iter_%@prd@VDF > 0)  %_iter_%@prd@SPD = %_iter_%@prd@FFSPD / %_iter_%@prd@VDF
; Restrained Link speed(no Queuing delay)
 ATYPE=SPDCLASS%10
; area type
 _cnt = 1.0
; counter


;;
; compute WEIGHTED restrained and freeflow SPEEDS for Aggregate summaries

      WRSPD =ROUND(%_iter_%@prd@VMT * %_iter_%@prd@SPD)
      WFfSPD=ROUND(%_iter_%@prd@VMT * %_iter_%@prd@FFSPD)

; Crosstab VMT,WrSPD,WffSPD, by FTYPE and JUR
    CROSSTAB VAR=%_iter_%@prd@VMT,WrSPD,WffSPD,_CNT,FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WrSPD/%_iter_%@prd@VMT, FORM=12.2cs,   ; AVG INITIAL SPD
     COMP=WffSPD/%_iter_%@prd@VMT, FORM=12.2cs     ; AVG FINAL SPD

; Crosstab %_iter_%@prd@VMT,WOSPD,WNSPD,_CNT2 by ATYPE and FTYPE
     CROSSTAB VAR=%_iter_%@prd@VMT,WrSPD,WffSPD,_CNT, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WrSPD/%_iter_%@prd@VMT, FORM=12.2cs,   ; AVG INITIAL SPD
     COMP=WffSPD/%_iter_%@prd@VMT, FORM=12.2cs     ; AVG FINAL SPD


; Crosstab VMT,WOSPD,WNSPD,WFSPD,_CNT2 by EVC and FTYPE
    CROSSTAB VAR=%_iter_%@prd@VMT,WrSPD,WffSPD,_CNT, FORM=12cs,
     ROW=%_iter_%@prd@VC, RANGE=0-5-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WrSPD/%_iter_%@prd@VMT, FORM=12.2cs,   ;  AVG INITIAL SPD
     COMP=WFfSPD/%_iter_%@prd@VMT, FORM=12.2cs     ; Freeflow Speed


    ; PRINT TO check

 print LIST=A(5),' ',B(5),DISTANCE(7.2),' ',@PCTADT@(4.3),' ',@prd@LANE(2.0),' ',
     @prd@HRLKCAP(5.0),' ',@prd@HRLNCAP(5.0),' ',
     %_iter_%@prd@VOL(8.2),' ',
     %_iter_%@prd@ffspd(5.1),' ',%_iter_%@prd@VC(6.4),' ',%_iter_%@prd@VDF(6.4),' ',
     ftype(3.0),' ',ATYPE(3.0), ' ',%_iter_%@prd@SPD(5.1),
     FILE=%_iter_%@prd@LLNK.ASC

;;

ENDRUN
ENDLOOP            ; Loop thru 1 (midday, MD) and 2 (evening/off-peak, OP)

;;;****************************************************************************
;;; Step 4: Summarize 24-hour VMT of current AM, PM, MD & NT assignments
;;;****************************************************************************

RUN PGM=HWYNET     ; Summarize 24-hour VMT of current AM, PM, MD & OP assignments
  FILEI NETI[1]=tempAM.net
  FILEI NETI[2]=tempMD.net
  FILEI NETI[3]=tempPM.net
  FILEI NETI[4]=tempNT.net
  FILEO NETO   =%_iter_%HWY.NET,
             EXCLUDE=OLDVOL1,NEWVOL1,OLDVOL2,NEWVOL2,OLDVOL3,NEWVOL3,
                     OLDVOL4,NEWVOL4,OLDVOL5,NEWVOL5,
                     OLDSPD1,OLDSPD2,OLDSPD3,OLDSPD4,OLDSPD5,%_iter_%24VMT

         %_iter_%amspd =  LI.1.%_iter_%amspd
         %_iter_%mdspd =  LI.2.%_iter_%mdspd
         %_iter_%pmspd =  LI.3.%_iter_%pmspd
         %_iter_%ntspd =  LI.4.%_iter_%ntspd
 ;
 ;
  _VOLAM =  LI.1.%_iter_%AMVOL
```

```
  _VOLMD =  LI.2.%_iter_%MDVOL
  _VOLPM =  LI.3.%_iter_%PMVOL
  _VOLNT =  LI.4.%_iter_%NTVOL

; COMPUTE FINAL DAILY VOLUME  ON ALL LINKS
  %_iter_%24VOL =  _VOLAM + _VOLMD + _VOLPM + _VOLNT   ; Total Daily Volume

; COMPUTE FINAL DAILY VMT ON ALL NON-CENTROID LINKS
IF (FTYPE = 0)
  %_iter_%24VMT =  0
 ELSE
  %_iter_%24VMT =  %_iter_%24VOL * DISTANCE  ; Total Daily VMT
ENDIF

;
;
IF (FTYPE=1-6)
  TVOL00=ROUND((_VOLAM + _VOLMD + _VOLPM + _VOLNT)/1000.0) ; total hwy vol in 000s
  TVMT00=TVOL00*DISTANCE                                   ; total hwy VMT in 000s
  ELSE
  TVOL00=0
  TVMT00=0                                   ;
ENDIF
;
;;IF (FTYPE=1-6 && COUNT > 0 || (AMLIMIT = 2-3 || PMLIMIT=2-3 || NTLIMIT=2-3))
;;  TVolEST=TVol00           ; total hwy vol in 000s
;;  TVolobs=count            ; total hwy vol in 000s
;;  TVMTEST=TVMT00           ; total hwy vol in 000s
;;  TVMTOBS=count*DISTANCE   ; total hwy VMT in 000s
;;  ELSE
;;  Tvmtest=0
;;  TVMTobs=0                                  ; total hwy VMT in 000s
;;ENDIF
;

  comp atype=spdclass%10       ; area type code     1-7
                               ;  its the first digit of spdclass var
;; Crosstab TVMTEST,TVMTOBS by ATYPE and FTYPE
;;    CROSSTAB VAR=TVMTEST,TVMTOBS, FORM=8cs,
;;             ROW=ATYPE, RANGE=1-7-1,,1-7,
;;             COL=FTYPE, RANGE=0-6-1,0-6,
;;             COMP=TVMTEST-TVMTOBS, FORM=8cs,   ; Difference  (est-obs)
;;             COMP=TVMTEST/TVMTOBS, FORM=8.2cs  ; Ratio       (est/obs)
;;
;; Crosstab TVMTEST,TVMTOBS by Jurisdiction and FTYPE
;;    CROSSTAB VAR=TVMTEST,TVMTOBS, FORM=8cs,
;;             ROW=JUR,   RANGE=0-23-1,,0-23,
;;             COL=FTYPE, RANGE=0-6-1,0-6,
;;             COMP=TVMTEST-TVMTOBS, FORM=8cs,   ; Difference  (est-obs)
;;             COMP=TVMTEST/TVMTOBS, FORM=8.2cs  ; Ratio       (est/obs)

;; Crosstab TVMTEST,TVMTOBS by Screenline and FTYPE
;;    CROSSTAB VAR=TVolEST,TVolOBS, FORM=8cs,
;;             ROW=SCREEN, RANGE=1-38-1,,1-38,
;;             COL=FTYPE,  RANGE=0-6-1,0-6,
;;             COMP=TVolEST-TVolOBS, FORM=8cs,   ; Difference  (est-obs)
;;             COMP=TVolEST/TVolOBS, FORM=8.2cs  ; Ratio       (est/obs)
; --------------------------------------------------------------------
; --------------------------------------------------------------------
;;================================================================================
;; DAILY X-Tabs
;;================================================================================

;;  Crosstab DAILY VMT by ATYPE and FTYPE
     CROSSTAB VAR=%_iter_%24VMT, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6

; Crosstab Total VMT by Jurisdiction and FTYPE
  CROSSTAB VAR=%_iter_%24VMT, FORM=12cs,
             ROW=JUR,   RANGE=0-23-1,,0-23,
             COL=FTYPE, RANGE=0-6-1,0-6


ENDRUN
```

10 Highway_Skims.s

```
;//////////////////////////////////////////////////////////////;
;  Highway_Skims.S                                            //;
;  MWCOG Version 2.3 Model                                    //;
;                                                             //;
;  Build AM Peak/Off-Peak Highway Skims                       //;
;  the Current Iteration Asssignment                          //;
;  AM and Off-Pk Skims are built in 2 separate HWYLOAD        //;
;  programs.                                                  //;
;  Three files are created, per SOV, HOV2, and HOV3 paths.//;
;                                                              //;
;         1) Time     (xx.xx minutes)                         //;
;         2) Distance (implied tenths of mi.)                 //;
;         3) Toll     (in 2007 cents)                         //;
;
; 6/30/03 MODIFICATIONS FOR IMPROVED TOLL MODELING MADE  rjm
;
; 1/25/08 Changes made to create special changes to mode choice skims
; 1/31/08 generalized toll used in pathtracing changed to be mode-specific
;        e.g.       MW[3] =PATHTRACE(LI.@PRD@TOLL),       NOACCESS=0,
; ..was changed to>  MW[3] =PATHTRACE(LW.SOV@PRD@TOLL),    NOACCESS=0,
;
;                    MW[6] =PATHTRACE(LI.@PRD@TOLL),       NOACCESS=0, ;
; ..was changed to>  MW[6] =PATHTRACE(LW.HV2@PRD@TOLL),    NOACCESS=0, ;
;
;                    MW[9] =PATHTRACE(LI.@PRD@TOLL),       NOACCESS=0, ;
; ..was changed to>  MW[9] =PATHTRACE(LW.HV3@PRD@TOLL),    NOACCESS=0, ;
;
;  4/25/08  Modifications for Truck model wga/rm
;          Note Time is not rounded (to whole mintes) any more
;
;//////////////////////////////////////////////////////////////;
;
;
;   Environment Variables:
;     _iter_  (Iteration indicator = 'pp','i1'-'i6')
;
;
pageheight=32767  ; Preclude header breaks
NETIN    = '%_iter_%hwy.net'


; Output special truck skim only for off-peak conditions

LOOP Period=1,2         ;  We are looping through the skimming process
                        ;  twice: (1) for the AM Peak & (2) the Off-Peak

;in_tskm = 'inputs\toll.skm'  ; read in toll param file
 in_tskm = 'inputs\hwy_assign_toll_skm.s'         ; read in toll param file

  IF (Period=1)          ; AM Highway Skim tokens
    PRD       = 'AM'
```

```
    MATOUT1   = 'sov%_iter_%am.skm '
    MATOUT2   = 'hov2%_iter_%am.skm'
    MATOUT3   = 'hov3%_iter_%am.skm'

    MATOUTMC1 = 'sov%_iter_%am_MC.skm '
    MATOUTMC2 = 'hov2%_iter_%am_MC.skm'
    MATOUTMC3 = 'hov3%_iter_%am_MC.skm'

    MYID      = '%_iter_% AM skims'

    TT        = ';'
    MATOUT4   = ' '
    SKMTOT    = ' '

  ELSEIF (Period=2)     ; MD Highway Skim tokens
    PRD       = 'MD'
    MATOUT1   = 'sov%_iter_%md.skm '
    MATOUT2   = 'hov2%_iter_%md.skm'
    MATOUT3   = 'hov3%_iter_%md.skm'

    MATOUTMC1 = 'sov%_iter_%md_MC.skm '
    MATOUTMC2 = 'hov2%_iter_%md_MC.skm'
    MATOUTMC3 = 'hov3%_iter_%md_MC.skm'

    TT        = ' '
    MATOUT4   = 'trk%_iter_%md.skm'
    SKMTOT    = 'skimtot%_iter_%.dat'

    MYID    = '%_iter_% MD skims'
  ENDIF


RUN PGM=HIGHWAY
;
;
  NETI   =@NETIN@                          ; Pk Prd TP+ network
  MATO[1]=@MATOUT1@, MO=1,2,3,13, FORMAT=MINUTP  ; LOV   skims: time, dist, total
tolls, VP tolls
  MATO[2]=@MATOUT2@, MO=4,5,6,16, FORMAT=MINUTP  ; HOV2  skims: time, dist, total
tolls, VP tolls
  MATO[3]=@MATOUT3@, MO=7,8,9,19, FORMAT=MINUTP  ; HOV3+ skims: time, dist, total
tolls, VP tolls
  @TT@ MATO[4]=@MATOUT4@, MO=10   ; Truck skims

  ID=@MYID@
;-
  READ FILE = @in_tskm@
;-

  PHASE=LINKREAD
       SPEED       =  LI.%_iter_%@PRD@SPD ;Restrained speed (min)
       IF (SPEED = 0)
          T1 = 0
       ELSE
          T1 = LI.DISTANCE / SPEED * 60.0
       ENDIF
;-
   ; Define AM /MD link level TOTAL tolls by vehicle type here:
       LW.SOV@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(1,LI.TOLLGRP)           ;
SOV       TOTAL TOLLS in 2007 cents
       LW.HV2@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(2,LI.TOLLGRP)           ;
HOV 2 occ TOTAL TOLLS in 2007 cents
       LW.HV3@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(3,LI.TOLLGRP)           ;
HOV 3+occ TOTAL TOLLS in 2007 cents
       LW.TRK@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(4,LI.TOLLGRP)           ;
Truck     TOTAL TOLLS in 2007 cents
       LW.APX@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(5,LI.TOLLGRP)           ;
AP Pax    TOTAL TOLLS in 2007 cents
```

```
       LW.SOV@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(1,LI.TOLLGRP)           ;
SOV       VarPr TOLLS in 2007 cents
       LW.HV2@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(2,LI.TOLLGRP)           ;
HOV 2 occ VarPr TOLLS in 2007 cents
       LW.HV3@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(3,LI.TOLLGRP)           ;
HOV 3+occ VarPr TOLLS in 2007 cents
       LW.TRK@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(4,LI.TOLLGRP)           ;
Truck     VarPr TOLLS in 2007 cents
       LW.APX@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(5,LI.TOLLGRP)           ;
AP Pax    VarPr TOLLS in 2007 cents

   ; Define AM /MD IMPEDANCE by vehicle type here:
      LW.SOV@PRD@IMP= T1 + ((LW.SOV@PRD@TOLL/100.0)*   SV@PRD@EQM);SOV   IMP
      LW.HV2@PRD@IMP= T1 + ((LW.HV2@PRD@TOLL/100.0)*   H2@PRD@EQM);HOV 2 IMP
      LW.HV3@PRD@IMP= T1 + ((LW.HV3@PRD@TOLL/100.0)*   H3@PRD@EQM);HOV 3+IMP
      LW.TRK@PRD@IMP= T1 + ((LW.TRK@PRD@TOLL/100.0)*   TK@PRD@EQM);Truck IMP
      LW.APX@PRD@IMP= T1 + ((LW.APX@PRD@TOLL/100.0)*   AP@PRD@EQM);APAX  IMP

;
;  Define the three path types here:
;
;
; limit codes used:
;  1=no prohibitions
;  2=prohibit  1/occ autos,trucks
;  3=prohibit  1&2occ autos,trucks
;  4=prohibit  trucks
;  5=prohibit non-airport access trips
;  6-8=unused
;  9=prohibit all traffic use

    IF (LI.@PRD@LIMIT = 2,3,5-9) ADDTOGROUP=1 ; SOV   prohibited links
    IF (LI.@PRD@LIMIT = 3,5-9)   ADDTOGROUP=2 ; HOV2  prohibited links
    IF (LI.@PRD@LIMIT = 5-9)     ADDTOGROUP=3 ; HOV3+ prohibited links
    IF (LI.@PRD@LIMIT = 4)       ADDTOGROUP=4 ; Truck prohibited links

;
  ENDPHASE
;
; Now do the path skimming, per the three path types.  Time, distance,
; and Toll skims created.  Scaling to the desired specified below.
; All skims are based on minimum time paths.
;
; Note that override values of 0 will be inserted for disconnected ijs
; (i.e. cells associated with 'unused' zones and intrazonal cells).
; I don't like the TP+ default value of 1,000,000 for these situations
;
; 1/25/08 added skim tabs created:
;        (t13,t16,t19) tolls on variably priced facilities only

  PHASE=ILOOP



     PATHLOAD PATH=LW.SOV@PRD@IMP, EXCLUDEGRP=1,                ; SOV   paths
              MW[1] =PATHTRACE(TIME),               NOACCESS=0, ; -excluding links
              MW[2] =PATHTRACE(DIST),               NOACCESS=0, ; w/LIMIT=2,3,5-9
              MW[3] =PATHTRACE(LW.SOV@PRD@TOLL),    NOACCESS=0, ;
              MW[13]=PATHTRACE(LW.SOV@PRD@TOLL_VP), NOACCESS=0 ;

     PATHLOAD PATH=LW.HV2@PRD@IMP, EXCLUDEGRP=2,                ; HOV2  paths
              MW[4] =PATHTRACE(TIME),               NOACCESS=0, ; -excluding links
              MW[5] =PATHTRACE(DIST),               NOACCESS=0, ; w/LIMIT=3,5-9
              MW[6] =PATHTRACE(LW.HV2@PRD@TOLL),    NOACCESS=0, ;
              MW[16]=PATHTRACE(LW.HV2@PRD@TOLL_VP), NOACCESS=0  ;

     PATHLOAD PATH=LW.HV3@PRD@IMP, EXCLUDEGRP=3,                ; HOV3+ paths
```

```
             MW[7] =PATHTRACE(TIME),               NOACCESS=0, ; -excluding links
             MW[8] =PATHTRACE(DIST),               NOACCESS=0, ; w/LIMIT=5-9
             MW[9] =PATHTRACE(LW.HV3@PRD@TOLL),    NOACCESS=0, ;
             MW[19]=PATHTRACE(LW.HV3@PRD@TOLL_VP), NOACCESS=0  ;

  @TT@ PATHLOAD PATH=LW.TRK@PRD@IMP, EXCLUDEGRP=1,4,            ; Truck paths
  @TT@          MW[10]=PATHTRACE(TIME),   NOACCESS=0


;----------------------------------------------------------------------
; scaling, rounding of skim tables done here!!
;----------------------------------------------------------------------

     mw[2] = ROUND(MW[2]*10)                   ; FACTOR/ROUND DIST.
     mw[5] = ROUND(MW[5]*10)                   ; SKIMS TO IMPLICIT
     mw[8] = ROUND(MW[8]*10)                   ; 1/10THS OF MILES

     mw[3] = ROUND(MW[3])                      ; ROUND Total TOLL
     mw[6] = ROUND(MW[6])                      ; SKIMS TO 2007
     mw[9] = ROUND(MW[9])                      ; WHOLE CENTS

     mw[13] = ROUND(MW[13])                    ; ROUND Variable priced TOLL
     mw[16] = ROUND(MW[16])                    ; SKIMS TO 2007
     mw[19] = ROUND(MW[19])                    ; WHOLE CENTS

;;
;----------------------------------------------------------------------
; Print selected rows of skim files
; for checking.
;----------------------------------------------------------------------


     IF (i = 1-2)                        ;  for select rows (Is)
         printrow MW=1-3, j=1-3722       ;  print work matrices 1-3
     ENDIF                               ;  row value to all Js.
  ENDPHASE
ENDRUN

;----------------------------------------------------------------------
; Finally create special Mode Choice skims here
; The mode choice skims will be the same as the above skims unless VP toll lanes
;  are used; in that case time will include the VP toll time equivalent
;  and the toll value will be the toll on non-VP toll lanes ONLY
;
; Also create zonal truck access file per the @TT@ statements for the OP per. only
;----------------------------------------------------------------------

RUN PGM=MATRIX

     READ FILE = @in_tskm@     ; read toll time eqv param file
                                                  ; -- INPUT SKIMS --
      MATI[1] = @MATOUT1@                           ; SOV  skims (tm,dst,total
toll, VP toll)
      MATI[2] = @MATOUT2@                           ; HOV2 skims (tm,dst,total
toll, VP toll)
      MATI[3] = @MATOUT3@                           ; HOV3+skims (tm,dst,total
toll, VP toll)

 @TT@ MATI[4] = @MATOUT4@                           ; read in trk skim (op per
only)
 @TT@  MW[99] = MI.4.1
 ; For the skim total, put a large value in unconnected O/D pairs
 @TT@  JLOOP
 @TT@     IF (MW[99] = 0) MW[99] = 100000
 @TT@  ENDJLOOP
 @TT@  REPORT MARGINREC = Y, FILE = @SKMTOT@, FORM=15, LIST=J(5),R99,C99

                                                  ; -- OUTPUT SKIMS --
```

```
    MATO[1] = @MATOUTMC1@,MO=101,12,103, FORMAT=MINUTP  ; SOV  skims (tm&toll tm
eqv,dst,non-VP toll component)
    MATO[2] = @MATOUTMC2@,MO=201,22,203, FORMAT=MINUTP  ; HOV2 skims (tm&toll tm
eqv,dst,non-VP toll component)
    MATO[3] = @MATOUTMC3@,MO=301,32,303, FORMAT=MINUTP  ; HOV3+skims (tm&toll tm
eqv,dst,non-VP toll component)


 ;; read in input skims from above
    MW[11] = MI.1.1  ; SOV   time
    MW[12] = MI.1.2  ; SOV   distance
    MW[13] = MI.1.3  ; SOV   total toll
    MW[14] = MI.1.4  ; SOV   Var.priced toll component (if VP toll facility used)

    MW[21] = MI.2.1  ; HOV2  time
    MW[22] = MI.2.2  ; HOV2  distance
    MW[23] = MI.2.3  ; HOV2  total toll
    MW[24] = MI.2.4  ; HOV2  Var.priced toll component (if VP toll facility used)

    MW[31] = MI.3.1  ; HOV3+ time
    MW[32] = MI.3.2  ; HOV3+ distance
    MW[33] = MI.3.3  ; HOV3+ total toll
    MW[34] = MI.3.4  ; HOV3+ Var.priced toll component (if VP toll facility used)

 ;; now compute special time and toll values to be used in the mode choice process
 ;; which are normally 1/time, 2/distance, and 3/tolls; the new skims will be:
 ;; 1/ time + the toll time_equivalent on VP facilities only
 ;; 2/ distance (as before)
 ;; 3/ tolls on non-VP tolled facilities ONLY

 ;Mode Choice model Hwy time:
      MW[101] = MW[11] + ((MW[14]/100.0) * SV@PRD@EQM);
      MW[201] = MW[21] + ((MW[24]/100.0) * H2@PRD@EQM);
      MW[301] = MW[31] + ((MW[34]/100.0) * H3@PRD@EQM);

 ;Mode Choice model Hwy TOLL:
      MW[103] = MW[13] - MW[14]
      MW[203] = MW[23] - MW[24]
      MW[303] = MW[33] - MW[34]

      MW[103] = MAX(0,MW[103])
      MW[203] = MAX(0,MW[203])
      MW[303] = MAX(0,MW[303])
 ENDRUN



; end of truck access section
ENDLOOP
```

11 Highway_Skims_mod.s

```
;//////////////////////////////////////////////////////////////;
;  Highway_SkimsMod.S                                        //;
;  MWCOG Version 2 Model                                     //;
;                                                            //;
;  Build AM Peak/Midday   Highway Skims                      //;
;  the Current Iteration Assignment                          //;
;  AM and Midday Skims are built in 2 separate HWYLOAD       //;
;  programs.                                                 //;
;  Three files are created, per SOV, HOV2, and HOV3 paths.//;
;  Each file will contain 3 Tables (in MINUTP format)        //;
```

```
;         1) Time     (whole minutes)                   //;
;         2) Distance (implied tenths of mi.)           //;
;         3) Toll     (in 2007 cents)                   //;
;
; 6/30/03 MODIFICATIONS FOR IMPROVED TOLL MODELING MADE  rjm
; 2/14/08 generalized toll skimming changed to mode specific  skimming
;         (See  HIGHWAY_SKIMS.S change made on 1/31/08)
; 6/25/10 max zones increased to 8000 per V2.3
;///////////////////////////////////////////////////////////;
;
;
;   Environment Variables:
;     _iter_  (Iteration indicator = 'pp','i1'-'i6')
;
;
pageheight=32767  ; Preclude header breaks
NETIN    = '%_iter_%hwymod.net'

LOOP Period=1,2         ;  We are looping through the skimming process
                        ;  twice: (1) for the AM Peak & (2) the Off-Peak

in_tskm = 'inputs\hwy_assign_toll_skm.s'  ; read in toll param file

  IF (Period=1)          ; AM Highway Skim tokens
    PRD     = 'MD'
    MATOUT1 = 'sovm%_iter_%am.skm '
    MATOUT2 = 'hov2m%_iter_%am.skm'
    MATOUT3 = 'hov3m%_iter_%am.skm'
    MYID    = '%_iter_% AM skims'
  ELSE                  ; MD Highway Skim tokens
    PRD     = 'MD'
    MATOUT1 = 'sovm%_iter_%MD.skm '
    MATOUT2 = 'hov2m%_iter_%MD.skm'
    MATOUT3 = 'hov3m%_iter_%MD.skm'
    MYID    = '%_iter_% MD skims'
  ENDIF

RUN PGM=HIGHWAY
zones=7000
;
;
  NETI   =@NETIN@                         ; Pk Prd TP+ network
  MATO[1]=@MATOUT1@, MO=1-3;;, LOV   skims
  MATO[2]=@MATOUT2@, MO=4-6;;, HOV2  skims
  MATO[3]=@MATOUT3@, MO=7-9;;, HOV3+ skims
  ID=@MYID@
;-
  READ FILE = @in_tskm@
;-

  PHASE=LINKREAD
       SPEED        =  LI.%_iter_%@PRD@SPD ;Restrained speed (min)
       IF (SPEED = 0)
          T1 = 0
       ELSE
          T1 = LI.DISTANCE / SPEED * 60.0
       ENDIF
;-
   ; Define AM /MD link level tolls by vehicle type here:
       LW.SOV@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(1,LI.TOLLGRP)           ;  SOV
TOLLS in 2007 cents
       LW.HV2@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(2,LI.TOLLGRP)           ;  HOV 2
occ TOLLS in 2007 cents
       LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP)           ;  HOV
3+occ TOLLS in 2007 cents
       LW.TRK@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(4,LI.TOLLGRP)           ;  Truck
TOLLS in 2007 cents
       LW.APX@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(5,LI.TOLLGRP)           ;  AP Pax
TOLLS in 2007 cents

   ; Define AM /MD IMPEDANCE by vehicle type here:
      LW.SOV@PRD@IMP= T1 + ((LW.SOV@PRD@TOLL/100.0)*   SV@PRD@EQM);SOV   IMP
      LW.HV2@PRD@IMP= T1 + ((LW.HV2@PRD@TOLL/100.0)*   H2@PRD@EQM);HOV 2 IMP
      LW.HV3@PRD@IMP= T1 + ((LW.HV3@PRD@TOLL/100.0)*   H3@PRD@EQM);HOV 3+IMP
      LW.TRK@PRD@IMP= T1 + ((LW.TRK@PRD@TOLL/100.0)*   TK@PRD@EQM);Truck IMP
      LW.APX@PRD@IMP= T1 + ((LW.APX@PRD@TOLL/100.0)*   AP@PRD@EQM);APAX  IMP


;
;  Define the three path types here:
;
;
; limit codes used:
;  1=no prohibitions
;  2=prohibit  1/occ autos,trucks
;  3=prohibit  1&2occ autos,trucks
;  4=prohibit  trucks
;  5=prohibit non-airport access trips
;  6-8=unused
;  9=prohibit all traffic use

    IF (LI.@PRD@LIMIT = 2,3,5-9) ADDTOGROUP=1 ; SOV   prohibited links
    IF (LI.@PRD@LIMIT = 3,5-9)   ADDTOGROUP=2 ; HOV2  prohibited links
    IF (LI.@PRD@LIMIT = 5-9)     ADDTOGROUP=3 ; HOV3+ prohibited links
;
  ENDPHASE
;
; Now do the path skimming, per the three path types.  Time, distance,
; and Toll skims created.  Scaling to the desired specified below.
; All skims are based on minimum time paths.
;
; Note that override values of 0 will be inserted for disconnected ijs
; (i.e. cells associated with 'unused' zones and intrazonal cells).
; I don't like the TP+ default value of 1,000,000 for these situations
;
  PHASE=ILOOP

    PATHLOAD PATH=LW.SOV@PRD@IMP, EXCLUDEGRP=1,    ; SOV   paths
             MW[1]=PATHTRACE(TIME),    NOACCESS=0, ; -excluding links
             MW[2]=PATHTRACE(DIST),    NOACCESS=0, ;   w/ LIMIT=2,3,5-9
             MW[3]=PATHTRACE(LW.SOV@PRD@TOLL),    NOACCESS=0 ;
    PATHLOAD PATH=LW.HV2@PRD@IMP, EXCLUDEGRP=2,    ; HOV2  paths
             MW[4]=PATHTRACE(TIME),    NOACCESS=0, ; -excluding links
             MW[5]=PATHTRACE(DIST),    NOACCESS=0, ;   w/ LIMIT=3,5-9
             MW[6]=PATHTRACE(LW.HV2@PRD@TOLL),    NOACCESS=0 ;
    PATHLOAD PATH=LW.HV3@PRD@IMP, EXCLUDEGRP=3,    ; HOV3+ paths
             MW[7]=PATHTRACE(TIME),    NOACCESS=0, ; -excluding links
             MW[8]=PATHTRACE(DIST),    NOACCESS=0, ;   w/ LIMIT=5-9
             MW[9]=PATHTRACE(LW.HV3@PRD@TOLL),    NOACCESS=0 ;

;------------------------------------------------------------------
; scaling, rounding of skim tables done here!!
;------------------------------------------------------------------

     mw[1] = ROUND(MW[1])                      ; ROUND TIME SKIMS
     mw[4] = ROUND(MW[4])                      ; TO WHOLE MINUTES
     mw[7] = ROUND(MW[7])                      ;
     mw[1] = MIN(MW[1],326.0)  ; Impose Max TIME / MC Model Maximum
     mw[4] = MIN(MW[4],326.0)  ; Impose Max TIME / MC Model Maximum
     mw[7] = MIN(MW[7],326.0)  ; Impose Max TIME / MC Model Maximum
                               ;  ...just in case
     mw[2] = ROUND(MW[2]*10)                   ; FACTOR/ROUND DIST.
     mw[5] = ROUND(MW[5]*10)                   ; SKIMS TO IMPLICIT
     mw[8] = ROUND(MW[8]*10)                   ; 1/10THS OF MILES

     mw[3] = ROUND(MW[3])                      ; ROUND TOLL
```

```
     mw[6] = ROUND(MW[6])                      ; SKIMS TO 2007
     mw[9] = ROUND(MW[9])                      ; WHOLE CENTS

;----------------------------------------------------------------------
; Print selected rows of skim files
; for checking.
;----------------------------------------------------------------------


     IF (i = 1-2)                        ;  for select rows (Is)
         printrow MW=1-3, j=1-2191       ;  print work matrices 1-3
     ENDIF                               ;  row value to all Js.
  ENDPHASE
ENDRUN
ENDLOOP
```

12 joinskims.s

```
; JoinSkims.S - Consolidate highway skims used in Mode Choice Model
;   Input skims:  ???%_iter_%@PRD@.skm
;   Changed to:   ???%_iter_%@PRD@_MC.skm
;  The revised skim reflect
;      time (min) + time (min) equivalent of any Variably Priced facility toll such
as ICC/VA Hot lanes
;      distance (1/10s of mi),
;      tolls (2007 cts) of any FIXED price facility, such as Dulles toll road.
;
; _HOV3Path_  environment variable is used to override HOV3 Skims from another
Subdirectory
;
pageheight=32767  ; Preclude header breaks


RUN PGM=MATRIX
    MATI[1]=         sov%_iter_%am_MC.skm
    MATI[2]=         hov2%_iter_%am_MC.skm
    MATI[3]=         hov3%_iter_%am_MC.skm

    MATI[4]=         sov%_iter_%md_MC.skm
    MATI[5]=         hov2%_iter_%md_MC.skm
    MATI[6]=         hov3%_iter_%md_MC.skm


    FILLMW  MW[1]  = MI.1.1,2,3
    FILLMW  MW[4]  = MI.2.1,2,3
    FILLMW  MW[7]  = MI.3.1,2,3

    FILLMW  MW[10] = MI.4.1,2,3
    FILLMW  MW[13] = MI.5.1,2,3
    FILLMW  MW[16] = MI.6.1,2,3

   MATO[1] = hwy%_iter_%am.skm, MO=1-9,
                                 name=SovTime,SOVDst10,SOVToll,
                                      Hv2Time,Hv2Dst10,HV2Toll,
                                      Hv3Time,Hv3Dst10,HV3Toll

   MATO[2] = hwy%_iter_%op.skm, MO=10-18,
                                 name=SovTime,SOVDst10,SOVToll,
                                      Hv2Time,Hv2Dst10,HV2Toll,
                                      Hv3Time,Hv3Dst10,HV3Toll
```

```
ENDRUN
```

13 MC_Auto_Drivers.s

```
; ====================================================================
;  Version 2.3
;  MC_Auto_Drivers.s
;  This program is used to develop 1-occ, 2-occ, and 3+occ auto driver
;  trip tables, by purpose (HBW, HBS, HBO, and NHB).  The script reads two files:
;  1) Internal Auto Person Trips - The AECOM NL Mode choice output, each file
;     contains auto person trips by occupancy group (1,2,and 3+ Occupant Vehicles).
;  2) External Auto Person trips - the trip distibution output containing
;     total auto person trips.
; ====================================================================
;
;
;/////////////////////////////////////////////////////////////////
;

Zonesize   = 3722
FstExtZn   = 3676

; First, establish Input/Output filenames:
LOOP PURP=1,5   ;  We'll Loop 5 times, for each purpose
                ;
IF (PURP=1)    ; HBW Loop
 MCFILE   = '%_iter_%_HBW_NL_MC.MTT' ;AECOM Mode Choice file           (Input)
 TDFILE   = 'HBW_%_iter_%_.PTT'      ;Trip distibution output          (Input)
 MC123OCC = 'HBW%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE  = 'HBW'                    ;
 Avg3P_Occ=  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 ExtCarOcc=  1.15                    ; Avg External Auto Occ.
 TDTab    =  '6'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=2) ; HBS Loop
 MCFILE   = '%_iter_%_HBS_NL_MC.MTT' ;AECOM Mode Choice file           (Input)
 TDFILE   = 'HBS_%_iter_%_.PTT'     ;Trip distibution output          (Input)
 MC123OCC = 'HBS%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE  = 'HBS'                    ;
 Avg3P_Occ=  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 ExtCarOcc=  1.64                    ; Avg External Auto Occ.
 TDTab    =  '6'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=3) ; HBO Loop
 MCFILE   = '%_iter_%_HBO_NL_MC.MTT' ;AECOM Mode Choice file           (Input)
 TDFILE   = 'HBO_%_iter_%_.PTT'     ;Trip distibution output          (Input)
 MC123OCC = 'HBO%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE  = 'HBO'                    ;
 Avg3P_Occ=  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 ExtCarOcc=  1.61                    ; Avg External Auto Occ.
 TDTab    =  '6'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=4) ; NHW Loop
 MCFILE   = '%_iter_%_NHW_NL_MC.MTT' ;AECOM Mode Choice file           (Input)
 TDFILE   = 'NHW_%_iter_%_.PTT'     ;Trip distibution output          (Input)
 MC123OCC = 'NHW%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE  = 'NHW'                    ;
 Avg3P_Occ=  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
```

```
 ExtCarOcc=  1.28                    ; Avg External Auto Occ.
 TDTab    =  '3'                     ; Total Psn Trip tab no. in Trip Dist. output
file


ELSEIF (PURP=5) ; NHO Loop
 MCFILE   = '%_iter_%_NHO_NL_MC.MTT' ;AECOM Mode Choice file           (Input)
 TDFILE   = 'NHO_%_iter_%_.PTT'     ;Trip distibution output           (Input)
 MC123OCC = 'NHO%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE  = 'NHO'                    ;
 Avg3P_Occ=  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 ExtCarOcc=  1.28                    ; Avg External Auto Occ.
 TDTab    =  '3'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ENDIF
;
;//////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
  PAGEHEIGHT= 32767

    MATI[1]=@MCFILE@           ;  MODE CHOICE MODEL OUTPUT FILE (for INTL TRIPS)
    MATI[2]=@TDfILE@           ;  TRIP DISTRIBUTION OUTPUT FILE (for EXTL TRIPS)

    ; put INTERNAL 1,2,3+ OCC AUTO PERSON TRIPS IN MTX 1,2,3
        FILLMW MW[1]  = MI.1.1,2,3

    ; compute internal auto driver trips, by occ group in mtx 11,12,13
        MW[11]  = MW[1] / 1.0              ;;  intl 1-occ. auto drivers
        MW[12]  = MW[2] / 2.0              ;;  intl 2-occ. auto drivers
        MW[13]  = MW[3] / @Avg3P_Occ@      ;;  intl 3+occ. auto drivers

    ; put TOTAL motorized person trips in mtx 20.
        MW[20] = MI.2.@TDtab@

    ; the external portion(auto person trips) will be extracted from mtx 20, and put
into 30
    ; .
        IF (I <  @FstExtZn@)  MW[22]  = 1.0, include = @FstExtZn@-@Zonesize@ ;
        IF (I >= @FstExtZn@)  MW[22]  = 1.0, exclude = @FstExtZn@-@Zonesize@ ;

        MW[30] = MW[20] * MW[22]        ;; Extl auto person trips

    ; compute external auto driver trips in mtx 40, and apportion among occ groups
    ; using standard occ. curves

        MW[40] = MW[30] / @ExtCarOcc@    ;; Extl Auto driver trips

JLOOP
  XCarOcc =@ExtCarOcc@
; Determine LOV Vehicles in 1,2,3&4+ occupant groups using model
; COG's disaggrgegation model.

        IF     (XCarOcc  < 1.0050) ;  Make sure the computed Car Occ.
                XCarOcc  = 1.0050  ;  is between 1.005 and 2.500
        ELSEIF (XCarOcc  > 2.5000) ;  -- if not establish boundary
                XCarOcc  = 2.5000  ;      conditions
        ENDIF
;
; Apply Car Occ. Pct Model-Computes Pct Vehs.in Occ groups as function
; of avg auto occ.  The function is continuous  but piecewise.
;
        IF     (XCarOcc = 1.0050 - 1.1199999)
         MW[21] =  2.00264 - (0.9989 * XCarOcc) ; Shr of 1-Occ Vehs
         MW[22] = -1.00050 + (0.9952 * XCarOcc) ; Shr of 2-Occ Vehs
         MW[23] = -0.00158 + (0.0029 * XCarOcc) ; Shr of 3-Occ Vehs
         MW[24] = -0.00056 + (0.0008 * XCarOcc) ; Shr of 4-Occ Vehs
```

```
        ELSEIF (XCarOcc = 1.1200 - 2.5000)
         MW[21] =  1.59600 - (0.6357 * XCarOcc) ; Shr of 1-Occ Vehs
         MW[22] = -0.31143 + (0.3800 * XCarOcc) ; Shr of 2-Occ Vehs
         MW[23] = -0.17082 + (0.1540 * XCarOcc) ; Shr of 3-Occ Vehs
         MW[24] = -0.11375 + (0.1017 * XCarOcc) ; Shr of 4-Occ Vehs
        ENDIF

        ;
        ;   Apply Modeled Shares to the Extl Auto Drivers in mtx 51-54

         MW[51] =(MW[21] * MW[40]) ; Estimated Extl 1 occ vehicles
         MW[52] =(MW[22] * MW[40]) ; Estimated Extl 2 occ vehicles
         MW[53] =(MW[23] * MW[40]) ; Estimated Extl 3 occ vehicles
         MW[54] =(MW[24] * MW[40]) ; Estimated Extl 4+occ vehicles


; compute add intl and extl auto drivers by occ. groups together
; in mtx 61,62,63.  Total adrs will be in mtx 70

         MW[61] = MW[51] + MW[11]           ; Total 1-Occ Total Auto Drivers
         MW[62] = MW[52] + MW[12]           ;       2-occ
         MW[63] = MW[53] + MW[54] + MW[13]  ;       3+occ

         MW[70] = mw[61] + MW[62] + MW[63]
;
endjloop



JLOOP

; Lets sum up the above to get neat total summaries
     Int1_OccAPsn  =   Int1_OccAPsn + MW[1]                             ;
     Int2_OccAPsn  =   Int2_OccAPsn + MW[2]                             ;
     Int3POccAPsn  =   Int3POccAPsn + MW[3]                             ;
     IntAutoPsn    =   IntAutoPsn   + MW[1] + MW[2]+ MW[3]
;

     Int1_OccADrv  =   Int1_OccADrv + MW[11]                            ;
     Int2_OccADrv  =   Int2_OccADrv + MW[12]                            ;
     Int3POccADrv  =   Int3POccADrv + MW[13]                            ;
     IntAutoDrv    =   IntAutoDrv   + MW[11] + MW[12]+ MW[13]
;

     TotalMotorPsn =   TotalMotorPsn + MW[20]                            ;

     ExtAutoPsn    =   ExtAutoPsn   + MW[30]                            ;

     ExtAutoDrv    =   ExtAutoDrv   + MW[40]                            ;

     Ext1_OccADrv  =   Ext1_OccADrv + MW[51]                            ;
     Ext2_OccADrv  =   Ext2_OccADrv + MW[52]                            ;
     Ext3_OccADrv  =   Ext3_OccADrv + MW[53]                            ;
     Ext4POccADrv  =   Ext4POccADrv + MW[54]                            ;
     ExtchkAdrv    =   ExtchkADrv   + MW[51]+ MW[52]+ MW[53]+ MW[54]    ;

     Tot1_OccADrv  =   Tot1_OccADrv + MW[61]                            ;
     Tot2_OccADrv  =   Tot2_OccADrv + MW[62]                            ;
     Tot3POccADrv  =   Tot3POccADrv + MW[63]                            ;

     TotalAutoDrv  =   TotalAutoDrv + MW[70]                            ;
endjloop

IF (I == ZONES)
;


 Print LIST='/bt     '
```

```
 LIST='SUMMARY OF ','@PURPOSE@',' ITERATION: ','%_iter_%','  AUTO DRIVER TRIP
RESULTS'
 LIST='   '
 Print form = 12.2  LIST='    Assumed Avg  3+Veh. Occ.:  ',@Avg3P_Occ@
 Print form = 12.2  LIST='    Assumed Extl Veh Occ.   :  ',@ExtCarOcc@
 LIST='   '
 List=' Input Internal Auto Persons   '
 Print form = 12.0csv List='       1-Occ.: ',   Int1_OccAPsn
 Print form = 12.0csv List='       2-Occ.: ',   Int2_OccAPsn
 Print form = 12.0csv List='       3+Occ.: ',   Int3POccAPsn
 List=' ------------------------------ '
 List='       Total   ',    IntAutoPsn
 List='                                 '
 List=' Input / Derived Internal Auto Drivers  '
 Print form = 12.0csv List='       1-Occ.: '    Int1_OccADrv
 Print form = 12.0csv List='       2-Occ.: '    Int2_OccADrv
 Print form = 12.0csv List='       3+Occ.: '    Int3POccADrv
 List=' ------------------------------ '
 Print form = 12.0csv List='       Total   ',   IntAutoDrv
 List='                '                '
 Print form = 12.0csv List='  Input Total Motorized Person   ',  TotalMotorPsn
 List='                            '
 Print form = 12.0csv List='  Input Total External Auto Psn  ',  ExtAutoPsn
 List='                           '
 Print form = 12.0csv List=' Input/Derived External Auto Drv ',  ExtAutoDrv
 List='             '
 List=' Estimated External Auto Drivers  '
 Print form = 12.0csv List='       1-Occ.: ',   Ext1_OccADrv
 Print form = 12.0csv List='       2-Occ.: ',   Ext2_OccADrv
 Print form = 12.0csv List='       3-Occ.: ',   Ext3_OccADrv
 Print form = 12.0csv List='       4+Occ.: ',   Ext4POccADrv
 List=' ------------------------------ '
 Print form = 12.0csv List='       Total   ',   ExtchkADrv
 List='       '
 List=' Output / Combined Internal/External Auto Drivers  '
 Print form = 12.0csv List='       1-Occ.: '    Tot1_OccADrv
 Print form = 12.0csv List='       2-Occ.: '    Tot2_OccADrv
 Print form = 12.0csv List='       3+Occ.: '    Tot3POccADrv
 List=' ------------------------------ '
 Print form = 12.0csv LIST='       Total   ',   TotalAutoDrv
 LIST='        '
 LIST='===  END OF ','@PURPOSE@',' ITERATION: ','%_iter_%',' AUTO DRV RESULTS ==='
 LIST='/et     '
ENDIF

MATO=@MC123OCC@,MO=61,62,63 ; output file designation

ENDRUN
ENDLOOP
```

14 MC_NL_Summary.s

```
;-------------------------------------------------------------------
; Program Name: MC__NL_Summary.s
; Version 2.3 Model w/ Nested Logit MC model
;
; Summarize final table by purpose & Mode & Submode
;
; Environment Variables Used:
;              %_iter_%
;              %_year_%
;              %_alt_%
;
;
;-------------------------------------------------------------------
;   Modes in AECOM MC model    Summary modes
;     1 DR ALONE                  1 All transit         4-14
;     2 SR2                       2 Metrorail only      7,13,14
;     3 SR3+                      3 Metrorail related   7,13,14,6,11,12
;     4 WK-CR                     4 Auto person         1-3
;     5 WK-BUS                    5 Total motorized psn 1-14
;     6 WK-BU/MR                  6 Commuter rail       4,8 (may incl bus/Mrail)
;     7 WK-MR                     7 Bus only            5,9,10
;     8 PNR-CR                    8 Bus only, WMATA Compact area
;     8 KNR-CR
;     9 PNR-BUS
;    10 KNR-BUS
;    11 PNR-BU/MR
;    12 KNR-BU/MR
;    13 PNR-MR
;    14 KNR-MR
;-------------------------------------------------------------------

; ---------------------------------------------------------------
; Now summarize total purpose trip tables, by mode
; ---------------------------------------------------------------
pageheight=32767  ; Preclude header breaks
 HBW3PlOCC = 3.50  ; Assumed Occupancy of 3+ Vehicles
 HBS3PlOCC = 3.50  ; Assumed Occupancy of 3+ Vehicles
 HBO3PlOCC = 3.50  ; Assumed Occupancy of 3+ Vehicles
 NHW3PlOCC = 3.50  ; Assumed Occupancy of 3+ Vehicles
 NHO3PlOCC = 3.50  ; Assumed Occupancy of 3+ Vehicles

RUN PGM=MATRIX

  ZONES=3722

    MATI[1]= %_iter_%_HBW_NL_MC.MTT
    MATI[2]= %_iter_%_HBS_NL_MC.MTT
    MATI[3]= %_iter_%_HBO_NL_MC.MTT
    MATI[4]= %_iter_%_NHW_NL_MC.MTT
    MATI[5]= %_iter_%_NHO_NL_MC.MTT

    FILLMW MW[101] = mi.1.1,2,3,4,5,6,7,8,9,10,11,12,13,14   ; HBW modal trip tabs
101..114
    FILLMW MW[201] = mi.2.1,2,3,4,5,6,7,8,9,10,11,12,13,14   ; HBS modal trip tabs
201..214
    FILLMW MW[301] = mi.3.1,2,3,4,5,6,7,8,9,10,11,12,13,14   ; HBO modal trip tabs
301..314
    FILLMW MW[401] = mi.4.1,2,3,4,5,6,7,8,9,10,11,12,13,14   ; NHW modal trip tabs
401..414
    FILLMW MW[501] = mi.5.1,2,3,4,5,6,7,8,9,10,11,12,13,14   ; NHO modal trip tabs
501..514

   MW[601]= MW[101]+MW[201]+MW[301]+MW[401]+MW[501]   MW[602]=
MW[102]+MW[202]+MW[302]+MW[402]+MW[502]  ; sum
   MW[603]= MW[103]+MW[203]+MW[303]+MW[403]+MW[503]   MW[604]=
MW[104]+MW[204]+MW[304]+MW[404]+MW[504]  ; total purpose
   MW[605]= MW[105]+MW[205]+MW[305]+MW[405]+MW[505]   MW[606]=
MW[106]+MW[206]+MW[306]+MW[406]+MW[506]  ; trips in tabs
   MW[607]= MW[107]+MW[207]+MW[307]+MW[407]+MW[507]   MW[608]=
MW[108]+MW[208]+MW[308]+MW[408]+MW[508]  ; 501..514
   MW[609]= MW[109]+MW[209]+MW[309]+MW[409]+MW[509]   MW[610]=
MW[110]+MW[210]+MW[310]+MW[410]+MW[510]  ;
   MW[611]= MW[111]+MW[211]+MW[311]+MW[411]+MW[511]   MW[612]=
MW[112]+MW[212]+MW[312]+MW[412]+MW[512]  ;
   MW[613]= MW[113]+MW[213]+MW[313]+MW[413]+MW[513]   MW[614]=
MW[114]+MW[214]+MW[314]+MW[414]+MW[514]  ;

   MATO[1] = %_iter_%_ALL_NL_MC.MTT, MO=601-614 ; Total Purpose Mode Choice Trips
ENDRUN
```

```
;---------------------------------------------------------------
; Summarize the Mode Choice Model Output to Juris. Level
;---------------------------------------------------------------


DESCRIPT='Simulation - Year: %_year_% Alternative: %_alt_%   Iteration: %_iter_% '


LOOP PURP=1,6  ; Outer Loop for Each Purpose (HBW,HBS,HBO,NHW,NHO, Total)
IF (PURP=1)
    pur = 'HBW'
    purfile = 'A_HBW.tb1'
    MCOUTTAB='%_iter_%_HBW_NL_MC.MTT'
    PURPOSE ='Internal HBW Trips'
ELSEIF (PURP=2)
    pur = 'HBS'
    purfile = 'B_HBS.tb1'
    MCOUTTAB='%_iter_%_HBS_NL_MC.MTT'
    PURPOSE ='Internal HBS Trips'
ELSEIF (PURP=3)
    pur = 'HBO'
    purfile = 'C_HBO.tb1'
    MCOUTTAB='%_iter_%_HBO_NL_MC.MTT'
    PURPOSE ='Internal HBO Trips'
ELSEIF (PURP=4)
    pur = 'NHW'
    purfile = 'D_NHW.tb1'
    MCOUTTAB='%_iter_%_NHW_NL_MC.MTT'
    PURPOSE ='Internal NHW Trips'
ELSEIF (PURP=5)
    pur = 'ALL'
    purfile = 'E_NHO.tb1'
    MCOUTTAB='%_iter_%_NHO_NL_MC.MTT'
    PURPOSE ='Internal NHO Trips '
ELSEIF (PURP=6)
    pur = 'ALL'
    purfile = 'F_ALL.tb1'
    MCOUTTAB='%_iter_%_ALL_NL_MC.MTT'
    PURPOSE ='Total Internal Trips '
ENDIF

;---------------------------------------------------------------
; Summarize the Est./Obs Output Files to Juris. Level
;---------------------------------------------------------------

COPY FILE=DJ.EQV
;   -- Start of Jurisiction-to-TAZ equivalency --
D 1=1-4,6-47,49-50,52-63,65,181-209,282-287,374-381     ;  0    DC Core
D 2=5,48,51,64,66-180,210-281,288-373,382-393           ;  0    DC Noncore
D 3=394-769                                             ;  1    Montgomery
D 4=771-776,778-1404                                    ;  2    Prince George
D 5=1471-1476, 1486-1489, 1495-1497                     ;  3    ArlCore
D 6=1405-1470,1477-1485,1490-1494,1498-1545             ;  3    ArlNCore
D 7=1546-1610                                           ;  4    Alex
D 8=1611-2159                                           ;  5    FFx
D 9=2160-2441                                           ;  6    LDn
D 10=2442-2554,2556-2628,2630-2819                      ;  7    PW
D 11=2820-2949                                          ;  9    Frd
D 12=3230-3265,3268-3287                                ; 14    Car.
D 13=2950-3017                                          ; 10    How.
D 14=3018-3102,3104-3116                                ; 11    AnnAr
D 15=3288-3334                                          ; 15    Calv
D 16=3335-3409                                          ; 16    StM
D 17=3117-3229                                          ; 12    Chs.
D 18=3604-3653                                          ; 21    Fau
D 19=3449-3477,3479-3481,3483-3494,3496-3541            ; 19    Stf.
D 20=3654-3662,3663-3675                                ; 22/23 Clk,Jeff.
D 21=3435-3448,3542-3543,3545-3603                      ; 18/20 Fbg,Spots
D 22=3410-3434                                          ; 17    KG.
D 23=3676-3722                                          ;       Externals
;   -- end of Jurisiction-to-TAZ equivalency --
ENDCOPY


RUN PGM=MATRIX
  PAGEHEIGHT= 32767
  ZONES=3722
  MATI[1]= @MCOUTTAB@


  MW[01]  = MI.1.4  + MI.1.5  + MI.1.6  + MI.1.7  + MI.1.8  +   ; 1/Transit
            MI.1.9  + MI.1.10 + MI.1.11 + MI.1.12 + MI.1.13 +
            MI.1.14

  MW[02]  = MI.1.1  + MI.1.2  + MI.1.3                          ; 2/Auto_Psn


  MW[04]  = MW[1] + MW[2]                                       ; 4/Person


  MW[05]  = MI.1.4  + MI.1.5  + MI.1.6  + MI.1.7                ; 5/TRN_Wlk
  MW[06]  = MI.1.8  + MI.1.9  + MI.1.11 + MI.1.13               ; 6/TRN_PNR
  MW[07]  = MI.1.10 + MI.1.12 + MI.1.14                         ; 7/TRN_KNR

  MW[08] = MI.1.1      ; DR ALONE                               ; 8/SOV_Psn
  MW[09] = MI.1.2      ; SR2                                    ; 9/HOV2_Psn
  MW[10] = MI.1.3      ; SR3+                                   ;10/HOV3_Psn

  MW[11] = MI.1.4      ; WK-CR                                  ;11/WLK_CR
  MW[12] = MI.1.5      ; WK-AB                                  ;12/WLK_AB
  MW[13] = MI.1.6      ; WK-BM                                  ;13/WLK_BM
  MW[14] = MI.1.7      ; WK-MR                                  ;14/WLK_MR

  MW[15] = MI.1.8      ; PNR-CR                                 ;15/PNR_CR
  MW[16] = MI.1.9      ; PNR-AB                                 ;16/PNR_AB
  MW[17] = MI.1.10     ; KNR-AB                                 ;17/KNR_AB
  MW[18] = MI.1.11     ; PNR-BM                                 ;18/PNR_BM
  MW[19] = MI.1.12     ; KNR-BM                                 ;19/KNR_BM
  MW[20] = MI.1.13     ; PNR-MR                                 ;20/PNR_MR
  MW[21] = MI.1.14     ; KNR-MR                                 ;21/KNR_MR

  MW[22] = MW[11] + MW[15]                                     ;22/cr
  MW[23] = MW[12] + MW[16] + MW[17]                            ;23/ab
  MW[24] = MW[13] + MW[18] + MW[19]                            ;24/bm
  MW[25] = MW[14] + MW[20] + MW[21]                            ;25/mr

  MW[30]= 0            ; dummy/placemarker table

;; ACCUMULATE MODAL TOTALS
    Transit         =  Transit   + ROWSUM(01)

    Auto_Psn        =  Auto_Psn  + ROWSUM(02)


    Person          =  Person    + ROWSUM(01) + ROWSUM(02)
    SOV_Psn         =  SOV_Psn   + ROWSUM(08)
    HOV2_Psn        =  HOV2_Psn  + ROWSUM(09)
    HOV3_Psn        =  HOV3_Psn  + ROWSUM(10)

    Trn_WLK         =  Trn_WLK   + ROWSUM(11) + ROWSUM(12) + ROWSUM(13) +
ROWSUM(14)
    Trn_PNR         =  Trn_PNR   + ROWSUM(15) + ROWSUM(16) + ROWSUM(18) +
ROWSUM(20)
    Trn_KNR         =  Trn_KNR   + ROWSUM(17) + ROWSUM(19) + ROWSUM(21)
```

```
    CR               =  CR       + ROWSUM(11) + ROWSUM(15)
    AB               =  AB       + ROWSUM(12) + ROWSUM(16) + ROWSUM(17)
    BM               =  BM       + ROWSUM(13) + ROWSUM(18) + ROWSUM(19)
    MR               =  MR       + ROWSUM(14) + ROWSUM(20) + ROWSUM(21)

    WLK_CR           =  WLK_CR   + ROWSUM(11)
    WLK_AB           =  WLK_AB   + ROWSUM(12)
    WLK_BM           =  WLK_BM   + ROWSUM(13)
    WLK_MR           =  WLK_MR   + ROWSUM(14)

    PNR_CR           =  PNR_CR   + ROWSUM(15)
    PNR_AB           =  PNR_AB   + ROWSUM(16)
    PNR_BM           =  PNR_BM   + ROWSUM(18)
    PNR_MR           =  PNR_MR   + ROWSUM(20)

    KNR_AB           =  KNR_AB   + ROWSUM(17)
    KNR_BM           =  KNR_BM   + ROWSUM(19)
    KNR_MR           =  KNR_MR   + ROWSUM(21)

    IF (I=ZONES)
       ;;
       ;; compute regional rates
       ;;
        Transit_Pct  =  Transit/Person * 100.00


       ;; print global totals:
         PRINT              LIST=' Purpose: ','@pur@', '  Regional Totals Summary',
file= @purfile@
         PRINT              LIST='      '
         PRINT FORM=12.0csv List= '      ','       Transit:             ', Transit
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Auto_Person:         ', Auto_Psn
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','      --------------------------------
',file= @purfile@;
         PRINT FORM=12.0csv List= '      ','         Total_Person:      ', Person
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT FORM=12.2csv List= '      ','       Transit Pct.:        ',
Transit_Pct  ,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       SOV_Auto_Person:     ', SOV_Psn
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       HOV2_Auto_Person:    ', HOV2_Psn
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       HOV3+Auto_Person     ', HOV3_Psn
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','      --------------------------------'
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','         Auto_Person:       ', Auto_Psn
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Commuter_Rail:       ', CR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       All_Bus:             ', AB
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Bus&Metrorail:       ', BM
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Metrorail_Only:      ', MR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','      -------------------------------- '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','          Transit:          ', Transit
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
                                                                              ;
         PRINT FORM=12.0csv List= '      ','       Walk_Commuter_Rail:  ', WLK_CR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Walk_All_Bus         ', WLK_AB
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Walk_Bus_&_Metrorail:', WLK_BM
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       Walk_Metrorail_Only: ', WLK_MR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','      -------------------------------- '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','         Total WLK Acc:     ', Trn_WLK
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       PNR__Commuter_Rail:  ', PNR_CR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       PNR__All_Bus         ', PNR_AB
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       PNR__Bus_&_Metrorail:', PNR_BM
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       PNR__Metrorail_Only: ', PNR_MR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','      -------------------------------- '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','         Total PNR Acc:     ', Trn_PNR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       KNR__ALL_Bus:        ', KNR_AB
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       KNR__Bus_&_Metrorail:', KNR_BM
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','       KNR__Metrorail_Only: ', KNR_MR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','      -------------------------------- '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','         Total KNR Acc:     ', Trn_KNR
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','                             '
,file= @purfile@;
         PRINT              LIST=' ====== End ','@pur@',' Purpose ============== '
,file= @purfile@;
         PRINT FORM=12.0csv List= '      ','     ','                         '
,file= @purfile@;
         PRINT LIST='/et           '

    ENDIF

        ;;
  FILEO MATO[01]  = TEMP.trn MO= 1,30
        MATO[02]  = TEMP.apn MO= 2,30
        MATO[04]  = TEMP.psn MO= 4,30
        MATO[05]  = TEMP.cr  MO=22,30
        MATO[06]  = TEMP.ab  MO=23,30
        MATO[07]  = TEMP.bm  MO=24,30
        MATO[08]  = TEMP.mr  MO=25,30
        MATO[09]  = TEMP.trp MO=1,4

  ; renumber OUT.MAT according to DJ.EQV
  RENUMBER FILE=DJ.EQV, MISSINGZI=M, MISSINGZO=W
ENDRUN
```

```
;
LOOP INDEX2=1,8   ; Inner Loop for Each Summary Type:
;                   1/LOV Adrs,2/LOV APpsns,3/Transit,4/HOV Psns,5/HOV Adrs
;                   6/Adrs    ,7/Apsns     ,8/Persons,9/Pct Trn ,10/Auto Occ
;
IF (INDEX2=1)                    ; Parameters for each table:
       SQFNAME='temp.trn'        ; - name of squeezed modal trip table(s)
       MODE ='Transit        '   ; - mode label od trip table
       DCML=0                    ; - decimal specification
       TABTYPE=1                 ; - table type(1/2)-involves 1 or 2 trip tables
       SCALE=1                   ; - scale factor to be applied (if desired)
       OPER='+'                  ; - operation(if tabtype=2) Tab1(?)Tab2=Result
     ELSEIF (INDEX2=2)
       SQFNAME='temp.apn'        ;
       MODE ='Auto Person    '
       DCML=0
       TABTYPE=1
       SCALE=1                   ;
       OPER='+'                  ;
     ELSEIF (INDEX2=3)
       SQFNAME='temp.psn'        ;
       MODE ='Motorized Person'
       DCML=0
       TABTYPE=1
       SCALE=1                   ;
       OPER='+'                  ;
     ELSEIF (INDEX2=4)
       SQFNAME='temp.cr '        ;
       MODE ='Commuter Rail  '
       DCML=0
       TABTYPE=1
       SCALE=1                   ;
       OPER='+'                  ;
     ELSEIF (INDEX2=5)
       SQFNAME='temp.ab '        ;
       MODE ='All Bus    '
       DCML=0
       TABTYPE=1
       SCALE=1                   ;
       OPER='+'                  ;
     ELSEIF (INDEX2=6)
       SQFNAME='temp.bm'        ;
       MODE ='Bus & Metrorail  '
       DCML=0
       TABTYPE=1
       SCALE=1                   ;
       OPER='+'                  ;
     ELSEIF (INDEX2=7)
       SQFNAME='temp.mr'        ;
       MODE ='Metrorail Only '
       DCML=0
       TABTYPE=1
       SCALE=1                   ;
       OPER='+'                  ;
     ELSEIF (INDEX2=8)
       SQFNAME='temp.trp'        ;
       MODE ='Transit Percentage'
       DCML=1
       TABTYPE=2
       SCALE=100                 ;
       OPER='/'
     ENDIF
;
RUN PGM=MATRIX
  PAGEHEIGHT= 32767
  ZONES=23
  FILEI MATI=@SQFNAME@

  ARRAY CSUM=23,CSUM1=23,CSUM2=23
; -------------------------------------------------------------
; --  Table Cell Value decalaration or computation (in MW[1])
; -------------------------------------------------------------

  FILLMW MW[1]=MI.1.1,2     ;    read input tables in MW 2,3

 IF (@TABTYPE@ = 2)
  FILLMW MW[2]=MI.1.1,2     ;    read input tables in MW 2,3
 ENDIF

  IF (@TABTYPE@=2)                                ; Cell Value
     JLOOP                                        ; computed for
      IF (MW[3][J]>0) MW[1]=MW[2]*@SCALE@@OPER@MW[3]; special summaries-
     ENDJLOOP                                     ; calculation in MW[1]
  ENDIF

; ---------------------------------------------------
; ---- ROW Marginal declaration or computation --------
; ---------------------------------------------------
  RSUM   =     ROWSUM(1)            ; 'normal' table- row summary value
  denom  =     ROWSUM(3)
  IF (@TABTYPE@=2)
       if (denom>0)  RSUM = @SCALE@*ROWSUM(2)@OPER@ROWSUM(3)  ; non-'normal' table
  ENDIF                                     ; compute the row marginal(%)

; -----------------------------------------------------
; ---- COLUMN/Total Marginal Accumulation            ----
; ---- The computation (if necessary) is done below  ----
; -----------------------------------------------------

  JLOOP                            ; COL/Total Accumulation
    CSUM[J] = CSUM[J] +  MW[1][J]  ; for 'normal' table
    TOTAL   = TOTAL   +  MW[1]     ;
  ENDJLOOP

IF (@TABTYPE@=2)
  JLOOP                              ; COL/Total Accumulation
    CSUM1[J] = CSUM1[J] +  MW[2][J]  ; for non-'normal' Table
    TOTAL1   = TOTAL1   +  MW[2]     ;
    CSUM2[J] = CSUM2[J] +  MW[3][J]  ;
    TOTAL2   = TOTAL2   +  MW[3]     ;
  ENDJLOOP
ENDIF

  IF (I==1)      ; print header

  PRINT LIST='/bt   ','@DESCRIPT@'
  PRINT LIST='      ','Purpose: ','@PURPOSE@','   MODE: ','@MODE@'
  PRINT LIST='      '

   PRINT LIST='           DESTINATION'
   PRINT LIST=' ORIGIN |',
              '      1','      2','      3','      4',
              '      5','      6','      7','      8','      9',
              '     10','     11','     12','     13','     14',
              '     15','     16','     17','     18','     19',
              '     20','     21','     22','     23',' |  TOTAL'



   PRINT LIST='=============',
              '=========================================',
              '=========================================',
              '=========================================',
              '======================================'
```

```
  ENDIF

  IF (I=1)
   CURDIST=STR(I,2,1)+' DC CR'+ '|' ; Make row header
  ELSEIF (I=2)
   CURDIST=STR(I,2,1)+' DC NC'+ '|' ; Make row header
  ELSEIF (I=3)
   CURDIST=STR(I,2,1)+' MTG  '+ '|' ; Make row header
  ELSEIF (I=4)
   CURDIST=STR(I,2,1)+' PG   '+ '|' ; Make row header
  ELSEIF (I=5)
   CURDIST=STR(I,2,1)+' ARLCR'+ '|' ; Make row header
  ELSEIF (I=6)
   CURDIST=STR(I,2,1)+' ARNCR'+ '|' ; Make row header
  ELSEIF (I=7)
   CURDIST=STR(I,2,1)+' ALX  '+ '|'; Make row header
  ELSEIF (I=8)
   CURDIST=STR(I,2,1)+' FFX  '+ '|' ; Make row header
  ELSEIF (I=9)
   CURDIST=STR(I,2,1)+' LDN  '+ '|' ; Make row header
  ELSEIF (I=10)
   CURDIST=STR(I,2,1)+' PW   '+ '|' ; Make row header
  ELSEIF (I=11)
   CURDIST=STR(I,2,1)+' FRD  '+ '|' ; Make row header
  ELSEIF (I=12)
   CURDIST=STR(I,2,1)+' CAR  '+ '|' ; Make row header
  ELSEIF (I=13)
   CURDIST=STR(I,2,1)+' HOW  '+ '|' ; Make row header
  ELSEIF (I=14)
   CURDIST=STR(I,2,1)+' AAR  '+ '|' ; Make row header
  ELSEIF (I=15)
   CURDIST=STR(I,2,1)+' CAL  '+ '|' ; Make row header
  ELSEIF (I=16)
   CURDIST=STR(I,2,1)+' STM  '+ '|' ; Make row header
  ELSEIF (I=17)
   CURDIST=STR(I,2,1)+' CHS  '+ '|' ; Make row header
  ELSEIF (I=18)
   CURDIST=STR(I,2,1)+' FAU  '+ '|' ; Make row header
  ELSEIF (I=19)
   CURDIST=STR(I,2,1)+' STA  '+ '|' ; Make row header
  ELSEIF (I=20)
   CURDIST=STR(I,2,1)+' CL/JF'+ '|' ; Make row header
  ELSEIF (I=21)
   CURDIST=STR(I,2,1)+' SP/FB'+ '|' ; Make row header
  ELSEIF (I=22)
   CURDIST=STR(I,2,1)+' KGEO '+ '|' ; Make row header
  ELSEIF (I=23)
   CURDIST=STR(I,2,1)+' EXTL '+ '|' ; Make row header
  ELSE ;  (I=24)
   CURDIST=STR(I,2,1)+' TOTAL'+ '|' ; Make row header
  ENDIF

  PRINT FORM=7.@DCML@ LIST=CURDIST, MW[1][1],MW[1][2],MW[1][3],MW[1][4],MW[1][5],
                    MW[1][6],MW[1][7],MW[1][8],MW[1][9],MW[1][10],
                    MW[1][11],MW[1][12],MW[1][13],MW[1][14],MW[1][15],
                    MW[1][16],MW[1][17],MW[1][18],MW[1][19],MW[1][20],
                    MW[1][21],MW[1][22],MW[1][23],' |',RSUM

  IF (I==ZONES)
; Now at the end of Processed zone matrix
;  Do final Column/Grand Total Computations
     IF (@TABTYPE@=2)
       LOOP IDX = 1,ZONES
            IF (CSUM2[IDX] = 0)
                 CSUM[IDX] = 0
            ELSE
                 CSUM[IDX] = @SCALE@* CSUM1[IDX] @OPER@ CSUM2[IDX]
            ENDIF
       ENDLOOP
     ENDIF
     IF (@TABTYPE@=2 )
            IF (TOTAL2 = 0)
                TOTAL  = 0
            ELSE
                TOTAL  = @SCALE@ *TOTAL1 @OPER@ TOTAL2
            ENDIF
     ENDIF

;  End of final Column/Grand Total Computations

   PRINT LIST='==============',
              '=========================================',
              '=========================================',
              '=========================================',
              '======================================'


    PRINT FORM=8.@DCML@,
    LIST=' TOTAL ',' ',CSUM[1],'      ' ,CSUM[3],
    '      ',CSUM[5],'      ',CSUM[7],'      ',CSUM[9],
    '      ',CSUM[11],'      ',CSUM[13],'      ',CSUM[15],
    '      ',CSUM[17],'      ',CSUM[19],'      ',CSUM[21],
    '      ',CSUM[23],' |'
    PRINT FORM=8.@DCML@,
    LIST='/et            ',CSUM[2],
    '      ' ,CSUM[4],'      ',CSUM[6],'      ',CSUM[8],
    '      ',CSUM[10],'      ',CSUM[12],'      ',CSUM[14],
    '      ',CSUM[16],'      ',CSUM[18],'      ',CSUM[20],
    '      ',CSUM[22],'       ',TOTAL(9.@DCML@)


 ENDIF
ENDRUN

ENDLOOP ; End 'Inner' Loop
ENDLOOP ; End 'Outer' Loop
```

15 Metrorail_skims.s

```
;=================================================================
;  Metrorail_skims.S
;  MWCOG Version 2.3 Model
;
;  Step 1: Build Metrorail Staion to Station Network
;  Step 2: Build Distance skims (in 1/100s mi) to be used in the
;  MFARE1 process
;  set metrorail link file to new input name
;=================================================================
; max 'zones' (stations changed from 116 to 150)

;  Global variables:

NZONES = 150           ; Max. no. of Stations
NNODES = 10000         ; Max. no. of NODES

NODIN='METNODM1.TB'    ; Input Station Nodes
LNKIN='METLNKM1.TB'   ; Input Station Links
DSKMO='rldist.skm'     ; Output Distance Skim File
TPENS='inputs\trnpen.dat'     ; Turn Penalty file
```

```
;=================================================================
; Step 1: Build Metrorail Network
;=================================================================


RUN PGM=NETWORK
;
ZONES=@NZONES@
NODES=@NNODES@

; Node Coordinate File
; XY Units are NAD83 (in whole feet)
FILEI NODEI=@NODIN@,
        VAR=N,11-14,
        VAR=X,20-27,
        VAR=Y,34-40

; Metrorail Links
FILEI LINKI=@LNKIN@,
        VAR=A,13-17,         ; A-Node Number
        VAR=B,22-26,         ; B-Node Number
        VAR=REV,35-35,       ; Reverse Code
        VAR=DISTANCE,43-47,  ; Distance in 1/100ths of Miles
        VAR=SPEED,67-71      ; Speed Value (mph)

; output network in TP+ format
NETO=metrail.TPN
;

;=================================================================
; Step 2: Build Station Level Distance Skims
;=================================================================

RUN PGM=HIGHWAY
  NETI   =metrail.tpn        ; Metrorail Network
  MATO[1]=@DSKMO@,MO=1,
          FORMAT=MINUTP
  TURNPENI=@TPENS@


  PHASE=LINKREAD
       SPEED   = LI.SPEED            ; Use Link Coded Speed
       DISTANCE= LI.DISTANCE / 100   ; Set Distance in 1/100ths of mi to true mi
  ENDPHASE
;
; Now create station-to-station distance skims over minimum time
; paths.  The distance skims are in 100ths of miles
; (e.g. a skim value of '145' indicates 1.45 miles)
;
;
  PHASE=ILOOP

   PATHLOAD PATH=TIME, PENI=1,  TRACE=(I=64 && J=37),

              MW[1]=PATHTRACE(LI.DISTANCE), noaccess = 0
;---------------------------------------------------------------------
; I will print selected rows of skim files
;---------------------------------------------------------------------
     IF (i = 1-2)                     ;  for select rows (Is)
         printrow MW=1, j=1-@NZONES@   ;  print work matrices 1-3
     ENDIF                            ;  row value to all Js.
   ENDPHASE
ENDRUN
```

16 MFARE1.S

```
;=================================================================
;  MFARE1.S
;   V2.3 Model
;       Script Version of MFARE1 script
;   Walk and Drive Access Metrorail Sta. to Sta. fares developed
;    for AM Peak and off-peak periods
;
;   Programmer: Milone
;   Date:      1/11/07
;   Metro station XY file name corrected (12/13/2006)
;=================================================================
;


STATSIZE        =   150               ;  No. of Metrorail Stations (Note: Max is
999)
MR_DST_FTR      =  0.01               ;  Factor to convert input skimmed Metrorail
distance units to whole miles

;---------------------------------------------------------------------
;  Filenames:

MSTA_XYs        = 'MFARE1.A1'                   ;  Metrorail Sta XYs coords scaled
so computed units are in 1/100ths of miles
MSTA_Dst_Skims  = 'RLDIST.SKM'                  ;  Metrorail Sta/Sta Distance Skims
(Distance units:        1/100ths of miles
MSTA_Discount   = 'INPUTS\mfare1_Sta_Disc.ASC'  ;  Metrorail Sta fare discount array
in cents
MSTA_Tariff     = 'INPUTS\tariff.txt'           ;  WMATA tariff policy

AM_Sta_Fares    = 'AM_Metrorail_Fares.TXT'      ;  Output AM Statio-to-Station Fares
-text file
OP_Sta_Fares    = 'OP_Metrorail_Fares.TXT'      ;  Output OP Statio-to-Station Fares
-text file


RUN PGM=MATRIX
ZONES=@STATSIZE@
read FILE=@MSTA_Tariff@


;
; Set up zone arrays for accumulating I/O variables
;
;
;
;==============================================================
; Read Station Coordinate file                                =
;==============================================================
;
      LOOKUP Name=StaXYS,
             LOOKUP[1]   = 1,Result = 2, ; Xcrds
             LOOKUP[2]   = 1,Result = 3, ; YCrds
             Interpolate = N, FAIL=0,0,0,list=Y,file=@MSTA_XYS@


;
;==============================================================
; Read Station Fare Discount Lookup                           =
;   - The station-specific discount values are in cents.      =
;     The discounts are subtracted from the final             =
;     computed fares to/from the station                      =
;==============================================================
```

```
;
      LOOKUP Name=StaDSC,
             LOOKUP[1]   = 1,Result = 2,   ;  AM Fare Discount in cents
             LOOKUP[2]   = 1,Result = 3,   ;  OP Fare Discount in cents
             Interpolate = N, FAIL=0,0,0,list=Y,file=@MSTA_Discount@


;===============================================================
; Over-the Rail Distance Skims                                 =
;===============================================================

     FILEI MATI = RLDIST.SKM
           MW[1]= MI.1.1     ;   (Over-the-rail distance in 1/100s mi)

           ROWSUM1 = ROWSUM(1)
;===============================================================
; Now, loop through each station i/j, compute composite distance,
;      and compute AM and Off peak fares.  Use generalized cost
;      calculation:
;
; FARE = (incremental cost + Rate*Distance) <-Per short  Distance  +
;        (incremental cost + Rate*Distance) <-Per medium Distance  +
;        (incremental cost + Rate*Distance) <-Per long   Distance
;
;===============================================================
  IF (rowsum1 > 0)      ; exclude unused stations
    JLOOP

     IF (MW[1] !=0 || I=J )   ; exclude station i/js that are 'unused

;     Calculate airline distance (MW[2]) in 100s of miles
      IxCrd  = StaXYS(1,I)
      JxCrd  = StaXYS(1,J)
      IyCrd  = StaXYS(2,I)
      JyCrd  = StaXYS(2,J)
      MW[2]  = ((IxCrd-JxCrd)^2 + (IyCrd-JyCrd)^2 )^ 0.5

;     Calculate Composite (airline/over-the rail) distance MW[3] in whole miles
      MW[3]  =          ((MW[1]  + MW[2]) / 2.0) * @MR_Dst_Ftr@

;     Calculate peak (MW[10]) and off-peak fares (MW[20]) based on comp distance
;     Fares computed units in non-defalted cents


;   Peak Fare Calculation:  --------------------------------------------------------
----------------

      PkDist1 = Pk_Fare_Dist1
      PkDist2 = Pk_Fare_Dist1 + Pk_Fare_Dist2


      IF       (MW[3] <= PkDist1)

                 MW[10] = Pk_Fare_Incr1 + (Pk_Fare_Rate1 * MW[3])

        ELSEIF (MW[3] >  PkDist1 && MW[3] <= PkDist2)

                 MW[10] = Pk_Fare_Incr1 + (Pk_Fare_Rate1 *  Pk_Fare_Dist1)   +
                          Pk_Fare_Incr2 + (Pk_Fare_Rate2 * (MW[3] - PkDist1))

        ELSEIF (MW[3] >  PkDist2)

                 MW[10] = Pk_Fare_Incr1 + (Pk_Fare_Rate1 *  Pk_Fare_Dist1)   +
                          Pk_Fare_Incr2 + (Pk_Fare_Rate2 *  Pk_Fare_Dist2)   +
                          Pk_Fare_Incr3 + (Pk_Fare_Rate3 * (MW[3] - PkDist2))
      ENDIF

;     Round computed AM fare MW[10] to nearest nickle as in original program Final
Fare
;     is 'FinAMFare'
                    FARE       = MW[10]
                    temp1      = INT(Fare/10.0)
                    temp2      = temp1  * 10.0
                    DiffCheck   = Fare - temp2
                    IF       (DiffCheck < 2.5)
                         FinAMFare = temp2
                      ELSEIF  (DiffCheck > 7.5)
                         FinAMFare = temp2 + 10.0
                      ElSE
                         FinAMFare = temp2 +  5.0
                    ENDIF

;     Impose Max Fare rule
                 If (FinAMFare > Pk_Fare_Max)  FinAMFare = Pk_Fare_Max

;     Apply AM station discounts if used
                    FinAMFare = FinAMFare - StaDSC(1,I) - StaDsc(1,J)

;     Compute IJ Index so station-to-station fares can be read in as a lookup
;     Index merges separate I/J numbers into one number (index for  station 1 to
station 1 is '1001')
                    IJindex = (I * 1000.0)  + J

;    Write out the AM Fares:
      Print List =  I(5),J(5), FinAMFare(6),IJindex(7),' ; ', MW[10](6),
MW[1](10.0),MW[2](10.0),MW[3](10.2),
                    IxCrd(7), JxCrd(7), IyCrd(7), JyCrd(7),
                    PkDist1(10.2),PkDist2(10.2),
               ';<
I/J/AM_Fare_n5/AM_Fare/R_Dst100s/A_Dst100s/CmpDstMi/iXcrd/jXcrd/iYcrd/jYcrdI/Dist1/D
ist2',
                File=@AM_Sta_Fares@



;     END of Peak Fare Calculation ------------------------------------------------
---------------

;    Off-Peak Calculation:  -------------------------------------------------------
---------------

      OpDist1 = Op_Fare_Dist1
      OpDist2 = Op_Fare_Dist1 + Op_Fare_Dist2


      IF       (MW[3] <= OpDist1)

                 MW[20] = Op_Fare_Incr1 + (Op_Fare_Rate1 * MW[3])

        ELSEIF (MW[3] >  OpDist1 && MW[3] <= OpDist2)

                 MW[20] = Op_Fare_Incr1 + (Op_Fare_Rate1 *  Op_Fare_Dist1)   +
                          Op_Fare_Incr2 + (Op_Fare_Rate2 * (MW[3] - OpDist1))

        ELSEIF (MW[3] >  OpDist2)

                 MW[20] = Op_Fare_Incr1 + (Op_Fare_Rate1 *  Op_Fare_Dist1)   +
                          Op_Fare_Incr2 + (Op_Fare_Rate2 *  Op_Fare_Dist2)   +
                          Op_Fare_Incr3 + (Op_Fare_Rate3 * (MW[3] - OpDist2))
      ENDIF

;     Round computed Off-peak fare MW[20] to nearest nickle as in original program
Final Fare
;     is 'FinOPFare'
                    FARE       = MW[20]
```

```
                    temp1       = INT(Fare/10.0)
                    temp2       = temp1  * 10.0
                    DiffCheck   = Fare - temp2
                    IF        (DiffCheck < 2.5)
                         FinOPFare = temp2
                      ELSEIF  (DiffCheck > 7.5)
                         FinOPFare = temp2 + 10.0
                      ElSE
                         FinOPFare = temp2 +  5.0
                    ENDIF


;     Impose Max Fare rule
                 If (FinOPFare > Op_Fare_Max)  FinOPFare = Op_Fare_Max

;     Apply Off-pk station discounts if used
                    FinOPFare = FinOPFare - StaDSC(2,I) - StaDsc(2,J)

;     Compute IJ Index so station-to-station fares can be read in as a lookup
;     Index merges separate I/J numbers into one number (index for  station 1 to
station 1 is '1001')
                    IJindex = (I * 1000.0)  + J

;     Write out the Off-Pk Fares:
      Print List =  I(5),J(5),FinOPFare(6),IJindex(7),' ; ', MW[20](6),
MW[1](10.0),MW[2](10.0),MW[3](10.2),
                    IxCrd(7), JxCrd(7), IyCrd(7), JyCrd(7),
                    OpDist1(10.2),OpDist2(10.2),
               ';<
I/J/OP_Fare/R_Dst100s/A_Dst100s/CmpDstMi/iXcrd/jXcrd/iYcrd/jYcrdI/Dist1/Dist2',
                File=@OP_Sta_Fares@



;     END of Off Peak Fare Calculation --------------------------------------------
-----------------


     ENDIF
    ENDJLOOP
   endif
ENDRUN
```

17 MFARE2.S

```
;=================================================================
;  MFARE2.S
;   Version 2.3 Model
;   TP+ Script Version of MFARE2 Program
;   Walk and Drive Access Zonal Fares Developed for AM Peak and Off-Peak Periods
;
;   Programmer: Milone
;   Date:     12/11/10
;
;
; Update 2/21/07 to support nested logit work
; 01/03/08 JainM
; Update for including LRT in MR path. Use BUSFARAM.ASC and BUSFAROP.ASC in MR
paths.
; Condition the fares for Metrorail only path. Zero out fare for i/j with no transit
path.
;=================================================================
;
ZONESIZE        =  3722               ;  No. of TAZs
LastIZn         =  3675               ;  Last Internal TAZ No.
STATSIZE        =   150               ;  Max No. of Metrorail Stations
BFZ_Size        =    21               ;  No. of Bus Fare Zones
; -------------------------------------------------------------------

MSTA_Tariff     = 'INPUTS\tariff.txt'
TRN_Defl        = 'TRN_Deflator.txt'
; LOOP Through the Time Period/Access Mode combinations
;      - define I/P & O/P files:
;
LOOP PRDACC = 1,22
                                                     ;; COMMUTER RAIL FARES
================================================
    IF (PRDACC = 1)                                  ;  ------ AM Walk Access cycle:
------
       USTOSFile       = '%_iter_%_AM_WK_CR.STA '    ;   Input:  Walk Acc. Station
to Station Matrix (Brd Sta/T1, Ali Stat/T2)
       TRSkimFile      = '%_iter_%_AM_WK_CR.SKM '    ;           Walk Acc. CR
Transit Skims
       MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;           Metrorail Fares in
Current Year Cents
       BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;           Bus Fare matrix
21x21 (Bus fares zones '1' to '21')
       MF2ZonalDeck    = 'FARE_A2.ASC'               ;           Zonal A2 Deck
(Bus fares zones referenced as '1' to '21')
       OutputMatrix    = '%_iter_%_AM_WK_CR.FAR '    ;   Output: Total Fare Matrix
       OutputMatrix5   = '%_iter_%_AM_WK_CR.FR5 '    ;           Fare Matrix (T1-5
Total,bus onlr, rail, acc, egr fare file)
       OutputText      = '%_iter_%_AM_WK_CR.TXT '    ;           Fare text file for
checking fare components / selected ijs
    ELSEIF (PRDACC = 2)                              ;  ------ AM Drive Access
cycle: ------
       USTOSFile       = '%_iter_%_AM_DR_CR.STA '    ;
       TRSkimFile      = '%_iter_%_AM_DR_CR.SKM '    ;
       MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
       BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
       MF2ZonalDeck    = 'FARE_A2.ASC'               ;
       OutputMatrix    = '%_iter_%_AM_DR_CR.FAR '    ;
       OutputMatrix5   = '%_iter_%_AM_DR_CR.FR5 '    ;
       OutputText      = '%_iter_%_AM_DR_CR.TXT '    ;
    ELSEIF (PRDACC = 3)                              ;  ------ Off-Pk Walk  Access
cycle: ------
       USTOSFile       = '%_iter_%_OP_WK_CR.STA '    ;
       TRSkimFile      = '%_iter_%_OP_WK_CR.SKM '    ;
       MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
       BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
       MF2ZonalDeck    = 'FARE_A2.ASC'               ;
       OutputMatrix    = '%_iter_%_OP_WK_CR.FAR '    ;
       OutputMatrix5   = '%_iter_%_OP_WK_CR.FR5 '    ;
       OutputText      = '%_iter_%_OP_WK_CR.TXT '    ;
    ELSEIF (PRDACC = 4)                              ;  ------ Off-Pk Drive  Access
cycle: ------
       USTOSFile       = '%_iter_%_OP_DR_CR.STA '    ;
       TRSkimFile      = '%_iter_%_OP_DR_CR.SKM '    ;
       MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
       BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
       MF2ZonalDeck    = 'FARE_A2.ASC'               ;
       OutputMatrix    = '%_iter_%_OP_DR_CR.FAR '    ;
       OutputMatrix5   = '%_iter_%_OP_DR_CR.FR5 '    ;
       OutputText      = '%_iter_%_OP_DR_CR.TXT '    ;


                                                     ;; METRORAIL ONLY FARES
==============
    ELSEIF (PRDACC = 5)                              ;  ------ AM Walk Access cycle:
------
       USTOSFile       = '%_iter_%_AM_WK_MR.STA '    ;
```

```
      TRSkimFile      = '%_iter_%_AM_WK_MR.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_WK_MR.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_WK_MR.FR5 '    ;
      OutputText      = '%_iter_%_AM_WK_MR.TXT '    ;
    ELSEIF (PRDACC = 6)                             ;  ------ AM Drive Access
cycle: ------
      USTOSFile       = '%_iter_%_AM_DR_MR.STA '    ;
      TRSkimFile      = '%_iter_%_AM_DR_MR.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_DR_MR.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_DR_MR.FR5 '    ;
      OutputText      = '%_iter_%_AM_DR_MR.TXT '    ;
    ELSEIF (PRDACC = 7)                             ;  ------ AM KNR   Access
cycle: ------
      USTOSFile       = '%_iter_%_AM_KR_MR.STA '    ;
      TRSkimFile      = '%_iter_%_AM_KR_MR.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_KR_MR.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_KR_MR.FR5 '    ;
      OutputText      = '%_iter_%_AM_KR_MR.TXT '    ;
    ELSEIF (PRDACC = 8)                             ;  ------ Off-Pk Walk  Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_WK_MR.STA '    ;
      TRSkimFile      = '%_iter_%_OP_WK_MR.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_WK_MR.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_WK_MR.FR5 '    ;
      OutputText      = '%_iter_%_OP_WK_MR.TXT '    ;
    ELSEIF (PRDACC = 9)                             ;  ------ Off-Pk Drive Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_DR_MR.STA '    ;
      TRSkimFile      = '%_iter_%_OP_DR_MR.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_DR_MR.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_DR_MR.FR5 '    ;
      OutputText      = '%_iter_%_OP_DR_MR.TXT '    ;
    ELSEIF (PRDACC =10)                             ;  ------ Off-Pk KNR   Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_KR_MR.STA '    ;
      TRSkimFile      = '%_iter_%_OP_KR_MR.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_KR_MR.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_KR_MR.FR5 '    ;
      OutputText      = '%_iter_%_OP_KR_MR.TXT '    ;

                                                    ;; ALL BUS FARES
========================================================
    ELSEIF (PRDACC =11)                             ;  ------ AM Walk Access cycle:
------
      USTOSFile       = '%_iter_%_AM_WK_AB.STA '    ;
      TRSkimFile      = '%_iter_%_AM_WK_AB.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_WK_AB.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_WK_AB.FR5 '    ;
      OutputText      = '%_iter_%_AM_WK_AB.TXT '    ;
    ELSEIF (PRDACC =12)                             ;  ------ AM Drive Access
cycle: ------
      USTOSFile       = '%_iter_%_AM_DR_AB.STA '    ;
      TRSkimFile      = '%_iter_%_AM_DR_AB.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_DR_AB.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_DR_AB.FR5 '    ;
      OutputText      = '%_iter_%_AM_DR_AB.TXT '    ;
    ELSEIF (PRDACC =13)                             ;  ------ AM KNR   Access
cycle: ------
      USTOSFile       = '%_iter_%_AM_KR_AB.STA '    ;
      TRSkimFile      = '%_iter_%_AM_KR_AB.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_KR_AB.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_KR_AB.FR5 '    ;
      OutputText      = '%_iter_%_AM_KR_AB.TXT '    ;
    ELSEIF (PRDACC =14)                             ;  ------ Off-Pk Walk  Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_WK_AB.STA '    ;
      TRSkimFile      = '%_iter_%_OP_WK_AB.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_WK_AB.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_WK_AB.FR5 '    ;
      OutputText      = '%_iter_%_OP_WK_AB.TXT '    ;
    ELSEIF (PRDACC =15)                             ;  ------ Off-Pk Drive Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_DR_AB.STA '    ;
      TRSkimFile      = '%_iter_%_OP_DR_AB.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_DR_AB.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_DR_AB.FR5 '    ;
      OutputText      = '%_iter_%_OP_DR_AB.TXT '    ;
    ELSEIF (PRDACC =16)                             ;  ------ Off-Pk KNR   Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_KR_AB.STA '    ;
      TRSkimFile      = '%_iter_%_OP_KR_AB.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_KR_AB.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_KR_AB.FR5 '    ;
      OutputText      = '%_iter_%_OP_KR_AB.TXT '    ;

                                                    ;; ALL BUS/METRORAIL FARES
=============================================
    ELSEIF (PRDACC =17)                             ;  ------ AM Walk Access cycle:
------
      USTOSFile       = '%_iter_%_AM_WK_BM.STA '    ;
      TRSkimFile      = '%_iter_%_AM_WK_BM.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_WK_BM.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_WK_BM.FR5 '    ;
      OutputText      = '%_iter_%_AM_WK_BM.TXT '    ;
    ELSEIF (PRDACC =18)                             ;  ------ AM Drive Access
cycle: ------
      USTOSFile       = '%_iter_%_AM_DR_BM.STA '    ;
```

```
      TRSkimFile      = '%_iter_%_AM_DR_BM.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_DR_BM.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_DR_BM.FR5 '    ;
      OutputText      = '%_iter_%_AM_DR_BM.TXT '    ;
    ELSEIF (PRDACC =19)                             ;  ------ AM KNR   Access
cycle: ------
      USTOSFile       = '%_iter_%_AM_KR_BM.STA '    ;
      TRSkimFile      = '%_iter_%_AM_KR_BM.SKM '    ;
      MR_FareFile     = 'AM_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFARAM.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_AM_KR_BM.FAR '    ;
      OutputMatrix5   = '%_iter_%_AM_KR_BM.FR5 '    ;
      OutputText      = '%_iter_%_AM_KR_BM.TXT '    ;
    ELSEIF (PRDACC =20)                             ;  ------ Off-Pk Walk  Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_WK_BM.STA '    ;
      TRSkimFile      = '%_iter_%_OP_WK_BM.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_WK_BM.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_WK_BM.FR5 '    ;
      OutputText      = '%_iter_%_OP_WK_BM.TXT '    ;
    ELSEIF (PRDACC =21)                             ;  ------ Off-Pk Drive Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_DR_BM.STA '    ;
      TRSkimFile      = '%_iter_%_OP_DR_BM.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_DR_BM.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_DR_BM.FR5 '    ;
      OutputText      = '%_iter_%_OP_DR_BM.TXT '    ;
    ELSEIF (PRDACC =22)                             ;  ------ Off-Pk KR    Access
cycle: ------
      USTOSFile       = '%_iter_%_OP_KR_BM.STA '    ;
      TRSkimFile      = '%_iter_%_OP_KR_BM.SKM '    ;
      MR_FareFile     = 'OP_Metrorail_Fares.TXT '   ;
      BusFareMTX      = 'INPUTS\BUSFAROP.ASC'       ;
      MF2ZonalDeck    = 'FARE_A2.ASC'               ;
      OutputMatrix    = '%_iter_%_OP_KR_BM.FAR '    ;
      OutputMatrix5   = '%_iter_%_OP_KR_BM.FR5 '    ;
      OutputText      = '%_iter_%_OP_KR_BM.TXT '    ;

    ENDIF


RUN PGM=MATRIX
ZONES=@ZONESIZE@
;
read FILE=@MSTA_Tariff@
read FILE=@TRN_Defl@
;==============================================================
; Read Station-to-Station Metrorail Fares as lookups         =
; Fares read in based on IJ index                             =
;    e.g., '1001' means 1 to 1 and '150150' means 150 to 150  =
;                                                             =
;==============================================================
;
      LOOKUP Name=STA_Fares,
             LOOKUP[1]   = 4,Result = 3,   ;  station to station fares
             Interpolate = N, FAIL=0,0,0,list=N,file=@MR_FareFile@
;
;==============================================================
; Read Bus Fare zone to Bus fare zone matrix                  =
; Fares are indexed to origin-end bus fare zone 'row';lookup  =
; no. corresponds to a destin-end bus fare zone 'column'      =
;==============================================================
;
      LOOKUP Name=BusFrMTX,
             LOOKUP[01]   = 1,Result = 2,   ;
             LOOKUP[02]   = 1,Result = 3,   ;
             LOOKUP[03]   = 1,Result = 4,   ;
             LOOKUP[04]   = 1,Result = 5,   ;
             LOOKUP[05]   = 1,Result = 6,   ;
             LOOKUP[06]   = 1,Result = 7,   ;
             LOOKUP[07]   = 1,Result = 8,   ;
             LOOKUP[08]   = 1,Result = 9,   ;
             LOOKUP[09]   = 1,Result =10,   ;
             LOOKUP[10]   = 1,Result =11,   ;
             LOOKUP[11]   = 1,Result =12,   ;
             LOOKUP[12]   = 1,Result =13,   ;
             LOOKUP[13]   = 1,Result =14,   ;
             LOOKUP[14]   = 1,Result =15,   ;
             LOOKUP[15]   = 1,Result =16,   ;
             LOOKUP[16]   = 1,Result =17,   ;
             LOOKUP[17]   = 1,Result =18,   ;
             LOOKUP[18]   = 1,Result =19,   ;
             LOOKUP[19]   = 1,Result =20,   ;
             LOOKUP[20]   = 1,Result =21,   ;
             LOOKUP[21]   = 1,Result =22,   ;
             Interpolate  = N, FAIL=0,0,0,list=N,file=@BusFareMTX@


;;   read Zone data file
      LOOKUP Name=TAZLook,
             LOOKUP[01]   = 1,Result = 2,   ;  BusFare Zn 1 (1-21)
             LOOKUP[02]   = 1,Result = 3,   ;  BusFare Zn 2 (1-21)
             LOOKUP[03]   = 1,Result = 4,   ;  Orig Walk Pct in 10ths of pcts
('1000'=100%)
             LOOKUP[04]   = 1,Result = 5,   ;  Dest Walk Pct in 10ths of pcts
('1000'=100%)
             LOOKUP[05]   = 1,Result = 6,   ;  BusFare Zn 1 associated w/ Metro
station  (1-21)
             LOOKUP[06]   = 1,Result = 7,   ;  BusFare Zn 2 associated w/ Metro
station  (1-21)
             LOOKUP[07]   = 1,Result = 8,   ;  Jurcode: 0/DC, 1/MD, 2/VA Area1, 3/VA
Area2
             LOOKUP[08]   = 1,Result = 9,   ;  Origin-end Bus Fare Override value
(in current yr cents)
             LOOKUP[09]   = 1,Result =10,   ;  Destin-end Bus Fare Override value
(in current yr cents
             Interpolate  = N, FAIL=0,0,0,list=N,file=@MF2ZonalDeck@

           ;
           ; Establish Discount Array
           ;
             ARRAY RB_Disc = 4

                   RB_Disc[1] = DC_RailBus_Disc
                   RB_Disc[2] = MD_RailBus_Disc
                   RB_Disc[3] = VA1_RailBusDisc
                   RB_Disc[4] = VA2_RailBusDisc

             IF (TAZLook(7,I) > 3 || TAZLook(7,I) < 0)
                LIST = 'Jurisdiction Code NOT within convention values; I Quit'
                ABORT
             ENDIF

             IF (TAZLook(3,I) < 0  || TAZLook(3,I) > 1000.0  )
                LIST = 'Orig. Walk Pcts NOT within tolerances(0.0 to 1000.0) ; I
Quit'
```

```
               ABORT
            ENDIF

            IF (TAZLook(4,I) < 0  || TAZLook(4,I) > 1000.0  )
               LIST = 'Destin. Walk Pcts NOT within tolerances(0.0 to 1000.0) ; I
Quit'
               ABORT
            ENDIF


            IF (TAZLook(1,I) > @BFZ_SIZE@ || TAZLook(2,I) > @BFZ_SIZE@ ||
                TAZLook(5,I) > @BFZ_SIZE@ || TAZLook(6,I) > @BFZ_SIZE@)
               LIST = 'Zonal / Metrorail Bus Fare Zn No. equivalence exceeds:
','@BFZ_SIZE@',': I Quit'
               ABORT
            ENDIF

;==============================================================
; Read in the USTOS files here & Declare output matrix        =
;==============================================================

          MATI[01] = @USTOSFile@
            MW[11] = MI.1.1    ;  On-Station
            MW[12] = MI.1.2    ;  Off-Station

          MATI[02] = @TRSkimFile@
            MW[13] = MI.2.1    ;---- ivt-local bus    (0.01 min)
            MW[14] = MI.2.2    ;---- ivt-exp bus      (0.01 min)
            MW[15] = MI.2.3    ;---- ivt-metrorail    (0.01 min)
            MW[16] = MI.2.4    ;---- ivt-commuter rail(0.01 min)
            MW[17] = MI.2.5    ;---- ivt-light rail   (0.01 min)
            MW[18] = MI.2.6    ;---- ivt-new mode     (0.01 min)



            MATO[1]= @OutputMatrix@,MO=21,FORMAT=MINUTP; total deflated fare/t1)

            MATO[2]= @OutputMatrix5@,MO=41-45    ; total deflated fare/t1,
                                                 ; busonly(undefl)    /t2,
                                                 ; rail(undef)        /t3,
                                                 ; acc(undef)         /t4,
                                                 ; egr(undef)         /t5

;==============================================================
;==============================================================
; Now begin  i/j level fare calculation process               =
;==============================================================
;==============================================================


  JLOOP

    MW[19] = MW[13]+MW[14]+MW[15]+MW[16]+MW[17]+MW[18]   ; total transit in-vehicle
time
    MW[20] = MW[13]+MW[14]+MW[16]+MW[17]+MW[18]          ; Non-Metrorail in-vehicle
time

    IF (I > @LastIZN@ || J > @LastIZN@)  Continue                  ; Skip current
i/j if either is external
     ; Start afresh all fare related variables at the current i/j

          BusFare        = 0.0
          RailFare       = 0.0
          RailAccFare    = 0.0
          RailEgrFare    = 0.0
          TotalFare      = 0.0
          TotalFareDef   = 0.0
          IBFZ1          = 0.0
          IBFZ2          = 0.0
          JBFZ1          = 0.0
          JBFZ2          = 0.0
          Acc_NoWlk_Prop = 0.0
          Egr_NoWlk_Prop = 0.0
          ISTA           = 0.0
          JSTA           = 0.0
          IJIDX          = 0.0
          RailFare       = 0.0
          RIBFZ1         = 0.0
          RIBFZ2         = 0.0
          RJBFZ1         = 0.0
          RJBFZ2         = 0.0
          _AccFare1      = 0.0
          _AccFare2      = 0.0
          _AccFare12     = 0.0
          _EgrFare1      = 0.0
          _EgrFare2      = 0.0
          _EgrFare12     = 0.0
          RailAccFare    = 0.0
          RailEgrFare    = 0.0
          Acc_Discount   = 0.0
          Egr_Discount   = 0.0
          I_FareOvr      = 0.0
          J_FareOvr      = 0.0

     ; Make sure station numbers are appropriate:
          IF (MW[11] > @STATSIZE@ ||  MW[12] > @STATSIZE@ )
                LIST = 'USTOS Station number(s) are out of range; I Quit'
              ABORT
          ENDIF

      ;
      ; Define Rail-to-bus fare discount.  The discount will be applied
      ; at the acces end and egress - end on a 50/50 basis (per MFARE2)
      ;
        AccRBDx     =  TAZLook(7,I) + 1         ; convert JurCode 0-3 to Rail/Bus
discount array index 1-4
        EgrRBDx     =  TAZLook(7,J) + 1         ;
        Acc_Discount  =  RB_Disc[AccRBDx] * 0.50
        Egr_Discount  =  RB_Disc[EgrRBDx] * 0.50


     ; Lookup Bus Fares
     ;
     IBFZ1 = TAZLOOK(1,I)
     IBFZ2 = TAZLOOK(2,I)
     IF (IBFZ2 = 0) IBFZ2 = IBFZ1


     JBFZ1 = TAZLOOK(1,J)
     JBFZ2 = TAZLOOK(2,J)
     IF (JBFZ2 = 0) JBFZ2 = JBFZ1


     ;
     ;  Define Zonal Non-walk area percentages at
     ;  Access end and egress end:
     Acc_NoWlk_Prop = 1.0 - (TAZLOOK(3,I)/1000.0)    ; Zonal non-walk proportion to
station (Access-end)
     Egr_NoWlk_Prop = 1.0 - (TAZLOOK(4,J)/1000.0)    ; Zonal non-walk proportion to
station (Egress-end)


    ;-------------------------------------------------------------------
    ; If no transit path exists for i/j then zero-out fares
    ;-------------------------------------------------------------------
    IF (MW[19][j] = 0 )
```

```
        TotalFare      = 0.0
        TotalFareDef   = 0.0
        BusFare        = 0.0
        RailFare       = 0.0
        _AccFare12     = 0.0
        _EgrFare12     = 0.0

         MW[21][j]     = TotalFareDef

         MW[41][j]     = TotalFareDef
         MW[42][j]     = BusFare
         MW[43][j]     = RailFare
         MW[44][j]     = _AccFare12
         MW[45][j]     = _EgrFare12


    ELSEIF (MW[11][j] = 0  && MW[12][j] = 0)  ;
    ;-------------------------------------------------------------------
    ; ..ElseIf no rail stations used, compute Bus fare (BUSFARE)
    ;-------------------------------------------------------------------
          BusFare = (BusFrMTX(JBFZ1,IBFZ1)  +
                     BusFrMTX(JBFZ2,IBFZ1)  +
                     BusFrMTX(JBFZ1,IBFZ2)  +
                     BusFrMTX(JBFZ2,IBFZ2))   * 0.250

        TotalFare     =  BusFare + RailFare + RailAccFare + RailEgrFare  ;
undeflated transit fare, Bus-Only paths
        TotalFareDef  =  Round(TotalFare * DeflationFTR)
        MW[21][j]     =  TotalFareDef

        MW[41][j]     = TotalFareDef
        MW[42][j]     = BusFare
        MW[43][j]     = RailFare
        MW[44][j]     = _AccFare12
        MW[45][j]     = _EgrFare12

    ELSE
    ;------------------------------------------------------------------
    ; ... Else compute rail related fares                              -
    ; if USTOS stations exist for current I/J                          -
    ;------------------------------------------------------------------

       ISTA     =  MW[11][J]                              ; Origin Metrorail
Station No.
       JSTA     =  MW[12][J]                              ; Destin Metrorail
Station No.
       IJIDX    =  ISTA*1000.0 + JSTA                     ; Sta I/J index,
('0001001' means from sta# 1 to sta#1)
       RailFare =  Sta_Fares(1,IJIDX)                     ; Fare from current Sta.I
to Sta.J

      ;
      ;  Define Station-related Bus Fare Zones
      ;  Access-End:

      RIBFZ1 = TAZLOOK(5,ISTA)
      RIBFZ2 = TAZLOOK(6,ISTA)
      IF (RIBFZ2 = 0) RIBFZ2 = RIBFZ1

      ;  Egress-End:

      RJBFZ1 = TAZLOOK(5,JSTA)
      RJBFZ2 = TAZLOOK(6,JSTA)
      IF (RJBFZ2 = 0) RJBFZ2 = RJBFZ1

       _AccFare1 = MIN(BusFrMTX(RIBFZ1,IBFZ1),BusFrMTX(RIBFZ2,IBFZ1))
       _AccFare2 = MIN(BusFrMTX(RIBFZ1,IBFZ2),BusFrMTX(RIBFZ2,IBFZ2))
       _AccFare12= ((_AccFare1 + _AccFare2) * 0.50) - Acc_Discount

       _EgrFare1 = MIN(BusFrMTX(JBFZ1,RJBFZ1),BusFrMTX(JBFZ1,RJBFZ2))
       _EgrFare2 = MIN(BusFrMTX(JBFZ2,RJBFZ1),BusFrMTX(JBFZ2,RJBFZ2))
       _EgrFare12= ((_EgrFare1 + _EgrFare2) * 0.50) - Egr_Discount

        RailAccFare = _AccFare12 *  Acc_NoWlk_Prop
        RailEgrFare = _EgrFare12 *  Egr_NoWlk_Prop


    ; If Only Metrorail is used then TotalFare equals RailFare

         IF (MW[20][j] = 0)

            TotalFare  = RailFare                                     ; undeflated
transit fare, Metrorail Only-Related paths

            BusFare    = 0.0
            _AccFare12 = 0.0
            _EgrFare12 = 0.0
           RailAccFare = 0.0
           RailEgrFare = 0.0

         ELSE

            TotalFare = BusFare + RailFare + RailAccFare + RailEgrFare ; undeflated
transit fare, Metrorail-Related paths

         ENDIF

    ; If an I/J override value exists use it instead of the total computed fare
value

         IF ( TAZLOOK(8,I) > 0.0 )
              I_FareOvr = TAZLOOK(8,I)
              TotalFare = I_FareOvr
         ENDIF
         IF ( TAZLOOK(9,J) > 0.0 )
             J_FareOvr = TAZLOOK(9,J)
             TotalFare = J_FareOvr
         ENDIF

    ; Apply Deflator to Total fare to write out constant dollars

        TotalFareDef   =  Round(TotalFare * DeflationFTR)
         MW[21][j]     =  TotalFareDef

         MW[41][j]     =  TotalFareDef
         MW[42][j]     =  BusFare
         MW[43][j]     =  RailFare
         MW[44][j]     =  _AccFare12
         MW[45][j]     =  _EgrFare12

    ENDIF


    ; write out the results of sample IJs here:
    IF (i = 8, 64, 345, 362, 464, 578, 829, 927, 1043, 1231, 1236, 1337,
         1537, 1554, 1619, 1698, 1716, 1842, 1942, 1967 &
         j = 8, 64, 345, 362, 1231, 1236, 1337, 1537)

         print Form=7.1 list= i(6),j(6),TotalFareDef(6), TotalFare, BusFare,
RailFare, _AccFare12,_EgrFare12,
                              I_FareOvr,J_FareOvr,
           ' <<-
I/J/DefFare/UnDefFare/BusFare/RailFare/AccFare/EgrFare/IOvrFare/JOvrFare/',
file=@Outputtext@
    ENDIF
```

```
  ENDJLOOP

ENDRUN

ENDLOOP
```

18 Misc_Time-of-Day.S

```
; =====================================================================
;  Misc_Time-of-Day.s
;  MWCOG Version 2.3 Model - 3722 TAZ System
;
;  Distribute Truck and  Miscellaneous (non-modeled) trips among
;             among three time periods:
;             -  AM peak    6:00 AM -  8:59 AM  (3 Hrs)
;             -  Midday     9:00 AM -  2:59 PM  (6 Hrs)
;             -  PM peak    3:00 PM -  6:59 PM  (4 Hrs)
;             -  Night      All remaining hrs. (11 Hrs)
;
; Note: The miscellaneous purpose 'School Auto Dr.' is no longer used in V2.3
;
; =====================================================================
;
; Environment Variable:
;              _iter_  (Iteration indicator = 'pp','i1'-'i6'
;
;//////////////////////////////////////////////////////////////////////
; Parameters:
;                                                                   //
ZONESIZE    =       3722              ;  No. of TAZs                //
LastIZN     =       3675              ;  Last Internal TAZ no.      //
FExt        =       LastIZN + 1       ;  First External TAZ no.     //
;//////////////////////////////////////////////////////////////////////

; Input/Output filenames:
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; COM/TRK Calibration Adjustment Tables                                //
TKDELTA  = '..\support\tkdelta_3722.trp '   ; MTK/HTK delta              //
CVDELTA  = '..\support\cvdelta_3722.trp'   ; COM delta      ;
//
; I/P Truck & Exogenous trip Tables:                                //
XXCVTRK  = 'inputs\XXCVT.vtt'       ;  Com/Mtk/Htk XX Trips (t1-3) //
XXAUTDR  = 'inputs\xxaut.vtt'       ;  Auto Dr XX Trips (t1)    //
;                                                                  //
TAXIADR  = 'inputs\taxi.adr'        ;  TAXI Auto Dr Trips       //
VISIADR  = 'inputs\visi.adr'        ;  Visitor A.Dr Trips       //
SchlADR  = 'inputs\schl.adr'        ;  School  A.Dr Trips       //
;
COMTDOUT = 'COM_%_iter_%_.pTT'        ;  Comm Vehs t1-Intl, t2-Extl
MTKTDOUT = 'MTK_%_iter_%_.pTT'        ;  Med  Trks t1-Intl, t2-Extl
HTKTDOUT = 'HTK_%_iter_%_.pTT'        ;  Hvy  Trks t1-Intl, t2-Extl  /
;
APXADR   = 'inputs\airpax.adr'         ;  Air Passenger Auto Dr.   //
;
;O/P Truck and Exogenous Tabs by time of day                       //
MISCAM  = 'MISCAM%_iter_%.TT'          ; AM     Non-Modeled Trips  //
MISCMD  = 'MISCMD%_iter_%.TT'          ; Midday Non-Modeled Trips  //
MISCPM  = 'MISCPM%_iter_%.TT'          ; PM     Non-Modeled Trips  //
MISCOP  = 'MISCNT%_iter_%.TT'          ; Night  Non-Modeled Trips  //
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;
; Each output file contains 8 tables -                                //
; 1/xx truck,2/xx autodr,3/taxi adr,4/visitor adr,
; 5/med. truck, 6/hvy truck, 7/air passenger adr, 8/comm veh
;//////////////////////////////////////////////////////////////////////
;--------------------------------------------------------------------
;;====================================================
;;  Begin com veh, med, hvy truck time of day processing
;;====================================================
run pgm=matrix
  pageheight=32767  ; Preclude header breaks
  id = "Commercial time of day + delta

  mati[1] = @COMTDOUT@
  mati[2] = @XXCVTRK@
  mati[3] = @CVDELTA@

  mato    = tempcom.trp, mo=61-68


 ; set up mtx 100, 200 to identify I-X, and X-I ijs respectively
  MW[100] = 0
  MW[200] = 0
  if (I=1-@LastIzn@)
      MW[100] = 1, include= @FExt@-@zonesize@
     else
      MW[200] = 1, include= 1-@LastIzn@
  endif

; I/I trips are already balanced, so we can apply a single factor
;  to all trips.  Apply separate P/A and A/P factors to externals.
;  Assume externals are 70/30 inbound (X/I, or A/P) in the morning,
;  70/30 outbound (I/X, P/A) in the evening.  Off-peak is 50/50.
;
; Note: the External(I-X,X-I) trips are multiplied by 2.0 as the CV model
; (i.e., delta table) was developed this way - rm 4/30/08

  mw[1] = mi.1.1              ; I/I CV trips
  mw[2] = mi.1.2   * mw[100]  ; Int P/ Ext A (outbound)     Delta trip table
reflects 1/2 total trips
  mw[3] = mi.1.2   * mw[200]  ; Ext A/ Int P (inbound)      Delta trip table
reflects 1/2 total trips

; Also add in the X/X's.
  mw[4] = mi.2.1

; Read and transpose the external delta
  mw[11] = mi.3.1 ; I/I
  mw[12] = mi.3.2 ; Int P/ Ext A (outbound)
  mw[13] = mi.3.2.t ; Ext A/ Int P (inbound)

; Add in the deltas.  First, for I/I and I/X.
  if (i = 1-@LastIZN@)
    jloop
      mw[21] = max(mw[1] + mw[11],0)
      mw[22] = max(mw[2] + mw[12],0)
    endjloop
  endif

  if (i > @LastIZN@)
; Now for Ext transposed (X/I).
    mw[23] = max(mw[3] + mw[13],0), include = 1-@LastIZN@

; Now for X/X.
    mw[24] = max(mw[4] + mw[12],0), include = @FExt@-@ZONESIZE@
  endif

; Sum I/I and External here (Total auto drv. distribution from 2007/08 HTS)
```

```
  mw[61]  = 0.18700  * (mw[21] + 0.70 * mw[23] + 0.30 * mw[22])  ; AM  Commercial
Vehs.
  mw[62]  = 0.32630  * (mw[21] + 0.50 * mw[23] + 0.50 * mw[22])  ; MD  Commercial
Vehs.
  mw[63]  = 0.32890  * (mw[21] + 0.30 * mw[23] + 0.70 * mw[22])  ; PM  Commercial
Vehs.
  mw[64]  = 0.15780  * (mw[21] + 0.50 * mw[23] + 0.50 * mw[22])  ; OP  Commercial
Vehs.

; Keep X/X separate
  mw[65]  = 0.18700  *  mw[24]
  mw[66]  = 0.32630  *  mw[24]
  mw[67]  = 0.32890  *  mw[24]
  mw[68]  = 0.15780  *  mw[24]

endrun

;--------------------------------------------------------------------
run pgm=matrix

  id = "Truck time of day + delta

  mati[1] = @MTKTDOUT@
  mati[4] = @HTKTDOUT@
  mati[2] = @XXCVTRK@
  mati[3] = @TKDELTA@

  mato    = temptrk.trp, mo=71-86


 ; set up mtx 100, 200 to identify I-X, and X-I ijs respectively
  MW[100] = 0
  MW[200] = 0
  if (I=1-@LastIzn@)
      MW[100] = 1, include= @FExt@-@zonesize@
     else
      MW[200] = 1, include= 1-@LastIzn@
  endif

; I/I trips are already balanced, so we can apply a single factor
;  to all trips.  Apply separate P/A and A/P factors to externals.
;  Assume externals are 70/30 inbound (X/I, or A/P) in the morning,
;  70/30 outbound (I/X, P/A) in the evening.  Off-peak is 50/50.
  mw[1] = mi.1.1                   ; MTK I/I
  mw[2] = mi.1.2    * mw[100]      ; MTK Int P/ Ext A (outbound)  Delta trip table
reflects 1/2 total trips
  mw[3] = mi.1.2    * mw[200]      ; MTK Ext A/ Int P (inbound)   Delta trip table
reflects 1/2 total trips

  mw[4] = mi.4.1                   ; HTK I/I
  mw[5] = mi.4.2    * mw[100]      ; HTK Int P/ Ext A (outbound)  Delta trip table
reflects 1/2 total trips
  mw[6] = mi.4.2    * mw[200]      ; HTK Ext A/ Int P (inbound)   Delta trip table
reflects 1/2 total trips

; Also add in the X/X's.
  mw[7] = mi.2.2 ; MTK
  mw[8] = mi.2.3 ; HTK

; Read and transpose the external delta.
  mw[21] = mi.3.1          ;  mi.3.mtkii
  mw[22] = mi.3.2          ;  mi.3.mtkext
  mw[23] = mi.3.2.t        ;  mi.3.mtkext.t
  mw[24] = mi.3.3          ;  mi.3.mtkxx
                           ;
  mw[25] = mi.3.4          ;  mi.3.htkii
  mw[26] = mi.3.5          ;  mi.3.htkext
  mw[27] = mi.3.5.t        ;  mi.3.htkext.t
  mw[28] = mi.3.6          ;  mi.3.htkxx

; Add in the deltas.  First, for I/I and I/X.
  if (i = 1-@LastIZN@)
    jloop
      mw[31] = max(mw[1] + mw[21],0)   ;mtk ii
      mw[32] = max(mw[2] + mw[22],0)   ;mtk ix

      mw[35] = max(mw[4] + mw[25],0)   ;htk ii
      mw[36] = max(mw[5] + mw[26],0)   ;htk ix
    endjloop
  endif

  if (i > @LastIZN@)

; Now for X/I.
    mw[33] = max(mw[3] + mw[23],0), include = 1-@LastIZN@   ; xi mtk
    mw[37] = max(mw[6] + mw[27],0), include = 1-@LastIZN@   ; xi htk

; Now for X/X.
    mw[34] = max(mw[7] + mw[24],0), include = @FExt@-@ZONESIZE@   ; xx mtk
    mw[38] = max(mw[8] + mw[28],0), include = @FExt@-@ZONESIZE@   ; xx htk
  endif

; Sum I/I and External here
;  MTK
  mw[71] = 0.250  * (mw[31] + 0.7 * mw[33] + 0.3 * mw[32])  ; AM
  mw[72] = 0.450  * (mw[31] + 0.5 * mw[33] + 0.5 * mw[32])  ; MD
  mw[73] = 0.200  * (mw[31] + 0.3 * mw[33] + 0.7 * mw[32])  ; PM
  mw[74] = 0.100  * (mw[31] + 0.5 * mw[33] + 0.5 * mw[32])  ; OP

;  HTK
  mw[75] = 0.200  * (mw[35] + 0.7 * mw[37] + 0.3 * mw[36])  ; AM
  mw[76] = 0.500  * (mw[35] + 0.5 * mw[37] + 0.5 * mw[36])  ; MD
  mw[77] = 0.100  * (mw[35] + 0.3 * mw[37] + 0.7 * mw[36])  ; PM
  mw[78] = 0.200  * (mw[35] + 0.5 * mw[37] + 0.5 * mw[36])  ; OP

; Keep X/X separate
;  MTK
  mw[79] = 0.250  * mw[34]
  mw[80] = 0.450  * mw[34]
  mw[81] = 0.200  * mw[34]
  mw[82] = 0.100  * mw[34]

;  HTK
  mw[83] = 0.200  * mw[38]
  mw[84] = 0.500  * mw[38]
  mw[85] = 0.100  * mw[38]
  mw[86] = 0.200  * mw[38]
endrun
;;=======================================================
;;  end of com veh, med, hvy truck time of day processing
;;=======================================================
RUN PGM=MATRIX                   ; Read in Daily Miscellaneous Trips
    MATI[1]=@XXAUTDR@            ; Thru            Auto Driver Trips
    MATI[2]=@TAXIADR@            ; Taxi            Auto Driver Trips
    MATI[3]=@VISIADR@            ; Visitor/Tourist Auto Driver Trips
    MATI[4]=@SchlADR@            ; School          Auto Driver Trips

    MATI[5]=@APXADR@             ; Air Passenger auto driver   Trips

; Read in COM/TRK trips, already split by time period above.
    MATI[6]=tempcom.trp
    MATI[7]=temptrk.trp

; Put Misc Trips in Work Mats 2-8 (it simplifies the
;  numbering of the other tables, below).
  MW[2]  = MI.1.1
```

```
  MW[3]  = MI.2.1
  MW[4]  = MI.3.1
  MW[5]  = MI.4.1

  MW[8]  = MI.5.1

; Put COM/TRK trips by TOD in their proper work matrices.  We're just
;  passing them through from the steps above.

  MW[110] = MI.7.9           ; AM X/X MTK
  MW[111] = MI.7.13          ; AM X/X HTK
  MW[112] = MI.7.9  + MI.7.13; AM X/X TRK
  MW[116] = MI.7.1           ; AM I/I + EXT MTK
  MW[117] = MI.7.5           ; AM I/I + EXT HTK
  MW[119] = MI.6.1           ; AM I/I + EXT COM

  MW[140] = MI.7.10          ; MD X/X MTK
  MW[141] = MI.7.14          ; MD X/X HTK
  MW[142] = MI.7.10 + MI.7.14; MD X/X TRK
  MW[146] = MI.7.2           ; MD I/I + EXT MTK
  MW[147] = MI.7.6           ; MD I/I + EXT HTK
  MW[149] = MI.6.2           ; MD I/I + EXT COM

  MW[120] = MI.7.11          ; PM X/X MTK
  MW[121] = MI.7.15          ; PM X/X HTK
  MW[122] = MI.7.11 + MI.7.15; PM X/X TRK
  MW[126] = MI.7.3           ; PM I/I + EXT MTK
  MW[127] = MI.7.7           ; PM I/I + EXT HTK
  MW[129] = MI.6.3           ; PM I/I + EXT COM

  MW[130] = MI.7.12          ; OP X/X MTK
  MW[131] = MI.7.16          ; OP X/X HTK
  MW[132] = MI.7.12 + MI.7.16; OP X/X TRK
  MW[136] = MI.7.4           ; OP I/I + EXT MTK
  MW[137] = MI.7.8           ; OP I/I + EXT HTK
  MW[139] = MI.6.4           ; OP I/I + EXT COM

; Apply TOD Factors
; put AM       trips in work mats 10-19
; put MD       trips in work mats 40-49
; put PM       trips in work mats 20-29
; put Off-Peak trips in work mats 30-39
;
 JLOOP
   ; AM Peak Period Trips ---------------------------------------------------
    MW[12] =  0.18700   * MW[2]  + MI.6.5[J] ; AM Thru     Auto Driver + COM
    MW[13] =  0.18700   * MW[3]    ; AM Taxi     Auto Driver
    MW[14] =  0.18700   * MW[4]    ; AM Visitor  Auto Driver
    MW[15] =  0.18700   * MW[5]    ; AM School   Auto Driver

    MW[18] =  0.2310    * MW[8]    ; AM Air Pax  Auto Driver

   ; Midday   Period Trips --------------------------------------------------
    MW[42] =  0.32630   * MW[2]  + MI.6.6[J] ; MD Thru     Auto Driver + COM
    MW[43] =  0.32630   * MW[3]  ; MD Taxi     Auto Driver
    MW[44] =  0.32630   * MW[4]  ; MD Visitor  Auto Driver
    MW[45] =  0.32630   * MW[5]  ; MD School   Auto Driver

    MW[48] =  0.3657    * MW[8]  ; MD Air Pax  Auto Driver

   ; PM Peak Period Trips  --------------------------------------------------
    MW[22] = 0.32890    * MW[2]  + MI.6.7[J] ; PM Thru     Auto Driver + COM
    MW[23] = 0.32890    * MW[3]  ; PM Taxi     Auto Driver
    MW[24] = 0.32890    * MW[4]  ; PM Visitor  Auto Driver
    MW[25] = 0.32890    * MW[5]  ; PM School   Auto Driver

    MW[28] = 0.2538     * MW[8]  ; PM Air Pax  Auto Driver

   ; Off-Peak Period Trips ----------------------------------------------------
    MW[32] = 0.15780    * MW[2]  + MI.6.8[J] ; OP Thru     Auto Driver + COM
    MW[33] = 0.15780    * MW[3]  ; OP Taxi     Auto Driver
    MW[34] = 0.15780    * MW[4]  ; OP Visitor  Auto Driver
    MW[35] = 0.15780    * MW[5]  ; OP School   Auto Driver

    MW[38] = 0.1495     * MW[8]  ; OP Air Pax  Auto Driver

 ENDJLOOP

; LET'S SUMMARIZE NEATLY
 jloop
    DAYXXMTK = DAYXXMTK + MW[110] + MW[120] + MW[130] + MW[140]    ; ACCUMULATE
TOTAL DAILY Medium THRU TRUCKS
    DAYXXHTK = DAYXXHTK + MW[111] + MW[121] + MW[131] + MW[141]    ; ACCUMULATE
TOTAL DAILY Heavy  THRU TRUCKS
    DAYXXAD  = DAYXXAD + MW[2] + MI.6.5[J] + MI.6.6[J] + MI.6.7[J] + MI.6.8[J];
ACCUMULATE TOTAL DAILY THRU AUTO DRV + COM
    DAYTXAD  = DAYTXAD + MW[3]                                     ; ACCUMULATE
TOTAL DAILY TAXI    ADR TRIPS
    DAYVSAD  = DAYVSAD + MW[4]                                     ; ACCUMULATE
TOTAL DAILY VISITOR ADR TRIPS
    DAYScAD  = DAYScAD + MW[5]                                     ; ACCUMULATE
TOTAL DAILY School  ADR TRIPS

    DAYMTRK  = DAYMTRK + MW[116] + MW[126] + MW[136] + MW[146]; ACCUMULATE TOTAL
DAILY MED. TRUCK TRIPS
    DAYHTRK  = DAYHTRK + MW[117] + MW[127] + MW[137] + MW[147]; ACCUMULATE TOTAL
DAILY HVY. TRUCK TRIPS
    DAYAPAX  = DAYAPAX + MW[8]                                ; ACCUMULATE TOTAL
DAILY AIR PAX ADR TRIPS
    DAYCOM   = DAYCOM  + MW[119] + MW[129] + MW[139] + MW[149]; ACCUMULATE TOTAL
DAILY COMMERCIAL TRIPS
 ;;---
    AMXXMTK  = AMXXMTK + MW[110]  ; ACCUMULATE TOTAL AM XX Medium TRUCKS
    AMXXHTK  = AMXXHTK + MW[111]  ; ACCUMULATE TOTAL AM XX Heavy  TRUCKS
    AMXXAD   = AMXXAD  + MW[12]   ; ACCUMULATE TOTAL AM XX ADR + XX COM  TRIPS
    AMTXAD   = AMTXAD  + MW[13]   ; ACCUMULATE TOTAL AM TAXI  ADR  TRIPS
    AMVSAD   = AMVSAD  + MW[14]   ; ACCUMULATE TOTAL AM VISIT ADR  TRIPS
    AMScAD   = AMScAD  + MW[15]   ; ACCUMULATE TOTAL AM SchoolADR  TRIPS

    AMMTRK   = AMMTRK  + MW[116]  ; ACCUMULATE TOTAL AM MED TRUCK  TRIPS
    AMHTRK   = AMHTRK  + MW[117]  ; ACCUMULATE TOTAL AM HVY TRUCK  TRIPS
    AMAPAX   = AMAPAX  + MW[18]   ; ACCUMULATE TOTAL AM AIR PAX ADR   TRIPS
    AMCOM    = AMCOM   + MW[119]  ; ACCUMULATE TOTAL AM COMMERCIAL TRIPS
 ;;---
    MDXXMTK  = MDXXMTK + MW[140]  ; ACCUMULATE TOTAL MD XX Medium TRUCKS
    MDXXHTK  = MDXXHTK + MW[141]  ; ACCUMULATE TOTAL MD XX Heavy  TRUCKS
    MDXXAD   = MDXXAD  + MW[42]   ; ACCUMULATE TOTAL MD XX ADR + XX COM  TRIPS
    MDTXAD   = MDTXAD  + MW[43]   ; ACCUMULATE TOTAL MD TAXI  ADR  TRIPS
    MDVSAD   = MDVSAD  + MW[44]   ; ACCUMULATE TOTAL MD VISIT ADR  TRIPS
    MDScAD   = MDScAD  + MW[45]   ; ACCUMULATE TOTAL MD SchoolADR  TRIPS

    MDMTRK   = MDMTRK  + MW[146]  ; ACCUMULATE TOTAL MD MED TRUCK  TRIPS
    MDHTRK   = MDHTRK  + MW[147]  ; ACCUMULATE TOTAL MD HVY TRUCK  TRIPS
    MDAPAX   = MDAPAX  + MW[48]   ; ACCUMULATE TOTAL MD AIRPAX ADR   TRIPS
    MDCOM    = MDCOM   + MW[149]  ; ACCUMULATE TOTAL MD COMMERCIAL TRIPS
 ;;---
    PMXXMTK  = PMXXMTK + MW[120]  ; ACCUMULATE TOTAL PM XX Medium TRUCKS
    PMXXHTK  = PMXXHTK + MW[121]  ; ACCUMULATE TOTAL PM XX Heavy  TRUCKS
    PMXXAD   = PMXXAD  + MW[22]   ; ACCUMULATE TOTAL PM XX ADR + XX COM  TRIPS
    PMTXAD   = PMTXAD  + MW[23]   ; ACCUMULATE TOTAL PM TAXI  ADR  TRIPS
    PMVSAD   = PMVSAD  + MW[24]   ; ACCUMULATE TOTAL PM VISIT ADR  TRIPS
    PMScAD   = PMScAD  + MW[25]   ; ACCUMULATE TOTAL PM SchoolADR  TRIPS

    PMMTRK   = PMMTRK  + MW[126]  ; ACCUMULATE TOTAL PM MED TRUCK  TRIPS
    PMHTRK   = PMHTRK  + MW[127]  ; ACCUMULATE TOTAL PM HVY TRUCK  TRIPS
    PMAPAX   = PMAPAX  + MW[28]   ; ACCUMULATE TOTAL PM AIR PAX ADR   TRIPS
```

```
    PMCOM    = PMCOM   + MW[129]  ; ACCUMULATE TOTAL PM COMMERCIAL TRIPS
 ;;---
    OPXXMTK  = OPXXMTK + MW[130]  ; ACCUMULATE TOTAL OP XX Medium TRUCKS
    OPXXHTK  = OPXXHTK + MW[131]  ; ACCUMULATE TOTAL OP XX Heavy  TRUCKS
    OPXXAD   = OPXXAD  + MW[32]   ; ACCUMULATE TOTAL OP XX ADR + XX COM  TRIPS
    OPTXAD   = OPTXAD  + MW[33]   ; ACCUMULATE TOTAL OP TAXI  ADR  TRIPS
    OPVSAD   = OPVSAD  + MW[34]   ; ACCUMULATE TOTAL OP VISIT ADR  TRIPS
    OPScAD   = OPScAD  + MW[35]   ; ACCUMULATE TOTAL OP SchoolADR  TRIPS

    OPMTRK   = OPMTRK  + MW[136]  ; ACCUMULATE TOTAL OP MED TRUCK  TRIPS
    OPHTRK   = OPHTRK  + MW[137]  ; ACCUMULATE TOTAL OP HVY TRUCK  TRIPS
    OPAPAX   = OPAPAX  + MW[38]   ; ACCUMULATE TOTAL OP AIR PAX ADR   TRIPS
    OPCOM    = OPCOM   + MW[139]  ; ACCUMULATE TOTAL OP COMMERCIAL TRIPS
  ;;---

; total input misc trips
  ipmisc     = ipmisc + MW[02]    + MW[03]    + MW[04]    + MW[05]   + MW[08]  +
                        MW[110]   + MW[111]   + MW[116]   + MW[117]  + MW[119] +
                        MW[120]   + MW[121]   + MW[126]   + MW[127]  + MW[129] +
                        MW[130]   + MW[131]   + MW[136]   + MW[137]  + MW[139] +
                        MW[140]   + MW[141]   + MW[146]   + MW[147]  + MW[149] +
                        MI.6.5[J] + MI.6.6[J] + MI.6.7[J] + MI.6.8[J]

; total output misc trips
  opmisc  = opmisc +
   MW[110]+MW[111]   +MW[12]+MW[13]+MW[14]+MW[15]+MW[116]+MW[117] +MW[18]+MW[119]+
   MW[120]+MW[121]   +MW[22]+MW[23]+MW[24]+MW[25]+MW[126]+MW[127] +MW[28]+MW[129]+
   MW[130]+MW[131]   +MW[32]+MW[33]+MW[34]+MW[35]+MW[136]+MW[137] +MW[38]+MW[139]+
   MW[140]+MW[141]   +MW[42]+MW[43]+MW[44]+MW[45]+MW[146]+MW[147] +MW[48]+MW[149]

 ENDJLOOP

IF (I=ZONES)  ;  LIST OUT THE TOTALS IF AT THE END OF THE I-LOOP
; get regional I/O differences
diff = opmisc-ipmisc ;

LIST = '/bt          '
LIST = '  MISCELLANEOUS/TRUCK TIME-OF-DAY TOTALS ','\n',
list = ' '

list = 'Input  Misc/Truck Total: ',ipmisc(10.0c)
list = 'Output Misc/Truck Total: ',opmisc(10.0c)
list = 'Diff.  (Output-Input):   ',diff(10.0)
list = ' '

LIST = 'DAILY XX MedTrk:'   ,dayxxmtk(9.0c),' AM, MD, PM, Off-Pk totals:
',AMXXmTK(9.0c),',',MDXXmTK(9.0c),',',PMXXmTK(9.0c),',',OPXXmTK(9.0c)
LIST = 'DAILY XX HvyTrk:'   ,dayxxhtk(9.0c),' AM, MD, PM, Off-Pk totals:
',AMXXhTK(9.0c),',',MDXXhTK(9.0c),',',PMXXhTK(9.0c),',',OPXXhTK(9.0c)
LIST = 'DAILY XX ADR/CV:'   ,dayxxAD(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMXXAD(9.0c), ',',MDXXAD(9.0c), ',',PMXXAD(9.0c), ',',OPXXAD(9.0c)
LIST = 'DAILY TAXI ADRS:'   ,dayTxAD(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMTXAD(9.0c), ',',MDTXAD(9.0c), ',',PMTXAD(9.0c), ',',OPTXAD(9.0c)
LIST = 'DAILY VISI ADRS:'   ,dayVSAD(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMVSAD(9.0c), ',',MDVSAD(9.0c), ',',PMVSAD(9.0c), ',',OPVSAD(9.0c)
LIST = 'DAILY Schl ADRS:'   ,dayScAD(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMScAD(9.0c), ',',MDScAD(9.0c), ',',PMScAD(9.0c), ',',OPScAD(9.0c)
LIST = 'DAILY COM VEHS: '   ,dayCOM(9.0c),  ' AM, MD, PM, Off-Pk totals:
',AMCOM(9.0c),  ',',MDCOM(9.0c),  ',',PMCOM(9.0c),  ',',OPCOM(9.0c)
LIST = 'DAILY MED TRKS: '   ,dayMTRK(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMMTRK(9.0c), ',',MDMTRK(9.0c), ',',PMMTRK(9.0c), ',',OPMTRK(9.0c)
LIST = 'DAILY HVY TRKS: '   ,dayHTRK(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMHTRK(9.0c), ',',MDHTRK(9.0c), ',',PMHTRK(9.0c), ',',OPHTRK(9.0c)
LIST = 'DAILY APX ADRS: '   ,dayAPAX(9.0c), ' AM, MD, PM, Off-Pk totals:
',AMAPAX(9.0c), ',',MDAPAX(9.0c), ',',PMAPAX(9.0c), ',',OPAPAX(9.0c)

LIST = '/et          '
endif
```

```
;  Write out the Miscellaneous Trips in time period-specific files
   MATO[1] = @MISCAM@, MO=112,12,13,14,15,116,117,18,119,   ; AM MISC Trips

name=AM_XXTrk,AM_XXAdr,AM_TxAdr,AM_VtAdr,AM_ScAdr,AM_MedTk,AM_HvyTk,AM_APAdr,AM_ComV
e

   MATO[2] = @MISCMD@, MO=142,42,43,44,45,146,147,48,149,   ; MD MISC Trips

name=MD_XXTrk,MD_XXAdr,MD_TxAdr,MD_VtAdr,MD_ScAdr,MD_MedTk,MD_HvyTk,MD_APAdr,MD_ComV
e

   MATO[3] = @MISCPM@, MO=122,22,23,24,25,126,127,28,129,   ; PM MISC Trips

name=PM_XXTrk,PM_XXAdr,PM_TxAdr,PM_VtAdr,PM_ScAdr,PM_MedTk,PM_HvyTk,PM_APAdr,PM_ComV
e

   MATO[4] = @MISCOP@, MO=132,32,33,34,35,136,137,38,139,   ; OP MISC Trips

name=OP_XXTrk,OP_XXAdr,OP_TxAdr,OP_VtAdr,OP_ScAdr,OP_MedTk,OP_HvyTk,OP_APAdr,OP_ComV
e
ENDRUN
;
*del tempcom.trp
*del temptrk.trp
```

19 modnet.s

```
pageheight=32767  ; Preclude header breaks

;; write out list of highway nodes with a-nodes, b-nodes, distance, TAZ, and Ftype
;; for the walkacc program
RUN PGM=HWYNET
NETI = '%_iter_%hwy.net'

 IF (Ftype != 0)
     print list= a(8), b(8), distance(8.2), ftype(8),TAZ(8), File= WalkAcc_links.txt
 ENDIF
ENDRUN

RUN PGM=MATRIX
ZONES=1
FILEI  RECI = WalkAcc_links.txt,
 a=  1, b=  2, distance= 3, ftype= 4,TAZ=  5

  n=n+1

  RECO[1] ="WalkAcc_Links.dbf",
  Fields = a(8), b(8), distance(8.2), ftype(8),TAZ(8)

  WRITE RECO=1
endrun
;



;; write out network with added station centroid connectors
RUN PGM=HWYNET
NETI = '%_iter_%hwy.net'

NETO = '%_iter_%HWYMOD.NET'

PARAMETERS ZONES=7000

IF (A=3723-7000 || B=3723-7000)
```

```
  AMLIMIT = 0
  PMLIMIT = 0
  OPLIMIT = 0
ENDIF
ENDRUN
```

20 Parker.s

```
*del voya*.prn
; Parker.s - PNR to Station Link development
; Dimensions:
;

;;Input Files:
  Sta_File       = 'inputs\Station.dbf ' ; Std. Station file
;
; Output Files:

  metampnr       = 'metampnr.tb'  ;unit:21x
  comampnr       = 'comampnr.tb'  ;     22
  busampnr       = 'busampnr.tb'  ;     23
  lrtampnr       = 'lrtampnr.tb'  ;     24
  newampnr       = 'newampnr.tb'  ;     25
  metoppnr       = 'metoppnr.tb'  ;     31x
  comoppnr       = 'comoppnr.tb'  ;     32
  busoppnr       = 'busoppnr.tb'  ;     33
  lrtoppnr       = 'lrtoppnr.tb'  ;     34
  newoppnr       = 'newoppnr.tb'  ;     35
;
; Params:

  VOTperHr       = 10.00          ; Assumed Value of time in $/hr)
  VOTperMin      = VOTperHR/60.0  ; Derived Value of time in $/min
  DOLLperMin     = 1.0/VOTperMin  ; Derived Value of dollars per min


RUN PGM=MATRIX

ZONES=1
FILEI DBI[1]     = "@Sta_File@"

FILEO PRINTO[1]  = "@metampnr@"
FILEO PRINTO[2]  = "@comampnr@"
FILEO PRINTO[3]  = "@busampnr@"
FILEO PRINTO[4]  = "@lrtampnr@"
FILEO PRINTO[5]  = "@newampnr@"
FILEO PRINTO[6]  = "@metoppnr@"
FILEO PRINTO[7]  = "@comoppnr@"
FILEO PRINTO[8]  = "@busoppnr@"
FILEO PRINTO[9]  = "@lrtoppnr@"
FILEO PRINTO[10] = "@newoppnr@"


; Read in Station File
LOOP K = 1,dbi.1.NUMRECORDS
      x = DBIReadRecord(1,k)

          MM          = di.1.MM          ;  Mode code ('M','C,','B','L','N')
          STAPARK     = di.1.STAPARK     ;  Station Parking lot flag ('Y' or blank)
          STAUSE      = di.1.STAUSE      ;  Station Active flag      ('Y' or blank)
          STAT        = di.1.STAT        ;  Station node         (9000 - 11999
series)
          STAZ        = di.1.STAZ        ;  Nearest TAZ centroid (   1 -  3722
series)
          STAC        = di.1.STAC        ;  Station centroid    ( 5000 -  8000
series)
          STAP        = di.1.STAP        ;  Station PNR node    (12000 - 14999
series)
          STAN1       = di.1.STAN1       ;  Bus Node connector
          STAPCAP     = di.1.STAPCAP     ;  Parking lot capacity
          STAPKCOST   = di.1.STAPKCOST   ;  AM Pk daily parking cost
          STAOPCOST   = di.1.STAOPCOST   ;  Offpk       parking cost
          STAPKSHAD   = di.1.STAPKSHAD   ;  AM    Shadow parking cost
          STAOPSHAD   = di.1.STAOPSHAD   ;  Offpk Shadow parking cost

          STACnt      =  dbi.1.NUMRECORDS

 _parkam = INT(max(1.0,(STAPKCOST/2.0)))   ; One-way AM     period parking cost
 _parkop = INT(max(1.0,(STAOPCOST/2.0)))   ; One-way Off Pk period parking cost
                                           ; Note: computed as truncated integer for
consistency w/ Parker.for

 _Walkk   = 100.0                      ; Base KNR     walk connector time in
hundreds of min ('100.0' = 1 min)
 _Walkpk  = 200.0                      ; Base AM PNR  walk connector time in
hundreds of min ('100.0' = 1 min)
 _Walkop  = 200.0                      ; Base OP PNR  walk connector time in
hundreds of min ('100.0' = 1 min)

 IF (STAPCAP >  500) _Walkpk = 250.0    ; Peak times are longer for stations with
larger lots
 IF (STAPCAP > 1000) _Walkpk = 350.0    ;
 IF (STAPCAP > 1500) _Walkpk = 400.0    ;
 IF (STAPCAP > 2000) _Walkpk = 500.0    ;

;; write out Metrorail PNR-to-Station links (for AM & Offpeak periods)
 IF (MM = 'M' && STAPARK = 'Y' && STAUSE = 'Y')

        _time  = _walkpk + STAPKSHAD + (@DollperMin@  * _parkam)
        _xtime = _time/100.0

        Print printo =1   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkam(5),' TIME= ', _Xtime(8.2)

        _time  = _walkop + STAOPSHAD + (@DollperMin@  * _parkop)
        _xtime = _time/100.0

        Print printo =6   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkop(5),' TIME= ', _Xtime(8.2)
 ENDIF


;; write out CommRail PNR-to-Station links (for AM & Offpeak periods)
 IF (MM = 'C' && STAPARK = 'Y' && STAUSE = 'Y')

        _time  = _walkpk + STAPKSHAD + (@DollperMin@  * _parkam)
        _xtime = _time/100.0

        Print printo =2   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkam(5),' TIME= ', _Xtime(8.2)

        _time  = _walkop + STAOPSHAD + (@DollperMin@  * _parkop)
        _xtime = _time/100.0

        Print printo =7   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkop(5),' TIME= ', _Xtime(8.2)
```

```
 ENDIF

;; write out BUS PNR-to-Bus Stop Node links (for AM & Offpeak periods)
 IF (MM = 'B' && STAPARK = 'Y' && STAUSE = 'Y')

        _time  = _walkpk + STAPKSHAD + (@DollperMin@  * _parkam)
        _xtime = _time/100.0

        Print printo =3   list = 'SUPPLINK N=',STAP(5),'-',STAN1(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkam(5),' TIME= ', _Xtime(8.2)

        _time  = _walkop + STAOPSHAD + (@DollperMin@  * _parkop)
        _xtime = _time/100.0

        Print printo =8   list = 'SUPPLINK N=',STAP(5),'-',STAN1(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkop(5),' TIME= ', _Xtime(8.2)
 ENDIF

;; write out Light Rail PNR-to-Station links (for AM & Offpeak periods)
 IF (MM = 'L' && STAPARK = 'Y' && STAUSE = 'Y')

        _time  = _walkpk + STAPKSHAD + (@DollperMin@  * _parkam)
        _xtime = _time/100.0

        Print printo =4   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkam(5),' TIME= ', _Xtime(8.2)

        _time  = _walkop + STAOPSHAD + (@DollperMin@  * _parkop)
        _xtime = _time/100.0

        Print printo =9   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkop(5),' TIME= ', _Xtime(8.2)
 ENDIF

;; write out BRT/New PNR-to-Station links (for AM & Offpeak periods)
 IF (MM = 'N' && STAPARK = 'Y' && STAUSE = 'Y')

        _time  = _walkpk + STAPKSHAD + (@DollperMin@  * _parkam)
        _xtime = _time/100.0

        Print printo =5   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkam(5),' TIME= ', _Xtime(8.2)

        _time  = _walkop + STAOPSHAD + (@DollperMin@  * _parkop)
        _xtime = _time/100.0

        Print printo =10   list = 'SUPPLINK N=',STAP(5),'-',STAT(5),' ONEWAY=Y
MODE=15',
                                 ' DIST= ',_parkop(5),' TIME= ', _Xtime(8.2)
 ENDIF



ENDLOOP
```

21 pathTrace.s

```
; pathTrace.s
;   This file will get inserted into Transit Skims Steps to perform path traces
;   for select i/j's (origins and destinations)
;
;  2010-10-08  MSM
;
; 3722   Juris
; TAZ    Code   Location                                        Orig  Dest
; --------------------------------------------------------------------------------
;   37     0    Downtown DC (Farragut West)                      x      x
;  283     0    Union Station, DC                                       x
;  492     1    Gaithersburg, near Mont Co Airpark, MD           x
;  520     1    Shady Grove, MD                                  x
;  589     1    North Silver Spring, MD                          x
;  623     1    Silver Spring, MD                                x      x
;  662     1    Bethesda, MD                                     x      x
;  717     1    Rockville, MD                                    x      x
;  906     2    Greenbelt, MD                                    x
;  982     2    College Park, Univ. of Maryland                  x
; 1003     2    New Carrollton, MD                               x
; 1342     2    Andrews Air Force Base, MD                              x
; 1472     3    Rosslyn, Arlington, VA                                  x
; 1496     3    Pentagon, Arlington, VA                          x      x
; 1501     3    Crystal City, Arlington, VA                      x      x
; 1599     4    Old Town Alexandria, VA                          x      x
; 1679     5    South of Dulles Airport, VA                             x
; 1768     5    Reston, VA                                       x
; 1823     5    Vienna, VA                                       x
; 1843     5    Tysons Corner, VA                                x      x
; 2032     5    Franconia-Springfield, VA                        x
; 2112     5    Fort Belvoir, VA                                        x
; 2139     5    Rolling Road VRE Station, VA                     x
; 2250     6    Loudoun Co. near Brunswick MARC sta.             x
; 2270     6    Leesburg, VA                                     x
; 2632     7    Manassas City, Prince William Co, VA             x
; 2751     7    Dale City, Prince William Co, VA                 x
; 2807     7    Quantico VRE, VA                                 x
; 2928     9    City of Frederick, Fred. Co, MD                  x
; 3004    10    Jessup MARC Station, Howard Co, MD               x
; 3007    10    North Laurel, Howard Co, MD                      x
; 3197    12    La Plata, Charles Co, MD                         x
; 3580    20    Spotsylvania Co, VA                              x

; ***** Comment out this section when running the model;  Keep this for building
only select paths
;;************* select i =
;;************* 37, 492, 520, 589, 623, 662, 717, 906, 982, 1003, 1496, 1501,
;;************* 1599, 1768, 1823, 1843, 2032, 2139, 2250, 2270, 2632, 2751, 2807,
;;************* 2928, 3004, 3007, 3197, 3580,
;;************* j =
;;************* 37, 283, 623, 662, 717, 1342, 1472, 1496, 1501, 1599, 1679, 1843,
2112
;  ***** End of section to be commented out when running travel model

select trace = (i =
37, 492, 520, 589, 623, 662, 717, 906, 982, 1003, 1496, 1501,
1599, 1768, 1823, 1843, 2032, 2139, 2250, 2270, 2632, 2751, 2807,
2928, 3004, 3007, 3197, 3580 &&
j =
37, 283, 623, 662, 717, 1342, 1472, 1496, 1501, 1599, 1679, 1843, 2112)
```

22 PP_Auto_Drivers.s

```
;-------------------------------------------------------------------
: PP_Auto_Drivers.S   Creating auto driver trips by occupant level (1,2,3+)
;                     from the pump prime trip distribution output
;                     using pre-existing NL model modal targets by market area
;                     (This process substitutes for a mode choice model run)
;                      in the initial 4-step iteration
; The 5 output matrix files will be:
;
;        1    HBWPP.ADR
;        2    HBSPP.ADR
;        3    HBOPP.ADR
;        4    NHWPP.ADR
;        5    NHOPP.ADR
;;                ... each file with 3 tabs: 1occ,2occ,3+occ auto drivers
; Milone:- 1/5/11
;-------------------------------------------------------------------

; First, establish Input/Output filenames:
LOOP PURP=1,5   ;  We'll Loop 5 times, for each purpose
;--------------------------------------------------------------------------
; write out zonal person trip table that reflects
; Auto Person trips, based on HTS Auto drivers (nonHBW trip factored by 1.75)
; and transit trips adjusted to match the targets
;--------------------------------------------------------------------------
;; global auto occs from HTS and estimated occupancies by occ. group
;; Purp avg_occ   1-occShr    2-occShr  3+occShr
;; HBW   1.06     0.943806    0.054412  0.001782
;; HBS   1.45     0.674235    0.239570  0.086195
;; HBO   1.63     0.559809    0.307970  0.132221
;; NHW   1.11     0.893861    0.104172  0.001967
;; NHO   1.50     0.642450    0.258570  0.098980
;;--------------------------------------------------------
                ;

IF (PURP=1)    ; HBW Loop
 MCFILE     = 'INPUTS\HBW_NL_MC.MTT'   ;AECOM Mode Choice file           (Input)
 TDFILE     = 'hbw_%_iter_%_.ptt'           ;Trip distibution output
(Input)
 MC123OCC   = 'HBW%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE    = 'HBW'                    ;
 Avg3P_Occ  =  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 CarOcc     =  1.06                    ; Avg External Auto Occ.
 adroccshr1 =  0.943806                ; assumed share of adrs that are 1 occ
 adroccshr2 =  0.054412                ;                                 2 occ
 adroccshr3 =  0.001782                ;                                 3+ occ
 TDTab      =  '6'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=2) ; HBS Loop
 MCFILE     = 'INPUTS\HBS_NL_MC.MTT'   ;AECOM Mode Choice file           (Input)
 TDFILE     = 'hbs_%_iter_%_.ptt'           ;Trip distibution output
(Input)
 MC123OCC   = 'HBS%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE    = 'HBS'                    ;
 Avg3P_Occ  =  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 CarOcc     =  1.45                    ; Avg External Auto Occ.
 adroccshr1 =  0.674235                ; assumed share of adrs that are 1 occ
 adroccshr2 =  0.239570                ;                                 2 occ
 adroccshr3 =  0.086195                ;                                 3+ occ
 TDTab      =  '6'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=3) ; HBO Loop
 MCFILE     = 'INPUTS\HBO_NL_MC.MTT'   ;AECOM Mode Choice file           (Input)
 TDFILE     = 'hbo_%_iter_%_.ptt'           ;Trip distibution output
(Input)
 MC123OCC   = 'HBO%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE    = 'HBO'                    ;
 Avg3P_Occ  =  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 CarOcc     =  1.63                       ; Avg External Auto Occ.
 adroccshr1 =  0.559809                ; assumed share of adrs that are 1 occ
 adroccshr2 =  0.307970                ;                                 2 occ
 adroccshr3 =  0.132221                ;                                 3+ occ
 TDTab      =  '6'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=4) ; NHW Loop
 MCFILE     = 'INPUTS\NHW_NL_MC.MTT'   ;AECOM Mode Choice file           (Input)
 TDFILE     = 'nhw_%_iter_%_.ptt'           ;Trip distibution output
(Input)
 MC123OCC   = 'NHW%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE    = 'NHW'                    ;
 Avg3P_Occ  =  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 CarOcc     =  1.11                       ; Avg External Auto Occ.
 adroccshr1 =  0.893861                ; assumed share of adrs that are 1 occ
 adroccshr2 =  0.104172                ;                                 2 occ
 adroccshr3 =  0.001967                ;                                 3+ occ
 TDTab      =  '3'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ELSEIF (PURP=5) ; NHO Loop
 MCFILE     = 'INPUTS\NHO_NL_MC.MTT'   ;AECOM Mode Choice file           (Input)
 TDFILE     = 'nho_%_iter_%_.ptt'           ;Trip distibution output
(Input)
 MC123OCC   = 'NHO%_iter_%.ADR'        ;HBW Auto Drv trips- 1,2,3+ Occ.  (Output)
 PURPOSE    = 'NHO'                    ;
 Avg3P_Occ  =  3.50                    ; Avg Auto Occupancy for autos w/ 3+ person
 CarOcc     =  1.50                       ; Avg External Auto Occ.
 adroccshr1 =  0.642450                ; assumed share of adrs that are 1 occ
 adroccshr2 =  0.258570                ;                                 2 occ
 adroccshr3 =  0.098980                ;                                 3+ occ
 TDTab      =  '3'                     ; Total Psn Trip tab no. in Trip Dist. output
file

ENDIF
;
;///////////////////////////////////////////////////////////////////
; Step 1:
;  - First read trip distribution person trips (from which auto drivers aree to be
estimated) and
;  - read a pre-existing nested logit mode choice model output.
;  - Summarize both to the 20 market segments (seg. 21 refers to external areas)
;  - computed auto person shares for each market area based on the NL output file
;  - apply market level 'seed' auto person shares to the trip dist. person trips
;  - write out the computed 'target' auto person trips at the market level.
;     (these will be used in step 2 to apportion zone level trip dist person trips
among auto psn/drv by occ level)
RUN PGM=MATRIX
  PAGEHEIGHT= 32767
  array  NLmkt_trips=5,21        ;  array to summarize NL seed trips by mode
(1,2,3+occ apsn transit, psn) and market area 1-21 (21 is external)
  array  TDmkt_trips=5,21        ;  array to summarize computed TD est. trips  by
mode, based on seed shares
  array  TDmkt_share=5,21        ;  array to summarize computed TD est. shares by
mode, based on seed shares

  MATI[1]=@TDfILE@           ;  TRIP DISTRIBUTION OUTPUT FILE
  MATI[2]=@MCFILE@           ;  NL MODE CHOICE MODEL OUTPUT FILE (INTL TRIPS)

;; read in Trip Dist. person trips and NL model output seed trips, by mode
```

```
    MW[101]  = MI.1.@TDtab@                                     ; put TOTAL PP
motorized person trips in mtx 101

    MW[201]  = MI.2.1  + MI.2.2  + MI.2.3  + MI.2.4 + MI.2.5  +
               MI.2.6  + MI.2.7  + MI.2.8  + MI.2.9 + MI.2.10 +
               MI.2.11 + MI.2.12 + MI.2.13 + MI.2.14             ; put 'seed' NL
MC psn trips by mode in mats 201-214       (I-I only)

    MW[211]  = MI.2.1                                 ;seed 1occ  auto psn
    MW[212]  = MI.2.2                                 ;seed 2occ  auto psn
    MW[213]  = MI.2.3                                 ;seed 3+occ auto psn
    MW[214]  = MW[201] - (MW[211] + MW[212] +MW[213]) ; seed transit

;; now summarize TD psn trips and seed trips by mode (transit, adr psn by 1,2,3+
occ)

  LOOKUP Name=TAZ_NLMkt,
          LOOKUP[1]   = 1,Result = 2, ; Market no 1 to 7
          Interpolate = N, FAIL=0,0,0,list=n,
          file= ..\support\TAZ3722_to_7Mrkts.txt

 jloop
     IM    = TAZ_NLMkt(1,I)
     JM    = TAZ_NLMkt(1,J)

     Mkt    = 21 ; default/external area
    ;; define zonal market idex no. 1 through 7-- put value in matrix 99
     if ((IM= 1 || IM= 3) && (JM=  1                   )) mkt= 1
     if ((IM= 1 || IM= 3) && (JM=  2                   )) mkt= 2
     if ((IM= 1 || IM= 3) && (JM=  3 || JM= 4 || JM=  5 )) mkt= 3
     if ((IM= 1 || IM= 3) && (JM=  6 || JM= 7          )) mkt= 4

     if ((IM=         4) && (JM=  1                   )) mkt= 5
     if ((IM=         4) && (JM=  2                   )) mkt= 6
     if ((IM=         4) && (JM=  3 || JM= 4 || JM=5   )) mkt= 7
     if ((IM=         4) && (JM=  6 || JM= 7          )) mkt= 8

     if ((IM= 2 || IM= 5) && (JM=  1                   )) mkt= 9
     if ((IM= 2 || IM= 5) && (JM=  2                   )) mkt=10
     if ((IM= 2 || IM= 5) && (JM=  3 || JM= 4  || JM=5  )) mkt=11
     if ((IM= 2 || IM= 5) && (JM=  6 || JM= 7          )) mkt=12

     if ((IM=         6) && (JM=  1                   )) mkt=13
     if ((IM=         6) && (JM=  2                   )) mkt=14
     if ((IM=         6) && (JM=  3 || JM= 4  || JM= 5 )) mkt=15
     if ((IM=         6) && (JM=  6 || JM= 7          )) mkt=16

     if ((IM=         7) && (JM=  1                   )) mkt=17
     if ((IM=         7) && (JM=  2                   )) mkt=18
     if ((IM=         7) && (JM=  3 || JM= 4  || JM=5  )) mkt=19
     if ((IM=         7) && (JM=  6 || JM= 7          )) mkt=20


     MW[99] = mkt

     ;; summarize seed trips by mode, mkt

    IF (Mkt > 0)

       NLmkt_trips[1][mkt] =  NLmkt_trips[1][mkt] + MW[211]    ;  NL seed 1-occ apsn
       NLmkt_trips[2][mkt] =  NLmkt_trips[2][mkt] + MW[212]    ;  NL seed 2-occ apsn
       NLmkt_trips[3][mkt] =  NLmkt_trips[3][mkt] + MW[213]    ;  NL seed 3+occ apsn
       NLmkt_trips[4][mkt] =  NLmkt_trips[4][mkt] + MW[214]    ;  NL seed transit
       NLmkt_trips[5][mkt] =  NLmkt_trips[5][mkt] + MW[211] + MW[212]+ MW[213]+
MW[214]   ;  NL seed person
       TDmkt_trips[5][mkt] =  TDmkt_trips[5][mkt] + MW[101]      ;  Trip Dist Psn
trips
    ENDIF
 endjloop

IF (I=zones)  ;; if at the end of program, write out dbf file with market shares

;; estimate TD trips based on NL model shares
Loop Mkt= 1,21
      IF (NLmkt_Trips[5][mkt] > 0)
          TDmkt_trips[1][mkt] = TDmkt_trips[5][mkt] *  NLmkt_trips[1][mkt] /
NLmkt_trips[5][mkt]; est 1 occapsn Trip Dist Psn trips
          TDmkt_trips[2][mkt] = TDmkt_trips[5][mkt] *  NLmkt_trips[2][mkt] /
NLmkt_trips[5][mkt]; est 2 occapsn Trip Dist Psn trips
          TDmkt_trips[3][mkt] = TDmkt_trips[5][mkt] *  NLmkt_trips[3][mkt] /
NLmkt_trips[5][mkt]; est 3+occpsn  Trip Dist Psn trips
          TDmkt_trips[4][mkt] = TDmkt_trips[5][mkt] *  NLmkt_trips[4][mkt] /
NLmkt_trips[5][mkt]; est Transit   Trip Dist Psn trips
       ELSE
          TDmkt_trips[1][mkt] = TDmkt_trips[5][mkt] * @adroccshr1@
          TDmkt_trips[2][mkt] = TDmkt_trips[5][mkt] * @adroccshr2@
          TDmkt_trips[3][mkt] = TDmkt_trips[5][mkt] * @adroccshr3@
      ENDIF
ENDLOOP


;; compute TD auto driver shares
loop Mkt= 1,21
     IF ( TDmkt_trips[5][mkt] > 0)
        TDmkt_share[1][mkt] =  TDmkt_trips[1][mkt] /TDmkt_trips[5][mkt]
        TDmkt_share[2][mkt] =  TDmkt_trips[2][mkt] /TDmkt_trips[5][mkt]
        TDmkt_share[3][mkt] =  TDmkt_trips[3][mkt] /TDmkt_trips[5][mkt]
        TDmkt_share[4][mkt] =  TDmkt_trips[4][mkt] /TDmkt_trips[5][mkt]
     ENDIF

   FILEO reco[1] =  TD_Shares@Purpose@.dbf, fields= mkt(5),
                    TDPsn1(12.2),    TDPsn2(12.2),   TDPsn3(12.2),   TDtrn(12.2),
TDpsn(12.2),
                    TDPsn1Shr(12.6), TDPsn2Shr(12.6),TDPsn3Shr(12.6),TDtrnShr(12.6)

                    ro.mkt       = mkt
                    ro.TDPsn1    = TDmkt_trips[1][mkt]  ; auto psn 1 occ trips
                    ro.TDPsn2    = TDmkt_trips[2][mkt]  ; auto psn 2 occ trips
                    ro.TDPsn3    = TDmkt_trips[3][mkt]  ; auto psn 3+occ trips
                    ro.TDTrn     = TDmkt_trips[4][mkt]  ; transit        trips
                    ro.TDPsn     = TDmkt_trips[5][mkt]  ; person         trips

                    ro.TDPsn1shr = TDmkt_share[1][mkt]  ; auto psn 1 occ trips share
                    ro.TDPsn2shr = TDmkt_share[2][mkt]  ; auto psn 2 occ trips share
                    ro.TDPsn3shr = TDmkt_share[3][mkt]  ; auto psn 3+occ trips share
                    ro.TDTrnshr  = TDmkt_share[4][mkt]  ; transit trip         share

   WRITE RECO=1
ENDLOOP
endif

  FILEO MATO[1]  = Market1_21.Mtx, MO=99
ENDRUN
;

;///////////////////////////////////////////////////////////////////
; Step 2:
;  - read the computed 'target' auto person trips (developed above) at the market
level.
;  - compute auto person shares from these targets at market level
;  - apply shares to TD person trips, compute auto person/driver trips by occ. level
(1,2,3+)
;; - write out the PP auto driver trips
```

```
;;  Note: There may be a small loss in the conservation of auto driver trips in
applying shares to trips at zone level
;         (particularly for the higher auto occ. levels).  This is acceptable for
the pump prime iteration
RUN PGM=MATRIX
  ZONES=3722
  MATI[1]       = @TDfILE@                ;  TRIP DISTRIBUTION OUTPUT FILE
  MATI[2]       = Market1_21.Mtx          ;  zone file containing mkt index no (21 =
extl)
  FILEI DBI[1]  ="TD_Shares@Purpose@.dbf" ;  mkt level shares and target trips by
mode, computed above

  MW[101]  = MI.1.@TDtab@                                        ; put TOTAL PP
motorized person trips in mtx 101
  MW[201]  = MI.2.1                                              ; put zonal mkt
index                in mtx 201

  array  TDmkt_share = 9,21       ;  array to summarize computed TD est. shares by
mode, based on seed shares
                                  ;  and target INPUT trips from above

  array  OTDmkt_trips= 8,21       ;  array to summarize OUTPUT zone level TD est.
trips  by mode, based on mkt level seed shares
                                  ;  8 modes:1/
Apsn1occ,2/Apsn2occ,3/Apsn3+occ,4/TRn,5/ADr1occ,6/ADr2occ,7/ADr3+occ,8/Psn
  ;
  ;;  read share file into array
  IF (I=1)
      LOOP K = 1,dbi.1.NUMRECORDS
            x = DBIReadRecord(1,k)
              mkt                 =  di.1.mkt
              TDmkt_share[1][mkt] =  di.1.TDPsn1shr
              TDmkt_share[2][mkt] =  di.1.TDPsn2shr
              TDmkt_share[3][mkt] =  di.1.TDPsn3shr
              TDmkt_share[4][mkt] =  di.1.TDTrnshr
              TDmkt_share[5][mkt] =  di.1.TDPsn1
              TDmkt_share[6][mkt] =  di.1.TDPsn2
              TDmkt_share[7][mkt] =  di.1.TDPsn3
              TDmkt_share[8][mkt] =  di.1.TDtrn
              TDmkt_share[9][mkt] =  di.1.TDpsn



             ;; echo print
             ;; print form=12.6 list = mkt(5),
             ;;                         TDmkt_share[1][mkt],
             ;;                         TDmkt_share[2][mkt],
             ;;                         TDmkt_share[3][mkt],
             ;;                         TDmkt_share[4][mkt],
file=Share_@purpose@_Chk.txt
      ENDLOOP
  ENDIF


;; Apply mkt level shares to zonal person trips
  Jloop

     IF       (mw[201] > 0                  )                   ;;
              mkt=   mw[201]                                 ; Est:
        mw[301] = MW[101] * TDmkt_share[1][mkt]                  ; zonal 1-occ auto
persons
        mw[302] = MW[101] * TDmkt_share[2][mkt]                  ; zonal 2-occ auto
persons
        mw[303] = MW[101] * TDmkt_share[3][mkt]                  ; zonal 3-occ auto
person
        mw[304] = MW[101] * TDmkt_share[4][mkt]                  ; zonal TRANSIT
        mw[305] = MW[101] * TDmkt_share[1][mkt] / 1.0            ; zonal 1-occ auto
drivers
        mw[306] = MW[101] * TDmkt_share[2][mkt] / 2.0           ; zonal 2-occ auto
drivers
        mw[307] = MW[101] * TDmkt_share[3][mkt] / @Avg3P_Occ@   ; zonal 3-occ auto
drivers


                                          ;; otherwise
      ELSE                                ;; apply external default pcts
         mw[301] = MW[101] * @adroccshr1@                  ; zonal 1-occ auto
persons
         mw[302] = MW[101] * @adroccshr2@                  ; zonal 2-occ auto
persons
         mw[303] = MW[101] * @adroccshr3@                  ; zonal 3-occ auto
persons

         mw[305] = MW[101] * @adroccshr1@ / 1.0           ; zonal 1-occ auto drivers
         mw[306] = MW[101] * @adroccshr2@ / 2.0           ; zonal 2-occ auto drivers
         mw[307] = MW[101] * @adroccshr3@ / @Avg3P_Occ@   ; zonal 3-occ auto drivers
    ENDIF

    ;; Accumulate computed trips by mode

      OTDmkt_trips[1][mkt] = OTDmkt_trips[1][mkt] + MW[301]
;  TD est. 1-occ psn
      OTDmkt_trips[2][mkt] = OTDmkt_trips[2][mkt] + MW[302]
;  TD est. 2-occ psn
      OTDmkt_trips[3][mkt] = OTDmkt_trips[3][mkt] + MW[303]
;  TD est. 3+occ psn
      OTDmkt_trips[4][mkt] = OTDmkt_trips[4][mkt] + MW[304]
;  TD est. transit
      OTDmkt_trips[5][mkt] = OTDmkt_trips[5][mkt] + MW[305]
;  TD est. 1-occ adr
      OTDmkt_trips[6][mkt] = OTDmkt_trips[6][mkt] + MW[306]
;  TD est. 2-occ adr
      OTDmkt_trips[7][mkt] = OTDmkt_trips[7][mkt] + MW[307]
;  TD est. 3+occ adr
      OTDmkt_trips[8][mkt] = OTDmkt_trips[8][mkt] + MW[301] + MW[302]+ MW[303]+
MW[304] ;  TD est. Person


  ENDJLOOP

  FILEO MATO[1] = @Purpose@%_iter_%.ADR,mo=305,306,307   ;; output auto driver
matrix - 3tabs (1,2,3+occ adrs)

  ;; At the end of processing, write out the OUTPUT trips by mode along with INPUT
trips by mode for checking
  IF (I=zones)
     loop Mkt= 1,21
         FILEO reco[1] = PP_Auto_Drivers_@Purpose@.dbf, fields= mkt(5),
                       OTDpsn1(12.2),OTDpsn2(12.2),  OTDpsn3(12.2),OTDTrn(12.2),
                       OTDadr1(12.2),OTDadr2(12.2),  OTDadr3(12.2),OTDPsn(12.2),
                       ITDPsn1(12.2), ITDPsn2(12.2), ITDPsn3(12.2),ITDtrn(12.2),
ITDpsn(12.2)

                    ro.mkt       = mkt
                    ro.OTDpsn1    = OTDmkt_trips[1][mkt]  ; OUTPUT  auto drv 1 occ
trips
                    ro.OTDpsn2    = OTDmkt_trips[2][mkt]  ; OUTPUT  auto drv 2 occ
trips
                    ro.OTDpsn3    = OTDmkt_trips[3][mkt]  ; OUTPUT  auto drv 3+occ
trips
                    ro.OTDTrn     = OTDmkt_trips[4][mkt]  ; OUTPUT  transit
trips
                    ro.OTDadr1    = OTDmkt_trips[5][mkt]  ; OUTPUT  auto drv 1 occ
trips
                    ro.OTDadr2    = OTDmkt_trips[6][mkt]  ; OUTPUT  auto drv 2 occ
trips
```

```
                    ro.OTDadr3    = OTDmkt_trips[7][mkt]  ; OUTPUT  auto drv 3+occ
trips
                    ro.OTDPsn     = OTDmkt_trips[8][mkt]  ; Output  person
trips

                    ro.ITDPsn1    = TDmkt_share[5][mkt]  ; INPUT auto Psn1occ
                    ro.ITDPsn2    = TDmkt_share[6][mkt]  ; INPUT auto Psn2occ
                    ro.ITDPsn3    = TDmkt_share[7][mkt]  ; INPUT auto Psn3+occ
                    ro.ITDtrn     = TDmkt_share[8][mkt]  ; INPUT transit
                    ro.ITDpsn     = TDmkt_share[9][mkt]  ; INPUT person


         WRITE RECO=1
     ENDLOOP
  ENDIF
ENDRUN
ENDLOOP
```

23 prefarV23.s

```
;=================================================================
;=================================================================
;  PREFAREV23.S
;   Program to read Zone File Used for MFARE2 Program (without walk pcts)
;       and to merge in walk pct. information
;      (Conversion of FORTRAN program Prefaretp.FOR)
;       Program also prepares the Z-file for the NL Mode Choice model (File 8)
;
;   Programmer: Milone
;   Date:        12/11/10
;
;    The program reads 3 files:
;               - a GIS-based walk area file containing short and
;                 long walk areas to all rail stations
;                 (rail includes metro & commuter rail).  The file also
;                 contains the sht,lng distances to the nearest metrorail
;                 station.  Note: the walk distance is based on 1.0 mile
;                 radius per the V2 models (NOT 7/10 mile per V1 models)
;               - a zone file containing bus fare zone/station equivs and
;                 jurisdiction code information.  This is essentially
;                 an A2 deck without walk percentages
;               - the 'final' zonal walk percentage file written
;                 by the wlklnktp.exe program.  This will suppress
;                 metrorail walk percentages to be consistent with
;                 the walk access links built previously
;    It writes out:
;               - A 'complete' A2 file for the MFARE2.S
;                  process
;    1/31/08 rm / a quality control check section added at the bottom
;    4/10/08 rm / added procedure to prepare the A1 file for the NL Mode choice
;                 application (Note: must use updated Ctl files)

;
ZONESIZE        =  3675                  ;  internal zones
ZNFILE_TrPcts   = 'inputs\NLwalkPct.txt' ;  Input Zonal Transit Walk Pcts
Fare_Zone_File  = 'INPUTS\tazfrzn.asc'   ;  from \INPUTS SD
ATYPFILE        = 'AreaType_File.dbf'    ;  Zonal Area Type file    (I/P file)

out_file        = 'fare_a2.asc'

RUN PGM=MATRIX
ZONES=@ZONESIZE@

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
; Initialize current metrorail walk pct and final pct walk
;;====================================================
ZDATI[1] = @ZNFILE_TrPcts@ , Z            =  #1,
                             MetroShort   =  #2,
                             MetroLong    =  #3,
                             AMShort      =  #4,
                             AMLong       =  #5,
                             OPShort      =  #6,
                             OPLong       =  #7
                   ;; Convert Metrorail Long walk proportion to 1/10s of pcts (i.e.,
1.00 will be 1000.)
                   ;; as expected in the MFARE process

                            Metwkpct     =  Round(zi.1.MetroLong[I]   * 1000.0)


;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

;  Lets double check that the computed metrorail walk pct (in tenths)
;  is within the expected range, if not then abort and write msg.

      if ((metwkpct <  0) || (metwkpct  > 1000.0)) ABORT

;;  print list = I(5),' ', larea(10.7),' ',swrarea(10.7),' ',lwrarea(10.7),' ',
;;                   smetdst(10.3),' ',lmetdst(10.3),
;;                         ' ',metwkpct(6.2)

ZDATI[3] = @Fare_Zone_File@,
           Z        =   4- 8,
           bfz1     =   9-16,
           bfz2     =  17-24,
           rfz1     =  41-48,
           rfz2     =  49-56,
           jur      =  57-64,
           pdsc     =  65-72,
           adsc     =  73-80


;
;  Print Out zonal data
;  -- Only if input bus fare zone 1 is nonzero
;     -this ensures that a consistent record count will be maintained w/ I&O
  IF (zi.3.bfz1 > 0)


       Print list = i(8), zi.3.bfz1(8),zi.3.bfz2(8),
                          metwkpct(8),metwkpct(8),
                          zi.3.rfz1(8),zi.3.rfz2(8),
                          zi.3.JUR(8),zi.3.pdsc(8),zi.3.adsc(8),file=@out_file@

  ENDIF

ENDRUN


;=================================================================
;  Prepare_MC_Zfile.S
;
;
;
;
;   Programmer: Milone
;   Date:       4/08/08
;
;=================================================================
```

```
;
;=================================================================
; Set Parameters:
;=================================================================

ZONESIZE    =       3722                ;  No. of TAZs
LastIZN     =       3675                ;  Last Internal TAZ no.
PCostRng    =       51                  ;  No. of ranges in the parking cost Model
TTimeRng    =       5                   ;  No. of ranges in the terminal time
Model


Rept         = 'Prepare_MC_Zfile.txt'  ; Summary Reports
OFilem       = ' ZONEV2.A2F  '         ; Output ZFile for the NL Mode Choice Model


;=================================================================
; Set Input Files:
;=================================================================

ZNFILE_LU      = 'inputs\zone.dbf'          ;  Input Zonal Land Use File
ZNFILE_TrPcts  = 'inputs\NLwalkPct.txt'     ;  Input Zonal Transit Walk Pcts
ZNFILE_MCMrkts = 'inputs\areadef3722.prn'   ;  Input Zonal TAZ-Mode choice district
equiv.

;==================================================================
;/////////////////////////////////////////////////////////////////=
;==================================================================
;          Begin TP+ Matrix Routine :                              =
;==================================================================
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\=
;==================================================================

RUN PGM=MATRIX
ZONES=@ZONESIZE@
ARRAY MetroShortA=101,   ;; Arrays for counting TAZs in pct walk bins of 0-100
      MetroLongA=101,
      AMShortA=101,
      AMLongA=101,
      OPShortA=101,
      OPLongA=101,

      MetroShortj=24,    ;; Arrays for counting TAZs in juris bins
      MetroLongj=24,
      AMShortj=24,
      AMLongj=24,
      OPShortj=24,
      OPLongj=24,
      Total_Area=24



;=========================================
; Read Zonal Area Type Lookup file       =
;========================================
;
;
FileI LOOKUPI[1] ="@atypfile@"
LOOKUP LOOKUPI=1, NAME=ZNAT,
       LOOKUP[1] = TAZ, RESULT=AType,   ;
       LOOKUP[2] = TAZ, RESULT=EMPDEN,   ;
       INTERPOLATE=N, FAIL= 0,0,0, LIST=N


;=================================================================================
=================
; End of LookUps  Now read the input files
=
```

```
;=================================================================================
=================

;; First initialize all current values to zero:

         HBWParkCost = 0
         HBSParkCost = 0
         HBOParkCost = 0
         NHBParkCost = 0
         HB_TermTime = 0
         NHB_TermTime= 0
         MetroShort  = 0
         MetroLong   = 0
         AMShort     = 0
         AMLong      = 0
         OPShort     = 0
         OPLong      = 0
         EMP         = 0
         jur         = 0
         area        = 0
         AMMELONG    = 0

; read Zonal land use files  into Z-File
ZDATI[1] = @ZNFILE_LU@;Z
                      ;EMP         TOTEMP  INDEMP  RETEMP  OFFEMP  OTHEMP  JURCODE
LANDAREA
                      ;jur
                      ;Area

      ; Current Zonal Totals:
                             EMP          = zi.1.TOTEMP[I]
                             jur          = zi.1.jurcode[I] + 1 ; convert 0-23 jur
codes to 1 to 24 for indexing
                             Area         = zi.1.LandArea[I]
                             IF (Area > 0)
                                 EMPDENSITY = ROUND(EMP/AREA)
                               ELSE
                                 EMPDENSITY = 0
                             ENDIF

      ; Accumulate Regional Totals:
                             TOTEMP       = TOTEMP  +  zi.1.TOTEMP[I]
                             TOTArea      = TOTArea +  zi.1.LandArea[I]


; Zonal MC TAZ -District Equiv. File
ZDATI[2] = @ZNFILE_MCMrkts@, Z            =  #1,
                             MCDistrict   =  #2
                             MCDistrict   =  zi.2.MCDistrict[I]

; Zonal Transit Walk Shares
ZDATI[3] = @ZNFILE_TrPcts@ , Z            =  #1,  ; TAZ
                             MetroShort   =  #2,  ; % of TAZ that is w/in short walk
distance (0.5mi) to Metrorail
                             MetroLong    =  #3,  ; % of TAZ that is w/in long  walk
distance (1.0mi) to Metrorail
                             AMShort      =  #4,  ; % of TAZ that is w/in short walk
distance (0.5mi) to AM Transit
                             AMLong       =  #5,  ; % of TAZ that is w/in long  walk
distance (1.0mi) to AM Transit
                             OPShort      =  #6,  ; % of TAZ that is w/in short walk
distance (0.5mi) to OP Transit
                             OPLong       =  #7   ; % of TAZ that is w/in long  walk
distance (1.0mi) to OP Transit
                   ;; Convert walk shares to percents (i.e., 1.00 will be 100)
                             MetroShort   =  Round(zi.3.MetroShort[I]  * 100.0)
                             MetroLong    =  Round(zi.3.MetroLong[I]   * 100.0)
                             AMShort      =  Round(zi.3.AMShort[I]     * 100.0)
```

```
                             AMLong       =  Round(zi.3.AMLong[I]      * 100.0)
                             OPShort      =  Round(zi.3.OPShort[I]     * 100.0)
                             OPLong       =  Round(zi.3.OPLong[I]      * 100.0)

                             AMMELON = 0.0 ; AM Long-mutually exclusive of AM Short
area
                             IF (AMSHORT = 100.0 )
AMMELONG = 0.0
                             IF (AMSHORT >   0.0 && AMSHORT < 100.0  &&  AMLONG > 0)
AMMELONG = AMLONG - AMShort
                             IF (AMSHORT =   0.0 && AMLONG  >   0.0)
AMMELONG = AMLONG


 ;; Do some QC checks on the Percent walk data
  IF (MetroShort < 0 || MetroShort > 100)
                List =' MetroShort  value: ', Metroshort,' out of expected range at
TAZ:',I
                Abort
  ENDIF
  IF (MetroLong  < 0 || MetroLong  > 100)
                List =' MetroLong   value: ', MetroLong ,' out of expected range at
TAZ:',I
                Abort
  ENDIF
  IF (AMShort    < 0 || AMShort    > 100)
                List =' AMShort     value: ', AMShort   ,' out of expected range at
TAZ:',I
                Abort
  ENDIF
  IF (AMLong     < 0 || AMLong     > 100)
                List =' AMLong      value: ', AMLong    ,' out of expected range at
TAZ:',I
                Abort
  ENDIF
  IF (OPShort    < 0 || OPShort    > 100)
                List =' OPShort     value: ', OPShort   ,' out of expected range at
TAZ:',I
                Abort
  ENDIF
  IF (OPLong     < 0 || OPLong     > 100)
                List =' OPLong      value: ', OPLong    ,' out of expected range at
TAZ:',I
                Abort
  ENDIF

; Accumulate the count of TAZs in pct walk bins (0 to 100) for reporting
 IF (Area > 0)
  LOOP Idx  = 1, 101  ;; indexs 1-101 refer to  values 0 to 100

       IF (MetroShort = (idx-1)) MetroShortA[idx] = MetroShortA[idx] + 1
       IF (MetroLong  = (idx-1)) MetroLongA[idx]  = MetroLongA[idx]  + 1
       IF (AMShort    = (idx-1)) AMShortA[idx]    = AMShortA[idx]    + 1
       IF (AMLong     = (idx-1)) AMLongA[idx]     = AMLongA[idx]     + 1
       IF (OPShort    = (idx-1)) OPShortA[idx]    = OPShortA[idx]    + 1
       IF (OPLong     = (idx-1)) OPLongA[idx]     = OPLongA[idx]     + 1
  ENDLOOP
       ActiveTAZCnt = ActiveTAZCnt + 1
 ENDIF
; Accumulate the Area of each walk shed for reporting
           MetroShortArea = MetroShortArea + (MetroShort/100.00 * Area)
           MetroLongArea  = MetroLongArea  + (MetroLong /100.00 * Area)
           AMShortArea    = AMShortArea    + (AMShort   /100.00 * Area)
           AMLongArea     = AMLongArea     + (AMLong    /100.00 * Area)
           OPShortArea    = OPShortArea    + (OPShort   /100.00 * Area)
           OPLongArea     = OPLongArea     + (OPLong    /100.00 * Area)

; Accumulate the area of TAZs in juris. bins for reporting
 IF (Area > 0)
  LOOP Idx  = 1, 24   ;; indexs 1-101 refer to  values 0 to 100

       IF (jur =  idx ) MetroShortj[idx] = MetroShortj[idx] + (MetroShort/100.00 *
Area)
       IF (jur =  idx ) MetroLongj[idx]  = MetroLongj[idx]  + (MetroLong /100.00 *
Area)
       IF (jur =  idx ) AMShortj[idx]    = AMShortj[idx]    + (AMShort   /100.00 *
Area)
       IF (jur =  idx ) AMLongj[idx]     = AMLongj[idx]     + (AMLong    /100.00 *
Area)
       IF (jur =  idx ) OPShortj[idx]    = OPShortj[idx]    + (OPShort   /100.00 *
Area)
       IF (jur =  idx ) OPLongj[idx]     = OPLongj[idx]     + (OPLong    /100.00 *
Area)
       IF (jur =  idx ) Total_Area[idx]  = Total_Area[idx]  +  Area
  ENDLOOP
ENDIF

 ;;---------------------------------------------
 ;; Define hwy terminal times based on Area Type
 ;;---------------------------------------------

     _AType      = ZNAT(1,I)         ;  Area Type
     _FEmpDen    = ZNAT(2,I)         ;  Floating 1-mi zonal Employment density
     if (_Atype = 1 ) Termtm= 5.0
     if (_Atype = 2 ) Termtm= 4.0
     if (_Atype = 3 ) Termtm= 3.0
     if (_Atype = 4 ) Termtm= 2.0
     if (_Atype = 5 ) Termtm= 1.0
     if (_Atype = 6 ) Termtm= 1.0

     if (I > @LastIZN@)    Termtm = 0.0

     HB_TermTime   =  TermTm
     NHB_TermTime  =  TermTm


 ;;------------------------------------------------------------------
 ;; Define hwy Parking costs based on Area Type --ALL IN 2007 CENTS
 ;;------------------------------------------------------------------
     ;; HBW 8-Hour Parking Cost
      IF (_Atype >0 && _Atype <= 3)
            HBWParkCost    = MAX( (217.24  * (Ln(_FEmpDen)) - 1553.3), 0.0 )
         ELSE
            HBWParkCost    = 0.0
      ENDIF

     ;; non-HBW 1-Hour Parking Cost
            IF (_Atype = 1)
                  HrNonWkPkCost =  200.0
               ELSEIF (_Atype = 2)
                  HrNonWkPkCost =  100.0
               ELSEIF (_Atype = 3)
                  HrNonWkPkCost =   25.0
               ELSE
                  HrNonWkPkCost =    0.0
            ENDIF


            HBSParkCost = HrNonWkPkCost        ; Assume 1-Hour parking duration for
HBS trips
            HBOParkCost = HrNonWkPkCost * 2.0  ; Assume 2-Hour parking duration for
HBO trips
            NHBParkCost = HrNonWkPkCost * 2.0  ; Assume 2-Hour parking duration for
NHB trips
```

```
;-----------------------------------------------------------------------
;Write out zonal files here  ...
;-----------------------------------------------------------------------

 Print file=@ofilem@, form = 5 List=  I,
                                     HBWParkCost,
                                     HBSParkCost,
                                     HBOParkCost,
                                     NHBParkCost,
                                     HB_TermTime,
                                     NHB_TermTime,
                                     MetroShort,
                                     MetroLong,
                                     AMShort,
                                     AMLong,
                                     OPShort,
                                     OPLong,
                                     MCDistrict


IF (I=@Zonesize@)
     Print form=10.5csv file=@Rept@ list = '    Total Employment:  ',
totemp(10.0csv) ,'\n','\n'


;;-----------------------------------------------------------------------------
---------------------------
     Print file=@Rept@ list = ' Jurisdictional Summary of Walk Shed Area (sq mi) by
Shed Type ','\n','\n',
                              '  Walk_Pct  MetroSh   MetroLg   AMShort   AMLong
OPShort   OPLong     TOTAL  ','\n',
                              ' --------- --------- --------- --------- --------- --
------- --------- ---------','\n'
 LOOP Idx   = 1, 24
  IF (Idx=1)
   CURDIST=STR(Idx,2,1)+' DC   '+ '|' ; Make row header
  ELSEIF (Idx=2)
   CURDIST=STR(Idx,2,1)+' MTG  '+ '|' ; Make row header
  ELSEIF (Idx=3)
   CURDIST=STR(Idx,2,1)+' PG   '+ '|' ; Make row header
  ELSEIF (Idx=4)
   CURDIST=STR(Idx,2,1)+' ARL  '+ '|' ; Make row header
  ELSEIF (Idx=5)
   CURDIST=STR(Idx,2,1)+' ALX  '+ '|' ; Make row header
  ELSEIF (Idx=6)
   CURDIST=STR(Idx,2,1)+' FFX  '+ '|' ; Make row header
  ELSEIF (Idx=7)
   CURDIST=STR(Idx,2,1)+' LDN  '+ '|'; Make row header
  ELSEIF (Idx=8)
   CURDIST=STR(Idx,2,1)+' PW   '+ '|' ; Make row header
  ELSEIF (Idx=9)
   CURDIST=STR(Idx,2,1)+' --   '+ '|' ; Make row header
  ELSEIF (Idx=10)
   CURDIST=STR(Idx,2,1)+' FRD  '+ '|' ; Make row header
  ELSEIF (Idx=11)
   CURDIST=STR(Idx,2,1)+' HOW  '+ '|' ; Make row header
  ELSEIF (Idx=12)
   CURDIST=STR(Idx,2,1)+' AAR  '+ '|' ; Make row header
  ELSEIF (Idx=13)
   CURDIST=STR(Idx,2,1)+' CHS  '+ '|' ; Make row header
  ELSEIF (Idx=14)
   CURDIST=STR(Idx,2,1)+' --   '+ '|' ; Make row header
  ELSEIF (Idx=15)
   CURDIST=STR(Idx,2,1)+' CAR  '+ '|' ; Make row header
  ELSEIF (Idx=16)
   CURDIST=STR(Idx,2,1)+' CAL  '+ '|' ; Make row header
  ELSEIF (Idx=17)
   CURDIST=STR(Idx,2,1)+' STM  '+ '|' ; Make row header
  ELSEIF (Idx=18)
   CURDIST=STR(Idx,2,1)+' KG   '+ '|' ; Make row header
  ELSEIF (Idx=19)
   CURDIST=STR(Idx,2,1)+' FBG  '+ '|' ; Make row header
  ELSEIF (Idx=20)
   CURDIST=STR(Idx,2,1)+' STF  '+ '|' ; Make row header
  ELSEIF (Idx=21)
   CURDIST=STR(Idx,2,1)+' SPTS '+ '|' ; Make row header
  ELSEIF (Idx=22)
   CURDIST=STR(Idx,2,1)+' FAUQ '+ '|' ; Make row header
  ELSEIF (Idx=23)
   CURDIST=STR(Idx,2,1)+' CLK  '+ '|' ; Make row header
  ELSE
   CURDIST=STR(Idx,2,1)+' JEFF '+ '|' ; Make row header
  ENDIF
     Print form=10.2csv, file=@Rept@,  list = CURDIST,
       MetroShortj[idx],
       MetroLongj[idx],
       AMShortj[idx],
       AMLongj[idx],
       OPShortj[idx],
       OPLongj[idx],
       TOTAL_Area[idx]
 ENDLOOP
     Print form=10.2csv, file=@Rept@ list = '\n', '\n',
                              ' --------- --------- --------- --------- --------- --
-------  --------- ---------','\n',
                              '     Total',MetroShortArea,MetroLongArea, AMShortArea
, AMLongArea,
                                           OPShortArea, OPLongArea,
totarea,'\n','\n','\n'
;;-----------------------------------------------------------------------------
---------------------------


;;-----------------------------------------------------------------------------
---------------------------
     Print file=@Rept@ list = ' # of "Active"  TAZs by Shed Type and Walk Percentage
(0% to 100%) ','\n','\n',
                              '  Walk_Pct  MetroSh   MetroLg   AMShort   AMLong
OPShort   OPLong  ','\n',
                              ' --------- --------- --------- --------- --------- --
------- ---------','\n'
 LOOP Idx  = 1, 101
     value = idx - 1
     Print form=10, file=@Rept@,  list = value,
       MetroShortA[idx],
       MetroLongA[idx],
       AMShortA[idx],
       AMLongA[idx],
       OPShortA[idx],
       OPLongA[idx]
 ENDLOOP
     Print form=10, file=@Rept@ list = '\n', '\n',
                              ' --------- --------- --------- --------- --------- --
------- ---------','\n',
                              '     Total', ActiveTAZCnt,
ActiveTAZCnt,ActiveTAZCnt,ActiveTAZCnt,
                                            ActiveTAZCnt, ActiveTAZCnt
;;-----------------------------------------------------------------------------
---------------------------
ENDIF

ENDRUN

;;opy TPPL*.prn Prepare_MC_ZFile.RPT
```

24 Prepare_Ext_Auto_Ends.s

```
*del voya*.prn
;
;===============================================================================
=================
;  Prepare_Ext_Auto_Ends.s
=
;  This process prepares Auto-related external Ps, As for the External Trip
Distribution Process     =
;  The zonal level internal Ps & As are scaled (or balanced) to match external As &
Ps, respectively =
;===============================================================================
=================

ZONESIZE       =  3722                      ;  No. of TAZs
Purps          =  5                         ;  No. of purposes
LastIZn        =  3675                      ;  Last Internal TAZ no.
Scaled_IntPsAs ='Ext_Trip_Gen_PsAs_%_iter_%.dbf'  ;; OUTPUT external zonal Ps,As
file, HBW,HBS,HBO,NHW,NHO purposes

RUN PGM=MATRIX
ZONES=1

Fileo printo[1] ='Ext_Trip_Gen_PsAs_%_iter_%.txt' ;; report file

Array ZProdA   = 5,3722     ; input zonal productions array /Unscaled
Array ZAttrA   = 5,3722     ; input zonal attractions array /Unscaled

Array S_ZProdA = 5,3722     ; output zonal productions /  intls  scaled to extl
attr. totals
Array S_ZAttrA = 5,3722     ; output zonal attractions /  intls  scaled to extl
prod. totals

Array TotProda=5, IntProda=5, ExtProda=5, TotscaleP=5, TotscaleA=5
Array TotAttra=5, IntAttra=5, ExtAttra=5, Pscale=5,Ascale=5, IntScaleP=5,
IntScaleA=5

;; INPUT Zonal trip productions
FILEI DBI[1] = "Trip_Gen_productions_%_iter_%.dbf"
;; variables in file:
;;TAZ     HBW_MTR_PS      HBW_NMT_PS      HBW_ALL_PS      HBWMTRP_I1      HBWMTRP_I2
HBWMTRP_I3      HBWMTRP_I4
;;        HBS_MTR_PS      HBS_NMT_PS      HBS_ALL_PS      HBSMTRP_I1      HBSMTRP_I2
HBSMTRP_I3      HBSMTRP_I4
;;        HBO_MTR_PS      HBO_NMT_PS      HBO_ALL_PS      HBOMTRP_I1      HBOMTRP_I2
HBOMTRP_I3      HBOMTRP_I4
;;        NHW_MTR_PS      NHW_NMT_PS      NHW_ALL_PS      NHO_MTR_PS      NHO_NMT_PS
NHO_ALL_PS

;;INPUT Zonal final/scaled trip attractions
FILEI DBI[2] = "Trip_Gen_Attractions_Final_%_iter_%.dbf"
;; variables in file:
;;TAZ     HBW_MTR_AS      HBW_NMT_AS      HBW_ALL_AS      HBWMTRA_I1      HBWMTRA_I2
HBWMTRA_I3      HBWMTRA_I4
;;        HBS_MTR_AS      HBS_NMT_AS      HBS_ALL_AS      HBSMTRA_I1      HBSMTRA_I2
HBSMTRA_I3      HBSMTRA_I4
;;        HBO_MTR_AS      HBO_NMT_AS      HBO_ALL_AS      HBOMTRA_I1      HBOMTRA_I2
HBOMTRA_I3      HBOMTRA_I4
;;        NHW_MTR_AS      NHW_NMT_AS      NHW_ALL_AS      NHO_MTR_AS      NHO_NMT_AS
NHO_ALL_AS
```

```
;; Read productions into zonal array and accumulate, totals, internals, and
externals by purpose
LOOP K = 1,dbi.1.NUMRECORDS
         x = DBIReadRecord(1,k)
              ZProda[1][di.1.TAZ]    =   di.1.HBW_Mtr_Ps
              ZProda[2][di.1.TAZ]    =   di.1.HBS_Mtr_Ps
              ZProda[3][di.1.TAZ]    =   di.1.HBO_Mtr_Ps
              ZProda[4][di.1.TAZ]    =   di.1.NHW_Mtr_Ps
              ZProda[5][di.1.TAZ]    =   di.1.NHO_Mtr_Ps

;;       Accumulate total, internal and external P's by purpose
              TotProda[1]  =  TotProda[1]  +  ZProda[1][di.1.TAZ]
              TotProda[2]  =  TotProda[2]  +  ZProda[2][di.1.TAZ]
              TotProda[3]  =  TotProda[3]  +  ZProda[3][di.1.TAZ]
              TotProda[4]  =  TotProda[4]  +  ZProda[4][di.1.TAZ]
              TotProda[5]  =  TotProda[5]  +  ZProda[5][di.1.TAZ]
              TotProdaSum  =  TotProdaSum  +  ZProda[1][di.1.TAZ] +
ZProda[2][di.1.TAZ] + ZProda[3][di.1.TAZ] + ZProda[4][di.1.TAZ] +
ZProda[5][di.1.TAZ]

          IF (K <= @LastIZn@)
              IntProda[1]  =  IntProda[1]  +  ZProda[1][di.1.TAZ]
              IntProda[2]  =  IntProda[2]  +  ZProda[2][di.1.TAZ]
              IntProda[3]  =  IntProda[3]  +  ZProda[3][di.1.TAZ]
              IntProda[4]  =  IntProda[4]  +  ZProda[4][di.1.TAZ]
              IntProda[5]  =  IntProda[5]  +  ZProda[5][di.1.TAZ]
              IntProdaSum  =  IntProdaSum  +  ZProda[1][di.1.TAZ] +
ZProda[2][di.1.TAZ] + ZProda[3][di.1.TAZ] + ZProda[4][di.1.TAZ] +
ZProda[5][di.1.TAZ]
           ELSE
              ExtProda[1]  =  ExtProda[1]  +  ZProda[1][di.1.TAZ]
              ExtProda[2]  =  ExtProda[2]  +  ZProda[2][di.1.TAZ]
              ExtProda[3]  =  ExtProda[3]  +  ZProda[3][di.1.TAZ]
              ExtProda[4]  =  ExtProda[4]  +  ZProda[4][di.1.TAZ]
              ExtProda[5]  =  ExtProda[5]  +  ZProda[5][di.1.TAZ]
              ExtProdaSum  =  ExtProdaSum  +  ZProda[1][di.1.TAZ] +
ZProda[2][di.1.TAZ] + ZProda[3][di.1.TAZ] + ZProda[4][di.1.TAZ] +
ZProda[5][di.1.TAZ]
          ENDIF
 ENDLOOP

;; Read attractions into zonal array and accumulate, totals, internals, and
externals by purpose
LOOP K = 1,dbi.2.NUMRECORDS
         x = DBIReadRecord(2,k)
              ZAttra[1][di.2.TAZ]    =   di.2.HBW_Mtr_As
              ZAttra[2][di.2.TAZ]    =   di.2.HBS_Mtr_As
              ZAttra[3][di.2.TAZ]    =   di.2.HBO_Mtr_As
              ZAttra[4][di.2.TAZ]    =   di.2.NHW_Mtr_As
              ZAttra[5][di.2.TAZ]    =   di.2.NHO_Mtr_As

;;       Accumulate total, internal and external P's by purpose
              TotAttra[1]  =  TotAttra[1]  +  ZAttra[1][di.2.TAZ]
              TotAttra[2]  =  TotAttra[2]  +  ZAttra[2][di.2.TAZ]
              TotAttra[3]  =  TotAttra[3]  +  ZAttra[3][di.2.TAZ]
              TotAttra[4]  =  TotAttra[4]  +  ZAttra[4][di.2.TAZ]
              TotAttra[5]  =  TotAttra[5]  +  ZAttra[5][di.2.TAZ]
              TotAttraSum  =  TotAttraSum  +  ZAttra[1][di.2.TAZ] +
ZAttra[2][di.2.TAZ] + ZAttra[3][di.2.TAZ] + ZAttra[4][di.2.TAZ] +
ZAttra[5][di.2.TAZ]

          IF (K <= @LastIZn@)
              IntAttra[1]  =  IntAttra[1]  +  ZAttra[1][di.2.TAZ]
              IntAttra[2]  =  IntAttra[2]  +  ZAttra[2][di.2.TAZ]
              IntAttra[3]  =  IntAttra[3]  +  ZAttra[3][di.2.TAZ]
              IntAttra[4]  =  IntAttra[4]  +  ZAttra[4][di.2.TAZ]
              IntAttra[5]  =  IntAttra[5]  +  ZAttra[5][di.2.TAZ]
```

```
              IntAttraSum  =  IntAttraSum  +  ZAttra[1][di.2.TAZ] +
ZAttra[2][di.2.TAZ] + ZAttra[3][di.2.TAZ] + ZAttra[4][di.2.TAZ] +
ZAttra[5][di.2.TAZ]
           ELSE
              ExtAttra[1]  =  ExtAttra[1]  +  ZAttra[1][di.2.TAZ]
              ExtAttra[2]  =  ExtAttra[2]  +  ZAttra[2][di.2.TAZ]
              ExtAttra[3]  =  ExtAttra[3]  +  ZAttra[3][di.2.TAZ]
              ExtAttra[4]  =  ExtAttra[4]  +  ZAttra[4][di.2.TAZ]
              ExtAttra[5]  =  ExtAttra[5]  +  ZAttra[5][di.2.TAZ]
              ExtAttraSum  =  ExtAttraSum  +  ZAttra[1][di.2.TAZ] +
ZAttra[2][di.2.TAZ] + ZAttra[3][di.2.TAZ] + ZAttra[4][di.2.TAZ] +
ZAttra[5][di.2.TAZ]
          ENDIF
 ENDLOOP

;; compute scaling  factors by purpose

    Loop pp= 1, @Purps@

         If (IntProda[pp]!= 0)  Pscale[pp] = ExtAttra[pp]/IntProda[pp]
         If (IntAttra[pp]!= 0)  Ascale[pp] = ExtProda[pp]/IntAttra[pp]

    ENDLOOP

;;print input P/A results by intl, external groups
   print printo=1           List =  ' Listing of INPUT P/A Totals by Purpose and
computed scaling factors '
   print printo= 1 form=12.2 list = '            '

   print printo =1             list = ' Purpose>>>                     ','
HBW            HBS            HBO            NHW            NHO            ALL'
   print printo= 1             list = '            '
   print printo= 1 form=16.2csv list = ' Total Internal  Ps by purpose: ',
IntProda[1],  IntProda[2], IntProda[3], IntProda[4], IntProda[5],  IntProdaSum
   print printo= 1 form=16.2csv list = ' Total External  Ps by purpose: ',
ExtProda[1],  ExtProda[2], ExtProda[3], ExtProda[4], ExtProda[5],  ExtProdaSum
   print printo= 1 form=16.2csv list = ' Total Intl&Extl Ps by purpose: ',
TotProda[1],  TotProda[2], TotProda[3], TotProda[4], TotProda[5],  TotProdaSum
   print printo= 1             list = '            '
   print printo= 1 form=16.2csv list = ' Total Internal  As by purpose: ',
IntAttra[1],  IntAttra[2], IntAttra[3], IntAttra[4], IntAttra[5],  IntAttraSum
   print printo= 1 form=16.2csv list = ' Total External  As by purpose: ',
ExtAttra[1],  ExtAttra[2], ExtAttra[3], ExtAttra[4], ExtAttra[5],  ExtAttraSum
   print printo= 1 form=16.2csv list = ' Total Intl&Extl As by purpose: ',
TotAttra[1],  TotAttra[2], TotAttra[3], TotAttra[4], TotAttra[5],  TotAttraSum
   print printo= 1             list = '            '
   print printo= 1 form=16.6csv list = 'Prod_scale fts ExtAs/IntlPs:    ',
Pscale[1], Pscale[2], Pscale[3], Pscale[4], Pscale[5]
   print printo= 1 form=16.6csv list = 'Attr_scale fts ExtPs/ExtlPs:    ',
Ascale[1], Ascale[2], Ascale[3], Ascale[4], Ascale[5]
   print printo= 1             list = '            '
   print printo= 1             list = '            '
   print printo= 1             list = '            '


;;set up out file


 ;; DEFINE OUTPUT FILE & VARIABLES
 FILEO RECO[1]    = "@Scaled_IntPsAs@",
                    fields = TAZ(5),
                             SHBW_MtrPs(15.2), SHBS_MtrPs(15.2), SHBO_MtrPs(15.2),
SNHW_MtrPs(15.2), SNHO_MtrPs(15.2),
                             SHBW_MtrAs(15.2), SHBS_MtrAs(15.2), SHBO_MtrAs(15.2),
SNHW_MtrAs(15.2), SNHO_MtrAs(15.2),
                             NHWIIAs(15.2), NHOIIAs(15.2)

 ;;
```

```
 ;; Now loop through each internal TAZ and
 ;;   1)  scale INT Attractions to EXT productions
 ;;   2)  scale INT Productions to EXT attractions
 ;;   3)  write out scaled/INT Ps As and unscaled EXT P's, As

 Loop zz= 1, @ZONESIZE@

    Loop pp= 1, @Purps@

          IF (zz <= @LastIZn@)      ;;if TAZ is internal, then scale and accumulate
            S_ZProda[pp][zz] =  ZProda[pp][zz] *   Pscale[pp]
            S_ZAttra[pp][zz] =  ZAttra[pp][zz] *   Ascale[pp]

;;          accumulate scaled internal Ps, As by purpose and for total
            IntScaleP[pp] = IntScaleP[pp] +   S_ZProda[pp][zz]
            IntScaleA[pp] = IntScaleA[pp] +   S_ZAttra[pp][zz]

            IntScalePSum  = IntScalePSum  +   S_ZProda[pp][zz]
            IntScaleASum  = IntScaleASum  +   S_ZAttra[pp][zz]

           ELSE                   ;; Else TAZ is external, final scaled P/S equals
input P,A
             S_ZProda[pp][zz] =  ZProdA[pp][zz]
             S_ZAttra[pp][zz] =  ZAttrA[pp][zz]

          ENDIF                  ;;
            ;; Accum. total of scaled intls and untouched extls for reporting, by
purpose and for total
            TotScaleP[pp] = TotScaleP[pp] +   S_ZProda[pp][zz]
            TotScaleA[pp] = TotScaleA[pp] +   S_ZAttra[pp][zz]

            TotScalePSum  = TotScalePSum  +   S_ZProda[pp][zz]
            TotScaleASum  = TotScaleASum  +   S_ZAttra[pp][zz]
    ENDLOOP



;;       Write out the unscaled and scaled Ps,As by purpose
;;       The scaled internal productions will equal the sum of external attractions
;;       The scaled internal attractions will equal the sum of external productions
;;       The external Ps, As will remain unchanged
          ro.TAZ        =  zz
          ro.SHBW_MtrPs = S_ZProda[1][zz]
          ro.SHBS_MtrPs = S_ZProda[2][zz]
          ro.SHBO_MtrPs = S_ZProda[3][zz]
          ro.SNHW_MtrPs = S_ZAttra[4][zz]
          ro.SNHO_MtrPs = S_ZAttra[5][zz]

          ro.SHBW_MtrAs = S_ZAttra[1][zz]
          ro.SHBS_MtrAs = S_ZAttra[2][zz]
          ro.SHBO_MtrAs = S_ZAttra[3][zz]
          ro.SNHW_MtrAs = S_ZAttra[4][zz]
          ro.SNHO_MtrAs = S_ZAttra[5][zz]

          IF (ZZ <= @LastIZn@)
                ro.NHWIIAs = ZAttra[4][zz]
                ro.NHOIIAs = ZAttra[5][zz]
            ELSE
                ro.NHWIIAs = 0.0
                ro.NHOIIAs = 0.0
          ENDIF


          WRITE RECO=1

ENDLOOP
```

```
print printo=1           List =  ' Listing of OUTPUT P/A Totals by purpose to be
used in the External Trip Distribution Process '
;;print input P/A results by intl, external groups

   print printo= 1             list = '            '
   print printo =1             list = ' Purpose>>>                     ','
HBW              HBS            HBO             NHW             NHO             ALL'
   print printo= 1             list = '            '
   print printo= 1 form=16.2csv list = ' Internal Ps, scaled to Extl As:',
IntScaleP[1], IntScaleP[2],IntScaleP[3], IntScaleP[4], IntScaleP[5],  IntScalePSum
   print printo= 1 form=16.2csv list = ' External Ps by purpose:       ',
ExtProda[1],  ExtProda[2], ExtProda[3], ExtProda[4],  ExtProda[5],   ExtProdaSum
   print printo= 1 form=16.2csv list = ' Total    Ps by purpose:       ',
TotScaleP[1], TotScaleP[2],TotScaleP[3], TotScaleP[4], TotScaleP[5],  TotScalePSum
   print printo= 1             list = '            '
   print printo= 1 form=16.2csv list = ' Internal As, scaled to Extl Ps:',
IntScaleA[1], IntScaleA[2],IntScaleA[3], IntScaleA[4], IntScaleA[5],  IntScaleASum
   print printo= 1 form=16.2csv list = ' Total External  As by purpose: ',
ExtAttra[1],  ExtAttra[2], ExtAttra[3], ExtAttra[4],  ExtAttra[5],   ExtAttraSum
   print printo= 1 form=16.2csv list = ' Total Intl&Extl As by purpose: ',
TotScaleA[1], TotScaleA[2],TotScaleA[3], TotScaleA[4], TotScaleA[5],  TotScaleASum
   print printo= 1             list = '            '

ENDRUN
*copy voya*.prn mod2.rpt
```

25 Prepare_Ext_ComTrk_Ends.s

```
*del voya*.prn
;
;==================================================================================
=================
;  Prepare_Ext_ComTrk_Ends.s
=
;  This process prepares CV and Truck-related external Ps, As for the External Trip
Distribution Process     =
;  The zonal level internal Ps & As are scaled (or balanced) to match external As &
Ps, respectively =
;==================================================================================
=================

ZONESIZE       =  3722                       ;  No. of TAZs
Purps          =  3                          ;  No. of purposes
LastIZn        =  3675                       ;  Last Internal TAZ no.
Scaled_IntPsAs  ='Ext_CVTruck_Gen_PsAs_%_iter_%.dbf'  ;; OUTPUT external zonal Ps,As
file, HBW,HBS,HBO,NHW,NHO purposes

RUN PGM=MATRIX
ZONES=1

Fileo printo[1] ='Ext_CVTruck_Gen_PsAs_%_iter_%.txt' ;; report file

Array ZProdA   = 5,3722     ; input zonal productions array /Unscaled
Array ZAttrA   = 5,3722     ; input zonal attractions array /Unscaled

Array S_ZProdA = 5,3722     ; output zonal productions /  intls  scaled to extl
attr. totals
Array S_ZAttrA = 5,3722     ; output zonal attractions /  intls  scaled to extl
prod. totals
```

```
Array TotProda=5, IntProda=5, ExtProda=5, TotscaleP=5, TotscaleA=5
Array TotAttra=5, IntAttra=5, ExtAttra=5, Pscale=5,Ascale=5, IntScaleP=5,
IntScaleA=5

;; INPUT Zonal trip productions

;;INPUT Zonal comm, med truck, heavy truck trip ends
FILEI DBI[1] = "ComVeh_Truck_Ends_%_iter_%.dbf"
;; variables in file:
;  TAZ     COMM_VEH        MED_TRUCK       HVY_TRUCK


;; Read productions into zonal array and accumulate, totals, internals, and
externals by purpose
LOOP K = 1,dbi.1.NUMRECORDS
         x = DBIReadRecord(1,k)
              ZProda[1][di.1.TAZ]    =   di.1.Comm_Veh
              ZProda[2][di.1.TAZ]    =   di.1.Med_Truck
              ZProda[3][di.1.TAZ]    =   di.1.Hvy_Truck

;;       Accumulate total, internal and external P's by purpose
              TotProda[1]  =  TotProda[1]  +  ZProda[1][di.1.TAZ]
              TotProda[2]  =  TotProda[2]  +  ZProda[2][di.1.TAZ]
              TotProda[3]  =  TotProda[3]  +  ZProda[3][di.1.TAZ]
              TotProdaSum  =  TotProdaSum  +  ZProda[1][di.1.TAZ] +
ZProda[2][di.1.TAZ] + ZProda[3][di.1.TAZ]

          IF (K <= @LastIZn@)
              IntProda[1]  =  IntProda[1]  +  ZProda[1][di.1.TAZ]
              IntProda[2]  =  IntProda[2]  +  ZProda[2][di.1.TAZ]
              IntProda[3]  =  IntProda[3]  +  ZProda[3][di.1.TAZ]
              IntProdaSum  =  IntProdaSum  +  ZProda[1][di.1.TAZ] +
ZProda[2][di.1.TAZ] + ZProda[3][di.1.TAZ]
           ELSE
              ExtProda[1]  =  ExtProda[1]  +  ZProda[1][di.1.TAZ]
              ExtProda[2]  =  ExtProda[2]  +  ZProda[2][di.1.TAZ]
              ExtProda[3]  =  ExtProda[3]  +  ZProda[3][di.1.TAZ]
              ExtProdaSum  =  ExtProdaSum  +  ZProda[1][di.1.TAZ] +
ZProda[2][di.1.TAZ] + ZProda[3][di.1.TAZ]
          ENDIF
 ENDLOOP

;; Read attractions into zonal array and accumulate, totals, internals, and
externals by purpose
LOOP K = 1,dbi.1.NUMRECORDS
         x = DBIReadRecord(1,k)
              ZAttra[1][di.1.TAZ]    =   di.1.Comm_Veh
              ZAttra[2][di.1.TAZ]    =   di.1.Med_Truck
              ZAttra[3][di.1.TAZ]    =   di.1.Hvy_Truck

;;       Accumulate total, internal and external P's by purpose
              TotAttra[1]  =  TotAttra[1]  +  ZAttra[1][di.1.TAZ]
              TotAttra[2]  =  TotAttra[2]  +  ZAttra[2][di.1.TAZ]
              TotAttra[3]  =  TotAttra[3]  +  ZAttra[3][di.1.TAZ]
              TotAttraSum  =  TotAttraSum  +  ZAttra[1][di.1.TAZ] +
ZAttra[2][di.1.TAZ] + ZAttra[3][di.1.TAZ]

          IF (K <= @LastIZn@)
              IntAttra[1]  =  IntAttra[1]  +  ZAttra[1][di.1.TAZ]
              IntAttra[2]  =  IntAttra[2]  +  ZAttra[2][di.1.TAZ]
              IntAttra[3]  =  IntAttra[3]  +  ZAttra[3][di.1.TAZ]
              IntAttraSum  =  IntAttraSum  +  ZAttra[1][di.1.TAZ] +
ZAttra[2][di.1.TAZ] + ZAttra[3][di.1.TAZ]
           ELSE
              ExtAttra[1]  =  ExtAttra[1]  +  ZAttra[1][di.1.TAZ]
              ExtAttra[2]  =  ExtAttra[2]  +  ZAttra[2][di.1.TAZ]
              ExtAttra[3]  =  ExtAttra[3]  +  ZAttra[3][di.1.TAZ]
```

```
              ExtAttraSum  =  ExtAttraSum  +  ZAttra[1][di.1.TAZ] +
ZAttra[2][di.1.TAZ] + ZAttra[3][di.1.TAZ]
          ENDIF
 ENDLOOP

;; compute scaling  factors by purpose

    Loop pp= 1, @Purps@

         If (IntProda[pp]!= 0)  Pscale[pp] = ExtAttra[pp]/IntProda[pp]
         If (IntAttra[pp]!= 0)  Ascale[pp] = ExtProda[pp]/IntAttra[pp]

    ENDLOOP

;;print input P/A results by intl, external groups
   print printo=1            List =  ' Listing of INPUT Commercial Veh. and Truck
P/A Totals by Purpose and computed scaling factors '
   print printo= 1 form=12.2 list = '            '

   print printo =1              list = ' Purpose>>>                    ','
Com_Veh           MedTrk         HvyTrk            ALL'
   print printo= 1              list = '            '
   print printo= 1 form=16.2csv list = ' Total Internal  Ps by purpose: ',
IntProda[1],  IntProda[2], IntProda[3], IntProdaSum
   print printo= 1 form=16.2csv list = ' Total External  Ps by purpose: ',
ExtProda[1],  ExtProda[2], ExtProda[3], ExtProdaSum
   print printo= 1 form=16.2csv list = ' Total Intl&Extl Ps by purpose: ',
TotProda[1],  TotProda[2], TotProda[3], TotProdaSum
   print printo= 1              list = '            '
   print printo= 1 form=16.2csv list = ' Total Internal  As by purpose: ',
IntAttra[1],  IntAttra[2], IntAttra[3], IntAttraSum
   print printo= 1 form=16.2csv list = ' Total External  As by purpose: ',
ExtAttra[1],  ExtAttra[2], ExtAttra[3], ExtAttraSum
   print printo= 1 form=16.2csv list = ' Total Intl&Extl As by purpose: ',
TotAttra[1],  TotAttra[2], TotAttra[3], TotAttraSum
   print printo= 1              list = '            '
   print printo= 1 form=16.6csv list = 'Prod_scale fts ExtAs/IntlPs:    ',
Pscale[1], Pscale[2], Pscale[3]
   print printo= 1 form=16.6csv list = 'Attr_scale fts ExtPs/ExtlPs:    ',
Ascale[1], Ascale[2], Ascale[3]
   print printo= 1              list = '            '
   print printo= 1              list = '            '
   print printo= 1              list = '            '


;;set up out file


 ;; DEFINE OUTPUT FILE & VARIABLES
 FILEO RECO[1]    = "@Scaled_IntPsAs@",
                    fields = TAZ(5),
                             SCom_VehPs(15.2), SMed_TrkPs(15.2), SHvy_TrkPs(15.2),
                             SCom_VehAs(15.2), SMed_TrkAs(15.2), SHvy_TrkAs(15.2)

 ;;
 ;; Now loop through each internal TAZ and
 ;;   1)  scale INT Attractions to EXT productions
 ;;   2)  scale INT Productions to EXT attractions
 ;;   3)  write out scaled/INT Ps As and unscaled EXT P's, As

 Loop zz= 1, @ZONESIZE@

    Loop pp= 1, @Purps@

          IF (zz <= @LastIZn@)      ;;if TAZ is internal, then scale and accumulate
            S_ZProda[pp][zz] =  ZProda[pp][zz] *   Pscale[pp]
            S_ZAttra[pp][zz] =  ZAttra[pp][zz] *   Ascale[pp]
;;          accumulate scaled internal Ps, As by purpose and for total
            IntScaleP[pp] = IntScaleP[pp] +   S_ZProda[pp][zz]
            IntScaleA[pp] = IntScaleA[pp] +   S_ZAttra[pp][zz]

            IntScalePSum  = IntScalePSum  +   S_ZProda[pp][zz]
            IntScaleASum  = IntScaleASum  +   S_ZAttra[pp][zz]

           ELSE                    ;; Else TAZ is external, final scaled P/S equals
input P,A
             S_ZProda[pp][zz] =  ZProdA[pp][zz]
             S_ZAttra[pp][zz] =  ZAttrA[pp][zz]

          ENDIF                    ;;
            ;; Accum. total of scaled intls and untouched extls for reporting, by
purpose and for total
            TotScaleP[pp] = TotScaleP[pp] +   S_ZProda[pp][zz]
            TotScaleA[pp] = TotScaleA[pp] +   S_ZAttra[pp][zz]

            TotScalePSum  = TotScalePSum  +   S_ZProda[pp][zz]
            TotScaleASum  = TotScaleASum  +   S_ZAttra[pp][zz]
    ENDLOOP




;;       Write out the unscaled and scaled Ps,As by purpose
;;       The scaled internal productions will equal the sum of external attractions
;;       The scaled internal attractions will equal the sum of external productions
;;       The external Ps, As will remain unchanged
          ro.TAZ       =  zz
          ro.SCom_VehPs = S_ZProda[1][zz]
          ro.SMed_TrkPs = S_ZProda[2][zz]
          ro.SHvy_TrkPs = S_ZProda[3][zz]

          ro.SCom_VehAs = S_ZAttra[1][zz]
          ro.SMed_TrkAs = S_ZAttra[2][zz]
          ro.SHvy_TrkAs = S_ZAttra[3][zz]

          WRITE RECO=1

ENDLOOP


print printo=1            List =  ' Listing of OUTPUT Commercial Veh. and Truck P/A
Totals by purpose to be used in the External Trip Distribution Process '
;;print input P/A results by intl, external groups

   print printo= 1              list = '            '
   print printo =1              list = ' Purpose>>>                    ','
ComVeh           MedTrk         HvyTrk            ALL'
   print printo= 1              list = '            '
   print printo= 1 form=16.2csv list = ' Internal Ps, scaled to Extl As:',
IntScaleP[1], IntScaleP[2],IntScaleP[3], IntScalePSum
   print printo= 1 form=16.2csv list = ' External Ps by purpose:        ',
ExtProda[1],  ExtProda[2], ExtProda[3], ExtProdaSum
   print printo= 1 form=16.2csv list = ' Total    Ps by purpose:        ',
TotScaleP[1], TotScaleP[2],TotScaleP[3], TotScalePSum
   print printo= 1              list = '            '
   print printo= 1 form=16.2csv list = ' Internal As, scaled to Extl Ps:',
IntScaleA[1], IntScaleA[2],IntScaleA[3], IntScaleASum
   print printo= 1 form=16.2csv list = ' Total External  As by purpose: ',
ExtAttra[1],  ExtAttra[2], ExtAttra[3], ExtAttraSum
   print printo= 1 form=16.2csv list = ' Total Intl&Extl As by purpose: ',
TotScaleA[1], TotScaleA[2],TotScaleA[3], TotScaleASum
   print printo= 1              list = '            '

ENDRUN
*copy voya*.prn mod2.rpt
```

26 Prepare_Trip_Tables_for_Assignment.s

```
;---------------------------------------------------------------
;   Step 1 - Modeled & Non-Modeled Trip Table Consolidation
;            for the Version 2.3 Highway Assignment
;
;            - 4 Trip files built for AM, Midday, PM, Off-Peak Time Periods
;            - Each file has 6 Trip tables:
;                1) 1-occ adrs
;                2) 2-occ adrs
;                3) 3+occ adrs
;                4) Commercial Vehicle
;                5) Trucks (Medium and Heavy)
;                6) Airport Pax Adrs
;---------------------------------------------------------------
;
; I/P Auto Dr. Pct. tables:
ADRAM  = 'AM%_iter_%.ADR'
ADRMD  = 'MD%_iter_%.ADR'
ADRPM  = 'PM%_iter_%.ADR'
ADRNT  = 'NT%_iter_%.ADR'
;
; I/P MISC Auto Dr.Tables:
MISCAM  = 'MISCAM%_iter_%.TT'
MISCMD  = 'MISCMD%_iter_%.TT'
MISCPM  = 'MISCPM%_iter_%.TT'
MISCNT  = 'MISCNT%_iter_%.TT'
;
;
; O/P  Vehicle  Trips:
AM_VT   = '%_iter_%AM.VTT'
MD_VT   = '%_iter_%MD.VTT'
PM_VT   = '%_iter_%PM.VTT'
NT_VT   = '%_iter_%NT.VTT'
;
;
; avg xx auto occ. is 1.72 basis for:    //
XXAD1OCC = 0.5021       ; ASSUMED SHARE OF THRU ADRS Which are  1-OCC vehs.
XXAD2OCC = 0.3426       ; ASSUMED SHARE OF THRU ADRS Which are  2-OCC vehs.
XXAD3OCC = 0.1553       ; ASSUMED SHARE OF THRU ADRS Which are  3+OCC vehs.
;//////////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
;; Input files:
;;  Auto Driver trips by time period
;;   each file contains 3 tables (1-occ, 2-occ., and 3+occ auto driver trips)
    MATI[1]=@ADRAM@   ;; AM Modeled Auto Drivers
    MATI[2]=@ADRMD@
    MATI[3]=@ADRPM@
    MATI[4]=@ADRNT@

;;  Miscellaneaous Trips by time period
;;
;; Each file contains 8 tables -
;;   1/xx truck,2/xx autodr,3/taxi adr,4/visitor-tourist adr,
;;   5/med.truck, 6/hvy truck, 7/air passenger adr, 8/comm veh.
    MATI[5]=@MISCAM@
    MATI[6]=@MISCMD@
    MATI[7]=@MISCPM@
    MATI[8]=@MISCNT@

;AM Modeled Auto Drivers:
    MW[101]= MI.1.1          ;  1-Occ adrs
    MW[102]= MI.1.2          ;  2-Occ adrs
    MW[103]= MI.1.3          ;  3+Occ adrs
;MD Modeled Auto Drivers:
    MW[201]= MI.2.1          ;  1-Occ adrs
    MW[202]= MI.2.2          ;  2-Occ adrs
    MW[203]= MI.2.3          ;  3+Occ adrs
;PM Modeled Auto Drivers:
    MW[301]= MI.3.1          ;  1-Occ adrs
    MW[302]= MI.3.2          ;  2-Occ adrs
    MW[303]= MI.3.3          ;  3+Occ adrs

;OP Modeled Auto Drivers:
    MW[401]= MI.4.1         ;  1-Occ adrs
    MW[402]= MI.4.2         ;  2-Occ adrs
    MW[403]= MI.4.3         ;  3+Occ adrs
;
; AM Peak Period MISC Trips
 MW[111] = MI.5.1            ;  Thru     Truck
 MW[112] = MI.5.2*@XXAD1OCC@ ;  Thru     Auto Driver-1 OCC
 MW[113] = MI.5.2*@XXAD2OCC@ ;  Thru     Auto Driver-2 OCC
 MW[114] = MI.5.2*@XXAD3OCC@ ;  Thru     Auto Driver-3+OCC
 MW[115] = MI.5.3            ;  Taxi     Auto Driver
 MW[116] = MI.5.4            ;  Visitor  Auto Driver
 MW[117] = MI.5.6            ;  I-I,I-E,E-I Medium Truck
 MW[118] = MI.5.7            ;  I-I,I-E,E-I Heavy  Truck
 MW[119] = MI.5.8            ;  Air Pax     Auto Driver
 MW[120] = MI.5.9            ;  I-I,I-E,E-I Comm. Veh
 MW[121] = MI.5.5            ;  School  Auto Driver


;
; MD Peak Period MISC Trips
 MW[211] = MI.6.1            ;  Thru     Truck
 MW[212] = MI.6.2*@XXAD1OCC@ ;  Thru     Auto Driver-1 OCC
 MW[213] = MI.6.2*@XXAD2OCC@ ;  Thru     Auto Driver-2 OCC
 MW[214] = MI.6.2*@XXAD3OCC@ ;  Thru     Auto Driver-3+OCC
 MW[215] = MI.6.3            ;  Taxi     Auto Driver
 MW[216] = MI.6.4            ;  Visitor  Auto Driver
 MW[217] = MI.6.6            ;  I-I,I-E,E-I Medium Truck
 MW[218] = MI.6.7            ;  I-I,I-E,E-I Heavy  Truck
 MW[219] = MI.6.8            ;  Air Pax     Auto Driver
 MW[220] = MI.6.9            ;  I-I,I-E,E-I Comm. Veh
 MW[221] = MI.6.5            ;  School   Auto Driver
;
; PM Peak Period MISC Trips
 MW[311] = MI.7.1            ;  Thru     Truck
 MW[312] = MI.7.2*@XXAD1OCC@ ;  Thru     Auto Driver-1 OCC
 MW[313] = MI.7.2*@XXAD2OCC@ ;  Thru     Auto Driver-2 OCC
 MW[314] = MI.7.2*@XXAD3OCC@ ;  Thru     Auto Driver-3+OCC
 MW[315] = MI.7.3            ;  Taxi     Auto Driver
 MW[316] = MI.7.4            ;  Visitor  Auto Driver
 MW[317] = MI.7.6            ;  I-I,I-E,E-I Medium Truck
 MW[318] = MI.7.7            ;  I-I,I-E,E-I Heavy  Truck
 MW[319] = MI.7.8            ;  Air Pax     Auto Driver
 MW[320] = MI.7.9            ;  I-I,I-E,E-I Comm. Veh
 MW[321] = MI.7.5            ;  School   Auto Driver


;
; OP Peak Period MISC Trips
 MW[411] = MI.8.1            ;  Thru     Truck
 MW[412] = MI.8.2*@XXAD1OCC@ ;  Thru     Auto Driver-1 OCC
 MW[413] = MI.8.2*@XXAD2OCC@ ;  Thru     Auto Driver-2 OCC
 MW[414] = MI.8.2*@XXAD3OCC@ ;  Thru     Auto Driver-3+OCC
 MW[415] = MI.8.3            ;  Taxi     Auto Driver
 MW[416] = MI.8.4            ;  Visitor  Auto Driver
 MW[417] = MI.8.6            ;  I-I,I-E,E-I Medium Truck
 MW[418] = MI.8.7            ;  I-I,I-E,E-I Heavy  Truck
 MW[419] = MI.8.8            ;  Air Pax     Auto Driver
 MW[420] = MI.8.9            ;  I-I,I-E,E-I Comm. Veh
 MW[421] = MI.8.5            ;  School   Auto Driver
```

```
;  Add up vehicle tables into the appropriate TOD Categories
;  AM
 MW[151] =  MW[101] + MW[112] + MW[121]            ; SOV   Vehicle Trips
 MW[152] =  MW[102] + MW[113] + MW[115] + MW[116]  ; HOV2  Vehicle Trips
 MW[153] =  MW[103] + MW[114]                      ; HOV3+ Vehicle Trips
 MW[154] =  MW[120]                                ; Comm. Vehs
 MW[155] =  MW[111] + MW[117] + MW[118]            ; Med/Hvy Truck Trips
 MW[156] =  MW[119]                                ; Airport Pax Adr Trips

;  MD
 MW[251] =  MW[201] + MW[212] + MW[221]            ; SOV   Vehicle Trips
 MW[252] =  MW[202] + MW[213] + MW[215] + MW[216]  ; HOV2  Vehicle Trips
 MW[253] =  MW[203] + MW[214]                      ; HOV3+ Vehicle Trips
 MW[254] =  MW[220]                                ; Comm. Vehs
 MW[255] =  MW[211] + MW[217] + MW[218]            ; Med/Hvy Truck Trips
 MW[256] =  MW[219]                                ; Airport Pax Adr Trips

;  PM
 MW[351] =  MW[301] + MW[312] + MW[321]            ; SOV   Vehicle Trips
 MW[352] =  MW[302] + MW[313] + MW[315] + MW[316]  ; HOV2  Vehicle Trips
 MW[353] =  MW[303] + MW[314]                      ; HOV3+ Vehicle Trips
 MW[354] =  MW[320]                                ; Comm. Vehs
 MW[355] =  MW[311] + MW[317] + MW[318]            ; Med/Hvy Truck Trips
 MW[356] =  MW[319]                                ; Airport Pax Adr Trips

;  OP
 MW[451] =  MW[401] + MW[412] + MW[421]            ; SOV   Vehicle Trips
 MW[452] =  MW[402] + MW[413] + MW[415] + MW[416]  ; HOV2  Vehicle Trips
 MW[453] =  MW[403] + MW[414]                      ; HOV3+ Vehicle Trips
 MW[454] =  MW[420]                                ; Comm. Vehs
 MW[455] =  MW[411] + MW[417] + MW[418]            ; Med/Hvy Truck Trips
 MW[456] =  MW[419]                                ; Airport Pax Adr Trips

;
;
; Now let's accumulate totals for neat regional summaries
jloop
     vehs   = vehs + (MW[151]+MW[152]+MW[153]+MW[154]+MW[155]+MW[156]) + ;
                     (MW[251]+MW[252]+MW[253]+MW[254]+MW[255]+MW[256]) + ;
                     (MW[351]+MW[352]+MW[353]+MW[354]+MW[355]+MW[356]) + ;
                     (MW[451]+MW[452]+MW[453]+MW[454]+MW[455]+MW[456])   ;   daily
vehs

      comveh = comveh + mw[120] + mw[220] + mw[320] + mw[420]    ;   daily CVs


;AM group
   amvehs   = amvehs   +(MW[151]+MW[152]+MW[153]+MW[154]+MW[155]+MW[156]) ; all am
vehs
   am1occ   = am1occ   + MW[151]                       ; am modeled 1-occveh's
   am2occ   = am2occ   + MW[152]                       ; am modeled 2-occveh's
   am3occ   = am3occ   + MW[153]                       ; am modeled 3+occveh's
   amtrks   = amtrks   + MW[155]                       ; am trucks
   amapax   = amapax   + MW[156]                       ; am airpax adrs
   am1occad = am1occad + MW[101]                       ; am 1occ adr
   am2occad = am2occad + MW[102]                       ; am 2occ adr
   am3occad = am3occad + MW[103]                       ; am 3+occ adr
   amadr    = amadr    + MW[101] + MW[102] + MW[103]   ; am total adr(modeled)
   amxxtrk  = amxxtrk  + MW[111]                       ; am Thru     Truck
   amxxad1  = amxxad1  + MW[112]                       ; am Thru 1occ Adr
   amxxad2  = amxxad2  + MW[113]                       ; am Thru 2occ Adr
   amxxad3  = amxxad3  + MW[114]                       ; am Thru 3+occAdr
   amxxadr  = amxxadr  + MW[112]+MW[113]+MW[114]       ; am total xx adr
   amtaxi   = amtaxi   + MW[115]                       ; am Taxi     ADr
   amvisi   = amvisi   + MW[116]                       ; am visitor  ADr
   amschl   = amschl   + MW[121]                       ; am School   ADr
   ammtrk   = ammtrk   + MW[117]                       ; am int,ext MedTk
   amhtrk   = amhtrk   + MW[118]                       ; am int,ext HvyTk
   amairpax = amairpax + MW[119]                       ; am air pax auto dr
   amcomveh = amcomveh + MW[120]                       ; am int,ext,ComVeh


;MD group
   mdvehs   = mdvehs   +(MW[251]+MW[252]+MW[253]+MW[254]+MW[255]+MW[256]) ; all md
vehs
   md1occ   = md1occ   + MW[251]                       ; md modeled 1-occveh's
   md2occ   = md2occ   + MW[252]                       ; md modeled 2-occveh's
   md3occ   = md3occ   + MW[253]                       ; md modeled 3+occveh's
   mdtrks   = mdtrks   + MW[255]                       ; md trucks
   mdapax   = mdapax   + MW[256]                       ; md airpax adrs
   md1occad = md1occad + MW[201]                       ; md 1occ adr
   md2occad = md2occad + MW[202]                       ; md 2occ adr
   md3occad = md3occad + MW[203]                       ; md 3+occ adr
   mdadr    = mdadr    + MW[201] + MW[202] + MW[203]   ; md total adr(modeled)
   mdxxtrk  = mdxxtrk  + MW[211]                       ; md Thru     Truck
   mdxxad1  = mdxxad1  + MW[212]                       ; md Thru 1occ Adr
   mdxxad2  = mdxxad2  + MW[213]                       ; md Thru 2occ Adr
   mdxxad3  = mdxxad3  + MW[214]                       ; md Thru 3+occAdr
   mdxxadr  = mdxxadr  + MW[212] + MW[213] + MW[214]   ; md total xx adr
   mdtaxi   = mdtaxi   + MW[215]                       ; md Taxi     ADr
   mdvisi   = mdvisi   + MW[216]                       ; md visitor  ADr
   mdSchl   = mdSchl   + MW[221]                       ; md School   ADr
   mdmtrk   = mdmtrk   + MW[217]                       ; md int,ext MedTk
   mdhtrk   = mdhtrk   + MW[218]                       ; md int,ext HvyTk
   mdairpax = mdairpax + MW[219]                       ; md air pax auto dr
   mdcomveh = mdcomveh + MW[220]                       ; md int,ext,ComVeh


;PM group
   pmvehs   = pmvehs   +(MW[351]+MW[352]+MW[353]+MW[354]+MW[355]+MW[356]) ; all pm
vehs
   pm1occ   = pm1occ   + MW[351]                       ; pm modeled 1-occveh's
   pm2occ   = pm2occ   + MW[352]                       ; pm modeled 2-occveh's
   pm3occ   = pm3occ   + MW[353]                       ; pm modeled 3+occveh's
   pmtrks   = pmtrks   + MW[355]                       ; pm trucks
   pmapax   = pmapax   + MW[356]                       ; pm airpax adrs
   pm1occad = pm1occad + MW[301]                       ; pm 1occ adr
   pm2occad = pm2occad + MW[302]                       ; pm 2occ adr
   pm3occad = pm3occad + MW[303]                       ; pm 3+occ adr
   pmadr    = pmadr    + MW[301] + MW[302] + MW[303]   ; pm total adr(modeled)
   pmxxtrk  = pmxxtrk  + MW[311]                       ; pm Thru     Truck
   pmxxad1  = pmxxad1  + MW[312]                       ; pm Thru 1occ Adr
   pmxxad2  = pmxxad2  + MW[313]                       ; pm Thru 2occ Adr
   pmxxad3  = pmxxad3  + MW[314]                       ; pm Thru 3+occAdr
   pmxxadr  = pmxxadr  + MW[312] + MW[313] + MW[314]   ; pm total xx adr
   pmtaxi   = pmtaxi   + MW[315]                       ; pm Taxi     ADr
   pmvisi   = pmvisi   + MW[316]                       ; pm visitor  ADr
   pmschl   = pmschl   + MW[321]                       ; pm school   ADr
   pmmtrk   = pmmtrk   + MW[317]                       ; pm int,ext MedTk
   pmhtrk   = pmhtrk   + MW[318]                       ; pm int,ext HvyTk
   pmairpax = pmairpax + MW[319]                       ; pm air pax auto dr
   pmcomveh = pmcomveh + MW[320]                       ; pm int,ext,ComVeh


;OP group
   opvehs   = opvehs   +(MW[451]+MW[452]+MW[453]+MW[454]+MW[455]+MW[456]) ; all
op/nt vehs
   op1occ   = op1occ   + MW[451]                       ; op/nt modeled 1-occveh's
   op2occ   = op2occ   + MW[452]                       ; op/nt modeled 2-occveh's
   op3occ   = op3occ   + MW[453]                       ; op/nt modeled 3+occveh's
   optrks   = optrks   + MW[455]                       ; op/nt trucks
   opapax   = opapax   + MW[456]                       ; op/nt airpax adrs
   op1occad = op1occad + MW[401]                       ; op/nt 1occ adr
   op2occad = op2occad + MW[402]                       ; op/nt 2occ adr
```

```
   op3occad = op3occad + MW[403]                      ; op/nt 3+occ adr
   opadr    = opadr    + MW[401] + MW[402] + MW[403]   ; op/nt total adr(modeled)
   opxxtrk  = opxxtrk  + MW[411]                      ; op/nt Thru     Truck
   opxxad1  = opxxad1  + MW[412]                      ; op/nt Thru 1occ Adr
   opxxad2  = opxxad2  + MW[413]                      ; op/nt Thru 2occ Adr
   opxxad3  = opxxad3  + MW[414]                      ; op/nt Thru 3+occAdr
   opxxadr  = opxxadr  + MW[412] + MW[413] + MW[414]   ; op/nt total xx adr
   optaxi   = optaxi   + MW[415]                      ; op/nt Taxi     ADr
   opvisi   = opvisi   + MW[416]                      ; op/nt visitor  ADr
   opschl   = opschl   + MW[421]                      ; op/nt school   ADr
   opmtrk   = opmtrk   + MW[417]                      ; op/nt int,ext MedTk
   ophtrk   = ophtrk   + MW[418]                      ; op/nt int,ext HvyTk
   opairpax = opairpax + MW[419]                      ; op/nt air pax auto dr
   opcomveh = opcomveh + MW[420]                      ; op/nt int,ext,ComVeh

;  Sum up output trip table totals
;  AM
    AMSOVs     =     AMSOVs     + MW[151]
    AMHOV2s    =     AMHOV2s    + MW[152]
    AMHOV3s    =     AMHOV3s    + MW[153]
    AMComVehs  =     AMComVehs  + MW[154]
    AMTrucks   =     AMTrucks   + MW[155]
    AMAirPaxs  =     AMAirPaxs  + MW[156]

;  MD
    MDSOVs     =     MDSOVs     + MW[251]
    MDHOV2s    =     MDHOV2s    + MW[252]
    MDHOV3s    =     MDHOV3s    + MW[253]
    MDComVehs  =     MDComVehs  + MW[254]
    MDTrucks   =     MDTrucks   + MW[255]
    MDAirPaxs  =     MDAirPaxs  + MW[256]

;  PM
    PMSOVs     =     PMSOVs     + MW[351]
    PMHOV2s    =     PMHOV2s    + MW[352]
    PMHOV3s    =     PMHOV3s    + MW[353]
    PMComVehs  =     PMComVehs  + MW[354]
    PMTrucks   =     PMTrucks   + MW[355]
    PMAirPaxs  =     PMAirPaxs  + MW[356]

; OP
    OPSOVs     =     OPSOVs     + MW[451]
    OPHOV2s    =     OPHOV2s    + MW[452]
    OPHOV3s    =     OPHOV3s    + MW[453]
    OPComVehs  =     OPComVehs  + MW[454]
    OPTrucks   =     OPTrucks   + MW[455]
    OPAirPaxs  =     OPAirPaxs  + MW[456]
endjloop

if (i=zones)   ; print out results
Print list = '/bt      '
Print list = '%_iter_% Iter. Pre-Traffic Assignment Trip Table Prep.
Report',file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt

Print list = 'AM-Peak Totals: '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am modeled 1-occveh's ',am1occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am modeled 2-occveh's ',am2occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am modeled 3+occveh's ',am3occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am trucks             ',amtrks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am 1occ adr           ',am1occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
```

```
Print form= 12.0csv list = '   am 2occ adr           ',am2occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am 3+occ adr          ',am3occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am total adr(modeled) ',amadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am Thru     Truck     ',amxxtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am Thru 1occ Adr      ',amxxad1
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am Thru 2occ Adr      ',amxxad2
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am Thru 3+occAdr      ',amxxad3
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am total xx adr       ',amxxadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am Taxi     ADr       ',amtaxi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am visitor  ADr       ',amvisi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am School   ADr       ',amschl
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am int,ext MedTk      ',ammtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am int,ext HvyTk      ',amhtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am air pax auto dr    ',amairpax
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   am int,ext,ComVeh     ',amcomveh
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   all am vehs           ',amvehs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt


   ;MD group
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = 'Midday  Totals: '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md modeled 1-occveh's ',md1occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md modeled 2-occveh's ',md2occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md modeled 3+occveh's ',md3occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md trucks             ',mdtrks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md 1occ adr           ',md1occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md 2occ adr           ',md2occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md 3+occ adr          ',md3occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md total adr(modeled) ',mdadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md Thru     Truck     ',mdxxtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md Thru 1occ Adr      ',mdxxad1
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md Thru 2occ Adr      ',mdxxad2
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md Thru 3+occAdr      ',mdxxad3
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md total xx adr       ',mdxxadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md Taxi     ADr       ',mdtaxi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
```

```
Print form= 12.0csv list = '   md visitor  ADr       ',mdvisi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md school   ADr       ',mdschl
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md int,ext MedTk      ',mdmtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md int,ext HvyTk      ',mdhtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md air pax auto dr    ',mdairpax
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   md int,ext,ComVeh     ',mdcomveh
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   all md vehs           ',mdvehs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt


   ;PM group
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = 'PM-Peak Totals: '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm modeled 1-occveh's ',pm1occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm modeled 2-occveh's ',pm2occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm modeled 3+occveh's ',pm3occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm trucks             ',pmtrks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm 1occ adr           ',pm1occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm 2occ adr           ',pm2occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm 3+occ adr          ',pm3occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm total adr(modeled) ',pmadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm Thru     Truck     ',pmxxtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm Thru 1occ Adr      ',pmxxad1
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm Thru 2occ Adr      ',pmxxad2
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm Thru 3+occAdr      ',pmxxad3
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm total xx adr       ',pmxxadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm Taxi     ADr       ',pmtaxi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm visitor  ADr       ',pmvisi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm school   ADr       ',pmschl
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm int,ext MedTk      ',pmmtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm int,ext HvyTk      ',pmhtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm air pax auto dr    ',pmairpax
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   pm int,ext,ComVeh     ',pmcomveh
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   all pm vehs           ',pmvehs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt


   ;OP group
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = 'Off-Peak Totals: '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op modeled 1-occveh's ',op1occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op modeled 2-occveh's ',op2occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op modeled 3+occveh's ',op3occ
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op trucks             ',optrks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op 1occ adr           ',op1occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op 2occ adr           ',op2occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op 3+occ adr          ',op3occad
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op total adr(modeled) ',opadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op Thru     Truck     ',opxxtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op Thru 1occ Adr      ',opxxad1
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op Thru 2occ Adr      ',opxxad2
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op Thru 3+occAdr      ',opxxad3
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op total xx adr       ',opxxadr
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op Taxi     ADr       ',optaxi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op visitor  ADr       ',opvisi
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op school   ADr       ',opschl
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op int,ext MedTk      ',opmtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op int,ext HvyTk      ',ophtrk
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op air pax auto dr    ',opairpax
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   op int,ext,ComVeh     ',opcomveh
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   all op vehs           ',opvehs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt

Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   SUM OF ALL VEHICLES:  ',vehs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '%_iter_% Trip Table Output Totals: '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
;  AM
Print form= 12.0csv list = '   AMSOVs                ',AMSOVs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   AMHOV2s               ',AMHOV2s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   AMHOV3s               ',AMHOV3s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
```

```
Print form= 12.0csv list = '   AMComVehs
',AMComVehs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   AMTrucks              ',AMTrucks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   AMAirPaxs
',AMAirPaxs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt

;  MD
Print form= 12.0csv list = '   MDSOVs                ',MDSOVs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   MDHOV2s               ',MDHOV2s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   MDHOV3s               ',MDHOV3s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   MDComVehs
',MDComVehs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   MDTrucks              ',MDTrucks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   MDAirPaxs
',MDAirPaxs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt

;  PM
Print form= 12.0csv list = '   PMSOVs                ',PMSOVs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   PMHOV2s               ',PMHOV2s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   PMHOV3s               ',PMHOV3s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   PMComVehs
',PMComVehs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   PMTrucks              ',PMTrucks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   PMAirPaxs
',PMAirPaxs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt

;  OP
Print form= 12.0csv list = '   OPSOVs                ',OPSOVs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   OPHOV2s               ',OPHOV2s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   OPHOV3s               ',OPHOV3s
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   OPComVehs
',OPComVehs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   OPTrucks              ',OPTrucks
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   OPAirPaxs
',OPAirPaxs,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print form= 12.0csv list = '   SUM OF ALL VEHICLES:  ',vehs
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '  '
,file=Prepare_Trip_Tables_For_Assignment%_Iter_%.txt
Print list = '/et      '
 endif



;  Write out the auto driver tables by time period
```

```
 MATO[1] = @AM_VT@,  MO=151-156,                                ; AM Veh Trips
1,2,3+occ, comveh, trucks,Air Pax Vehs
           name=AM_SOVs,AM_HV2s,AM_HV3s,AM_COMs,AM_TRKs,AM_APVs

 MATO[2] = @MD_VT@,  MO=251-256,                                ; MD Veh Trips
1,2,3+occ, comveh, trucks,Air Pax Vehs
           name=MD_SOVs,MD_HV2s,MD_HV3s,MD_COMs,MD_TRKs,MD_APVs

 MATO[3] = @PM_VT@,  MO=351-356,                                ; PM Veh Trips
1,2,3+occ, comveh, trucks,Air Pax Vehs
           name=PM_SOVs,PM_HV2s,PM_HV3s,PM_COMs,PM_TRKs,PM_APVs

 MATO[4] = @NT_VT@,  MO=451-456,                                ; NT Veh Trips
1,2,3+occ, comveh, trucks,Air Pax Vehs
           name=NT_SOVs,NT_HV2s,NT_HV3s,NT_COMs,NT_TRKs,NT_APVs

ENDRUN
```

27 RemovePPSpeed.s

```
;;  Remove initial 'lookup' speeds on highway links defined during hwy network
building
;;  The speeds will be replaced by restrained speeds created in the 'pump prime'
assignment
;;
*copy zonehwy.net zonehwy.tem
*del  zonehwy.net
RUN PGM=NETWORK
NETI = ZONEHWY.tem
NETO = zonehwy.net, exclude= PPAMSPD,PPPMSPD,PPMDSPD,PPNTSPD,PPOPSPD
ENDRUN
```

28 Set_CPI.S

```
;-------------------------------------------------------------------
;-------------------------------------------------------------------
; SET_CPI.S   Version 2.3 Model
;   Used to define Transit and Highway Deflators consistently
;
;-------------------------------------------------------------------
CPI_File        =  'INPUTS\CPI_File.TXT'   ;  Input parameters from the \INPUTS
subdir.
ModeledYear     =  '%_year_%'              ;  Simulation Year (Defined in
runall_ModelSteps_<year>.bat file)
;;  Two one-line files are produced:
;;                              TRN_Deflator.txt  (Transit Deflation Factor)
;;                              HWY_Deflator.txt  (Highway Deflation Factor)
;----------------------------------------------------------------------

CPI_Rept        = 'MFARE2_CPI.TXT'                ; Output Reporting file
pageheight=32767  ; Preclude header breaks
;
RUN PGM=MATRIX
ZONES=1
READ file=@CPI_File@

IF (Defl_OverRide != 0 )               ; if explicit deflation factor is provided by
user
```

```
     DEFLATIONFTR  = Defl_OverRide     ; then use it, otherwise compute it using the
most recent CPI table
     Print List='Deflation Factor is based on Override (Defl_OverRide)  in the
CPI_File.txt file: ', DEFLATIONFTR(8.5), file=@CPI_rept@
   ELSE                                ;
;
;;
;;  Now establish the Deflation factor depending on the modeled year
;;  and available historic US BLS data
;;
       _BseCPI      = CPI_Table(1,BaseCPIYear)
       _CurCPI      = CPI_Table(1,CurrCPIYear)
       _CurCPIdefl  = CPI_Table(1,BaseCPIYear) / CPI_Table(1,CurrCPIYear)

       IF (@ModeledYear@ < BaseCPIYear)             ; Deflation ftr can't be
developed if yr < 1994
           LIST = 'Modeled Year is earlier than Base Year in CPI Lookup; I Quit'
           ABORT

         ELSEIF (@ModeledYear@ = BaseCPIYear)      ; If Modeled year is Base CPI
year
           _BseGrowRate = CPI_Table(2,@ModeledYear@) ;    then use the defaltion
rate from table
           _AltGrowRate = CPI_Table(2,@ModeledYear@)

           _FutBseCPI   = CPI_Table(1,@ModeledYear@)
           _FutAltCPI   = CPI_Table(1,@ModeledYear@)

           DEFLATIONFTR = CPI_Table(3,@ModeledYear@)


         ELSEIF (@ModeledYear@ > BaseCPIYear && @ModeledYear@ <= CurrCPIYear)   ; If
Modeled year is Base CPI year
           _BseGrowRate = CPI_Table(2,@ModeledYear@)                            ;
then use the defaltion rate from table
           _AltGrowRate = CPI_Table(2,@ModeledYear@) * INFLATIONFTR

           _FutBseCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_BseGrowRate)^(@ModeledYear@ - BaseCPIYear))
           _FutAltCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_AltGrowRate)^(@ModeledYear@ - BaseCPIYear))

           DEFLATIONFTR = (_FutAltCPI / _FutBseCPI)  *  CPI_Table(3,@ModeledYear@)


         ELSE
           _BseGrowRate = ( (CPI_Table(1,CurrCPIYear) / CPI_Table(1,BaseCPIYear)) ^
(1.0/ (CurrCPIYear - BaseCPIYear)) ) - 1.0
           _AltGrowRate = _BseGrowRate * INFLATIONFTR

           _FutBseCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_BseGrowRate)^(@ModeledYear@ - BaseCPIYear))
           _FutAltCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_AltGrowRate)^(@ModeledYear@ - BaseCPIYear))

           DEFLATIONFTR =  (_FutAltCPI / _FutBseCPI)  *  CPI_Table(3,CurrCPIYear)
        ENDIF

               ;  print out small text file containing deflation factor deriviation:
           Print List='Modeled Year:                                       ',
@ModeledYear@(8.0) ,'\n',                      file=@CPI_rept@
           Print List='Base    Year & CPI:                                 ',
BaseCPIYear(8.0) , _BseCPI(8.1),'\n',            file=@CPI_rept@
           Print List='Current Year & CPI & deflator (Base CPI/Curr CPI):  ',
CurrCPIYear(8.0) , _CurCPI(8.1),_CurCPIdefl(8.5),'\n',file=@CPI_rept@
           Print List='Inflation Factor Assumption (1.00 = direct CPI):    ',
INFLATIONFTR(8.5),'\n',                          file=@CPI_rept@
           Print List='Modeled Year Growth rate & CPI w/  Full  CPI:    (A)',
_BseGrowRate(8.5)  , _FutBseCPI(8.1),'(forecasts years only)','\n',file=@CPI_rept@
           Print List='Modeled Year growth rate & CPI w/ Infla. Factor: (B)',
_AltGrowRate(8.5)  , _FutAltCPI(8.1),'(forecasts years only)','\n',file=@CPI_rept@
           Print List='Deflation Factor ((B)/(A) * Current Deflator :      ',
DEFLATIONFTR(8.5)  ,                                    file=@CPI_rept@

ENDIF
          Print List = 'DEFLATIONFTR  = ', DEFLATIONFTR(8.5),'  ;; Transit Deflation
Factor ',  File = TRN_Deflator.txt
          Print List = 'DEFLATIONFTR  = ', DEFLATIONFTR(8.5),'  ;; Highway Deflation
Factor ',  File = HWY_Deflator.txt




ENDRUN
;==============================================================
; End of CPI/Deflation section                                =
;==============================================================
```

29 Time-of-Day.s

```
; ===================================================================
; Time-of-Day.s
; MWCOG Version 2.3 Model
;
;
;              Distribute Modeled Pump Prime Auto Driver Trips, i.e,
;              4 Purposes (HBW,HBS,HBO,NHB), 3 Modes (1,2,3+Occ Adrs)
;              among three time periods:
;
;              -  AM peak  (6:00AM   -  9:00 AM)  3 Hrs.
;              -  Midday   (9:00AM   -  3:00 PM)  6 Hrs.
;              -  PM peak  (3:00PM   -  7:00 PM)  4 Hrs.
;              -  Off-peak (All Other hrs      ) 11 Hrs.
;
;              file named: 'todcomp_2008HTS_AdjOP.dbf' is used.
;              It contains trip percentages for each time period
;              by purpose, mode, and direction.
;
;
;   Environment Variable:
;               _iter_  (Iteration indicator = 'pp','i1'-'i6'
; ===================================================================
;
;
;/////////////////////////////////////////////////////////////////////
;                                                                   //
; Input/Output filenames:                                           //
;                                                                   //
TODFtrs = '..\support\todcomp_2008HTS.dbf' ; Time of Day Factor File
;                                                                   //
; I/P PP Auto Driver Trip Tables:                                   //  ; I/P PP Auto
Driver Trip Tables:                                         //
 HBWADR = 'HBW%_iter_%.ADR' ; HBW  1,2,3+ Occ Adr Trips (t1-3)         //
 HBSADR = 'HBS%_iter_%.ADR' ; HBS  1,2,3+ Occ Adr Trips (t1-3)         //
 HBOADR = 'HBO%_iter_%.ADR' ; HBO  1,2,3+ Occ Adr Trips (t1-3)         //
 NHWADR = 'NHW%_iter_%.ADR' ; NHW  1,2,3+ Occ Adr Trips (t1-3)         //
 NHOADR = 'NHO%_iter_%.ADR' ; NHO  1,2,3+ Occ Adr Trips (t1-3)         //
;                                                                      //
; O/P Auto Dr. Pct. tables:                                            //
 ADRAM  = 'AM%_iter_%.ADR'  ; AM     Modeled Total Auto Drivers        //
```

```
 ADRPM  = 'PM%_iter_%.ADR'  ; PM     Modeled Total Auto Drivers         //
 ADRMD  = 'MD%_iter_%.ADR'  ; Midday Modeled Total Auto Drivers         //
 ADRNT  = 'NT%_iter_%.ADR'  ; Night  Modeled Total Auto Drivers         //
;

;; define TOD ARRAY parameters
Pur = 5  ;  1/HBW,   2/HBS,    3/HBO, 4/NHW, 5/NHO
Mod = 4  ;  1/Adr,   2/DrAlone 3/CarPoolPsn  4/Transit
Dir = 2  ;  1/H>NH,  2/NH>H
Per = 4  ;  1/AM,    2/MD,     3/PM,  4/NT


RUN PGM=MATRIX
pageheight=32767        ; Preclude header breaks
    MATI[1]=@HBWADR@    ; HBW 1,2,3+-Occ. Auto Drv. Trips(T1-3)
    MATI[2]=@HBSADR@    ; HBS 1,2,3+-Occ. Auto Drv. Trips(T1-3)
    MATI[3]=@HBOADR@    ; HBO 1,2,3+-Occ. Auto Drv. Trips(T1-3)
    MATI[4]=@NHWADR@    ; NHW 1,2,3+-Occ. Auto Drv. Trips(T1-3)
    MATI[5]=@NHOADR@    ; NHO 1,2,3+-Occ. Auto Drv. Trips(T1-3)


;  These are in P/A format and represent the Home-to-NonHome direction

    FILLMW  MW[111]  = MI.1.1,  MI.1.2,  MI.1.3 ;Work 1,2,3+ Occ Adrs P/A
t111-t113
    FILLMW  MW[121]  = MI.2.1,  MI.2.2,  MI.2.3 ;Shop 1,2,3+ Occ Adrs P/A
t121-t123
    FILLMW  MW[131]  = MI.3.1,  MI.3.2,  MI.3.3 ;Othr 1,2,3+ Occ Adrs P/A
t131-t133
    FILLMW  MW[141]  = MI.4.1,  MI.4.2,  MI.4.3 ;NHW  1,2,3+ Occ Adrs P/A
t141-t143
    FILLMW  MW[151]  = MI.5.1,  MI.5.2,  MI.5.3 ;NHO  1,2,3+ Occ Adrs P/A
t151-t153

; Put Transpose of the above
; HBW, HBS, HBO, NHW, NHO trip tables
;
MW[211]=MI.1.1.T, MW[212]=MI.1.2.T, MW[213]=MI.1.3.T; HBW 1,2,3+ Occ Adrs A/P
t211-213
MW[221]=MI.2.1.T, MW[222]=MI.2.2.T, MW[223]=MI.2.3.T; HBS 1,2,3+ Occ Adrs A/P
t221-223
MW[231]=MI.3.1.T, MW[232]=MI.3.2.T, MW[233]=MI.3.3.T; HBO 1,2,3+ Occ Adrs A/P
t231-233
MW[241]=MI.4.1.T, MW[242]=MI.4.2.T, MW[243]=MI.4.3.T; NHW 1,2,3+ Occ Adrs A/P
t241-243
MW[251]=MI.5.1.T, MW[252]=MI.5.2.T, MW[253]=MI.5.3.T; NHO 1,2,3+ Occ Adrs A/P
t251-253

;
; Now read TOD factors  file
;

Array TODFtrs  =@Pur@,@Mod@,@Dir@,@Per@

;==================================================================================
===========
;==================================================================================
===========
; Read in Time of Day factor file and populate TOD factor array

FILEI DBI[1]    ="@TODFtrs@"
LOOP K = 1,dbi.1.NUMRECORDS       ;;PURP    MODE    DIR     AM      MD      PM
OP

     x = DBIReadRecord(1,k)
           count       = dbi.1.recno
           TODFtrs[di.1.Purp][di.1.Mode][di.1.DIR][1] = di.1.AM
           TODFtrs[di.1.Purp][di.1.Mode][di.1.DIR][2] = di.1.MD
           TODFtrs[di.1.Purp][di.1.Mode][di.1.DIR][3] = di.1.PM
           TODFtrs[di.1.Purp][di.1.Mode][di.1.DIR][4] = di.1.OP
ENDLOOP
;==================================================================================
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;==================================================================================
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JLOOP

;;              Trips           p  m  d  p            Trips            p  m  d  p
;;              in              u  o  i  e            in               u  o  i  e
;;              H-NH Dir        r  d  r  r            H-NH Dir         r  d  r  r
;;              |               |  |  |  |             |               |  |  |  |
;
   mw[501] =  (MW[111] * (TODFtrs[1][2][1][1]/100.00) + MW[211]*
(TODFtrs[1][2][2][1]/100.00)) / 2.0  ;   HBW / DA             *****
   mw[502] =  (MW[112] * (TODFtrs[1][3][1][1]/100.00) + MW[212]*
(TODFtrs[1][3][2][1]/100.00)) / 2.0  ;   HBW / 2-occ carpool  *   *
   mw[503] =  (MW[113] * (TODFtrs[1][3][1][1]/100.00) + MW[213]*
(TODFtrs[1][3][2][1]/100.00)) / 2.0  ;   HBW / 3+occ carpool  * A *

;                       * M *
   mw[504] =  (MW[121] * (TODFtrs[2][2][1][1]/100.00) + MW[221]*
(TODFtrs[2][2][2][1]/100.00)) / 2.0  ;   HBS / DA             *   *
   mw[505] =  (MW[122] * (TODFtrs[2][3][1][1]/100.00) + MW[222]*
(TODFtrs[2][3][2][1]/100.00)) / 2.0  ;   HBS / 2-occ carpool  * P *
   mw[506] =  (MW[123] * (TODFtrs[2][3][1][1]/100.00) + MW[223]*
(TODFtrs[2][3][2][1]/100.00)) / 2.0  ;   HBS / 3+occ carpool  * E *

;                       * A *
   mw[507] =  (MW[131] * (TODFtrs[3][2][1][1]/100.00) + MW[231]*
(TODFtrs[3][2][2][1]/100.00)) / 2.0  ;   HBO / DA             * K *
   mw[508] =  (MW[132] * (TODFtrs[3][3][1][1]/100.00) + MW[232]*
(TODFtrs[3][3][2][1]/100.00)) / 2.0  ;   HBO / 2-occ carpool  *   *
   mw[509] =  (MW[133] * (TODFtrs[3][3][1][1]/100.00) + MW[233]*
(TODFtrs[3][3][2][1]/100.00)) / 2.0  ;   HBO / 3+occ carpool  * P *

;                       * E *
   mw[510] =  (MW[141] * (TODFtrs[4][2][1][1]/100.00) + MW[241]*
(TODFtrs[4][2][2][1]/100.00)) / 2.0  ;   NHW / DA             * R *
   mw[511] =  (MW[142] * (TODFtrs[4][3][1][1]/100.00) + MW[242]*
(TODFtrs[4][3][2][1]/100.00)) / 2.0  ;   NHW / 2-occ carpool  * I *
   mw[512] =  (MW[143] * (TODFtrs[4][3][1][1]/100.00) + MW[243]*
(TODFtrs[4][3][2][1]/100.00)) / 2.0  ;   NHW / 3+occ carpool  * O *

;                       * D *
   mw[513] =  (MW[151] * (TODFtrs[5][2][1][1]/100.00) + MW[251]*
(TODFtrs[5][2][2][1]/100.00)) / 2.0  ;   NHO / DA             *   *
   mw[514] =  (MW[152] * (TODFtrs[5][3][1][1]/100.00) + MW[252]*
(TODFtrs[5][3][2][1]/100.00)) / 2.0  ;   NHO / 2-occ carpool  *   *
   mw[515] =  (MW[153] * (TODFtrs[5][3][1][1]/100.00) + MW[253]*
(TODFtrs[5][3][2][1]/100.00)) / 2.0  ;   NHO / 3+occ carpool  *****

;;

   mw[516] =  (MW[111] * (TODFtrs[1][2][1][2]/100.00) + MW[211]*
(TODFtrs[1][2][2][2]/100.00)) / 2.0  ;   HBW / DA             *****
   mw[517] =  (MW[112] * (TODFtrs[1][3][1][2]/100.00) + MW[212]*
(TODFtrs[1][3][2][2]/100.00)) / 2.0  ;   HBW / 2-occ carpool  *   *
   mw[518] =  (MW[113] * (TODFtrs[1][3][1][2]/100.00) + MW[213]*
(TODFtrs[1][3][2][2]/100.00)) / 2.0  ;   HBW / 3+occ carpool  * M *

;                       * I *
   mw[519] =  (MW[121] * (TODFtrs[2][2][1][2]/100.00) + MW[221]*
(TODFtrs[2][2][2][2]/100.00)) / 2.0  ;   HBS / DA             * D *
```

```
   mw[520] =  (MW[122] * (TODFtrs[2][3][1][2]/100.00) + MW[222]*
(TODFtrs[2][3][2][2]/100.00)) / 2.0  ;   HBS / 2-occ carpool  * D *
   mw[521] =  (MW[123] * (TODFtrs[2][3][1][2]/100.00) + MW[223]*
(TODFtrs[2][3][2][2]/100.00)) / 2.0  ;   HBS / 3+occ carpool  * A *

;                        * Y *
   mw[522] =  (MW[131] * (TODFtrs[3][2][1][2]/100.00) + MW[231]*
(TODFtrs[3][2][2][2]/100.00)) / 2.0  ;   HBO / DA             *   *
   mw[523] =  (MW[132] * (TODFtrs[3][3][1][2]/100.00) + MW[232]*
(TODFtrs[3][3][2][2]/100.00)) / 2.0  ;   HBO / 2-occ carpool  *   *
   mw[524] =  (MW[133] * (TODFtrs[3][3][1][2]/100.00) + MW[233]*
(TODFtrs[3][3][2][2]/100.00)) / 2.0  ;   HBO / 3+occ carpool  * P *

;                        * E *
   mw[525] =  (MW[141] * (TODFtrs[4][2][1][2]/100.00) + MW[241]*
(TODFtrs[4][2][2][2]/100.00)) / 2.0  ;   NHW / DA             * R *
   mw[526] =  (MW[142] * (TODFtrs[4][3][1][2]/100.00) + MW[242]*
(TODFtrs[4][3][2][2]/100.00)) / 2.0  ;   NHW / 2-occ carpool  * I *
   mw[527] =  (MW[143] * (TODFtrs[4][3][1][2]/100.00) + MW[243]*
(TODFtrs[4][3][2][2]/100.00)) / 2.0  ;   NHW / 3+occ carpool  * O *

;                        * D *
   mw[528] =  (MW[151] * (TODFtrs[5][2][1][2]/100.00) + MW[251]*
(TODFtrs[5][2][2][2]/100.00)) / 2.0  ;   NHO / DA             *   *
   mw[529] =  (MW[152] * (TODFtrs[5][3][1][2]/100.00) + MW[252]*
(TODFtrs[5][3][2][2]/100.00)) / 2.0  ;   NHO / 2-occ carpool  *   *
   mw[530] =  (MW[153] * (TODFtrs[5][3][1][2]/100.00) + MW[253]*
(TODFtrs[5][3][2][2]/100.00)) / 2.0  ;   NHO / 3+occ carpool  *****

;;

   mw[531] =  (MW[111] * (TODFtrs[1][2][1][3]/100.00) + MW[211]*
(TODFtrs[1][2][2][3]/100.00)) / 2.0  ;   HBW / DA             *****
   mw[532] =  (MW[112] * (TODFtrs[1][3][1][3]/100.00) + MW[212]*
(TODFtrs[1][3][2][3]/100.00)) / 2.0  ;   HBW / 2-occ carpool  *   *
   mw[533] =  (MW[113] * (TODFtrs[1][3][1][3]/100.00) + MW[213]*
(TODFtrs[1][3][2][3]/100.00)) / 2.0  ;   HBW / 3+occ carpool  * P *

;                        * M *
   mw[534] =  (MW[121] * (TODFtrs[2][2][1][3]/100.00) + MW[221]*
(TODFtrs[2][2][2][3]/100.00)) / 2.0  ;   HBS / DA             *   *
   mw[535] =  (MW[122] * (TODFtrs[2][3][1][3]/100.00) + MW[222]*
(TODFtrs[2][3][2][3]/100.00)) / 2.0  ;   HBS / 2-occ carpool  * P *
   mw[536] =  (MW[123] * (TODFtrs[2][3][1][3]/100.00) + MW[223]*
(TODFtrs[2][3][2][3]/100.00)) / 2.0  ;   HBS / 3+occ carpool  * E *

;                        * A *
   mw[537] =  (MW[131] * (TODFtrs[3][2][1][3]/100.00) + MW[231]*
(TODFtrs[3][2][2][3]/100.00)) / 2.0  ;   HBO / DA             * K *
   mw[538] =  (MW[132] * (TODFtrs[3][3][1][3]/100.00) + MW[232]*
(TODFtrs[3][3][2][3]/100.00)) / 2.0  ;   HBO / 2-occ carpool  *   *
   mw[539] =  (MW[133] * (TODFtrs[3][3][1][3]/100.00) + MW[233]*
(TODFtrs[3][3][2][3]/100.00)) / 2.0  ;   HBO / 3+occ carpool  * P *

;                        * E *
   mw[540] =  (MW[141] * (TODFtrs[4][2][1][3]/100.00) + MW[241]*
(TODFtrs[4][2][2][3]/100.00)) / 2.0  ;   NHW / DA             * R *
   mw[541] =  (MW[142] * (TODFtrs[4][3][1][3]/100.00) + MW[242]*
(TODFtrs[4][3][2][3]/100.00)) / 2.0  ;   NHW / 2-occ carpool  * I *
   mw[542] =  (MW[143] * (TODFtrs[4][3][1][3]/100.00) + MW[243]*
(TODFtrs[4][3][2][3]/100.00)) / 2.0  ;   NHW / 3+occ carpool  * O *

;                        * D *
   mw[543] =  (MW[151] * (TODFtrs[5][2][1][3]/100.00) + MW[251]*
(TODFtrs[5][2][2][3]/100.00)) / 2.0  ;   NHO / DA             *   *
   mw[544] =  (MW[152] * (TODFtrs[5][3][1][3]/100.00) + MW[252]*
(TODFtrs[5][3][2][3]/100.00)) / 2.0  ;   NHO / 2-occ carpool  *   *
   mw[545] =  (MW[153] * (TODFtrs[5][3][1][3]/100.00) + MW[253]*
(TODFtrs[5][3][2][3]/100.00)) / 2.0  ;   NHO / 3+occ carpool  *****

;;

   mw[546] =  (MW[111] * (TODFtrs[1][2][1][4]/100.00) + MW[211]*
(TODFtrs[1][2][2][4]/100.00)) / 2.0  ;   HBW / DA             *****
   mw[547] =  (MW[112] * (TODFtrs[1][3][1][4]/100.00) + MW[212]*
(TODFtrs[1][3][2][4]/100.00)) / 2.0  ;   HBW / 2-occ carpool  * O *
   mw[548] =  (MW[113] * (TODFtrs[1][3][1][4]/100.00) + MW[213]*
(TODFtrs[1][3][2][4]/100.00)) / 2.0  ;   HBW / 3+occ carpool  * F *

;                        * F *
   mw[549] =  (MW[121] * (TODFtrs[2][2][1][4]/100.00) + MW[221]*
(TODFtrs[2][2][2][4]/100.00)) / 2.0  ;   HBS / DA             *   *
   mw[550] =  (MW[122] * (TODFtrs[2][3][1][4]/100.00) + MW[222]*
(TODFtrs[2][3][2][4]/100.00)) / 2.0  ;   HBS / 2-occ carpool  * P *
   mw[551] =  (MW[123] * (TODFtrs[2][3][1][4]/100.00) + MW[223]*
(TODFtrs[2][3][2][4]/100.00)) / 2.0  ;   HBS / 3+occ carpool  * E *

;                        * A *
   mw[552] =  (MW[131] * (TODFtrs[3][2][1][4]/100.00) + MW[231]*
(TODFtrs[3][2][2][4]/100.00)) / 2.0  ;   HBO / DA             * K *
   mw[553] =  (MW[132] * (TODFtrs[3][3][1][4]/100.00) + MW[232]*
(TODFtrs[3][3][2][4]/100.00)) / 2.0  ;   HBO / 2-occ carpool  *   *
   mw[554] =  (MW[133] * (TODFtrs[3][3][1][4]/100.00) + MW[233]*
(TODFtrs[3][3][2][4]/100.00)) / 2.0  ;   HBO / 3+occ carpool  * P *

;                        * E *
   mw[555] =  (MW[141] * (TODFtrs[4][2][1][4]/100.00) + MW[241]*
(TODFtrs[4][2][2][4]/100.00)) / 2.0  ;   NHW / DA             * R *
   mw[556] =  (MW[142] * (TODFtrs[4][3][1][4]/100.00) + MW[242]*
(TODFtrs[4][3][2][4]/100.00)) / 2.0  ;   NHW / 2-occ carpool  * I *
   mw[557] =  (MW[143] * (TODFtrs[4][3][1][4]/100.00) + MW[243]*
(TODFtrs[4][3][2][4]/100.00)) / 2.0  ;   NHW / 3+occ carpool  * O *

;                        * D *
   mw[558] =  (MW[151] * (TODFtrs[5][2][1][4]/100.00) + MW[251]*
(TODFtrs[5][2][2][4]/100.00)) / 2.0  ;   NHO / DA             *   *
   mw[559] =  (MW[152] * (TODFtrs[5][3][1][4]/100.00) + MW[252]*
(TODFtrs[5][3][2][4]/100.00)) / 2.0  ;   NHO / 2-occ carpool  *   *
   mw[560] =  (MW[153] * (TODFtrs[5][3][1][4]/100.00) + MW[253]*
(TODFtrs[5][3][2][4]/100.00)) / 2.0  ;   NHO / 3+occ carpool  *****

;
;----------------------------------------------------------------------
; Summarize by purpose for checking - 601/hbw, 602/hbs, 603/hbo, 604/nhw, 605/nho
; Total HBW:
 MW[601]= MW[501]+MW[502]+MW[503] + MW[516]+MW[517]+MW[518] +
MW[531]+MW[532]+MW[533] + MW[546]+MW[547]+MW[548]
; Total HBS:
 MW[602]= MW[504]+MW[505]+MW[506] + MW[519]+MW[520]+MW[521] +
MW[534]+MW[535]+MW[536] + MW[549]+MW[550]+MW[551]
; Total HBO:
 MW[603]= MW[507]+MW[508]+MW[509] + MW[522]+MW[523]+MW[524] +
MW[537]+MW[538]+MW[539] + MW[552]+MW[553]+MW[554]
; Total NHW:
 MW[604]= MW[510]+MW[511]+MW[512] + MW[525]+MW[526]+MW[527] +
MW[540]+MW[541]+MW[542] + MW[555]+MW[556]+MW[557]
; Total NHO:
 MW[605]= MW[513]+MW[514]+MW[515] + MW[528]+MW[529]+MW[530] +
MW[543]+MW[544]+MW[545] + MW[558]+MW[559]+MW[560]

;----------------------------------------------------------------------
; Summarize by Time period, Occ Group for Assignment    611-622
;
 MW[611]= MW[501]+MW[504]+MW[507]+MW[510]+MW[513]  ; AM 1-Occ adrs
 MW[612]= MW[502]+MW[505]+MW[508]+MW[511]+MW[514]  ; AM 2-Occ adrs
```

```
 MW[613]= MW[503]+MW[506]+MW[509]+MW[512]+MW[515]  ; AM 3+Occ adrs
;
 MW[614]= MW[516]+MW[519]+MW[522]+MW[525]+MW[528]  ; MD 1-Occ adrs
 MW[615]= MW[517]+MW[520]+MW[523]+MW[526]+MW[529]  ; MD 2-Occ adrs
 MW[616]= MW[518]+MW[521]+MW[524]+MW[527]+MW[530]  ; MD 3+Occ adrs
;
 MW[617]= MW[531]+MW[534]+MW[537]+MW[540]+MW[543]  ; PM 1-Occ adrs
 MW[618]= MW[532]+MW[535]+MW[538]+MW[541]+MW[544]  ; PM 2-Occ adrs
 MW[619]= MW[533]+MW[536]+MW[539]+MW[542]+MW[545]  ; PM 3+Occ adrs
;
 MW[620]= MW[546]+MW[549]+MW[552]+MW[555]+MW[558]  ; OP 1-Occ adrs
 MW[621]= MW[547]+MW[550]+MW[553]+MW[556]+MW[559]  ; OP 2-Occ adrs
 MW[622]= MW[548]+MW[551]+MW[554]+MW[557]+MW[560]  ; OP 3+Occ adrs

; Now summarize regional totals to summarize neatly

;;AM;;
; am hbw, hbs, hbo, nhb by occupant totals:
amhbw1=amhbw1+MW[501], amhbw2=amhbw2+MW[502], amhbw3=amhbw3+MW[503]
amhbs1=amhbs1+MW[504], amhbs2=amhbs2+MW[505], amhbs3=amhbs3+MW[506]
amhbo1=amhbo1+MW[507], amhbo2=amhbo2+MW[508], amhbo3=amhbo3+MW[509]
amnhw1=amnhw1+MW[510], amnhw2=amnhw2+MW[511], amnhw3=amnhw3+MW[512]
amnho1=amnho1+MW[513], amnho2=amnho2+MW[514], amnho3=amnho3+MW[515]
; am hbw, hbs, hbo, nhb totals:
amhbw =amhbw + MW[501] + MW[502] + MW[503]
amhbs =amhbs + MW[504] + MW[505] + MW[506]
amhbo =amhbo + MW[507] + MW[508] + MW[509]
amnhw =amnhw + MW[510] + MW[511] + MW[512]
amnho =amnho + MW[513] + MW[514] + MW[515]
; am occupant level totals:
am1   =am1   +MW[611],am2   =am2   +MW[612],am3   =am3   +MW[613]
; am totals:
am    =am    +MW[611]              +MW[612]              +MW[613]


;;MD;;
; md hbw, hbs, hbo, nhb by occupant totals:
mdhbw1=mdhbw1+MW[516], mdhbw2=mdhbw2+MW[517], mdhbw3=mdhbw3+MW[518]
mdhbs1=mdhbs1+MW[519], mdhbs2=mdhbs2+MW[520], mdhbs3=mdhbs3+MW[521]
mdhbo1=mdhbo1+MW[522], mdhbo2=mdhbo2+MW[523], mdhbo3=mdhbo3+MW[524]
mdnhw1=mdnhw1+MW[525], mdnhw2=mdnhw2+MW[526], mdnhw3=mdnhw3+MW[527]
mdnho1=mdnho1+MW[528], mdnho2=mdnho2+MW[529], mdnho3=mdnho3+MW[530]
; md hbw, hbs, hbo, nhb totals:
mdhbw =mdhbw + MW[516] + MW[517] + MW[518]
mdhbs =mdhbs + MW[519] + MW[520] + MW[521]
mdhbo =mdhbo + MW[522] + MW[523] + MW[524]
mdnhw =mdnhw + MW[525] + MW[526] + MW[527]
mdnho =mdnho + MW[528] + MW[529] + MW[530]
; md occupant level totals:
md1   =md1   +MW[614],md2   =md2   +MW[615],md3   =md3   +MW[616]
; md totals:
md    =md    +MW[614]              +MW[615]              +MW[616]

;;PM;;
; pm hbw, hbs, hbo, nhb by occupant totals:
pmhbw1=pmhbw1+MW[531], pmhbw2=pmhbw2+MW[532], pmhbw3=pmhbw3+MW[533]
pmhbs1=pmhbs1+MW[534], pmhbs2=pmhbs2+MW[535], pmhbs3=pmhbs3+MW[536]
pmhbo1=pmhbo1+MW[537], pmhbo2=pmhbo2+MW[538], pmhbo3=pmhbo3+MW[539]
pmnhw1=pmnhw1+MW[540], pmnhw2=pmnhw2+MW[541], pmnhw3=pmnhw3+MW[542]
pmnho1=pmnho1+MW[543], pmnho2=pmnho2+MW[544], pmnho3=pmnho3+MW[545]
; pm hbw, hbs, hbo, nhb totals:
pmhbw =pmhbw + MW[531] + MW[532] + MW[533]
pmhbs =pmhbs + MW[534] + MW[535] + MW[536]
pmhbo =pmhbo + MW[537] + MW[538] + MW[539]
pmnhw =pmnhw + MW[540] + MW[541] + MW[542]
pmnho =pmnho + MW[543] + MW[544] + MW[545]
; pm occupant level totals:
pm1   =pm1   +MW[617],pm2   =pm2   +MW[618],pm3   =pm3   +MW[619]
```

```
; pm totals:
pm    =pm    +MW[617]              +MW[618]              +MW[619]

;;OP;;
; op hbw, hbs, hbo, nhb by occupant totals:
ophbw1=ophbw1+MW[546], ophbw2=ophbw2+MW[547], ophbw3=ophbw3+MW[548]
ophbs1=ophbs1+MW[549], ophbs2=ophbs2+MW[550], ophbs3=ophbs3+MW[551]
ophbo1=ophbo1+MW[552], ophbo2=ophbo2+MW[553], ophbo3=ophbo3+MW[554]
opnhw1=opnhw1+MW[555], opnhw2=opnhw2+MW[556], opnhw3=opnhw3+MW[557]
opnho1=opnho1+MW[558], opnho2=opnho2+MW[559], opnho3=opnho3+MW[560]
; op hbw, hbs, hbo, nhb totals:
ophbw =ophbw + MW[546] + MW[547] + MW[548]
ophbs =ophbs + MW[549] + MW[550] + MW[551]
ophbo =ophbo + MW[552] + MW[553] + MW[554]
opnhw =opnhw + MW[555] + MW[556] + MW[557]
opnho =opnho + MW[558] + MW[559] + MW[560]
; op occupant level totals:
op1   =op1   +MW[620],op2   =op2   +MW[621],op3   =op3   +MW[622]
; op totals:
op    =op    +MW[620]              +MW[621]              +MW[622]

;==============================================================================
;==============================================================================
; total output trips by purpose--output total:
 ohbw=ohbw+MW[601], ohbs=ohbs+MW[602], ohbo=ohbo+MW[603], onhw=onhw+MW[604],
onho=onho+MW[605]

; total grand Total of output auto driver trips:
 adr = adr + MW[601] + MW[602] + MW[603] + MW[604] + MW[605]

; total input trips by purpose
 ihbw=ihbw + MW[111]  + MW[112]  + MW[113]
 ihbs=ihbs + MW[121]  + MW[122]  + MW[123]
 ihbo=ihbo + MW[131]  + MW[132]  + MW[133]
 inhw=inhw + MW[141]  + MW[142]  + MW[143]
 inho=inho + MW[151]  + MW[152]  + MW[153]

ENDJLOOP


; now write out the totals neatly:
if (i=zones)
; get differences by purpose (output - Input)
dfhbw = ohbw - ihbw;
dfhbs = ohbs - ihbs;
dfhbo = ohbo - ihbo;
dfnhw = onhw - inhw;
dfnho = onho - inho;

LIST = '/bt     '
LIST = ' Modeled Pump Prime Time-of-Day Results','\n'
list = 'AM Period:  1-Occ.  2-Occ.  3+Occ.      Total'
list = 'HBW       ',amhbw1(8.0),amhbw2(8.0),amhbw3(8.0),'    ',amhbw(8.0)
list = 'HBS       ',amhbs1(8.0),amhbs2(8.0),amhbs3(8.0),'    ',amhbs(8.0)
list = 'HBO       ',amhbo1(8.0),amhbo2(8.0),amhbo3(8.0),'    ',amhbo(8.0)
list = 'NHW       ',amnhw1(8.0),amnhw2(8.0),amnhw3(8.0),'    ',amnhw(8.0)
list = 'NHO       ',amnho1(8.0),amnho2(8.0),amnho3(8.0),'    ',amnho(8.0)
list = '---------------------------------------------'
list = 'Subtotal: ',am1(8.0),am2(8.0),am3(8.0),'    ',am(8.0)
list = '  '
list = '  '
list = 'Midday:     1-Occ.  2-Occ.  3+Occ.      Total'
list = 'HBW       ',mdhbw1(8.0),mdhbw2(8.0),mdhbw3(8.0),'    ',mdhbw(8.0)
list = 'HBS       ',mdhbs1(8.0),mdhbs2(8.0),mdhbs3(8.0),'    ',mdhbs(8.0)
list = 'HBO       ',mdhbo1(8.0),mdhbo2(8.0),mdhbo3(8.0),'    ',mdhbo(8.0)
list = 'NHW       ',mdnhw1(8.0),mdnhw2(8.0),mdnhw3(8.0),'    ',mdnhw(8.0)
list = 'NHO       ',mdnho1(8.0),mdnho2(8.0),mdnho3(8.0),'    ',mdnho(8.0)
list = '---------------------------------------------'
```

```
list = 'Subtotal: ',md1(8.0),md2(8.0),md3(8.0),'    ',md(8.0)
list = '  '
list = '  '
list = 'PM Period:  1-Occ.  2-Occ.  3+Occ.      Total'
list = 'HBW       ',pmhbw1(8.0),pmhbw2(8.0),pmhbw3(8.0),'    ',pmhbw(8.0)
list = 'HBS       ',pmhbs1(8.0),pmhbs2(8.0),pmhbs3(8.0),'    ',pmhbs(8.0)
list = 'HBO       ',pmhbo1(8.0),pmhbo2(8.0),pmhbo3(8.0),'    ',pmhbo(8.0)
list = 'NHW       ',pmnhw1(8.0),pmnhw2(8.0),pmnhw3(8.0),'    ',pmnhw(8.0)
list = 'NHO       ',pmnho1(8.0),pmnho2(8.0),pmnho3(8.0),'    ',pmnho(8.0)
list = '---------------------------------------------'
list = 'Subtotal: ',pm1(8.0),pm2(8.0),pm3(8.0),'    ',pm(8.0)
list = '  '
list = '  '
list = 'Night:      1-Occ.  2-Occ.  3+Occ.      Total'
list = 'HBW       ',ophbw1(8.0),ophbw2(8.0),ophbw3(8.0),'    ',ophbw(8.0)
list = 'HBS       ',ophbs1(8.0),ophbs2(8.0),ophbs3(8.0),'    ',ophbs(8.0)
list = 'HBO       ',ophbo1(8.0),ophbo2(8.0),ophbo3(8.0),'    ',ophbo(8.0)
list = 'NHW       ',opnhw1(8.0),opnhw2(8.0),opnhw3(8.0),'    ',opnhw(8.0)
list = 'NHO       ',opnho1(8.0),opnho2(8.0),opnho3(8.0),'    ',opnho(8.0)
list = '---------------------------------------------'
list = 'Subtotal: ',op1(8.0),op2(8.0),op3(8.0),'    ',op(8.0)
list = '  '
list = '  '
list = ' Input / Output Totals by Purpose:
list = '                           Diff.      '
list = '             Input    Output    (O-I)      '
list = 'HBW       ',ihbw(8.0),'  ',ohbw(8.0),'  ',dfhbw(8.0)
list = 'HBS       ',ihbs(8.0),'  ',ohbs(8.0),'  ',dfhbs(8.0)
list = 'HBO       ',ihbo(8.0),'  ',ohbo(8.0),'  ',dfhbo(8.0)
list = 'NHW       ',inhw(8.0),'  ',onhw(8.0),'  ',dfnhw(8.0)
list = 'NHO       ',inho(8.0),'  ',onho(8.0),'  ',dfnho(8.0)
list = '  '
list = 'Total Auto Drv:',adr(8.0)

list = '/et       '
endif

am1   =am1   +MW[611],am2   =am2   +MW[612],am3   =am3   +MW[613]
md1   =md1   +MW[614],md2   =md2   +MW[615],md3   =md3   +MW[616]
pm1   =pm1   +MW[617],pm2   =pm2   +MW[618],pm3   =pm3   +MW[619]
op1   =op1   +MW[620],op2   =op2   +MW[621],op3   =op3   +MW[622]

;;  Write out the auto driver files for each time period, 3 tables in each file (1-
,2-, 3+occ)

   MATO[1] = @ADRAM@, MO=611-613,; AM peak period Auto Drv Trips 1,2,3+occ tabs 1-3
             name = AM_ADRs_1,AM_ADRs_2,AM_ADRs_3

   MATO[2] = @ADRMD@, MO=614-616, ; Midday  period Auto Drv Trips 1,2,3+occ tabs 1-3
             name = MD_ADRs_1,MD_ADRs_2,MD_ADRs_3

   MATO[3] = @ADRPM@, MO=617-619, ; PM peak period Auto Drv Trips 1,2,3+occ tabs 1-3
             name = PM_ADRs_1,PM_ADRs_2,PM_ADRs_3

   MATO[4] = @ADRNT@, MO=620-622, ; Night   period Auto Drv Trips 1,2,3+occ tabs 1-3
             name = NT_ADRs_1,NT_ADRs_2,NT_ADRs_3

ENDRUN
;
```

30 Transit_Accessibility.s

```
;---------------------------------------------------------------------------
; Transit_Accessibility.s
;
; Develop transit accessibility files needed in the demographic modeling
; - the AM transit accessibility to jobs w/in 35, 40, 45, 50 min
; - Metrorail related accessibility only (BM & MR only).
;---------------------------------------------------------------------------
;


Loop Pr_ = 1,2
     IF (PR_ =1) per ='AM'
     IF (PR_ =2) per ='OP'

     Loop Ac_=1,2
          IF (Ac_ =1) Acc  = 'WK'
          IF (Ac_ =2) Acc  = 'DR'

          Loop Pth_=1,2
            IF (Pth_=1)  Path ='BM'
            IF (Pth_=2)  Path ='MR'
         ;; IF (Pth_=3)  Path ='AB'
         ;; IF (Pth_=4)  Path ='CR'


pageheight=32767  ; Preclude header breaks
ZONESIZE = 3722
RUN PGM=MATRIX
 MATI[1] =%_iter_%_@per@_@Acc@_@Path@.ttt

 ZDATI[1] =INPUTS\ZONE.dbf

 _ACCESS = 0
 _TAZ    = i

MW[100] = Mi.1.1

JLOOP

    IF (MW[100] =0.0) MW[100] =1000000

    IF (MW[100] =1000000)
        NotConnected = NotConnected + 1
       ELSE
        Connected   = Connected + 1
    ENDIF


    IF (MW[100] < 1000000 )
     _ACCESS = _ACCESS + MW[100]
    ENDIF

ENDJLOOP

 IF (_ACCESS > 0 )
  MW[100][I] = 1
 ENDIF

 _EMP35  = 0
 _EMP40  = 0
 _EMP45  = 0
 _EMP50  = 0
 _EMPTOT = 0

JLOOP
  IF (MW[100] = 1-35)
   _EMP35 = _EMP35  + ZI.1.TOTEMP[J]     ;  jobs w/35 Min
  ENDIF
```

```
  IF (MW[100] = 1-40)
   _EMP40 = _EMP40  + ZI.1.TOTEMP[J]     ;  jobs w/40 Min
  ENDIF

  IF (MW[100] = 1-45)
   _EMP45 = _EMP45  + ZI.1.TOTEMP[J]     ;  jobs w/45 Min
  ENDIF

  IF (MW[100] = 1-50)
   _EMP50 = _EMP50  + ZI.1.TOTEMP[J]     ;  jobs w/50 Min
  ENDIF

  _EMPTOT = _EMPTOT + ZI.1.TOTEMP[J]     ;  total regional jobs

ENDJLOOP

;;; ;; Print Accessibility to jobs file

FILEO RECO[1] = "%_iter_%_@per@_@Acc@_@Path@_JOBACC.dbf",
                Fields = TAZ(5), Emp35(10), Emp40(10), Emp45(10), Emp50(10),
EMPTOT(10)

                ro.TAZ    = _TAZ
                ro.emp35  = _emp35
                ro.emp40  = _emp40
                ro.emp45  = _emp45
                ro.emp50  = _emp50
                ro.emptot = _emptot

                WRITE RECO=1 ;


;; Print out text file containing best path stats
IF (I= @ZONESIZE@)
 PRINT FILE=%_iter_%_@per@_@Acc@_@Path@_JOBACC.txt, FORM=12csv, LIST=
'Accessibility_Report: ',
                                                                    '  Iteration:
','%_iter_%',
                                                                    '  Period:
','@per@' ,
                                                                    '  AccType:
','@Acc@' ,
                                                                    '  PathType:
','@Path@',
                                                                    ' #Connected
IJs:    ', Connected,
                                                                    ' #Disconnected
IJs: ', NotConnected
ENDIF


ENDRUN
ENDLOOP
ENDLOOP
ENDLOOP
```

31 Transit_Assignment_AB.s

```
;---------------------------------------------------------------------------
;Transit_Assignment_AB.s
;MWCOG Version 2.2 Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Assign Transit Trips by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
;  Transit Trip Tables          = '%_iter_%_AMMS.TRP', '%_iter_%_OPMS.TRP'
; Output Files:
;  Transit Assignment Link and Node Files
;
; Step 1: AM Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: WKABAMnode.dbf; WKABAMlink.dbf
; Step 2: AM Peak Drive Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: DRABAMnode.dbf; DRABAMlink.dbf
; Step 3: AM Peak K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: KRABAMnode.dbf; KRABAMlink.dbf
; Step 4: Off Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: WKABOPnode.dbf; WKABOPlink.dbf
; Step 5: Off Peak Drive Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: DRABOPnode.dbf; DRABOPlink.dbf
; Step 6: Off Peak K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: KRABOPnode.dbf; KRABOPlink.dbf
;


;---------------------------------------------------------------------------
;        Loop through each period and access mode
;---------------------------------------------------------------------------

;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
pageheight=32767  ; Preclude header breaks
;

LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR

  MATIN='%_iter_%_AMMS.TRP'
  AM=' '
  OP=';'

 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR

  MATIN='%_iter_%_OPMS.TRP'
  AM=';'
  OP=' '

 ENDIF
```

```
;---- start the access mode loop ----

LOOP ACCESS = 1,3

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
   KR_MODEL = ';'
   TABIN = 'MI.1.2'
  ELSEIF (ACCESS = 2)
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   KR_MODEL = ';'
   TABIN = 'MI.1.6'
  ELSE
   ACCESS_MODE = 'KR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ';'
   KR_MODEL = ' '
   TABIN = 'MI.1.7'
  ENDIF


;---------------------------------------------------------------------------
; Step 1, 2, 3 , 4, 5 & 6 Assign All Bus Transit Trips
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATI = @MATIN@

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11
@KR_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y
```

```
;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25
;--------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplAB@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y



;---- Rail Stations & Links (modes 3 & 4) ----

;READ FILE = met_node.tb   ;---- Metrorail stations
;READ FILE = met_link.tb   ;---- Metrorail links
;READ FILE = com_node.tb   ;---- Commuter Rail stations
;READ FILE = com_link.tb   ;---- Commuter Rail links
;READ FILE = lrt_node.tb   ;---- LRT stations
;READ FILE = lrt_link.tb   ;---- LRT links
READ FILE = new_node.tb   ;---- Mode10 Stations
READ FILE = new_link.tb   ;---- Mode10 links
;---- Park and Ride Lots (mode 15) ----

@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR
connectors (links)
@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

;READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
;READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
;READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
;@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
@DRIVE_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- drive to bus
@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

@KR_MODEL@READ FILE = mrkr@TIME_PERIOD@.asc;--- k/r to metrorail
@KR_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- k/r to bus
@KR_MODEL@READ FILE = lrtkr@TIME_PERIOD@.asc;--- k/r to LRT
@KR_MODEL@READ FILE = newkr@TIME_PERIOD@.asc;--- k/r to Mode10

;@KR_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@KR_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors (links)
@KR_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
;READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
;READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
;READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

; output files
@WALK_MODEL@@AM@FILEO NODEO  = %_iter_%_WKABAMnode.dbf ; output node file
@WALK_MODEL@@OP@FILEO NODEO  = %_iter_%_WKABOPnode.dbf ; output node file
@DRIVE_MODEL@@AM@FILEO NODEO = %_iter_%_DRABAMnode.dbf ; output node file
@DRIVE_MODEL@@OP@FILEO NODEO = %_iter_%_DRABOPnode.dbf ; output node file
@KR_MODEL@@AM@FILEO NODEO    = %_iter_%_KRABAMnode.dbf ; output node file
@KR_MODEL@@OP@FILEO NODEO    = %_iter_%_KRABOPnode.dbf ; output node file

@WALK_MODEL@@AM@FILEO LINKO  = %_iter_%_WKABAMlink.dbf ; output link file
@WALK_MODEL@@OP@FILEO LINKO  = %_iter_%_WKABOPlink.dbf ; output link file
@DRIVE_MODEL@@AM@FILEO LINKO = %_iter_%_DRABAMlink.dbf ; output link file
@DRIVE_MODEL@@OP@FILEO LINKO = %_iter_%_DRABOPlink.dbf ; output link file
@KR_MODEL@@AM@FILEO LINKO    = %_iter_%_KRABAMlink.dbf ; output link file
@KR_MODEL@@OP@FILEO LINKO    = %_iter_%_KRABOPlink.dbf ; output link file

TRIPS MATRIX=@TABIN@, ASSIGN=Y, VOLUMES=Y, BOARDS=Y, EXITS=Y
REPORT LINKVOL=Y,LINEVOL=Y

ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

32 Transit_Assignment_BM.s

```
;--------------------------------------------------------------------------
;Transit_Assignment_BM.s
;MWCOG Version 2.2 Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Assign Transit Trips by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
;  Transit Trip Tables          = '%_iter_%_AMMS.TRP', '%_iter_%_OPMS.TRP'
; Output Files:
;  Transit Assignment Link and Node Files
;
```

```
; Step 1: AM Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: WKBMAMnode.dbf; WKBMAMlink.dbf
; Step 2: AM Peak Drive Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: DRBMAMnode.dbf; DRBMAMlink.dbf
; Step 3: AM Peak K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: KRBMAMnode.dbf; KRBMAMlink.dbf
; Step 4: Off Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: WKBMOPnode.dbf; WKBMOPlink.dbf
; Step 5: Off Peak Drive Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: DRBMOPnode.dbf; DRBMOPlink.dbf
; Step 6: Off Peak K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: KRBMOPnode.dbf; KRBMOPlink.dbf
;
;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
pageheight=32767  ; Preclude header breaks
;

;---------------------------------------------------------------------------
;         Loop through each period and access mode
;---------------------------------------------------------------------------

LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
  MATIN='%_iter_%_AMMS.TRP'
  AM=' '
  OP=';'
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
  MATIN='%_iter_%_OPMS.TRP'
  AM=';'
  OP=' '
 ENDIF

;---- start the access mode loop ----

LOOP ACCESS = 1,3

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
   KR_MODEL = ';'
   TABIN = 'MI.1.3'
  ELSEIF (ACCESS = 2)
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   KR_MODEL = ';'
   TABIN = 'MI.1.8'
  ELSE
   ACCESS_MODE = 'KR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ';'
   KR_MODEL = ' '
   TABIN = 'MI.1.9'
  ENDIF

;---------------------------------------------------------------------------
; Step 1, 2, 3 , 4, 5 & 6 Assign Bus/MR Transit Trips
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATI = @MATIN@

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11
@KR_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
```

```
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25

;-------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplBM@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
;
```

```
;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
;READ FILE = com_node.tb   ;---- Commuter Rail stations
;READ FILE = com_link.tb   ;---- Commuter Rail links
READ FILE = lrt_node.tb   ;---- LRT stations
READ FILE = lrt_link.tb   ;---- LRT links
READ FILE = new_node.tb   ;---- Mode10 Stations
READ FILE = new_link.tb   ;---- Mode10 links

;---- Park and Ride Lots (mode 15) ----

@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR
connectors (links)
@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
;READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
;@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
@DRIVE_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- drive to bus
@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

@KR_MODEL@READ FILE = mrkr@TIME_PERIOD@.asc;--- k/r to metrorail
@KR_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- k/r to bus
@KR_MODEL@READ FILE = lrtkr@TIME_PERIOD@.asc;--- k/r to LRT
@KR_MODEL@READ FILE = newkr@TIME_PERIOD@.asc;--- k/r to Mode10

@KR_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@KR_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors (links)
@KR_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
;READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
```

```
READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

; output files
@WALK_MODEL@@AM@FILEO NODEO  = %_iter_%_WKBMAMnode.dbf ; output node file
@WALK_MODEL@@OP@FILEO NODEO  = %_iter_%_WKBMOPnode.dbf ; output node file
@DRIVE_MODEL@@AM@FILEO NODEO = %_iter_%_DRBMAMnode.dbf ; output node file
@DRIVE_MODEL@@OP@FILEO NODEO = %_iter_%_DRBMOPnode.dbf ; output node file
@KR_MODEL@@AM@FILEO NODEO    = %_iter_%_KRBMAMnode.dbf ; output node file
@KR_MODEL@@OP@FILEO NODEO    = %_iter_%_KRBMOPnode.dbf ; output node file ; Added
"O" to filename

@WALK_MODEL@@AM@FILEO LINKO  = %_iter_%_WKBMAMlink.dbf ; output link file
@WALK_MODEL@@OP@FILEO LINKO  = %_iter_%_WKBMOPlink.dbf ; output link file
@DRIVE_MODEL@@AM@FILEO LINKO = %_iter_%_DRBMAMlink.dbf ; output link file
@DRIVE_MODEL@@OP@FILEO LINKO = %_iter_%_DRBMOPlink.dbf ; output link file
@KR_MODEL@@AM@FILEO LINKO    = %_iter_%_KRBMAMlink.dbf ; output link file
@KR_MODEL@@OP@FILEO LINKO    = %_iter_%_KRBMOPlink.dbf ; output link file

TRIPS MATRIX=@TABIN@, ASSIGN=Y, VOLUMES=Y, BOARDS=Y, EXITS=Y
REPORT LINKVOL=Y,LINEVOL=Y

ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

33 Transit_Assignment_CR.s

```
;---------------------------------------------------------------------------
;Transit_Assignment_CR.s
;MWCOG Version 2.2 Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Assign Transit Trips by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
;  Transit Trip Tables          = '%_iter_%_AMMS.TRP', '%_iter_%_OPMS.TRP'
; Output Files:
;  Transit Assignment Link and Node Files
;
; Step 1: AM Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: WKCRAMnode.dbf; WKCRAMlink.dbf
; Step 2: AM Peak Drive, K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: DRCRAMnode.dbf; DRCRAMlink.dbf
; Step 3: Off Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: WKCROPnode.dbf; WKCROPlink.dbf
; Step 4: Off Peak Drive, K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: DRCROPnode.dbf; DRCROPlink.dbf
;
;---------------------------------------------------------------------------

;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
pageheight=32767  ; Preclude header breaks
;

;---------------------------------------------------------------------------
;         Loop through each period and access mode
;---------------------------------------------------------------------------

LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
   MATIN='%_iter_%_AMMS.TRP'
  AM=' '
  OP=';'
ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
   MATIN='%_iter_%_OPMS.TRP'
  AM=';'
  OP=' '
ENDIF

;---- start the access mode loop ----

LOOP ACCESS = 1, 2

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
    TABIN = 'MI.1.1'
 ELSE
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   TABIN = 'MI.1.5'
  ENDIF

;---------------------------------------------------------------------------
; Step 1, 2, 3 & 4 Assign CR Transit Trips
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATI = @MATIN@

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----
```

```
COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N        ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25

;--------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplCR@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
;

;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
READ FILE = com_node.tb   ;---- Commuter Rail stations
READ FILE = com_link.tb   ;---- Commuter Rail links
READ FILE = lrt_node.tb   ;---- LRT stations
READ FILE = lrt_link.tb   ;---- LRT links
READ FILE = new_node.tb   ;---- Mode10 Stations
READ FILE = new_link.tb   ;---- Mode10 links
;---- Park and Ride Lots (mode 15) ----

;@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

;@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors
(links)
@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR connectors
(links)
;@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
```

```
READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

;@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
;@DRIVE_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- drive to bus
;@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
;@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
;READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
;READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
;READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

; output files
@WALK_MODEL@@AM@FILEO NODEO  = %_iter_%_WKCRAMnode.dbf ; output node file
@WALK_MODEL@@OP@FILEO NODEO  = %_iter_%_WKCROPnode.dbf ; output node file
@DRIVE_MODEL@@AM@FILEO NODEO = %_iter_%_DRCRAMnode.dbf ; output node file
@DRIVE_MODEL@@OP@FILEO NODEO = %_iter_%_DRCROPnode.dbf ; output node file

@WALK_MODEL@@AM@FILEO LINKO  = %_iter_%_WKCRAMlink.dbf ; output link file
@WALK_MODEL@@OP@FILEO LINKO  = %_iter_%_WKCROPlink.dbf ; output link file
@DRIVE_MODEL@@AM@FILEO LINKO = %_iter_%_DRCRAMlink.dbf ; output link file
@DRIVE_MODEL@@OP@FILEO LINKO = %_iter_%_DRCROPlink.dbf ; output link file

TRIPS MATRIX=@TABIN@, ASSIGN=Y, VOLUMES=Y, BOARDS=Y, EXITS=Y
REPORT LINKVOL=Y,LINEVOL=Y

ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

34 Transit_Assignment_MR.s

```
;-----------------------------------------------------------------------
;Transit_Assignment_MR.s
;MWCOG Version 2.2 Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Assign Transit Trips by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
;  Transit Trip Tables          = '%_iter_%_AMMS.TRP', '%_iter_%_OPMS.TRP'
; Output Files:
;  Transit Assignment Link and Node Files
;
; Step 1: AM Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: WKMRAMnode.dbf; WKMRAMlink.dbf
; Step 2: AM Peak Drive Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: DRMRAMnode.dbf; DRMRAMlink.dbf
; Step 3: AM Peak K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB, '%_iter_%_AMMS.TRP'
;  Output Files: KRMRAMnode.dbf; KRMRAMlink.dbf
; Step 4: Off Peak Walk Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: WKMROPnode.dbf; WKMROPlink.dbf
; Step 5: Off Peak Drive Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: DRMROPnode.dbf; DRMROPlink.dbf
; Step 6: Off Peak K/R Assignment
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB, '%_iter_%_OPMS.TRP'
;  Output Files: KRMROPnode.dbf; KRMROPlink.dbf
;
;-----------------------------------------------------------------------


;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
pageheight=32767  ; Preclude header breaks
;

;-----------------------------------------------------------------------
;       Loop through each period and access mode
;-----------------------------------------------------------------------

LOOP PERIOD=1,2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
  MATIN='%_iter_%_AMMS.TRP'
  AM=' '
  OP=';'
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
  MATIN='%_iter_%_OPMS.TRP'
  AM=';'
  OP=' '
 ENDIF

;---- start the access mode loop ----

LOOP ACCESS=1,3

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
   KR_MODEL = ';'
   TABIN = 'MI.1.4'
  ELSEIF (ACCESS = 2)
```

```
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   KR_MODEL = ';'
   TABIN = 'MI.1.10'
  ELSE
   ACCESS_MODE = 'KR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ';'
   KR_MODEL = ' '
   TABIN = 'MI.1.11'
  ENDIF

;---------------------------------------------------------------------------
; Step 1, 2, 3, 4, 5 & 6 Assign MR Transit Trips
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATI = @MATIN@

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11
@KR_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50


;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
```

```
;XYFACTOR = 1.97       ;--- Added on 09/25

;-------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplMR@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
;

;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
;READ FILE = com_node.tb   ;---- Commuter Rail stations
;READ FILE = com_link.tb   ;---- Commuter Rail links
READ FILE = lrt_node.tb   ;---- LRT stations
READ FILE = lrt_link.tb   ;---- LRT links
;READ FILE = new_node.tb   ;---- Mode10 Stations
;READ FILE = new_link.tb   ;---- Mode10 links
;---- Park and Ride Lots (mode 15) ----

;@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

;@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR
connectors (links)
@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
;READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
;READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
;@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
;@DRIVE_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- drive to bus
@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
;@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

@KR_MODEL@READ FILE = mrkr@TIME_PERIOD@.asc;--- k/r to metrorail
;KR_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- k/r to bus
@KR_MODEL@READ FILE = lrtkr@TIME_PERIOD@.asc;--- k/r to LRT
;@KR_MODEL@READ FILE = newkr@TIME_PERIOD@.asc;--- k/r to Mode10

@KR_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

;READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
;READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
;READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
;READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
;READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
;READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
;READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
;READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

; output files
@WALK_MODEL@@AM@FILEO NODEO  = %_iter_%_WKMRAMnode.dbf ; output node file
@WALK_MODEL@@OP@FILEO NODEO  = %_iter_%_WKMROPnode.dbf ; output node file
@DRIVE_MODEL@@AM@FILEO NODEO = %_iter_%_DRMRAMnode.dbf ; output node file
@DRIVE_MODEL@@OP@FILEO NODEO = %_iter_%_DRMROPnode.dbf ; output node file
@KR_MODEL@@AM@FILEO NODEO    = %_iter_%_KRMRAMnode.dbf ; output node file
@KR_MODEL@@OP@FILEO NODEO    = %_iter_%_KRMROPnode.dbf ; output node file

@WALK_MODEL@@AM@FILEO LINKO  = %_iter_%_WKMRAMlink.dbf ; output link file
@WALK_MODEL@@OP@FILEO LINKO  = %_iter_%_WKMROPlink.dbf ; output link file
@DRIVE_MODEL@@AM@FILEO LINKO = %_iter_%_DRMRAMlink.dbf ; output link file
@DRIVE_MODEL@@OP@FILEO LINKO = %_iter_%_DRMROPlink.dbf ; output link file
@KR_MODEL@@AM@FILEO LINKO    = %_iter_%_KRMRAMlink.dbf ; output link file
@KR_MODEL@@OP@FILEO LINKO    = %_iter_%_KRMROPlink.dbf ; output link file

TRIPS MATRIX=@TABIN@, ASSIGN=Y, VOLUMES=Y, BOARDS=Y, EXITS=Y
REPORT LINKVOL=Y,LINEVOL=Y


ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

35 Transit_Skims_AB.s

```
;---------------------------------------------------------------------------
;---------------------------------------------------------------------------
;Transit_Skims_AB.s
;MWCOG Version 2.2 Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Build Transit Skims by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
; Output Files:
;  Walk and Drive Access Skims  = pp_aa_mo.SKM
;  Walk and Drive Station Data  = pp_aa_mo.STA
;
; Step 1: AM Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 2: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_WK_AB.SKM, %_iter_%_AM_WK_AB.STA,
; Step 3: AM Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 4: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_DR_AB.SKM, %_iter_%_AM_DR_AB.STA,
; Step 5: AM Peak K/R Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
```

```
;  Output Files: TRANSIT.SKM
; Step 6: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_KR_AB.SKM, %_iter_%_AM_KR_AB.STA,
; Step 7: Off Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 8: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_WK_AB.SKM, %_iter_%_OP_WK_AB.STA,
; Step 9: Off Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 10: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_DR_AB.SKM, %_iter_%_OP_DR_AB.STA
; Step 11: Off Peak K/R Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 12: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_KR_AB.SKM, %_iter_%_OP_KR_AB.STA,
;
;---------------------------------------------------------------------------
; Added Mode 15 access links for KNR to Bus path, JainM 09.19.06
; @KR_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)

; rm  4/7/08                       ;
; Added  table #19 (Total Transit time in min.) to output transit.skm file     ;
; create total transit time skims named:                                       ;
;        %_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_AB.ttt                           ;

; 2010-10-22  Previously, only bus PNR links were built to bus PNR & bus KNR paths.
;             Now, we have created bus KNR access links from TAZ to bus stop node,
;             instead of TAZ to PNR node (rjm/msm)

;---------------------------------------------------------------------------


;---------------------------------------------------------------------------
;         Loop through each period and access mode
;---------------------------------------------------------------------------
pageheight=32767  ; Preclude header breaks
;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
;

LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
 ENDIF



;---- start the access mode loop ----
```

```
LOOP ACCESS = 1,3

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
   KR_MODEL = ';'
  ELSEIF (ACCESS = 2)
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   KR_MODEL = ';'
  ELSE
   ACCESS_MODE = 'KR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ';'
   KR_MODEL = ' '
  ENDIF


;---------------------------------------------------------------------------
; Step 1, 3, 5 , 7, 9 & 11 Build Transit Path
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATO = TRANSIT.SKM
 maxnode = 60000

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11
@KR_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----
```

```
IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25
;--------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplAB@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
fileo nodeo    = supnAB@access_mode@@time_period@.dbf
fileo linko    = trnlAB@access_mode@@time_period@.dbf   ; Can be used to create
transit shapefile


;---- specify output skims ----


MATRICES NAME = IVLB, IVXB, IVMT, IVCR, IVNRM, IVNBM, IWAIT, XWAIT, WACCT, WLKT,
 XADD, BRDS, DACCT, DACCD, PRKI, PRKC, ISTOS, JSTOS,
; MW[1] = TIME(1,6,8),
 MW[1] = TIME(1) * @_IBFTR@ +
         TIME(6) * @_IBFTR@ +
         TIME(8) * @_OBFTR@ ,                ;---- ivt-local bus    (0.01 min)
 MW[2] = TIME(2,7,9),                        ;---- ivt-exp bus      (0.01 min)
 MW[3] = TIME(3),                            ;---- ivt-metrorail    (0.01 min)
 MW[4] = TIME(4),                            ;---- ivt-commuter rail(0.01 min)
 MW[5] = TIME(5),                            ;---- ivt-new rail mode(0.01 min)
 MW[6] = TIME(10),                           ;---- ivt-new bus mode (0.01 min)
 MW[7] = IWAIT,                              ;---- ini.wait time    (0.01 min)
 MW[8] = XWAIT(1,2,3,4,5,6,7,8,9,10),        ;---- xfr wait time    (0.01 min)
 MW[9] = TIME(14,16),                        ;---- walk acc time    (0.01 min)
 MW[10] = TIME(12,13),                       ;---- other walk time  (0.01 min)
 MW[11] = XPEN,                              ;---- added xfer time  (0.01 min)
 MW[12] = BOARDS,                            ;---- boardings        (1+)
 MW[13] = TIME(11),                          ;---- drv acc time     (0.01 min)
 MW[14] = DIST(11),                          ;---- drv acc distance (0.01 mile)
 MW[15] = TIME(15),                          ;---- pnr impedance    (0.01 min)
 MW[16] = DIST(15),                          ;---- pnr cost         (cents)
 MW[17] = NODE0(3) - 8000.0,                 ;---- metro board  sta (1-150)
 MW[18] = NODEL(3) - 8000.0                  ;---- metro alight sta (1-150)



;---- Rail Stations & Links (modes 3 & 4) ----

;READ FILE = met_node.tb   ;---- Metrorail stations
;READ FILE = met_link.tb   ;---- Metrorail links
;READ FILE = com_node.tb   ;---- Commuter Rail stations
;READ FILE = com_link.tb   ;---- Commuter Rail links
;READ FILE = lrt_node.tb   ;---- LRT stations
;READ FILE = lrt_link.tb   ;---- LRT links
READ FILE = new_node.tb   ;---- Mode10 Stations
READ FILE = new_link.tb   ;---- Mode10 links
;---- Park and Ride Lots (mode 15) ----

@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR
connectors (links)
@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
```

```
@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

;READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
;READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
;READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
;@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
@DRIVE_MODEL@READ FILE = buspr@TIME_PERIOD@.asc;--- drive to bus
@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

@KR_MODEL@READ FILE = mrkr@TIME_PERIOD@.asc;--- k/r to metrorail
@KR_MODEL@READ FILE = buskr@TIME_PERIOD@.asc;--- k/r to bus
@KR_MODEL@READ FILE = lrtkr@TIME_PERIOD@.asc;--- k/r to LRT
@KR_MODEL@READ FILE = newkr@TIME_PERIOD@.asc;--- k/r to Mode10

;@KR_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@KR_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors (links)
@KR_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
;READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
;READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
;READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

/* Transit path traces for select i/j pairs */
read file = ..\scripts\pathTrace.s

ENDRUN
;---------------------------------------------------------------------------
;Step 2, 4, 6 & 8 Condition & Split Skims into Multiple Files
;---------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=TRANSIT.SKM
 MATO[1]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_AB.SKM, MO = 1-16,
  FORMAT = MINUTP,
  NAME = IVLB, IVXB, IVMT, IVCR, IVNM, INIT, XFERT, WACCT, WLKT, BRDS,
  DACCT, DACCD, PRKT, PRKC
 MATO[2]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_AB.STA, MO = 17-18,
  FORMAT = MINUTP,
 NAME = ISTOS, JSTOS
                                                                              ;3
 MATO[3]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_AB.ttt, MO = 100,               ;
  FORMAT = MINUTP,                                                            ;
 NAME = sumtrntm

MW[1] = MI.1.1    ;---- ivt-local bus    (0.01 min)
MW[2] = MI.1.2    ;---- ivt-exp bus      (0.01 min)
MW[3] = MI.1.3    ;---- ivt-metrorail    (0.01 min)
MW[4] = MI.1.4    ;---- ivt-commuter rail(0.01 min)
MW[5] = MI.1.5    ;---- ivt-new rail mode(0.01 min)
MW[6] = MI.1.6    ;---- ivt-new bus mode (0.01 min)
MW[7] = MI.1.7    ;---- ini.wait time    (0.01 min)
MW[8] = MI.1.8    ;---- xfr wait time    (0.01 min)
MW[9] = MI.1.9    ;---- walk acc time    (0.01 min)
MW[10] = MI.1.10  ;---- other walk time  (0.01 min)
MW[11] = MI.1.11  ;---- added xfer time  (0.01 min)
MW[12] = MI.1.12  ;---- transfers        (0+)
MW[13] = MI.1.13  ;---- drv acc time     (0.01 min)
MW[14] = MI.1.14  ;---- drv acc distance (0.01 mile)
MW[15] = MI.1.15  ;---- pnr time         (0.01 min)
MW[16] = MI.1.16  ;---- pnr cost         (cents)

MW[17] = MI.1.17  ;---- metro board  sta (1-150)
MW[18] = MI.1.18  ;---- metro alight sta (1-150)
                                                                              ;4
                                                                              ;
                                                                              ;
JLOOP
  MW[12] = MW[12] - 1
  IF (MW[16] = 1 ) MW[16] = 0
  MW[15] = MW[15] - MW[16] * 6.0
  IF (MW[17] < 0 || MW[17] > 150 ) MW[17] = 0
  IF (MW[18] < 0 || MW[18] > 150 ) MW[18] = 0
ENDJLOOP

MW[100] =(MW[1]  +  MW[2]  +  MW[3]  +  MW[4] +  MW[5]   +
          MW[6]  +  MW[7]  +  MW[8]  +  MW[9] +  MW[10]  +
          MW[11] +  MW[13]) * 0.01   ;; Total Real Transit Time  in Whole Minutes
(not incl. PNR 'impedance')


ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

36 Transit_Skims_BM.s

```
;---------------------------------------------------------------------------
;Transit_Skims_BM.s
;MWCOG Version 2.2 Model
;                         - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                         - iteration (_iter_) global variables used
;Build Transit Skims by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
; Output Files:
;  Walk and Drive Access Skims  = pp_aa_mo.SKM
;  Walk and Drive Station Data  = pp_aa_mo.STA
;
; Step 1: AM Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 2: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_WK_BM.SKM, %_iter_%_AM_WK_BM.STA,
```

```
; Step 3: AM Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 4: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_DR_BM.SKM, %_iter_%_AM_DR_BM.STA,
; Step 5: AM Peak K/R Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 6: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_KR_BM.SKM, %_iter_%_AM_KR_BM.STA,
; Step 7: Off Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 8: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_WK_BM.SKM, %_iter_%_OP_WK_BM.STA,
; Step 9: Off Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 10: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_DR_BM.SKM, %_iter_%_OP_DR_BM.STA
; Step 11: Off Peak K/R Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 12: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_KR_BM.SKM, %_iter_%_OP_KR_BM.STA,
;
;---------------------------------------------------------------------------
; Added Mode 15 access links for KNR to Bus path, JainM 09.19.06
; @KR_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)

; rm  4/7/08                        ;
; Added  table #19 (Total Transit time in min.) to output transit.skm file     ;
; create total transit time skims named:                                       ;
;         %_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_BM.ttt                          ;

; 2010-10-22  Previously, only bus PNR links were built to bus PNR & bus KNR paths.
;             Now, we have created bus KNR access links from TAZ to bus stop node,
;             instead of TAZ to PNR node (rjm/msm)

;---------------------------------------------------------------------------


;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
;

;---------------------------------------------------------------------------
;         Loop through each period and access mode
;---------------------------------------------------------------------------
pageheight=32767  ; Preclude header breaks
LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
 ENDIF

;---- start the access mode loop ----

LOOP ACCESS = 1,3

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
   KR_MODEL = ';'
  ELSEIF (ACCESS = 2)
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   KR_MODEL = ';'
  ELSE
   ACCESS_MODE = 'KR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ';'
   KR_MODEL = ' '
  ENDIF

;---------------------------------------------------------------------------
; Step 1, 3, 5 , 7, 9 & 11 Build Transit Path
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATO = TRANSIT.SKM
 maxnode = 60000

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11
@KR_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
```

```
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25

;--------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplBM@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
fileo nodeo    = supnBM@access_mode@@time_period@.dbf
fileo linko    = trnlBM@access_mode@@time_period@.dbf   ; Can be used to create
transit shapefile
;

;---- specify output skims ----

MATRICES NAME = IVLB, IVXB, IVMT, IVCR, IVNRM, IVNBM, IWAIT, XWAIT, WACCT, WLKT,
 XADD, BRDS, DACCT, DACCD, PRKI, PRKC, ISTOS, JSTOS,
; MW[1] = TIME(1,6,8),
 MW[1] = TIME(1) * @_IBFTR@ +
         TIME(6) * @_IBFTR@ +
         TIME(8) * @_OBFTR@ ,                ;---- ivt-local bus    (0.01 min)
 MW[2] = TIME(2,7,9),                        ;---- ivt-exp bus      (0.01 min)
 MW[3] = TIME(3),                            ;---- ivt-metrorail    (0.01 min)
 MW[4] = TIME(4),                            ;---- ivt-commuter rail(0.01 min)
 MW[5] = TIME(5),                            ;---- ivt-new rail mode(0.01 min)
 MW[6] = TIME(10),                           ;---- ivt-new bus mode (0.01 min)
 MW[7] = IWAIT,                              ;---- ini.wait time    (0.01 min)
 MW[8] = XWAIT(1,2,3,4,5,6,7,8,9,10),        ;---- xfr wait time    (0.01 min)
 MW[9] = TIME(14,16),                        ;---- walk acc time    (0.01 min)
 MW[10] = TIME(12,13),                       ;---- other walk time  (0.01 min)
 MW[11] = XPEN,                              ;---- added xfer time  (0.01 min)
 MW[12] = BOARDS,                            ;---- boardings        (1+)
 MW[13] = TIME(11),                          ;---- drv acc time     (0.01 min)
 MW[14] = DIST(11),                          ;---- drv acc distance (0.01 mile)
 MW[15] = TIME(15),                          ;---- pnr impedance    (0.01 min)
 MW[16] = DIST(15),                          ;---- pnr cost         (cents)
 MW[17] = NODE0(3) - 8000.0,                 ;---- metro board  sta (1-150)
 MW[18] = NODEL(3) - 8000.0                  ;---- metro alight sta (1-150)


;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
;READ FILE = com_node.tb   ;---- Commuter Rail stations
;READ FILE = com_link.tb   ;---- Commuter Rail links
READ FILE = lrt_node.tb   ;---- LRT stations
READ FILE = lrt_link.tb   ;---- LRT links
READ FILE = new_node.tb   ;---- Mode10 Stations
READ FILE = new_link.tb   ;---- Mode10 links

;---- Park and Ride Lots (mode 15) ----

@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
```

```
@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR
connectors (links)
@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
;READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
;@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
@DRIVE_MODEL@READ FILE = buspr@TIME_PERIOD@.asc;--- drive to bus
@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

@KR_MODEL@READ FILE = mrkr@TIME_PERIOD@.asc;--- k/r to metrorail
@KR_MODEL@READ FILE = buskr@TIME_PERIOD@.asc;--- k/r to bus
@KR_MODEL@READ FILE = lrtkr@TIME_PERIOD@.asc;--- k/r to LRT
@KR_MODEL@READ FILE = newkr@TIME_PERIOD@.asc;--- k/r to Mode10

@KR_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
@KR_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors (links)
@KR_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
;READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

/* Transit path traces for select i/j pairs */
read file = ..\scripts\pathTrace.s

ENDRUN
;---------------------------------------------------------------------------
;Step 2, 4, 6 & 8 Condition & Split Skims into Multiple Files
;---------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=TRANSIT.SKM
 MATO[1]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_BM.SKM, MO = 1-16,
  FORMAT = MINUTP,
  NAME = IVLB, IVXB, IVMT, IVCR, IVNM, INIT, XFERT, WACCT, WLKT, BRDS,
  DACCT, DACCD, PRKT, PRKC
 MATO[2]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_BM.STA, MO = 17-18,
  FORMAT = MINUTP,
 NAME = ISTOS, JSTOS

 MATO[3]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_BM.ttt, MO = 100,                ;
  FORMAT = MINUTP,                                                               ;
 NAME = sumtrntm


MW[1] = MI.1.1    ;---- ivt-local bus    (0.01 min)
MW[2] = MI.1.2    ;---- ivt-exp bus      (0.01 min)
MW[3] = MI.1.3    ;---- ivt-metrorail    (0.01 min)
MW[4] = MI.1.4    ;---- ivt-commuter rail(0.01 min)
MW[5] = MI.1.5    ;---- ivt-new rail mode(0.01 min)
MW[6] = MI.1.6    ;---- ivt-new bus mode (0.01 min)
MW[7] = MI.1.7    ;---- ini.wait time    (0.01 min)
MW[8] = MI.1.8    ;---- xfr wait time    (0.01 min)
MW[9] = MI.1.9    ;---- walk acc time    (0.01 min)
MW[10] = MI.1.10  ;---- other walk time  (0.01 min)
MW[11] = MI.1.11  ;---- added xfer time  (0.01 min)
MW[12] = MI.1.12  ;---- transfers        (0+)
MW[13] = MI.1.13  ;---- drv acc time     (0.01 min)
MW[14] = MI.1.14  ;---- drv acc distance (0.01 mile)
MW[15] = MI.1.15  ;---- pnr time         (0.01 min)
MW[16] = MI.1.16  ;---- pnr cost         (cents)

MW[17] = MI.1.17  ;---- metro board  sta (1-150)
MW[18] = MI.1.18  ;---- metro alight sta (1-150)
                                                                                 ;4
                                                                                 ;
                                                                                 ;



JLOOP
 IF ((MW[1] + MW[2] + MW[6] = 0 ) || (MW[3]+MW[5]=0))
  MW[1] = 0
  MW[2] = 0
  MW[3] = 0
  MW[4] = 0
  MW[5] = 0
  MW[6] = 0
  MW[7] = 0
  MW[8] = 0
  MW[9] = 0
  MW[10] = 0
  MW[11] = 0
  MW[12] = 0
  MW[13] = 0
  MW[14] = 0
  MW[15] = 0
  MW[16] = 0
  MW[17] = 0
  MW[18] = 0
 ELSE
  MW[12] = MW[12] - 1
  IF (MW[16] = 1 ) MW[16] = 0
  MW[15] = MW[15] - MW[16] * 6.0
  IF (MW[17] < 0 || MW[17] > 150 ) MW[17] = 0
  IF (MW[18] < 0 || MW[18] > 150 ) MW[18] = 0
 ENDIF
ENDJLOOP

MW[100] =(MW[1]  +  MW[2]  +  MW[3]  +  MW[4] +  MW[5]   +
          MW[6]  +  MW[7]  +  MW[8]  +  MW[9] +  MW[10]  +
          MW[11] +  MW[13]) * 0.01   ;; Total Real Transit Time  in Whole Minutes
(not incl. PNR 'impedance')


ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

37 Transit_Skims_CR.s

```
;--------------------------------------------------------------------------
;Transit_Skims_CR.s
;MWCOG Version 2.2 Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Build Transit Skims by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
; Output Files:
;  Walk and Drive Access Skims  = pp_aa_mo.SKM
;  Walk and Drive Station Data  = pp_aa_mo.STA
;
; Step 1: AM Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 2: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_WK_CR.SKM, %_iter_%_AM_WK_CR.STA,
; Step 3: AM Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 4: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_DR_CR.SKM, %_iter_%_AM_DR_CR.STA,
; Step 5: Off Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 6: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_WK_CR.SKM, %_iter_%_OP_WK_CR.STA,
; Step 7: Off Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 8: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_DR_CR.SKM, %_iter_%_OP_DR_CR.STA
;
;--------------------------------------------------------------------------
; rm  4/7/08                      ;
; Added  table #19 (Total Transit time in min.) to output transit.skm file     ;
; create total transit time skims named:                                       ;
;         %_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_CR.ttt                          ;
;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
;

;--------------------------------------------------------------------------
;         Loop through each period and access mode
;--------------------------------------------------------------------------
pageheight=32767  ; Preclude header breaks
LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
 ENDIF

;---- start the access mode loop ----

LOOP ACCESS = 1, 2

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
  ELSE
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
  ENDIF

;--------------------------------------------------------------------------
; Step 1, 3, 5 & 7 Build Transit Path
;--------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATO = TRANSIT.SKM
 maxnode = 60000

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
```

```
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25

;-------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplCR@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
fileo nodeo    = supnCR@access_mode@@time_period@.dbf
fileo linko    = trnlCR@access_mode@@time_period@.dbf   ; Can be used to create
transit shapefile
;

;---- specify output skims ----

MATRICES NAME = IVLB, IVXB, IVMT, IVCR, IVNRM, IVNBM, IWAIT, XWAIT, WACCT, WLKT,
 XADD, BRDS, DACCT, DACCD, PRKI, PRKC, ISTOS, JSTOS,
; MW[1] = TIME(1,6,8),
 MW[1] = TIME(1) * @_IBFTR@ +
         TIME(6) * @_IBFTR@ +
         TIME(8) * @_OBFTR@ ,               ;---- ivt-local bus    (0.01 min)
 MW[2] = TIME(2,7,9),                       ;---- ivt-exp bus      (0.01 min)
 MW[3] = TIME(3),                           ;---- ivt-metrorail    (0.01 min)
 MW[4] = TIME(4),                           ;---- ivt-commuter rail(0.01 min)
 MW[5] = TIME(5),                           ;---- ivt-new rail mode(0.01 min)
 MW[6] = TIME(10),                          ;---- ivt-new bus mode (0.01 min)
 MW[7] = IWAIT,                             ;---- ini.wait time    (0.01 min)
 MW[8] = XWAIT(1,2,3,4,5,6,7,8,9,10),       ;---- xfr wait time    (0.01 min)
 MW[9] = TIME(14,16),                       ;---- walk acc time    (0.01 min)
 MW[10] = TIME(12,13),                      ;---- other walk time  (0.01 min)
 MW[11] = XPEN,                             ;---- added xfer time  (0.01 min)
 MW[12] = BOARDS,                           ;---- boardings        (1+)
 MW[13] = TIME(11),                         ;---- drv acc time     (0.01 min)
 MW[14] = DIST(11),                         ;---- drv acc distance (0.01 mile)
 MW[15] = TIME(15),                         ;---- pnr impedance    (0.01 min)
 MW[16] = DIST(15),                         ;---- pnr cost         (cents)
 MW[17] = NODE0(3) - 8000.0,                ;---- metro board  sta (1-150)
 MW[18] = NODEL(3) - 8000.0                 ;---- metro alight sta (1-150)


;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
READ FILE = com_node.tb   ;---- Commuter Rail stations
READ FILE = com_link.tb   ;---- Commuter Rail links
READ FILE = lrt_node.tb   ;---- LRT stations
READ FILE = lrt_link.tb   ;---- LRT links
READ FILE = new_node.tb   ;---- Mode10 Stations
READ FILE = new_link.tb   ;---- Mode10 links
;---- Park and Ride Lots (mode 15) ----

;@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
```

```
;@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

;@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors
(links)
@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR connectors
(links)
;@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

;@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
;@DRIVE_MODEL@READ FILE = bus@TIME_PERIOD@.asc;--- drive to bus
;@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
;@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
;READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
;READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
;READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

/* Transit path traces for select i/j pairs */
read file = ..\scripts\pathTrace.s

ENDRUN
;--------------------------------------------------------------------------
;Step 2, 4, 6 & 8 Condition & Split Skims into Multiple Files
;--------------------------------------------------------------------------
RUN PGM=MATRIX
 MATI[1]=TRANSIT.SKM
 MATO[1]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_CR.SKM, MO = 1-16,
  FORMAT = MINUTP,
  NAME = IVLB, IVXB, IVMT, IVCR, IVNM, INIT, XFERT, WACCT, WLKT, BRDS,
  DACCT, DACCD, PRKT, PRKC
 MATO[2]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_CR.STA, MO = 17-18,
  FORMAT = MINUTP,
 NAME = ISTOS, JSTOS
                                                                              ;3
 MATO[3]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_CR.ttt, MO = 100,               ;
  FORMAT = MINUTP,                                                            ;
 NAME = sumtrntm


MW[1] = MI.1.1    ;---- ivt-local bus    (0.01 min)
MW[2] = MI.1.2    ;---- ivt-exp bus      (0.01 min)
MW[3] = MI.1.3    ;---- ivt-metrorail    (0.01 min)
MW[4] = MI.1.4    ;---- ivt-commuter rail(0.01 min)
MW[5] = MI.1.5    ;---- ivt-new rail mode(0.01 min)
MW[6] = MI.1.6    ;---- ivt-new bus mode (0.01 min)
MW[7] = MI.1.7    ;---- ini.wait time    (0.01 min)
MW[8] = MI.1.8    ;---- xfr wait time    (0.01 min)
MW[9] = MI.1.9    ;---- walk acc time    (0.01 min)
MW[10] = MI.1.10  ;---- other walk time  (0.01 min)
MW[11] = MI.1.11  ;---- added xfer time  (0.01 min)
MW[12] = MI.1.12  ;---- transfers        (0+)
MW[13] = MI.1.13  ;---- drv acc time     (0.01 min)
MW[14] = MI.1.14  ;---- drv acc distance (0.01 mile)
MW[15] = MI.1.15  ;---- pnr time         (0.01 min)
MW[16] = MI.1.16  ;---- pnr cost         (cents)

MW[17] = MI.1.17  ;---- metro board  sta (1-150)
MW[18] = MI.1.18  ;---- metro alight sta (1-150)

                                                                              ;4
                                                                              ;

JLOOP
 IF (MW[4] = 0 )
  MW[1] = 0
  MW[2] = 0
  MW[3] = 0
  MW[4] = 0
  MW[5] = 0
  MW[6] = 0
  MW[7] = 0
  MW[8] = 0
  MW[9] = 0
  MW[10] = 0
  MW[11] = 0
  MW[12] = 0
  MW[13] = 0
  MW[14] = 0
  MW[15] = 0
  MW[16] = 0
  MW[17] = 0
  MW[18] = 0
 ELSE
  MW[12] = MW[12] - 1
  IF (MW[16] = 1 ) MW[16] = 0
  MW[15] = MW[15] - MW[16] * 6.0
  IF (MW[17] < 0 || MW[17] > 150 ) MW[17] = 0
  IF (MW[18] < 0 || MW[18] > 150 ) MW[18] = 0
 ENDIF
ENDJLOOP

MW[100] =(MW[1]  +  MW[2]  +  MW[3]  +  MW[4] +  MW[5]   +
          MW[6]  +  MW[7]  +  MW[8]  +  MW[9] +  MW[10]  +
          MW[11] +  MW[13]) * 0.01   ;; Total Real Transit Time  in Whole Minutes
(not incl. PNR 'impedance')

ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

38 Transit_Skims_MR.s

```
;--------------------------------------------------------------------------
;Transit_Skims_MR.s
```

```
;MWCOG Version 2.2 Model
;                         - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                         - iteration (_iter_) global variables used
;Build Transit Skims by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALKACC.TB, *_PNR_pp.TB
;  Walk Sidewalk Network        = SIDEWALK.ASC
; Output Files:
;  Walk and Drive Access Skims  = pp_aa_mo.SKM
;  Walk and Drive Station Data  = pp_aa_mo.STA
;
; Step 1: AM Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 2: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_WK_MR.SKM, %_iter_%_AM_WK_MR.STA,
; Step 3: AM Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 4: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_DR_MR.SKM, %_iter_%_AM_DR_MR.STA,
; Step 5: AM Peak K/R Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 6: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_KR_MR.SKM, %_iter_%_AM_KR_MR.STA,
; Step 7: Off Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 8: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_WK_MR.SKM, %_iter_%_OP_WK_MR.STA,
; Step 9: Off Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 10: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_DR_MR.SKM, %_iter_%_OP_DR_MR.STA
; Step 11: Off Peak K/R Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 12: Condition & Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_KR_MR.SKM, %_iter_%_OP_KR_MR.STA,
;
;---------------------------------------------------------------------------
; rm  4/7/08                        ;
; Added  table #19 (Total Transit time in min.) to output transit.skm file     ;
; create total transit time skims named:                                       ;
;         %_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_MR.ttt                          ;

;
;  Read in time factors to increase local bus times
;  based on increasing arterial hwy congestion

READ FILE=INPUTS\LBus_TimFTRS.ASC   ; Local Bus Time Factors
;

;---------------------------------------------------------------------------
;         Loop through each period and access mode
;---------------------------------------------------------------------------
pageheight=32767  ; Preclude header breaks
```

```
LOOP PERIOD=1,2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
  _IBFTR=AMIBFTR
  _OBFTR=AMOBFTR
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
  _IBFTR=OPIBFTR
  _OBFTR=OPOBFTR
 ENDIF

;---- start the access mode loop ----

LOOP ACCESS=1,3

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
   KR_MODEL = ';'
  ELSEIF (ACCESS = 2)
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
   KR_MODEL = ';'
  ELSE
   ACCESS_MODE = 'KR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ';'
   KR_MODEL = ' '
  ENDIF

;---------------------------------------------------------------------------
; Step 1, 3, 5 & 7 Build Transit Path
;---------------------------------------------------------------------------

RUN PGM=TRNBUILD
 NETI = ZONEHWY.NET
 MATO = TRANSIT.SKM
 maxnode = 60000

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11
@KR_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
```

```
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[10] = 0.0, IF[10] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.0  ;---- in-vehicle time
MODEFAC[11] = 1.50    ;---- drive access time
MODEFAC[12] = 2.00    ;---- transit transfer time
MODEFAC[13] = 2.00    ;---- walk network time
MODEFAC[14] = 2.00    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.00    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0
XWAITMIN[1] = 2*4.0,0.0,4.0,0.0,3*4.0,10.0,4.0

;---- boarding and transfer penalties ----

XPEN[1]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[2]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[3]= 2*5.0, 0.0, 2*2.0,5*5.0, 6*0.0
XPEN[4]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[5]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[6]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[7]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[8]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[9]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[10]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[11]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[12]= 2*8.0,3*2.0,4*8.0,5.0, 6*0.0
XPEN[13]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[14]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[15]= 2*5.0,3*2.0,5*5.0, 6*0.0
XPEN[16]= 2*5.0,3*2.0,5*5.0, 6*0.0

XPENFAC[1]= 16*2.50
XPENFAC[2]= 16*2.50
XPENFAC[3]= 16*2.50
XPENFAC[4]= 16*2.50
XPENFAC[5]= 16*2.50
XPENFAC[6]= 16*2.50
XPENFAC[7]= 16*2.50
XPENFAC[8]= 16*2.50
XPENFAC[9]= 16*2.50
XPENFAC[10]= 16*2.50
XPENFAC[11]= 16*2.50
XPENFAC[12]= 16*2.50
XPENFAC[13]= 16*2.50
XPENFAC[14]= 16*2.50
XPENFAC[15]= 16*2.50
XPENFAC[16]= 16*2.50


;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 360.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25

;--------------------------
;  write out support links for later viewing in VIPER
fileo supporto = suplMR@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
fileo nodeo    = supnMR@access_mode@@time_period@.dbf
fileo linko    = trnlMR@access_mode@@time_period@.dbf   ; Can be used to create
transit shapefile
;

;---- specify output skims ----

MATRICES NAME = IVLB, IVXB, IVMT, IVCR, IVNRM, IVNBM, IWAIT, XWAIT, WACCT, WLKT,
 XADD, BRDS, DACCT, DACCD, PRKI, PRKC, ISTOS, JSTOS,
; MW[1] = TIME(1,6,8),
 MW[1] = TIME(1) * @_IBFTR@ +
         TIME(6) * @_IBFTR@ +
         TIME(8) * @_OBFTR@ ,               ;---- ivt-local bus    (0.01 min)
 MW[2] = TIME(2,7,9),                       ;---- ivt-exp bus      (0.01 min)
 MW[3] = TIME(3),                           ;---- ivt-metrorail    (0.01 min)
 MW[4] = TIME(4),                           ;---- ivt-commuter rail(0.01 min)
 MW[5] = TIME(5),                           ;---- ivt-new rail mode(0.01 min)
 MW[6] = TIME(10),                          ;---- ivt-new bus mode (0.01 min)
 MW[7] = IWAIT,                             ;---- ini.wait time    (0.01 min)
 MW[8] = XWAIT(1,2,3,4,5,6,7,8,9,10),       ;---- xfr wait time    (0.01 min)
 MW[9] = TIME(14,16),                       ;---- walk acc time    (0.01 min)
 MW[10] = TIME(12,13),                      ;---- other walk time  (0.01 min)
 MW[11] = XPEN,                             ;---- added xfer time  (0.01 min)
 MW[12] = BOARDS,                           ;---- boardings        (1+)
 MW[13] = TIME(11),                         ;---- drv acc time     (0.01 min)
 MW[14] = DIST(11),                         ;---- drv acc distance (0.01 mile)
 MW[15] = TIME(15),                         ;---- pnr impedance    (0.01 min)
 MW[16] = DIST(15),                         ;---- pnr cost         (cents)
 MW[17] = NODE0(3) - 8000.0,                ;---- metro board  sta (1-150)
 MW[18] = NODEL(3) - 8000.0                 ;---- metro alight sta (1-150)



;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
;READ FILE = com_node.tb   ;---- Commuter Rail stations
;READ FILE = com_link.tb   ;---- Commuter Rail links
READ FILE = lrt_node.tb   ;---- LRT stations
```

```
READ FILE = lrt_link.tb   ;---- LRT links
;READ FILE = new_node.tb   ;---- Mode10 Stations
;READ FILE = new_link.tb   ;---- Mode10 links
;---- Park and Ride Lots (mode 15) ----

;@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = lrt_pnrn.tb  ;---- LRT PNR lots (nodes)
;@DRIVE_MODEL@ READ FILE = new_pnrn.tb  ;---- Mode10 PNR lots (nodes)

;@DRIVE_MODEL@ READ FILE = bus@TIME_PERIOD@pnr.tb  ;---- Bus-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = met@TIME_PERIOD@pnr.tb  ;---- Metro-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = com@TIME_PERIOD@pnr.tb  ;---- Commuter Rail-PNR
connectors (links)
@DRIVE_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)
;@DRIVE_MODEL@ READ FILE = new@TIME_PERIOD@pnr.tb  ;---- Mode10-PNR connectors
(links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
;READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car
READ FILE = lrt_bus.tb   ;--- bus-LRT links&xfer car
;READ FILE = new_bus.tb   ;--- Mode10 bus-LRT links&xfer car

READ FILE = walkacc.asc ;--- walk to local transit

@DRIVE_MODEL@READ FILE = mrpr@TIME_PERIOD@.asc;--- drive to metrorail
;@DRIVE_MODEL@READ FILE = cr@TIME_PERIOD@.asc;--- drive to Commuter rail
;@DRIVE_MODEL@READ FILE = buspr@TIME_PERIOD@.asc;--- drive to bus
@DRIVE_MODEL@READ FILE = lrt@TIME_PERIOD@.asc;--- drive to LRT
;@DRIVE_MODEL@READ FILE = new@TIME_PERIOD@.asc;--- drive to Mode10

@KR_MODEL@READ FILE = mrkr@TIME_PERIOD@.asc;--- k/r to metrorail
;KR_MODEL@READ FILE = buskr@TIME_PERIOD@.asc;--- k/r to bus
@KR_MODEL@READ FILE = lrtkr@TIME_PERIOD@.asc;--- k/r to LRT
;@KR_MODEL@READ FILE = newkr@TIME_PERIOD@.asc;--- k/r to Mode10

@KR_MODEL@ READ FILE = lrt@TIME_PERIOD@pnr.tb  ;---- LRT-PNR connectors (links)

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = sidewalk.asc;--- walk network for transfers

;---- Transit Line Cards (modes 1-10) ----

;READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
;READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
;READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
;READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
;READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
;READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
;READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus
;READ FILE = MODE10@TIME_PERIOD@.TB  ;---- M10- other bus (future)

/* Transit path traces for select i/j pairs */
read file = ..\scripts\pathTrace.s

ENDRUN
;-----------------------------------------------------------------------------
;Step 2, 4, 6 & 8 Condition & Split Skims into Multiple Files
;-----------------------------------------------------------------------------
RUN PGM=MATRIX
```

```
 MATI[1]=TRANSIT.SKM
 MATO[1]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_MR.SKM, MO = 1-16,
  FORMAT = MINUTP,
  NAME = IVLB, IVXB, IVMT, IVCR, IVNM, INIT, XFERT, WACCT, WLKT, BRDS,
  DACCT, DACCD, PRKT, PRKC
 MATO[2]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_MR.STA, MO = 17-18,
  FORMAT = MINUTP,
 NAME = ISTOS, JSTOS

 MATO[3]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@_MR.ttt, MO = 100,              ;
  FORMAT = MINUTP,                                                          ;
 NAME = sumtrntm


MW[1] = MI.1.1    ;---- ivt-local bus    (0.01 min)
MW[2] = MI.1.2    ;---- ivt-exp bus      (0.01 min)
MW[3] = MI.1.3    ;---- ivt-metrorail    (0.01 min)
MW[4] = MI.1.4    ;---- ivt-commuter rail(0.01 min)
MW[5] = MI.1.5    ;---- ivt-new rail mode(0.01 min)
MW[6] = MI.1.6    ;---- ivt-new bus mode (0.01 min)
MW[7] = MI.1.7    ;---- ini.wait time    (0.01 min)
MW[8] = MI.1.8    ;---- xfr wait time    (0.01 min)
MW[9] = MI.1.9    ;---- walk acc time    (0.01 min)
MW[10] = MI.1.10  ;---- other walk time  (0.01 min)
MW[11] = MI.1.11  ;---- added xfer time  (0.01 min)
MW[12] = MI.1.12  ;---- transfers        (0+)
MW[13] = MI.1.13  ;---- drv acc time     (0.01 min)
MW[14] = MI.1.14  ;---- drv acc distance (0.01 mile)
MW[15] = MI.1.15  ;---- pnr time         (0.01 min)
MW[16] = MI.1.16  ;---- pnr cost         (cents)

MW[17] = MI.1.17  ;---- metro board  sta (1-150)
MW[18] = MI.1.18  ;---- metro alight sta (1-150)
                                                                             ;4
                                                                             ;
                                                                             ;

JLOOP
 IF ((MW[3]+MW[5] = 0) || (MW[1]+MW[2]+MW[6] > 0))
  MW[1] = 0
  MW[2] = 0
  MW[3] = 0
  MW[4] = 0
  MW[5] = 0
  MW[6] = 0
  MW[7] = 0
  MW[8] = 0
  MW[9] = 0
  MW[10] = 0
  MW[11] = 0
  MW[12] = 0
  MW[13] = 0
  MW[14] = 0
  MW[15] = 0
  MW[16] = 0
  MW[17] = 0
  MW[18] = 0
 ELSE
  MW[12] = MW[12] - 1
  IF (MW[16] = 1 ) MW[16] = 0
  MW[15] = MW[15] - MW[16] * 6.0
  IF (MW[17] < 0 || MW[17] > 150 ) MW[17] = 0
  IF (MW[18] < 0 || MW[18] > 150 ) MW[18] = 0
 ENDIF
ENDJLOOP

MW[100] =(MW[1]  +  MW[2]  +  MW[3]  +  MW[4] +  MW[5]   +
          MW[6]  +  MW[7]  +  MW[8]  +  MW[9] +  MW[10]  +
```

```
        MW[11] +  MW[13]) * 0.01   ;; Total Real Transit Time  in Whole Minutes
(not incl. PNR 'impedance')


ENDRUN

ENDLOOP ;---- ACCESS ----
ENDLOOP ;---- PERIOD ----
```

39 Transit_Skims_Select_Paths.s

```
;---------------------------------------------------------------------------
;Transit_Skims_Select_Paths.s
;MWCOG Version 2.1D Model
;                        - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;                        - iteration (_iter_) global variables used
;Build Transit Skims by Time Period and Access Mode
; Input Files:
;  TP+ Highway Network          = ZONEHWY.NET
;  Transit Line Files           = MODE?_pp.TB
;  Transit Network Data         = MET_*.TB, COM_*.TB, BUS_*.TB
;  Walk and Drive Access        = WALK_pp.TB, PNR_pp.TB
;  Walk Sidewalk Network        = WLKNET.TB
;  Zone Employment              = ZONE.ASC
; Output Files:
;  Walk and Drive Access Skims  = %_iter_%_pp_aa.SKM
;  Walk and Drive Station Data  = %_iter_%_pp_aa.STA
;  Walk and Drive Travel Time   = %_iter_%_pp_aa.TTT
;  Transit Access to Employment = JOBACC.ASC
;
; Step 1: AM Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 2: Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_WK.SKM, %_iter_%_AM_WK.STA, %_iter_%_AM_WK.TTT
; Step 3: AM Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_AM.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 4: Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_AM_DR.SKM, %_iter_%_AM_DR.STA, %_iter_%_AM_DR.TTT
; Step 5: Off Peak Walk Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 6: Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_WK.SKM, %_iter_%_OP_WK.STA, %_iter_%_OP_WK.TTT
; Step 7: Off Peak Drive Skims
;  Input Files: ZONEHWY.NET, MODE?_OP.TB, *.TB
;  Output Files: TRANSIT.SKM
; Step 8: Split Skims into Multiple Files
;  Input Files: TRANSIT.SKM
;  Output Files: %_iter_%_OP_DR.SKM, %_iter_%_OP_DR.STA, %_iter_%_OP_DR.TTT
; Step 9: Sum the Jobs by Transit Travel Time
;  Input Files: %_iter_%_AM_WK.TTT, %_iter_%_AM_DR.TTT
;  Output Files: JOBACC.ASC
;
;---------------------------------------------------------------------------
;
; Global Variables
;
;        _iter_ (= PP,i1-i6)
;
```

```
;---------------------------------------------------------------------------
;          Loop through each period and access mode
;---------------------------------------------------------------------------
pageheight=32767  ; Preclude header breaks
LOOP PERIOD = 1, 2

 IF (PERIOD = 1)
  TIME_PERIOD = 'AM'
  COMBINE = 5.0
 ELSE
  TIME_PERIOD = 'OP'
  COMBINE = 10.0
 ENDIF

;---- start the access mode loop ----

LOOP ACCESS = 1, 2

  IF (ACCESS = 1)
   ACCESS_MODE = 'WK'
   WALK_MODEL = ' '
   DRIVE_MODEL = ';'
  ELSE
   ACCESS_MODE = 'DR'
   WALK_MODEL = ';'
   DRIVE_MODEL = ' '
  ENDIF

;---------------------------------------------------------------------------
; Steps 1, 3, and 5: Build Transit Paths
;---------------------------------------------------------------------------

RUN PGM = TRNBUILD
 NETI = ZONEHWY.NET
;; MATO = TRANSIT.SKM

 HWYTIME = @TIME_PERIOD@HTIME

;--- set default zone access and line parameters ----

ZONEACCESS  GENERATE=N

@WALK_MODEL@ACCESSMODES = 14,16
@DRIVE_MODEL@ACCESSMODES = 11

@WALK_MODEL@SKIPMODES = 11,15

PATHSTYLE  = 0
USERUNTIME = Y

;---- rules for combining multiple line and headways ----

COMBINE MAXDIFF[1] = 0.0, IF[1] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[2] = 0.0, IF[2] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[3] = 0.0, IF[3] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[4] = 0.0, IF[4] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[5] = 0.0, IF[5] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[6] = 0.0, IF[6] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[7] = 0.0, IF[7] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[8] = 0.0, IF[8] = ((RUN - MINRUN) < @COMBINE@)
COMBINE MAXDIFF[9] = 0.0, IF[9] = ((RUN - MINRUN) < @COMBINE@)

;---- factors to convert actual time to perceived time ----

MODEFAC[1]  = 10*1.00 ;---- in-vehicle time
MODEFAC[11] = 1.00    ;---- drive access time
MODEFAC[12] = 2.50    ;---- transit transfer time
MODEFAC[13] = 2.50    ;---- walk network time
```

```
MODEFAC[14] = 2.50    ;---- unused (used to be dummy link to station)
MODEFAC[15] = 2.50    ;---- park-&-ride transfer time
MODEFAC[16] = 2.50    ;---- walk access time

;---- initial and transfer wait factors ----

IWAITFAC[1] = 10*2.50
XWAITFAC[1] = 10*2.50
IWAITMAX[1] = 10*60.0

;---- boarding penalty - limit to three transfers ----

BOARDPEN[1] = 0.0, 6.0, 6.0, 60.0

;---- transfer prohibitions ----

;--- mode  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16
NOX[1]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[2]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[3]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[4]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[5]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[6]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[7]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[8]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[9]  =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[10] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[11] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  Y,  n,  n
NOX[12] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  n,  n,  Y,  n
NOX[13] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[14] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  n,  n,  Y,  n
NOX[15] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  Y,  Y,  Y,  Y,  Y
NOX[16] =  n,  n,  n,  n,  n,  n,  n,  n,  n,  n,  Y,  n,  Y,  n,  Y,  Y

;---- Parameters ----

LISTINPUT = N         ;--- echo input files

MAXPATHTIME = 240.0   ;--- Kill any path with preceived time > 240 min.
FREQPERIOD = 1        ;--- Use the First Headway value
USERUNTIME = Y        ;--- Ignore any RUNTIME or RT parameters on lines.
MAXRUNTIME = 240.0    ;--- Report lines with run times > 240 min.
;ONLINE = 100          ;--- Display every 100 lines

;WALKSPEED = 3.0       ;--- Set default walk speed to 3.0 mph
;XYFACTOR = 0.84401    ;--- Replicate MINUTP value
;WALKSPEED = 2.0       ;--- Added on 09/25
;XYFACTOR = 1.97       ;--- Added on 09/25

;-------------------------
;  write out support links for later viewing in VIPER
fileo supporto = supl@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
fileo nodeo    = supn@access_mode@@time_period@.dbf
;


;---- specify output skims ----

;;MATRICES NAME = WLKT, DACCT, INIT, XFERT, IVNMT, IVMT, TOTT, ISTOS, JSTOS,
;; MW[1] = TIME(12,13,14,15)*0.01,             ;---- xfer walk time   (min)
;; MW[2] = TIME(11)*0.01,                      ;---- drv acc time     (min)
;; MW[3] = IWAIT*0.01,                         ;---- ini.wait time    (min)
;; MW[4] = XWAIT(1,2,3,4,5,6,7,8,9,10)*0.01,   ;---- xfr wait time    (min)
;; MW[5] = TIME(1,2,4,5,6,7,8,9,10)*0.01,      ;---- ivt-nonmetrorail (min)
;; MW[6] = TIME(3)*0.01,                       ;---- ivt-metrorail    (min)
;; MW[7] = (IWAIT + TIME (0) + XWAIT (0))*0.01,;---- total time       (min)
;; MW[8] = NODE0(3) - 7300.0,                  ;---- metro board  sta (1-116)
;; MW[9] = NODEL(3) - 7300.0                   ;---- metro alight sta (1-116)
```

```
;---- Rail Stations & Links (modes 3 & 4) ----

READ FILE = met_node.tb   ;---- Metrorail stations
READ FILE = met_link.tb   ;---- Metrorail links
READ FILE = com_node.tb   ;---- Commuter Rail stations
READ FILE = com_link.tb   ;---- Commuter Rail links

;---- Park and Ride Lots (mode 15) ----

@DRIVE_MODEL@ READ FILE = bus_pnrn.tb  ;---- Bus PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = met_pnrn.tb  ;---- Metro PNR lots (nodes)
@DRIVE_MODEL@ READ FILE = com_pnrn.tb  ;---- Commuter Rail PNR lots (nodes)

@DRIVE_MODEL@ READ FILE = bus_pnrl.tb  ;---- Bus-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = met_pnrl.tb  ;---- Metro-PNR connectors (links)
@DRIVE_MODEL@ READ FILE = com_pnrl.tb  ;---- Commuter Rail-PNR connectors (links)

;---- Access Links (modes 11, 12 and 16) ----

READ FILE = met_bus.tb   ;--- bus-metro links&xfer cards
READ FILE = com_bus.tb   ;--- bus-commuter rail links&xfer car

READ FILE = walk_@TIME_PERIOD@.tb ;--- walk to local transit

@DRIVE_MODEL@READ FILE = pnr_@TIME_PERIOD@.tb;--- drive to transit

;---- Dummy Centroid Access Links (mode 14) ----

;---- Sidewalk Network (mode 13) ----

READ FILE = wlknet.tb;--- walk network for transfers

;---- Transit Line Cards (modes 1-9) ----

READ FILE = MODE1@TIME_PERIOD@.TB  ;---- M1- metrobus local
READ FILE = MODE2@TIME_PERIOD@.TB  ;---- M2- metrobus express
READ FILE = MODE3@TIME_PERIOD@.TB  ;---- M3- metrorail
READ FILE = MODE4@TIME_PERIOD@.TB  ;---- M4- commuter rail
READ FILE = MODE5@TIME_PERIOD@.TB  ;---- M5- other rail (future)
READ FILE = MODE6@TIME_PERIOD@.TB  ;---- M6- other local bus
READ FILE = MODE7@TIME_PERIOD@.TB  ;---- M7- other express bus
READ FILE = MODE8@TIME_PERIOD@.TB  ;---- M8- other local bus
READ FILE = MODE9@TIME_PERIOD@.TB  ;---- M9- other express bus

;---- Reports -----
; Path Tracing
; Consider these "i"s           to      these "j"s
; -----------------------------         ---------
;   8 Downtwn      1236 Rosslyn               8  Downtwn
;  64 Union Sta    1337 Alexandria           64  Union Sta
; 345 Bethesda     1537 Tysons Crnr         345  Bethesda
; 362 Silver Spr   1554 Ft Belvoir          362  Silver Spr
; 464 N.SilverSpr  1619 Vienna             1231  Pentagon
; 578 Shady Gr Rd  1698 Dulles AP          1236  Rosslyn
; 829 Andrews AFB  1716 Reston             1337  Alexandria
; 927 New Carrltn  1842 Leesburg           1537  Tysons
;1043 Frederick    1942 Dale City
;1231 Pentagon     1967 Manassas


Select   i = 451, 692
trace = (i = 451, 692  &
         j = 8, 64)
;; REPORT LINES = NAME, MODE  ; added by rm 4/09/04 to ensure line listings
                           ; with or without 'RT=' commands in transit line files
ENDRUN
```

```
ENDLOOP

ENDLOOP
```

40 Trip_Distribution.s

```
*del voya*.prn

; Trip_Distribution.s  - Version 2.3 Trip Distribution
;
ZONESIZE  =  3722                ; Max. TAZ No.           (Param)
LSTITAZ   =  3675                ; Last Internal Zone No.  (Param)

;; itr = '%_iter_%'   ;;
;;  IF (itr = 'pp')
;;     AMSOVSKM = 'inputs\SOVppam.skm'      ;  AM  HWY TIME SKIMS (Initial
iteration)
;;     MDSOVSKM = 'inputs\SOVppmd.skm'      ;  MD  HWY TIME SKIMS (Initial
iteration)
;;   ELSE
;;     AMSOVSKM = 'SOV%_prev_%am.skm'            ;  AM  HWY TIME SKIMS
;;     MDSOVSKM = 'SOV%_prev_%md.skm'            ;  MD  HWY TIME SKIMS
;;  ENDIF

AMSOVSKM = 'SOV%_prev_%am.skm'            ;  AM  HWY TIME SKIMS
MDSOVSKM = 'SOV%_prev_%md.skm'            ;  MD  HWY TIME SKIMS



ATYPFILE = 'AreaType_File.dbf'            ; Zonal Area Type file    (I/P file)
HWYTERM  = 'ztermtm.asc'                  ;  Zonal HWY TERMINAL TIME file (created
in THIS script)


AWTRNSKM = '%_iter_%_am_wk_MR.ttt'        ;  AM WK (Metrorail only) ACC TRN TIME
SKIMS
ADTRNSKM = '%_iter_%_am_dr_MR.ttt'        ;  AM DR (Metrorail Only) ACC TRN TIME
SKIMS

MWTRNSKM = '%_iter_%_op_wk_MR.ttt'        ;  OP WK (Metrorail only) ACC TRN TIME
SKIMS
MDTRNSKM = '%_iter_%_op_dr_MR.ttt'        ;  OP DR (Metrorail Only) ACC TRN TIME
SKIMS

; --------------------------------------------------------------------
; Equivalent minutes (min/'07$) by income level (for toll modeling)
toll_inc = '..\support\toll.inc'    ; Equivalent minutes (min/'07$) by period &
income level (for toll modeling)

; Zonal K-factor Files
;
HBWK     = '..\support\hbwk.dat'    ;
HBSK     = '..\support\hbsk.dat'    ;
HBOK     = '..\support\hbok.dat'    ;
NHWK     = '..\support\nhwk.dat'    ;
NHOK     = '..\support\nhok.dat'    ;
;
;-------------------------------------------------------------------
;
;
FFsFile   = '..\SUPPORT\Version_23_FFtrs.dbf'  ; F-Factors for all modeled purposes
;;Variables in the dbf file:
; IMP     HBWINC1 HBWINC2 HBWINC3 HBWINC4 HBWEI HBWEA    ;
;         HBSINC1 HBSINC2 HBSINC3 HBSINC4 HBSEI HBSEA    ;
;         HBOINC1 HBOINC2 HBOINC3 HBOINC4 HBOEI HBOEA    ;
;         NHW     NHO     NHBEI   NHBEA                  ;
;         ICOM    IMTK    IHTK    EXTCOM  EXTMTK  EXTHTK ;
;
; Trip-End (P/A) Input Files:
;
AutoProds = 'Trip_Gen_Productions_%_iter_%.dbf'      ; Intl/Extl Auto Productions
;;Variables in dbf file:
; TAZ     HBW_MTR_PS  HBW_NMT_PS  HBW_ALL_PS  HBWMTRP_I1  HBWMTRP_I2  HBWMTRP_I3
HBWMTRP_I4
;         HBS_MTR_PS  HBS_NMT_PS  HBS_ALL_PS  HBSMTRP_I1  HBSMTRP_I2  HBSMTRP_I3
HBSMTRP_I4
;         HBO_MTR_PS  HBO_NMT_PS  HBO_ALL_PS  HBOMTRP_I1  HBOMTRP_I2  HBOMTRP_I3
HBOMTRP_I4
;         NHW_MTR_PS  NHW_NMT_PS  NHW_ALL_PS  NHO_MTR_PS  NHO_NMT_PS  NHO_ALL_PS
;

AutoAttrs = 'Trip_Gen_Attractions_Final_%_iter_%.dbf' ; Intl/Extl Auto Attractions
;;Variables in dbf file:
; TAZ     HBW_MTR_AS  HBW_NMT_AS  HBW_ALL_AS  HBWMTRA_I1  HBWMTRA_I2  HBWMTRA_I3
HBWMTRA_I4
;         HBS_MTR_AS  HBS_NMT_AS  HBS_ALL_AS  HBSMTRA_I1  HBSMTRA_I2  HBSMTRA_I3
HBSMTRA_I4
;         HBO_/TR_AS  HBO_NMT_AS  HBO_ALL_AS  HBOMTRA_I1  HBOMTRA_I2  HBOMTRA_I3
HBOMTRA_I4
;         NHW_MTR_AS  NHW_NMT_AS  NHW_ALL_AS  NHO_MTR_AS  NHO_NMT_AS  NHO_ALL_AS


ExtPsAs   = 'Ext_Trip_Gen_PsAs_%_iter_%.dbf' ; Extl Auto Ps, As
;;Variables in dbf file:
; TAZ     SHBW_Mtr_Ps  SHBS_Mtr_Ps  SHBO_Mtr_Ps  SNHW_Mtr_Ps  SNHO_Mtr_Ps
;         SHBW_Mtr_As  SHBS_Mtr_As  SHBO_Mtr_As  SNHW_Mtr_As  SNHO_Mtr_As
;
;
TruckEnds = 'ComVeh_Truck_Ends_%_iter_%.dbf'         ; Intl Comm.Veh/Truck TripEnds
;;Variables in dbf file:
; TAZ    ICOMM_VEH  IMED_TRUCK  IHVY_TRUCK
;
;
Ext_TrkEnds = 'Ext_CVTruck_Gen_PsAs_pp.dbf'
;;Variables in dbf file:
;  TAZ SCOM_VEHPS      SMED_TRKPS      SHVY_TRKPS      SCOM_VEHAS      SMED_TRKAS
SHVY_TRKAS
;
;; OUTPUT TRIP TABLES
HBWTDOUT  = 'HBW_%_iter_%_.PTT';
HBSTDOUT  = 'HBS_%_iter_%_.PTT';
HBOTDOUT  = 'HBO_%_iter_%_.PTT';
NHWTDOUT  = 'NHW_%_iter_%_.PTT';
NHOTDOUT  = 'NHO_%_iter_%_.PTT';
COMTDOUT  = 'COM_%_iter_%_.PTT';
MTKTDOUT  = 'MTK_%_iter_%_.PTT';
HTKTDOUT  = 'HTK_%_iter_%_.PTT';

 ;; OUTPUT matrices for mode choice model consumption
 HBWforMC  = '%_iter_%_hbw_NL.ptt' ; HBW Person Trips-4TABS (INC1..INC4)
 HBSforMC  = '%_iter_%_hbs_NL.ptt' ; HBS Person Trips-4TABS (INC1..INC4)
 HBOforMC  = '%_iter_%_hbo_NL.ptt' ; HBO Person Trips-4TABS (INC1..INC4)
 NHWforMC  = '%_iter_%_nhw_NL.ptt' ; NHW Person Trips-1TAB  (INTERNAL)
 NHOforMC  = '%_iter_%_nho_NL.ptt' ; NHO Person Trips-1TAB  (INTERNAL)

; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\    BEGIN Composite Impedance, terminal time development \\\
```

```
; ///////////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
zones=1

;
FileI LOOKUPI[1] ="@atypfile@"
LOOKUP LOOKUPI=1, NAME=ZNAT,
       LOOKUP[1] = TAZ, RESULT=AType,   ;
       INTERPOLATE=N, FAIL= 0,0,0, LIST=N
; CREATE ZONAL ARRAY FOR EMPLOYMENT DENSITY



Loop M= 1,@ZONESIZE@

     _AType    = ZNAT(1,M)         ;  Area Type
     if (_Atype = 1 ) Termtm= 5.0
     if (_Atype = 2 ) Termtm= 4.0
     if (_Atype = 3 ) Termtm= 3.0
     if (_Atype = 4 ) Termtm= 2.0
     if (_Atype = 5 ) Termtm= 1.0
     if (_Atype = 6 ) Termtm= 1.0
     if (_Atype = 7 ) Termtm= 1.0

     if (M > @LSTITAZ@)    Termtm = 0.0

;  WRITE OUT  ZONAL TERMINAL TIME FILE
        list = 'TAZ: ',M(4),' AT: ',_Atype(3),' Term. Time: ',
                termtm(3),file=@hwyterm@
ENDLOOP

ENDRUN

;
; ///////////////////////////////////////////////////////////////////////
; \\\\\\\\\    1) Add Highway Terminal Times to AM, Off-peak     \\\\\\
; \\\\\\\\\       SOV Skims                                      \\\\\\
; ///////////////////////////////////////////////////////////////////////



RUN PGM=MATRIX
Zones = 3722
;  READ Highway terminal time file

ZDATI[1]= @hwyterm@, Z=6-9,hterm=31-33

;  READ AM PEAK & Midday  SOV TIME SKIM FILE (IN WHOLE MIN)

  MATI[1] = @AMSOVSKM@   ;  INPUT AM PK  SKIM FILE
  MATI[2] = @MDSOVSKM@   ;  INPUT OFF-PK SKIM FILE

  MW[1]   = MI.1.1       ;  INPUT AM PK  Time (min) SKIM FILE
  MW[2]   = MI.2.1       ;  INPUT OFF-PK Time (min) SKIM FILE


;
; Now add the terminal times to the AM/MD travel times below
;   - terminal times added only to connected interchanges)
;   - terminal times are added to both the i and j ends of the trip
;
JLOOP
    IF  (MW[1] > 0)
         MW[3] = MW[1] + zi.1.hterm[I] + zi.1.hterm[J]
         ELSE
         MW[3] = MW[1]
    ENDIF
    IF  (MW[2] > 0)
         MW[4] = MW[2] + zi.1.hterm[I] + zi.1.hterm[J]
         ELSE
         MW[4] = MW[2]
    ENDIF
ENDJLOOP

;
; Establish Intrazonal Values for Network Time Skims
;  -  Values equal to 85% of lowest nonzero interzonal value
;     Up from 50% used in Version 2.2
JLOOP
 IF (I=J)
      MW[3]=ROUND(0.85 * LOWEST(3,1,0.0001,99999.9))
      MW[4]=ROUND(0.85 * LOWEST(4,1,0.0001,99999.9))

 ENDIF
ENDJLOOP
; WRITE OUT FINAL TIME SKIMS

 MATO[1] = SOVAMTT.SKF, MO=3; output am sov time(min) w/ o&d term&intra times
 MATO[2] = SOVMDTT.SKF, MO=4; output md sov time(min) w/ o&d term&intra times

; print row 1 of I/O matrices for checking

   IF  (I =699)
     PRINTROW MW=1-4
   ENDIF

ENDRUN

; ///////////////////////////////////////////////////////////////////////
; \\\\\\\\\    2) Compute Composite Impedances to by used in        \\\
; \\\\\\\\\       Trip Distribution for HBW, HBS, HBO, NHB Purposes \\\
; ///////////////////////////////////////////////////////////////////////


RUN PGM=MATRIX
Zones = 3722

; COMPUTATION OF COMPOSITE IMPEDANCES
;  READ AM PEAK & OFF-PEAK SOV TIME SKIM FILE (IN WHOLE MIN)

MATI[1] = SOVAMTT.SKF  ;  AM  PK HWY TIME FILE W/ TERM&INTRAZNL VALUES
MATI[2] = SOVMDTT.SKF  ;  OFF-PK HWY TIME FILE W/ TERM&INTRAZNL VALUES

MATI[3] = @AWTRNSKM@   ;  AM  PK WALK ACC TRN (Metrorail Only) SKIM FILE
MATI[4] = @ADTRNSKM@   ;  AM  PK AUTO ACC TRN (Metrorail Only) SKIM FILE
MATI[5] = @MWTRNSKM@   ;  Midday WALK ACC TRN (Metrorail Only) SKIM FILE
MATI[6] = @MDTRNSKM@   ;  Midday AUTO ACC TRN (Metrorail Only) SKIM FILE

;$
MATI[7] = @AMSOVSKM@   ;  INPUT AM PK  tolls in '07 cents (on table 3)
MATI[8] = @MDSOVSKM@   ;  INPUT Midday tolls in '07 cents (on table 3)
;
 READ FILE =@TOLL_INC@  ;  READ in equivalent min/07$ by income group
;
;$

; ESTABLISH WORK MATRICES:

MW[1]=MI.1.1            ; AM  PK HWY TIME FILE W/ TERM&INTRAZNL VALUES
MW[2]=MI.2.1            ; OFF-PK HWY TIME FILE W/ TERM&INTRAZNL VALUES
;
;----------------------; Make Sure interzonal (conn.or disconn.)
JLOOP
  IF (MW[1] = 0.0)
      MW[1] = 1.0
```

```
  ENDIF
  IF (MW[2] = 0.0)
      MW[2] = 1.0
  ENDIF
ENDJLOOP
;-----------------------;
;

;$
;-
; add equivalent 'tolled' AM/OP highway time to normal times by income level
; AM pk normal + equivalent hwy time in work tables 61-64
; Offpk normal + equivalent hwy time in work tables 71-74

      MW[61] = Round(MW[1] + ((MI.7.3/100.0) * i1PKEQM)) ;i1 AM hwy time w/eqv
      MW[62] = Round(MW[1] + ((MI.7.3/100.0) * i2PKEQM)) ;i2 AM hwy time w/eqv
      MW[63] = Round(MW[1] + ((MI.7.3/100.0) * i3PKEQM)) ;i3 AM hwy time w/eqv
      MW[64] = Round(MW[1] + ((MI.7.3/100.0) * i4PKEQM)) ;i4 AM hwy time w/eqv

      MW[71] = Round(MW[2] + ((MI.8.3/100.0) * i1MDEQM)) ;i1 MD hwy time w/eqv
      MW[72] = Round(MW[2] + ((MI.8.3/100.0) * i2MDEQM)) ;i2 MD hwy time w/eqv
      MW[73] = Round(MW[2] + ((MI.8.3/100.0) * i3MDEQM)) ;i3 MD hwy time w/eqv
      MW[74] = Round(MW[2] + ((MI.8.3/100.0) * i4MDEQM)) ;i4 MD hwy time w/eqv
;
; Lines below convert tolls to time for distribution of external trips.
; Average factors from traffic assignment are used.
;
      MW[76] = Round(MW[1] + ((MI.7.3/100.0) * SVAMEQM)) ;X-I,I-X AM hwy time w/eqv
- added by DV 2/6/09
      MW[77] = Round(MW[2] + ((MI.8.3/100.0) * SVMDEQM)) ;X-I,I-X OP hwy time w/eqv
- added by DV 2/6/09
;
;
;
;
;
MW[3]=MI.3.1            ; AM  PK WALK ACC TOTAL TRN TIME FILE
MW[4]=MI.4.1            ; AM  PK AUTO ACC TOTAL TRN TIME FILE

MW[5]=MI.5.1            ; OFF-PK WALK ACC TOTAL TRN TIME FILE
MW[6]=MI.6.1            ; OFF-PK AUTO ACC TOTAL TRN TIME FILE

;FIRST, FIND 'BEST' WALK/AUTO TRANSIT TIME BOTH AM AND OFF-PK CONDITIONS
; BEST AM TRN TIME STORED IN MW11, BEST OP TRN TIME STORED IN MW12

  JLOOP
     IF (MW[3] > 0 && MW[4] > 0)      ; 'BEST' AM PK TRN TIME
        MW[11] = MIN(MW[3],MW[4])     ; WILL BE THE MINIMUM OF
     ELSE                             ; NON-ZERO WALK/AUTO TIMES OR
        MW[11] = MAX(MW[3],MW[4])     ; THE ONE THAT'S CONNECTED
     ENDIF

     IF (MW[5] > 0 && MW[6] > 0)      ;  SAME FOR OFF PEAK
        MW[12] = MIN(MW[5],MW[6])     ;
     ELSE                             ;
        MW[12] = MAX(MW[5],MW[6])     ;
     ENDIF
  ENDJLOOP

; NOW COMPUTE HBW,HBS,HBO,NHB COMPOSITE IMPEDANCES
;
JLOOP
 IF (MW[11] = 0 || I = J)
   MW[15] = MW[61]
   MW[16] = MW[62]
   MW[17] = MW[63]
   MW[18] = MW[64]
 ELSE
   MW[15] = 1.0/((1.0/MW[61])+(0.1851/MW[11]))  ; HBW -INC 1 CI MTX
   MW[16] = 1.0/((1.0/MW[62])+(0.1563/MW[11]))  ; HBW -INC 2 CI MTX
   MW[17] = 1.0/((1.0/MW[63])+(0.1682/MW[11]))  ; HBW -INC 3 CI MTX
   MW[18] = 1.0/((1.0/MW[64])+(0.1483/MW[11]))  ; HBW -INC 4 CI MTX
 ENDIF

 IF (MW[12] = 0 || I = J)
   MW[20] =  MW[71]
   MW[21] =  MW[72]
   MW[22] =  MW[73]
   MW[23] =  MW[74]

   MW[25] =  MW[71]
   MW[26] =  MW[72]
   MW[27] =  MW[73]
   MW[28] =  MW[74]

   MW[50] =  MW[72]
   MW[51] =  MW[72]

 ELSE
   MW[20] = 1.0/((1.0/MW[71])+(0.0805/MW[12])) ; HBS -INC 1 CI MTX
   MW[21] = 1.0/((1.0/MW[72])+(0.0184/MW[12])) ; HBS -INC 2 CI MTX
   MW[22] = 1.0/((1.0/MW[73])+(0.0117/MW[12])) ; HBS -INC 3 CI MTX
   MW[23] = 1.0/((1.0/MW[74])+(0.0104/MW[12])) ; HBS -INC 4 CI MTX

   MW[25] = 1.0/((1.0/MW[71])+(0.1239/MW[12])) ; HBO -INC 1 CI MTX
   MW[26] = 1.0/((1.0/MW[72])+(0.0231/MW[12])) ; HBO -INC 2 CI MTX
   MW[27] = 1.0/((1.0/MW[73])+(0.0188/MW[12])) ; HBO -INC 3 CI MTX
   MW[28] = 1.0/((1.0/MW[74])+(0.0158/MW[12])) ; HBO -INC 4 CI MTX

   MW[50] = 1.0/((1.0/MW[72])+(0.0866/MW[12])) ; NHW
   MW[51] = 1.0/((1.0/MW[72])+(0.0224/MW[12])) ; NHO
 ENDIF

ENDJLOOP

MATO[1] = HBWCI1_4.DAT, MO=15,16,17,18 ;HBW COMP.IMPEDANCES-INC.LEVELS 1-4
MATO[2] = HBSCI1_4.DAT, MO=20,21,22,23 ;HBS COMP.IMPEDANCES-INC.LEVELS 1-4
MATO[3] = HBOCI1_4.DAT, MO=25,26,27,28 ;HBO COMP.IMPEDANCES-INC.LEVELS 1-4
MATO[4] = NHBCI.DAT,    MO=50,51       ;NHW/NHO  COMP.IMPEDANCES
MATO[5] = SOVAMTTX.SKF, MO=76          ; AM Peak  X-I, I-X impedances with tolls
MATO[6] = SOVMDTTX.SKF, MO=77          ; Off Peak X-I, I-X impedances with tolls
;
;$
;
; NOW, WRITE OUT THE RESULTS OF SELECTED INTERCHANGES FOR CHECKING
;     AND COMPARING WITH MINUTP
JLOOP INCLUDE=1 ; WILL PROCESS ONLY FOR J=1
  PRINT LIST = I(4),' ',J(4),' ',mw[15](5),mw[16](5),mw[17](5),mw[18](5),
        FILE =ci_hbw.txt
  PRINT LIST = I(4),' ',J(4),' ',mw[20](5),mw[21](5),mw[22](5),mw[23](5),
        FILE =ci_hbs.txt
  PRINT LIST = I(4),' ',J(4),' ',mw[25](5),mw[26](5),mw[27](5),mw[28](5),
        FILE =ci_hbo.txt
  PRINT LIST = I(4),' ',J(4),' ',mw[72](5),MW[12](5),mw[50](5),MW[51](5),
        FILE =ci_nhb.txt
ENDJLOOP
ENDRUN

; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\    3) Compute Impedance files to be used in the External \\
; \\\\\\\\\       Trip Distribution processing                       \\
; //////////////////////////////////////////////////////////////////////



RUN PGM=MATRIX
```

```
ZONES =3722
MATI[1] = SOVAMTTX.SKF  ;  AM  PK HWY TIME FILE W/ TERM&INTRAZNL VALUES
MATI[2] = SOVMDTTX.SKF  ;  Midday HWY TIME FILE W/ TERM&INTRAZNL VALUES

MW[1]=MI.1.1           ;  AM  PK HWY TIME FILE W/ TERM&INTRAZNL VALUES
MW[2]=MI.2.1           ;  Midday HWY TIME FILE W/ TERM&INTRAZNL VALUES

;  Development of Peak, Midday   SOV Travel times to be used
;  for External Trip distribution of Interstate and Arterial Trip Dist.
;
;  2 skim files will be written:
;  MW[11] - AM Time Period, External ij's
;  MW[12] - Midday  Period, External ij's
;
;   First, set work matrices equal to 'Full' AM, Off-peak time skims
;
 MW[11] = MW[1]    ; AM
 MW[12] = MW[2]    ; Midday

; next, put very large time value into all
; i-i and x-x ijs to preclude distributing externals in these cells

 IF  (I =    1-3675)
    MW[11] =   2000, INCLUDE=    1-3675 ; i-i ijs
    MW[12] =   2000, INCLUDE=    1-3675 ; i-i ijs
 ELSE
    MW[11] =   2000, INCLUDE= 3675-3722 ; x-x ijs
    MW[12] =   2000, INCLUDE= 3675-3722 ; x-x ijs
 ENDIF

; WRITE OUT EXTERNAL TRIP DISTRIBUTION IMPEDANCE TABLES

MATO[1] = SOVAMTTE.skf, MO=11 ;  AM -PK Time skims for Extl trip dist.
MATO[2] = SOVMDTTE.skf, MO=12 ;  Midday Time skims for Extl trip dist.
ENDRUN
;

; End of Composite Impedance Development

;-------------------------------------------------------------------------------
; Trip Distribution Model Calibration Process
;-------------------------------------------------------------------------------
;

; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////      Start HBW Trip Distribution Here:             /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|



RUN PGM=DISTRIBUTION
  zones= 3722
  MATI= HBWCI1_4.DAT,   ; Composite Time Impedances HBW Inc.Levels 1-4  #1
        @HBWK@,         ; HBW Kfactors (Scaled by 1000.0)               #2
        SOVAMTTE.skf,   ; AM -PK Time skims for Extl trip dist.         #3
        SOVMDTTE.skf    ; Midday Time skims for Extl trip dist.         #4

; Put income based impedance matrices in work tables 11-14
; tabs 11-14 are comp.time for inc.levels 1,2,3,4
; Put am, midday external impedances (hwy time) 21,31 respectively

  FILLMW MW[11]  = MI.1.1,2,3,4
         MW[21]  = MI.3.1
         MW[31]  = MI.4.1

; Put K-factor matrix in work table 20
;   - K-factors are scaled by 1000s (eg, a mtx value of '1000'=1.0)
;   - K-factors are applied across all HBW distributions

  FILLMW MW[20] = MI.2.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units

ZDATI[1]     = @AutoProds@ ;  internal auto  productions file
ZDATI[2]     = @AutoAttrs@ ;  internal auto  attractions file
ZDATI[3]     = @ExtPsAs@   ;  External Ps,As attractions file

; read friction factors file as lookup table
FileI LOOKUPI[1] = "@FFsFile@"
LOOKUP LOOKUPI=1, NAME=FF,
       LOOKUP[1]  = IMP, RESULT=HBWinc1,   ;
       LOOKUP[2]  = IMP, RESULT=HBWInc2,   ;
       LOOKUP[3]  = IMP, RESULT=HBWInc3,   ;
       LOOKUP[4]  = IMP, RESULT=HBWInc4,   ;
       LOOKUP[5]  = IMP, RESULT=HBWEI,     ;
       LOOKUP[6]  = IMP, RESULT=HBWEA,     ;
       INTERPOLATE=N,SETUPPER=T,FAIL=0,0,0

;  Establish production and attraction vectors here:

SETPA P[1]=ZI.1.HBWMTRP_I1, P[2]=ZI.1.HBWMTRP_I2, P[3]=ZI.1.HBWMTRP_I3,
P[4]=ZI.1.HBWMTRP_I4, P[5]=ZI.3.SHBW_MtrPs, P[6]=ZI.3.SHBW_MtrPs
SETPA A[1]=ZI.2.HBWMTRA_I1, A[2]=ZI.2.HBWMTRA_I2, A[3]=ZI.2.HBWMTRA_I3,
A[4]=ZI.2.HBWMTRA_I4, A[5]=ZI.3.SHBW_MtrAs, A[6]=ZI.3.SHBW_MtrAs

MAXITERS = 15    ; specify GM iterations
MAXRMSE  = 0.0001


;  Establish gravity model run files & parameters
GRAVITY  PURPOSE  = 1, LOS=MW[11], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 2, LOS=MW[12], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 3, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 4, LOS=MW[14], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 5, LOS=MW[21], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;21-am-HBW 31-md/nonHBW
GRAVITY  PURPOSE  = 6, LOS=MW[21], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;21/am-HBW 31-op/nonHBW

;REPORT ZDAT = Y
;REPORT ACOMP=1-6

MATO = HBW.TEM,MO=1-6   ;   Final HBW  trip table(s)
                         ;       T1 - HBW Inc. Level 1 (i-i)
                         ;       T2 - HBW Inc. Level 2 (i-i)
                         ;       T3 - HBW Inc. Level 3 (i-i)
                         ;       T4 - HBW Inc. Level 4 (i-i)
                         ;       T5 - externals/ using interstate facility FFactors
                         ;       T6 - externals/ using arterial   facility FFactors
ENDRUN

;; --ENB HBW Trip Dist---;;
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////      Start HBS Trip Distribution Here:             /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|



RUN PGM=DISTRIBUTION
  zones= 3722
  MATI= HBSCI1_4.DAT,   ; Composite Time Impedances HBW Inc.Levels 1-4  #1
        @HBSK@,         ; HBW Kfactors (Scaled by 1000.0)               #2
        SOVAMTTE.skf,   ; AM -PK Time skims for Extl trip dist.         #3
        SOVMDTTE.skf    ; Midday Time skims for Extl trip dist.         #4

; Put income based impedance matrices in work tables 11-14
; tabs 11-14 are comp.time for inc.levels 1,2,3,4
```

```
; Put am, midday external impedances (hwy time) 21,31 respectively

  FILLMW MW[11]  = MI.1.1,2,3,4
         MW[21]  = MI.3.1
         MW[31]  = MI.4.1

; Put K-factor matrix in work table 20
;   - K-factors are scaled by 1000s (eg, a mtx value of '1000'=1.0)
;   - K-factors are applied across all HBW distributions

  FILLMW MW[20] = MI.2.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units

ZDATI[1]     = @AutoProds@ ;  internal auto  productions file
ZDATI[2]     = @AutoAttrs@ ;  internal auto  attractions file
ZDATI[3]     = @ExtPsAs@   ;  External Ps,As attractions file

; read friction factors file as lookup table
FileI LOOKUPI[1] = "@FFsFile@"
LOOKUP LOOKUPI=1, NAME=FF,
       LOOKUP[1]  = IMP, RESULT=HBSinc1,   ;
       LOOKUP[2]  = IMP, RESULT=HBSInc2,   ;
       LOOKUP[3]  = IMP, RESULT=HBSInc3,   ;
       LOOKUP[4]  = IMP, RESULT=HBSInc4,   ;
       LOOKUP[5]  = IMP, RESULT=HBSEI,     ;
       LOOKUP[6]  = IMP, RESULT=HBSEA,     ;
       INTERPOLATE=N,SETUPPER=T,FAIL=0,0,0

;  Establish production and attraction vectors here:

SETPA P[1]=ZI.1.HBSMTRP_I1, P[2]=ZI.1.HBSMTRP_I2, P[3]=ZI.1.HBSMTRP_I3,
P[4]=ZI.1.HBSMTRP_I4, P[5]=ZI.3.SHBS_MtrPs, P[6]=ZI.3.SHBS_MtrPs
SETPA A[1]=ZI.2.HBSMTRA_I1, A[2]=ZI.2.HBSMTRA_I2, A[3]=ZI.2.HBSMTRA_I3,
A[4]=ZI.2.HBSMTRA_I4, A[5]=ZI.3.SHBS_MtrAs, A[6]=ZI.3.SHBS_MtrAs

MAXITERS = 27    ; specify GM iterations
MAXRMSE  = 0.0001


;  Establish gravity model run files & parameters
GRAVITY  PURPOSE  = 1, LOS=MW[11], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 2, LOS=MW[12], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 3, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 4, LOS=MW[14], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 5, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;21-am-HBW 31-md/nonHBW
GRAVITY  PURPOSE  = 6, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;21/am-HBW 31-op/nonHBW

;REPORT ZDAT = Y
;REPORT ACOMP=1-6

MATO = HBS.TEM,MO=1-6   ;   Final HBS  trip table(s)
                         ;       T1 - HBS Inc. Level 1 (i-i)
                         ;       T2 - HBS Inc. Level 2 (i-i)
                         ;       T3 - HBS Inc. Level 3 (i-i)
                         ;       T4 - HBS Inc. Level 4 (i-i)
                         ;       T5 - externals/ using interstate facility FFactors
                         ;       T6 - externals/ using arterial   facility FFactors
ENDRUN

;; --ENB HBS Trip Dist---;;
;

; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////      Start HBO Trip Distribution Here:             /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
```

```
RUN PGM=DISTRIBUTION
  zones= 3722
  MATI= HBOCI1_4.DAT,   ; Composite Time Impedances HBW Inc.Levels 1-4  #1
        @HBOK@,         ; HBW Kfactors (Scaled by 1000.0)               #2
        SOVAMTTE.skf,   ; AM -PK Time skims for Extl trip dist.         #3
        SOVMDTTE.skf    ; Midday Time skims for Extl trip dist.         #4

; Put income based impedance matrices in work tables 11-14
; tabs 11-14 are comp.time for inc.levels 1,2,3,4
; Put am, midday external impedances (hwy time) 21,31 respectively

  FILLMW MW[11]  = MI.1.1,2,3,4   ; comp. imp mw tabs 11-14
         MW[21]  = MI.3.1         ;
         MW[31]  = MI.4.1         ;

; Put K-factor matrix in work table 20
;   - K-factors are scaled by 1000s (eg, a mtx value of '1000'=1.0)
;   - K-factors are applied across all HBW distributions

  FILLMW MW[20] = MI.2.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units

ZDATI[1]     = @AutoProds@ ;  internal auto  productions file
ZDATI[2]     = @AutoAttrs@ ;  internal auto  attractions file
ZDATI[3]     = @ExtPsAs@   ;  External Ps,As attractions file

; read friction factors file as lookup table
FileI LOOKUPI[1] = "@FFsFile@"
LOOKUP LOOKUPI=1, NAME=FF,
       LOOKUP[1]  = IMP, RESULT=HBOinc1,   ;
       LOOKUP[2]  = IMP, RESULT=HBOInc2,   ;
       LOOKUP[3]  = IMP, RESULT=HBOInc3,   ;
       LOOKUP[4]  = IMP, RESULT=HBOInc4,   ;
       LOOKUP[5]  = IMP, RESULT=HBOEI,     ;
       LOOKUP[6]  = IMP, RESULT=HBOEA,     ;
       INTERPOLATE=N,SETUPPER=T,FAIL=0,0,0

;  Establish production and attraction vectors here:

SETPA P[1]=ZI.1.HBOMTRP_I1, P[2]=ZI.1.HBOMTRP_I2, P[3]=ZI.1.HBOMTRP_I3,
P[4]=ZI.1.HBOMTRP_I4, P[5]=ZI.3.SHBO_MtrPs, P[6]=ZI.3.SHBO_MtrPs
SETPA A[1]=ZI.2.HBOMTRA_I1, A[2]=ZI.2.HBOMTRA_I2, A[3]=ZI.2.HBOMTRA_I3,
A[4]=ZI.2.HBOMTRA_I4, A[5]=ZI.3.SHBO_MtrAs, A[6]=ZI.3.SHBO_MtrAs

MAXITERS = 27    ; specify GM iterations
MAXRMSE  = 0.0001


;  Establish gravity model run files & parameters
GRAVITY  PURPOSE  = 1, LOS=MW[11], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 2, LOS=MW[12], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 3, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 4, LOS=MW[14], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 5, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;21-am-HBW 31-md/nonHBW
GRAVITY  PURPOSE  = 6, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;21/am-HBW 31-op/nonHBW

;REPORT ZDAT = Y
;REPORT ACOMP=1-6

MATO = HBO.TEM,MO=1-6   ;   Final HBO  trip table(s)
                         ;       T1 - HBO Inc. Level 1 (i-i)
                         ;       T2 - HBO Inc. Level 2 (i-i)
                         ;       T3 - HBO Inc. Level 3 (i-i)
                         ;       T4 - HBO Inc. Level 4 (i-i)
                         ;       T5 - externals/ using interstate facility FFactors
```

```
                         ;       T6 - externals/ using arterial   facility FFactors
ENDRUN

;; --ENB HBO Trip Dist---;;
;

; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////      Start NHW/NHO Trip Distribution Here:         /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

RUN PGM=DISTRIBUTION
  zones= 3722
  MATI=   NHBCI.DAT,      ; Composite Time Impedances NHW/NHO T1&2   file 1
          SOVMDTTE.skf,   ; Midday Time skims for Extl trip dist.    file 2
          @NHWK@,         ; NHW Kfactors (Scaled by 1000.0)          file 3
          @NHOK@          ; NHO Kfactors (Scaled by 1000.0)          file 4

; Put nhw, nho impedance matrices in work tables 11-12
  FILLMW MW[11]  = MI.1.1,2
; Put extl     impedance matrices in work tables 31
  mw[31] = mi.2.1

; Put K-factor matrix in work table 20
;   - K-factors are scaled by 1000s (eg, a mtx value of '1000'=1.0)
;   - K-factors are applied across all HBS distributions

  FILLMW MW[20] = MI.3.1
  FILLMW MW[21] = MI.4.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units
  DUMMY = ROWFAC(21,0.001) ; scale k-factor's to 'true' units
                                                  ; Variables in the ZDATI files:
ZDATI[1]     = @ExtPsAs@   ;  External Ps,As attractions file

;  read friction factors file as lookup table
FileI LOOKUPI[1] = "@FFsFile@"
LOOKUP LOOKUPI=1, NAME=FF,
       LOOKUP[1]  = IMP, RESULT=NHW,       ;
       LOOKUP[2]  = IMP, RESULT=NHO,       ;
       LOOKUP[3]  = IMP, RESULT=NHBEI,     ;
       LOOKUP[4]  = IMP, RESULT=NHBEA,     ;
       LOOKUP[5]  = IMP, RESULT=NHBEI,     ;
       LOOKUP[6]  = IMP, RESULT=NHBEA,     ;
       INTERPOLATE=N,SETUPPER=T,FAIL=0,0,0

;  Establish production and attraction vectors here:

SETPA P[1]=ZI.1.NHWIIAs, P[2]=ZI.1.NHOIIAs, P[3]=ZI.1.SNHW_MtrAs,
P[4]=ZI.1.SNHW_MtrAs, P[5]=ZI.1.SNHO_MtrAs, P[6]=ZI.1.SNHO_MtrAs
SETPA A[1]=ZI.1.NHWIIAs, A[2]=ZI.1.NHOIIAs, A[3]=ZI.1.SNHW_MtrAs,
A[4]=ZI.1.SNHW_MtrAs, A[5]=ZI.1.SNHO_MtrAs, A[6]=ZI.1.SNHO_MtrAs

MAXITERS = 9     ; specify GM iterations
MAXRMSE  = 0.0001


;  Establish gravity model run files & parameters
GRAVITY  PURPOSE  = 1, LOS=MW[11], FFACTORS= FF, KFACTORS = MW[20]
;; NHW INTL
GRAVITY  PURPOSE  = 2, LOS=MW[12], FFACTORS= FF, KFACTORS = MW[21]
;; NHO INTL
GRAVITY  PURPOSE  = 3, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;NHW /INTERSTATE FFS
GRAVITY  PURPOSE  = 4, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[21],LOSRANGE=2-250.
;;NHW /ARTERIAL   FFS
GRAVITY  PURPOSE  = 5, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[20],LOSRANGE=2-250.
;;NHO /INTERSTATE FFS
GRAVITY  PURPOSE  = 6, LOS=MW[31], FFACTORS= FF, KFACTORS = MW[21],LOSRANGE=2-250.
;;NHO /ARTERIAL   FFS
```

```
;REPORT ZDAT = Y
;REPORT ACOMP=1-6

MATO = NHB.TEM,MO=1-6   ;   Final NHB  trip table(s)
                         ;       T1 - NHW    INTL
                         ;       T2 - NHO    INTL
                         ;       T3 - NHW    EXTL      interstate facility FFactors
                         ;       T4 - NHW    EXTL      arterial   facility FFactors
                         ;       T5 - NHO    EXTL      interstate facility FFactors
                         ;       T6 - NHO    EXTL      arterial   facility FFactors
ENDRUN
;; --ENB NHB Trip Dist---;;
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////      Start COM/TRK Trip Distribution Here:              /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

RUN PGM=TRIPDIST
  MATI[1] = SOV%_prev_%MD.SKM       ; Off-Pk Time Imped. for COM
  MATI[2] = trk%_prev_%md.skm       ; Off-Pk Truck Time for MTK/HTK
  MATI[3] = SOVMDTTE.skf            ; Midday Time skims for Extl trip dist.

; Put impedance matrices in work tables 11-12.  Tab 11 is for COM
; trips; tab 12 is for MTK and HTK trips.  All time values are in minutes.

 MW[11]  = MI.1.1  ; com veh los  matix
 MW[12]  = MI.2.1  ; trk     los  matrix
 MW[13]  = MI.3.1  ; extl    los  matrix

ZDATI[1]  = @TruckEnds@
ZDATI[2]  = @Ext_TrkEnds@

;  FFactors
FileI LOOKUPI[1] = "@FFsFile@"
LOOKUP LOOKUPI=1, NAME=FF,
       LOOKUP[1]  = IMP, RESULT=ICOM,       ; CVInt
       LOOKUP[2]  = IMP, RESULT=IMTK,       ; MTrk Intl
       LOOKUP[3]  = IMP, RESULT=IHTK,       ; HTrk Intl
       LOOKUP[4]  = IMP, RESULT=EXTCOM,     ; Ext CV
       LOOKUP[5]  = IMP, RESULT=EXTMTK,     ; Ext Mtk
       LOOKUP[6]  = IMP, RESULT=EXTHTK,     ; Ext Htk
       INTERPOLATE=N,SETUPPER=T,FAIL=0,0,0

;  Establish production and attraction vectors here:

SETPA P[1]=ZI.1.IComm_Veh, P[2]=ZI.1.IMed_Truck, P[3]=ZI.1.IHvy_Truck,
P[4]=ZI.2.SCOM_VEHPS, P[5]=ZI.2.SMED_TRKPS, P[6]=ZI.2.SHVY_TRKPS
SETPA A[1]=ZI.1.IComm_Veh, A[2]=ZI.1.IMed_Truck, A[3]=ZI.1.IHvy_Truck,
A[4]=ZI.2.SCOM_VEHAS, A[5]=ZI.2.SMED_TRKAS, A[6]=ZI.2.SHVY_TRKAS

MAXITERS = 9     ; specify GM iterations
MAXRMSE  = 0.0001

;  Establish gravity model run files & parameters
GRAVITY  PURPOSE  = 1, LOS=MW[11], FFACTORS= FF                      ; COM I/I
GRAVITY  PURPOSE  = 2, LOS=MW[12], FFACTORS= FF                      ; MTK I/I
GRAVITY  PURPOSE  = 3, LOS=MW[12], FFACTORS= FF                      ; HTK I/I
GRAVITY  PURPOSE  = 4, LOS=MW[13], FFACTORS= FF,losrange=2-250     ; COM External
GRAVITY  PURPOSE  = 5, LOS=MW[13], FFACTORS= FF,losrange=2-250     ; MTK External
GRAVITY  PURPOSE  = 6, LOS=MW[13], FFACTORS= FF,losrange=2-250     ; HTK External

MATO[1] = COM.TEM,MO=1,4 ; Final COM trip tables: 1 = I/I, 2 = Extl
MATO[2] = MTK.TEM,MO=2,5 ; Final MTK trip tables: 1 = I/I, 2 = Extl
MATO[3] = HTK.TEM,MO=3,6 ; Final HTK trip tables: 1 = I/I, 2 = Extl

ENDRUN

; End COM/TRK Trip Distribution  ---
```

```
;;------------------------------------------------------------------------------------
---------------------
;;Now splice the external interstate/ external arterial matrices by purpose into
single external table  -
;;------------------------------------------------------------------------------------
---------------------

RUN PGM=MATRIX
ZONES = @ZONESIZE@

MATI[1] = HBW.TEM    ;    6 HBW  trip tables:  Inc1,..,Inc4, Ext/InterstFFs,
Extls/ArterFFs
MATI[2] = HBS.TEM    ;    6 HBS  trip tables:  Inc1,..,Inc4, Ext/InterstFFs,
Extls/ArterFFs
MATI[3] = HBO.TEM    ;    6 HBO  trip tables:  Inc1,..,Inc4, Ext/InterstFFs,
Extls/ArterFFs
MATI[4] = NHB.TEM    ;    6 NHB  trip tables:  NHW I-I, NHO I-I, NHW Extl/IntFFs,NHW
Extl/ArtFFs, NHO Extl/IntFFs,NHO Extl/ArtFFs
MATI[5] = COM.TEM    ;    2 Com  trip tables:  I/I, Extl
MATI[6] = MTK.TEM    ;    2 Mtk  trip tables:  I/I, Extl
MATI[7] = HTK.TEM    ;    2 Htk  trip tables:  I/I, Extl

FillMW MW[101]=mi.1.1,2,3,4,5,6  ; HBW tabs in mw 101-106
FillMW MW[201]=mi.2.1,2,3,4,5,6  ; HBS tabs in mw 201-206
FillMW MW[301]=mi.3.1,2,3,4,5,6  ; HBO tabs in mw 301-306
FillMW MW[401]=mi.4.1,2,3,4,5,6  ; NHW/NHO tabs in mw 401-406

FillMW MW[601]=mi.5.1,2          ; Com tabs in mw 501-506
FillMW MW[701]=mi.6.1,2          ; Mtk tabs in mw 601-606
FillMW MW[801]=mi.7.1,2          ; Htk tabs in mw 701-706

;; define external interstate, and external arterial station interchanges
;;  in mws 11, 22
MW[11]=0.0
MW[22]=0.0


;; define External /Interstate rows, columns
if  (I >= 1 && I <= @LstITaz@)  mw[11] = 1.0, include =
3677,3680,3685,3687,3697,3702,3711,3713,3714,3715,3718,3722
if  (I=3677 || I=3680  || I=3685  || I=3687  || I=3697  || I=3702 || I=3711  ||
I=3713  || I=3714  || I=3715  || I=3718  || I=3722)
                               mw[11] = 1.0
 endif

;; define External /Arterial rows, columns
if  (I >= 1 && I <= @LstITaz@)  mw[22] = 1.0, include =
3676,3678,3679,3681,3682,3683,3684,3686,3688,3689,3690,3691,3692,3693,3694,3695,

3696,3698,3699,3700,3701,3703,3704,3705,3706,3707,3708,3709,3710,3712,3716,3717,3719
,3720,3721
if  (I=3676 || I=3678 || I=3679 || I=3681 || I=3682 || I=3683 || I=3684 || I=3686 ||
I=3688 || I=3689 || I=3690 || I=3691 || I=3692 ||
     I=3693 || I=3694 || I=3695 || I=3696 || I=3698 || I=3699 || I=3700 || I=3701 ||
I=3703 || I=3704 || I=3705 || I=3706 || I=3707 ||
     I=3708 || I=3709 || I=3710 || I=3712 || I=3716 || I=3717 || I=3719 || I=3720 ||
I=3721)
                               mw[22] = 1.0
endif

;;
;;Apply 'screen' matrices to separate external Int/Art matrices and combine in one
matrix
MW[107] =   (MW[105] * mw[11]) + (MW[106] * mw[22])  ; Final HBW External trip
tables
MW[207] =   (MW[205] * mw[11]) + (MW[206] * mw[22])  ;       HBS External trip
tables
MW[307] =   (MW[305] * mw[11]) + (MW[306] * mw[22])  ;       HBO External trip
tables

MW[407] =   (MW[403] * mw[11]) + (MW[404] * mw[22])  ;       NHW External trip
tables
MW[507] =   (MW[405] * mw[11]) + (MW[406] * mw[22])  ;       NHO External trip
tables

;;
;;Compute Total Person Trips matrix
MW[108] =    MW[101] + MW[102] + MW[103] + MW[104] + MW[107]    ; Total HBW
Motorized Person Trip tabs (II,IX,XI)
MW[208] =    MW[201] + MW[202] + MW[203] + MW[204] + MW[207]    ; Final HBS
Motorized Person Trip tabs (II,IX,XI)
MW[308] =    MW[301] + MW[302] + MW[303] + MW[304] + MW[307]    ; Final HBO
Motorized Person Trip tabs (II,IX,XI)
MW[408] =    MW[401] +                             MW[407]    ; Final NHW
Motorized Person Trip tabs (II,IX,XI)
MW[508] =    MW[402] +                             MW[507]    ; Final NHO
Motorized Person Trip tabs (II,IX,XI)
MW[608] =    MW[601] + MW[602]                                ; Final Commercial
Vehicle Trips       (II,IX,XI)
MW[708] =    MW[701] + MW[702]                                ; Final Medium Truck
Trips             (II,IX,XI)
MW[808] =    MW[801] + MW[802]                                ; Final Heavy  Truck
Trips             (II,IX,XI)

 ;; write out final matrices comprehensive tabs
MATO[1] = @HBWTDOUT@ ,
MO=101,102,103,104,107,108,name=HBWI1Psn,HBWI2Psn,HBWI3Psn,HBWI4Psn,HBW_Ext,HBWAllPs
n
MATO[2] = @HBSTDOUT@ ,
MO=201,202,203,204,207,208,name=HBSI1Psn,HBSI2Psn,HBSI3Psn,HBSI4Psn,HBS_Ext,HBSAllPs
n
MATO[3] = @HBOTDOUT@ ,
MO=301,302,303,304,307,308,name=HBOI1Psn,HBOI2Psn,HBOI3Psn,HBOI4Psn,HBO_Ext,HBOAllPs
n
MATO[4] = @NHWTDOUT@ , MO=401,407,408            ,name=NHWPsnII,NHWPsnExt
NHWAllPsn
MATO[5] = @NHOTDOUT@ , MO=402,507,508            ,name=NHOPsnII,NHOPsnExt
NHOAllPsn
MATO[6] = @COMTDOUT@ , MO=601,602,608            ,name=COM_Int ,COM_Ext,
COMAllVeh
MATO[7] = @MTKTDOUT@ , MO=701,702,708            ,name=MTK_Int ,MTK_Ext,
MTKAllVeh
MATO[8] = @HTKTDOUT@ , MO=801,802,808            ,name=HTK_Int ,HTK_Ext,
HTKAllVeh



 ;; write out final matrices for mode choice model consumption
MATO[9] = @HBWforMC@ ,MO=101,102,103,104,name=HBWI1Psn,HBWI2Psn,HBWI3Psn,HBWI4Psn
; HBW Person   Trips-4TABS (INC1..INC4)
MATO[10]= @HBSforMC@ ,MO=201,202,203,204,name=HBSI1Psn,HBSI2Psn,HBSI3Psn,HBSI4Psn
; HBS Person   Trips-4TABS (INC1..INC4)
MATO[11]= @HBOforMC@ ,MO=301,302,303,304,name=HBOI1Psn,HBOI2Psn,HBOI3Psn,HBOI4Psn
; HBO Person   Trips-4TABS (INC1..INC4)
MATO[12]= @NHWforMC@ ,MO=401            ,name=NHWPsnII
; NHW Person   Trips-1TAB  (INTERNAL)
MATO[13]= @NHOforMC@ ,MO=402            ,name=NHOPsnII
; NHO Person   Trips-1TAB  (INTERNAL)

ENDRUN
;
;==================================================================
;
;----------------------------------------------------------
;
```

```
; Standard 23x23 Summaries
; Trip Distribution (HBW,HBS,HBO,NHB,COM,MTK,HTK) and formats
; them in neat jurisdictional summaries (23x23)
;
;
;--------------------------------------------------------
;--------------------------------------------------------

COPY FILE=DJ.EQV
;   -- Start of Jurisiction-to-TAZ equivalency --
D 1=1-4,6-47,49-50,52-63,65,181-209,282-287,374-381     ;  0    DC Core
D 2=5,48,51,64,66-180,210-281,288-373,382-393           ;  0    DC Noncore
D 3=394-769                                             ;  1    Montgomery
D 4=771-776,778-1404                                    ;  2    Prince George
D 5=1471-1476, 1486-1489, 1495-1497                     ;  3    ArlCore
D 6=1405-1470,1477-1485,1490-1494,1498-1545             ;  3    ArlNCore
D 7=1546-1610                                           ;  4    Alex
D 8=1611-2159                                           ;  5    FFx
D 9=2160-2441                                           ;  6    LDn
D 10=2442-2554,2556-2628,2630-2819                      ;  7    PW
D 11=2820-2949                                          ;  9    Frd
D 12=3230-3265,3268-3287                                ; 14    Car.
D 13=2950-3017                                          ; 10    How.
D 14=3018-3102,3104-3116                                ; 11    AnnAr
D 15=3288-3334                                          ; 15    Calv
D 16=3335-3409                                          ; 16    StM
D 17=3117-3229                                          ; 12    Chs.
D 18=3604-3653                                          ; 21    Fau
D 19=3449-3477,3479-3481,3483-3494,3496-3541            ; 19    Stf.
D 20=3654-3662,3663-3675                                ; 22/23 Clk,Jeff.
D 21=3435-3448,3542-3543,3545-3603                      ; 18/20 Fbg,Spots
D 22=3410-3434                                          ; 17    KG.
D 23=3676-3722                                          ;       Externals
;   -- end of Jurisiction-to-TAZ equivalency --
ENDCOPY


RUN PGM=MATRIX
  ZONES=@ZONESIZE@
  MATI[1]= @HBWTDOUT@
  MATI[2]= @HBSTDOUT@
  MATI[3]= @HBOTDOUT@
  MATI[4]= @NHWTDOUT@
  MATI[5]= @NHOTDOUT@
  MATI[6]= @COMTDOUT@
  MATI[7]= @MTKTDOUT@
  MATI[8]= @HTKTDOUT@

  MW[1] = MI.1.6          ; HBW TRIP TABLE/TAZ-LEVEL
  MW[2] = MI.2.6          ; HBS TRIP TABLE/TAZ-LEVEL
  MW[3] = MI.3.6          ; HBO TRIP TABLE/TAZ-LEVEL
  MW[4] = MI.4.3          ; NHW TRIP TABLE/TAZ-LEVEL
  MW[5] = MI.5.3          ; NHO TRIP TABLE/TAZ-LEVEL
  MW[6] = MI.6.3          ; COM TRIP TABLE/TAZ-LEVEL
  MW[7] = MI.7.3          ; MTK TRIP TABLE/TAZ-LEVEL
  MW[8] = MI.8.3          ; HTK TRIP TABLE/TAZ-LEVEL

 ; -- PLACEMARKER TABLES - FUTURE WORK
  MW[11] = 0 ;                 HBW TRIP TABLE/TAZ-LEVEL
  MW[12] = 0 ;                 HBS TRIP TABLE/TAZ-LEVEL
  MW[13] = 0 ;                 HBO TRIP TABLE/TAZ-LEVEL
  MW[14] = 0 ;                 NHB TRIP TABLE/TAZ-LEVEL
  MW[15] = 0 ;                 NHB TRIP TABLE/TAZ-LEVEL
  MW[16] = 0 ;                 COM TRIP TABLE/TAZ-LEVEL
  MW[17] = 0 ;                 MTK TRIP TABLE/TAZ-LEVEL
  MW[18] = 0 ;                 HTK TRIP TABLE/TAZ-LEVEL

  FILEO MATO[1]  = HBW.SQZ MO=1,11 ; OUTPUT HBW TABLE(S), SQUEEZED
        MATO[2]  = HBS.SQZ MO=2,12 ; OUTPUT HBS TABLE(S), SQUEEZED
        MATO[3]  = HBO.SQZ MO=3,13 ; OUTPUT HBO TABLE(S), SQUEEZED
        MATO[4]  = NHW.SQZ MO=4,14 ; OUTPUT NHW TABLE(S), SQUEEZED
        MATO[5]  = NHO.SQZ MO=5,15 ; OUTPUT NHO TABLE(S), SQUEEZED
        MATO[6]  = COM.SQZ MO=6,16 ; OUTPUT COM TABLE(S), SQUEEZED
        MATO[7]  = MTK.SQZ MO=7,17 ; OUTPUT MTK TABLE(S), SQUEEZED
        MATO[8]  = HTK.SQZ MO=8,18 ; OUTPUT HTK TABLE(S), SQUEEZED

  ; renumber OUT.MAT according to DJ.EQV
  RENUMBER FILE=DJ.EQV, MISSINGZI=M, MISSINGZO=W
ENDRUN

;
LOOP PURP=1,8 ; Loop for Each Purpose
;
; Global Variables:
;   SQFNAME    Name of squeezed modal trip table(s)
;   DESCRIPT   Description
;   PURPOSE    Purpose
;   MODE       Mode
;   DCML       Decimal specification
;   TABTYPE    Table type(1/2), i.e.,-involves 1 or 2 trip tables
;   SCALE=1    Scale factor to be applied (if desired)
;   OPER='+'   Operation(if tabtype=2) Tab1(?)Tab2=Result
;
;
DESCRIPT    = 'SIMULATION-%_iter_% Itr Year: %_year_% Alt: %_alt_%'
IF (PURP=1)
  SQFNAME     = 'HBW.SQZ'
  PURPOSE     = 'HBW'
  MODE        = 'MOTORIZED PERSON'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=2)
  SQFNAME     = 'HBS.SQZ'
  PURPOSE     = 'HBS'
  MODE        = 'MOTORIZED PERSON'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=3)
  SQFNAME     = 'HBO.SQZ'
  PURPOSE     = 'HBO'
  MODE        = 'MOTORIZED PERSON'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=4)
  SQFNAME     = 'NHW.SQZ'
  PURPOSE     = 'NHW'
  MODE        = 'MOTORIZED PERSON'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=5)
  SQFNAME     = 'NHO.SQZ'
  PURPOSE     = 'NHO'
  MODE        = 'MOTORIZED PERSON'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=6)
```

```
  SQFNAME     = 'COM.SQZ'
  PURPOSE     = 'COM'
  MODE        = 'COMMERCIAL VEH'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=7)
  SQFNAME     = 'MTK.SQZ'
  PURPOSE     = 'MTK'
  MODE        = 'TRUCKS'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=8)
  SQFNAME     = 'HTK.SQZ'
  PURPOSE     = 'HTK'
  MODE        = 'TRUCKS'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ENDIF
;
RUN PGM=MATRIX
  PAGEheight=32000
  ZONES=23
  FILEI MATI=@SQFNAME@
  ARRAY CSUM=23,CSUM1=23,CSUM2=23
; ---------------------------------------------------------------
; --  Table Cell Value decalaration or computation (in MW[1])
; ---------------------------------------------------------------

  FILLMW MW[1]=MI.1.1,2     ;    read input tables in MW 2,3

 IF (@TABTYPE@ = 2)
  FILLMW MW[2]=MI.1.1,2     ;    read input tables in MW 2,3
 ENDIF

  IF (@TABTYPE@=2)                                 ; Cell Value
     JLOOP                                         ; computed for
      IF (MW[3][J]>0) MW[1]=MW[2]*@SCALE@@OPER@MW[3]; special summaries-
     ENDJLOOP                                      ; calculation in MW[1]
  ENDIF

; -----------------------------------------------------
; ---- ROW Marginal declaration or computation --------
; -----------------------------------------------------
  RSUM   =     ROWSUM(1)           ; 'normal' table- row summary value

  IF (@TABTYPE@=2)
         RSUM = @SCALE@*ROWSUM(2)@OPER@ROWSUM(3)  ; non-'normal' table
  ENDIF                                     ; compute the row marginal(%)

; -------------------------------------------------------
; ---- COLUMN/Total Marginal Accumulation           ----
; ---- The computation (if necessary) is done below  ----
; -------------------------------------------------------

  JLOOP                           ; COL/Total Accumulation
    CSUM[J] = CSUM[J] +  MW[1][J]  ; for 'normal' table
    TOTAL   = TOTAL   +  MW[1]     ;
  ENDJLOOP

IF (@TABTYPE@=2)
  JLOOP                             ; COL/Total Accumulation
    CSUM1[J] = CSUM1[J] +  MW[2][J]  ; for non-'normal' Table
     TOTAL1   = TOTAL1   +  MW[2]     ;
     CSUM2[J] = CSUM2[J] +  MW[3][J]  ;
     TOTAL2   = TOTAL2   +  MW[3]     ;
   ENDJLOOP
 ENDIF

   IF (I==1)      ; print header

   PRINT LIST='/bt   ','@DESCRIPT@'
   PRINT LIST='      ','Purpose: ','@PURPOSE@','   MODE: ','@MODE@'
   PRINT LIST='      '

    PRINT LIST='           DESTINATION'
    PRINT LIST=' ORIGIN |',
               '      1','      2','      3','      4',
               '      5','      6','      7','      8','      9',
               '     10','     11','     12','     13','     14',
               '     15','     16','     17','     18','     19',
               '     20','     21','     22','     23',' |  TOTAL'



    PRINT LIST='==============',
               '=========================================',
               '=========================================',
               '=========================================',
               '======================================'


   ENDIF

   IF (I=1)
    CURDIST=STR(I,2,1)+' DC CR'+ '|' ; Make row header
   ELSEIF (I=2)
    CURDIST=STR(I,2,1)+' DC NC'+ '|' ; Make row header
   ELSEIF (I=3)
    CURDIST=STR(I,2,1)+' MTG  '+ '|' ; Make row header
   ELSEIF (I=4)
    CURDIST=STR(I,2,1)+' PG   '+ '|' ; Make row header
   ELSEIF (I=5)
    CURDIST=STR(I,2,1)+' ARLCR'+ '|' ; Make row header
   ELSEIF (I=6)
    CURDIST=STR(I,2,1)+' ARNCR'+ '|' ; Make row header
   ELSEIF (I=7)
    CURDIST=STR(I,2,1)+' ALX  '+ '|'; Make row header
   ELSEIF (I=8)
    CURDIST=STR(I,2,1)+' FFX  '+ '|' ; Make row header
   ELSEIF (I=9)
    CURDIST=STR(I,2,1)+' LDN  '+ '|' ; Make row header
   ELSEIF (I=10)
    CURDIST=STR(I,2,1)+' PW   '+ '|' ; Make row header
   ELSEIF (I=11)
    CURDIST=STR(I,2,1)+' FRD  '+ '|' ; Make row header
   ELSEIF (I=12)
    CURDIST=STR(I,2,1)+' CAR  '+ '|' ; Make row header
   ELSEIF (I=13)
    CURDIST=STR(I,2,1)+' HOW  '+ '|' ; Make row header
   ELSEIF (I=14)
    CURDIST=STR(I,2,1)+' AAR  '+ '|' ; Make row header
   ELSEIF (I=15)
    CURDIST=STR(I,2,1)+' CAL  '+ '|' ; Make row header
   ELSEIF (I=16)
    CURDIST=STR(I,2,1)+' STM  '+ '|' ; Make row header
   ELSEIF (I=17)
    CURDIST=STR(I,2,1)+' CHS  '+ '|' ; Make row header
   ELSEIF (I=18)
    CURDIST=STR(I,2,1)+' FAU  '+ '|' ; Make row header
   ELSEIF (I=19)
```

```
   CURDIST=STR(I,2,1)+' STA  '+ '|' ; Make row header
  ELSEIF (I=20)
   CURDIST=STR(I,2,1)+' CL/JF'+ '|' ; Make row header
  ELSEIF (I=21)
   CURDIST=STR(I,2,1)+' SP/FB'+ '|' ; Make row header
  ELSEIF (I=22)
   CURDIST=STR(I,2,1)+' KGEO '+ '|' ; Make row header
  ELSEIF (I=23)
   CURDIST=STR(I,2,1)+' EXTL '+ '|' ; Make row header
  ELSE  ; (I=24)
   CURDIST=STR(I,2,1)+' TOTAL'+ '|' ; Make row header
  ENDIF

  PRINT FORM=7.@DCML@ LIST=CURDIST, MW[1][1],MW[1][2],MW[1][3],MW[1][4],MW[1][5],
                  MW[1][6],MW[1][7],MW[1][8],MW[1][9],MW[1][10],
                  MW[1][11],MW[1][12],MW[1][13],MW[1][14],MW[1][15],
                  MW[1][16],MW[1][17],MW[1][18],MW[1][19],MW[1][20],
                  MW[1][21],MW[1][22],MW[1][23],' |',RSUM

  IF (I==ZONES)
; Now at the end of Processed zone matrix
;  Do final Column/Grand Total Computations
     IF (@TABTYPE@=2)
       LOOP IDX = 1,ZONES
            IF (CSUM2[IDX] = 0)
                 CSUM[IDX] = 0
            ELSE
                 CSUM[IDX] = @SCALE@* CSUM1[IDX] @OPER@ CSUM2[IDX]
            ENDIF
       ENDLOOP
     ENDIF
     IF (@TABTYPE@=2 )
            IF (TOTAL2 = 0)
                TOTAL  = 0
            ELSE
                TOTAL  = @SCALE@ *TOTAL1 @OPER@ TOTAL2
            ENDIF
     ENDIF

;  End of final Column/Grand Total Computations

   PRINT LIST='==============',
              '=========================================',
              '=========================================',
              '=========================================',
              '====================================='


    PRINT FORM=8.@DCML@,
    LIST=' TOTAL ',' ',CSUM[1],'      ' ,CSUM[3],
    '      ',CSUM[5],'      ',CSUM[7],'      ',CSUM[9],
    '      ',CSUM[11],'      ',CSUM[13],'      ',CSUM[15],
    '      ',CSUM[17],'      ',CSUM[19],'      ',CSUM[21],
    '      ',CSUM[23],' |'
    PRINT FORM=8.@DCML@,
    LIST='/et            ',CSUM[2],
    '      ' ,CSUM[4],'      ',CSUM[6],'      ',CSUM[8],
    '      ',CSUM[10],'      ',CSUM[12],'      ',CSUM[14],
    '      ',CSUM[16],'      ',CSUM[18],'      ',CSUM[20],
    '      ',CSUM[22],'       ',TOTAL(9.@DCML@)


 ENDIF
ENDRUN

ENDLOOP ; End Loop
```

41 Trip_Generation.s

```
*del voya*.prn
;=================================================================
;  Trip_Generation.s
;  Version 2.3, 3722 TAZ System  - Trip Generation Process
;
;   RM
;   Date:      2011-02-15
;
;=================================================================
; Note: Jurisdictional adjustment for P's A's added 2/8/11
; with nonmotorized fix  2/15/11
;=================================================================
;Parameters and file specifications:
;=================================================================

ZONESIZE    =  3722                       ;  No. of TAZs
LastIZn     =  3675                       ;  Last Internal TAZ no.
vmtFacNwk   = 1.00                        ;  To account for underreporting
vmtFacWrk   = 1.00                        ;  To account for underreporting

JrCl        =  24                         ;  No. of Juris. Classes (transformed
JURIS. Code 0-23 becomes 1-24)
ArCl        =   6                         ;  No. of Area Classe (ATypes)
SzCl        =   4                         ;  No. of HH Size   Classes
InCl        =   4                         ;  No. of Income    Classes
VaCl        =   4                         ;  No. of Veh Avail Classes
PrCL        =   5                         ;  No. of Trip Purposes

ZNFILE_IN1  = 'inputs\ZONE.dbf'           ;  Input  Zonal Land Use File
Ext_PsAs    = 'inputs\Ext_PsAs.dbf'       ;  External Ps/As

ZNFILE_IN3  = 'AreaType_File.dbf'                    ;  Input  Zonal Area Type File
from network building
ZNFILE_IN4  = 'Demo_Models_HHbyISV_%_iter_%.dbf'     ;  HHs by Income Size Vehs
Avail

ZNFILE_IN5  = 'TripGen_LUFile.dbf'                   ;  Consolidated zonal input
file (intermediate I/O file)

ReportFile  = 'Trip_Generation_%_iter_%.txt'             ; Trip Gen. Report file
TripPros    = 'Trip_Gen_Productions_%_iter_%.dbf'        ; Zonal Trip productions by
purpose
TripAttsCom = 'Trip_Gen_Attractions_Comp_%_iter_%.dbf'   ; Zonal Trip Attractions -
Initial/computed
TripAttsFin = 'Trip_Gen_Attractions_Final_%_iter_%.dbf'  ; Zonal Trip Attractions -
Final/scaled

ZNFILE_IN2  ='..\support\GIS_variables.DBF'              ;  Input  Zonal GIS
variable File
Prate_IN    ='..\support\weighted_trip_rates.dbf'        ; Trip Prod. rates
NMPrate_in  ='..\support\NMPrates.dbf'                   ; NonMotorized Prod share
model coeffs.
NMArate_in  ='..\support\NMArates.dbf'                   ; NonMotorized Attr share
model coeffs.
Attrate_in  ='..\support\AttrRates.dbf'                  ; Trip attraction rates
IncRat_in   ='..\support\HBINCRAT.dbf'                   ; HB income shares
```

```
;; Area Type-Based Trip End Adjustments BY PURPOSE AND AREA TYPE
;;  - Thes include calibrated rate adjustments and non-work underreporting factors
for non work, motorized trips (1.65 -down from 1.75)
;; MOTORIZED PRODUCTIONS
MHBWPAdj1=1.1358 * vmtFacWrk  MHBWPAdj2=1.1180 * vmtFacWrk  MHBWPAdj3=1.0554 *
vmtFacWrk  MHBWPAdj4=0.9175 * vmtFacWrk  MHBWPAdj5=0.9577 * vmtFacWrk
MHBWPAdj6=0.9307 * vmtFacWrk ;
MHBSPAdj1=0.8092 * vmtFacNwk  MHBSPAdj2=0.9504 * vmtFacNwk  MHBSPAdj3=1.0793 *
vmtFacNwk  MHBSPAdj4=0.9059 * vmtFacNwk  MHBSPAdj5=1.0751 * vmtFacNwk
MHBSPAdj6=0.8620 * vmtFacNwk ;
MHBOPAdj1=1.1067 * vmtFacNwk  MHBOPAdj2=1.1181 * vmtFacNwk  MHBOPAdj3=1.0303 *
vmtFacNwk  MHBOPAdj4=0.9647 * vmtFacNwk  MHBOPAdj5=1.0109 * vmtFacNwk
MHBOPAdj6=0.8324 * vmtFacNwk ;
MNHWPAdj1=1.0000 * vmtFacNwk  MNHWPAdj2=1.0000 * vmtFacNwk  MNHWPAdj3=1.0000 *
vmtFacNwk  MNHWPAdj4=1.0000 * vmtFacNwk  MNHWPAdj5=1.0000 * vmtFacNwk
MNHWPAdj6=1.0000 * vmtFacNwk ;
MNHOPAdj1=1.0000 * vmtFacNwk  MNHOPAdj2=1.0000 * vmtFacNwk  MNHOPAdj3=1.0000 *
vmtFacNwk  MNHOPAdj4=1.0000 * vmtFacNwk  MNHOPAdj5=1.0000 * vmtFacNwk
MNHOPAdj6=1.0000 * vmtFacNwk ;

;; MOTORIZED ATTRACTIONS
MHBWAAdj1=1.0765 * vmtFacWrk  MHBWAAdj2=0.8478 * vmtFacWrk  MHBWAAdj3=0.9612 *
vmtFacWrk  MHBWAAdj4=1.1045 * vmtFacWrk  MHBWAAdj5=0.9871 * vmtFacWrk
MHBWAAdj6=1.0383 * vmtFacWrk ;
MHBSAAdj1=0.7952 * vmtFacNwk  MHBSAAdj2=1.0967 * vmtFacNwk  MHBSAAdj3=1.1577 *
vmtFacNwk  MHBSAAdj4=0.8770 * vmtFacNwk  MHBSAAdj5=0.9437 * vmtFacNwk
MHBSAAdj6=0.5187 * vmtFacNwk ;
MHBOAAdj1=1.1542 * vmtFacNwk  MHBOAAdj2=1.1304 * vmtFacNwk  MHBOAAdj3=0.9307 *
vmtFacNwk  MHBOAAdj4=1.0635 * vmtFacNwk  MHBOAAdj5=1.0480 * vmtFacNwk
MHBOAAdj6=0.8032 * vmtFacNwk ;
MNHWAAdj1=1.1457 * vmtFacNwk  MNHWAAdj2=0.8686 * vmtFacNwk  MNHWAAdj3=0.9843 *
vmtFacNwk  MNHWAAdj4=1.5731 * vmtFacNwk  MNHWAAdj5=1.1860 * vmtFacNwk
MNHWAAdj6=1.0919 * vmtFacNwk ;
MNHOAAdj1=0.7953 * vmtFacNwk  MNHOAAdj2=1.0652 * vmtFacNwk  MNHOAAdj3=1.0724 *
vmtFacNwk  MNHOAAdj4=0.9180 * vmtFacNwk  MNHOAAdj5=1.0899 * vmtFacNwk
MNHOAAdj6=0.7224 * vmtFacNwk ;

;; NONMOTORIZED PRODUCTIONS
NHBWPAdj1=1.2600  NHBWPAdj2=1.0000  NHBWPAdj3=1.0000  NHBWPAdj4=1.0000
NHBWPAdj5=1.0000   NHBWPAdj6=1.0000  ;
NHBSPAdj1=1.6700  NHBSPAdj2=1.4000  NHBSPAdj3=1.0000  NHBSPAdj4=1.0000
NHBSPAdj5=1.0000   NHBSPAdj6=1.0000  ;
NHBOPAdj1=0.7000  NHBOPAdj2=1.0700  NHBOPAdj3=1.0000  NHBOPAdj4=1.0000
NHBOPAdj5=1.0000   NHBOPAdj6=1.0000  ;
NNHWPAdj1=1.0000  NNHWPAdj2=1.0000  NNHWPAdj3=1.0000  NNHWPAdj4=1.0000
NNHWPAdj5=1.0000   NNHWPAdj6=1.0000  ;
NNHOPAdj1=1.0000  NNHOPAdj2=1.0000  NNHOPAdj3=1.0000  NNHOPAdj4=1.0000
NNHOPAdj5=1.0000   NNHOPAdj6=1.0000  ;

;; NONMOTORIZED ATTRACTIONS
NHBWAAdj1=1.0300  NHBWAAdj2=1.0000  NHBWAAdj3=1.1100  NHBWAAdj4=1.1100
NHBWAAdj5=1.1300   NHBWAAdj6=1.1000  ;
NHBSAAdj1=1.8400  NHBSAAdj2=1.2900  NHBSAAdj3=1.0900  NHBSAAdj4=1.1000
NHBSAAdj5=1.0000   NHBSAAdj6=1.0000  ;
NHBOAAdj1=0.6000  NHBOAAdj2=1.0600  NHBOAAdj3=1.1100  NHBOAAdj4=1.0900
NHBOAAdj5=1.1000   NHBOAAdj6=1.0800  ;
NNHWAAdj1=1.0000  NNHWAAdj2=1.0000  NNHWAAdj3=1.0000  NNHWAAdj4=1.0000
NNHWAAdj5=1.0000   NNHWAAdj6=1.0000  ;
NNHOAAdj1=1.6600  NNHOAAdj2=1.0000  NNHOAAdj3=0.7000  NNHOAAdj4=0.7000
NNHOAAdj5=0.7000   NNHOAAdj6=0.7000  ;

XNHW_Share = 0.41      ; Pct. of external NHB Auto Driver Trips that are NHW
(2007/08HTS)
XNHO_Share = 0.59      ; Pct. of external NHB Auto Driver Trips that are NHO
(2007/08HTS)
```

```
XOccHBW    = 1.06      ;  HBW External Auto occupancy assumption (2007/08HTS)
XOccHBS    = 1.45      ;  HBS External Auto occupancy assumption
XOccHBO    = 1.63      ;  HBO External Auto occupancy assumption
XOccNHW    = 1.11      ;  NHW External Auto occupancy assumption
XOccNHO    = 1.50      ;  NHO External Auto occupancy assumption


Ofmt        = '(15.2)'               ;  Format of Output file data

;=================================================================
;Program Steps
;=================================================================
 RUN PGM=MATRIX
 ZONES=1
;=========================================================================
;  Accumulate floating 0.5 mile block density for each TAZ
;  Accumulation based on varying straightline distances between TAZ centroids
;
;;========================================================================


 FILEO RECO[1]    = "@ZNFile_IN5@",
                    fields = TAZ(5),
                    HH(8.0),        TOTPOP(8.0), TOTEMP(8.0),
RETEMP(8.0),NRETEMP(8.0),
                    OFFEMP(8.0),    OTHEMP(8.0), INDEMP(8.0), HHPOP(8.0),
GQPOP(8.0),
                    LANDAREA(8.4), POP_10,      EMP_10,       AREA_10,
                    POPDEN10,       EMPDEN10,      ADISTTOX(5.2),
                    BLOCKS05(8.0), AREA05(15.4),   BlockDen05(8.0),
                    jurcode(5.0), Atype(5.0)

; read XY coords from the ZONE file, as a zonal lookup table
 FileI LOOKUPI[1] = "@ZNFILE_IN1@"
 LOOKUP LOOKUPI=1, NAME=tazdata,
        LOOKUP[1]  = TAZ, RESULT=TAZXCRD,  ;
        LOOKUP[2]  = TAZ, RESULT=TAZYCRD,  ;
        LOOKUP[3]  = TAZ, RESULT=HH,       ;
        LOOKUP[4]  = TAZ, RESULT=HHPOP,    ;
        LOOKUP[5]  = TAZ, RESULT=GQPOP,    ;
        LOOKUP[6]  = TAZ, RESULT=TOTPOP,   ;
        LOOKUP[7]  = TAZ, RESULT=TOTEMP,   ;
        LOOKUP[8]  = TAZ, RESULT=INDEMP,   ;
        LOOKUP[9]  = TAZ, RESULT=RETEMP,    ;
        LOOKUP[10] = TAZ, RESULT=OFFEMP,    ;
        LOOKUP[11] = TAZ, RESULT=OTHEMP,    ;
        LOOKUP[12] = TAZ, RESULT=JURCODE,   ;
        LOOKUP[13] = TAZ, RESULT=LANDAREA,  ;
        LOOKUP[14] = TAZ, RESULT=ADISTTOX,  ;
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N


; Read GIS File as a zonal lookup table
 FileI LOOKUPI[2] = "@ZNFILE_IN2@"
 LOOKUP LOOKUPI=2,   NAME=gisdata,
        LOOKUP[1]  = TAZ, RESULT=BLOCKS,
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N


; Read Area Type File as a zonal lookup table
 FileI LOOKUPI[3] = "@ZNFILE_IN3@"
 LOOKUP LOOKUPI=3,   NAME=Atypedata,
        LOOKUP[1]  = TAZ, RESULT=pop_10,
        LOOKUP[2]  = TAZ, RESULT=emp_10,
        LOOKUP[3]  = TAZ, RESULT=Area_10,
        LOOKUP[4]  = TAZ, RESULT=popden,
        LOOKUP[5]  = TAZ, RESULT=empden,
        LOOKUP[6]  = TAZ, RESULT=atype,
```

```
       INTERPOLATE=N, FAIL= 0,0,0, LIST=N
;; define zonal arrays for accumulating the variables
ARRAY   BLOCKS05=3722, BLOCKDEN05=3722, AREA05=3722

 LOOP M = 1,@LastIZn@  ;  Loop through each zone, read coordinates

   Xi      = tazdata(1,M)
   Yi      = tazdata(2,M)
   IF (Xi  = 0.00)  Continue


      LOOP L= 1,@LastIZn@   ; Loop through all proximate zones, read coords.
           Xj      = tazdata(1,L)
           Yj      = tazdata(2,L)
           IF (Xj  = 0.00)  Continue

           Xdiff   = abs(Xi-Xj)                            ; calc. airline distance
           Ydiff   = abs(Yi-Yj)                            ;
                                                           ;
           d_ft    = sqrt(xdiff*xdiff + Ydiff*Ydiff)       ;
           d_mi    = d_ft/5280.0                           ;
                                                           ;
           ;debug1
           If (l=1)
                print form=10  list = l,m,xi,yi,xj,yj,d_ft,d_mi(6.2),
file=debug1.txt
           endif
           ;end debug1

           IF      (D_mi <  0.500)
                    BLOCKS05[M]    =  BLOCKS05[M]    +  gisdata(1,L)
                    Area05[M]      =  Area05[M]      +  tazdata(13,L)
           ENDIF


       ENDLOOP

 ENDLOOP

;; All done reading, write out zonal results:

LOOP M= 1,@LastIZn@
            ro.TAZ            = M
            ro.Area05         = Area05[M]
            ro.BLOCKS05       = BLOCKS05[M]
            ro.BlockDen05     = 0
               IF (Area05[M] > 0)
                   ro.BlockDen05     = BLOCKS05[M]/Area05[M]
               ENDIF

            ro.HH             = TAZdata(3,M)
            ro.HHPOP          = TAZdata(4,M)
            ro.GQPOP          = TAZdata(5,M)
            ro.TOTPOP          =TAZdata(6,M)
            ro.TOTEMP          =TAZdata(7,M)
            ro.RETEMP          =TAZdata(9,M)
            ro.NRETEMP         =TAZdata(7,M) - TAZdata(9,M)
            ro.INDEMP          =TAZdata(8,M)
            ro.OTHEMP          =TAZdata(11,M)
            ro.OFFEMP          =TAZdata(10,M)
            ro.JURCODE         =TAZdata(12,M)
            ro.LANDAREA        =TAZdata(13,M)
            ro.ADISTTOX        =TAZdata(14,M)

            ro.POP_10          =Atypedata(1,M)
            ro.EMP_10          =Atypedata(2,M)
            ro.Area_10         =Atypedata(3,M)
            ro.POPDEN10        =Atypedata(4,M)
            ro.EMPDEN10        =Atypedata(5,M)
            ro.ATYPE           =Atypedata(6,M)

        WRITE RECO= 1
  ENDLOOP
 endrun



RUN PGM=MATRIX
ZONES=@ZONESIZE@

FILEO PRINTO[1]    = "@ReportFile@"
pageheight=32767  ; Preclude header breaks

; Set up zone arrays for accumulating I/O variables
;

Array Proda      =@PrCl@,@InCl@,@SzCl@,@VaCl@

Array Zproda     =@PrCl@,@ZoneSize@
Array ZprodaInc  =@PrCl@,@InCl@,@ZoneSize@
Array MZprodaInc =@PrCl@,@InCl@,@ZoneSize@
Array MZproda    =@PrCl@,@Zonesize@
Array MTotProdInca =@PrCl@,@Incl@
Array NMZProda   =@PrCl@,@Zonesize@
Array MZattra    =@PrCl@,@Zonesize@
Array MZattraInc =@PrCl@,@InCl@,@Zonesize@
Array NMZattra   =@PrCl@,@Zonesize@

Array AIncratio  =@InCl@,@ArCl@,@PrCl@
Array AIncShare  =@InCl@,@ArCl@,@PrCl@
Array IniAttra   =@InCl@,@PrCl@
Array FinAttra   =@InCl@,@PrCl@
Array IniAtot    =@PrCl@
Array FinAtot    =@PrCl@
Array Scaltot    =@PrCl@
Array Mscale     =@PrCl@
Array NMscale    =@PrCl@

Array HHa       =@InCl@,@SzCl@,@VaCl@
Array Prata     =@PrCl@,@InCl@,@SzCl@,@VaCl@
Array NMPrate   =10,@PrCl@,@ArCl@
Array NMArate   =10,@PrCl@,@ArCl@
Array Attrate   =10,@PrCl@,@ArCl@

Array I_proda   =@InCl@,@PrCl@
Array S_proda   =@SzCl@,@PrCl@
Array V_proda   =@VaCl@,@PrCl@
Array A_proda   =@ArCl@,@PrCl@
Array J_proda   =@JrCl@,@PrCl@

Array TotProda           =@PrCl@,
      MTotProda          =@PrCl@,
      XMTotProda         =@PrCl@,
      NMTotProda         =@PrCl@,
      MTotAttra          =@PrCl@,
      XMTotAttra         =@PrCl@,
      NMTotAttra         =@PrCl@,

      Atypea             =@zonesize@,

      I_HHa              =@InCl@,
      S_HHa              =@SzCl@,
      V_HHa              =@VaCl@,
      A_HHa              =@ArCl@,
```

```
      J_HHa             =@JrCl@,

      TotProdInca       =@InCl@,
      TotProdSiza       =@SzCl@,
      TotProdVeha       =@VaCl@,
      TotProdAreaa      =@ArCl@,
      TotProdJura       =@JrCl@,

      HBWNMPro          =@zonesize@,
      HBSNMPro          =@zonesize@,
      HBONMPro          =@zonesize@,
      NHWNMPro          =@zonesize@,
      NHONMPro          =@zonesize@,

      HBWNMAtt          =@zonesize@,
      HBSNMAtt          =@zonesize@,
      HBONMAtt          =@zonesize@,
      NHWNMAtt          =@zonesize@,
      NHONMAtt          =@zonesize@,

      HBWCompATT        =@zonesize@,
      HBSCompATT        =@zonesize@,
      HBOCompATT        =@zonesize@,
      NHWCompATT        =@zonesize@,
      NHOCompATT        =@zonesize@,

      HBWScalATT        =@zonesize@,
      HBSScalATT        =@zonesize@,
      HBOScalATT        =@zonesize@,
      NHWScalATT        =@zonesize@,
      NHOScalATT        =@zonesize@

 Array HBWATTInca       =@zonesize@,@InCl@
 Array HBSATTInca       =@zonesize@,@InCl@
 Array HBOATTInca       =@zonesize@,@InCl@
 Array NHWATTInca       =@zonesize@
 Array NHOATTInca       =@zonesize@
;;----------------------------------------------
;;----------------------------------------------

Array MPro_Adj = @PrCl@,@ArCl@
Array MAtt_Adj = @PrCl@,@ArCl@
Array NPro_Adj = @PrCl@,@ArCl@
Array NAtt_Adj = @PrCl@,@ArCl@

; fill purpose and area type adjustments
;;motorized adjustments
MPro_Adj[1][1]=@MHBWPAdj1@  MPro_Adj[2][1]=@MHBSPAdj1@   MPro_Adj[3][1]= @MHBOPAdj1@
MPro_Adj[4][1]= @MNHWPAdj1@  MPro_Adj[5][1]=@MNHOPAdj1@
MPro_Adj[1][2]=@MHBWPAdj2@  MPro_Adj[2][2]=@MHBSPAdj2@   MPro_Adj[3][2]= @MHBOPAdj2@
MPro_Adj[4][2]= @MNHWPAdj2@  MPro_Adj[5][2]=@MNHOPAdj2@
MPro_Adj[1][3]=@MHBWPAdj3@  MPro_Adj[2][3]=@MHBSPAdj3@   MPro_Adj[3][3]= @MHBOPAdj3@
MPro_Adj[4][3]= @MNHWPAdj3@  MPro_Adj[5][3]=@MNHOPAdj3@
MPro_Adj[1][4]=@MHBWPAdj4@  MPro_Adj[2][4]=@MHBSPAdj4@   MPro_Adj[3][4]= @MHBOPAdj4@
MPro_Adj[4][4]= @MNHWPAdj4@  MPro_Adj[5][4]=@MNHOPAdj4@
MPro_Adj[1][5]=@MHBWPAdj5@  MPro_Adj[2][5]=@MHBSPAdj5@   MPro_Adj[3][5]= @MHBOPAdj5@
MPro_Adj[4][5]= @MNHWPAdj5@  MPro_Adj[5][5]=@MNHOPAdj5@
MPro_Adj[1][6]=@MHBWPAdj6@  MPro_Adj[2][6]=@MHBSPAdj6@   MPro_Adj[3][6]= @MHBOPAdj6@
MPro_Adj[4][6]= @MNHWPAdj6@  MPro_Adj[5][6]=@MNHOPAdj6@

MAtt_Adj[1][1]=@MHBWAAdj1@  MAtt_Adj[2][1]=@MHBSAAdj1@   MAtt_Adj[3][1]= @MHBOAAdj1@
MAtt_Adj[4][1]= @MNHWAAdj1@  MAtt_Adj[5][1]=@MNHOAAdj1@
MAtt_Adj[1][2]=@MHBWAAdj2@  MAtt_Adj[2][2]=@MHBSAAdj2@   MAtt_Adj[3][2]= @MHBOAAdj2@
MAtt_Adj[4][2]= @MNHWAAdj2@  MAtt_Adj[5][2]=@MNHOAAdj2@
MAtt_Adj[1][3]=@MHBWAAdj3@  MAtt_Adj[2][3]=@MHBSAAdj3@   MAtt_Adj[3][3]= @MHBOAAdj3@
MAtt_Adj[4][3]= @MNHWAAdj3@  MAtt_Adj[5][3]=@MNHOAAdj3@
MAtt_Adj[1][4]=@MHBWAAdj4@  MAtt_Adj[2][4]=@MHBSAAdj4@   MAtt_Adj[3][4]= @MHBOAAdj4@
MAtt_Adj[4][4]= @MNHWAAdj4@  MAtt_Adj[5][4]=@MNHOAAdj4@
```

```
MAtt_Adj[1][5]=@MHBWAAdj5@  MAtt_Adj[2][5]=@MHBSAAdj5@   MAtt_Adj[3][5]= @MHBOAAdj5@
MAtt_Adj[4][5]= @MNHWAAdj5@  MAtt_Adj[5][5]=@MNHOAAdj5@
MAtt_Adj[1][6]=@MHBWAAdj6@  MAtt_Adj[2][6]=@MHBSAAdj6@   MAtt_Adj[3][6]= @MHBOAAdj6@
MAtt_Adj[4][6]= @MNHWAAdj6@  MAtt_Adj[5][6]=@MNHOAAdj6@


;;nonmotorized adjustments
NPro_Adj[1][1]=@NHBWPAdj1@  NPro_Adj[2][1]=@NHBSPAdj1@   NPro_Adj[3][1]= @NHBOPAdj1@
NPro_Adj[4][1]= @NNHWPAdj1@  NPro_Adj[5][1]=@NNHOPAdj1@
NPro_Adj[1][2]=@NHBWPAdj2@  NPro_Adj[2][2]=@NHBSPAdj2@   NPro_Adj[3][2]= @NHBOPAdj2@
NPro_Adj[4][2]= @NNHWPAdj2@  NPro_Adj[5][2]=@NNHOPAdj2@
NPro_Adj[1][3]=@NHBWPAdj3@  NPro_Adj[2][3]=@NHBSPAdj3@   NPro_Adj[3][3]= @NHBOPAdj3@
NPro_Adj[4][3]= @NNHWPAdj3@  NPro_Adj[5][3]=@NNHOPAdj3@
NPro_Adj[1][4]=@NHBWPAdj4@  NPro_Adj[2][4]=@NHBSPAdj4@   NPro_Adj[3][4]= @NHBOPAdj4@
NPro_Adj[4][4]= @NNHWPAdj4@  NPro_Adj[5][4]=@NNHOPAdj4@
NPro_Adj[1][5]=@NHBWPAdj5@  NPro_Adj[2][5]=@NHBSPAdj5@   NPro_Adj[3][5]= @NHBOPAdj5@
NPro_Adj[4][5]= @NNHWPAdj5@  NPro_Adj[5][5]=@NNHOPAdj5@
NPro_Adj[1][6]=@NHBWPAdj6@  NPro_Adj[2][6]=@NHBSPAdj6@   NPro_Adj[3][6]= @NHBOPAdj6@
NPro_Adj[4][6]= @NNHWPAdj6@  NPro_Adj[5][6]=@NNHOPAdj6@

NAtt_Adj[1][1]=@NHBWAAdj1@  NAtt_Adj[2][1]=@NHBSAAdj1@   NAtt_Adj[3][1]= @NHBOAAdj1@
NAtt_Adj[4][1]= @NNHWAAdj1@  NAtt_Adj[5][1]=@NNHOAAdj1@
NAtt_Adj[1][2]=@NHBWAAdj2@  NAtt_Adj[2][2]=@NHBSAAdj2@   NAtt_Adj[3][2]= @NHBOAAdj2@
NAtt_Adj[4][2]= @NNHWAAdj2@  NAtt_Adj[5][2]=@NNHOAAdj2@
NAtt_Adj[1][3]=@NHBWAAdj3@  NAtt_Adj[2][3]=@NHBSAAdj3@   NAtt_Adj[3][3]= @NHBOAAdj3@
NAtt_Adj[4][3]= @NNHWAAdj3@  NAtt_Adj[5][3]=@NNHOAAdj3@
NAtt_Adj[1][4]=@NHBWAAdj4@  NAtt_Adj[2][4]=@NHBSAAdj4@   NAtt_Adj[3][4]= @NHBOAAdj4@
NAtt_Adj[4][4]= @NNHWAAdj4@  NAtt_Adj[5][4]=@NNHOAAdj4@
NAtt_Adj[1][5]=@NHBWAAdj5@  NAtt_Adj[2][5]=@NHBSAAdj5@   NAtt_Adj[3][5]= @NHBOAAdj5@
NAtt_Adj[4][5]= @NNHWAAdj5@  NAtt_Adj[5][5]=@NNHOAAdj5@
NAtt_Adj[1][6]=@NHBWAAdj6@  NAtt_Adj[2][6]=@NHBSAAdj6@   NAtt_Adj[3][6]= @NHBOAAdj6@
NAtt_Adj[4][6]= @NNHWAAdj6@  NAtt_Adj[5][6]=@NNHOAAdj6@
;;----------------------------------------------
;;----------------------------------------------
;; Read in Consolidated zone file

 ZDATI[1] = @ZNFILE_IN5@ ;; variables in DBF file: TAZ,  HH, HHPOP, JURCODE,
HHINCIDX
                         ;; TAZ,       HH,     TOTPOP, TOTEMP,  RETEMP,  NRETEMP,
OFFEMP,  OTHEMP,
                         ;; INDEMP,    POP_10, EMP_10, AREA_10,
POPDEN10,EMPDEN10,BLOCKS05,AREA05,
                         ;; BLOCKDEN05,JURCODE,ATYPE,ADISTTOX

Atypea[i] = zi.1.Atype   ; populate zonal area type array

;;==============================================================================
================
; Define Jurisdiction Motorized Production, Attraction Adjustment Lookup
;;==============================================================================
================
;
LOOKUP NAME=P_JurAdj,   ;
       LOOKUP[1] = 1, RESULT=2, ;  HBW Production Adjustment
       LOOKUP[2] = 1, RESULT=3, ;  HBS Production Adjustment
       LOOKUP[3] = 1, RESULT=4, ;  HBO Production Adjustment
       LOOKUP[4] = 1, RESULT=5, ;  NHW Production Adjustment
       LOOKUP[5] = 1, RESULT=6, ;  NHO Production Adjustment
       INTERPOLATE=N, FAIL= 1.0,1.0,1.0,
;;
;;          HBWPs  HBSPs  HBOPs  NNWPs  NHOPs
R="     0,  1.00,  0.85,  1.20,  1.00,  1.00,",  ;;dc
  "     1,  0.95,  1.00,  1.05,  1.00,  1.00,",  ;;mtg
  "     2,  1.00,  0.88,  0.97,  1.00,  1.00,",  ;;pg
  "     3,  1.00,  1.11,  1.08,  1.00,  1.00,",  ;;arl
  "     4,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;alx
  "     5,  1.02,  1.02,  1.02,  1.00,  1.00,",  ;;ffx
  "     6,  1.00,  0.95,  0.92,  1.00,  1.00,",  ;;ldn
```

```
  "     7,  1.04,  1.15,  0.94,  1.00,  1.00,",  ;;pw
  "     8,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;
  "     9,  1.13,  1.00,  1.04,  1.00,  1.00,",  ;;frd
  "    10,  1.00,  1.00,  0.94,  1.00,  1.00,",  ;;how
  "    11,  1.00,  1.12,  1.03,  1.00,  1.00,",  ;;aa
  "    12,  1.00,  1.00,  0.93,  1.00,  1.00,",  ;;chs
  "    13,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;
  "    14,  1.00,  1.00,  0.92,  1.00,  1.00,",  ;;car
  "    15,  1.00,  1.00,  1.12,  1.00,  1.00,",  ;;cal
  "    16,  1.36,  1.00,  1.00,  1.00,  1.00,",  ;;stm
  "    17,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;kg
  "    18,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;fbg
  "    19,  1.00,  1.14,  0.86,  1.00,  1.00,",  ;;sta
  "    20,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;spt
  "    21,  1.00,  1.00,  0.88,  1.00,  1.00,",  ;;fau
  "    22,  1.00,  1.00,  1.00,  1.00,  1.00,",  ;;clk
  "    23,  1.00,  1.00,  1.00,  1.00,  1.00,"   ;;jef
;;
;
LOOKUP NAME=A_JurAdj,   ;
       LOOKUP[1] = 1, RESULT=2, ;  HBW Attraction Adjustment
       LOOKUP[2] = 1, RESULT=3, ;  HBS Attraction Adjustment
       LOOKUP[3] = 1, RESULT=4, ;  HBO Attraction Adjustment
       LOOKUP[4] = 1, RESULT=5, ;  NHW Attraction Adjustment
       LOOKUP[5] = 1, RESULT=6, ;  NHO Attraction Adjustment
       INTERPOLATE=N, FAIL= 1.0,1.0,1.0,
;;
;;           HBWAs  HBSAs  HBOAs  NNWAs  NHOAs
R="     0,   1.10,  0.60,  0.90,  1.10,  0.80,",  ;;dc
  "     1,   1.02,  1.07,  1.10,  0.90,  1.13,",  ;;mtg
  "     2,   1.08,  0.78,  0.77,  1.00,  0.77,",  ;;pg
  "     3,   1.22,  0.87,  0.95,  1.00,  0.60,",  ;;arl
  "     4,   0.77,  0.85,  1.00,  1.00,  1.14,",  ;;alx
  "     5,   1.07,  1.05,  1.00,  0.95,  0.95,",  ;;ffx
  "     6,   0.89,  1.07,  0.87,  0.85,  1.00,",  ;;ldn
  "     7,   1.11,  1.05,  0.96,  1.00,  1.00,",  ;;pw
  "     8,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;
  "     9,   1.00,  1.00,  0.83,  0.88,  1.14,",  ;;frd
  "    10,   0.82,  1.18,  0.87,  0.78,  1.00,",  ;;how
  "    11,   0.86,  1.00,  0.85,  0.89,  0.94,",  ;;aa
  "    12,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;chs
  "    13,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;
  "    14,   1.00,  1.51,  0.94,  1.00,  1.24,",  ;;car
  "    15,   1.00,  0.78,  1.29,  1.00,  1.00,",  ;;cal
  "    16,   1.40,  1.00,  0.80,  1.49,  1.00,",  ;;stm
  "    17,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;kg
  "    18,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;fbg
  "    19,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;sta
  "    20,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;spt
  "    21,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;fau
  "    22,   1.00,  1.00,  1.00,  1.00,  1.00,",  ;;clk
  "    23,   1.00,  1.00,  1.00,  1.00,  1.00,"   ;;jef
;;
;;
;;            *  P_JurAdj(1,jurcode)
;;            *  A_JurAdj(1,jurcode)
;;
;;==================================================================================
================
; End  Jurisdiction Motorized Production, Attraction Adjustment Lookups
;;==================================================================================
================


; Read in Production rates, fill in production rate array
FILEI DBI[1]     ="@Prate_in@"
LOOP K = 1,dbi.1.NUMRECORDS
      x = DBIReadRecord(1,k)
           count       = dbi.1.recno
           Prata[1][di.1.Inc][di.1.Siz][di.1.Veh] = di.1.HBW
           Prata[2][di.1.Inc][di.1.Siz][di.1.Veh] = di.1.HBS
           Prata[3][di.1.Inc][di.1.Siz][di.1.Veh] = di.1.HBO
           Prata[4][di.1.Inc][di.1.Siz][di.1.Veh] = di.1.NHW
           Prata[5][di.1.Inc][di.1.Siz][di.1.Veh] = di.1.NHO
ENDLOOP



;; Read in NMproduction model
;;   rates arrayed as: variables (1-4) - 1/constant, 2/1-mi float.pop den.,3/1-mi
float emp. den.,4/0.5mi. float. block density
;;                       purpose   (1-5)
;;                       area type (1-6)
FILEI DBI[2]     ="@NMPrate_in@"
LOOP K = 1,dbi.2.NUMRECORDS
      x = DBIReadRecord(2,k)
           NMPrate[dbi.2.recno][1][1] = di.2.HBW1
           NMPrate[dbi.2.recno][1][2] = di.2.HBW2
           NMPrate[dbi.2.recno][1][3] = di.2.HBW3
           NMPrate[dbi.2.recno][1][4] = di.2.HBW4
           NMPrate[dbi.2.recno][1][5] = di.2.HBW5
           NMPrate[dbi.2.recno][1][6] = di.2.HBW6

           NMPrate[dbi.2.recno][2][1] = di.2.HBS1
           NMPrate[dbi.2.recno][2][2] = di.2.HBS2
           NMPrate[dbi.2.recno][2][3] = di.2.HBS3
           NMPrate[dbi.2.recno][2][4] = di.2.HBS4
           NMPrate[dbi.2.recno][2][5] = di.2.HBS5
           NMPrate[dbi.2.recno][2][6] = di.2.HBS6

           NMPrate[dbi.2.recno][3][1] = di.2.HBO1
           NMPrate[dbi.2.recno][3][2] = di.2.HBO2
           NMPrate[dbi.2.recno][3][3] = di.2.HBO3
           NMPrate[dbi.2.recno][3][4] = di.2.HBO4
           NMPrate[dbi.2.recno][3][5] = di.2.HBO5
           NMPrate[dbi.2.recno][3][6] = di.2.HBO6

           NMPrate[dbi.2.recno][4][1] = di.2.NHW1
           NMPrate[dbi.2.recno][4][2] = di.2.NHW2
           NMPrate[dbi.2.recno][4][3] = di.2.NHW3
           NMPrate[dbi.2.recno][4][4] = di.2.NHW4
           NMPrate[dbi.2.recno][4][5] = di.2.NHW5
           NMPrate[dbi.2.recno][4][6] = di.2.NHW6

           NMPrate[dbi.2.recno][5][1] = di.2.NHO1
           NMPrate[dbi.2.recno][5][2] = di.2.NHO2
           NMPrate[dbi.2.recno][5][3] = di.2.NHO3
           NMPrate[dbi.2.recno][5][4] = di.2.NHO4
           NMPrate[dbi.2.recno][5][5] = di.2.NHO5
           NMPrate[dbi.2.recno][5][6] = di.2.NHO6
ENDLOOP


;; Read in NMattraction model
;;   rates arrayed as: Ind.Variable (1-4) - 1/constant, 2/1-mi float.pop den.,3/1-mi
float emp. den.,4/0.5mi. float. block density
;;                       purpose      (1-5)
;;                       area type    (1-6)
FILEI DBI[3]     ="@NMArate_in@"
LOOP K = 1,dbi.3.NUMRECORDS
      x = DBIReadRecord(3,k)
           NMArate[dbi.3.recno][1][1] = di.3.HBW1
           NMArate[dbi.3.recno][1][2] = di.3.HBW2
           NMArate[dbi.3.recno][1][3] = di.3.HBW3
           NMArate[dbi.3.recno][1][4] = di.3.HBW4
```

```
          NMArate[dbi.3.recno][1][5] = di.3.HBW5
          NMArate[dbi.3.recno][1][6] = di.3.HBW6

          NMArate[dbi.3.recno][2][1] = di.3.HBS1
          NMArate[dbi.3.recno][2][2] = di.3.HBS2
          NMArate[dbi.3.recno][2][3] = di.3.HBS3
          NMArate[dbi.3.recno][2][4] = di.3.HBS4
          NMArate[dbi.3.recno][2][5] = di.3.HBS5
          NMArate[dbi.3.recno][2][6] = di.3.HBS6

          NMArate[dbi.3.recno][3][1] = di.3.HBO1
          NMArate[dbi.3.recno][3][2] = di.3.HBO2
          NMArate[dbi.3.recno][3][3] = di.3.HBO3
          NMArate[dbi.3.recno][3][4] = di.3.HBO4
          NMArate[dbi.3.recno][3][5] = di.3.HBO5
          NMArate[dbi.3.recno][3][6] = di.3.HBO6

          NMArate[dbi.3.recno][4][1] = di.3.NHW1
          NMArate[dbi.3.recno][4][2] = di.3.NHW2
          NMArate[dbi.3.recno][4][3] = di.3.NHW3
          NMArate[dbi.3.recno][4][4] = di.3.NHW4
          NMArate[dbi.3.recno][4][5] = di.3.NHW5
          NMArate[dbi.3.recno][4][6] = di.3.NHW6

          NMArate[dbi.3.recno][5][1] = di.3.NHO1
          NMArate[dbi.3.recno][5][2] = di.3.NHO2
          NMArate[dbi.3.recno][5][3] = di.3.NHO3
          NMArate[dbi.3.recno][5][4] = di.3.NHO4
          NMArate[dbi.3.recno][5][5] = di.3.NHO5
          NMArate[dbi.3.recno][5][6] = di.3.NHO6
ENDLOOP


;; Read in Attraction rates
;;   rates arrayed as: Ind.Variables - 1/TotalEmp.,2/Total
Pop.,3/Ret.Emp.,4/Off.Emp.,5/OtherEmp.,6/Non-retail Emp.
;;                    purpose   (1-5)
;;                    area type (1-6)
FILEI DBI[4]     ="@Attrate_in@"
LOOP K = 1,dbi.4.NUMRECORDS
      x = DBIReadRecord(4,k)
          ATTrate[dbi.4.recno][1][1] = di.4.HBW1
          ATTrate[dbi.4.recno][1][2] = di.4.HBW2
          ATTrate[dbi.4.recno][1][3] = di.4.HBW3
          ATTrate[dbi.4.recno][1][4] = di.4.HBW4
          ATTrate[dbi.4.recno][1][5] = di.4.HBW5
          ATTrate[dbi.4.recno][1][6] = di.4.HBW6

          ATTrate[dbi.4.recno][2][1] = di.4.HBS1
          ATTrate[dbi.4.recno][2][2] = di.4.HBS2
          ATTrate[dbi.4.recno][2][3] = di.4.HBS3
          ATTrate[dbi.4.recno][2][4] = di.4.HBS4
          ATTrate[dbi.4.recno][2][5] = di.4.HBS5
          ATTrate[dbi.4.recno][2][6] = di.4.HBS6

          ATTrate[dbi.4.recno][3][1] = di.4.HBO1
          ATTrate[dbi.4.recno][3][2] = di.4.HBO2
          ATTrate[dbi.4.recno][3][3] = di.4.HBO3
          ATTrate[dbi.4.recno][3][4] = di.4.HBO4
          ATTrate[dbi.4.recno][3][5] = di.4.HBO5
          ATTrate[dbi.4.recno][3][6] = di.4.HBO6

          ATTrate[dbi.4.recno][4][1] = di.4.NHW1
          ATTrate[dbi.4.recno][4][2] = di.4.NHW2
          ATTrate[dbi.4.recno][4][3] = di.4.NHW3
          ATTrate[dbi.4.recno][4][4] = di.4.NHW4
          ATTrate[dbi.4.recno][4][5] = di.4.NHW5
          ATTrate[dbi.4.recno][4][6] = di.4.NHW6

          ATTrate[dbi.4.recno][5][1] = di.4.NHO1
          ATTrate[dbi.4.recno][5][2] = di.4.NHO2
          ATTrate[dbi.4.recno][5][3] = di.4.NHO3
          ATTrate[dbi.4.recno][5][4] = di.4.NHO4
          ATTrate[dbi.4.recno][5][5] = di.4.NHO5
          ATTrate[dbi.4.recno][5][6] = di.4.NHO6
ENDLOOP


;; Read in Income/Area Type - Attraction Shares
;;   rates arrayed as: Income, AreaType
;;
;;
FILEI DBI[5]     ="@Incrat_in@"
LOOP K = 1,dbi.5.NUMRECORDS
      x = DBIReadRecord(5,k)
          AIncRatio[di.5.income][di.5.Atype][1]  = di.5.HBWRat
          AIncShare[di.5.income][di.5.Atype][1]  = di.5.HBWShare

          AIncRatio[di.5.income][di.5.Atype][2]  = di.5.HBSRat
          AIncShare[di.5.income][di.5.Atype][2]  = di.5.HBSShare

          AIncRatio[di.5.income][di.5.Atype][3]  = di.5.HBORat
          AIncShare[di.5.income][di.5.Atype][3]  = di.5.HBOShare
ENDLOOP

If (I <= @LastIZN@)

; Read in HHs by Income , Size, Vehs. Avail
 ZDATI[2] = @ZNFILE_IN4@ ;; variables in DBF file:
                         ;; HHSISV111      HHSISV112      HHSISV113
HHSISV114
                         ;; HHSISV211      HHSISV212      HHSISV213
HHSISV214
                         ;; HHSISV311      HHSISV312      HHSISV313
HHSISV314
                         ;; HHSISV411      HHSISV412      HHSISV413
HHSISV414
                         ;; HHSISV121      HHSISV122      HHSISV123
HHSISV124
                         ;; HHSISV221      HHSISV222      HHSISV223
HHSISV224
                         ;; HHSISV321      HHSISV322      HHSISV323
HHSISV324
                         ;; HHSISV421      HHSISV422      HHSISV423
HHSISV424
                         ;; HHSISV131      HHSISV132      HHSISV133
HHSISV134
                         ;; HHSISV231      HHSISV232      HHSISV233
HHSISV234
                         ;; HHSISV331      HHSISV332      HHSISV333
HHSISV334
                         ;; HHSISV431      HHSISV432      HHSISV433
HHSISV434
                         ;; HHSISV141      HHSISV142      HHSISV143
HHSISV144
                         ;; HHSISV241      HHSISV242      HHSISV243
HHSISV244
                         ;; HHSISV341      HHSISV342      HHSISV343
HHSISV344
                         ;; HHSISV441      HHSISV442      HHSISV443
HHSISV444

;; store current TAZ HHs in Array
   Hha[1][1][1] = zi.2.HHSISV111  Hha[1][1][2] = zi.2.HHSISV112  Hha[1][1][3] =
zi.2.HHSISV113  Hha[1][1][4] = zi.2.HHSISV114
```

```
   Hha[2][1][1] = zi.2.HHSISV211  Hha[2][1][2] = zi.2.HHSISV212  Hha[2][1][3] =
zi.2.HHSISV213  Hha[2][1][4] = zi.2.HHSISV214
   Hha[3][1][1] = zi.2.HHSISV311  Hha[3][1][2] = zi.2.HHSISV312  Hha[3][1][3] =
zi.2.HHSISV313  Hha[3][1][4] = zi.2.HHSISV314
   Hha[4][1][1] = zi.2.HHSISV411  Hha[4][1][2] = zi.2.HHSISV412  Hha[4][1][3] =
zi.2.HHSISV413  Hha[4][1][4] = zi.2.HHSISV414
   Hha[1][2][1] = zi.2.HHSISV121  Hha[1][2][2] = zi.2.HHSISV122  Hha[1][2][3] =
zi.2.HHSISV123  Hha[1][2][4] = zi.2.HHSISV124
   Hha[2][2][1] = zi.2.HHSISV221  Hha[2][2][2] = zi.2.HHSISV222  Hha[2][2][3] =
zi.2.HHSISV223  Hha[2][2][4] = zi.2.HHSISV224
   Hha[3][2][1] = zi.2.HHSISV321  Hha[3][2][2] = zi.2.HHSISV322  Hha[3][2][3] =
zi.2.HHSISV323  Hha[3][2][4] = zi.2.HHSISV324
   Hha[4][2][1] = zi.2.HHSISV421  Hha[4][2][2] = zi.2.HHSISV422  Hha[4][2][3] =
zi.2.HHSISV423  Hha[4][2][4] = zi.2.HHSISV424
   Hha[1][3][1] = zi.2.HHSISV131  Hha[1][3][2] = zi.2.HHSISV132  Hha[1][3][3] =
zi.2.HHSISV133  Hha[1][3][4] = zi.2.HHSISV134
   Hha[2][3][1] = zi.2.HHSISV231  Hha[2][3][2] = zi.2.HHSISV232  Hha[2][3][3] =
zi.2.HHSISV233  Hha[2][3][4] = zi.2.HHSISV234
   Hha[3][3][1] = zi.2.HHSISV331  Hha[3][3][2] = zi.2.HHSISV332  Hha[3][3][3] =
zi.2.HHSISV333  Hha[3][3][4] = zi.2.HHSISV334
   Hha[4][3][1] = zi.2.HHSISV431  Hha[4][3][2] = zi.2.HHSISV432  Hha[4][3][3] =
zi.2.HHSISV433  Hha[4][3][4] = zi.2.HHSISV434
   Hha[1][4][1] = zi.2.HHSISV141  Hha[1][4][2] = zi.2.HHSISV142  Hha[1][4][3] =
zi.2.HHSISV143  Hha[1][4][4] = zi.2.HHSISV144
   Hha[2][4][1] = zi.2.HHSISV241  Hha[2][4][2] = zi.2.HHSISV242  Hha[2][4][3] =
zi.2.HHSISV243  Hha[2][4][4] = zi.2.HHSISV244
   Hha[3][4][1] = zi.2.HHSISV341  Hha[3][4][2] = zi.2.HHSISV342  Hha[3][4][3] =
zi.2.HHSISV343  Hha[3][4][4] = zi.2.HHSISV344
   Hha[4][4][1] = zi.2.HHSISV441  Hha[4][4][2] = zi.2.HHSISV442  Hha[4][4][3] =
zi.2.HHSISV443  Hha[4][4][4] = zi.2.HHSISV444

Jr             = zi.1.Jurcode + 1.0  ; Initialize Jur code index
At             = zi.1.Atype          ; Initialize Area Type index


   loop in=1,4
      loop Si=1,4
         loop Ve=1,4

             TotHHa          =  TotHHa         + HHa[in][si][ve]
             I_HHa[in]       =  I_HHa[in]      + HHa[in][Si][Ve]
; HHs by Inc
             S_HHa[Si]       =  S_HHa[Si]      + HHa[in][Si][Ve]
;     by Size
             V_HHa[Ve]       =  V_HHa[Ve]      + HHa[in][Si][Ve]
;     by Vehs.
             A_HHa[At]       =  A_HHa[At]      + HHa[in][Si][Ve]
;     by Area Type
             J_HHa[Jr]       =  J_HHa[Jr]      + HHa[in][Si][Ve]
;     by Juris.
             TotHH           =  TotHH          + HHa[in][Si][Ve]
; Sum of all HHs

             loop pu=1,5

                Proda[pu][in][Si][Ve]  =  HHa[in][Si][Ve]  *   Prata[Pu][In][Si][Ve]
; Compute Motorized/NonMotorized productions
                Zproda[pu][i]          =  Zproda[pu][i]       +
Proda[pu][in][Si][Ve]         ; Zonal Motor/NonMotor productions by purp
                ZprodaInc[pu][in][i]   =  ZprodaInc[pu][in][i] +
Proda[pu][in][Si][Ve]         ; Zonal Motor/NonMotor productions by purp&Inc

                TotProda[pu]         =  TotProda[pu]     + Proda[pu][in][Si][Ve]
; Accumulate total M/NM productions by purpose

; Accumualte M/NM summary arrays
                I_proda[in][pu]       =  I_proda[in][pu]  +  Proda[pu][in][Si][Ve]
;  Productions by Inc and Purpose
                S_proda[Si][pu]       =  S_proda[si][pu]  +  Proda[pu][in][Si][Ve]
;  Productions by Size and Purpose
                V_proda[Ve][pu]       =  V_proda[Ve][pu]  +  Proda[pu][in][Si][Ve]
;  Productions by Vehs. and Purpose
                A_proda[at][pu]       =  A_proda[at][pu]  +  Proda[pu][in][Si][Ve]
;  Productions by Area Tp. and Purpose
                J_proda[Jr][pu]       =  J_proda[Jr][pu]  +  Proda[pu][in][Si][Ve]
;  Productions by Juris. and Purpose

                TotProdInca[in]       =  TotProdInca[In]  +  Proda[pu][in][Si][Ve]
;  Total Productions by Inc.
                TotProdSiza[Si]       =  TotProdSiza[Si]  +  Proda[pu][in][Si][Ve]
;  Total Productions by Size
                TotProdVeha[Ve]       =  TotProdVeha[Ve]  +  Proda[pu][in][Si][Ve]
;  Total Productions by Vehs.
                TotProdAreaa[At]      =  TotProdAreaa[At] +  Proda[pu][in][Si][Ve]
;  Total Productions by Area Tp.
                TotProdJura[Jr]       =  TotProdJura[At]  +  Proda[pu][in][Si][Ve]
;  Total Productions by Juris.

             endloop
         endloop
      endloop
   endloop


;;
;;  Compute Internal Motorized / NonMotorized productions here:
;;
;; H.Humeida's NM Model - 10/14/10
;; original model (single curve:  IX_ShareHBW = 0.1786 * (exp(-0.1435 *
zi.1.ADISTTOX))
;; updated model

;; Default Curves
  IX_ShareHBW = 0.2133 * (exp(-0.1950 * zi.1.ADISTTOX))
  IX_ShareHBS = 0.2133 * (exp(-0.1950 * zi.1.ADISTTOX))
  IX_ShareHBO = 0.2133 * (exp(-0.1950 * zi.1.ADISTTOX))
  IX_ShareNHW = 0.2133 * (exp(-0.1950 * zi.1.ADISTTOX))
  IX_ShareNHO = 0.2133 * (exp(-0.1950 * zi.1.ADISTTOX))

;; Baltimore area curves:
If (zi.1.jurcode = 10 || zi.1.jurcode = 11 || zi.1.jurcode = 14 )
  IX_ShareHBW = 0.3348 * (exp(-0.0938 * zi.1.ADISTTOX))
  IX_ShareHBS = 0.1766 * (exp(-0.1957 * zi.1.ADISTTOX))
  IX_ShareHBO = 0.1766 * (exp(-0.1957 * zi.1.ADISTTOX))
  IX_ShareNHW = 0.1766 * (exp(-0.1957 * zi.1.ADISTTOX))
  IX_ShareNHO = 0.1766 * (exp(-0.1957 * zi.1.ADISTTOX))
endif
;;-------------------------------------------------------------------------------
----


NMP_ShareHBW = NMPrate[1][1][zi.1.atype]                  +
               NMPrate[2][1][zi.1.atype] * zi.1.POPDEN10   +
               NMPrate[3][1][zi.1.atype] * zi.1.EMPDEN10   +
               NMPrate[4][1][zi.1.atype] * zi.1.Blockden05

NMP_ShareHBS = NMPrate[1][2][zi.1.atype]                  +
               NMPrate[2][2][zi.1.atype] * zi.1.POPDEN10   +
               NMPrate[3][2][zi.1.atype] * zi.1.EMPDEN10   +
               NMPrate[4][2][zi.1.atype] * zi.1.Blockden05

NMP_ShareHBO = NMPrate[1][3][zi.1.atype]                  +
               NMPrate[2][3][zi.1.atype] * zi.1.POPDEN10   +
               NMPrate[3][3][zi.1.atype] * zi.1.EMPDEN10   +
               NMPrate[4][3][zi.1.atype] * zi.1.Blockden05
```

```
NMP_ShareNHW = NMPrate[1][4][zi.1.atype]                    +
               NMPrate[2][4][zi.1.atype] * zi.1.POPDEN10   +
               NMPrate[3][4][zi.1.atype] * zi.1.EMPDEN10   +
               NMPrate[4][4][zi.1.atype] * zi.1.Blockden05

NMP_ShareNHO = NMPrate[1][5][zi.1.atype]                    +
               NMPrate[2][5][zi.1.atype] * zi.1.POPDEN10   +
               NMPrate[3][5][zi.1.atype] * zi.1.EMPDEN10   +
               NMPrate[4][5][zi.1.atype] * zi.1.Blockden05

;; compute Internal Motor/NonMotor productions by purpose

;;---------------HBW-----------
   MZProda[1][i]  =     Zproda[1][i] * (1.0 - NMP_ShareHBW) * ( 1.0 -  IX_ShareHBW )
* MPro_Adj[1][At] *  P_JurAdj(1,jurcode)   ;; compute internal HBW Motorized
productions
   NMZProda[1][i] =     Zproda[1][i] *        NMP_ShareHBW  * ( 1.0 -  IX_ShareHBW)
* MPro_Adj[1][At] *  P_JurAdj(1,jurcode)  * NPro_Adj[1][At]  ;;       ;; compute
internal HBW Non-Motorized productions

   IF (Zproda[1][i]>0)
        ;;   Pr In zone;          Pr Zn         Pr Zn               in pr  zn
;; compute internal HBW Motorized productions by Income level
     MZProdaInc[1][1][i]  = (MZProda[1][i]/Zproda[1][i]) * ZprodaInc[1][1][i]
     MZProdaInc[1][2][i]  = (MZProda[1][i]/Zproda[1][i]) * ZprodaInc[1][2][i]
     MZProdaInc[1][3][i]  = (MZProda[1][i]/Zproda[1][i]) * ZprodaInc[1][3][i]
     MZProdaInc[1][4][i]  = (MZProda[1][i]/Zproda[1][i]) * ZprodaInc[1][4][i]
   ENDIF

;;---------------HBS-----------
   MZProda[2][i]  =     Zproda[2][i] * (1.0 - NMP_ShareHBS) * ( 1.0 -  IX_ShareHBS )
* MPro_Adj[2][At] *  P_JurAdj(2,jurcode)  ;; compute internal HBS Motorized
productions
   NMZProda[2][i] =     Zproda[2][i] *        NMP_ShareHBS  * ( 1.0 -  IX_ShareHBS)
* MPro_Adj[2][At] *  P_JurAdj(2,jurcode)   * NPro_Adj[2][At]  ;;       ;; compute
internal HBS Non-Motorized productions

   IF (Zproda[2][i]>0)
        ;;   Pr In zone;          Pr Zn         Pr Zn               in pr  zn
;; compute internal HBS Motorized productions by Income level
     MZProdaInc[2][1][i]  = (MZProda[2][i]/Zproda[2][i]) * ZprodaInc[2][1][i]
     MZProdaInc[2][2][i]  = (MZProda[2][i]/Zproda[2][i]) * ZprodaInc[2][2][i]
     MZProdaInc[2][3][i]  = (MZProda[2][i]/Zproda[2][i]) * ZprodaInc[2][3][i]
     MZProdaInc[2][4][i]  = (MZProda[2][i]/Zproda[2][i]) * ZprodaInc[2][4][i]
   ENDIF


;;---------------HBO-----------
   MZProda[3][i]  =     Zproda[3][i] * (1.0 - NMP_ShareHBO) * ( 1.0 -  IX_ShareHBO )
* MPro_Adj[3][At] *  P_JurAdj(3,jurcode) ;; compute internal HBO Motorized
productions
   NMZProda[3][i] =     Zproda[3][i] *        NMP_ShareHBO  * ( 1.0 -  IX_ShareHBO)
* MPro_Adj[3][At] *  P_JurAdj(3,jurcode) * NPro_Adj[3][At] ;;        ;; compute
internal HBO Non-Motorized productions

   IF (Zproda[3][i]>0)
        ;;   Pr In zone;          Pr Zn         Pr Zn               in pr zn
;; compute internal HBO Motorized productions by Income level
     MZProdaInc[3][1][i]  = (MZProda[3][i]/Zproda[3][i]) * ZprodaInc[3][1][i]
     MZProdaInc[3][2][i]  = (MZProda[3][i]/Zproda[3][i]) * ZprodaInc[3][2][i]
     MZProdaInc[3][3][i]  = (MZProda[3][i]/Zproda[3][i]) * ZprodaInc[3][3][i]
     MZProdaInc[3][4][i]  = (MZProda[3][i]/Zproda[3][i]) * ZprodaInc[3][4][i]
   ENDIF


;;---------------NHW-----------
   MZProda[4][i]  =     Zproda[4][i] * (1.0 - NMP_ShareNHW) * ( 1.0 -  IX_ShareNHW)
* MPro_Adj[4][At] *  P_JurAdj(4,jurcode)  ;; compute internal NHW Motorized
productions
   NMZProda[4][i] =     Zproda[4][i] *        NMP_ShareNHW  * ( 1.0 -  IX_ShareNHW)
* MPro_Adj[4][At] *  P_JurAdj(4,jurcode)  * NPro_Adj[4][At] ;;        ;; compute
internal NHW Non-Motorized productions

;;---------------NHO-----------
   MZProda[5][i]  =     Zproda[5][i] * (1.0 - NMP_ShareNHO) * ( 1.0 -  IX_ShareNHO)
* MPro_Adj[5][At] *  P_JurAdj(5,jurcode)  ;; compute internal NHO Motorized
productions
   NMZProda[5][i] =     Zproda[5][i] *        NMP_ShareNHO  * ( 1.0 -  IX_ShareNHO)
* MPro_Adj[5][At] *  P_JurAdj(5,jurcode)   * NPro_Adj[5][At];;         ;; compute
internal NHO Non-Motorized productions


;;--;; Debug productions calculations
if (I <300)
 print  form=6.4 list ='taz: ',i,'  IX  shares by purp: ', IX_ShareHBW,' ',
IX_ShareHBS,' ', IX_ShareHBO,' ', IX_ShareNHW,' ', IX_ShareNHO, file=
debug_P_Shares.txt
 print  form=6.4 list ='taz: ',i,'  NMP shares by purp: ', NMP_ShareHBW,' ',
NMP_ShareHBS,' ', NMP_ShareHBO,' ', NMP_ShareNHW,' ', NMP_ShareNHO, file=
debug_P_Shares.txt
 print  form=6.2 list ='taz: ',i,' Total Prods by purp: ', ZProda[1][i],'
',ZProda[2][i],' ', ZProda[3][i],' ', ZProda[4][i],' ',ZProda[5][i],
file= debug_P_Shares.txt
 print  form=6.2 list ='taz: ',i,' Motr  Prods by purp: ',MZProda[1][i],'
',MZProda[2][i],' ',MZProda[3][i],' ',MZProda[4][i],' ',MZProda[5][i],
file= debug_P_Shares.txt
 print  form=6.2 list ='taz: ',i,' NMtr  Prods by purp: ',NMZProda[1][i],'
',NMZProda[2][i],' ',NMZProda[3][i],' ',NMZProda[4][i],' ',nMZProda[5][i],
file= debug_P_Shares.txt


endif
;;
;; write out dbf files for Trip Productions by purpose and mode
;;   Pr In zone;
;;
MZProdaInc[1][1][i]
FILEO RECO[1]    = "@TripPros@",fields =
                 TAZ(5),
                 HBW_Mtr_Ps@ofmt@, HBW_NMt_Ps@ofmt@,
HBW_All_Ps@ofmt@,HBWMtrP_I1@ofmt@,HBWMtrP_I2@ofmt@,HBWMtrP_I3@ofmt@,HBWMtrP_I4@ofmt@
,
                 HBS_Mtr_Ps@ofmt@, HBS_NMt_Ps@ofmt@,
HBS_All_Ps@ofmt@,HBSMtrP_I1@ofmt@,HBSMtrP_I2@ofmt@,HBSMtrP_I3@ofmt@,HBSMtrP_I4@ofmt@
,
                 HBO_Mtr_Ps@ofmt@, HBO_NMt_Ps@ofmt@,
HBO_All_Ps@ofmt@,HBOMtrP_I1@ofmt@,HBOMtrP_I2@ofmt@,HBOMtrP_I3@ofmt@,HBOMtrP_I4@ofmt@
,
                 NHW_Mtr_Ps@ofmt@, NHW_NMt_Ps@ofmt@, NHW_All_Ps@ofmt@,
                 NHO_Mtr_Ps@ofmt@, NHO_NMt_Ps@ofmt@, NHO_All_Ps@ofmt@

 ro.TAZ = i
 ro.HBW_Mtr_Ps = MZProda[1][i]       ro.HBW_NMt_Ps = NMZProda[1][i]
ro.HBW_All_Ps = ZProda[1][i]
 ro.HBWMtrP_I1 = MZProdaInc[1][1][i] ro.HBWMtrP_I2 = MZProdaInc[1][2][i]
ro.HBWMtrP_I3 = MZProdaInc[1][3][i]  ro.HBWMtrP_I4 = MZProdaInc[1][4][i]

 ro.HBS_Mtr_Ps = MZProda[2][i]       ro.HBS_NMt_Ps = NMZProda[2][i]
ro.HBS_All_Ps = ZProda[2][i]
 ro.HBSMtrP_I1 = MZProdaInc[2][1][i] ro.HBSMtrP_I2 = MZProdaInc[2][2][i]
ro.HBSMtrP_I3 = MZProdaInc[2][3][i]  ro.HBSMtrP_I4 = MZProdaInc[2][4][i]

 ro.HBO_Mtr_Ps = MZProda[3][i]       ro.HBO_NMt_Ps = NMZProda[3][i]
ro.HBO_All_Ps = ZProda[3][i]
```

```
 ro.HBOMtrP_I1 = MZProdaInc[3][1][i] ro.HBOMtrP_I2 = MZProdaInc[3][2][i]
ro.HBOMtrP_I3 = MZProdaInc[3][3][i]  ro.HBOMtrP_I4 = MZProdaInc[3][4][i]

 ro.NHW_Mtr_Ps = MZProda[4][i]       ro.NHW_NMt_Ps = NMZProda[4][i]
ro.NHW_All_Ps = ZProda[4][i]

 ro.NHO_Mtr_Ps = MZProda[5][i]       ro.NHO_NMt_Ps = NMZProda[5][i]
ro.NHO_All_Ps = ZProda[5][i]

 WRITE RECO=1


;; Accumulate Regional Motor/NonMotor Totals by purpose

   MTotProda[1]           =     MTotProda[1] +  MZProda[1][i]
;; accum. internal HBW Motorized productions
     MTotProdInca[1][1]   =     MTotProdInca[1][1] +  MZProdaInc[1][1][i]
;; accum. internal HBW Motorized productions by inc.
     MTotProdInca[1][2]   =     MTotProdInca[1][2] +  MZProdaInc[1][2][i]
;; accum. internal HBW Motorized productions by inc.
     MTotProdInca[1][3]   =     MTotProdInca[1][3] +  MZProdaInc[1][3][i]
;; accum. internal HBW Motorized productions by inc.
     MTotProdInca[1][4]   =     MTotProdInca[1][4] +  MZProdaInc[1][4][i]
;; accum. internal HBW Motorized productions by inc.
   NMTotProda[1]  =    NMTotProda[1] + NMZProda[1][i]
;; accum. internal HBW Non-Motorized productions

   MTotProda[2]   =     MTotProda[2] +  MZProda[2][i]
;; accum.internal HBS Motorized productions
     MTotProdInca[2][1]   =     MTotProdInca[2][1] +  MZProdaInc[2][1][i]
;; accum. internal HBS Motorized productions by inc.
     MTotProdInca[2][2]   =     MTotProdInca[2][2] +  MZProdaInc[2][2][i]
;; accum. internal HBS Motorized productions by inc.
     MTotProdInca[2][3]   =     MTotProdInca[2][3] +  MZProdaInc[2][3][i]
;; accum. internal HBS Motorized productions by inc.
     MTotProdInca[2][4]   =     MTotProdInca[2][4] +  MZProdaInc[2][4][i]
;; accum. internal HBS Motorized productions by inc.
   NMTotProda[2]  =    NMTotProda[2] + NMZProda[2][i]
;; accum.internal HBS Non-Motorized productions

   MTotProda[3]   =     MTotProda[3]  + MZProda[3][i]
;; accum.internal HBO Motorized productions
     MTotProdInca[3][1]   =     MTotProdInca[3][1] +  MZProdaInc[3][1][i]
;; accum. internal HBO Motorized productions by inc.
     MTotProdInca[3][2]   =     MTotProdInca[3][2] +  MZProdaInc[3][2][i]
;; accum. internal HBO Motorized productions by inc.
     MTotProdInca[3][3]   =     MTotProdInca[3][3] +  MZProdaInc[3][3][i]
;; accum. internal HBO Motorized productions by inc.
     MTotProdInca[3][4]   =     MTotProdInca[3][4] +  MZProdaInc[3][4][i]
;; accum. internal HBO Motorized productions by inc.
   NMTotProda[3]  =    NMTotProda[3] + NMZProda[3][i]
;; accum.internal HBO Non-Motorized productions

   MTotProda[4]   =     MTotProda[4]  + MZProda[4][i]
;; accum.internal NHW Motorized productions
   NMTotProda[4]  =    NMTotProda[4] + NMZProda[4][i]
;; accum.internal NHW Non-Motorized productions

   MTotProda[5]   =     MTotProda[5]  + MZProda[5][i]
;; accum.internal NHO Motorized productions
   NMTotProda[5]  =    NMTotProda[5] + NMZProda[5][i]
;; accum.internal NHO Non-Motorized productions


;; Accumulate Regional Motor/NonMotor Totals
   MTotProd       = MTotProd      +   MZProda[1][i] +   MZProda[2][i] +
MZProda[3][i] +   MZProda[4][i]  +   MZProda[5][i]
```

```
   NMTotProd      =  NMTotProd     +  NMZProda[1][i] +  NMZProda[2][i] +
NMZProda[3][i] +  NMZProda[4][i]  +  NMZProda[5][i]
;;==============================================================================
========================================


   HBWCompATT[i] =(Attrate[1][1][zi.1.atype] * zi.1.TOTEMP   +
                   Attrate[2][1][zi.1.atype] * zi.1.TOTPOP   +
                   Attrate[3][1][zi.1.atype] * zi.1.RETEMP   +
                   Attrate[4][1][zi.1.atype] * zi.1.OFFEMP   +
                   Attrate[5][1][zi.1.atype] * zi.1.OTHEMP   +
                   Attrate[6][1][zi.1.atype] * zi.1.NRETEMP)

   HBSCompATT[i] =(Attrate[1][2][zi.1.atype] * zi.1.TOTEMP   +
                   Attrate[2][2][zi.1.atype] * zi.1.TOTPOP   +
                   Attrate[3][2][zi.1.atype] * zi.1.RETEMP   +
                   Attrate[4][2][zi.1.atype] * zi.1.OFFEMP   +
                   Attrate[5][2][zi.1.atype] * zi.1.OTHEMP   +
                   Attrate[6][2][zi.1.atype] * zi.1.NRETEMP)

   HBOCompATT[i] =(Attrate[1][3][zi.1.atype] * zi.1.TOTEMP   +
                   Attrate[2][3][zi.1.atype] * zi.1.TOTPOP   +
                   Attrate[3][3][zi.1.atype] * zi.1.RETEMP   +
                   Attrate[4][3][zi.1.atype] * zi.1.OFFEMP   +
                   Attrate[5][3][zi.1.atype] * zi.1.OTHEMP   +
                   Attrate[6][3][zi.1.atype] * zi.1.NRETEMP)

   NHWCompATT[i] =(Attrate[1][4][zi.1.atype] * zi.1.TOTEMP   +
                   Attrate[2][4][zi.1.atype] * zi.1.TOTPOP   +
                   Attrate[3][4][zi.1.atype] * zi.1.RETEMP   +
                   Attrate[4][4][zi.1.atype] * zi.1.OFFEMP   +
                   Attrate[5][4][zi.1.atype] * zi.1.OTHEMP   +
                   Attrate[6][4][zi.1.atype] * zi.1.NRETEMP)

   NHOCompATT[i] =(Attrate[1][5][zi.1.atype] * zi.1.TOTEMP   +
                   Attrate[2][5][zi.1.atype] * zi.1.TOTPOP   +
                   Attrate[3][5][zi.1.atype] * zi.1.RETEMP   +
                   Attrate[4][5][zi.1.atype] * zi.1.OFFEMP   +
                   Attrate[5][5][zi.1.atype] * zi.1.OTHEMP   +
                   Attrate[6][5][zi.1.atype] * zi.1.NRETEMP)



 TOTHBWCompATT = TOTHBWCompATT + HBWCompATT[I]
 TOTHBSCompATT = TOTHBSCompATT + HBSCompATT[I]
 TOTHBOCompATT = TOTHBOCompATT + HBOCompATT[I]
 TOTNHWCompATT = TOTNHWCompATT + NHWCompATT[I]
 TOTNHOCompATT = TOTNHOCompATT + NHOCompATT[I]


;;
;;  Compute Internal Motorized / NonMotorized ATTRACTIONS here:
;;


NMA_ShareHBW = NMArate[1][1][zi.1.atype]                   +
               NMArate[2][1][zi.1.atype] * zi.1.POPDEN10   +
               NMArate[3][1][zi.1.atype] * zi.1.EMPDEN10   +
               NMArate[4][1][zi.1.atype] * zi.1.Blockden05

NMA_ShareHBS = NMArate[1][2][zi.1.atype]                   +
               NMArate[2][2][zi.1.atype] * zi.1.POPDEN10   +
               NMArate[3][2][zi.1.atype] * zi.1.EMPDEN10   +
               NMArate[4][2][zi.1.atype] * zi.1.Blockden05

NMA_ShareHBO = NMArate[1][3][zi.1.atype]                   +
               NMArate[2][3][zi.1.atype] * zi.1.POPDEN10   +
               NMArate[3][3][zi.1.atype] * zi.1.EMPDEN10   +
```

```
              NMArate[4][3][zi.1.atype] * zi.1.Blockden05

NMA_ShareNHW = NMArate[1][4][zi.1.atype]                 +
              NMArate[2][4][zi.1.atype] * zi.1.POPDEN10   +
              NMArate[3][4][zi.1.atype] * zi.1.EMPDEN10   +
              NMArate[4][4][zi.1.atype] * zi.1.Blockden05

NMA_ShareNHO = NMArate[1][5][zi.1.atype]                 +
              NMArate[2][5][zi.1.atype] * zi.1.POPDEN10   +
              NMArate[3][5][zi.1.atype] * zi.1.EMPDEN10   +
              NMArate[4][5][zi.1.atype] * zi.1.Blockden05

;; compute Internal Motor/NonMotor ATTRACTIONS by purpose

   MZAttra[1][i]  =     HBWCompATT[i] * (1.0 - NMA_ShareHBW) * MAtt_Adj[1][at]  *
A_JurAdj(1,jurcode)     ;; compute internal HBW Motorized attractions
   NMZAttra[1][i] =     HBWCompATT[i] *       NMA_ShareHBW  * MAtt_Adj[1][at]  *
A_JurAdj(1,jurcode)     *  NAtt_Adj[1][at]        ;; compute internal HBW Non-
Motorized attractions

   MZAttra[2][i]  =     HBSCompATT[i] * (1.0 - NMA_ShareHBS) * MAtt_Adj[2][at]  *
A_JurAdj(2,jurcode)     ;; compute internal HBS Motorized attractions
   NMZAttra[2][i] =     HBSCompATT[i] *       NMA_ShareHBS  * MAtt_Adj[2][at]  *
A_JurAdj(2,jurcode)     *  NAtt_Adj[2][at]        ;; compute internal HBS Non-
Motorized attractions

   MZAttra[3][i]  =     HBOCompATT[i] * (1.0 - NMA_ShareHBO) * MAtt_Adj[3][at]  *
A_JurAdj(3,jurcode)     ;; compute internal HBO Motorized attractions
   NMZAttra[3][i] =     HBOCompATT[i] *       NMA_ShareHBO  * MAtt_Adj[3][at]  *
A_JurAdj(3,jurcode)     *  NAtt_Adj[3][at]        ;; compute internal HBO Non-
Motorized attractions

   MZAttra[4][i]  =     NHWCompATT[i] * (1.0 - NMA_ShareNHW) * MAtt_Adj[4][at]  *
A_JurAdj(4,jurcode)     ;; compute internal NHW Motorized attractions
   NMZAttra[4][i] =     NHWCompATT[i] *       NMA_ShareNHW  * MAtt_Adj[4][at]  *
A_JurAdj(4,jurcode)     *  NAtt_Adj[4][at]        ;; compute internal NHW Non-
Motorized attractions

   MZAttra[5][i]  =     NHOCompATT[i] * (1.0 - NMA_ShareNHO) * MAtt_Adj[5][at]  *
A_JurAdj(5,jurcode)     ;; compute internal NHO Motorized attractions
   NMZAttra[5][i] =     NHOCompATT[i] *       NMA_ShareNHO  * MAtt_Adj[5][at]  *
A_JurAdj(5,jurcode)     *  NAtt_Adj[5][at]        ;; compute internal NHO Non-
Motorized attractions


;; Accumulate Regional Motor/NonMotor Totals by purpose

   MTotAttra[1]   =     MTotAttra[1] +  MZAttra[1][i]
;; compute internal HBW Motorized attractions
   NMTotAttra[1]  =    NMTotAttra[1] + NMZAttra[1][i]
;; compute internal HBW Non-Motorized attractions

   MTotAttra[2]   =     MTotAttra[2] +  MZAttra[2][i]
;; compute internal HBS Motorized attractions
   NMTotAttra[2]  =    NMTotAttra[2] + NMZAttra[2][i]
;; compute internal HBS Non-Motorized attractions

   MTotAttra[3]   =     MTotAttra[3]  + MZAttra[3][i]
;; compute internal HBO Motorized attractions
   NMTotAttra[3]  =    NMTotAttra[3] + NMZAttra[3][i]
;; compute internal HBO Non-Motorized attractions

   MTotAttra[4]   =     MTotAttra[4]  + MZAttra[4][i]
;; compute internal NHW Motorized attractions
   NMTotAttra[4]  =    NMTotAttra[4] + NMZAttra[4][i]
;; compute internal NHW Non-Motorized attractions
```

```
   MTotAttra[5]   =     MTotAttra[5]  + MZAttra[5][i]
;; compute internal NHO Motorized attractions
   NMTotAttra[5]  =    NMTotAttra[5] + NMZAttra[5][i]
;; compute internal NHO Non-Motorized attractions


;; Accumulate Regional Motor/NonMotor Totals
   MTotAttr       =  MTotAttr      +   MZAttra[1][i] +   MZAttra[2][i] +
MZAttra[3][i] +   MZAttra[4][i]  +   MZAttra[5][i]
   NMTotAttr      =  NMTotAttr     +  NMZAttra[1][i] +  NMZAttra[2][i] +
NMZAttra[3][i] +  NMZAttra[4][i]  +  NMZAttra[5][i]

;; write out dbf files for computed Trip Attractions by purpose and mode
;;
FILEO RECO[2]    = "@TripAttsCom@",fields =
                 TAZ(5),
                 HBW_Mtr_As@ofmt@, HBW_NMt_As@ofmt@, HBW_All_As@ofmt@,
                 HBS_Mtr_As@ofmt@, HBS_NMt_As@ofmt@, HBS_All_As@ofmt@,
                 HBO_Mtr_As@ofmt@, HBO_NMt_As@ofmt@, HBO_All_As@ofmt@,
                 NHW_Mtr_As@ofmt@, NHW_NMt_As@ofmt@, NHW_All_As@ofmt@,
                 NHO_Mtr_As@ofmt@, NHO_NMt_As@ofmt@, NHO_All_As@ofmt@

 ro.TAZ = i
 ro.HBW_Mtr_As = MZAttra[1][i]     ro.HBW_NMt_As = NMZAttra[1][i]   ro.HBW_All_As =
HBWCompAtt[i]
 ro.HBS_Mtr_As = MZAttra[2][i]     ro.HBS_NMt_As = NMZAttra[2][i]   ro.HBS_All_As =
HBSCompAtt[i]
 ro.HBO_Mtr_As = MZAttra[3][i]     ro.HBO_NMt_As = NMZAttra[3][i]   ro.HBO_All_As =
HBOCompAtt[i]
 ro.NHW_Mtr_As = MZAttra[4][i]     ro.NHW_NMt_As = NMZAttra[4][i]   ro.NHW_All_As =
NHWCompAtt[i]
 ro.NHO_Mtr_As = MZAttra[5][i]     ro.NHO_NMt_As = NMZAttra[5][i]   ro.NHO_All_As =
NHOCompAtt[i]

 WRITE RECO=2


;;==================================================================================
========================================
;; debug1
   if (i=1 )

          print list= ' TAZ ',' NMP_ShHW ',' NMP_ShHS ',' NMP_ShHO ',' NMP_ShNW ','
NMP_ShNO ',
                              ' NMA_ShHW ',' NMA_ShHS ',' NMA_ShHO ',' NMA_ShNW ','
NMA_ShNO ',
                              ' AttrsHBW ',' AttrsHBS ',' AttrsHBO ',' AttrsNHW ','
AttrsNHO ',
                                file= debug.txt
    endif
          print form=10.4,list= I(5),NMP_ShareHBW,     NMP_ShareHBS,
NMP_ShareHBO,     NMP_ShareNHW,     NMP_ShareNHO,
                                     NMA_ShareHBW,     NMA_ShareHBS,
NMA_ShareHBO,     NMA_ShareNHW,     NMA_ShareNHO,

HBWCOMPATT[i](10),HBSCOMPATT[i](10),HBOCOMPATT[i](10),NHWCOMPATT[i](10),NHOCOMPATT[i
](10),
                                     file= debug.txt

          print form=10.4,list= I(5),MZAttra[1][i](10), HBWATTInca[i][1](10),
HBWATTInca[i][2](10),HBWATTInca[i][3](10),HBWATTInca[i][4](10),
                                     file= debugHBWaS.txt
          print form=10.4,list= I(5),MZAttra[2][i](10), HBSATTInca[i][1](10),
HBSATTInca[i][2](10),HBSATTInca[i][3](10),HBSATTInca[i][4](10),
                                     file= debugHBSas.txt
          print form=10.4,list= I(5),MZAttra[3][i](10), HBOATTInca[i][1](10),
HBOATTInca[i][2](10),HBOATTInca[i][3](10),HBOATTInca[i][4](10),
                                     file= debugaHBOas.txt
```

```
;;==================================================================================
============================================
;; Disaggregate Motorized Attractions by Income
;;==================================================================================
============================================

Loop Pr = 1,3
     IniAtot[Pr] = 0
     FinAtot[Pr] = 0
     Scaltot[Pr] = 0
     Loop In = 1,4
             IniAttra[In][Pr]= MZAttra[Pr][i]* AincRatio[In][zi.1.Atype][Pr] *
AincShare[In][zi.1.Atype][Pr]  ;; compute initial attractions by income
             IniAtot[Pr]     =                  IniAtot[Pr] + IniAttra[In][Pr]
;; accum.  initial attractions by purpose
     EndLoop
EndLoop



Loop Pr = 1,3

     if (IniAtot[Pr] = 0)
              Scaltot[Pr] = 0
         else
              Scaltot[Pr] =  MZAttra[Pr][i] / IniAtot[Pr]        ;; compute scaling
factor by purpose
     endif

     Loop In = 1,4
             FinAttra[In][Pr]= 0
             FinAttra[In][Pr]= IniAttra[In][Pr] * Scaltot[Pr]   ;; compute final
attractions by purp/income level (apply scaling factor)
             FinAtot[Pr]     = FinAtot[Pr] + FinAttra[In][Pr]   ;; accumu. final
attractions by income level
     EndLoop
EndLoop
;;; ---
  print list = 'comp HBW attractions    ',MZAttra[1][i], ' Area Type: ', zi.1.Atype
,file= debug_incdisagg.txt
  print list = 'Initial  HBW attractions ',IniAttra[1][1] , IniAttra[2][1]
,IniAttra[3][1] ,IniAttra[4][1] , ' Sum: ', IniAtot[1] ,file= debug_incdisagg.txt
  print list = 'HBW scale               ',scaltot[1](8.6)
,file= debug_incdisagg.txt
  print list = 'FINAL    HBW attractions ',FinAttra[1][1] , FinAttra[2][1]
,FinAttra[3][1] ,FinAttra[4][1] , ' Sum: ', FinAtot[1] ,file= debug_incdisagg.txt

  ;;                        in  pr
  HBWATTInca[i][1] =FinAttra[1][1]
  HBWATTInca[i][2] =FinAttra[2][1]
  HBWATTInca[i][3] =FinAttra[3][1]
  HBWATTInca[i][4] =FinAttra[4][1]

  ;;                        in  pr
  HBSATTInca[i][1] =FinAttra[1][2]
  HBSATTInca[i][2] =FinAttra[2][2]
  HBSATTInca[i][3] =FinAttra[3][2]
  HBSATTInca[i][4] =FinAttra[4][2]

  ;;                        in  pr
  HBOATTInca[i][1] =FinAttra[1][3]
  HBOATTInca[i][2] =FinAttra[2][3]
  HBOATTInca[i][3] =FinAttra[3][3]
  HBOATTInca[i][4] =FinAttra[4][3]
```

```
;;----------------------------------------------------------------------------------
---------------------------------------------
ENDIF ; if I <= last internal zone
;;----------------------------------------------------------------------------------
---------------------------------------------

IF (I=@Zonesize@)  ;; If at last TAZ
;;==================================================================================
=============================================
;; Now at the end of the internal TAZs-- now read external Ps& As, and then compute
scaling factor for attractions
;;==================================================================================
=============================================
FILEI DBI[6]     ="@Ext_PsAs@"   ;;  variables in file:  TAZ     HBW_XI  HBS_XI
HBO_XI  NHB_XI   HBW_IX  HBS_IX  HBO_IX  NHB_IX

LOOP K = 1,dbi.6.NUMRECORDS
         x = DBIReadRecord(6,k)
              MZProda[1][di.6.TAZ]    =   di.6.HBW_XI * @XOccHBW@
              MZProda[2][di.6.TAZ]    =   di.6.HBS_XI * @XOccHBS@
              MZProda[3][di.6.TAZ]    =   di.6.HBO_XI * @XOccHBO@
              NHBProds                =   di.6.NHB_XI

              MZProda[4][di.6.TAZ]    =   NHBProds * @XNHW_Share@ * @XOccNHW@
              MZProda[5][di.6.TAZ]    =   NHBProds * @XNHO_Share@ * @XOccNHO@

              MZAttra[1][di.6.TAZ]    =   di.6.HBW_IX * @XOccHBW@
              MZAttra[2][di.6.TAZ]    =   di.6.HBS_IX * @XOccHBS@
              MZAttra[3][di.6.TAZ]    =   di.6.HBO_IX * @XOccHBO@
              NHBAttrs                =   di.6.NHB_IX

              MZAttra[4][di.6.TAZ]    =   NHBAttrs * @XNHW_Share@ * @XOccNHW@
              MZAttra[5][di.6.TAZ]    =   NHBAttrs * @XNHO_Share@ * @XOccNHO@

;;       Accumulate external P's As by purpose
              XMTotProda[1]           =   XMTotProda[1] +  MZProda[1][di.6.TAZ]
              XMTotProda[2]           =   XMTotProda[2] +  MZProda[2][di.6.TAZ]
              XMTotProda[3]           =   XMTotProda[3] +  MZProda[3][di.6.TAZ]
              XMTotProda[4]           =   XMTotProda[4] +  MZProda[4][di.6.TAZ]
              XMTotProda[5]           =   XMTotProda[5] +  MZProda[5][di.6.TAZ]

              XMTotAttra[1]           =   XMTotAttra[1] +  MZAttra[1][di.6.TAZ]
              XMTotAttra[2]           =   XMTotAttra[2] +  MZAttra[2][di.6.TAZ]
              XMTotAttra[3]           =   XMTotAttra[3] +  MZAttra[3][di.6.TAZ]
              XMTotAttra[4]           =   XMTotAttra[4] +  MZAttra[4][di.6.TAZ]
              XMTotAttra[5]           =   XMTotAttra[5] +  MZAttra[5][di.6.TAZ]


;;       Write extl Motorized Ps out to the zonal production file (Internals were
written out previously)
;;         the extl Motorized As will be written out below, along with the scaled
attractions
           ro.TAZ        =  di.6.TAZ
           ro.HBW_Mtr_Ps =  MZProda[1][di.6.taz]
           ro.HBS_Mtr_Ps =  MZProda[2][di.6.taz]
           ro.HBO_Mtr_Ps =  MZProda[3][di.6.taz]
           ro.NHW_Mtr_Ps =  MZProda[4][di.6.taz]
           ro.NHO_Mtr_Ps =  MZProda[5][di.6.taz]

           ;; zero out all of the unknown external production data (Non-motorized
Ps, Ps by Income, etc.)
           ro.HBW_NMT_PS =  0
           ro.HBS_NMT_PS =  0
           ro.HBO_NMT_PS =  0
           ro.NHW_NMT_PS =  0
           ro.NHO_NMT_PS =  0
```

```
           ro.HBW_ALL_PS =  0
           ro.HBS_ALL_PS =  0
           ro.HBO_ALL_PS =  0
           ro.NHW_ALL_PS =  0
           ro.NHO_ALL_PS =  0

           ro.HBWMTRP_I1 =  0
           ro.HBSMTRP_I1 =  0
           ro.HBOMTRP_I1 =  0

           ro.HBWMTRP_I2 =  0
           ro.HBSMTRP_I2 =  0
           ro.HBOMTRP_I2 =  0

           ro.HBWMTRP_I3 =  0
           ro.HBSMTRP_I3 =  0
           ro.HBOMTRP_I3 =  0

           ro.HBWMTRP_I4 =  0
           ro.HBSMTRP_I4 =  0
           ro.HBOMTRP_I4 =  0



         WRITE RECO=1
ENDLOOP



print form=12csv list =
            'Total extl productions by purpose:  ',XMTotProda[1],' ',XMTotProda[2],'
',XMTotProda[3],' ',XMTotProda[4],' ',XMTotProda[5],
            'Total extl attractions by purpose:  ',XMTotAttra[1],' ',XMTotAttra[2],'
',XMTotAttra[3],' ',XMTotAttra[4],' ',XMTotAttra[5],
            file= debug_Extlsr.txt





print list = '  HBW attrs ',  TotHBWCompAtt,
             '  HBS attrs ',  TotHBSCompAtt,
             '  HBO attrs ',  TotHBOCompAtt,
             '  NHW attrs ',  TotNHWCompAtt,
             '  NHO attrs ',  TotNHOCompAtt

print list = 'Motorized attractions by purp.    ',      MTotAttra[1]  MTotAttra[2]
MTotAttra[3]  MTotAttra[4]  MTotAttra[5]   MTotAttr
print list = 'Nonmotorized attractions by purp. ',      NMTotAttra[1] NMTotAttra[2]
NMTotAttra[3] NMTotAttra[4] NMTotAttra[5]  NMTotAttr


;; Compute scaling factors for Motorized attractions and Non-motorized attractions,
by purpose

loop m=1,5
      IF (M=1) purpo=' HBW '
      IF (M=2) purpo=' HBS '
      IF (M=3) purpo=' HBO '
      IF (M=4) purpo=' NHW '
      IF (M=5) purpo=' NHO '

      IF ( MTotAttra[M]  > 0)    Mscale[M] =  (MTotProda[M] + XMTotProda[M] -
XMTotAttra[M])/ MTotAttra[M]
      IF ( NMTotAttra[M] > 0)   NMscale[M] =  NMTotProda[M] / NMTotAttra[M]

      PRINT Printo = 1               LIST = 'Purpose:  ',purpo(a6)
      PRINT Printo = 1 FORM= 12.2csv LIST = '           Total Motorized Internal
Productions:    ',MTotProda[M]
      PRINT Printo = 1 FORM= 12.2csv LIST = '           External  Productions:
',XMTotProda[M]
      PRINT Printo = 1 FORM= 12.2csv LIST = '           External Attractions:
',XMTotAttra[M]
      PRINT Printo = 1 FORM= 12.2csv LIST = '           Internal Computed
Attractions:           ',MTotAttra[M]
      PRINT Printo = 1 FORM= 12.2csv LIST = '           Scaling factor:
',MScale[M](12.6)

      PRINT Printo = 1 FORM= 12.2csv LIST = '    '

      PRINT Printo = 1 FORM= 12.2csv LIST = '           Total NonMotorized
Productions:          ', NMTotProda[M]
      PRINT Printo = 1 FORM= 12.2csv LIST = '           Total Computed NonMotorized
Attractions: ', NMTotAttra[M]
      PRINT Printo = 1 FORM= 12.2csv LIST = '           NonMotor Scaling Factor:
', NMScale[M](12.6)
      PRINT Printo = 1 FORM= 12.2csv LIST = '    '
      PRINT Printo = 1 FORM= 12.2csv LIST = '    '


endloop


;; Apply scaling factors to INTERNAL attractions
LOOP ZZ= 1,@Zonesize@
     IF (ZZ<= @LastIZN@)
         Loop PP= 1,5
               MZAttra[PP][ZZ]  = MZAttra[PP][ZZ]   *  MScale[PP]
              NMZAttra[PP][ZZ]  = NMZAttra[PP][ZZ]  * NMScale[PP]
         ENDLOOP

              HBWAttInca[ZZ][1] = HBWAttInca[ZZ][1] *  MScale[1]
              HBWAttInca[ZZ][2] = HBWAttInca[ZZ][2] *  MScale[1]
              HBWAttInca[ZZ][3] = HBWAttInca[ZZ][3] *  MScale[1]
              HBWAttInca[ZZ][4] = HBWAttInca[ZZ][4] *  MScale[1]

              HBSAttInca[ZZ][1] = HBSAttInca[ZZ][1] *  MScale[2]
              HBSAttInca[ZZ][2] = HBSAttInca[ZZ][2] *  MScale[2]
              HBSAttInca[ZZ][3] = HBSAttInca[ZZ][3] *  MScale[2]
              HBSAttInca[ZZ][4] = HBSAttInca[ZZ][4] *  MScale[2]

              HBOAttInca[ZZ][1] = HBOAttInca[ZZ][1] *  MScale[3]
              HBOAttInca[ZZ][2] = HBOAttInca[ZZ][2] *  MScale[3]
              HBOAttInca[ZZ][3] = HBOAttInca[ZZ][3] *  MScale[3]
              HBOAttInca[ZZ][4] = HBOAttInca[ZZ][4] *  MScale[3]
     ENDIF

;; write out dbf files for Final/Scaled Trip Attractions by purpose and mode
;;
FILEO RECO[3]    = "@TripAttsFin@",fields =
                 TAZ(5),
                 HBW_Mtr_As@ofmt@, HBW_NMt_As@ofmt@, HBW_All_As@ofmt@,
                 HBWMtrA_I1@ofmt@, HBWMtrA_I2@ofmt@, HBWMtrA_I3@ofmt@,
HBWMtrA_I4@ofmt@,

                 HBS_Mtr_As@ofmt@, HBS_NMt_As@ofmt@, HBS_All_As@ofmt@,
                 HBSMtrA_I1@ofmt@, HBSMtrA_I2@ofmt@, HBSMtrA_I3@ofmt@,
HBSMtrA_I4@ofmt@,

                 HBO_Mtr_As@ofmt@, HBO_NMt_As@ofmt@, HBO_All_As@ofmt@,
                 HBOMtrA_I1@ofmt@, HBOMtrA_I2@ofmt@, HBOMtrA_I3@ofmt@,
HBOMtrA_I4@ofmt@,

                 NHW_Mtr_As@ofmt@, NHW_NMt_As@ofmt@, NHW_All_As@ofmt@,
```

```
                NHO_Mtr_As@ofmt@, NHO_NMt_As@ofmt@, NHO_All_As@ofmt@

 ro.TAZ = zz
 ro.HBW_Mtr_As = MZAttra[1][zz]    ro.HBW_NMt_As = NMZAttra[1][zz]   ro.HBW_All_As =
MZAttra[1][zz] + NMZAttra[1][zz]
 ro.HBWMtrA_I1 = HBWAttInca[ZZ][1] ro.HBWMtrA_I2 = HBWAttInca[ZZ][2] ro.HBWMtrA_I3 =
HBWAttInca[ZZ][3] ro.HBWMtrA_I4 = HBWAttInca[ZZ][4]

 ro.HBS_Mtr_As = MZAttra[2][zz]    ro.HBS_NMt_As = NMZAttra[2][zz]   ro.HBS_All_As =
MZAttra[2][zz] + NMZAttra[2][zz]
 ro.HBSMtrA_I1 = HBSAttInca[ZZ][1] ro.HBSMtrA_I2 = HBSAttInca[ZZ][2] ro.HBSMtrA_I3 =
HBSAttInca[ZZ][3] ro.HBSMtrA_I4 = HBSAttInca[ZZ][4]

 ro.HBO_Mtr_As = MZAttra[3][zz]    ro.HBO_NMt_As = NMZAttra[3][zz]   ro.HBO_All_As =
MZAttra[3][zz] + NMZAttra[3][zz]
 ro.HBOMtrA_I1 = HBOAttInca[ZZ][1] ro.HBOMtrA_I2 = HBOAttInca[ZZ][2] ro.HBOMtrA_I3 =
HBOAttInca[ZZ][3] ro.HBOMtrA_I4 = HBOAttInca[ZZ][4]

 ro.NHW_Mtr_As = MZAttra[4][zz]    ro.NHW_NMt_As = NMZAttra[4][zz]   ro.NHW_All_As =
NHWCompAtt[zz]
 ro.NHO_Mtr_As = MZAttra[5][zz]    ro.NHO_NMt_As = NMZAttra[5][zz]   ro.NHO_All_As =
NHOCompAtt[zz]

 WRITE RECO=3






 ENDLOOP


;;
;; -------------------------------------------------------------------------------
;; print out Total (I-I and I-X,Motorized, NonMotorized) Productions Tables- by
Income

   PRINT PRINTO=1 form=10.0csv list = ' Regional Total (I-I,I-X & Motorized,
NonMotorized) Trip Productions Summary by Income '
   PRINT PRINTO=1 form=10.0csv list = '             Income_1   Income_2   Income_3
Income_4     Sum   '
   PRINT PRINTO=1 form=10.0csv list = '            ---------- ---------- ----------
---------- ----------'
   PRINT PRINTO=1 form=10.0csv list = ' HHs:       ',  I_HHa[1]   ,' ',I_HHa[2]
,' ',I_HHa[3]     ,' ',I_HHa[4]     ,' ',TOTHHa
   PRINT PRINTO=1 form=10.0csv list = ' HBW Trips: ',I_Proda[1][1],'
',I_Proda[2][1],' ',I_Proda[3][1],' ',I_Proda[4][1],' ',TOTProda[1]
   PRINT PRINTO=1 form=10.0csv list = ' HBS Trips: ',I_Proda[1][2],'
',I_Proda[2][2],' ',I_Proda[3][2],' ',I_Proda[4][2],' ',TOTProda[2]
   PRINT PRINTO=1 form=10.0csv list = ' HBO Trips: ',I_Proda[1][3],'
',I_Proda[2][3],' ',I_Proda[3][3],' ',I_Proda[4][3],' ',TOTProda[3]
   PRINT PRINTO=1 form=10.0csv list = ' NHW Trips: ',I_Proda[1][4],'
',I_Proda[2][4],' ',I_Proda[3][4],' ',I_Proda[4][4],' ',TOTProda[4]
   PRINT PRINTO=1 form=10.0csv list = ' NHO Trips: ',I_Proda[1][5],'
',I_Proda[2][5],' ',I_Proda[3][5],' ',I_Proda[4][5],' ',TOTProda[5]
   PRINT PRINTO=1 form=10.0csv list = '            ---------- ---------- ----------
---------- ----------'
   PRINT PRINTO=1 form=10.0csv list = '     '
 ;; end

;; print out Total Productions Tables- by Size

   PRINT PRINTO=1 form=10.0csv list = ' Regional Total (I-I,I-X & Motorized,
NonMotorized) Trip Productions Summary by Size   '
   PRINT PRINTO=1 form=10.0csv list = '               Size_1     Size_2     Size_3
Size_4      Sum    '
   PRINT PRINTO=1 form=10.0csv list = '            ---------- ---------- ----------
----------  ----------'
   PRINT PRINTO=1 form=10.0csv list = ' HHs:       ',  S_HHa[1]   ,' ',S_HHa[2]
,' ',S_HHa[3]     ,' ',S_HHa[4]     ,' ',TOTHHa
   PRINT PRINTO=1 form=10.0csv list = ' HBW Trips: ',S_Proda[1][1],'
',S_Proda[2][1],' ',S_Proda[3][1],' ',S_Proda[4][1],' ',TOTProda[1]
   PRINT PRINTO=1 form=10.0csv list = ' HBS Trips: ',S_Proda[1][2],'
',S_Proda[2][2],' ',S_Proda[3][2],' ',S_Proda[4][2],' ',TOTProda[2]
   PRINT PRINTO=1 form=10.0csv list = ' HBO Trips: ',S_Proda[1][3],'
',S_Proda[2][3],' ',S_Proda[3][3],' ',S_Proda[4][3],' ',TOTProda[3]
   PRINT PRINTO=1 form=10.0csv list = ' NHW Trips: ',S_Proda[1][4],'
',S_Proda[2][4],' ',S_Proda[3][4],' ',S_Proda[4][4],' ',TOTProda[4]
   PRINT PRINTO=1 form=10.0csv list = ' NHO Trips: ',S_Proda[1][5],'
',S_Proda[2][5],' ',S_Proda[3][5],' ',S_Proda[4][5],' ',TOTProda[5]
   PRINT PRINTO=1 form=10.0csv list = '            ---------- ---------- ----------
---------- ----------'
   PRINT PRINTO=1 form=10.0csv list = '     '
 ;; end

;; print out Total Productions Tables- by Size

   PRINT PRINTO=1 form=10.0csv list = ' Regional Total (I-I,I-X & Motorized,
NonMotorized) Trip Productions Summary by Vehicles '
   PRINT PRINTO=1 form=10.0csv list = '               0_Vehs     1_Veh      2_Vehs
3+Vehs      Sum   '
   PRINT PRINTO=1 form=10.0csv list = '            ---------- ---------- ----------
---------- ----------'
   PRINT PRINTO=1 form=10.0csv list = ' HHs:       ',  V_HHa[1]   ,' ',V_HHa[2]
,' ',V_HHa[3]     ,' ',V_HHa[4]     ,' ',TOTHHa
   PRINT PRINTO=1 form=10.0csv list = ' HBW Trips: ',V_Proda[1][1],'
',V_Proda[2][1],' ',V_Proda[3][1],' ',V_Proda[4][1],' ',TOTProda[1]
   PRINT PRINTO=1 form=10.0csv list = ' HBS Trips: ',V_Proda[1][2],'
',V_Proda[2][2],' ',V_Proda[3][2],' ',V_Proda[4][2],' ',TOTProda[2]
   PRINT PRINTO=1 form=10.0csv list = ' HBO Trips: ',V_Proda[1][3],'
',V_Proda[2][3],' ',V_Proda[3][3],' ',V_Proda[4][3],' ',TOTProda[3]
   PRINT PRINTO=1 form=10.0csv list = ' NHW Trips: ',V_Proda[1][4],'
',V_Proda[2][4],' ',V_Proda[3][4],' ',V_Proda[4][4],' ',TOTProda[4]
   PRINT PRINTO=1 form=10.0csv list = ' NHO Trips: ',V_Proda[1][5],'
',V_Proda[2][5],' ',V_Proda[3][5],' ',V_Proda[4][5],' ',TOTProda[5]
   PRINT PRINTO=1 form=10.0csv list = '            ---------- ---------- ----------
---------- ----------'
   PRINT PRINTO=1 form=10.0csv list = '     '
 ;; end

      print list =' idx      ','     HHInc','     IncPs','     Irate','     HHsiz','
sizPs','     Srate','     HHVeh','     VehPs','     Vrate', file=dud.dat
loop m= 1,4
      irate= TotProdInca[m]/I_HHa[m] srate= TotProdSiza[m]/S_HHa[m] vrate=
TotProdVeha[m]/V_HHa[m]

      print form = 10.0 list =  m, I_HHa[m], TotProdInca[m], irate(10.2),
S_HHa[m],TotProdSiza[m], srate(10.2), V_HHa[m], TotProdVeha[m],vrate, file=dud.dat
endloop



;;
;; -----------------------------------------------------------------------------
;;
ENDIF ;; If at last TAZ


ENDRUN
*copy voya*.prn mod2.rpt
```

42 Trip_Generation_Summary.s

```
*del Voya*.prn
;
ReportFile ='Trip_Generation_Summary_%_Iter_%.txt'

;-------------------------------------------------------------------------------------------------------------
; Trip_Generation_Summary.s - Summarize demographics and trip ends by purpose at the
juris. level ("cores" broken out)
;                              and at area type level.
;
;-------------------------------------------------------------------------------------------------------------
;;;----- Create Juris.TAZ Range Lookup --------------------
; file include jur index(1-23), 8 TAZ 'Low/High' ranges, and jur name (Some juris.
categories have more than one TAZ range)
;
;
COPY File = JurCore.lkp
 1,    1,    4,    6,    47,    49,    50,   52,    63,  65,  65, 181, 209,  282,
287,  374,  381,   DC_Core     ,
 2,    5,    5,   48,    48,    51,    51,   64,    64,  66, 180, 210, 281,  288,
373,  382,  393,   DC_Noncore  ,
 3,  394,  769,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Mtg         ,
 4,  771,  776,  778,  1404,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   PGeo        ,
 5, 1471, 1476, 1486,  1489,  1495,  1497,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   ArlCore     ,
 6, 1405, 1470, 1477,  1485,  1490,  1494, 1498,  1545,   0,   0,   0,   0,    0,
0,    0,    0,   ArlNCore    ,
 7, 1546, 1610,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   ALX         ,
 8, 1611, 2159,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   FFX         ,
 9, 2160, 2441,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   LDN         ,
10, 2442, 2554, 2556,  2628,  2630,  2819,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   PW          ,
11, 2820, 2949,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Frd         ,
12, 3230, 3265, 3268,  3287,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Car         ,
13, 2950, 3017,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   How         ,
14, 3018, 3102, 3104,  3116,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   AnnAr       ,
15, 3288, 3334,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Calv        ,
16, 3335, 3409,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   STM         ,
17, 3117, 3229,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Chs         ,
18, 3604, 3653,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Fau         ,
19, 3449, 3477, 3479,  3481,  3483,  3494, 3496,  3541,   0,   0,   0,   0,    0,
0,    0,    0,   Stf         ,
20, 3654, 3662, 3663,  3675,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Clk_Jeff    ,
21, 3435, 3448, 3542,  3543,  3545,  3603,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Fbg_Spots   ,
22, 3410, 3434,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   KGeo        ,
23, 3676, 3722,    0,     0,     0,     0,    0,     0,   0,   0,   0,   0,    0,
0,    0,    0,   Externals   ,
ENDCOPY
;---------------------------------------------------------
; Put Juris-TAZ lookup into a DBF file
;
;
RUN PGM=MATRIX
ZONES=1
FILEI  RECI = JurCore.lkp,
 Jno            =  1,
 LoTAZ1         =  2,
 HiTAZ1         =  3,
 LoTAZ2         =  4,
 HiTAZ2         =  5,
 LoTAZ3         =  6,
 HiTAZ3         =  7,
 LoTAZ4         =  8,
 HiTAZ4         =  9,
 LoTAZ5         = 10,
 HiTAZ5         = 11,
 LoTAZ6         = 12,
 HiTAZ6         = 13,
 LoTAZ7         = 14,
 HiTAZ7         = 15,
 LoTAZ8         = 16,
 HiTAZ8         = 17,
 JName(c)       = 18,
 DELIMITER[1]=","
 n=n+1
 RECO[1] ="JurCore.dbf",
 Fields = RECI.ALLFIELDS ;
 WRITE RECO=1
endrun
;
;-------------------------------------------------------------------------------------------------------------
; now summarize demographic data and trip end data files
;-------------------------------------------------------------------------------------------------------------
RUN PGM=MATRIX
ZONES =1
;; zone file input
FILEI DBI[1] = "TripGen_LUFile.dbf"
;;variables in file:  TAZ     HH      HHPOP   GQPOP   TOTPOP  TOTEMP  INDEMP  RETEMP
OFFEMP  OTHEMP  JURCODE LANDAREA

;; Juris.-TAZ lookup (core broken out)
FILEI DBI[2] = "JurCore.dbf"

;; Zonal trip productions
FILEI DBI[3] = "Trip_Gen_productions_%_iter_%.dbf"
;; variables in file:
;;TAZ     HBW_MTR_PS      HBW_NMT_PS      HBW_ALL_PS      HBWMTRP_I1      HBWMTRP_I2
HBWMTRP_I3      HBWMTRP_I4
;;        HBS_MTR_PS      HBS_NMT_PS      HBS_ALL_PS      HBSMTRP_I1      HBSMTRP_I2
HBSMTRP_I3      HBSMTRP_I4
;;        HBO_MTR_PS      HBO_NMT_PS      HBO_ALL_PS      HBOMTRP_I1      HBOMTRP_I2
HBOMTRP_I3      HBOMTRP_I4
;;        NHW_MTR_PS      NHW_NMT_PS      NHW_ALL_PS      NHO_MTR_PS      NHO_NMT_PS
NHO_ALL_PS

;;Zonal final/scaled trip attractions
FILEI DBI[4]="Trip_Gen_Attractions_Final_%_iter_%.dbf"
;; variables in file:
;;TAZ     HBW_MTR_AS      HBW_NMT_AS      HBW_ALL_AS      HBWMTRA_I1      HBWMTRA_I2
HBWMTRA_I3      HBWMTRA_I4
```

```
;;       HBS_MTR_AS      HBS_NMT_AS      HBS_ALL_AS      HBSMTRA_I1      HBSMTRA_I2
HBSMTRA_I3      HBSMTRA_I4
;;       HBO_MTR_AS      HBO_NMT_AS      HBO_ALL_AS      HBOMTRA_I1      HBOMTRA_I2
HBOMTRA_I3      HBOMTRA_I4
;;       NHW_MTR_AS      NHW_NMT_AS      NHW_ALL_AS      NHO_MTR_AS      NHO_NMT_AS
NHO_ALL_AS



PRINTO[1]    = "@ReportFile@"
 ; juris and area type arrays:
 ARRAY   HH_Ja=25, HHPOP_Ja=25, GQPOP_Ja=25, TotPOP_Ja=25, TotEmp_Ja=25,
IndEmp_Ja=25, RetEmp_Ja=25, OffEmp_Ja=25, OthEmp_Ja=25, LArea_Ja= 25
 ARRAY   HH_Aa=6 , HHPOP_Aa=6 , GQPOP_Aa=6 , TotPOP_Aa=6 , TotEmp_Aa=6 , IndEmp_Aa=6
, RetEmp_Aa=6 , OffEmp_Aa=6 , OthEmp_Aa=6 , LArea_Aa= 6

 ARRAY   AT_Za=3675        ; zonal area type array

 ARRAY   MTR_Pro_Ja=5,25   ; jurisdictional motor. productions
 ARRAY   NMT_Pro_Ja=5,25   ;                nonmot productions
 ARRAY   MTR_PTot_Ja=25    ;                       productions
 ARRAY   NMT_PTot_Ja=25    ;                       productions
 ARRAY   MTR_PTot_Aa=6     ;                       productions
 ARRAY   NMT_PTot_Aa=6     ;                       productions

 ARRAY   MTR_Att_Ja=5,25   ;                motor. attractions
 ARRAY   NMT_Att_Ja=5,25   ;                nonmot attractions
 ARRAY   MTR_ATot_Ja=25    ;                motor. attractions
 ARRAY   NMT_ATot_Ja=25    ;                nonmot attractions
 ARRAY   MTR_ATot_Aa=6     ;                motor. attractions
 ARRAY   NMT_ATot_Aa=6     ;                nonmot attractions

 ARRAY   MTR_ProInc_Ja=5,4,25 ; jurisdictional motor. productions by income group
 ARRAY   MTR_AttInc_Ja=5,4,25 ;             motor. attractions by income group

 ARRAY   MTR_Pro_Aa=5,6    ; area type      motor. productions
 ARRAY   NMT_Pro_Aa=5,6    ;                nonmot productions
 ARRAY   MTR_Att_Aa=5,6    ;                motor. attractions
 ARRAY   NMT_Att_Aa=5,6    ;                nonmot attractions

 ARRAY   MTR_ProInc_Aa=5,4,6 ; area type    motor. productions by income group
 ARRAY   MTR_AttInc_Aa=5,4,6 ;              motor. attractions by income group

 ARRAY   HHPrate_pj=5,25
 Array   HHTPrate_j=25,HHTPrate_p=5

 ARRAY   EMPArate_pj=5,25
 Array   EMPTArate_j=25,EMPTArate_p=5

 ;;#################################################################################
 ;;===============================================================================
 ;; process land use file first                                                  =
 ;;===============================================================================

 LOOP K = 1,dbi.1.NUMRECORDS
      x = DBIReadRecord(1,k)

        ; Define input variables in zone file
        _TAZ       = di.1.TAZ
        _HH        = di.1.HH
        _HHPOP     = di.1.HHPOP
        _GQPOP     = di.1.GQPOP
        _TotPOP    = di.1.TotPOP
        _TotEmp    = di.1.TotEmp
        _IndEmp    = di.1.IndEmp
        _RetEmp    = di.1.RetEmp
        _OffEmp    = di.1.OffEmp
        _OthEmp    = di.1.OthEmp
        _LArea     = di.1.Landarea
        _At        = di.1.Atype

        AT_Za[_TAZ] = _At    ; zonal area type array to be used later with trip
prod/attr summaries

          ;; Slot TAZ into a jurisdiction --------------------
          ;; JDX = 25                      ; begin with assumed unknown juris
             Loop KK = 1,dbi.2.numrecords
                       xx = DBIReadRecord(2,kk)
                            IF ((_TAZ >= di.2.LoTAZ1 && _TAZ <= di.2.HiTAZ1) ||
                                (_TAZ >= di.2.LoTAZ2 && _TAZ <= di.2.HiTAZ2) ||
                                (_TAZ >= di.2.LoTAZ3 && _TAZ <= di.2.HiTAZ3) ||
                                (_TAZ >= di.2.LoTAZ4 && _TAZ <= di.2.HiTAZ4) ||
                                (_TAZ >= di.2.LoTAZ5 && _TAZ <= di.2.HiTAZ5) ||
                                (_TAZ >= di.2.LoTAZ6 && _TAZ <= di.2.HiTAZ6) ||
                                (_TAZ >= di.2.LoTAZ7 && _TAZ <= di.2.HiTAZ7) ||
                                (_TAZ >= di.2.LoTAZ8 && _TAZ <= di.2.HiTAZ8))
                                  JDX = di.2.Jno
                            ENDIF
             ENDLOOP

             ;; -------- Array accumulation for weighted HHs and trips by purpose---
----

                 HH_Ja[jdx]     = HH_Ja[jdx]      +  di.1.HH
                 HHPOP_Ja[jdx]  = HHPOP_Ja[jdx]   +  di.1.HHPOP
                 GQPOP_Ja[jdx]  = GQPOP_Ja[jdx]   +  di.1.GQPOP
                 TotPOP_Ja[jdx] = TotPOP_Ja[jdx]  +  di.1.TotPOP
                 TotEmp_Ja[jdx] = TotEmp_Ja[jdx]  +  di.1.TotEmp
                 IndEmp_Ja[jdx] = IndEmp_Ja[jdx]  +  di.1.IndEmp
                 RetEmp_Ja[jdx] = RetEmp_Ja[jdx]  +  di.1.RetEmp
                 OffEmp_Ja[jdx] = OffEmp_Ja[jdx]  +  di.1.OffEmp
                 OthEmp_Ja[jdx] = OthEmp_Ja[jdx]  +  di.1.OthEmp
                 LArea_Ja[jdx]  = LArea_Ja[jdx]   +  di.1.Landarea

                 HH_Aa[_At]       = HH_Aa[_At]      +  di.1.HH
                 HHPOP_Aa[_At]    = HHPOP_Aa[_At]   +  di.1.HHPOP
                 GQPOP_Aa[_At]    = GQPOP_Aa[_At]   +  di.1.GQPOP
                 TotPOP_Aa[_At]   = TotPOP_Aa[_At]  +  di.1.TotPOP
                 TotEmp_Aa[_At]   = TotEmp_Aa[_At]  +  di.1.TotEmp
                 IndEmp_Aa[_At]   = IndEmp_Aa[_At]  +  di.1.IndEmp
                 RetEmp_Aa[_At]   = RetEmp_Aa[_At]  +  di.1.RetEmp
                 OffEmp_Aa[_At]   = OffEmp_Aa[_At]  +  di.1.OffEmp
                 OthEmp_Aa[_At]   = OthEmp_Aa[_At]  +  di.1.OthEmp
                 LArea_Aa[_At]    = LArea_Aa[_At]   +  di.1.Landarea

                 HH_Tot     = HH_Tot      +  di.1.HH
                 HHPOP_Tot  = HHPOP_Tot   +  di.1.HHPOP
                 GQPOP_Tot  = GQPOP_Tot   +  di.1.GQPOP
                 TotPOP_Tot = TotPOP_Tot  +  di.1.TotPOP
                 TotEmp_Tot = TotEmp_Tot  +  di.1.TotEmp
                 IndEmp_Tot = IndEmp_Tot  +  di.1.IndEmp
                 RetEmp_Tot = RetEmp_Tot  +  di.1.RetEmp
                 OffEmp_Tot = OffEmp_Tot  +  di.1.OffEmp
                 OthEmp_Tot = OthEmp_Tot  +  di.1.OthEmp
                 LArea_Tot  = LArea_Tot   +  di.1.Landarea


             ;; --------            End of Array accumulation                  ---
----
 ENDLOOP

;; =========   Printout  Reports
==========================================================================
;;
```

```
;; -------------------------------------------------------------------------------
-------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Land Activity by Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ',' Households','     HH_Pop','
GQ_Pop','    Tot_Pop',' Total_Emp','    IND_Emp',
                                                  '    RET_Emp','    Off_Emp','
Oth_Emp','   LandArea','    HH_Size',' JobHHRatio ','\n'

 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno


      HH_Size  = 0
      JobHHRat = 0
      if (HH_Ja[jdx]      > 0)   HH_Size  = HHPop_Ja[jdx]  / HH_Ja[jdx]
      if (TotEmp_Ja[jdx]  > 0)   JobHHRat = TotEmp_Ja[jdx] / HH_Ja[jdx]
      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ', HH_Ja[jdx],' ', HHPOP_Ja[jdx],' ',GQPOP_Ja[jdx],'
',TotPop_Ja[jdx],' ',TotEMP_Ja[jdx],' ',
                            INDEmp_Ja[jdx],' ',RetEmp_Ja[jdx],' ',OffEmp_Ja[jdx],'
',OthEmp_Ja[jdx],' ',Larea_Ja[jdx](10.3csv),
                            HH_Size(10.3csv)  ,' ',JobHHRat(10.3csv)
 ENDLOOP

      HH_Size  = 0
      JobHHRat = 0
      if (HH_Tot       > 0)   HH_Size  = HHPop_Tot  / HH_Tot
      if (TotEmp_Tot   > 0)   JobHHRat = TotEmp_Tot / HH_Tot

  Print PRINTO=1 LIST='                         '
  Print form=10csv PRINTO=1 LIST='      TOTAL               ', HH_Tot,    ' ',
HHPOP_Tot,' ',GQPOP_Tot,' ',TotPop_Tot,' ',TotEMP_Tot,' ',
                                                               INDEmp_Tot,'
',RetEmp_Tot,' ',OffEmp_Tot,' ',OthEmp_Tot,' ',Larea_Tot(10.3csv),
                                                               HH_Size(10.3csv) ,'
',JobHHRat(10.3csv)


;; -------------------------------------------------------------------------------
-------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Land Activity by Area Type                      ',
'\n','\n'
 Print PRINTO=1 LIST='      Area Type          ',' Households','     HH_Pop','
GQ_Pop','    Tot_Pop',' Total_Emp','    IND_Emp',
                                                  '    RET_Emp','    Off_Emp','
Oth_Emp','   LandArea','    HH_Size',' JobHHRatio ','\n'

 Loop KK = 1,6

      Adx = kk


      HH_Size  = 0
      JobHHRat = 0
      if (HH_Aa[Adx]      > 0)   HH_Size  = HHPop_Aa[Adx]  / HH_Aa[Adx]
      if (TotEmp_Aa[Adx]  > 0)   JobHHRat = TotEmp_Aa[Adx] / HH_Aa[Adx]
      Print form=10csv PRINTO=1 LIST=
                    Adx,'               ', HH_Aa[Adx],' ', HHPOP_Aa[Adx],'
',GQPOP_Aa[Adx],' ',TotPop_Aa[Adx],' ',TotEMP_Aa[Adx],' ',
                                            INDEmp_Aa[Adx],' ',RetEmp_Aa[Adx],'
',OffEmp_Aa[Adx],' ',OthEmp_Aa[Adx],' ',Larea_Aa[Adx](10.3csv),
                                            HH_Size(10.3csv)  ,' ',JobHHRat(10.3csv)
 ENDLOOP

      HH_Size  = 0
      JobHHRat = 0
      if (HH_Tot       > 0)   HH_Size  = HHPop_Tot  / HH_Tot
      if (TotEmp_Tot   > 0)   JobHHRat = TotEmp_Tot / HH_Tot

  Print PRINTO=1 LIST='                         '
  Print form=10csv PRINTO=1 LIST='      TOTAL               ', HH_Tot,    ' ',
HHPOP_Tot,' ',GQPOP_Tot,' ',TotPop_Tot,' ',TotEMP_Tot,' ',
                                                               INDEmp_Tot,'
',RetEmp_Tot,' ',OffEmp_Tot,' ',OthEmp_Tot,' ',Larea_Tot(10.3csv),
                                                               HH_Size(10.3csv) ,'
',JobHHRat(10.3csv)

;;###############################################################################
##########################################################
 ;;=============================================================================
 ;; process trip productions next                                               =
 ;;=============================================================================

 LOOP K = 1,dbi.3.NUMRECORDS
      x = DBIReadRecord(3,k)
      if (K <= 3675)
        ; Define input variables in production zone file

        _TAZ        = di.3.TAZ
        _HBW_MTR_PS = di.3.HBW_MTR_PS
        _HBW_NMT_PS = di.3.HBW_NMT_PS
        _HBW_ALL_PS = di.3.HBW_ALL_PS
        _HBWMTRP_I1 = di.3.HBWMTRP_I1
        _HBWMTRP_I2 = di.3.HBWMTRP_I2
        _HBWMTRP_I3 = di.3.HBWMTRP_I3
        _HBWMTRP_I4 = di.3.HBWMTRP_I4
        _HBS_MTR_PS = di.3.HBS_MTR_PS
        _HBS_NMT_PS = di.3.HBS_NMT_PS
        _HBS_ALL_PS = di.3.HBS_ALL_PS
        _HBSMTRP_I1 = di.3.HBSMTRP_I1
        _HBSMTRP_I2 = di.3.HBSMTRP_I2
        _HBSMTRP_I3 = di.3.HBSMTRP_I3
        _HBSMTRP_I4 = di.3.HBSMTRP_I4
        _HBO_MTR_PS = di.3.HBO_MTR_PS
        _HBO_NMT_PS = di.3.HBO_NMT_PS
        _HBO_ALL_PS = di.3.HBO_ALL_PS
        _HBOMTRP_I1 = di.3.HBOMTRP_I1
        _HBOMTRP_I2 = di.3.HBOMTRP_I2
        _HBOMTRP_I3 = di.3.HBOMTRP_I3
        _HBOMTRP_I4 = di.3.HBOMTRP_I4
        _NHW_MTR_PS = di.3.NHW_MTR_PS
        _NHW_NMT_PS = di.3.NHW_NMT_PS
        _NHW_ALL_PS = di.3.NHW_ALL_PS
        _NHO_MTR_PS = di.3.NHO_MTR_PS
        _NHO_NMT_PS = di.3.NHO_NMT_PS
        _NHO_ALL_PS = di.3.NHO_ALL_PS

         ADX = AT_Za[_TAZ]                        ; slot cuurent taz into an area
type

          ;; Slot TAZ into a jurisdiction --------------------
             Loop KK = 1,dbi.2.numrecords
                       xx = DBIReadRecord(2,kk)
                            IF ((_TAZ >= di.2.LoTAZ1 && _TAZ <= di.2.HiTAZ1) ||
                                (_TAZ >= di.2.LoTAZ2 && _TAZ <= di.2.HiTAZ2) ||
                                (_TAZ >= di.2.LoTAZ3 && _TAZ <= di.2.HiTAZ3) ||
                                (_TAZ >= di.2.LoTAZ4 && _TAZ <= di.2.HiTAZ4) ||
                                (_TAZ >= di.2.LoTAZ5 && _TAZ <= di.2.HiTAZ5) ||
                                (_TAZ >= di.2.LoTAZ6 && _TAZ <= di.2.HiTAZ6) ||
                                (_TAZ >= di.2.LoTAZ7 && _TAZ <= di.2.HiTAZ7) ||
                                (_TAZ >= di.2.LoTAZ8 && _TAZ <= di.2.HiTAZ8))
                                  JDX = di.2.Jno
                            ENDIF
             ENDLOOP
```

```
            ;; -------- Array accumulation for productions-------

;; total Ps
    Mtr_Pro_ja[1][jdx] = Mtr_Pro_ja[1][jdx]  +  di.3.HBW_MTR_Ps
Mtr_Pro_Aa[1][adx] = Mtr_Pro_Aa[1][adx]  +  di.3.HBW_MTR_Ps
    Mtr_Pro_ja[2][jdx] = Mtr_Pro_ja[2][jdx]  +  di.3.HBS_MTR_Ps
Mtr_Pro_Aa[2][adx] = Mtr_Pro_Aa[2][adx]  +  di.3.HBS_MTR_Ps
    Mtr_Pro_ja[3][jdx] = Mtr_Pro_ja[3][jdx]  +  di.3.HBO_MTR_Ps
Mtr_Pro_Aa[3][adx] = Mtr_Pro_Aa[3][adx]  +  di.3.HBO_MTR_Ps
    Mtr_Pro_ja[4][jdx] = Mtr_Pro_ja[4][jdx]  +  di.3.NHW_MTR_Ps
Mtr_Pro_Aa[4][adx] = Mtr_Pro_Aa[4][adx]  +  di.3.NHW_MTR_Ps
    Mtr_Pro_ja[5][jdx] = Mtr_Pro_ja[5][jdx]  +  di.3.NHO_MTR_Ps
Mtr_Pro_Aa[5][adx] = Mtr_Pro_Aa[5][adx]  +  di.3.NHO_MTR_Ps

    MTR_PTot_Ja[jdx]   = MTR_PTot_Ja[jdx]    +  di.3.HBW_MTR_Ps + di.3.HBS_MTR_Ps +
di.3.HBO_MTR_Ps + di.3.NHW_MTR_Ps + di.3.NHO_MTR_Ps
    MTR_PTot_Aa[adx]   = MTR_PTot_Aa[Adx]    +  di.3.HBW_MTR_Ps + di.3.HBS_MTR_Ps +
di.3.HBO_MTR_Ps + di.3.NHW_MTR_Ps + di.3.NHO_MTR_Ps

    NMT_Pro_ja[1][jdx] = NMT_Pro_ja[1][jdx]  +  di.3.HBW_NMT_Ps
NMT_Pro_Aa[1][adx] = NMT_Pro_Aa[1][adx]  +  di.3.HBW_NMT_Ps
    NMT_Pro_ja[2][jdx] = NMT_Pro_ja[2][jdx]  +  di.3.HBS_NMT_Ps
NMT_Pro_Aa[2][adx] = NMT_Pro_Aa[2][adx]  +  di.3.HBS_NMT_Ps
    NMT_Pro_ja[3][jdx] = NMT_Pro_ja[3][jdx]  +  di.3.HBO_NMT_Ps
NMT_Pro_Aa[3][adx] = NMT_Pro_Aa[3][adx]  +  di.3.HBO_NMT_Ps
    NMT_Pro_ja[4][jdx] = NMT_Pro_ja[4][jdx]  +  di.3.NHW_NMT_Ps
NMT_Pro_Aa[4][adx] = NMT_Pro_Aa[4][adx]  +  di.3.NHW_NMT_Ps
    NMT_Pro_ja[5][jdx] = NMT_Pro_ja[5][jdx]  +  di.3.NHO_NMT_Ps
NMT_Pro_Aa[5][adx] = NMT_Pro_Aa[5][adx]  +  di.3.NHO_NMT_Ps

    NMT_PTot_Ja[jdx]   = NMT_PTot_Ja[jdx]    +  di.3.HBW_NMT_Ps + di.3.HBS_NMT_Ps +
di.3.HBO_NMT_Ps + di.3.NHW_NMT_Ps + di.3.NHO_NMT_Ps
    NMT_PTot_Aa[adx]   = NMT_PTot_Aa[adx]    +  di.3.HBW_NMT_Ps + di.3.HBS_NMT_Ps +
di.3.HBO_NMT_Ps + di.3.NHW_NMT_Ps + di.3.NHO_NMT_Ps



;; total HB motorized Ps    by income
    Mtr_ProInc_ja[1][1][jdx] = Mtr_ProInc_ja[1][1][jdx]  +  di.3.HBWMTRP_I1
Mtr_ProInc_Aa[1][1][adx] = Mtr_ProInc_Aa[1][1][adx]  +  di.3.HBWMTRP_I1
    Mtr_ProInc_ja[2][1][jdx] = Mtr_ProInc_ja[2][1][jdx]  +  di.3.HBSMTRP_I1
Mtr_ProInc_Aa[2][1][adx] = Mtr_ProInc_Aa[2][1][adx]  +  di.3.HBSMTRP_I1
    Mtr_ProInc_ja[3][1][jdx] = Mtr_ProInc_ja[3][1][jdx]  +  di.3.HBOMTRP_I1
Mtr_ProInc_Aa[3][1][adx] = Mtr_ProInc_Aa[3][1][adx]  +  di.3.HBOMTRP_I1

    Mtr_ProInc_ja[1][2][jdx] = Mtr_ProInc_ja[1][2][jdx]  +  di.3.HBWMTRP_I2
Mtr_ProInc_Aa[1][2][adx] = Mtr_ProInc_Aa[1][2][adx]  +  di.3.HBWMTRP_I2
    Mtr_ProInc_ja[2][2][jdx] = Mtr_ProInc_ja[2][2][jdx]  +  di.3.HBSMTRP_I2
Mtr_ProInc_Aa[2][2][adx] = Mtr_ProInc_Aa[2][2][adx]  +  di.3.HBSMTRP_I2
    Mtr_ProInc_ja[3][2][jdx] = Mtr_ProInc_ja[3][2][jdx]  +  di.3.HBOMTRP_I2
Mtr_ProInc_Aa[3][2][adx] = Mtr_ProInc_Aa[3][2][adx]  +  di.3.HBOMTRP_I2

    Mtr_ProInc_ja[1][3][jdx] = Mtr_ProInc_ja[1][3][jdx]  +  di.3.HBWMTRP_I3
Mtr_ProInc_Aa[1][3][adx] = Mtr_ProInc_Aa[1][3][adx]  +  di.3.HBWMTRP_I3
    Mtr_ProInc_ja[2][3][jdx] = Mtr_ProInc_ja[2][3][jdx]  +  di.3.HBSMTRP_I3
Mtr_ProInc_Aa[2][3][adx] = Mtr_ProInc_Aa[2][3][adx]  +  di.3.HBSMTRP_I3
    Mtr_ProInc_ja[3][3][jdx] = Mtr_ProInc_ja[3][3][jdx]  +  di.3.HBOMTRP_I3
Mtr_ProInc_Aa[3][3][adx] = Mtr_ProInc_Aa[3][3][adx]  +  di.3.HBOMTRP_I3

    Mtr_ProInc_ja[1][4][jdx] = Mtr_ProInc_ja[1][4][jdx]  +  di.3.HBWMTRP_I4
Mtr_ProInc_Aa[1][4][adx] = Mtr_ProInc_Aa[1][4][adx]  +  di.3.HBWMTRP_I4
    Mtr_ProInc_ja[2][4][jdx] = Mtr_ProInc_ja[2][4][jdx]  +  di.3.HBSMTRP_I4
Mtr_ProInc_Aa[2][4][adx] = Mtr_ProInc_Aa[2][4][adx]  +  di.3.HBSMTRP_I4
    Mtr_ProInc_ja[3][4][jdx] = Mtr_ProInc_ja[3][4][jdx]  +  di.3.HBOMTRP_I4
Mtr_ProInc_Aa[3][4][adx] = Mtr_ProInc_Aa[3][4][adx]  +  di.3.HBOMTRP_I4

 ;; totals
```

```
    TotHBWMtrPs = TotHBWMtrPs + di.3.HBW_MTR_Ps   TotHBWNmtPs = TotHBWnmtPs +
di.3.HBW_NMT_Ps
    TotHBSMtrPs = TotHBSMtrPs + di.3.HBS_MTR_Ps   TotHBSNmtPs = TotHBSnmtPs +
di.3.HBS_NMT_Ps
    TotHBOMtrPs = TotHBOMtrPs + di.3.HBO_MTR_Ps   TotHBONmtPs = TotHBOnmtPs +
di.3.HBO_NMT_Ps
    TotNHWMtrPs = TotNHWMtrPs + di.3.NHW_MTR_Ps   TotNHWNmtPs = TotNHWnmtPs +
di.3.NHW_NMT_Ps
    TotNHOMtrPs = TotNHOMtrPs + di.3.NHO_MTR_Ps   TotNHONmtPs = TotNHOnmtPs +
di.3.NHO_NMT_Ps

    TotMtrPs    = TotMtrPs    + di.3.HBW_MTR_Ps + di.3.HBS_MTR_Ps + di.3.HBO_MTR_Ps
+ di.3.NHW_MTR_Ps + di.3.NHO_MTR_Ps
    TotNmtPs    = TotNmtPs    + di.3.HBW_NMT_Ps + di.3.HBS_NMT_Ps + di.3.HBO_NMT_Ps
+ di.3.NHW_NMT_Ps + di.3.NHO_NMT_Ps

    TotHBWMtrPs_I1 = TotHBWMtrPs_I1 + di.3.HBWMTRP_I1
    TotHBSMtrPs_I1 = TotHBSMtrPs_I1 + di.3.HBSMTRP_I1
    TotHBOMtrPs_I1 = TotHBOMtrPs_I1 + di.3.HBOMTRP_I1

    TotHBWMtrPs_I2 = TotHBWMtrPs_I2 + di.3.HBWMTRP_I2
    TotHBSMtrPs_I2 = TotHBSMtrPs_I2 + di.3.HBSMTRP_I2
    TotHBOMtrPs_I2 = TotHBOMtrPs_I2 + di.3.HBOMTRP_I2

    TotHBWMtrPs_I3 = TotHBWMtrPs_I3 + di.3.HBWMTRP_I3
    TotHBSMtrPs_I3 = TotHBSMtrPs_I3 + di.3.HBSMTRP_I3
    TotHBOMtrPs_I3 = TotHBOMtrPs_I3 + di.3.HBOMTRP_I3

    TotHBWMtrPs_I4 = TotHBWMtrPs_I4 + di.3.HBWMTRP_I4
    TotHBSMtrPs_I4 = TotHBSMtrPs_I4 + di.3.HBSMTRP_I4
    TotHBOMtrPs_I4 = TotHBOMtrPs_I4 + di.3.HBOMTRP_I4



  ENDIF      ;; --------             End of Array accumulation                  ---
----
 ENDLOOP

  Loop Jdx = 1,25
      if (HH_ja[jdx]  > 0)  HHPrate_pj[1][Jdx] =  Mtr_Pro_ja[1][jdx] / HH_ja[jdx]
      if (HH_ja[jdx]  > 0)  HHPrate_pj[2][Jdx] =  Mtr_Pro_ja[2][jdx] / HH_ja[jdx]
      if (HH_ja[jdx]  > 0)  HHPrate_pj[3][Jdx] =  Mtr_Pro_ja[3][jdx] / HH_ja[jdx]
      if (HH_ja[jdx]  > 0)  HHPrate_pj[4][Jdx] =  Mtr_Pro_ja[4][jdx] / HH_ja[jdx]
      if (HH_ja[jdx]  > 0)  HHPrate_pj[5][Jdx] =  Mtr_Pro_ja[5][jdx] / HH_ja[jdx]

      if (HH_ja[jdx]  > 0)  HHTPrate_j[jdx]     =  MTR_PTot_Ja[jdx]   / HH_ja[jdx]
  ENDLOOP

      if (HH_Tot  > 0)   HHTPrate_p[1]    = TotHBWMtrPs    /    HH_Tot
      if (HH_Tot  > 0)   HHTPrate_p[2]    = TotHBSMtrPs    /    HH_Tot
      if (HH_Tot  > 0)   HHTPrate_p[3]    = TotHBOMtrPs    /    HH_Tot
      if (HH_Tot  > 0)   HHTPrate_p[4]    = TotNHWMtrPs    /    HH_Tot
      if (HH_Tot  > 0)   HHTPrate_p[5]    = TotNHOMtrPs    /    HH_Tot

      if (HH_Tot>0)      TotRATESALL      =
(TotHBWMtrPs+TotHBSMtrPs+TotHBOMtrPs+TotNHWMtrPs+TotNHOMtrPs) / HH_Tot

; =========   Printout  Trip Production Reports
======================================================================

; -------------------------------------------------------------------------------------
------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Motorized Trip Productions by Purpose and
Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'
```

```
 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',Mtr_Pro_Ja[1][jdx],' ',Mtr_Pro_Ja[2][jdx],'
',Mtr_Pro_Ja[3][jdx],' ',Mtr_Pro_Ja[4][jdx],' ',
                            Mtr_Pro_Ja[5][jdx],' ',Mtr_Ptot_Ja[jdx]
 ENDLOOP

  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL              ',
                                 TOTHBWMTRPs, ' ',TOTHBSMTRPs,' ',TOTHBOMTRPs,'
',TOTNHWMTRPs,' ',TOTNHOMTRPs,' ',TOTMTRPs


; ---------------------------------------------------------------------------------
------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Motorized Trip Productions per Household by
Purpose and Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10.2csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',HHPrate_pj[1][jdx],' ',HHPrate_pj[2][jdx],'
',HHPrate_pj[3][jdx],' ',HHPrate_pj[4][jdx],' ',
                            HHPrate_pj[5][jdx],' ',HHTPrate_j[jdx]
 ENDLOOP

  Print PRINTO=1 LIST='                          '
  Print form=10.2csv PRINTO=1 LIST='      TOTAL              ',
                                 HHTPRate_P[1], ' ',HHTPRate_P[2],'
',HHTPRate_P[3],' ',HHTPRate_P[4],' ',HHTPRate_P[5],' ',TOTRatesall


;; --------------------------------------------------------------------------------
-------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Motorized Trip Productions by Purpose and Area
Type     ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,6

      Adx = kk

      Print form=10csv PRINTO=1 LIST='     Area Type:     ',Adx(5),
                        ' ',Mtr_Pro_Aa[1][adx],' ',Mtr_Pro_Aa[2][adx],'
',Mtr_Pro_Aa[3][adx],' ',Mtr_Pro_Aa[4][adx],' ',
                            Mtr_Pro_Aa[5][adx],' ',Mtr_Ptot_Aa[adx]
 ENDLOOP


  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL              ',
                                 TOTHBWMTRPs, ' ',TOTHBSMTRPs,' ',TOTHBOMTRPs,'
',TOTNHWMTRPs,' ',TOTNHOMTRPs,' ',TOTMTRPs


; ---------------------------------------------------------------------------------
------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' NonMotorized Trip Productions by Purpose and
Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',Nmt_Pro_Ja[1][jdx],' ',Nmt_Pro_Ja[2][jdx],'
',Nmt_Pro_Ja[3][jdx],' ',Nmt_Pro_Ja[4][jdx],' ',
                            Nmt_Pro_Ja[5][jdx],' ',Nmt_Ptot_Ja[jdx]
 ENDLOOP

  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL              ',
                                 TOTHBWNMTPs, ' ',TOTHBSNMTPs,' ',TOTHBONMTPs,'
',TOTNHWNMTPs,' ',TOTNHONMTPs,' ',TOTNMTPs


;; --------------------------------------------------------------------------------
-------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' NonMotorized Trip Productions by Purpose and Area
Type     ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,6

      Adx = kk

      Print form=10csv PRINTO=1 LIST='     Area Type:     ',Adx(5),
                        ' ',Nmt_Pro_Aa[1][adx],' ',Nmt_Pro_Aa[2][adx],'
',Nmt_Pro_Aa[3][adx],' ',Nmt_Pro_Aa[4][adx],' ',
                            Nmt_Pro_Aa[5][adx],' ',Nmt_Ptot_Aa[adx]
 ENDLOOP


  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL              ',
                                 TOTHBWNMTPs, ' ',TOTHBSNMTPs,' ',TOTHBONMTPs,'
',TOTNHWNMTPs,' ',TOTNHONMTPs,' ',TOTNMTPs

; ---------------------------------------------------------------------------------
------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Home-Based Motorized Trip Productions by Purpose,
Income, and Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','   HBW_Inc1','   HBW_Inc2','
HBW_Inc3','   HBW_Inc4',
                                                 '   HBS_Inc1','   HBS_Inc2','
HBS_Inc3','   HBS_Inc4',
                                                 '   HBO_Inc1','   HBO_Inc2','
HBO_Inc3','   HBO_Inc4', '\n'


 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',Mtr_ProInc_ja[1][1][jdx],' ',Mtr_ProInc_ja[1][2][jdx],'
',Mtr_ProInc_ja[1][3][jdx],' ',Mtr_ProInc_ja[1][4][jdx],' ',
                            Mtr_ProInc_ja[2][1][jdx],' ',Mtr_ProInc_ja[2][2][jdx],'
',Mtr_ProInc_ja[2][3][jdx],' ',Mtr_ProInc_ja[2][4][jdx],' ',
                            Mtr_ProInc_ja[3][1][jdx],' ',Mtr_ProInc_ja[3][2][jdx],'
',Mtr_ProInc_ja[3][3][jdx],' ',Mtr_ProInc_ja[3][4][jdx]

 ENDLOOP
```

```
  Print PRINTO=1 LIST='                              '
  Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWMTRPs_i1, ' ',TOTHBWMTRPs_i2,'
',TOTHBWMTRPs_i3,' ',TOTHBWMTRPs_i4,' ',
                                 TOTHBSMTRPs_i1, ' ',TOTHBSMTRPs_i2,'
',TOTHBSMTRPs_i3,' ',TOTHBSMTRPs_i4,' ',
                                 TOTHBOMTRPs_i1, ' ',TOTHBOMTRPs_i2,'
',TOTHBOMTRPs_i3,' ',TOTHBOMTRPs_i4

; ---------------------------------------------------------------------------------
------------------------------------------------------
;; -------------------------------------------------------------------------------
-------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Home-Based Motorized Trip Productions by Purpose,
Income, and Area Type       ', '\n','\n'
 Print PRINTO=1 LIST='      Area Type          ','   HBW_Inc1','   HBW_Inc2','
HBW_Inc3','   HBW_Inc4',
                                               '   HBS_Inc1','   HBS_Inc2','
HBS_Inc3','   HBS_Inc4',
                                               '   HBO_Inc1','   HBO_Inc2','
HBO_Inc3','   HBO_Inc4', '\n'

 Loop KK = 1,6

      Adx = kk

      Print form=10csv PRINTO=1 LIST='     Area Type:     ',Adx(5),
                        ' ',Mtr_ProInc_Aa[1][1][Adx],' ',Mtr_ProInc_Aa[1][2][Adx],'
',Mtr_ProInc_Aa[1][3][Adx],' ',Mtr_ProInc_Aa[1][4][Adx],' ',
                            Mtr_ProInc_Aa[2][1][Adx],' ',Mtr_ProInc_Aa[2][2][Adx],'
',Mtr_ProInc_Aa[2][3][Adx],' ',Mtr_ProInc_Aa[2][4][Adx],' ',
                            Mtr_ProInc_Aa[3][1][Adx],' ',Mtr_ProInc_Aa[3][2][Adx],'
',Mtr_ProInc_Aa[3][3][Adx],' ',Mtr_ProInc_Aa[3][4][Adx]
 ENDLOOP


 Print PRINTO=1 LIST='                              '
 Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWMTRPs_i1, ' ',TOTHBWMTRPs_i2,'
',TOTHBWMTRPs_i3,' ',TOTHBWMTRPs_i4,' ',
                                 TOTHBSMTRPs_i1, ' ',TOTHBSMTRPs_i2,'
',TOTHBSMTRPs_i3,' ',TOTHBSMTRPs_i4,' ',
                                 TOTHBOMTRPs_i1, ' ',TOTHBOMTRPs_i2,'
',TOTHBOMTRPs_i3,' ',TOTHBOMTRPs_i4



;;#################################################################################
##############################################################
 ;;===============================================================================
 ;; process Trip Attractions next                                                =
 ;;===============================================================================

 LOOP K = 1,dbi.4.NUMRECORDS
      x = DBIReadRecord(4,k)
      if (K <= 3675)
        ; Define input variables in ATTRACTION zone file

        _TAZ        = di.4.TAZ
        _HBW_MTR_AS = di.4.HBW_MTR_AS
        _HBW_NMT_AS = di.4.HBW_NMT_AS
        _HBW_ALL_AS = di.4.HBW_ALL_AS
        _HBWMTRA_I1 = di.4.HBWMTRA_I1
        _HBWMTRA_I2 = di.4.HBWMTRA_I2
        _HBWMTRA_I3 = di.4.HBWMTRA_I3
        _HBWMTRA_I4 = di.4.HBWMTRA_I4
        _HBS_MTR_AS = di.4.HBS_MTR_AS
        _HBS_NMT_AS = di.4.HBS_NMT_AS
        _HBS_ALL_AS = di.4.HBS_ALL_AS
        _HBSMTRA_I1 = di.4.HBSMTRA_I1
        _HBSMTRA_I2 = di.4.HBSMTRA_I2
        _HBSMTRA_I3 = di.4.HBSMTRA_I3
        _HBSMTRA_I4 = di.4.HBSMTRA_I4
        _HBO_MTR_AS = di.4.HBO_MTR_AS
        _HBO_NMT_AS = di.4.HBO_NMT_AS
        _HBO_ALL_AS = di.4.HBO_ALL_AS
        _HBOMTRA_I1 = di.4.HBOMTRA_I1
        _HBOMTRA_I2 = di.4.HBOMTRA_I2
        _HBOMTRA_I3 = di.4.HBOMTRA_I3
        _HBOMTRA_I4 = di.4.HBOMTRA_I4
        _NHW_MTR_AS = di.4.NHW_MTR_AS
        _NHW_NMT_AS = di.4.NHW_NMT_AS
        _NHW_ALL_AS = di.4.NHW_ALL_AS
        _NHO_MTR_AS = di.4.NHO_MTR_AS
        _NHO_NMT_AS = di.4.NHO_NMT_AS
        _NHO_ALL_AS = di.4.NHO_ALL_AS

         ADX = AT_Za[_TAZ]                        ; slot cuurent taz into an area
type

          ;; Slot TAZ into a jurisdiction --------------------
             Loop KK = 1,dbi.2.numrecords
                       xx = DBIReadRecord(2,kk)
                            IF ((_TAZ >= di.2.LoTAZ1 && _TAZ <= di.2.HiTAZ1) ||
                                (_TAZ >= di.2.LoTAZ2 && _TAZ <= di.2.HiTAZ2) ||
                                (_TAZ >= di.2.LoTAZ3 && _TAZ <= di.2.HiTAZ3) ||
                                (_TAZ >= di.2.LoTAZ4 && _TAZ <= di.2.HiTAZ4) ||
                                (_TAZ >= di.2.LoTAZ5 && _TAZ <= di.2.HiTAZ5) ||
                                (_TAZ >= di.2.LoTAZ6 && _TAZ <= di.2.HiTAZ6) ||
                                (_TAZ >= di.2.LoTAZ7 && _TAZ <= di.2.HiTAZ7) ||
                                (_TAZ >= di.2.LoTAZ8 && _TAZ <= di.2.HiTAZ8))
                                  JDX = di.2.Jno
                            ENDIF
             ENDLOOP

             ;; -------- Array accumulation for productions-------

;; total As
    Mtr_Att_ja[1][jdx] = Mtr_Att_ja[1][jdx]  +  di.4.HBW_MTR_As
Mtr_Att_Aa[1][adx] = Mtr_Att_Aa[1][adx]  +  di.4.HBW_MTR_As
    Mtr_Att_ja[2][jdx] = Mtr_Att_ja[2][jdx]  +  di.4.HBS_MTR_As
Mtr_Att_Aa[2][adx] = Mtr_Att_Aa[2][adx]  +  di.4.HBS_MTR_As
    Mtr_Att_ja[3][jdx] = Mtr_Att_ja[3][jdx]  +  di.4.HBO_MTR_As
Mtr_Att_Aa[3][adx] = Mtr_Att_Aa[3][adx]  +  di.4.HBO_MTR_As
    Mtr_Att_ja[4][jdx] = Mtr_Att_ja[4][jdx]  +  di.4.NHW_MTR_As
Mtr_Att_Aa[4][adx] = Mtr_Att_Aa[4][adx]  +  di.4.NHW_MTR_As
    Mtr_Att_ja[5][jdx] = Mtr_Att_ja[5][jdx]  +  di.4.NHO_MTR_As
Mtr_Att_Aa[5][adx] = Mtr_Att_Aa[5][adx]  +  di.4.NHO_MTR_As

    MTR_ATot_Ja[jdx]   = MTR_ATot_Ja[jdx]    +  di.4.HBW_MTR_As + di.4.HBS_MTR_As +
di.4.HBO_MTR_As + di.4.NHW_MTR_As + di.4.NHO_MTR_As
    MTR_ATot_Aa[adx]   = MTR_ATot_Aa[Adx]    +  di.4.HBW_MTR_As + di.4.HBS_MTR_As +
di.4.HBO_MTR_As + di.4.NHW_MTR_As + di.4.NHO_MTR_As

    NMT_Att_ja[1][jdx] = NMT_Att_ja[1][jdx]  +  di.4.HBW_NMT_As
NMT_Att_Aa[1][adx] = NMT_Att_Aa[1][adx]  +  di.4.HBW_NMT_As
    NMT_Att_ja[2][jdx] = NMT_Att_ja[2][jdx]  +  di.4.HBS_NMT_As
NMT_Att_Aa[2][adx] = NMT_Att_Aa[2][adx]  +  di.4.HBS_NMT_As
    NMT_Att_ja[3][jdx] = NMT_Att_ja[3][jdx]  +  di.4.HBO_NMT_As
NMT_Att_Aa[3][adx] = NMT_Att_Aa[3][adx]  +  di.4.HBO_NMT_As
    NMT_Att_ja[4][jdx] = NMT_Att_ja[4][jdx]  +  di.4.NHW_NMT_As
NMT_Att_Aa[4][adx] = NMT_Att_Aa[4][adx]  +  di.4.NHW_NMT_As
    NMT_Att_ja[5][jdx] = NMT_Att_ja[5][jdx]  +  di.4.NHO_NMT_As
NMT_Att_Aa[5][adx] = NMT_Att_Aa[5][adx]  +  di.4.NHO_NMT_As
```

```
    NMT_ATot_Ja[jdx]   = NMT_ATot_Ja[jdx]    +  di.4.HBW_NMT_As + di.4.HBS_NMT_As +
di.4.HBO_NMT_As + di.4.NHW_NMT_As + di.4.NHO_NMT_As
    NMT_ATot_Aa[adx]   = NMT_ATot_Aa[adx]    +  di.4.HBW_NMT_As + di.4.HBS_NMT_As +
di.4.HBO_NMT_As + di.4.NHW_NMT_As + di.4.NHO_NMT_As



;; total HB motorized As    by income
    Mtr_AttInc_ja[1][1][jdx] = Mtr_AttInc_ja[1][1][jdx]  +  di.4.HBWMTRA_I1
Mtr_AttInc_Aa[1][1][adx] = Mtr_AttInc_Aa[1][1][adx]  +  di.4.HBWMTRA_I1
    Mtr_AttInc_ja[2][1][jdx] = Mtr_AttInc_ja[2][1][jdx]  +  di.4.HBSMTRA_I1
Mtr_AttInc_Aa[2][1][adx] = Mtr_AttInc_Aa[2][1][adx]  +  di.4.HBSMTRA_I1
    Mtr_AttInc_ja[3][1][jdx] = Mtr_AttInc_ja[3][1][jdx]  +  di.4.HBOMTRA_I1
Mtr_AttInc_Aa[3][1][adx] = Mtr_AttInc_Aa[3][1][adx]  +  di.4.HBOMTRA_I1

    Mtr_AttInc_ja[1][2][jdx] = Mtr_AttInc_ja[1][2][jdx]  +  di.4.HBWMTRA_I2
Mtr_AttInc_Aa[1][2][adx] = Mtr_AttInc_Aa[1][2][adx]  +  di.4.HBWMTRA_I2
    Mtr_AttInc_ja[2][2][jdx] = Mtr_AttInc_ja[2][2][jdx]  +  di.4.HBSMTRA_I2
Mtr_AttInc_Aa[2][2][adx] = Mtr_AttInc_Aa[2][2][adx]  +  di.4.HBSMTRA_I2
    Mtr_AttInc_ja[3][2][jdx] = Mtr_AttInc_ja[3][2][jdx]  +  di.4.HBOMTRA_I2
Mtr_AttInc_Aa[3][2][adx] = Mtr_AttInc_Aa[3][2][adx]  +  di.4.HBOMTRA_I2

    Mtr_AttInc_ja[1][3][jdx] = Mtr_AttInc_ja[1][3][jdx]  +  di.4.HBWMTRA_I3
Mtr_AttInc_Aa[1][3][adx] = Mtr_AttInc_Aa[1][3][adx]  +  di.4.HBWMTRA_I3
    Mtr_AttInc_ja[2][3][jdx] = Mtr_AttInc_ja[2][3][jdx]  +  di.4.HBSMTRA_I3
Mtr_AttInc_Aa[2][3][adx] = Mtr_AttInc_Aa[2][3][adx]  +  di.4.HBSMTRA_I3
    Mtr_AttInc_ja[3][3][jdx] = Mtr_AttInc_ja[3][3][jdx]  +  di.4.HBOMTRA_I3
Mtr_AttInc_Aa[3][3][adx] = Mtr_AttInc_Aa[3][3][adx]  +  di.4.HBOMTRA_I3

    Mtr_AttInc_ja[1][4][jdx] = Mtr_AttInc_ja[1][4][jdx]  +  di.4.HBWMTRA_I4
Mtr_AttInc_Aa[1][4][adx] = Mtr_AttInc_Aa[1][4][adx]  +  di.4.HBWMTRA_I4
    Mtr_AttInc_ja[2][4][jdx] = Mtr_AttInc_ja[2][4][jdx]  +  di.4.HBSMTRA_I4
Mtr_AttInc_Aa[2][4][adx] = Mtr_AttInc_Aa[2][4][adx]  +  di.4.HBSMTRA_I4
    Mtr_AttInc_ja[3][4][jdx] = Mtr_AttInc_ja[3][4][jdx]  +  di.4.HBOMTRA_I4
Mtr_AttInc_Aa[3][4][adx] = Mtr_AttInc_Aa[3][4][adx]  +  di.4.HBOMTRA_I4

 ;; totals

    TotHBWMtrAs = TotHBWMtrAs + di.4.HBW_MTR_As   TotHBWNmtAs = TotHBWnmtAs +
di.4.HBW_NMT_As
    TotHBSMtrAs = TotHBSMtrAs + di.4.HBS_MTR_As   TotHBSNmtAs = TotHBSnmtAs +
di.4.HBS_NMT_As
    TotHBOMtrAs = TotHBOMtrAs + di.4.HBO_MTR_As   TotHBONmtAs = TotHBOnmtAs +
di.4.HBO_NMT_As
    TotNHWMtrAs = TotNHWMtrAs + di.4.NHW_MTR_As   TotNHWNmtAs = TotNHWnmtAs +
di.4.NHW_NMT_As
    TotNHOMtrAs = TotNHOMtrAs + di.4.NHO_MTR_As   TotNHONmtAs = TotNHOnmtAs +
di.4.NHO_NMT_As

    TotMtrAs    = TotMtrAs    + di.4.HBW_MTR_As + di.4.HBS_MTR_As + di.4.HBO_MTR_As
+ di.4.NHW_MTR_As + di.4.NHO_MTR_As
    TotNmtAs    = TotNmtAs    + di.4.HBW_NMT_As + di.4.HBS_NMT_As + di.4.HBO_NMT_As
+ di.4.NHW_NMT_As + di.4.NHO_NMT_As

    TotHBWMtrAs_I1 = TotHBWMtrAs_I1 + di.4.HBWMTRA_I1
    TotHBSMtrAs_I1 = TotHBSMtrAs_I1 + di.4.HBSMTRA_I1
    TotHBOMtrAs_I1 = TotHBOMtrAs_I1 + di.4.HBOMTRA_I1

    TotHBWMtrAs_I2 = TotHBWMtrAs_I2 + di.4.HBWMTRA_I2
    TotHBSMtrAs_I2 = TotHBSMtrAs_I2 + di.4.HBSMTRA_I2
    TotHBOMtrAs_I2 = TotHBOMtrAs_I2 + di.4.HBOMTRA_I2

    TotHBWMtrAs_I3 = TotHBWMtrAs_I3 + di.4.HBWMTRA_I3
    TotHBSMtrAs_I3 = TotHBSMtrAs_I3 + di.4.HBSMTRA_I3
    TotHBOMtrAs_I3 = TotHBOMtrAs_I3 + di.4.HBOMTRA_I3

    TotHBWMtrAs_I4 = TotHBWMtrAs_I4 + di.4.HBWMTRA_I4
    TotHBSMtrAs_I4 = TotHBSMtrAs_I4 + di.4.HBSMTRA_I4
    TotHBOMtrAs_I4 = TotHBOMtrAs_I4 + di.4.HBOMTRA_I4



  ENDIF      ;; --------             End of Array accumulation                  ---
----
 ENDLOOP


  Loop Jdx = 1,25
      if (TotEMP_ja[jdx]  > 0)  EMPARate_pj[1][Jdx] =  Mtr_Att_ja[1][jdx] /
TotEMP_ja[jdx]
      if (TotEMP_ja[jdx]  > 0)  EMPARate_pj[2][Jdx] =  Mtr_Att_ja[2][jdx] /
TotEMP_ja[jdx]
      if (TotEMP_ja[jdx]  > 0)  EMPARate_pj[3][Jdx] =  Mtr_Att_ja[3][jdx] /
TotEMP_ja[jdx]
      if (TotEMP_ja[jdx]  > 0)  EMPARate_pj[4][Jdx] =  Mtr_Att_ja[4][jdx] /
TotEMP_ja[jdx]
      if (TotEMP_ja[jdx]  > 0)  EMPARate_pj[5][Jdx] =  Mtr_Att_ja[5][jdx] /
TotEMP_ja[jdx]

      if (TotEMP_ja[jdx]  > 0)  EMPTARate_j[jdx]     =  MTR_ATot_Ja[jdx]  /
TotEMP_ja[jdx]
  ENDLOOP

      if (TotEMP_Tot  > 0)   EMPTARate_p[1]    = TotHBWMtrAs    /    TotEMP_Tot
      if (TotEMP_Tot  > 0)   EMPTARate_p[2]    = TotHBSMtrAs    /    TotEMP_Tot
      if (TotEMP_Tot  > 0)   EMPTARate_p[3]    = TotHBOMtrAs    /    TotEMP_Tot
      if (TotEMP_Tot  > 0)   EMPTARate_p[4]    = TotNHWMtrAs    /    TotEMP_Tot
      if (TotEMP_Tot  > 0)   EMPTARate_p[5]    = TotNHOMtrAs    /    TotEMP_Tot

      if (TotEMP_Tot>0)      TotRATESALL      =
(TotHBWMtrAs+TotHBSMtrAs+TotHBOMtrAs+TotNHWMtrAs+TotNHOMtrAs) / TotEMP_Tot

; =========   Printout  Trip Production Reports
======================================================================

; --------------------------------------------------------------------------------
------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Motorized Trip Attractions by Purpose and
Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',Mtr_Att_Ja[1][jdx],' ',Mtr_Att_Ja[2][jdx],'
',Mtr_Att_Ja[3][jdx],' ',Mtr_Att_Ja[4][jdx],' ',
                            Mtr_Att_Ja[5][jdx],' ',Mtr_Atot_Ja[jdx]
 ENDLOOP

  Print PRINTO=1 LIST='                               '
  Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWMTRAs, ' ',TOTHBSMTRAs,' ',TOTHBOMTRAs,'
',TOTNHWMTRAs,' ',TOTNHOMTRAs,' ',TOTMTRAs


; --------------------------------------------------------------------------------
------------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Motorized Trip Attractions per Job by Purpose and
Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'
```

```
 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10.2csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',EMPARate_pj[1][jdx],' ',EMPARate_pj[2][jdx],'
',EMPARate_pj[3][jdx],' ',EMPARate_pj[4][jdx],' ',
                            EMPARate_pj[5][jdx],' ',EMPTARate_j[jdx]
 ENDLOOP

  Print PRINTO=1 LIST='                          '
  Print form=10.2csv PRINTO=1 LIST='      TOTAL                ',
                                 EMPTARate_P[1], ' ',EMPTARate_P[2],'
',EMPTARate_P[3],' ',EMPTARate_P[4],' ',EMPTARate_P[5],' ',TOTRatesall


;; ----------------------------------------------------------------------------------
-----------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Motorized Trip Attractions by Purpose and Area
Type     ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,6

      Adx = kk

      Print form=10csv PRINTO=1 LIST='     Area Type:     ',Adx(5),
                        ' ',Mtr_Att_Aa[1][adx],' ',Mtr_Att_Aa[2][adx],'
',Mtr_Att_Aa[3][adx],' ',Mtr_Att_Aa[4][adx],' ',
                            Mtr_Att_Aa[5][adx],' ',Mtr_Atot_Aa[adx]
 ENDLOOP


  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWMTRAs, ' ',TOTHBSMTRAs,' ',TOTHBOMTRAs,'
',TOTNHWMTRAs,' ',TOTNHOMTRAs,' ',TOTMTRAs


; ----------------------------------------------------------------------------------
----------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' NonMotorized Trip Attractions by Purpose and
Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',Nmt_Att_Ja[1][jdx],' ',Nmt_Att_Ja[2][jdx],'
',Nmt_Att_Ja[3][jdx],' ',Nmt_Att_Ja[4][jdx],' ',
                            Nmt_Att_Ja[5][jdx],' ',Nmt_Atot_Ja[jdx]
 ENDLOOP

  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWNMTAs, ' ',TOTHBSNMTAs,' ',TOTHBONMTAs,'
',TOTNHWNMTAs,' ',TOTNHONMTAs,' ',TOTNMTAs


;; ----------------------------------------------------------------------------------
-----------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' NonMotorized Trip Attractions by Purpose and Area
Type     ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','        HBW','        HBS','
HBO','        NHW','        NHO','      Total','\n'

 Loop KK = 1,6

      Adx = kk

      Print form=10csv PRINTO=1 LIST='     Area Type:     ',Adx(5),
                        ' ',Nmt_Att_Aa[1][adx],' ',Nmt_Att_Aa[2][adx],'
',Nmt_Att_Aa[3][adx],' ',Nmt_Att_Aa[4][adx],' ',
                            Nmt_Att_Aa[5][adx],' ',Nmt_Atot_Aa[adx]
 ENDLOOP


  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWNMTAs, ' ',TOTHBSNMTAs,' ',TOTHBONMTAs,'
',TOTNHWNMTAs,' ',TOTNHONMTAs,' ',TOTNMTAs

; ----------------------------------------------------------------------------------
----------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Home-Based Motorized Trip Attractions by Purpose,
Income, and Jurisdiction    ', '\n','\n'
 Print PRINTO=1 LIST='      Jurisdiction       ','   HBW_Inc1','   HBW_Inc2','
HBW_Inc3','   HBW_Inc4',
                                                 '   HBS_Inc1','   HBS_Inc2','
HBS_Inc3','   HBS_Inc4',
                                                 '   HBO_Inc1','   HBO_Inc2','
HBO_Inc3','   HBO_Inc4', '\n'


 Loop KK = 1,dbi.2.numrecords
      xx = DBIReadRecord(2,kk)
      jdx = di.2.Jno

      Print form=10csv PRINTO=1 LIST=
        di.2.JNAME(c25),' ',Mtr_AttInc_ja[1][1][jdx],' ',Mtr_AttInc_ja[1][2][jdx],'
',Mtr_AttInc_ja[1][3][jdx],' ',Mtr_AttInc_ja[1][4][jdx],' ',
                            Mtr_AttInc_ja[2][1][jdx],' ',Mtr_AttInc_ja[2][2][jdx],'
',Mtr_AttInc_ja[2][3][jdx],' ',Mtr_AttInc_ja[2][4][jdx],' ',
                            Mtr_AttInc_ja[3][1][jdx],' ',Mtr_AttInc_ja[3][2][jdx],'
',Mtr_AttInc_ja[3][3][jdx],' ',Mtr_AttInc_ja[3][4][jdx]

 ENDLOOP

  Print PRINTO=1 LIST='                          '
  Print form=10csv PRINTO=1 LIST='      TOTAL                ',
                                 TOTHBWMTRAs_i1, ' ',TOTHBWMTRAs_i2,'
',TOTHBWMTRAs_i3,' ',TOTHBWMTRAs_i4,' ',
                                 TOTHBSMTRAs_i1, ' ',TOTHBSMTRAs_i2,'
',TOTHBSMTRAs_i3,' ',TOTHBSMTRAs_i4,' ',
                                 TOTHBOMTRAs_i1, ' ',TOTHBOMTRAs_i2,'
',TOTHBOMTRAs_i3,' ',TOTHBOMTRAs_i4

; ----------------------------------------------------------------------------------
----------------------------------------------------
;; ---------------------------------------------------------------------------------
-----------------------------------------------------
 Print PRINTO=1 LIST= '\n','\n',' Home-Based Motorized Trip Attractions by Purpose,
Income, and Area Type       ', '\n','\n'
 Print PRINTO=1 LIST='      Area Type          ','   HBW_Inc1','   HBW_Inc2','
HBW_Inc3','   HBW_Inc4',
                                                 '   HBS_Inc1','   HBS_Inc2','
HBS_Inc3','   HBS_Inc4',
                                                 '   HBO_Inc1','   HBO_Inc2','
HBO_Inc3','   HBO_Inc4', '\n'

 Loop KK = 1,6
```

```
      Adx = kk

      Print form=10csv PRINTO=1 LIST='     Area Type:     ',Adx(5),
                        ' ',Mtr_AttInc_Aa[1][1][Adx],' ',Mtr_AttInc_Aa[1][2][Adx],'
',Mtr_AttInc_Aa[1][3][Adx],' ',Mtr_AttInc_Aa[1][4][Adx],' ',
                            Mtr_AttInc_Aa[2][1][Adx],' ',Mtr_AttInc_Aa[2][2][Adx],'
',Mtr_AttInc_Aa[2][3][Adx],' ',Mtr_AttInc_Aa[2][4][Adx],' ',
                            Mtr_AttInc_Aa[3][1][Adx],' ',Mtr_AttInc_Aa[3][2][Adx],'
',Mtr_AttInc_Aa[3][3][Adx],' ',Mtr_AttInc_Aa[3][4][Adx]
 ENDLOOP


 Print PRINTO=1 LIST='                           '
 Print form=10csv PRINTO=1 LIST='      TOTAL               ',
                                 TOTHBWMTRAs_i1, ' ',TOTHBWMTRAs_i2,'
',TOTHBWMTRAs_i3,' ',TOTHBWMTRAs_i4,' ',
                                 TOTHBSMTRAs_i1, ' ',TOTHBSMTRAs_i2,'
',TOTHBSMTRAs_i3,' ',TOTHBSMTRAs_i4,' ',
                                 TOTHBOMTRAs_i1, ' ',TOTHBOMTRAs_i2,'
',TOTHBOMTRAs_i3,' ',TOTHBOMTRAs_i4

ENDRUN
*copy voya*.prn Juris_Trip_Rate_summary.rpt
```

43 Truck_Com_Trip_Generation.s

```
*del voya*.prn
;=================================================================
;  Truck_Com_Trip_Generation.s
;  Version 2.3, 3722 TAZ System  - Truck and Commercial Vehicle Trip Generation
Process
;
;   RM
;   Date:      12/08/10
;
;=================================================================
;
;
;=================================================================
;Parameters and file specifications:
;=================================================================

ZONESIZE    =  3722                     ;  No. of TAZs
LastIZn     =  3675                     ;  Last Internal TAZ no.

JrCl        =  24                       ;  No. of Juris. Classes (transformed
JURIS. Code 0-23 becomes 1-24)
ArCl        =   6                       ;  No. of Area Classe (ATypes)
VeCl        =   3                       ;  No. of Vehicle Classes (1/Medium Truck,
2/ Heavy Truck, 3, Comm. Vehicle

ZNFILE_IN1  = 'inputs\ZONE.dbf'                  ;  Input  Zonal Land Use File
ZNFILE_IN2  = 'AreaType_File.dbf'                ;  Input  Zonal Area Type File
from network building
Ext_PsAs    = 'inputs\Ext_PsAs.dbf'              ;  External Ps, As
ZoneConnect = 'skimtot%_prev_%.dat'              ;  Zone file showing TAZs without
Truck Access (generation is suppressed)
ZnFile_Ou1  = 'ComVeh_Truck_Ends_%_iter_%.dbf'     ;  output comm, med trk, hvy
truck trip ends
ZnFile_Ou2  = 'ComVeh_Truck_dbg_%_iter_%.dbf'      ;  output debug file- zonal
inputs and outputs

Rates_in    ='..\support\Truck_Com_Trip_Rates.DBF'    ;  Truck, Comm.Veh trip rates
reportfile  ='Truck_Com_Trip_Generation_%_iter_%.txt'

;=================================================================
;Program Steps
;=================================================================
 RUN PGM=MATRIX
 ZONES=1
 ARRAY OFFRateA = 3,6  ; trip rates arrayed as 3 types (Med, Hvy, CV) by 6 area
types
 ARRAY RETRateA = 3,6  ;
 ARRAY INDRateA = 3,6  ;
 ARRAY OTHRateA = 3,6  ;
 ARRAY HH_RateA = 3,6  ;

 ARRAY MHC_JurA =3,24  ; jurisdictional arrays 3 TYPES (Med, Hvy, CV) by juris. code
1 to 24 (0-23)
 ARRAY MHC_AtpA =3,24  ; Area Type      arrays 3 TYPES (Med, Hvy, CV) by Area Type
(1-6)


;=========================================================================

; Define Zonal Land activity as a zonal lookup table
 FileI LOOKUPI[1] = "@ZNFILE_IN1@"
 LOOKUP LOOKUPI=1, NAME=tazlu,
        LOOKUP[1] = TAZ, RESULT=OFFEMP,   ;
        LOOKUP[2] = TAZ, RESULT=RETEMP,   ;
        LOOKUP[3] = TAZ, RESULT=INDEMP,   ;
        LOOKUP[4] = TAZ, RESULT=OTHEMP,   ;
        LOOKUP[5] = TAZ, RESULT=HH,       ;
        LOOKUP[6] = TAZ, RESULT=JURCODE,  ;
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N

; Define Zonal Truck Access indicator (sum of truck time skims to/from each TAZ)
 LOOKUP NAME=trkskims,
        LOOKUP[1] = 1, RESULT=2,   ; row sum of truck skims
        LOOKUP[2] = 1, RESULT=3,   ; col sum of truck skims
        INTERPOLATE=N, FAIL= 10000000.0, 10000000.0, 10000000.0, LIST=N,file
=@zoneconnect@


; Define special truck generator TAZs - as defined in the original calibration work
; Lookup table to identify "truck zones" for 2005 (new TAZs)
  LOOKUP NAME=tzone,
  LOOKUP[1] = 2, RESULT=1,   ; row sum of truck skims
  interpolate = n, fail = 0,0,0,
  R=     '1        213',
         '1        218',
         '1        519',
         '1        520',
         '1        527',
         '1        531',
         '1        864',
         '1        865',
         '1        870',
         '1       1018',
         '1       1021',
         '1       1022',
         '1       1031',
         '1       1088',
         '1       1119',
         '1       1120',
```

```
         '1       1230',
         '1       1249',
         '1       1511',
         '1       1652',
         '1       1800',
         '1       1973',
         '1       1983',
         '1       1985',
         '1       1987',
         '1       1988',
         '1       2014',
         '1       2116',
         '1       2321',
         '1       2326',
         '1       2327',
         '1       2383',
         '1       2386',
         '1       2388',
         '1       2527',
         '1       2542',
         '1       2547',
         '1       2834',
         '1       2835',
         '1       2837',
         '1       2838',
         '1       2839',
         '1       2840',
         '1       2841',
         '1       2842',
         '1       2921',
         '1       2922',
         '1       2923',
         '1       2930',
         '1       2931',
         '1       2937',
         '1       2940',
         '1       2943',
         '1       2990',
         '1       2992',
         '1       2999',
         '1       3002',
         '1       3003',
         '1       3004',
         '1       3005',
         '1       3036',
         '1       3233',
         '1       3234',
         '1       3235',
         '1       3236',
         '1       3237',
         '1       3238',
         '1       3239',
         '1       3245',
         '1       3572',
         '1       3573',
         '1       3574',
         '1       3575',
         '1       3580',
         '1       3585'
;;;;     end


; Define zonal Area Type File as a zonal lookup table
 FileI LOOKUPI[2] = "@ZNFILE_IN2@"
 LOOKUP LOOKUPI=2,   NAME=TAZat,
        LOOKUP[1]  = TAZ, RESULT=atype,
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N
```

```
; Define External trip end file as a zonal lookup table
 FileI LOOKUPI[3] = "@Ext_PsAs@"
 LOOKUP LOOKUPI=3,   NAME=ExtTAZdat,
        LOOKUP[1]  = TAZ, RESULT=CV_XI,
        LOOKUP[2]  = TAZ, RESULT=MTK_XI,
        LOOKUP[3]  = TAZ, RESULT=HTK_XI,
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N

; Read in Trip rates, fill in rate array
FILEI DBI[1]     ="@Rates_in@"
LOOP K = 1,dbi.1.NUMRECORDS
      x = DBIReadRecord(1,k)
           count       = dbi.1.recno
           OFFRateA[di.1.Vtype][di.1.ATYPE]      = di.1.OFFRATE    ;;VNAME   VTYPE
ATYPE   OFFRATE RETRATE INDRATE OTHRATE HHRATE
           RETRateA[di.1.Vtype][di.1.ATYPE]      = di.1.RETRATE    ;;VNAME   VTYPE
ATYPE   OFFRATE RETRATE INDRATE OTHRATE HHRATE
           INDRateA[di.1.Vtype][di.1.ATYPE]      = di.1.INDRATE    ;;VNAME   VTYPE
ATYPE   OFFRATE RETRATE INDRATE OTHRATE HHRATE
           OTHRateA[di.1.Vtype][di.1.ATYPE]      = di.1.OTHRATE    ;;VNAME   VTYPE
ATYPE   OFFRATE RETRATE INDRATE OTHRATE HHRATE
           HH_RateA[di.1.Vtype][di.1.ATYPE]      = di.1.HHRATE     ;;VNAME   VTYPE
ATYPE   OFFRATE RETRATE INDRATE OTHRATE HHRATE
ENDLOOP

;; define output DBF file name and variables
;;       output trip file here:
FILEO RECO[1]    = "@ZNFile_ou1@",
                     fields = TAZ(5), Comm_Veh(12.2),  Med_Truck(12.2),
Hvy_Truck(12.2), ;; <-- All(Int/Ext) trip ends
                                     IComm_Veh(12.2),  IMed_Truck(12.2) ,
IHvy_Truck(12.2)   ;; <-- Internal ONLY Trip ends

;;       output debug file here (all zonal inputs and outputs):
FILEO RECO[2]    = "@ZNFile_ou2@",
                     fields = TAZ(5), Atype(3.0),
                     Comm_Veh(8.0),  Med_Truck(8.0), Hvy_Truck(8.0),
                     Off(8.0),Ret(8.0),Ind(8.0),Oth(8.0),HH(8.0),
                     COff_Rate(8.5), CRet_Rate(8.5), CInd_Rate(8.5), COth_Rate(8.5),
CHH_Rate(8.5),
                     MOff_Rate(8.5), MRet_Rate(8.5), MInd_Rate(8.5), MOth_Rate(8.5),
MHH_Rate(8.5),
                     HOff_Rate(8.5), HRet_Rate(8.5), HInd_Rate(8.5), HOth_Rate(8.5),
HHH_Rate(8.5),
                     tzfactm(8.2),tzfacth(8.2),supressed(4)


;; All done reading,  now compute the trips and write out zonal results:

LOOP M= 1,@LastIZn@

            _ATYPE            = TAZat(1,M)                           ;;CURRENT Area
type
            _Jur              = TAZlu(6,M) + 1.0                     ;;CURRENT Jur
index (=jurcode + 1, so 0-23 becomes 1-24)

            _Comm_Veh         = TAZlu(1,M) * OFFRATEA[3][_ATYPE] +   ;; compute
commercial trips
                                TAZlu(2,M) * RETRATEA[3][_ATYPE] +
                                TAZlu(3,M) * INDRATEA[3][_ATYPE] +
                                TAZlu(4,M) * OTHRATEA[3][_ATYPE] +
                                TAZlu(5,M) * HH_RATEA[3][_ATYPE]

            _Med_Truck        = TAZlu(1,M) * OFFRATEA[1][_ATYPE] +   ;; compute
Medium Truck trips
                                TAZlu(2,M) * RETRATEA[1][_ATYPE] +
                                TAZlu(3,M) * INDRATEA[1][_ATYPE] +
                                TAZlu(4,M) * OTHRATEA[1][_ATYPE] +
```

```
                                TAZlu(5,M) * HH_RATEA[1][_ATYPE]

            _Hvy_Truck        = TAZlu(1,M) * OFFRATEA[2][_ATYPE] +   ;; compute
Heavy truck trips
                                TAZlu(2,M) * RETRATEA[2][_ATYPE] +
                                TAZlu(3,M) * INDRATEA[2][_ATYPE] +
                                TAZlu(4,M) * OTHRATEA[2][_ATYPE] +
                                TAZlu(5,M) * HH_RATEA[2][_ATYPE]

; If zone is not truck-accessible, zero out all truck trips.
          ro.supressed = 0.0
          skimout = trkskims(1,M)
          skimin  = trkskims(2,M)

          IF (SKIMOUT/@ZONESIZE@ > 2000.0 || SKIMIN/@ZONESIZE@ > 2000.0)
            _Med_Truck = 0
            _Hvy_Truck = 0
            ro.supressed = 1.0

          ENDIF

; Incorporate truck zone adjustment factors

       TZFACTM     = 1.0
       TZFACTH     = 1.0
       IF (TZONE(1,M) > 0.0)
         TZFACTM = 2.7
         TZFACTH = 5.3
       ENDIF
       _Med_Truck      = _Med_Truck * TZFACTM
       _Hvy_Truck      = _Hvy_Truck * TZFACTH


            ro.TAZ            = M                                    ;  define
current zonal output vars
            ro.ATYPE          = _Atype                               ;
atype

       ;;  com/trk trips will be written out along with extls
            ro.Comm_Veh       = _Comm_Veh                            ;
comm  trips
            ro.Med_Truck      = _Med_Truck                           ;
medtk trips
            ro.Hvy_Truck      = _Hvy_Truck                           ;
hvytk trips
       ;;Internal com/trk trips will also be explicitly written for trip dist.
            ro.IComm_Veh      = _Comm_Veh                            ;
comm  trips
            ro.IMed_Truck       = _Med_Truck                           ;
medtk trips
            ro.IHvy_Truck       = _Hvy_Truck                           ;
hvytk trips

            ro.Off            = TAZlu(1,M)                           ;  land
activity
            ro.Ret            = TAZlu(2,M)                           ;
            ro.Ind            = TAZlu(3,M)                           ;
            ro.Oth            = TAZlu(4,M)                           ;
            ro.HH             = TAZlu(5,M)
                                                                     ; CV trip rates
            ro.COFF_Rate      = OFFRATEA[3][_ATYPE]                  ;
            ro.CRET_Rate      = RETRATEA[3][_ATYPE]                  ;
            ro.CIND_Rate      = INDRATEA[3][_ATYPE]                  ;
            ro.COTH_Rate      = OTHRATEA[3][_ATYPE]                  ;
            ro.CHH_Rate       = HH_RATEA[3][_ATYPE]

            ro.MOFF_Rate      = OFFRATEA[1][_ATYPE]   ro.HOFF_Rate =
OFFRATEA[2][_ATYPE] ; truck rates
```

```
            ro.MRET_Rate      = RETRATEA[1][_ATYPE]   ro.HRET_Rate =
RETRATEA[2][_ATYPE] ;
            ro.MIND_Rate      = INDRATEA[1][_ATYPE]   ro.HIND_Rate =
INDRATEA[2][_ATYPE] ;
            ro.MOTH_Rate      = OTHRATEA[1][_ATYPE]   ro.HOTH_Rate =
OTHRATEA[2][_ATYPE] ;
            ro.MHH_Rate       = HH_RATEA[1][_ATYPE]   ro.HHH_Rate  =
HH_RATEA[2][_ATYPE] ;
            ro.TZFACTM        = TZFACTM
            ro.TZFACTH        = TZFACTH

            WRITE RECO=1                                         ;  write out
current record
            WRITE RECO=2                                         ;  write out
current record



         ;; accumulate Area type trip totals for reporting/checking
            MHC_AtpA[1][_Atype] = MHC_AtpA[1][_Atype] + _Med_Truck
            MHC_AtpA[2][_Atype] = MHC_AtpA[2][_Atype] + _Hvy_Truck
            MHC_AtpA[3][_Atype] = MHC_AtpA[3][_Atype] + _Comm_Veh

         ;; accumulate juris trip totals for reporting/checking
            MHC_JurA[1][_jur] = MHC_JurA[1][_jur] + _Med_Truck
            MHC_JurA[2][_jur] = MHC_JurA[2][_jur] + _Hvy_Truck
            MHC_JurA[3][_jur] = MHC_JurA[3][_jur] + _Comm_Veh

         ;; accumulate internal totals for reporting/checking
            Tot_CVs           = Tot_CVs  +  _Comm_Veh
            Tot_MTs           = Tot_MTs  +  _Med_Truck
            Tot_HTs           = Tot_HTs  +  _HVY_Truck
            Tot_OFF           = Tot_OFF  +  TAZlu(1,M)
            Tot_RET           = Tot_RET  +  TAZlu(2,M)
            Tot_IND           = Tot_IND  +  TAZlu(3,M)
            Tot_OTH           = Tot_OTH  +  TAZlu(4,M)
            Tot_HHs           = Tot_HHs  +  TAZlu(5,M)

 ENDLOOP

;; finally, write out external trips from extl file

; Read in External trip file:
firstExtl= @LastIzn@ + 1
LOOP K = firstExtl,@zonesize@


            ro.TAZ            = k                 ;                 TAZ (extl
station)
            ro.Comm_Veh       = ExtTAZdat(1,k)    ;                 comm  trips
            ro.Med_Truck      = ExtTAZdat(2,k)    ;                 medtk trips
            ro.Hvy_Truck      = ExtTAZdat(3,k)    ;                 hvytk trips
            ;; Also write out null values for intl only trips to  be used in trip
distribution

            ro.IComm_Veh       = 0.0               ;               int  comm  trips
            ro.IMed_Truck        = 0.0               ;               int  medtk
trips
            ro.IHvy_Truck        = 0.0               ;               int  hvytk
trips
            write RECO = 1

         ;; accumulate total externals for reporting/checking
            Tot_ExtCVs           = Tot_ExtCVs  +  ExtTAZdat(1,k)
            Tot_ExtMTs           = Tot_ExtMTs  +  ExtTAZdat(2,k)
            Tot_ExtHTs           = Tot_ExtHTs  +  ExtTAZdat(3,k)
ENDLOOP
```

```
        ;; sum up total internals / externals for reporting/checking
           Tot_IntExtCVs          = Tot_ExtCVs  + Tot_CVs
           Tot_IntExtMTs          = Tot_ExtMTs  + Tot_MTs
           Tot_IntExtHTs          = Tot_ExtHTs  + Tot_HTs

           Total_Emp              = Tot_Off + Tot_Ret +  Tot_Ind +  Tot_Oth
         ;; Print report and we're done


   FILEO PRINTO[1]    = "@Reportfile@"
   PRINT PRINTO=1 form=12.0csv list = '
'
   PRINT PRINTO=1 form=12.0csv list = ' Regional Total Truck and Commercial Trip-
Ends '
   PRINT PRINTO=1 form=12.0csv list = '                                Internal
External     ALL     '
   PRINT PRINTO=1 form=12.0csv list = '                               ----------  --
--------  ---------- '
   PRINT PRINTO=1 form=12.0csv list = ' Commercial Vehicle Trips: ',  Tot_CVs  ,' ',
Tot_ExtCVs ,' ',Tot_IntExtCVs
   PRINT PRINTO=1 form=12.0csv list = ' Medium Truck Trips      : ',  Tot_MTs  ,' ',
Tot_ExtMTs ,' ',Tot_IntExtMTs
   PRINT PRINTO=1 form=12.0csv list = ' Heavy Truck Trips       : ',  Tot_HTs  ,' ',
Tot_ExtHTs ,' ',Tot_IntExtHTs

   PRINT PRINTO=1 form=12.0csv list = '
'
   PRINT PRINTO=1 form=12.0csv list = ' Land Activity Totals
'
   PRINT PRINTO=1 form=12.0csv list = ' HHs                     : ',   Tot_HHs
   PRINT PRINTO=1 form=12.0csv list = ' Office     Emp.         : ',   Tot_OFF
   PRINT PRINTO=1 form=12.0csv list = ' Retail     Emp.         : ',   Tot_Ret
   PRINT PRINTO=1 form=12.0csv list = ' Industrial Emp.         : ',   Tot_Ind
   PRINT PRINTO=1 form=12.0csv list = ' Other      Emp.         : ',   Tot_Oth
   PRINT PRINTO=1 form=12.0csv list = ' Total      Emp.         : ',   Total_Emp


   PRINT PRINTO=1 form=12.0csv list = '
'
   PRINT PRINTO=1 form=12.0csv list = ' Truck and Comm. Veh. Internal Trip Totals by
Area Type '
   PRINT PRINTO=1 form=12.0csv list = '   ATYPE  Medium Trk  Heavy Trk  Comm. Veh.
'
   PRINT PRINTO=1 form=12.0csv list = '-------- ----------- ----------- -----------
'
   Loop K= 1,6
      PRINT PRINTO=1 form=12.0csv list =  K(8), MHC_AtpA[1][K], MHC_AtpA[2][K],
MHC_AtpA[3][K]
   ENDLOOP
      PRINT PRINTO=1 form=12.0csv list =  '  Total ', Tot_MTs, Tot_HTs, Tot_Cvs


   PRINT PRINTO=1 form=12.0csv list = '
'
   PRINT PRINTO=1 form=12.0csv list = ' Truck and Comm. Veh. Internal Trip Totals by
Jurisdiction '
   PRINT PRINTO=1 form=12.0csv list = ' JurCode  Medium Trk  Heavy Trk  Comm. Veh.
'
   PRINT PRINTO=1 form=12.0csv list = '-------- ----------- ----------- -----------
'
   Loop K= 1,24
        kk = k-1.0
      PRINT PRINTO=1 form=12.0csv list =  kK(8), MHC_JurA[1][K], MHC_JurA[2][K],
MHC_JurA[3][K]
   ENDLOOP
      PRINT PRINTO=1 form=12.0csv list =  '  Total ', Tot_MTs, Tot_HTs, Tot_Cvs

ENDRUN
*copy voya*.prn Truck_Com_Trip_Generation.rpt
```

44 V2.3_Highway_Build.s

```
*del voya*.prn
;=========================================================================
;  HIGHWAY_BUILD_TOLL.S
;
;  MWCOG Version 2.3 Model  - Highway Network Building Program
;;========================================================================
;
; PARAMETERS :
  ZONESIZE  =  3722                ; Max. TAZ No.            (Param)
  LSTITAZ   =  3675                ; Last Internal Zone No.  (Param)
  FstHwyNode = 20000               ; First Highway node      (Param)

; I/O Files :
  NODEFILE  = 'inputs\NODE.dbf'     ; Node X/Y File           (I/P file)
  LINKFILE  = 'inputs\LINK.dbf'     ; Link File               (I/P file)
  ZONEFILE  = 'inputs\ZONE.dbf'     ; Zonal Land Use File     (I/P file)
  ;;AT_OVR    = 'AREAOVER.ASC'        ; Area Type Override file (I/P file)
  ATYPFILE  = 'AreaType_File.dbf'   ; Zonal Area Type file    (I/P file)

  AMSPD     = '..\support\AMSPD.LKP'    ; AM       Speed lookup ATxFT   (I/P file)
  MDSPD     = '..\support\MDSPD.LKP'    ; Midday   Speed lookup ATxFT   (I/P file)

  IN_TESC   = 'inputs\TOLL.ESC'     ; INPUT Toll Escalation Param file
  HWY_Defl  = 'HWY_Deflator.txt'    ; INPUT Default Highway Deflator (I/P file)
  LKTAZFILE = 'LinkTAZ.DBF'         ; Nearest Taz to each link file(O/P file)
  OU_BSNET  = 'ZONEHWY.NET'         ; OUTPUT BUILT network FILE

;--------------------------------------------------------------------------------
; Associate each link in the network to its nearest TAZ
 RUN PGM=MATRIX
 ZONES=1

 FILEI DBI[1]     = "@LINKFILE@"                                   ; highway links
 FILEO RECO[1]    = "@LKTAZFILE@",fields = A(8),B(8),AB(15),TAZ(8) ; output a/b &
nearest TAZ

 FileI LOOKUPI[1] = "@nodefile@"
 LOOKUP LOOKUPI=1, NAME=nodexys,
        LOOKUP[1] = N, RESULT=x,   ;
        LOOKUP[2] = N, RESULT=y,   ;
        INTERPOLATE=N, FAIL= 0,0,0, LIST=N

 LOOP L= 1,dbi.1.NUMRECORDS
         y=DBIReadRecord(1,L)
         A = di.1.A
         B = di.1.B

  ;
  ; The TAZ designated for the link is that with the minimum distance
  ; to either the A-node or the B-node
  ;
     If      (A <= @ZONESIZE@)
              TAZ =A
      elseIf (B <= @ZONESIZE@)
```

```
              TAZ =B
        else
            Ax =nodexys(1,A)
            Ay =nodexys(2,A)
            bx =nodexys(1,B)
            by =nodexys(2,B)
            TAZ= 0

            IF  (AX > 0 && BX > 0)
              midx  = (Ax+ Bx)/2.0
              midy  = (Ay+ By)/2.0
              mindist = 9999999.
              TAZ=0
              loop tdx=1,@LstITAZ@
                   CURDIST=  SQRT( (midx - nodexys(1,tdx))**2 + (midy -
nodexys(2,tdx))**2 )/ 5280.
                   if (curdist < mindist)
                       mindist = curdist
                       TAZ = TDX
                   ENDIF
              endloop
            Endif
        Endif
        ;;Let's check this
          if (L= 1-10, 10000-10100,30000-30100)
             print form=10   list = A, B, TAZ, ';;; A XY: ',Ax,Ay,' B XY: ', Bx,By,'
MidXY: ', midx,midy, file= Link_Taz_Check.txt
          endif

          ro.A    = A
          ro.B    = B
          ro.AB   = A*100000 + B
          ro.TAZ  = TAZ
          WRITE RECO= 1
 ENDLOOP
 endrun

;
;=================================================================
;
;  Highway Building Part 1 - Develop Area type, Spdclass/CapClass Vars
;
;=================================================================
;
RUN PGM = HWYNET
ZONES=@ZONESIZE@

READ FILE=@IN_TESC@

; Node Coordinate File
; XY Units are NAD83 (in whole feet)
FILEI NODEI=@Nodefile@
        ; Node
        ; X Crd
        ; Y Crd

; Highway Links
FILEI LINKI=@LINKFILE@
        ; A-Node Number
        ; B-Node Number
        ; Distance in whole miles (xx.xx)
        ; Speed Class(optional)
        ; Capacity Class(optional)
        ; Observed AAWDT in 1000's
        ; Count Type 0,1,2,6,7
        ; Jurisdiction Code (0-23)
        ; Screenline Code   (1-36)
        ; Facility Type Code (0-6)
        ; Current year Toll Value in cents
        ; Toll Group code (1-10)
        ; AM Peak Prd. No. of Lanes
        ; AM Peak Period Operation Code (0-9)
        ; PM Peak Prd. No. of Lanes
        ; PM Peak Period Operation Code (0-9)
        ; Off-Peak Prd. No. of Lanes
        ; Off-Peak Period Operation Code (0-9)
        ; EDGEID
        ; Project ID String
        ; Code

;   Note:
;   The Standard SPDCLASS(1-67), CAPCLASS(1-67),& TAZ defined below
;
NETO=TEMP.NET  ; TEMPORARY NETWORK TO BE PASSED ONTO NEXT STEP


;--------------------------------------------------------------
; Develop Link Area type/ Spdclass/ Capclass Attributes      -
;--------------------------------------------------------------

;
; Zonal Area Type Lookup (produced above)
;
FileI LOOKUPI[1] ="@atypfile@"
LOOKUP LOOKUPI=1, NAME=ZNAT,
       LOOKUP[1] = TAZ, RESULT=AType,   ;
       INTERPOLATE=N, FAIL= 0,0,0, LIST=N

FileI LOOKUPI[2] ="@lktazfile@"
LOOKUP LOOKUPI=2, NAME=lktaz,
       LOOKUP[1] = ab, RESULT=TAZ,   ;
       INTERPOLATE=N, FAIL= 0,0,0, LIST=N

_ABJoined = A*100000 + B

;; Ensure Centroids have lanes coded

IF (A<= 3722 || B <= 3722)
              SCREEN   =0     ; Screenline Code   (1-36)
              FTYPE    =0     ; Facility Type Code (0-6)
              TOLL     =0     ; Current year Toll Value in cents
              TOLLGRP  =0     ; Toll Group code (1-10)
              AMLANE   =7     ; AM Peak Prd. No. of Lanes
              AMLIMIT  =0     ; AM Peak Period Operation Code (0-9)
              PMLANE   =7     ; PM Peak Prd. No. of Lanes
              PMLIMIT  =0     ; PM Peak Period Operation Code (0-9)
              OPLANE   =7     ; Off-Peak Prd. No. of Lanes
              OPLIMIT  =0     ; Off-Peak Period Operation Code (0-9)
ENDIF


TAZ      = LKTAZ(1,_ABJOINED)
AType    = ZNAT(1,TAZ)           ;  Area Type
;
;
;  Here we will over ride the standard default Area Type code
;  if the user specifies an area type override range (Min, Max)
;  (via TG_ATOVR lookup table in the TOLL.ESC file)

           _TG_ATMin  =    TG_ATOVR(1,TOLLGRP)
           _TG_ATMax  =    TG_ATOVR(2,TOLLGRP)
           _DefaultAT =    AType

           IF (_TG_ATMin > 0 && _DefaultAT < _TG_ATMin) AType  = _TG_ATMin
           IF (_TG_ATMax > 0 && _DefaultAT > _TG_ATMax) AType  = _TG_ATMax
```

```
   ;;      IF (AType < 1 || AType > 7)
   ;;          print list= 'A: ',A(5),' B: ',B(5),' TAZ: ',TAZ: ',TAZ(3),' Area
Type: ', AType(3)
   ;;          ABORT
   ;;      ENDif
;
;
; With the TAZ designated, now the speed/capacity class is defined as
; a two-digit code-- facility type & areatype
;
           SPDCLASS =  FTYPE*10 + AType      ;  Speed Class
           CAPCLASS =  FTYPE*10 + AType      ;  Capacity Class

;
;
; Check that TOLLGRP is coded for any link coded with a TOLL value-
;  IF TOLLGRP is not coded with non-zero value, then give it a default
;  value of '1.0'
;
          IF (TOLL > 0.0 && TOLLGRP = 0.0)
              TOLLGRP = 1.0
          ENDIF
;
;
;  Set the Night (NT) and Midday (MD) lanes, limits equal to the Off-peak
;  values read in on the link
       MDLANE  =    OPLANE
       MDLIMIT =    OPLIMIT

       NTLANE  =    OPLANE
       NTLIMIT =    OPLIMIT

;
ENDRUN


;=================================================================
;
;  Highway Building Part 2 - develop deflated highway tolls and
;                            pump prime speeds
;
;=================================================================
;
RUN PGM = HWYNET

ZONES=@ZONESIZE@

NETI=TEMP.NET
; output network in TP+ format
NETO = zonehwy.net
READ FILE=@IN_TESC@
READ FILE=@HWY_Defl@
;
; Compute AM, PM, Off-Peak Tolls
; The tolls are read in as undeflated, based on the coded TOLL value on the
;  link and/or as a function of a distance based rate;
;  The defaltion is handled below.  If the 'escfac' lookup (in the TOLL.ESC file)
;  is non-zero, then it is used to deflate.  If it is zero, then the the default
;  highway deflator 'DEFLATION' (calculated in the SET_Factors.s script) is used.
;  The recommended appraoch is to set the 'escfac' lookup array to zero and use
;  HWY_Deflator
;

; deflated toll based on escfac:
AMTOLL=(TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(1,tollgrp)*escfac(1,tollgrp)
PMTOLL=(TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(2,tollgrp)*escfac(1,tollgrp)
OPTOLL=(TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(3,tollgrp)*escfac(1,tollgrp)
```

```
; if escfac set to zero then deflate based on HWY_Deflator:
  IF (AMTOLL = 0)
      AMTOLL=(TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(1,tollgrp)*DEFLATIONFTR
  ENDIF
  IF (PMTOLL = 0)
      PMTOLL=(TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(2,tollgrp)*DEFLATIONFTR
  ENDIF
  IF (OPTOLL = 0)
      OPTOLL=(TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(3,tollgrp)*DEFLATIONFTR
  ENDIF
; ---------------------------------------------------------------------------
; 1/25/08/ rm  Changes made to develop special travel times/tolls for the MC
;              program regarding variably priced facilities

   AMTOLL_VP = 0
   PMTOLL_VP = 0
   OPTOLL_VP = 0



; Check that coded tolls have a TOLLTYPE designation
;  then define tolls on variably priced facilities ONLY
  _TOLLTP   =  TOLLTYPE(1,tollgrp)       ;
  IF ((AMTOLL > 0 || PMTOLL > 0 || OPTOLL>0) && _TOLLTP = 0)
      LIST=' non-zero TOLL exists on a link has a zero TOLLTYPE code'
      abort
   ELSEIF (_TOLLTP = 2)
      AMTOLL_VP = (TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(1,tollgrp)*DEFLATIONFTR
      PMTOLL_VP = (TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(2,tollgrp)*DEFLATIONFTR
      OPTOLL_VP = (TOLL+(DSTFAC(1,tollgrp)*DISTANCE))*TTFAC(3,tollgrp)*DEFLATIONFTR
  ENDIF
; ---------------------------------------------------------------------------

;
; AM and Off-peak Initial Speed Lookup Tables...
;
; Use two lookups for AM/OP period by Facility type and Area type for now.
;
lookup name = amspd,           ;   AM Initial Speeds Atype x Ftype
       lookup[1] = 1,result=2,  ; AM CentConn Speeds (mph)
       lookup[2] = 1,result=3,  ; AM Freeway  Speeds (mph)
       lookup[3] = 1,result=4,  ; AM Maj Art  Speeds (mph)
       lookup[4] = 1,result=5,  ; AM Min Art  Speeds (mph)
       lookup[5] = 1,result=6,  ; AM Collect  Speeds (mph)
       lookup[6] = 1,result=7,  ; AM Exprway  Speeds (mph)
       lookup[7] = 1,result=8,  ; AM Ramp     Speeds (mph)
       interpolate=N,fail=0,0,0,file=@AMSPD@

lookup name = opspd,           ; Off-Pk Initial Speeds Atype x Ftype
       lookup[1] = 1,result=2,  ; Off-pk CentConn Speeds (mph)
       lookup[2] = 1,result=3,  ; Off-pk Freeway  Speeds (mph)
       lookup[3] = 1,result=4,  ; Off-pk Maj Art  Speeds (mph)
       lookup[4] = 1,result=5,  ; Off-pk Min Art  Speeds (mph)
       lookup[5] = 1,result=6,  ; Off-pk Collect  Speeds (mph)
       lookup[6] = 1,result=7,  ; Off-pk Exprway  Speeds (mph)
       lookup[7] = 1,result=8,  ; Off-pk Ramp     Speeds (mph)
       interpolate=N,fail=0,0,0,file=@MDSPD@

        _IDX    =  FTYPE + 1
        PPAMSPD= AMSPD(_IDX,AType)
        PPOPSPD= OPSPD(_IDX,AType)


;
; ESTABLISH  AM/PM/MD/NT    Highway Times (for the transit Network)
;
PPPMSPD =  PPAMSPD                 ; assume PM spd is equal to AM
```

```
IF (PPAMSPD != 0 )
  AMHTIME    =  (DISTANCE/PPAMSPD)*60.00
  PMHTIME    =  (DISTANCE/PPPMSPD)*60.00
 ELSE
  AMHTIME    =  0.01
  PMHTIME    =  0.01
ENDIF

IF (PPOPSPD != 0 )
  OPHTIME    =  (DISTANCE/PPOPSPD)*60.00
 ELSE
  OPHTIME    =  0.01
ENDIF

MDTOLL      = OPTOLL
MDTOLL_VP   = OPTOLL_VP
PPMDSPD     = PPOPSPD
MDHTIME     = OPHTIME

NTTOLL      = OPTOLL
NTTOLL_VP   = OPTOLL_VP
PPNTSPD     = PPOPSPD
NTHTIME     = OPHTIME

;  CREATE SOME FREQUENCY-CROSSTABS FOR CHECKING
_CNT= 1

CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=AMLANE,    RANGE=1-7-1
CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=OPLANE,    RANGE=1-7-1
CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=PMLANE,    RANGE=1-7-1

CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=AMLIMIT,   RANGE=0-9-1
CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=OPLIMIT,   RANGE=0-9-1
CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=PMLIMIT,   RANGE=0-9-1

;
;


ENDRUN
```

45 walkacc.s

```
*del voya*.prn
;; Walkacc.s - walk access link development - based on walkacc.for from AECOM

;; Dimensions:
NodeSize    = 60000       ;; Highway node size
TAZSTASize  =  7000       ;; TAZ/Sta dimensions
ITAZSize    =  3675       ;; Internal TAZ dimensions
XLinkSize   =  1000       ;; Max. no. of user-defined Add/Del links

;;Input Files:
NodeF       = 'inputs\node.dbf'
AreaF       = 'inputs\HBWV2A1.dbf'
XtraF       = 'inputs\Xtrawalk.dbf'
LinkF       = 'WalkAcc_Links.dbf'

;; Output Files:
sidewalkF   ='sidewalk.asc'
walkaccF    ='walkacc.asc'
supportF    ='support.asc'

;;-------------------------------------------------------------------
RUN PGM=MATRIX

ZONES=1
FileI DBI[1]   = "@nodef@"
FILEI DBI[2]   = "@Xtraf@"
FileI DBI[3]   = "@areaf@"
FILEI DBI[4]   = "@Linkf@"


FILEO PRINTO[1]  =@sidewalkf@
FILEO PRINTO[2]  =@walkaccf@
FILEO PRINTO[3]  =@supportf@


;ARRAY  Type=c1  AD = @Xlinksize@

ARRAY  nx            = @nodesize@,
       ny            = @nodesize@,
       use           = @nodesize@,
       Dela1         = @Xlinksize@,
       Delb1         = @Xlinksize@,
       Dela2         = @Xlinksize@,
       Delb2         = @Xlinksize@,
       DelTAZ        = @TAZSTASize@,
       Tazdist       = @TAZSTASize@,
       Tazarea       = @TAZSTASize@,
       Tazpctw       = @TAZSTASize@

; Fill node XY Array
Maxnode = 0.0

LOOP K = 1,dbi.1.NUMRECORDS
       x = DBIReadRecord(1,k)
           N             = di.1.N
           NX[N]         = di.1.X
           NY[N]         = di.1.Y
           IF (N > Maxnode) Maxnode = N
ENDLOOP

; Fill xtra node Array
LOOP K = 1,dbi.2.NUMRECORDS
       x = DBIReadRecord(2,k)
          AD             = di.2.AD
          AD_A           = di.2.AD_A
          AD_B           = di.2.AD_B

          if (AD_A <=@TAZSTASIZE@ || AD_B <=@TAZSTASIZE@)
                       ip =16
              else
                       ip =13
          endif

          if (AD = '-' && ip = 13)
              Ndel1  = Ndel1 + 1.0
              Dela1[Ndel1] = AD_A
              Delb1[Ndel1] = AD_B
          endif

          if (AD = '-' && ip = 16)
              Ndel2  = Ndel2 + 1.0
              Dela2[Ndel2] = AD_A
              Delb2[Ndel2] = AD_B
              IF (AD_A <= @TAZSTASIZE@) DelTAZ[AD_A] = 1.0
              IF (AD_B <= @TAZSTASIZE@) DelTAZ[AD_B] = 1.0
          endif
```

```
          IF (AD = '+')
              Ndel2 = Ndel2 + 1.0
              Dela2[Ndel2] = AD_A
              Delb2[Ndel2] = AD_B
              Xdist   = abs(NX[AD_A] - NX[AD_B])
              Ydist   = abs(NY[AD_A] - NY[AD_B])
              Distft  =  ((Xdist*Xdist) + (Ydist*Ydist))**0.50
              Dist    =  Round(Distft/52.80)   ; distance in tenths of miles

              IF (IP = 13)
                    Print PRINTO=1  list = 'SUPPORT N=',AD_A(6),'-',AD_B(6),
                                           ' MODE=13 SPEED=3 ONEWAY=Y DIST = ',
DIST(6)

                    Print PRINTO=3  list = 'SUPPLINK N=',AD_A(6),'-',AD_B(6),
                                           ' MODE=13 SPEED=3 ONEWAY=Y DIST = ',
DIST(6)
                 ELSE
                    Print PRINTO=2  list = 'SUPPORT N=',AD_A(6),'-',AD_B(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6)

                    Print PRINTO=3  list = 'SUPPLINK N=',AD_A(6),'-',AD_B(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6)

              ENDIF
          ENDIF
 ENDLOOP
;;

LOOP K = 1,dbi.3.NUMRECORDS
       x = DBIReadRecord(3,k)
           TAZ           = di.3.TAZ
           Pctwksh       = di.3.pctwksh
           Pctwklg       = di.3.pctwklg
           area          = di.3.area

           Tazarea[TAZ]  = area
           Tazdist[TAZ] = min(100.0,( 75*((area)**0.5)) )
           Tazpctw[TAZ]  = Pctwksh + Pctwklg
           print list = TAZ, Pctwksh,Pctwklg,TAZarea[TAZ],Tazdist[TAZ],Tazpctw[TAZ],
file = zonal.asc
ENDLOOP


LOOP K = 1,dbi.4.NUMRECORDS
       x = DBIReadRecord(4,k)
           A             = di.4.A
           B             = di.4.B
           hdist         = di.4.distance
           htaz          = di.4.TAZ
           ftype         = di.4.ftype

           LOOP L=1, Ndel1
                IF (A = Dela1[L] && B = Delb1[L]) GOTO SKIP
                IF (B = Dela1[L] && A = Delb1[L]) GOTO SKIP
           ENDLOOP

           IF (ftype <= 1 || ftype=5 || ftype =6 )       GOTO SKIP
           IF (TAZPctw[hTAZ] = 0.0               )       GOTO SKIP


           USE[A] = 1.0
           USE[B] = 1.0

           tdist         = Round(hdist*100.00)
           Print PRINTO=1  list = 'SUPPORT N=',A(6),'-',B(6),
                                       ' MODE=13 SPEED=3 ONEWAY=Y DIST = ', TDIST(6)

           Print PRINTO=3  list = 'SUPPLINK N=',A(6),'-',B(6),
                                       ' MODE=13 SPEED=3 ONEWAY=Y DIST = ', TDIST(6)

:SKIP
ENDLOOP

;;   END of Sidewalk Links   ;;

;; debug
     LOOP NN = NNode,Maxnode
          print list = NN, USE[NN] ,file= uselist.asc
     ENDLOOP
;;


;;   BEGIN zonal access link development
; ----------------------------------------------------------------------
;    Find all access links within the 1.00 mile search radius:
; ----------------------------------------------------------------------
LOOP ZZ = 1,@ITAZSize@
     Find =0
     If (TAZPctw[ZZ]  = 0.0)  GOTO NextTAZ
     If (NX[ZZ]       = 0.0)  GOTO NextTAZ

     NNode = @ITAZSize@ + 1.0
     LOOP NN = NNode,Maxnode
               IF (DelTAZ[ZZ] = 0.0) GOTO SkipDLst
               LOOP M=1, Ndel2
                  IF (ZZ = Dela2[M] && NN = Delb2[M])  GOTO NextNode
                  IF (NN = Dela2[M] && ZZ = Delb2[M])  GOTO NextNode
               ENDLOOP
     :SkipDLst

     IF (Use[NN] = 0)  GOTO NextNode
     IF (NX[NN]  = 0)  GOTO NextNode

     Xdist   = abs(NX[zz] - NX[nn])
     Ydist   = abs(NY[zz] - NY[nn])
     search = 5280.0
     IF (Xdist > search )                            GOTO NextNode
     IF (Ydist > search )                            GOTO NextNode
     IF (Xdist =    0.0 && YDist =    0.0)           GOTO NextNode


     Distft  =  ((Xdist*Xdist) + (Ydist*Ydist))**0.50
     Dist    =  (Distft/52.80)   ; distance in hundrths of miles
    ;;;--
    ; IF (ZZ=190 )  ;; debug section
    ;      print list = '      zz','      NN',' TAZarea',' TAZPctw','   XDist','
YDist  ',' Search ',' Distft ','    Dist',' TAZdist',   file = dud.asc
    ;      print form=8.2 list = zz, NN,TAZarea[ZZ](8.4), TAZPctw[ZZ],XDist, YDist,
search, Distft, Dist,TAZdist[ZZ],   file = dud.asc
    ;  endif
    ;;;--
     IF (Dist > TAZdist[ZZ])   GOTO NextNode


       Print PRINTO=2  list = 'SUPPORT N=',ZZ(6),'-',NN(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6), ';; search =
',search

       Print PRINTO=3  list = 'SUPPLINK N=',ZZ(6),'-',NN(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6)

       Find = Find + 1.0
```

```
      :NextNode
      ENDLOOP


; ---------------------------------------------------------------------
;   Expand search radius to 1.25 * TAZDist if no access links found thus far
; ---------------------------------------------------------------------
IF (Find > 0)  GOTO NEXTTAZ


    LOOP NN = NNode,Maxnode

              LOOP M=1, Ndel2
                 IF (ZZ = Dela2[M] && NN = Delb2[M])  GOTO NextNode1
                 IF (NN = Dela2[M] && ZZ = Delb2[M])  GOTO NextNode1
              ENDLOOP

    IF (Use[NN] = 0)  GOTO NextNode1
    IF (NX[NN]  = 0)  GOTO NextNode1

    Xdist   = abs(NX[zz] - NX[nn])
    Ydist   = abs(NY[zz] - NY[nn])
    search = 1.25 * 52.80* TAZdist[ZZ]
    IF (Xdist > search )                              GOTO NextNode1
    IF (Ydist > search )                              GOTO NextNode1
    IF (Xdist =    0.0 && YDist =    0.0)             GOTO NextNode1


    Distft  =  ((Xdist*Xdist) + (Ydist*Ydist))**0.50
    Dist    =  (Distft/52.80)   ; distance in tenths of miles

    IF (Dist > 100.0)   GOTO NextNode1


       Print PRINTO=2  list = 'SUPPORT N=',ZZ(6),'-',NN(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6), ';; search =
',search

       Print PRINTO=3  list = 'SUPPLINK N=',ZZ(6),'-',NN(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6)

      Find = Find + 1.0


     :NextNode1
     ENDLOOP

; ---------------------------------------------------------------------
;   Expand search radius to 1.50 * TAZDist if no access links found thus far
; ---------------------------------------------------------------------
IF (Find > 0)  GOTO NEXTTAZ


    LOOP NN = NNode,Maxnode

              LOOP M=1, Ndel2
                 IF (ZZ = Dela2[M] && NN = Delb2[M])  GOTO NextNode2
                 IF (NN = Dela2[M] && ZZ = Delb2[M])  GOTO NextNode2
              ENDLOOP

    IF (Use[NN] = 0)  GOTO NextNode2
    IF (NX[NN]  = 0)  GOTO NextNode2

    Xdist   = abs(NX[zz] - NX[nn])
    Ydist   = abs(NY[zz] - NY[nn])
    search = 1.50 * 52.80* TAZdist[ZZ]
    IF (Xdist > search )                              GOTO NextNode2
    IF (Ydist > search )                              GOTO NextNode2
    IF (Xdist =    0.0 && YDist =    0.0)             GOTO NextNode2


    Distft  =  ((Xdist*Xdist) + (Ydist*Ydist))**0.50
    Dist    =  (Distft/52.80)   ; distance in tenths of miles
    IF (Dist > 100.0)   GOTO NextNode2

       Print PRINTO=2  list = 'SUPPORT N=',ZZ(6),'-',NN(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6), ';; search =
',search

       Print PRINTO=3  list = 'SUPPLINK N=',ZZ(6),'-',NN(6),
                    ' ONEWAY=N  MODE=16 SPEED= 3 DIST= ', DIST(6)

      Find = Find + 1.0
     :NextNode2
     ENDLOOP

:NextTAZ
ENDLOOP
ENDRUN
*copy voya*.prn WalkAcc.rpt
```

Appendix D. AEMS Fortran Control files

1 hbw_nl_mc.ctl

```
HBW AM NESTED LOGIT MC - #DATE:  2/15/2011 #VER:  21
CHOICE            1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
*
*
*LOGIT COEFFICIENTS BY CHOICE FOR EACH SKIM (NO INPUT SKIM IS
*EQUIVALENT TO A CONSTANT)
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
COEF01:IVTT       1>-0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128
SKIM01:IVTT       1>DAIV      S2IV      S3IV      WCIV      WBIV      WTIV      WMIV      PCIV      KCIV      PBIV      KBIV      PTIV      KTIV      PMIV      KMIV
COEF02:AUTO ACC   1>                                                                      -0.03192  -0.03192  -0.03192  -0.03192  -0.03192  -0.03192  -0.03192  -0.03192
SKIM02:AUTO ACC   1>                                                                      PCAA      KCAA      PBAA      KBAA      PTAA      KTAA      PMAA      KMAA
COEF03:TERM/OVTT  1>-0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320
SKIM03:TERM/OVTT  1>DATE      S2TE      S3TE      WCOV      WBOV      WTOV      WMOV      PCOV      KCOV      PBOV      KBOV      PTOV      KTOV      PMOV      KMOV
* LIMIT COEF 04 TO PURPOSE 1
COEF PURP04        >1
COEF04:COST INC1  1>-0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185  -0.00185
SKIM04:COST INC1  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 05 TO PURPOSE 2
COEF PURP05        >2
COEF05:COST INC2  1>-0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093  -0.00093
SKIM05:COST INC2  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 06 TO PURPOSE 3
COEF PURP06        >3
COEF06:COST INC3  1>-0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062  -0.00062
SKIM06:COST INC3  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF PURP07        >4
* LIMIT COEF 07 TO PURPOSE 4
COEF07:COST INC4  1>-0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046  -0.00046
SKIM07:COST INC4  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF08:TRN XFERS  1>                              -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000
SKIM08:TRN XFERS  1>                              WCXF      WBXF      WTXF      WMXF      PCXF      KCXF      PBXF      KBXF      PTXF      KTXF      PMXF      KMXF
COEF09:TRN BRDPEN 1>                              -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320  -0.05320
SKIM09:TRN BRDPEN 1>                              WCXP      WBXP      WTXP      WMXP      PCXP      KCXP      PBXP      KBXP      PTXP      KTXP      PMXP      KMXP
*WALK WEIGHT
COEF10:TRN WLKWT  1>                              -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256  -0.04256
SKIM10:TRN WLKWT  1>                              WCWK      WBWK      WTWK      WMWK      PCWK      KCWK      PBWK      KBWK      PTWK      KTWK      PMWK      KMWK

*SYNTAX TO LIMIT UTILITY ELEMENT TO A PARTICULAR WALK SEGMENT IN THIS EXAMPLE
*    COEF 18 APPLIES ONLY TO WALK SEGMENT 1
*COEF WLKSEG18      >1

* ASSUMED MATRIX ORGANIZATION
* FILE 1 TRIP TABLE (SEPARATE FOR EACH PURPOSE)
* 1 INCOME 1 (HOME-BASED)/ALL NHB TRIPS
* 2 INCOME 2 (HOME-BASED)
* 3 INCOME 3 (HOME-BASED)
* 4 INCOME 4 (HOME-BASED)
*
* FILE 2 HIGHWAY SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* 1 SOV   TIME (MIN)
* 2 SOV   DIST (0.1 MILES)
* 3 SOV   TOLL (2007 CENTS)
* 4 HOV2  TIME (MIN)
* 5 HOV2  DIST (0.1 MILES)
* 6 HOV2  TOLL (2007 CENTS)
* 7 HOV3+ TIME (MIN)
* 8 HOV3+ DIST (0.1 MILES)
* 9 HOV3+ TOLL (2007 CENTS)
*
* FILE 3=COM. RAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 4=BUS SKIMS       (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 5=METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 6=BUS+METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
```

```
*  1 WLK ACC/EGR (.01 MIN)  15 PNR ACC/EGR (.01 MIN)  33 KNR ACC/EGR  (.01 MIN)
*  2 WLK OTHER   (.01 MIN)  16 PNR OTHER   (.01 MIN)  34 KNR OTHER   (.01 MIN)
*  3 WLK IWAIT   (.01 MIN)  17 PNR IWAIT   (.01 MIN)  35 KNR IWAIT   (.01 MIN)
*  4 WLK XWAIT   (.01 MIN)  18 PNR XWAIT   (.01 MIN)  36 KNR XWAIT   (.01 MIN)
*  5 WLK IVTT TOT(.01 MIN)  19 PNR IVTT TOT(.01 MIN)  37 KNR IVTT TOT(.01 MIN)
*  6 WLK IVTT CR (.01 MIN)  20 PNR IVTT CR (.01 MIN)  38 KNR IVTT CR (.01 MIN)
*  7 WLK IVTT XB (.01 MIN)  21 PNR IVTT XB (.01 MIN)  39 KNR IVTT XB (.01 MIN)
*  8 WLK IVTT MR (.01 MIN)  22 PNR IVTT MR (.01 MIN)  40 KNR IVTT MR (.01 MIN)
*  9 WLK IVTT NM (.01 MIN)  23 PNR IVTT NM (.01 MIN)  41 KNR IVTT NM (.01 MIN)
* 10 WLK IVTT NM2(.01 MIN)  24 PNR IVTT NM2(.01 MIN)  42 KNR IVTT NM2(.01 MIN)
* 11 WLK IVTT LB (.01 MIN)  25 PNR IVTT LB (.01 MIN)  43 KNR IVTT LB (.01 MIN)
* 12 WLK #XFERS  (NUMBER )  26 PNR #XFERS  (NUMBER )  44 KNR #XFERS  (NUMBER )
* 13 WLK COST    (07CENTS)  27 PNR COST    (07CENTS)  45 KNR COST    (07CENTS)
* 14 WLK XPEN    (.01 MIN)  28 PNR XPEN    (.01 MIN)  46 KNR XPEN    (.01 MIN)
*                           29 PNR ACC TIME(.01 MIN)  47 KNR ACC TIME(.01 MIN)
*                           30 PNR ACC DIST(.01 MIL)  48 KNR ACC DIST(.01 MIL)
*                           31 PNR ACC COST(07CENTS)
*                           32 PNR STA TERM(.01 MIN)
*
* FILE 8=ZDATA
*  1 HBW PARK COST (2007 CENTS)
*  2 HBS PARK COST (2007 CENTS)
*  3 HBO PARK COST (2007 CENTS)
*  4 NHB PARK COST (2007 CENTS)
*  5 TERMINAL TIME (HOME BASED) (MINUTES)
*  6 TERMINAL TIME (NON HOME BASED) (MINUTES)
*  7 ARC VIEW SHORT WALK PERCENT TO METRO
*  8 ARC VIEW LONG WALK PERCENT TO METRO
*  9 ARC VIEW SHORT WALK PERCENT TO ALL AM PK TRANSIT
* 10 ARC VIEW LONG WALK PERCENT TO ALL AM PK TRANSIT
* 11 ARC VIEW SHORT WALK PERCENT TO ALL OP TRANSIT
* 12 ARC VIEW LONG WALK PERCENT TO ALL OP TRANSIT
* 13 AREA TYPE
*    1=DC CORE
*    2=VA CORE
*    3=DC URBAN
*    4=MD URBAN
*    5=VA URBAN
*    6=MD OTHER
*    7=VA OTHER


* PARAMETERS
*=======================================================
* AUTO OPERATING COSTS IN CENTS/mile
COMPUTE AUOP       >10
* AUTO OCCUPANCY FOR 3+
COMPUTE OCC3       >3.5

* TERMINAL TIMES, USE i/j805 FOR HBW, HBS, AND HBO. USE i/j806 FOR NHB
* HBW/HBS/HBO
COMPUTE TERI       >i805
COMPUTE TERJ       >j805
* NHB
*COMPUTE TERI       >i806
*COMPUTE TERJ       >j806

* PARK COSTS, USE i/j801 802 803 804 FOR HBW, HBS, HBO, NHB RESPECTIVELY
* HBW
COMPUTE PRKC       >j801/2.
* HBS
* COMPUTE PRKC       >j802/2.
* HBO
* COMPUTE PRKC       >j803/2.
* NHB
* COMPUTE PRKC       >j804

* Percent of productions in long-walk area that are assumed to walk = 25% (i.e., 75% drive)
```

```
COMPUTE PCLM       >0.25
COMPUTE PCLT       >0.25
* PERCENT WALKS-METRORAIL ONLY
COMPUTE PCMI       >(i807+PCLM*(i808-i807))/100.
COMPUTE PCMJ       >(j807+PCLM*(j808-j807))/100.
* PERCENT WALKS-PEAK
COMPUTE PCTI       >(i809+PCLT*(i810-i809))/100.
COMPUTE PCTJ       >(j809+PCLT*(j810-j809))/100.
* PERCENT WALKS-OFFPEAK
*COMPUTE PCTI       >(i811+PCLT*(i812-i811))/100.
*COMPUTE PCTJ       >(j811+PCLT*(j812-j811))/100.
COMPUTE PCMI       >MAX(PCMI,0)
COMPUTE PCMI       >MIN(PCMI,1)
COMPUTE PCMJ       >MAX(PCMJ,0)
COMPUTE PCMJ       >MIN(PCMJ,1)
COMPUTE PCTI       >MAX(PCTI,PCMI)
COMPUTE PCTI       >MIN(PCTI,1)
COMPUTE PCTJ       >MAX(PCTJ,PCMJ)
COMPUTE PCTJ       >MIN(PCTJ,1)
*
* DO TRIP SUBDIVISIONS
*
*  HOME BASED ALTERNATIVES
COMPUTE TRP1       >m101
COMPUTE TRP2       >m102
COMPUTE TRP3       >m103
COMPUTE TRP4       >m104
* NON-HOME BASED
*COMPUTE TRP1       >0.25*m101
*COMPUTE TRP2       >0.25*m101
*COMPUTE TRP3       >0.25*m101
*COMPUTE TRP4       >0.25*m101
*
* BE SURE TO UPDATE THE IVTT COEFFICIENT IN FTA SECTION FOR EACH PURPOSE
*
*=====================================================


*INITIALIZING ALL VARIABLES WITHIN IF STATEMENTS TO ZERO
COMPUTE DAIV       >0
COMPUTE DACS       >0
COMPUTE DATE       >0
COMPUTE S2IV       >0
COMPUTE S2CS       >0
COMPUTE S2TE       >0
COMPUTE S3IV       >0
COMPUTE S3CS       >0
COMPUTE S3TE       >0
COMPUTE WKIV       >0
COMPUTE WKOV       >0
COMPUTE WKXF       >0
COMPUTE WKCS       >0
COMPUTE WKXP       >0
COMPUTE WBIV       >0
COMPUTE WBOV       >0
COMPUTE WBXF       >0
COMPUTE WBCS       >0
COMPUTE WBXP       >0
COMPUTE WTIV       >0
COMPUTE WTOV       >0
COMPUTE WTXF       >0
COMPUTE WTCS       >0
COMPUTE WTXP       >0
COMPUTE WMIV       >0
COMPUTE WMOV       >0
COMPUTE WMXF       >0
COMPUTE WMCS       >0
COMPUTE WMXP       >0
```

```
COMPUTE PCIV       >0
COMPUTE PCAA       >0
COMPUTE PCOV       >0
COMPUTE PCXF       >0
COMPUTE PCCS       >0
COMPUTE PCXP       >0
COMPUTE PBIV       >0
COMPUTE PBAA       >0
COMPUTE PBOV       >0
COMPUTE PBXF       >0
COMPUTE PBCS       >0
COMPUTE PBXP       >0
COMPUTE PTIV       >0
COMPUTE PTAA       >0
COMPUTE PTOV       >0
COMPUTE PTXF       >0
COMPUTE PTCS       >0
COMPUTE PTXP       >0
COMPUTE PMIV       >0
COMPUTE PMAA       >0
COMPUTE PMOV       >0
COMPUTE PMXF       >0
COMPUTE PMCS       >0
COMPUTE PMXP       >0
COMPUTE KCIV       >0
COMPUTE KCAA       >0
COMPUTE KCOV       >0
COMPUTE KCXF       >0
COMPUTE KCCS       >0
COMPUTE KCXP       >0
COMPUTE KBIV       >0
COMPUTE KBAA       >0
COMPUTE KBOV       >0
COMPUTE KBXF       >0
COMPUTE KBCS       >0
COMPUTE KBXP       >0
COMPUTE KTIV       >0
COMPUTE KTAA       >0
COMPUTE KTOV       >0
COMPUTE KTXF       >0
COMPUTE KTCS       >0
COMPUTE KTXP       >0
COMPUTE KMIV       >0
COMPUTE KMAA       >0
COMPUTE KMOV       >0
COMPUTE KMXF       >0
COMPUTE KMCS       >0
COMPUTE KMXP       >0

COMPUTE WCWK       >0
COMPUTE WBWK       >0
COMPUTE WTWK       >0
COMPUTE WMWK       >0
COMPUTE PCWK       >0
COMPUTE KCWK       >0
COMPUTE PBWK       >0
COMPUTE KBWK       >0
COMPUTE PTWK       >0
COMPUTE KTWK       >0
COMPUTE PMWK       >0
COMPUTE KMWK       >0

* SKIM VALUES, Divide distances by 10 to convert tenths of miles to whole miles
* DRIVE ALONE
COMPUTE            >IF(m201>0)
COMPUTE DAIV       >m201
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
```

```
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(m204>0)
COMPUTE S2IV       >m204
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(m207>0)
COMPUTE S3IV       >m207
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

* Assign Intrazonal trips to Autos (mj11/04/05)
COMPUTE            >IF(P()=Q())
COMPUTE DAIV       >1
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(P()=Q())
COMPUTE S2IV       >1
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(P()=Q())
COMPUTE S3IV       >1
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

*End of Intrazonal trips

* WALK COMMUTER RAIL
COMPUTE            >IF(m305>0)
COMPUTE WCIV       >m305/100.
COMPUTE WCOV       >(m303+m304)/100.
COMPUTE WCXF       >m312
COMPUTE WCCS       >m313
COMPUTE WCXP       >m314/100.
COMPUTE WCWK       >(m301+m302)/100.
COMPUTE            >ENDIF

* WALK BUS
COMPUTE            >IF(m405>0)
COMPUTE WBIV       >m405/100.
COMPUTE WBOV       >(m403+m404)/100.
COMPUTE WBXF       >m412
COMPUTE WBCS       >m413
COMPUTE WBXP       >m414/100.
COMPUTE WBWK       >(m401+m402)/100.
COMPUTE            >ENDIF

* WALK BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m605>0)
COMPUTE WTIV       >m605/100.
COMPUTE WTOV       >(m603+m604)/100.
COMPUTE WTXF       >m612
COMPUTE WTCS       >m613
COMPUTE WTXP       >m614/100.
COMPUTE WTWK       >(m601+m602)/100.
COMPUTE            >ENDIF
```

```
* WALK METRORAIL
COMPUTE            >IF(m505>0)
COMPUTE WMIV       >m505/100.
COMPUTE WMOV       >(m503+m504)/100.
COMPUTE WMXF       >m512
COMPUTE WMCS       >m513
COMPUTE WMXP       >m514/100.
COMPUTE WMWK       >(m501+m502)/100.
COMPUTE            >ENDIF

* PNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE PCIV       >m319/100.
COMPUTE PCAA       >m329/100.
COMPUTE PCOV       >(m317+m318+m332)/100.
COMPUTE PCXF       >m326
COMPUTE PCCS       >m327+m331+m330/100*AUOP
COMPUTE PCXP       >m328/100.
COMPUTE PCWK       >(m315+m316)/100.
COMPUTE            >ENDIF

* PNR BUS
COMPUTE            >IF(m419>0)
COMPUTE PBIV       >m419/100.
COMPUTE PBAA       >m429/100.
COMPUTE PBOV       >(m417+m418+m432)/100.
COMPUTE PBXF       >m426
COMPUTE PBCS       >m427+m431+m430/100*AUOP
COMPUTE PBXP       >m428/100.
COMPUTE PBWK       >(m415+m416)/100.
COMPUTE            >ENDIF

* PNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m619>0)
COMPUTE PTIV       >m619/100.
COMPUTE PTAA       >m629/100.
COMPUTE PTOV       >(m617+m618+m632)/100.
COMPUTE PTXF       >m626
COMPUTE PTCS       >m627+m631+m630/100*AUOP
COMPUTE PTXP       >m628/100.
COMPUTE PTWK       >(m615+m616)/100.
COMPUTE            >ENDIF


* PNR METRORAIL
COMPUTE            >IF(m519>0)
COMPUTE PMIV       >m519/100.
COMPUTE PMAA       >m529/100.
COMPUTE PMOV       >(m517+m518+m532)/100.
COMPUTE PMXF       >m526
COMPUTE PMCS       >m527+m531+m530/100*AUOP
COMPUTE PMXP       >m528/100.
COMPUTE PMWK       >(m515+m516)/100.
COMPUTE            >ENDIF


* KNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE KCIV       >m319/100.
COMPUTE KCAA       >m329/100.
COMPUTE KCOV       >(m317+m318)/100.
COMPUTE KCXF       >m326
COMPUTE KCCS       >m327+m330/100*AUOP
COMPUTE KCXP       >m328/100.
COMPUTE KCWK       >(m315+m316)/100.
COMPUTE            >ENDIF
```

```
* KNR BUS
COMPUTE            >IF(m437>0)
COMPUTE KBIV       >m437/100.
COMPUTE KBAA       >m447/100.
COMPUTE KBOV       >(m435+m436)/100.
COMPUTE KBXF       >m444
COMPUTE KBCS       >m445+m448/100*AUOP
COMPUTE KBXP       >m446/100.
COMPUTE KBWK       >(m433+m434)/100.
COMPUTE            >ENDIF

* KNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m637>0)
COMPUTE KTIV       >m637/100.
COMPUTE KTAA       >m647/100.
COMPUTE KTOV       >(m635+m636)/100.
COMPUTE KTXF       >m644
COMPUTE KTCS       >m645+m648/100*AUOP
COMPUTE KTXP       >m646/100.
COMPUTE KTWK       >(m633+m634)/100.
COMPUTE            >ENDIF


* KNR METRORAIL
COMPUTE            >IF(m537>0)
COMPUTE KMIV       >m537/100.
COMPUTE KMAA       >m547/100.
COMPUTE KMOV       >(m535+m536)/100.
COMPUTE KMXF       >m544
COMPUTE KMCS       >m545+m548/100*AUOP
COMPUTE KMXP       >m546/100.
COMPUTE KMWK       >(m533+m534)/100.
COMPUTE            >ENDIF

*CONSTANTS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
PURP01 1INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 1INC 2     1>
PURP03 1INC 3     1>
PURP04 1INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 2INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 2INC 2     1>
PURP03 2INC 3     1>
PURP04 2INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 3INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 3INC 2     1>
PURP03 3INC 3     1>
PURP04 3INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 4INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 4INC 2     1>
PURP03 4INC 3     1>
PURP04 4INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 5INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 5INC 2     1>
PURP03 5INC 3     1>
PURP04 5INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 6INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 6INC 2     1>
PURP03 6INC 3     1>
PURP04 6INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 7INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 7INC 2     1>
PURP03 7INC 3     1>
PURP04 7INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 8INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 8INC 2     1>
```

```
PURP03 8INC 3     1>
PURP04 8INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 9INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 9INC 2     1>
PURP03 9INC 3     1>
PURP04 9INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0110INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0210INC 2     1>
PURP0310INC 3     1>
PURP0410INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0111INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0211INC 2     1>
PURP0311INC 3     1>
PURP0411INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0112INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0212INC 2     1>
PURP0312INC 3     1>
PURP0412INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0113INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0213INC 2     1>
PURP0313INC 3     1>
PURP0413INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0114INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0214INC 2     1>
PURP0314INC 3     1>
PURP0414INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0115INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0215INC 2     1>
PURP0315INC 3     1>
PURP0415INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0116INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0216INC 2     1>
PURP0316INC 3     1>
PURP0416INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0117INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0217INC 2     1>
PURP0317INC 3     1>
PURP0417INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0118INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0218INC 2     1>
PURP0318INC 3     1>
PURP0418INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0119INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0219INC 2     1>
PURP0319INC 3     1>
PURP0419INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0120INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0220INC 2     1>
PURP0320INC 3     1>
PURP0420INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000

TRIPIN01           >TRP1
TRIPIN02           >TRP2
TRIPIN03           >TRP3
TRIPIN04           >TRP4
TRIPIFACT01        >tfi1
TRIPIFACT02        >tfi2
TRIPIFACT03        >tfi3
TRIPIFACT04        >tfi4
COMPUTE tfi1       >1.0
COMPUTE tfi2       >1.0
COMPUTE tfi3       >1.0
COMPUTE tfi4       >1.0

*
*OUTPUT MATRICES AND OUTPUT FACTORS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
TRIPOUT01         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
```

```
TRIPFACT01        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT02         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT02        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT03         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT03        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT04         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT04        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
**
**P AND A WALK PERCENTS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
WALK SEG CW 1 PCT 1>WSWM
WALK SEG CW 1 MODE1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 2 PCT 1>WSW1
WALK SEG CW 2 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 3 PCT 1>WSW2
WALK SEG CW 3 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG CW 4 PCT 1>WSW3
WALK SEG CW 4 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG MD 5 PCT 1>WSM1
WALK SEG MD 5 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG MD 6 PCT 1>WSM2
WALK SEG MD 6 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y
WALK SEG NT 7 PCT 1>WSNT
WALK SEG NT 7 MODE1>Y         Y         Y
*SYNTAX OF COMMAND TO ADD A COMPONENT TO A SPECIFIC WALK SEGMENT IF DESIRED
*WALK SEG CW 1 COEF1>                              -0.04747  -0.04747  -0.04747  -0.04747  -0.04747  -0.04747
*WALK SEG CW 1 VAR 1>                              WTSS      DTSS      DISS      WRSS      DRSS      DJSS
COMPUTE WSWM       >PCMI*PCMJ
COMPUTE WSW1       >(PCTI-PCMI)*PCMJ
COMPUTE WSW2       >(PCTI-PCMI)*(PCTJ-PCMJ)
COMPUTE WSW3       >PCMI*(PCTJ-PCMJ)
COMPUTE WSM1       >(1-PCTI)*PCMJ
COMPUTE WSM2       >(1-PCTI)*(PCTJ-PCMJ)
COMPUTE WSNT       >1-WSWM-WSW1-WSW2-WSW3-WSM1-WSM2

*NEST DEFINITIONS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
NEST 1,1=         1>Y         Y         Y
NEST 1,2=         1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
NEST 2,1=         1>                              Y         Y         Y         Y
NEST 2,2=         1>                                                                      Y                   Y                   Y                   Y
NEST 2,3=         1>                                                                                Y                   Y                   Y                   Y
NEST 3,1=         1>                              Y
NEST 3,2=         1>                                        Y
NEST 3,3=         1>                                                  Y
NEST 3,4=         1>                                                            Y
NEST 4,1          1>                                                                      Y
NEST 4,2          1>                                                                                          Y
NEST 4,3          1>                                                                                                              Y
NEST 4,4          1>                                                                                                                                  Y
NEST 5,1          1>                                                                                Y
NEST 5,2          1>                                                                                                    Y
NEST 5,3          1>                                                                                                                        Y
NEST 5,4          1>                                                                                                                                            Y
NEST 6,1          1>Y
NEST 6,2          1>          Y         Y
NEST 7,1          1>          Y
NEST 7,2          1>                    Y

IGRP DEFINITION    >i813
JGRP DEFINITION    >j813
* 1 DC CORE/URBAN-DC CORE
SEGMENT  1         >    1    1
SEGMENT  1         >    3    1
* 2 DC CORE/URBAN-VA CORE
SEGMENT  2         >    1    2
SEGMENT  2         >    3    2
* 3 DC CORE/URBAN-URBAN
```

```
SEGMENT  3          >    1    3
SEGMENT  3          >    3    3
SEGMENT  3          >    1    4
SEGMENT  3          >    3    4
SEGMENT  3          >    1    5
SEGMENT  3          >    3    5
* 4 DC CORE/URBAN-OTHER
SEGMENT  4          >    1    6
SEGMENT  4          >    3    6
SEGMENT  4          >    1    7
SEGMENT  4          >    3    7
* 5 MD URBAN-DC CORE
SEGMENT  5          >    4    1
* 6 MD URBAN-VA CORE
SEGMENT  6          >    4    2
* 7 MD URBAN-URBAN
SEGMENT  7          >    4    3
SEGMENT  7          >    4    4
SEGMENT  7          >    4    5
* 8 MD URBAN-OTHER
SEGMENT  8          >    4    6
SEGMENT  8          >    4    7
* 9 VA CORE/URBAN-DC CORE
SEGMENT  9          >    2    1
SEGMENT  9          >    5    1
*10 VA CORE/URBAN-VA CORE
SEGMENT 10          >    2    2
SEGMENT 10          >    5    2
*11 VA CORE/URBAN-URBAN
SEGMENT 11          >    2    3
SEGMENT 11          >    5    3
SEGMENT 11          >    2    4
SEGMENT 11          >    5    4
SEGMENT 11          >    2    5
SEGMENT 11          >    5    5
*12 VA CORE/URBAN-OTHER
SEGMENT 12          >    2    6
SEGMENT 12          >    5    6
SEGMENT 12          >    2    7
SEGMENT 12          >    5    7
*13 MD OTHER-DC CORE
SEGMENT 13          >    6    1
*14 MD OTHER-VA CORE
SEGMENT 14          >    6    2
*15 MD OTHER-URBAN
SEGMENT 15          >    6    3
SEGMENT 15          >    6    4
SEGMENT 15          >    6    5
*16 MD OTHER-OTHER
SEGMENT 16          >    6    6
SEGMENT 16          >    6    7
*17 VA OTHER-DC CORE
SEGMENT 17          >    7    1
*18 VA OTHER-VA CORE
SEGMENT 18          >    7    2
*19 VA OTHER-URBAN
SEGMENT 19          >    7    3
SEGMENT 19          >    7    4
SEGMENT 19          >    7    5
*20 VA OTHER-OTHER
SEGMENT 20          >    7    6
SEGMENT 20          >    7    7

* SEGMENT  1
NSTC 10 1GRND TOTAL>
NSTC 11 1AUTO       >      0.5    0.00000
NSTC 12 1TRANSIT    >      0.5    3.22129
NSTC 20 1TOTAL TRN >
```

```
NSTC 21 1WALK ACC  >      0.5    0.00000
NSTC 22 1PNR ACC   >      0.5   -4.43473
NSTC 23 1KNR ACC   >      0.5   -7.84475
NSTC 30 1WLK TRN
NSTC 31 1WLK CR    >      1.0   -1.22092
NSTC 32 1WLK BUS   >      1.0   -2.43070
NSTC 33 1WLK BU/MR >      1.0   -1.17137
NSTC 34 1WLK METRO >      1.0    0.00000
NSTC 40 1PNR TRN
NSTC 41 1PNR CR    >      1.0    0.14839
NSTC 42 1PNR BUS   >      1.0   -1.70009
NSTC 43 1PNR BU/MR >      1.0    5.15373
NSTC 44 1PNR METRO >      1.0    0.00000
NSTC 50 1KNR TRN
NSTC 51 1KNR CR    >      1.0    4.20952
NSTC 52 1KNR BUS   >      1.0    1.76416
NSTC 53 1KNR BU/MR >      1.0    8.24629
NSTC 54 1KNR METRO >      1.0    0.00000
NSTC 60 1AUTO
NSTC 61 1LOV       >      1.0    0.00000
NSTC 62 1HOV       >      0.5   -2.47450
NSTC 70 1HOV
NSTC 71 1HOV2      >      1.0    0.00000
NSTC 72 1HOV3+     >      1.0   -3.25653
* SEGMENT  2
NSTC 10 2GRND TOTAL>
NSTC 11 2AUTO      >      0.5    0.00000
NSTC 12 2TRANSIT   >      0.5    4.68534
NSTC 20 2TOTAL TRN >
NSTC 21 2WALK ACC  >      0.5    0.00000
NSTC 22 2PNR ACC   >      0.5   -7.06886
NSTC 23 2KNR ACC   >      0.5  -10.51218
NSTC 30 2WLK TRN
NSTC 31 2WLK CR    >      1.0   -2.97867
NSTC 32 2WLK BUS   >      1.0  -15.79494
NSTC 33 2WLK BU/MR >      1.0   -6.39786
NSTC 34 2WLK METRO >      1.0    0.00000
NSTC 40 2PNR TRN
NSTC 41 2PNR CR    >      1.0   -0.21487
NSTC 42 2PNR BUS   >      1.0   -0.21487
NSTC 43 2PNR BU/MR >      1.0    2.52150
NSTC 44 2PNR METRO >      1.0    0.00000
NSTC 50 2KNR TRN
NSTC 51 2KNR CR    >      1.0    0.43234
NSTC 52 2KNR BUS   >      1.0    0.43234
NSTC 53 2KNR BU/MR >      1.0    9.83743
NSTC 54 2KNR METRO >      1.0    0.00000
NSTC 60 2AUTO
NSTC 61 2LOV       >      1.0    0.00000
NSTC 62 2HOV       >      0.5   -2.41755
NSTC 70 2HOV
NSTC 71 2HOV2      >      1.0    0.00000
NSTC 72 2HOV3+     >      1.0   -3.40582
* SEGMENT  3
NSTC 10 3GRND TOTAL>
NSTC 11 3AUTO      >      0.5    0.00000
NSTC 12 3TRANSIT   >      0.5    6.98831
NSTC 20 3TOTAL TRN >
NSTC 21 3WALK ACC  >      0.5    0.00000
NSTC 22 3PNR ACC   >      0.5   -9.63503
NSTC 23 3KNR ACC   >      0.5  -12.93013
NSTC 30 3WLK TRN
NSTC 31 3WLK CR    >      1.0   -7.08247
NSTC 32 3WLK BUS   >      1.0  -12.11304
NSTC 33 3WLK BU/MR >      1.0   -8.80930
NSTC 34 3WLK METRO >      1.0    0.00000
NSTC 40 3PNR TRN
NSTC 41 3PNR CR    >      1.0   -2.20672
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NSTC 42 3PNR BUS   >      1.0   -9.70812
NSTC 43 3PNR BU/MR >      1.0   -6.16109
NSTC 44 3PNR METRO >      1.0    0.00000
NSTC 50 3KNR TRN
NSTC 51 3KNR CR    >      1.0   -0.07472
NSTC 52 3KNR BUS   >      1.0   -3.62022
NSTC 53 3KNR BU/MR >      1.0    0.80681
NSTC 54 3KNR METRO >      1.0    0.00000
NSTC 60 3AUTO
NSTC 61 3LOV       >      1.0    0.00000
NSTC 62 3HOV       >      0.5   -2.34765
NSTC 70 3HOV
NSTC 71 3HOV2      >      1.0    0.00000
NSTC 72 3HOV3+     >      1.0   -3.46698
* SEGMENT  4
NSTC 10 4GRND TOTAL>
NSTC 11 4AUTO      >      0.5    0.00000
NSTC 12 4TRANSIT   >      0.5    7.49754
NSTC 20 4TOTAL TRN >
NSTC 21 4WALK ACC  >      0.5    0.00000
NSTC 22 4PNR ACC   >      0.5  -12.31798
NSTC 23 4KNR ACC   >      0.5  -14.00036
NSTC 30 4WLK TRN
NSTC 31 4WLK CR    >      1.0  -26.83624
NSTC 32 4WLK BUS   >      1.0  -27.08377
NSTC 33 4WLK BU/MR >      1.0  -26.51205
NSTC 34 4WLK METRO >      1.0    0.00000
NSTC 40 4PNR TRN
NSTC 41 4PNR CR    >      1.0   -0.10587
NSTC 42 4PNR BUS   >      1.0   -8.69695
NSTC 43 4PNR BU/MR >      1.0   -6.94504
NSTC 44 4PNR METRO >      1.0    0.00000
NSTC 50 4KNR TRN
NSTC 51 4KNR CR    >      1.0    1.32094
NSTC 52 4KNR BUS   >      1.0   -2.37602
NSTC 53 4KNR BU/MR >      1.0   -4.72437
NSTC 54 4KNR METRO >      1.0    0.00000
NSTC 60 4AUTO
NSTC 61 4LOV       >      1.0    0.00000
NSTC 62 4HOV       >      0.5   -2.50099
NSTC 70 4HOV
NSTC 71 4HOV2      >      1.0    0.00000
NSTC 72 4HOV3+     >      1.0   -4.33461
* SEGMENT  5
NSTC 10 5GRND TOTAL>
NSTC 11 5AUTO      >      0.5    0.00000
NSTC 12 5TRANSIT   >      0.5    3.30728
NSTC 20 5TOTAL TRN >
NSTC 21 5WALK ACC  >      0.5    0.00000
NSTC 22 5PNR ACC   >      0.5   -7.46602
NSTC 23 5KNR ACC   >      0.5   -9.45673
NSTC 30 5WLK TRN
NSTC 31 5WLK CR    >      1.0   -4.04447
NSTC 32 5WLK BUS   >      1.0  -11.33807
NSTC 33 5WLK BU/MR >      1.0   -9.34678
NSTC 34 5WLK METRO >      1.0    0.00000
NSTC 40 5PNR TRN
NSTC 41 5PNR CR    >      1.0   -0.37023
NSTC 42 5PNR BUS   >      1.0   -4.94735
NSTC 43 5PNR BU/MR >      1.0    6.10946
NSTC 44 5PNR METRO >      1.0    0.00000
NSTC 50 5KNR TRN
NSTC 51 5KNR CR    >      1.0    0.75051
NSTC 52 5KNR BUS   >      1.0    1.50739
NSTC 53 5KNR BU/MR >      1.0   11.00534
NSTC 54 5KNR METRO >      1.0    0.00000
NSTC 60 5AUTO
NSTC 61 5LOV       >      1.0    0.00000
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NSTC 62 5HOV       >      0.5   -2.46938
NSTC 70 5HOV
NSTC 71 5HOV2      >      1.0    0.00000
NSTC 72 5HOV3+     >      1.0   -3.27992
* SEGMENT  6
NSTC 10 6GRND TOTAL>
NSTC 11 6AUTO      >      0.5    0.00000
NSTC 12 6TRANSIT   >      0.5    2.56468
NSTC 20 6TOTAL TRN >
NSTC 21 6WALK ACC  >      0.5    0.00000
NSTC 22 6PNR ACC   >      0.5   -5.34826
NSTC 23 6KNR ACC   >      0.5   -6.59751
NSTC 30 6WLK TRN
NSTC 31 6WLK CR    >      1.0   -2.92961
NSTC 32 6WLK BUS   >      1.0  -12.88868
NSTC 33 6WLK BU/MR >      1.0   -7.76115
NSTC 34 6WLK METRO >      1.0    0.00000
NSTC 40 6PNR TRN
NSTC 41 6PNR CR    >      1.0   -0.61858
NSTC 42 6PNR BUS   >      1.0   -0.61858
NSTC 43 6PNR BU/MR >      1.0    1.80152
NSTC 44 6PNR METRO >      1.0    0.00000
NSTC 50 6KNR TRN
NSTC 51 6KNR CR    >      1.0   -0.42079
NSTC 52 6KNR BUS   >      1.0   -0.42079
NSTC 53 6KNR BU/MR >      1.0   -0.42079
NSTC 54 6KNR METRO >      1.0    0.00000
NSTC 60 6AUTO
NSTC 61 6LOV       >      1.0    0.00000
NSTC 62 6HOV       >      0.5   -2.58496
NSTC 70 6HOV
NSTC 71 6HOV2      >      1.0    0.00000
NSTC 72 6HOV3+     >      1.0   -3.43215
* SEGMENT  7
NSTC 10 7GRND TOTAL>
NSTC 11 7AUTO      >      0.5    0.00000
NSTC 12 7TRANSIT   >      0.5    2.16957
NSTC 20 7TOTAL TRN >
NSTC 21 7WALK ACC  >      0.5    0.00000
NSTC 22 7PNR ACC   >      0.5   -7.12240
NSTC 23 7KNR ACC   >      0.5   -8.39927
NSTC 30 7WLK TRN
NSTC 31 7WLK CR    >      1.0   -4.33908
NSTC 32 7WLK BUS   >      1.0   -6.56096
NSTC 33 7WLK BU/MR >      1.0   -4.81848
NSTC 34 7WLK METRO >      1.0    0.00000
NSTC 40 7PNR TRN
NSTC 41 7PNR CR    >      1.0   -1.20342
NSTC 42 7PNR BUS   >      1.0   -4.50001
NSTC 43 7PNR BU/MR >      1.0   -1.42502
NSTC 44 7PNR METRO >      1.0    0.00000
NSTC 50 7KNR TRN
NSTC 51 7KNR CR    >      1.0   -3.94051
NSTC 52 7KNR BUS   >      1.0   -0.02013
NSTC 53 7KNR BU/MR >      1.0    2.68544
NSTC 54 7KNR METRO >      1.0    0.00000
NSTC 60 7AUTO
NSTC 61 7LOV       >      1.0    0.00000
NSTC 62 7HOV       >      0.5   -2.33090
NSTC 70 7HOV
NSTC 71 7HOV2      >      1.0    0.00000
NSTC 72 7HOV3+     >      1.0   -3.21798
* SEGMENT  8
NSTC 10 8GRND TOTAL>
NSTC 11 8AUTO      >      0.5    0.00000
NSTC 12 8TRANSIT   >      0.5    1.95327
NSTC 20 8TOTAL TRN >
NSTC 21 8WALK ACC  >      0.5    0.00000
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NSTC 22 8PNR ACC   >      0.5   -6.58681
NSTC 23 8KNR ACC   >      0.5   -9.05173
NSTC 30 8WLK TRN
NSTC 31 8WLK CR    >      1.0   -8.36224
NSTC 32 8WLK BUS   >      1.0   -8.70234
NSTC 33 8WLK BU/MR >      1.0   -7.91479
NSTC 34 8WLK METRO >      1.0    0.00000
NSTC 40 8PNR TRN
NSTC 41 8PNR CR    >      1.0   -1.93264
NSTC 42 8PNR BUS   >      1.0   -1.41963
NSTC 43 8PNR BU/MR >      1.0   -3.18312
NSTC 44 8PNR METRO >      1.0    0.00000
NSTC 50 8KNR TRN
NSTC 51 8KNR CR    >      1.0    0.83470
NSTC 52 8KNR BUS   >      1.0    3.96686
NSTC 53 8KNR BU/MR >      1.0    1.21915
NSTC 54 8KNR METRO >      1.0    0.00000
NSTC 60 8AUTO
NSTC 61 8LOV       >      1.0    0.00000
NSTC 62 8HOV       >      0.5   -2.35114
NSTC 70 8HOV
NSTC 71 8HOV2      >      1.0    0.00000
NSTC 72 8HOV3+     >      1.0   -3.48999
* SEGMENT  9
NSTC 10 9GRND TOTAL>
NSTC 11 9AUTO      >      0.5    0.00000
NSTC 12 9TRANSIT   >      0.5    7.50738
NSTC 20 9TOTAL TRN >
NSTC 21 9WALK ACC  >      0.5    0.00000
NSTC 22 9PNR ACC   >      0.5  -13.51288
NSTC 23 9KNR ACC   >      0.5  -15.73498
NSTC 30 9WLK TRN
NSTC 31 9WLK CR    >      1.0  -26.64536
NSTC 32 9WLK BUS   >      1.0  -24.57207
NSTC 33 9WLK BU/MR >      1.0  -15.72215
NSTC 34 9WLK METRO >      1.0    0.00000
NSTC 40 9PNR TRN
NSTC 41 9PNR CR    >      1.0    0.71460
NSTC 42 9PNR BUS   >      1.0    0.95737
NSTC 43 9PNR BU/MR >      1.0    3.94189
NSTC 44 9PNR METRO >      1.0    0.00000
NSTC 50 9KNR TRN
NSTC 51 9KNR CR    >      1.0    0.36575
NSTC 52 9KNR BUS   >      1.0    0.36575
NSTC 53 9KNR BU/MR >      1.0    8.21118
NSTC 54 9KNR METRO >      1.0    0.00000
NSTC 60 9AUTO
NSTC 61 9LOV       >      1.0    0.00000
NSTC 62 9HOV       >      0.5   -2.49773
NSTC 70 9HOV
NSTC 71 9HOV2      >      1.0    0.00000
NSTC 72 9HOV3+     >      1.0   -3.74242
* SEGMENT 10
NSTC 1010GRND TOTAL>
NSTC 1110AUTO      >      0.5    0.00000
NSTC 1210TRANSIT   >      0.5    1.96969
NSTC 2010TOTAL TRN >
NSTC 2110WALK ACC  >      0.5    0.00000
NSTC 2210PNR ACC   >      0.5   -6.75480
NSTC 2310KNR ACC   >      0.5   -9.63249
NSTC 3010WLK TRN
NSTC 3110WLK CR    >      1.0   -3.76018
NSTC 3210WLK BUS   >      1.0   -7.06437
NSTC 3310WLK BU/MR >      1.0   -8.17168
NSTC 3410WLK METRO >      1.0    0.00000
NSTC 4010PNR TRN
NSTC 4110PNR CR    >      1.0   -1.06041
NSTC 4210PNR BUS   >      1.0   -0.18670
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NSTC 4310PNR BU/MR >      1.0   -1.06041
NSTC 4410PNR METRO >      1.0    0.00000
NSTC 5010KNR TRN
NSTC 5110KNR CR    >      1.0   -0.17866
NSTC 5210KNR BUS   >      1.0   -0.17866
NSTC 5310KNR BU/MR >      1.0   -0.17866
NSTC 5410KNR METRO >      1.0    0.00000
NSTC 6010AUTO
NSTC 6110LOV       >      1.0    0.00000
NSTC 6210HOV       >      0.5   -2.38548
NSTC 7010HOV
NSTC 7110HOV2      >      1.0    0.00000
NSTC 7210HOV3+     >      1.0   -3.50930
* SEGMENT 11
NSTC 1011GRND TOTAL>
NSTC 1111AUTO      >      0.5    0.00000
NSTC 1211TRANSIT   >      0.5    5.51956
NSTC 2011TOTAL TRN >
NSTC 2111WALK ACC  >      0.5    0.00000
NSTC 2211PNR ACC   >      0.5  -13.61355
NSTC 2311KNR ACC   >      0.5  -15.01456
NSTC 3011WLK TRN
NSTC 3111WLK CR    >      1.0   -6.80235
NSTC 3211WLK BUS   >      1.0  -19.24134
NSTC 3311WLK BU/MR >      1.0  -17.17225
NSTC 3411WLK METRO >      1.0    0.00000
NSTC 4011PNR TRN
NSTC 4111PNR CR    >      1.0    0.01884
NSTC 4211PNR BUS   >      1.0   -1.18803
NSTC 4311PNR BU/MR >      1.0    1.49519
NSTC 4411PNR METRO >      1.0    0.00000
NSTC 5011KNR TRN
NSTC 5111KNR CR    >      1.0   -0.39292
NSTC 5211KNR BUS   >      1.0   -0.39292
NSTC 5311KNR BU/MR >      1.0   -0.71753
NSTC 5411KNR METRO >      1.0    0.00000
NSTC 6011AUTO
NSTC 6111LOV       >      1.0    0.00000
NSTC 6211HOV       >      0.5   -2.36851
NSTC 7011HOV
NSTC 7111HOV2      >      1.0    0.00000
NSTC 7211HOV3+     >      1.0   -3.45409
* SEGMENT 12
NSTC 1012GRND TOTAL>
NSTC 1112AUTO      >      0.5    0.00000
NSTC 1212TRANSIT   >      0.5    4.48123
NSTC 2012TOTAL TRN >
NSTC 2112WALK ACC  >      0.5    0.00000
NSTC 2212PNR ACC   >      0.5  -10.30322
NSTC 2312KNR ACC   >      0.5  -12.85619
NSTC 3012WLK TRN
NSTC 3112WLK CR    >      1.0  -17.75998
NSTC 3212WLK BUS   >      1.0  -23.20196
NSTC 3312WLK BU/MR >      1.0  -20.90323
NSTC 3412WLK METRO >      1.0    0.00000
NSTC 4012PNR TRN
NSTC 4112PNR CR    >      1.0   -9.32836
NSTC 4212PNR BUS   >      1.0   -7.38354
NSTC 4312PNR BU/MR >      1.0   -9.32836
NSTC 4412PNR METRO >      1.0    0.00000
NSTC 5012KNR TRN
NSTC 5112KNR CR    >      1.0   -2.30369
NSTC 5212KNR BUS   >      1.0    0.07561
NSTC 5312KNR BU/MR >      1.0   -4.99137
NSTC 5412KNR METRO >      1.0    0.00000
NSTC 6012AUTO
NSTC 6112LOV       >      1.0    0.00000
NSTC 6212HOV       >      0.5   -2.42245
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NSTC 7012HOV
NSTC 7112HOV2      >      1.0    0.00000
NSTC 7212HOV3+     >      1.0   -3.59591
* SEGMENT 13
NSTC 1013GRND TOTAL>
NSTC 1113AUTO      >      0.5    0.00000
NSTC 1213TRANSIT   >      0.5    2.15894
NSTC 2013TOTAL TRN >
NSTC 2113WALK ACC  >      0.5    0.00000
NSTC 2213PNR ACC   >      0.5   -6.92660
NSTC 2313KNR ACC   >      0.5   -7.71486
NSTC 3013WLK TRN
NSTC 3113WLK CR    >      1.0   -7.94796
NSTC 3213WLK BUS   >      1.0   -9.48335
NSTC 3313WLK BU/MR >      1.0   -9.33887
NSTC 3413WLK METRO >      1.0    0.00000
NSTC 4013PNR TRN
NSTC 4113PNR CR    >      1.0    0.80741
NSTC 4213PNR BUS   >      1.0   -2.97045
NSTC 4313PNR BU/MR >      1.0   17.97979
NSTC 4413PNR METRO >      1.0    0.00000
NSTC 5013KNR TRN
NSTC 5113KNR CR    >      1.0   -4.05465
NSTC 5213KNR BUS   >      1.0   -4.82364
NSTC 5313KNR BU/MR >      1.0    0.89638
NSTC 5413KNR METRO >      1.0    0.00000
NSTC 6013AUTO
NSTC 6113LOV       >      1.0    0.00000
NSTC 6213HOV       >      0.5   -2.64427
NSTC 7013HOV
NSTC 7113HOV2      >      1.0    0.00000
NSTC 7213HOV3+     >      1.0   -3.47954
* SEGMENT 14
NSTC 1014GRND TOTAL>
NSTC 1114AUTO      >      0.5    0.00000
NSTC 1214TRANSIT   >      0.5    1.03419
NSTC 2014TOTAL TRN >
NSTC 2114WALK ACC  >      0.5    0.00000
NSTC 2214PNR ACC   >      0.5   -3.43391
NSTC 2314KNR ACC   >      0.5   -4.86378
NSTC 3014WLK TRN
NSTC 3114WLK CR    >      1.0   -8.07201
NSTC 3214WLK BUS   >      1.0   -5.35020
NSTC 3314WLK BU/MR >      1.0   -5.76287
NSTC 3414WLK METRO >      1.0    0.00000
NSTC 4014PNR TRN
NSTC 4114PNR CR    >      1.0   -4.21826
NSTC 4214PNR BUS   >      1.0    2.79205
NSTC 4314PNR BU/MR >      1.0    8.15322
NSTC 4414PNR METRO >      1.0    0.00000
NSTC 5014KNR TRN
NSTC 5114KNR CR    >      1.0   -9.09461
NSTC 5214KNR BUS   >      1.0   -0.17126
NSTC 5314KNR BU/MR >      1.0    1.77852
NSTC 5414KNR METRO >      1.0    0.00000
NSTC 6014AUTO
NSTC 6114LOV       >      1.0    0.00000
NSTC 6214HOV       >      0.5   -2.56906
NSTC 7014HOV
NSTC 7114HOV2      >      1.0    0.00000
NSTC 7214HOV3+     >      1.0   -3.46257
* SEGMENT 15
NSTC 1015GRND TOTAL>
NSTC 1115AUTO      >      0.5    0.00000
NSTC 1215TRANSIT   >      0.5    2.02545
NSTC 2015TOTAL TRN >
NSTC 2115WALK ACC  >      0.5    0.00000
NSTC 2215PNR ACC   >      0.5   -7.11111
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NSTC 2315KNR ACC   >      0.5   -7.14013
NSTC 3015WLK TRN
NSTC 3115WLK CR    >      1.0  -10.01506
NSTC 3215WLK BUS   >      1.0   -7.57640
NSTC 3315WLK BU/MR >      1.0   -7.81754
NSTC 3415WLK METRO >      1.0    0.00000
NSTC 4015PNR TRN
NSTC 4115PNR CR    >      1.0   -2.39764
NSTC 4215PNR BUS   >      1.0    1.21821
NSTC 4315PNR BU/MR >      1.0    1.37121
NSTC 4415PNR METRO >      1.0    0.00000
NSTC 5015KNR TRN
NSTC 5115KNR CR    >      1.0   -7.34212
NSTC 5215KNR BUS   >      1.0   -1.58130
NSTC 5315KNR BU/MR >      1.0   -0.80990
NSTC 5415KNR METRO >      1.0    0.00000
NSTC 6015AUTO
NSTC 6115LOV       >      1.0    0.00000
NSTC 6215HOV       >      0.5   -2.48518
NSTC 7015HOV
NSTC 7115HOV2      >      1.0    0.00000
NSTC 7215HOV3+     >      1.0   -3.53224
* SEGMENT 16
NSTC 1016GRND TOTAL>
NSTC 1116AUTO      >      0.5    0.00000
NSTC 1216TRANSIT   >      0.5    0.24220
NSTC 2016TOTAL TRN >
NSTC 2116WALK ACC  >      0.5    0.00000
NSTC 2216PNR ACC   >      0.5   -5.74724
NSTC 2316KNR ACC   >      0.5   -5.06145
NSTC 3016WLK TRN
NSTC 3116WLK CR    >      1.0   -5.76798
NSTC 3216WLK BUS   >      1.0   -3.36187
NSTC 3316WLK BU/MR >      1.0   -3.16321
NSTC 3416WLK METRO >      1.0    0.00000
NSTC 4016PNR TRN
NSTC 4116PNR CR    >      1.0   -1.88306
NSTC 4216PNR BUS   >      1.0    1.36261
NSTC 4316PNR BU/MR >      1.0   -0.52764
NSTC 4416PNR METRO >      1.0    0.00000
NSTC 5016KNR TRN
NSTC 5116KNR CR    >      1.0   -6.49245
NSTC 5216KNR BUS   >      1.0   -1.22008
NSTC 5316KNR BU/MR >      1.0   -1.68214
NSTC 5416KNR METRO >      1.0    0.00000
NSTC 6016AUTO
NSTC 6116LOV       >      1.0    0.00000
NSTC 6216HOV       >      0.5   -2.34902
NSTC 7016HOV
NSTC 7116HOV2      >      1.0    0.00000
NSTC 7216HOV3+     >      1.0   -3.22728
* SEGMENT 17
NSTC 1017GRND TOTAL>
NSTC 1117AUTO      >      0.5    0.00000
NSTC 1217TRANSIT   >      0.5    3.47974
NSTC 2017TOTAL TRN >
NSTC 2117WALK ACC  >      0.5    0.00000
NSTC 2217PNR ACC   >      0.5  -11.12611
NSTC 2317KNR ACC   >      0.5  -10.71998
NSTC 3017WLK TRN
NSTC 3117WLK CR    >      1.0  -19.31951
NSTC 3217WLK BUS   >      1.0  -17.57613
NSTC 3317WLK BU/MR >      1.0  -14.26568
NSTC 3417WLK METRO >      1.0    0.00000
NSTC 4017PNR TRN
NSTC 4117PNR CR    >      1.0   -2.17235
NSTC 4217PNR BUS   >      1.0    2.33576
NSTC 4317PNR BU/MR >      1.0   13.08837
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NSTC 4417PNR METRO >      1.0    0.00000
NSTC 5017KNR TRN
NSTC 5117KNR CR    >      1.0   -8.30821
NSTC 5217KNR BUS   >      1.0   -3.27026
NSTC 5317KNR BU/MR >      1.0   -0.80123
NSTC 5417KNR METRO >      1.0    0.00000
NSTC 6017AUTO
NSTC 6117LOV       >      1.0    0.00000
NSTC 6217HOV       >      0.5   -3.59521
NSTC 7017HOV
NSTC 7117HOV2      >      1.0    0.00000
NSTC 7217HOV3+     >      1.0   -7.85556
* SEGMENT 18
NSTC 1018GRND TOTAL>
NSTC 1118AUTO      >      0.5    0.00000
NSTC 1218TRANSIT   >      0.5    1.93776
NSTC 2018TOTAL TRN >
NSTC 2118WALK ACC  >      0.5    0.00000
NSTC 2218PNR ACC   >      0.5   -7.86793
NSTC 2318KNR ACC   >      0.5   -7.36768
NSTC 3018WLK TRN
NSTC 3118WLK CR    >      1.0  -12.18708
NSTC 3218WLK BUS   >      1.0   -9.01363
NSTC 3318WLK BU/MR >      1.0   -8.95614
NSTC 3418WLK METRO >      1.0    0.00000
NSTC 4018PNR TRN
NSTC 4118PNR CR    >      1.0    1.20225
NSTC 4218PNR BUS   >      1.0    4.48249
NSTC 4318PNR BU/MR >      1.0    7.49606
NSTC 4418PNR METRO >      1.0    0.00000
NSTC 5018KNR TRN
NSTC 5118KNR CR    >      1.0   -5.68930
NSTC 5218KNR BUS   >      1.0   -1.88004
NSTC 5318KNR BU/MR >      1.0   -1.06007
NSTC 5418KNR METRO >      1.0    0.00000
NSTC 6018AUTO
NSTC 6118LOV       >      1.0    0.00000
NSTC 6218HOV       >      0.5   -3.33928
NSTC 7018HOV
NSTC 7118HOV2      >      1.0    0.00000
NSTC 7218HOV3+     >      1.0   -8.46784
* SEGMENT 19
NSTC 1019GRND TOTAL>
NSTC 1119AUTO      >      0.5    0.00000
NSTC 1219TRANSIT   >      0.5    2.56950
NSTC 2019TOTAL TRN >
NSTC 2119WALK ACC  >      0.5    0.00000
NSTC 2219PNR ACC   >      0.5   -9.76176
NSTC 2319KNR ACC   >      0.5   -8.71241
NSTC 3019WLK TRN
NSTC 3119WLK CR    >      1.0  -15.76443
NSTC 3219WLK BUS   >      1.0  -12.98533
NSTC 3319WLK BU/MR >      1.0  -11.59989
NSTC 3419WLK METRO >      1.0    0.00000
NSTC 4019PNR TRN
NSTC 4119PNR CR    >      1.0    0.36989
NSTC 4219PNR BUS   >      1.0    3.27831
NSTC 4319PNR BU/MR >      1.0    3.79686
NSTC 4419PNR METRO >      1.0    0.00000
NSTC 5019KNR TRN
NSTC 5119KNR CR    >      1.0   -7.06968
NSTC 5219KNR BUS   >      1.0   -3.02782
NSTC 5319KNR BU/MR >      1.0   -2.13037
NSTC 5419KNR METRO >      1.0    0.00000
NSTC 6019AUTO
NSTC 6119LOV       >      1.0    0.00000
NSTC 6219HOV       >      0.5   -3.09473
NSTC 7019HOV
```

```
NSTC 7119HOV2      >      1.0    0.00000
NSTC 7219HOV3+     >      1.0   -8.54631
* SEGMENT 20
NSTC 1020GRND TOTAL>
NSTC 1120AUTO      >      0.5    0.00000
NSTC 1220TRANSIT   >      0.5    1.92257
NSTC 2020TOTAL TRN >
NSTC 2120WALK ACC  >      0.5    0.00000
NSTC 2220PNR ACC   >      0.5  -11.17009
NSTC 2320KNR ACC   >      0.5   -7.95607
NSTC 3020WLK TRN
NSTC 3120WLK CR    >      1.0  -17.59883
NSTC 3220WLK BUS   >      1.0  -12.16109
NSTC 3320WLK BU/MR >      1.0  -12.86502
NSTC 3420WLK METRO >      1.0    0.00000
NSTC 4020PNR TRN
NSTC 4120PNR CR    >      1.0   -9.77532
NSTC 4220PNR BUS   >      1.0   -4.52891
NSTC 4320PNR BU/MR >      1.0   -2.53963
NSTC 4420PNR METRO >      1.0    0.00000
NSTC 5020KNR TRN
NSTC 5120KNR CR    >      1.0  -20.64870
NSTC 5220KNR BUS   >      1.0  -10.40745
NSTC 5320KNR BU/MR >      1.0   -7.17202
NSTC 5420KNR METRO >      1.0    0.00000
NSTC 6020AUTO
NSTC 6120LOV       >      1.0    0.00000
NSTC 6220HOV       >      0.5   -2.43817
NSTC 7020HOV
NSTC 7120HOV2      >      1.0    0.00000
NSTC 7220HOV3+     >      1.0   -5.01062

*DOWNTOWN=8
*SELI               >         8

*UNION STATION=64
*SELI               >        64

* =122
*SELI               >       122

*BETHESDA=345
*SELI               >       345

*SILVER SPRING=362
*SELI               >       362

*N.SILVER SPRING=464
*SELI               >       464

* =475
*SELI               >       475

*SHADY GROVE RD=578
*SELI               >       578

* =787
*SELI               >       787

*ANDREWS AFB=829
*SELI               >       829

*NEW CARROLTON=927
*SELI               >       927

*BRISTOL=972
*SELI               >       972
```

```
*FREDERICK=1043
*SELI              >      1043

*JESSUP=1080
*SELI              >      1080

*SCAGGSVILLE=1091
*SELI              >      1091

*WALDORF=1216
*SELI              >      1216

*PENTAGON=1231
*SELI              >      1231

*ROSSLYN=1236
*SELI              >      1236

*ALEXANDRIA=1337
*SELI              >      1337

* =1455
*SELI              >      1455

*SPRINGFIELD=1502
*SELI              >      1502

*  =1511
*SELI              >      1511

*TYSONS CRNR=1537
*SELI              >      1537

*FT BELVOIR=1554
*SELI              >      1554

*VIENNA=1619
*SELI              >      1619

*DULES AP=1698
*SELI              >      1698

*RESTON=1716
*SELI              >      1716

*LEESBURG=1842
*SELI              >      1842

*BRUNSWICK=1863
*SELI              >      1863

*DALE CITY=1942
*SELI              >      1942

*MANASSAS=1967
*SELI              >      1967

*SPOTSYLVANIA=2110
*SELI              >      2110

* =2055
*SELI              >      2055


*SELJ              >         8
*SELJ              >        63
*SELJ              >        64
*SELJ              >        77
```

```
*SELJ               >       100
*SELJ               >       344
*SELJ               >       345
*SELJ               >       362
*SELJ               >      1231
*SELJ               >      1236
*SELJ               >      1265
*SELJ               >      1337
*SELJ               >      1537

*SELI               >  523
*SELJ               >    9

TRACE              >         0
* OUTPUT %           >
*PROCSEL            >
PRINT MS           >HBW_NL_MC.PRN
INPUT PRINT FILE   >HBW_NL_MC.PRN
INPUT GOALS        >HBW_NL_MC.GOL
INFILE 1           >hbw_income.ptt
INFILE 2           >hwyam.skm
INFILE 3           >TRNAM_CR.SKM
INFILE 4           >TRNAM_AB.SKM
INFILE 5           >TRNAM_MR.SKM
INFILE 6           >TRNAM_BM.SKM
ZINFILE 8          >ZONEV2.A2F
OUTFILE 9          >HBW_NL_MC.MTT

* FTA USER BENEFITS SPECIFICATIONS
*FTA RESULTS FILE   >HBW_NL_MC.BEN
FTA TRANSIT COEFF  >-0.02128
FTA AUTO COEFF     >-0.02128
FTA PURPOSE NAME   >HBW
FTA PERIOD NAME    >ALLDAY
FTA ALTER. NAME    >CALIB
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
FTA AUTO NEST      >         1         1
FTA MOTORIZED?    1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
FTA TRANSIT?      1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
```

2 hbs_nl_mc.ctl

```
HBS OP NESTED LOGIT MC - #DATE:  2/15/2011 #VER:  21
CHOICE            1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
*
*
*LOGIT COEFFICIENTS BY CHOICE FOR EACH SKIM (NO INPUT SKIM IS
*EQUIVALENT TO A CONSTANT)
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
COEF01:IVTT       1>-0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168  -0.02168
SKIM01:IVTT       1>DAIV      S2IV      S3IV      WCIV      WBIV      WTIV      WMIV      PCIV      KCIV      PBIV      KBIV      PTIV      KTIV      PMIV      KMIV
COEF02:AUTO ACC   1>                                                                      -0.03252  -0.03252  -0.03252  -0.03252  -0.03252  -0.03252  -0.03252  -0.03252
SKIM02:AUTO ACC   1>                                                                      PCAA      KCAA      PBAA      KBAA      PTAA      KTAA      PMAA      KMAA
COEF03:TERM/OVTT  1>-0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420
SKIM03:TERM/OVTT  1>DATE      S2TE      S3TE      WCOV      WBOV      WTOV      WMOV      PCOV      KCOV      PBOV      KBOV      PTOV      KTOV      PMOV      KMOV
* LIMIT COEF 04 TO PURPOSE 1
COEF PURP04        >1
COEF04:COST INC1  1>-0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202
SKIM04:COST INC1  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 05 TO PURPOSE 2
COEF PURP05        >2
COEF05:COST INC2  1>-0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101
SKIM05:COST INC2  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 06 TO PURPOSE 3
COEF PURP06        >3
COEF06:COST INC3  1>-0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067
```

```
SKIM06:COST INC3  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF PURP07        >4
* LIMIT COEF 07 TO PURPOSE 4
COEF07:COST INC4  1>-0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051
SKIM07:COST INC4  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF08:TRN XFERS  1>                              -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000
SKIM08:TRN XFERS  1>                              WCXF      WBXF      WTXF      WMXF      PCXF      KCXF      PBXF      KBXF      PTXF      KTXF      PMXF      KMXF
COEF09:TRN BRDPEN 1>                              -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420  -0.05420
SKIM09:TRN BRDPEN 1>                              WCXP      WBXP      WTXP      WMXP      PCXP      KCXP      PBXP      KBXP      PTXP      KTXP      PMXP      KMXP
*WALK WEIGHT
COEF10:TRN WLKWT  1>                              -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336  -0.04336
SKIM10:TRN WLKWT  1>                              WCWK      WBWK      WTWK      WMWK      PCWK      KCWK      PBWK      KBWK      PTWK      KTWK      PMWK      KMWK

*SYNTAX TO LIMIT UTILITY ELEMENT TO A PARTICULAR WALK SEGMENT IN THIS EXAMPLE
*    COEF 18 APPLIES ONLY TO WALK SEGMENT 1
*COEF WLKSEG18      >1

* ASSUMED MATRIX ORGANIZATION
* FILE 1 TRIP TABLE (SEPARATE FOR EACH PURPOSE)
* 1 INCOME 1 (HOME-BASED)/ALL NHB TRIPS
* 2 INCOME 2 (HOME-BASED)
* 3 INCOME 3 (HOME-BASED)
* 4 INCOME 4 (HOME-BASED)
*
* FILE 2 HIGHWAY SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* 1 SOV   TIME (MIN)
* 2 SOV   DIST (0.1 MILES)
* 3 SOV   TOLL (2007 CENTS)
* 4 HOV2  TIME (MIN)
* 5 HOV2  DIST (0.1 MILES)
* 6 HOV2  TOLL (2007 CENTS)
* 7 HOV3+ TIME (MIN)
* 8 HOV3+ DIST (0.1 MILES)
* 9 HOV3+ TOLL (2007 CENTS)
*
* FILE 3=COM. RAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 4=BUS SKIMS       (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 5=METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 6=BUS+METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
*  1 WLK ACC/EGR (.01 MIN)  15 PNR ACC/EGR (.01 MIN)  33 KNR ACC/EGR  (.01 MIN)
*  2 WLK OTHER   (.01 MIN)  16 PNR OTHER   (.01 MIN)  34 KNR OTHER   (.01 MIN)
*  3 WLK IWAIT   (.01 MIN)  17 PNR IWAIT   (.01 MIN)  35 KNR IWAIT   (.01 MIN)
*  4 WLK XWAIT   (.01 MIN)  18 PNR XWAIT   (.01 MIN)  36 KNR XWAIT   (.01 MIN)
*  5 WLK IVTT TOT(.01 MIN)  19 PNR IVTT TOT(.01 MIN)  37 KNR IVTT TOT(.01 MIN)
*  6 WLK IVTT CR (.01 MIN)  20 PNR IVTT CR (.01 MIN)  38 KNR IVTT CR (.01 MIN)
*  7 WLK IVTT XB (.01 MIN)  21 PNR IVTT XB (.01 MIN)  39 KNR IVTT XB (.01 MIN)
*  8 WLK IVTT MR (.01 MIN)  22 PNR IVTT MR (.01 MIN)  40 KNR IVTT MR (.01 MIN)
*  9 WLK IVTT NM (.01 MIN)  23 PNR IVTT NM (.01 MIN)  41 KNR IVTT NM (.01 MIN)
* 10 WLK IVTT NM2(.01 MIN)  24 PNR IVTT NM2(.01 MIN)  42 KNR IVTT NM2(.01 MIN)
* 11 WLK IVTT LB (.01 MIN)  25 PNR IVTT LB (.01 MIN)  43 KNR IVTT LB (.01 MIN)
* 12 WLK #XFERS  (NUMBER )  26 PNR #XFERS  (NUMBER )  44 KNR #XFERS  (NUMBER )
* 13 WLK COST    (07CENTS)  27 PNR COST    (07CENTS)  45 KNR COST    (07CENTS)
* 14 WLK XPEN    (.01 MIN)  28 PNR XPEN    (.01 MIN)  46 KNR XPEN    (.01 MIN)
*                           29 PNR ACC TIME(.01 MIN)  47 KNR ACC TIME(.01 MIN)
*                           30 PNR ACC DIST(.01 MIL)  48 KNR ACC DIST(.01 MIL)
*                           31 PNR ACC COST(07CENTS)
*                           32 PNR STA TERM(.01 MIN)
*
* FILE 8=ZDATA
*  1 HBW PARK COST (2007 CENTS)
*  2 HBS PARK COST (2007 CENTS)
*  3 HBO PARK COST (2007 CENTS)
*  4 NHB PARK COST (2007 CENTS)
*  5 TERMINAL TIME (HOME BASED) (MINUTES)
*  6 TERMINAL TIME (NON HOME BASED) (MINUTES)
*  7 ARC VIEW SHORT WALK PERCENT TO METRO
*  8 ARC VIEW LONG WALK PERCENT TO METRO
*  9 ARC VIEW SHORT WALK PERCENT TO ALL AM PK TRANSIT
```

```
* 10 ARC VIEW LONG WALK PERCENT TO ALL AM PK TRANSIT
* 11 ARC VIEW SHORT WALK PERCENT TO ALL OP TRANSIT
* 12 ARC VIEW LONG WALK PERCENT TO ALL OP TRANSIT
* 13 AREA TYPE
*    1=DC CORE
*    2=VA CORE
*    3=DC URBAN
*    4=MD URBAN
*    5=VA URBAN
*    6=MD OTHER
*    7=VA OTHER


* PARAMETERS
*=======================================================
* AUTO OPERATING COSTS IN CENTS/mile
COMPUTE AUOP       >10
* AUTO OCCUPANCY FOR 3+  Reduced from 3.5 to 3.25 on 3/1/07 rm
COMPUTE OCC3       >3.25

* TERMINAL TIMES, USE i/j805 FOR HBW, HBS, AND HBO. USE i/j806 FOR NHB
* HBW/HBS/HBO
COMPUTE TERI       >i805
COMPUTE TERJ       >j805
* NHB
*COMPUTE TERI       >i806
*COMPUTE TERJ       >j806

* PARK COSTS, USE i/j801 802 803 804 FOR HBW, HBS, HBO, NHB RESPECTIVELY
* HBW
*COMPUTE PRKC       >j801/2.
* HBS
COMPUTE PRKC       >j802/2.
* HBO
* COMPUTE PRKC       >j803/2.
* NHB
* COMPUTE PRKC       >j804

* Percent of productions in long-walk area that are assumed to walk = 25% (i.e., 75% drive)
COMPUTE PCLM       >0.25
COMPUTE PCLT       >0.25
* PERCENT WALKS-METRORAIL ONLY
COMPUTE PCMI       >(i807+PCLM*(i808-i807))/100.
COMPUTE PCMJ       >(j807+PCLM*(j808-j807))/100.
* PERCENT WALKS-PEAK
*COMPUTE PCTI       >(i809+PCLT*(i810-i809))/100.
*COMPUTE PCTJ       >(j809+PCLT*(j810-j809))/100.
* PERCENT WALKS-OFFPEAK
COMPUTE PCTI       >(i811+PCLT*(i812-i811))/100.
COMPUTE PCTJ       >(j811+PCLT*(j812-j811))/100.
COMPUTE PCMI       >MAX(PCMI,0)
COMPUTE PCMI       >MIN(PCMI,1)
COMPUTE PCMJ       >MAX(PCMJ,0)
COMPUTE PCMJ       >MIN(PCMJ,1)
COMPUTE PCTI       >MAX(PCTI,PCMI)
COMPUTE PCTI       >MIN(PCTI,1)
COMPUTE PCTJ       >MAX(PCTJ,PCMJ)
COMPUTE PCTJ       >MIN(PCTJ,1)
*
* DO TRIP SUBDIVISIONS
*
*  HOME BASED ALTERNATIVES
COMPUTE TRP1       >m101
COMPUTE TRP2       >m102
COMPUTE TRP3       >m103
COMPUTE TRP4       >m104
* NON-HOME BASED
*COMPUTE TRP1       >0.25*m101
```

```
*COMPUTE TRP2       >0.25*m101
*COMPUTE TRP3       >0.25*m101
*COMPUTE TRP4       >0.25*m101
*
* BE SURE TO UPDATE THE IVTT COEFFICIENT IN FTA SECTION FOR EACH PURPOSE
*
*====================================================
*INITIALIZING ALL VARIABLES WITHIN IF STATEMENTS TO ZERO
COMPUTE DAIV       >0
COMPUTE DACS       >0
COMPUTE DATE       >0
COMPUTE S2IV       >0
COMPUTE S2CS       >0
COMPUTE S2TE       >0
COMPUTE S3IV       >0
COMPUTE S3CS       >0
COMPUTE S3TE       >0
COMPUTE WKIV       >0
COMPUTE WKOV       >0
COMPUTE WKXF       >0
COMPUTE WKCS       >0
COMPUTE WKXP       >0
COMPUTE WBIV       >0
COMPUTE WBOV       >0
COMPUTE WBXF       >0
COMPUTE WBCS       >0
COMPUTE WBXP       >0
COMPUTE WTIV       >0
COMPUTE WTOV       >0
COMPUTE WTXF       >0
COMPUTE WTCS       >0
COMPUTE WTXP       >0
COMPUTE WMIV       >0
COMPUTE WMOV       >0
COMPUTE WMXF       >0
COMPUTE WMCS       >0
COMPUTE WMXP       >0
COMPUTE PCIV       >0
COMPUTE PCAA       >0
COMPUTE PCOV       >0
COMPUTE PCXF       >0
COMPUTE PCCS       >0
COMPUTE PCXP       >0
COMPUTE PBIV       >0
COMPUTE PBAA       >0
COMPUTE PBOV       >0
COMPUTE PBXF       >0
COMPUTE PBCS       >0
COMPUTE PBXP       >0
COMPUTE PTIV       >0
COMPUTE PTAA       >0
COMPUTE PTOV       >0
COMPUTE PTXF       >0
COMPUTE PTCS       >0
COMPUTE PTXP       >0
COMPUTE PMIV       >0
COMPUTE PMAA       >0
COMPUTE PMOV       >0
COMPUTE PMXF       >0
COMPUTE PMCS       >0
COMPUTE PMXP       >0
COMPUTE KCIV       >0
COMPUTE KCAA       >0
COMPUTE KCOV       >0
COMPUTE KCXF       >0
COMPUTE KCCS       >0
COMPUTE KCXP       >0
COMPUTE KBIV       >0
```

```
COMPUTE KBAA       >0
COMPUTE KBOV       >0
COMPUTE KBXF       >0
COMPUTE KBCS       >0
COMPUTE KBXP       >0
COMPUTE KTIV       >0
COMPUTE KTAA       >0
COMPUTE KTOV       >0
COMPUTE KTXF       >0
COMPUTE KTCS       >0
COMPUTE KTXP       >0
COMPUTE KMIV       >0
COMPUTE KMAA       >0
COMPUTE KMOV       >0
COMPUTE KMXF       >0
COMPUTE KMCS       >0
COMPUTE KMXP       >0

COMPUTE WCWK       >0
COMPUTE WBWK       >0
COMPUTE WTWK       >0
COMPUTE WMWK       >0
COMPUTE PCWK       >0
COMPUTE KCWK       >0
COMPUTE PBWK       >0
COMPUTE KBWK       >0
COMPUTE PTWK       >0
COMPUTE KTWK       >0
COMPUTE PMWK       >0
COMPUTE KMWK       >0

* SKIM VALUES, Divide distances by 10 to convert tenths of miles to whole miles
* DRIVE ALONE
COMPUTE            >IF(m201>0)
COMPUTE DAIV       >m201
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(m204>0)
COMPUTE S2IV       >m204
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(m207>0)
COMPUTE S3IV       >m207
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

* Assign Intrazonal trips to Autos (mj11/04/05)
COMPUTE            >IF(P()=Q())
COMPUTE DAIV       >1
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(P()=Q())
COMPUTE S2IV       >1
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
```

```
COMPUTE            >IF(P()=Q())
COMPUTE S3IV       >1
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

*End of Intrazonal trips

* WALK COMMUTER RAIL
COMPUTE            >IF(m305>0)
COMPUTE WCIV       >m305/100.
COMPUTE WCOV       >(m303+m304)/100.
COMPUTE WCXF       >m312
COMPUTE WCCS       >m313
COMPUTE WCXP       >m314/100.
COMPUTE WCWK       >(m301+m302)/100.
COMPUTE            >ENDIF

* WALK BUS
COMPUTE            >IF(m405>0)
COMPUTE WBIV       >m405/100.
COMPUTE WBOV       >(m403+m404)/100.
COMPUTE WBXF       >m412
COMPUTE WBCS       >m413
COMPUTE WBXP       >m414/100.
COMPUTE WBWK       >(m401+m402)/100.
COMPUTE            >ENDIF

* WALK BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m605>0)
COMPUTE WTIV       >m605/100.
COMPUTE WTOV       >(m603+m604)/100.
COMPUTE WTXF       >m612
COMPUTE WTCS       >m613
COMPUTE WTXP       >m614/100.
COMPUTE WTWK       >(m601+m602)/100.
COMPUTE            >ENDIF


* WALK METRORAIL
COMPUTE            >IF(m505>0)
COMPUTE WMIV       >m505/100.
COMPUTE WMOV       >(m503+m504)/100.
COMPUTE WMXF       >m512
COMPUTE WMCS       >m513
COMPUTE WMXP       >m514/100.
COMPUTE WMWK       >(m501+m502)/100.
COMPUTE            >ENDIF

* PNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE PCIV       >m319/100.
COMPUTE PCAA       >m329/100.
COMPUTE PCOV       >(m317+m318+m332)/100.
COMPUTE PCXF       >m326
COMPUTE PCCS       >m327+m331+m330/100*AUOP
COMPUTE PCXP       >m328/100.
COMPUTE PCWK       >(m315+m316)/100.
COMPUTE            >ENDIF

* PNR BUS
COMPUTE            >IF(m419>0)
COMPUTE PBIV       >m419/100.
COMPUTE PBAA       >m429/100.
COMPUTE PBOV       >(m417+m418+m432)/100.
COMPUTE PBXF       >m426
COMPUTE PBCS       >m427+m431+m430/100*AUOP
COMPUTE PBXP       >m428/100.
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COMPUTE PBWK       >(m415+m416)/100.
COMPUTE            >ENDIF

* PNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m619>0)
COMPUTE PTIV       >m619/100.
COMPUTE PTAA       >m629/100.
COMPUTE PTOV       >(m617+m618+m632)/100.
COMPUTE PTXF       >m626
COMPUTE PTCS       >m627+m631+m630/100*AUOP
COMPUTE PTXP       >m628/100.
COMPUTE PTWK       >(m615+m616)/100.
COMPUTE            >ENDIF


* PNR METRORAIL
COMPUTE            >IF(m519>0)
COMPUTE PMIV       >m519/100.
COMPUTE PMAA       >m529/100.
COMPUTE PMOV       >(m517+m518+m532)/100.
COMPUTE PMXF       >m526
COMPUTE PMCS       >m527+m531+m530/100*AUOP
COMPUTE PMXP       >m528/100.
COMPUTE PMWK       >(m515+m516)/100.
COMPUTE            >ENDIF


* KNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE KCIV       >m319/100.
COMPUTE KCAA       >m329/100.
COMPUTE KCOV       >(m317+m318)/100.
COMPUTE KCXF       >m326
COMPUTE KCCS       >m327+m330/100*AUOP
COMPUTE KCXP       >m328/100.
COMPUTE KCWK       >(m315+m316)/100.
COMPUTE            >ENDIF


* KNR BUS
COMPUTE            >IF(m437>0)
COMPUTE KBIV       >m437/100.
COMPUTE KBAA       >m447/100.
COMPUTE KBOV       >(m435+m436)/100.
COMPUTE KBXF       >m444
COMPUTE KBCS       >m445+m448/100*AUOP
COMPUTE KBXP       >m446/100.
COMPUTE KBWK       >(m433+m434)/100.
COMPUTE            >ENDIF

* KNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m637>0)
COMPUTE KTIV       >m637/100.
COMPUTE KTAA       >m647/100.
COMPUTE KTOV       >(m635+m636)/100.
COMPUTE KTXF       >m644
COMPUTE KTCS       >m645+m648/100*AUOP
COMPUTE KTXP       >m646/100.
COMPUTE KTWK       >(m633+m634)/100.
COMPUTE            >ENDIF


* KNR METRORAIL
COMPUTE            >IF(m537>0)
COMPUTE KMIV       >m537/100.
COMPUTE KMAA       >m547/100.
COMPUTE KMOV       >(m535+m536)/100.
COMPUTE KMXF       >m544
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COMPUTE KMCS       >m545+m548/100*AUOP
COMPUTE KMXP       >m546/100.
COMPUTE KMWK       >(m533+m534)/100.
COMPUTE            >ENDIF

*CONSTANTS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
PURP01 1INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 1INC 2     1>
PURP03 1INC 3     1>
PURP04 1INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 2INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 2INC 2     1>
PURP03 2INC 3     1>
PURP04 2INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 3INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 3INC 2     1>
PURP03 3INC 3     1>
PURP04 3INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 4INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 4INC 2     1>
PURP03 4INC 3     1>
PURP04 4INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 5INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 5INC 2     1>
PURP03 5INC 3     1>
PURP04 5INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 6INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 6INC 2     1>
PURP03 6INC 3     1>
PURP04 6INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 7INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 7INC 2     1>
PURP03 7INC 3     1>
PURP04 7INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 8INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 8INC 2     1>
PURP03 8INC 3     1>
PURP04 8INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 9INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 9INC 2     1>
PURP03 9INC 3     1>
PURP04 9INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0110INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0210INC 2     1>
PURP0310INC 3     1>
PURP0410INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0111INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0211INC 2     1>
PURP0311INC 3     1>
PURP0411INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0112INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0212INC 2     1>
PURP0312INC 3     1>
PURP0412INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0113INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0213INC 2     1>
PURP0313INC 3     1>
PURP0413INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0114INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0214INC 2     1>
PURP0314INC 3     1>
PURP0414INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0115INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP0215INC 2     1>
PURP0315INC 3     1>
PURP0415INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP0116INC 1     1>                              2.000000  2.000000  2.000000  2.000000
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PURP0216INC 2     1>
PURP0316INC 3     1>
PURP0416INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0117INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0217INC 2     1>
PURP0317INC 3     1>
PURP0417INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0118INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0218INC 2     1>
PURP0318INC 3     1>
PURP0418INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0119INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0219INC 2     1>
PURP0319INC 3     1>
PURP0419INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0120INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0220INC 2     1>
PURP0320INC 3     1>
PURP0420INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000

TRIPIN01           >TRP1
TRIPIN02           >TRP2
TRIPIN03           >TRP3
TRIPIN04           >TRP4
TRIPIFACT01        >tfi1
TRIPIFACT02        >tfi2
TRIPIFACT03        >tfi3
TRIPIFACT04        >tfi4
COMPUTE tfi1       >1.0
COMPUTE tfi2       >1.0
COMPUTE tfi3       >1.0
COMPUTE tfi4       >1.0

*
*OUTPUT MATRICES AND OUTPUT FACTORS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
TRIPOUT01         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT01        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT02         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT02        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT03         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT03        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT04         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT04        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
**
**P AND A WALK PERCENTS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
WALK SEG CW 1 PCT 1>WSWM
WALK SEG CW 1 MODE1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 2 PCT 1>WSW1
WALK SEG CW 2 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 3 PCT 1>WSW2
WALK SEG CW 3 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG CW 4 PCT 1>WSW3
WALK SEG CW 4 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG MD 5 PCT 1>WSM1
WALK SEG MD 5 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG MD 6 PCT 1>WSM2
WALK SEG MD 6 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y
WALK SEG NT 7 PCT 1>WSNT
WALK SEG NT 7 MODE1>Y         Y         Y
*SYNTAX OF COMMAND TO ADD A COMPONENT TO A SPECIFIC WALK SEGMENT IF DESIRED
*WALK SEG CW 1 COEF1>                         -0.04747  -0.04747  -0.04747  -0.04747  -0.04747  -0.04747
*WALK SEG CW 1 VAR 1>                         WTSS      DTSS      DISS      WRSS      DRSS      DJSS
COMPUTE WSWM       >PCMI*PCMJ
COMPUTE WSW1       >(PCTI-PCMI)*PCMJ
COMPUTE WSW2       >(PCTI-PCMI)*(PCTJ-PCMJ)
COMPUTE WSW3       >PCMI*(PCTJ-PCMJ)
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COMPUTE WSM1       >(1-PCTI)*PCMJ
COMPUTE WSM2       >(1-PCTI)*(PCTJ-PCMJ)
COMPUTE WSNT       >1-WSWM-WSW1-WSW2-WSW3-WSM1-WSM2

*NEST DEFINITIONS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
NEST 1,1=         1>Y         Y         Y
NEST 1,2=         1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
NEST 2,1=         1>                              Y         Y         Y         Y
NEST 2,2=         1>                                                                      Y                   Y                   Y                   Y
NEST 2,3=         1>                                                                                Y                   Y                   Y                   Y
NEST 3,1=         1>                              Y
NEST 3,2=         1>                                        Y
NEST 3,3=         1>                                                  Y
NEST 3,4=         1>                                                            Y
NEST 4,1          1>                                                                      Y
NEST 4,2          1>                                                                                          Y
NEST 4,3          1>                                                                                                              Y
NEST 4,4          1>                                                                                                                                  Y
NEST 5,1          1>                                                                                Y
NEST 5,2          1>                                                                                                    Y
NEST 5,3          1>                                                                                                                        Y
NEST 5,4          1>                                                                                                                                            Y
NEST 6,1          1>Y
NEST 6,2          1>          Y         Y
NEST 7,1          1>          Y
NEST 7,2          1>                    Y

IGRP DEFINITION    >i813
JGRP DEFINITION    >j813
* 1 DC CORE/URBAN-DC CORE
SEGMENT  1         >    1    1
SEGMENT  1         >    3    1
* 2 DC CORE/URBAN-VA CORE
SEGMENT  2         >    1    2
SEGMENT  2         >    3    2
* 3 DC CORE/URBAN-URBAN
SEGMENT  3         >    1    3
SEGMENT  3         >    3    3
SEGMENT  3         >    1    4
SEGMENT  3         >    3    4
SEGMENT  3         >    1    5
SEGMENT  3         >    3    5
* 4 DC CORE/URBAN-OTHER
SEGMENT  4         >    1    6
SEGMENT  4         >    3    6
SEGMENT  4         >    1    7
SEGMENT  4         >    3    7
* 5 MD URBAN-DC CORE
SEGMENT  5         >    4    1
* 6 MD URBAN-VA CORE
SEGMENT  6         >    4    2
* 7 MD URBAN-URBAN
SEGMENT  7         >    4    3
SEGMENT  7         >    4    4
SEGMENT  7         >    4    5
* 8 MD URBAN-OTHER
SEGMENT  8         >    4    6
SEGMENT  8         >    4    7
* 9 VA CORE/URBAN-DC CORE
SEGMENT  9         >    2    1
SEGMENT  9         >    5    1
*10 VA CORE/URBAN-VA CORE
SEGMENT 10         >    2    2
SEGMENT 10         >    5    2
*11 VA CORE/URBAN-URBAN
SEGMENT 11         >    2    3
SEGMENT 11         >    5    3
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SEGMENT 11         >    2    4
SEGMENT 11         >    5    4
SEGMENT 11         >    2    5
SEGMENT 11         >    5    5
*12 VA CORE/URBAN-OTHER
SEGMENT 12         >    2    6
SEGMENT 12         >    5    6
SEGMENT 12         >    2    7
SEGMENT 12         >    5    7
*13 MD OTHER-DC CORE
SEGMENT 13         >    6    1
*14 MD OTHER-VA CORE
SEGMENT 14         >    6    2
*15 MD OTHER-URBAN
SEGMENT 15         >    6    3
SEGMENT 15         >    6    4
SEGMENT 15         >    6    5
*16 MD OTHER-OTHER
SEGMENT 16         >    6    6
SEGMENT 16         >    6    7
*17 VA OTHER-DC CORE
SEGMENT 17         >    7    1
*18 VA OTHER-VA CORE
SEGMENT 18         >    7    2
*19 VA OTHER-URBAN
SEGMENT 19         >    7    3
SEGMENT 19         >    7    4
SEGMENT 19         >    7    5
*20 VA OTHER-OTHER
SEGMENT 20         >    7    6
SEGMENT 20         >    7    7

* SEGMENT  1
NSTC 10 1GRND TOTAL>
NSTC 11 1AUTO      >      0.5    0.00000
NSTC 12 1TRANSIT   >      0.5   -1.81161
NSTC 20 1TOTAL TRN >
NSTC 21 1WALK ACC  >      0.5    0.00000
NSTC 22 1PNR ACC   >      0.5   -2.34348
NSTC 23 1KNR ACC   >      0.5   -5.86939
NSTC 30 1WLK TRN
NSTC 31 1WLK CR    >      1.0    0.62782
NSTC 32 1WLK BUS   >      1.0    0.66955
NSTC 33 1WLK BU/MR >      1.0    2.26740
NSTC 34 1WLK METRO >      1.0    0.00000
NSTC 40 1PNR TRN
NSTC 41 1PNR CR    >      1.0   -2.47573
NSTC 42 1PNR BUS   >      1.0   -2.47573
NSTC 43 1PNR BU/MR >      1.0   -2.47573
NSTC 44 1PNR METRO >      1.0    0.00000
NSTC 50 1KNR TRN
NSTC 51 1KNR CR    >      1.0   -0.61871
NSTC 52 1KNR BUS   >      1.0   -0.61871
NSTC 53 1KNR BU/MR >      1.0   -0.61871
NSTC 54 1KNR METRO >      1.0    0.00000
NSTC 60 1AUTO
NSTC 61 1LOV       >      1.0    0.00000
NSTC 62 1HOV       >      0.5   -0.21345
NSTC 70 1HOV
NSTC 71 1HOV2      >      1.0    0.00000
NSTC 72 1HOV3+     >      1.0   -0.55477
* SEGMENT  2
NSTC 10 2GRND TOTAL>
NSTC 11 2AUTO      >      0.5    0.00000
NSTC 12 2TRANSIT   >      0.5   -2.15577
NSTC 20 2TOTAL TRN >
NSTC 21 2WALK ACC  >      0.5    0.00000
NSTC 22 2PNR ACC   >      0.5   -2.64107
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NSTC 23 2KNR ACC   >      0.5   -2.64107
NSTC 30 2WLK TRN
NSTC 31 2WLK CR    >      1.0   -4.23420
NSTC 32 2WLK BUS   >      1.0   -4.23420
NSTC 33 2WLK BU/MR >      1.0   -4.23420
NSTC 34 2WLK METRO >      1.0    0.00000
NSTC 40 2PNR TRN
NSTC 41 2PNR CR    >      1.0    0.00001
NSTC 42 2PNR BUS   >      1.0    0.00001
NSTC 43 2PNR BU/MR >      1.0    0.00001
NSTC 44 2PNR METRO >      1.0    0.00000
NSTC 50 2KNR TRN
NSTC 51 2KNR CR    >      1.0    0.00001
NSTC 52 2KNR BUS   >      1.0    0.00001
NSTC 53 2KNR BU/MR >      1.0    0.00001
NSTC 54 2KNR METRO >      1.0    0.00000
NSTC 60 2AUTO
NSTC 61 2LOV       >      1.0    0.00000
NSTC 62 2HOV       >      0.5   -0.22120
NSTC 70 2HOV
NSTC 71 2HOV2      >      1.0    0.00000
NSTC 72 2HOV3+     >      1.0   -0.56317
* SEGMENT  3
NSTC 10 3GRND TOTAL>
NSTC 11 3AUTO      >      0.5    0.00000
NSTC 12 3TRANSIT   >      0.5   -0.76011
NSTC 20 3TOTAL TRN >
NSTC 21 3WALK ACC  >      0.5    0.00000
NSTC 22 3PNR ACC   >      0.5   -4.41291
NSTC 23 3KNR ACC   >      0.5   -7.37247
NSTC 30 3WLK TRN
NSTC 31 3WLK CR    >      1.0   -1.40351
NSTC 32 3WLK BUS   >      1.0   -2.50769
NSTC 33 3WLK BU/MR >      1.0   -0.32712
NSTC 34 3WLK METRO >      1.0    0.00000
NSTC 40 3PNR TRN
NSTC 41 3PNR CR    >      1.0   -4.14300
NSTC 42 3PNR BUS   >      1.0   -4.14300
NSTC 43 3PNR BU/MR >      1.0    1.81372
NSTC 44 3PNR METRO >      1.0    0.00000
NSTC 50 3KNR TRN
NSTC 51 3KNR CR    >      1.0    2.73817
NSTC 52 3KNR BUS   >      1.0    3.98673
NSTC 53 3KNR BU/MR >      1.0    5.45581
NSTC 54 3KNR METRO >      1.0    0.00000
NSTC 60 3AUTO
NSTC 61 3LOV       >      1.0    0.00000
NSTC 62 3HOV       >      0.5   -0.16830
NSTC 70 3HOV
NSTC 71 3HOV2      >      1.0    0.00000
NSTC 72 3HOV3+     >      1.0   -0.52130
* SEGMENT  4
NSTC 10 4GRND TOTAL>
NSTC 11 4AUTO      >      0.5    0.00000
NSTC 12 4TRANSIT   >      0.5   -1.66394
NSTC 20 4TOTAL TRN >
NSTC 21 4WALK ACC  >      0.5    0.00000
NSTC 22 4PNR ACC   >      0.5   -2.77849
NSTC 23 4KNR ACC   >      0.5   -2.77849
NSTC 30 4WLK TRN
NSTC 31 4WLK CR    >      1.0    1.47290
NSTC 32 4WLK BUS   >      1.0   -0.07400
NSTC 33 4WLK BU/MR >      1.0   -2.48407
NSTC 34 4WLK METRO >      1.0    0.00000
NSTC 40 4PNR TRN
NSTC 41 4PNR CR    >      1.0    0.00001
NSTC 42 4PNR BUS   >      1.0    0.00001
NSTC 43 4PNR BU/MR >      1.0    0.00001
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NSTC 44 4PNR METRO >      1.0    0.00000
NSTC 50 4KNR TRN
NSTC 51 4KNR CR    >      1.0    0.00001
NSTC 52 4KNR BUS   >      1.0    0.00001
NSTC 53 4KNR BU/MR >      1.0    0.00001
NSTC 54 4KNR METRO >      1.0    0.00000
NSTC 60 4AUTO
NSTC 61 4LOV       >      1.0    0.00000
NSTC 62 4HOV       >      0.5   -0.21977
NSTC 70 4HOV
NSTC 71 4HOV2      >      1.0    0.00000
NSTC 72 4HOV3+     >      1.0   -0.57125
* SEGMENT  5
NSTC 10 5GRND TOTAL>
NSTC 11 5AUTO      >      0.5    0.00000
NSTC 12 5TRANSIT   >      0.5    0.32942
NSTC 20 5TOTAL TRN >
NSTC 21 5WALK ACC  >      0.5    0.00000
NSTC 22 5PNR ACC   >      0.5   -6.70986
NSTC 23 5KNR ACC   >      0.5   -6.70986
NSTC 30 5WLK TRN
NSTC 31 5WLK CR    >      1.0   -0.12027
NSTC 32 5WLK BUS   >      1.0   -3.26225
NSTC 33 5WLK BU/MR >      1.0    1.01811
NSTC 34 5WLK METRO >      1.0    0.00000
NSTC 40 5PNR TRN
NSTC 41 5PNR CR    >      1.0    0.00001
NSTC 42 5PNR BUS   >      1.0    0.00001
NSTC 43 5PNR BU/MR >      1.0    0.00001
NSTC 44 5PNR METRO >      1.0    0.00000
NSTC 50 5KNR TRN
NSTC 51 5KNR CR    >      1.0    0.00001
NSTC 52 5KNR BUS   >      1.0    0.00001
NSTC 53 5KNR BU/MR >      1.0    0.00001
NSTC 54 5KNR METRO >      1.0    0.00000
NSTC 60 5AUTO
NSTC 61 5LOV       >      1.0    0.00000
NSTC 62 5HOV       >      0.5   -0.23585
NSTC 70 5HOV
NSTC 71 5HOV2      >      1.0    0.00000
NSTC 72 5HOV3+     >      1.0   -0.56897
* SEGMENT  6
NSTC 10 6GRND TOTAL>
NSTC 11 6AUTO      >      0.5    0.00000
NSTC 12 6TRANSIT   >      0.5    1.86627
NSTC 20 6TOTAL TRN >
NSTC 21 6WALK ACC  >      0.5    0.00000
NSTC 22 6PNR ACC   >      0.5   -6.64457
NSTC 23 6KNR ACC   >      0.5   -6.64457
NSTC 30 6WLK TRN
NSTC 31 6WLK CR    >      1.0   -7.74455
NSTC 32 6WLK BUS   >      1.0   -7.74455
NSTC 33 6WLK BU/MR >      1.0   -7.74455
NSTC 34 6WLK METRO >      1.0    0.00000
NSTC 40 6PNR TRN
NSTC 41 6PNR CR    >      1.0    0.00001
NSTC 42 6PNR BUS   >      1.0    0.00001
NSTC 43 6PNR BU/MR >      1.0    0.00001
NSTC 44 6PNR METRO >      1.0    0.00000
NSTC 50 6KNR TRN
NSTC 51 6KNR CR    >      1.0    0.00001
NSTC 52 6KNR BUS   >      1.0    0.00001
NSTC 53 6KNR BU/MR >      1.0    0.00001
NSTC 54 6KNR METRO >      1.0    0.00000
NSTC 60 6AUTO
NSTC 61 6LOV       >      1.0    0.00000
NSTC 62 6HOV       >      0.5    0.00907
NSTC 70 6HOV
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NSTC 71 6HOV2      >      1.0    0.00000
NSTC 72 6HOV3+     >      1.0    0.06435
* SEGMENT  7
NSTC 10 7GRND TOTAL>
NSTC 11 7AUTO      >      0.5    0.00000
NSTC 12 7TRANSIT   >      0.5   -2.08702
NSTC 20 7TOTAL TRN >
NSTC 21 7WALK ACC  >      0.5    0.00000
NSTC 22 7PNR ACC   >      0.5   -4.92390
NSTC 23 7KNR ACC   >      0.5   -4.92390
NSTC 30 7WLK TRN
NSTC 31 7WLK CR    >      1.0    1.60905
NSTC 32 7WLK BUS   >      1.0    1.44163
NSTC 33 7WLK BU/MR >      1.0    4.80084
NSTC 34 7WLK METRO >      1.0    0.00000
NSTC 40 7PNR TRN
NSTC 41 7PNR CR    >      1.0    0.00001
NSTC 42 7PNR BUS   >      1.0    0.00001
NSTC 43 7PNR BU/MR >      1.0    0.00001
NSTC 44 7PNR METRO >      1.0    0.00000
NSTC 50 7KNR TRN
NSTC 51 7KNR CR    >      1.0    0.00001
NSTC 52 7KNR BUS   >      1.0    0.00001
NSTC 53 7KNR BU/MR >      1.0    0.00001
NSTC 54 7KNR METRO >      1.0    0.00000
NSTC 60 7AUTO
NSTC 61 7LOV       >      1.0    0.00000
NSTC 62 7HOV       >      0.5   -0.15352
NSTC 70 7HOV
NSTC 71 7HOV2      >      1.0    0.00000
NSTC 72 7HOV3+     >      1.0   -0.50813
* SEGMENT  8
NSTC 10 8GRND TOTAL>
NSTC 11 8AUTO      >      0.5    0.00000
NSTC 12 8TRANSIT   >      0.5   -3.28450
NSTC 20 8TOTAL TRN >
NSTC 21 8WALK ACC  >      0.5    0.00000
NSTC 22 8PNR ACC   >      0.5   -1.88042
NSTC 23 8KNR ACC   >      0.5   -2.44767
NSTC 30 8WLK TRN
NSTC 31 8WLK CR    >      1.0   -0.06487
NSTC 32 8WLK BUS   >      1.0    1.37648
NSTC 33 8WLK BU/MR >      1.0   -0.06487
NSTC 34 8WLK METRO >      1.0    0.00000
NSTC 40 8PNR TRN
NSTC 41 8PNR CR    >      1.0    0.00001
NSTC 42 8PNR BUS   >      1.0    0.00001
NSTC 43 8PNR BU/MR >      1.0    0.00001
NSTC 44 8PNR METRO >      1.0    0.00000
NSTC 50 8KNR TRN
NSTC 51 8KNR CR    >      1.0    0.00001
NSTC 52 8KNR BUS   >      1.0    8.99593
NSTC 53 8KNR BU/MR >      1.0    0.00001
NSTC 54 8KNR METRO >      1.0    0.00000
NSTC 60 8AUTO
NSTC 61 8LOV       >      1.0    0.00000
NSTC 62 8HOV       >      0.5   -0.17493
NSTC 70 8HOV
NSTC 71 8HOV2      >      1.0    0.00000
NSTC 72 8HOV3+     >      1.0   -0.52478
* SEGMENT  9
NSTC 10 9GRND TOTAL>
NSTC 11 9AUTO      >      0.5    0.00000
NSTC 12 9TRANSIT   >      0.5    0.29831
NSTC 20 9TOTAL TRN >
NSTC 21 9WALK ACC  >      0.5    0.00000
NSTC 22 9PNR ACC   >      0.5   -5.64109
NSTC 23 9KNR ACC   >      0.5   -9.04425
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NSTC 30 9WLK TRN
NSTC 31 9WLK CR    >      1.0   -5.21443
NSTC 32 9WLK BUS   >      1.0   -5.21443
NSTC 33 9WLK BU/MR >      1.0   -5.21443
NSTC 34 9WLK METRO >      1.0    0.00000
NSTC 40 9PNR TRN
NSTC 41 9PNR CR    >      1.0    0.00001
NSTC 42 9PNR BUS   >      1.0    0.00001
NSTC 43 9PNR BU/MR >      1.0    0.00001
NSTC 44 9PNR METRO >      1.0    0.00000
NSTC 50 9KNR TRN
NSTC 51 9KNR CR    >      1.0    0.00001
NSTC 52 9KNR BUS   >      1.0    0.00001
NSTC 53 9KNR BU/MR >      1.0   18.51081
NSTC 54 9KNR METRO >      1.0    0.00000
NSTC 60 9AUTO
NSTC 61 9LOV       >      1.0    0.00000
NSTC 62 9HOV       >      0.5   -0.20207
NSTC 70 9HOV
NSTC 71 9HOV2      >      1.0    0.00000
NSTC 72 9HOV3+     >      1.0   -0.55307
* SEGMENT 10
NSTC 1010GRND TOTAL>
NSTC 1110AUTO      >      0.5    0.00000
NSTC 1210TRANSIT   >      0.5   -3.02541
NSTC 2010TOTAL TRN >
NSTC 2110WALK ACC  >      0.5    0.00000
NSTC 2210PNR ACC   >      0.5   -4.45709
NSTC 2310KNR ACC   >      0.5   -4.45709
NSTC 3010WLK TRN
NSTC 3110WLK CR    >      1.0    0.00001
NSTC 3210WLK BUS   >      1.0    4.73809
NSTC 3310WLK BU/MR >      1.0    0.00001
NSTC 3410WLK METRO >      1.0    0.00000
NSTC 4010PNR TRN
NSTC 4110PNR CR    >      1.0    0.00001
NSTC 4210PNR BUS   >      1.0    0.00001
NSTC 4310PNR BU/MR >      1.0    0.00001
NSTC 4410PNR METRO >      1.0    0.00000
NSTC 5010KNR TRN
NSTC 5110KNR CR    >      1.0    0.00001
NSTC 5210KNR BUS   >      1.0    0.00001
NSTC 5310KNR BU/MR >      1.0    0.00001
NSTC 5410KNR METRO >      1.0    0.00000
NSTC 6010AUTO
NSTC 6110LOV       >      1.0    0.00000
NSTC 6210HOV       >      0.5   -0.19549
NSTC 7010HOV
NSTC 7110HOV2      >      1.0    0.00000
NSTC 7210HOV3+     >      1.0   -0.54165
* SEGMENT 11
NSTC 1011GRND TOTAL>
NSTC 1111AUTO      >      0.5    0.00000
NSTC 1211TRANSIT   >      0.5   -0.88046
NSTC 2011TOTAL TRN >
NSTC 2111WALK ACC  >      0.5    0.00000
NSTC 2211PNR ACC   >      0.5   -6.34787
NSTC 2311KNR ACC   >      0.5   -6.20472
NSTC 3011WLK TRN
NSTC 3111WLK CR    >      1.0   -3.30557
NSTC 3211WLK BUS   >      1.0   -4.86676
NSTC 3311WLK BU/MR >      1.0   -3.95911
NSTC 3411WLK METRO >      1.0    0.00000
NSTC 4011PNR TRN
NSTC 4111PNR CR    >      1.0   -8.00397
NSTC 4211PNR BUS   >      1.0   -8.00397
NSTC 4311PNR BU/MR >      1.0   -8.00397
NSTC 4411PNR METRO >      1.0    0.00000
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NSTC 5011KNR TRN
NSTC 5111KNR CR    >      1.0    0.00001
NSTC 5211KNR BUS   >      1.0    0.00001
NSTC 5311KNR BU/MR >      1.0    0.00001
NSTC 5411KNR METRO >      1.0    0.00000
NSTC 6011AUTO
NSTC 6111LOV       >      1.0    0.00000
NSTC 6211HOV       >      0.5   -0.16631
NSTC 7011HOV
NSTC 7111HOV2      >      1.0    0.00000
NSTC 7211HOV3+     >      1.0   -0.51993
* SEGMENT 12
NSTC 1012GRND TOTAL>
NSTC 1112AUTO      >      0.5    0.00000
NSTC 1212TRANSIT   >      0.5   -3.16564
NSTC 2012TOTAL TRN >
NSTC 2112WALK ACC  >      0.5    0.00000
NSTC 2212PNR ACC   >      0.5   -2.80732
NSTC 2312KNR ACC   >      0.5   -2.80732
NSTC 3012WLK TRN
NSTC 3112WLK CR    >      1.0    0.00001
NSTC 3212WLK BUS   >      1.0    2.22451
NSTC 3312WLK BU/MR >      1.0    0.00001
NSTC 3412WLK METRO >      1.0    0.00000
NSTC 4012PNR TRN
NSTC 4112PNR CR    >      1.0    0.00001
NSTC 4212PNR BUS   >      1.0    0.00001
NSTC 4312PNR BU/MR >      1.0    0.00001
NSTC 4412PNR METRO >      1.0    0.00000
NSTC 5012KNR TRN
NSTC 5112KNR CR    >      1.0    0.00001
NSTC 5212KNR BUS   >      1.0    0.00001
NSTC 5312KNR BU/MR >      1.0    0.00001
NSTC 5412KNR METRO >      1.0    0.00000
NSTC 6012AUTO
NSTC 6112LOV       >      1.0    0.00000
NSTC 6212HOV       >      0.5   -0.18288
NSTC 7012HOV
NSTC 7112HOV2      >      1.0    0.00000
NSTC 7212HOV3+     >      1.0   -0.53628
* SEGMENT 13
NSTC 1013GRND TOTAL>
NSTC 1113AUTO      >      0.5    0.00000
NSTC 1213TRANSIT   >      0.5   -1.80912
NSTC 2013TOTAL TRN >
NSTC 2113WALK ACC  >      0.5    0.00000
NSTC 2213PNR ACC   >      0.5   -1.47583
NSTC 2313KNR ACC   >      0.5   -1.43418
NSTC 3013WLK TRN
NSTC 3113WLK CR    >      1.0    0.00001
NSTC 3213WLK BUS   >      1.0    3.68497
NSTC 3313WLK BU/MR >      1.0    3.97378
NSTC 3413WLK METRO >      1.0    0.00000
NSTC 4013PNR TRN
NSTC 4113PNR CR    >      1.0    1.53814
NSTC 4213PNR BUS   >      1.0   10.03267
NSTC 4313PNR BU/MR >      1.0    6.95250
NSTC 4413PNR METRO >      1.0    0.00000
NSTC 5013KNR TRN
NSTC 5113KNR CR    >      1.0    1.19363
NSTC 5213KNR BUS   >      1.0    1.19363
NSTC 5313KNR BU/MR >      1.0    6.68465
NSTC 5413KNR METRO >      1.0    0.00000
NSTC 6013AUTO
NSTC 6113LOV       >      1.0    0.00000
NSTC 6213HOV       >      0.5   -0.31459
NSTC 7013HOV
NSTC 7113HOV2      >      1.0    0.00000
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NSTC 7213HOV3+     >      1.0   -0.67241
* SEGMENT 14
NSTC 1014GRND TOTAL>
NSTC 1114AUTO      >      0.5    0.00000
NSTC 1214TRANSIT   >      0.5   -2.65430
NSTC 2014TOTAL TRN >
NSTC 2114WALK ACC  >      0.5    0.00000
NSTC 2214PNR ACC   >      0.5   -4.63923
NSTC 2314KNR ACC   >      0.5   -4.63923
NSTC 3014WLK TRN
NSTC 3114WLK CR    >      1.0    0.00001
NSTC 3214WLK BUS   >      1.0    0.00001
NSTC 3314WLK BU/MR >      1.0    5.86349
NSTC 3414WLK METRO >      1.0    0.00000
NSTC 4014PNR TRN
NSTC 4114PNR CR    >      1.0    0.00001
NSTC 4214PNR BUS   >      1.0    0.00001
NSTC 4314PNR BU/MR >      1.0    0.00001
NSTC 4414PNR METRO >      1.0    0.00000
NSTC 5014KNR TRN
NSTC 5114KNR CR    >      1.0    0.00001
NSTC 5214KNR BUS   >      1.0    0.00001
NSTC 5314KNR BU/MR >      1.0    0.00001
NSTC 5414KNR METRO >      1.0    0.00000
NSTC 6014AUTO
NSTC 6114LOV       >      1.0    0.00000
NSTC 6214HOV       >      0.5   -0.34538
NSTC 7014HOV
NSTC 7114HOV2      >      1.0    0.00000
NSTC 7214HOV3+     >      1.0   -0.67711
* SEGMENT 15
NSTC 1015GRND TOTAL>
NSTC 1115AUTO      >      0.5    0.00000
NSTC 1215TRANSIT   >      0.5   -0.74635
NSTC 2015TOTAL TRN >
NSTC 2115WALK ACC  >      0.5    0.00000
NSTC 2215PNR ACC   >      0.5   -6.67588
NSTC 2315KNR ACC   >      0.5   -8.66630
NSTC 3015WLK TRN
NSTC 3115WLK CR    >      1.0   -1.94291
NSTC 3215WLK BUS   >      1.0   -2.06732
NSTC 3315WLK BU/MR >      1.0   -3.22270
NSTC 3415WLK METRO >      1.0    0.00000
NSTC 4015PNR TRN
NSTC 4115PNR CR    >      1.0   -3.15609
NSTC 4215PNR BUS   >      1.0   -3.15609
NSTC 4315PNR BU/MR >      1.0   -3.15609
NSTC 4415PNR METRO >      1.0    0.00000
NSTC 5015KNR TRN
NSTC 5115KNR CR    >      1.0   -0.18460
NSTC 5215KNR BUS   >      1.0   -0.18460
NSTC 5315KNR BU/MR >      1.0    5.26367
NSTC 5415KNR METRO >      1.0    0.00000
NSTC 6015AUTO
NSTC 6115LOV       >      1.0    0.00000
NSTC 6215HOV       >      0.5   -0.22152
NSTC 7015HOV
NSTC 7115HOV2      >      1.0    0.00000
NSTC 7215HOV3+     >      1.0   -0.57718
* SEGMENT 16
NSTC 1016GRND TOTAL>
NSTC 1116AUTO      >      0.5    0.00000
NSTC 1216TRANSIT   >      0.5   -2.57017
NSTC 2016TOTAL TRN >
NSTC 2116WALK ACC  >      0.5    0.00000
NSTC 2216PNR ACC   >      0.5  -14.33712
NSTC 2316KNR ACC   >      0.5   -8.94900
NSTC 3016WLK TRN
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NSTC 3116WLK CR    >      1.0    3.02031
NSTC 3216WLK BUS   >      1.0    3.13578
NSTC 3316WLK BU/MR >      1.0    0.14246
NSTC 3416WLK METRO >      1.0    0.00000
NSTC 4016PNR TRN
NSTC 4116PNR CR    >      1.0    0.00001
NSTC 4216PNR BUS   >      1.0   12.15160
NSTC 4316PNR BU/MR >      1.0    0.00001
NSTC 4416PNR METRO >      1.0    0.00000
NSTC 5016KNR TRN
NSTC 5116KNR CR    >      1.0    0.00001
NSTC 5216KNR BUS   >      1.0    8.05342
NSTC 5316KNR BU/MR >      1.0    0.00001
NSTC 5416KNR METRO >      1.0    0.00000
NSTC 6016AUTO
NSTC 6116LOV       >      1.0    0.00000
NSTC 6216HOV       >      0.5   -0.16559
NSTC 7016HOV
NSTC 7116HOV2      >      1.0    0.00000
NSTC 7216HOV3+     >      1.0   -0.51876
* SEGMENT 17
NSTC 1017GRND TOTAL>
NSTC 1117AUTO      >      0.5    0.00000
NSTC 1217TRANSIT   >      0.5    2.33826
NSTC 2017TOTAL TRN >
NSTC 2117WALK ACC  >      0.5    0.00000
NSTC 2217PNR ACC   >      0.5  -11.35282
NSTC 2317KNR ACC   >      0.5  -11.85186
NSTC 3017WLK TRN
NSTC 3117WLK CR    >      1.0  -10.50670
NSTC 3217WLK BUS   >      1.0   -8.21402
NSTC 3317WLK BU/MR >      1.0  -10.50670
NSTC 3417WLK METRO >      1.0    0.00000
NSTC 4017PNR TRN
NSTC 4117PNR CR    >      1.0    2.81746
NSTC 4217PNR BUS   >      1.0    2.81746
NSTC 4317PNR BU/MR >      1.0   12.93293
NSTC 4417PNR METRO >      1.0    0.00000
NSTC 5017KNR TRN
NSTC 5117KNR CR    >      1.0    0.00001
NSTC 5217KNR BUS   >      1.0    0.00001
NSTC 5317KNR BU/MR >      1.0    0.00001
NSTC 5417KNR METRO >      1.0    0.00000
NSTC 6017AUTO
NSTC 6117LOV       >      1.0    0.00000
NSTC 6217HOV       >      0.5   -0.28065
NSTC 7017HOV
NSTC 7117HOV2      >      1.0    0.00000
NSTC 7217HOV3+     >      1.0   -0.64422
* SEGMENT 18
NSTC 1018GRND TOTAL>
NSTC 1118AUTO      >      0.5    0.00000
NSTC 1218TRANSIT   >      0.5  -11.81650
NSTC 2018TOTAL TRN >
NSTC 2118WALK ACC  >      0.5    0.00000
NSTC 2218PNR ACC   >      0.5  -14.99139
NSTC 2318KNR ACC   >      0.5  -11.28975
NSTC 3018WLK TRN
NSTC 3118WLK CR    >      1.0    0.00001
NSTC 3218WLK BUS   >      1.0   24.88739
NSTC 3318WLK BU/MR >      1.0    0.00001
NSTC 3418WLK METRO >      1.0    0.00000
NSTC 4018PNR TRN
NSTC 4118PNR CR    >      1.0    0.00001
NSTC 4218PNR BUS   >      1.0   16.72830
NSTC 4318PNR BU/MR >      1.0    0.00001
NSTC 4418PNR METRO >      1.0    0.00000
NSTC 5018KNR TRN
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NSTC 5118KNR CR    >      1.0    0.00001
NSTC 5218KNR BUS   >      1.0    0.00001
NSTC 5318KNR BU/MR >      1.0    0.00001
NSTC 5418KNR METRO >      1.0    0.00000
NSTC 6018AUTO
NSTC 6118LOV       >      1.0    0.00000
NSTC 6218HOV       >      0.5   -0.23805
NSTC 7018HOV
NSTC 7118HOV2      >      1.0    0.00000
NSTC 7218HOV3+     >      1.0   -0.57596
* SEGMENT 19
NSTC 1019GRND TOTAL>
NSTC 1119AUTO      >      0.5    0.00000
NSTC 1219TRANSIT   >      0.5   -0.58567
NSTC 2019TOTAL TRN >
NSTC 2119WALK ACC  >      0.5    0.00000
NSTC 2219PNR ACC   >      0.5  -12.84796
NSTC 2319KNR ACC   >      0.5  -10.62783
NSTC 3019WLK TRN
NSTC 3119WLK CR    >      1.0   -5.45670
NSTC 3219WLK BUS   >      1.0   -6.58183
NSTC 3319WLK BU/MR >      1.0   -5.09291
NSTC 3419WLK METRO >      1.0    0.00000
NSTC 4019PNR TRN
NSTC 4119PNR CR    >      1.0   -4.87418
NSTC 4219PNR BUS   >      1.0   -4.87418
NSTC 4319PNR BU/MR >      1.0   -4.87418
NSTC 4419PNR METRO >      1.0    0.00000
NSTC 5019KNR TRN
NSTC 5119KNR CR    >      1.0    0.00001
NSTC 5219KNR BUS   >      1.0    0.00001
NSTC 5319KNR BU/MR >      1.0    0.00001
NSTC 5419KNR METRO >      1.0    0.00000
NSTC 6019AUTO
NSTC 6119LOV       >      1.0    0.00000
NSTC 6219HOV       >      0.5   -0.20963
NSTC 7019HOV
NSTC 7119HOV2      >      1.0    0.00000
NSTC 7219HOV3+     >      1.0   -0.57245
* SEGMENT 20
NSTC 1020GRND TOTAL>
NSTC 1120AUTO      >      0.5    0.00000
NSTC 1220TRANSIT   >      0.5   -1.96228
NSTC 2020TOTAL TRN >
NSTC 2120WALK ACC  >      0.5    0.00000
NSTC 2220PNR ACC   >      0.5  -96.77476
NSTC 2320KNR ACC   >      0.5  -97.31764
NSTC 3020WLK TRN
NSTC 3120WLK CR    >      1.0   -2.16669
NSTC 3220WLK BUS   >      1.0   -0.97321
NSTC 3320WLK BU/MR >      1.0  -48.97881
NSTC 3420WLK METRO >      1.0    0.00000
NSTC 4020PNR TRN
NSTC 4120PNR CR    >      1.0    0.00001
NSTC 4220PNR BUS   >      1.0   20.16355
NSTC 4320PNR BU/MR >      1.0    0.00001
NSTC 4420PNR METRO >      1.0    0.00000
NSTC 5020KNR TRN
NSTC 5120KNR CR    >      1.0    0.00001
NSTC 5220KNR BUS   >      1.0   16.44218
NSTC 5320KNR BU/MR >      1.0    0.00001
NSTC 5420KNR METRO >      1.0    0.00000
NSTC 6020AUTO
NSTC 6120LOV       >      1.0    0.00000
NSTC 6220HOV       >      0.5   -0.16130
NSTC 7020HOV
NSTC 7120HOV2      >      1.0    0.00000
NSTC 7220HOV3+     >      1.0   -0.51608
```

```
*DOWNTOWN=8
*SELI             >         8

*UNION STATION=64
*SELI             >        64

* =122
*SELI             >       122

*BETHESDA=345
*SELI             >       345

*SILVER SPRING=362
*SELI             >       362

*N.SILVER SPRING=464
*SELI             >       464

* =475
*SELI             >       475

*SHADY GROVE RD=578
*SELI             >       578

* =787
*SELI             >       787

*ANDREWS AFB=829
*SELI             >       829

*NEW CARROLTON=927
*SELI             >       927

*BRISTOL=972
*SELI             >       972

*FREDERICK=1043
*SELI             >      1043

*JESSUP=1080
*SELI             >      1080

*SCAGGSVILLE=1091
*SELI             >      1091

*WALDORF=1216
*SELI             >      1216

*PENTAGON=1231
*SELI             >      1231

*ROSSLYN=1236
*SELI             >      1236

*ALEXANDRIA=1337
*SELI             >      1337

* =1455
*SELI             >      1455

*SPRINGFIELD=1502
*SELI             >      1502

*  =1511
*SELI             >      1511

*TYSONS CRNR=1537
```

```
*SELI               >      1537

*FT BELVOIR=1554
*SELI               >      1554

*VIENNA=1619
*SELI               >      1619

*DULES AP=1698
*SELI               >      1698

*RESTON=1716
*SELI               >      1716

*LEESBURG=1842
*SELI               >      1842

*BRUNSWICK=1863
*SELI               >      1863

*DALE CITY=1942
*SELI               >      1942

*MANASSAS=1967
*SELI               >      1967

*SPOTSYLVANIA=2110
*SELI               >      2110

* =2055
*SELI               >      2055

*SELJ               >         8
*SELJ               >        63
*SELJ               >        64
*SELJ               >        77
*SELJ               >       100
*SELJ               >       344
*SELJ               >       345
*SELJ               >       362
*SELJ               >      1231
*SELJ               >      1236
*SELJ               >      1265
*SELJ               >      1337
*SELJ               >      1537
*SELI               >  523
*SELJ               >    9

TRACE              >         0
* OUTPUT %           >
*PROCSEL            >
PRINT MS           >HBS_NL_MC.PRN
INPUT PRINT FILE   >HBS_NL_MC.PRN
INPUT GOALS        >HBS_NL_MC.GOL
INFILE 1           >hbs_income.ptt
INFILE 2           >hwyop.skm
INFILE 3           >TRNOP_CR.SKM
INFILE 4           >TRNOP_AB.SKM
INFILE 5           >TRNOP_MR.SKM
INFILE 6           >TRNOP_BM.SKM
ZINFILE 8          >ZONEV2.A2F
OUTFILE 9          >HBS_NL_MC.MTT


* FTA USER BENEFITS SPECIFICATIONS
*FTA RESULTS FILE   >HBS_NL_MC.BEN
FTA TRANSIT COEFF  >-0.02168
FTA AUTO COEFF     >-0.02168
```

```
FTA PURPOSE NAME   >HBO
FTA PERIOD NAME    >ALLDAY
FTA ALTER. NAME    >CALIB
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
FTA AUTO NEST      >         1         1
FTA MOTORIZED?    1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
FTA TRANSIT?      1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
```

3 hbo_nl_mc.ctl

```
HBO OP NESTED LOGIT MC - #DATE:  2/15/2011 #VER:  21
CHOICE            1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
*
*
*LOGIT COEFFICIENTS BY CHOICE FOR EACH SKIM (NO INPUT SKIM IS
*EQUIVALENT TO A CONSTANT)
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
COEF01:IVTT       1>-0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322  -0.02322
SKIM01:IVTT       1>DAIV      S2IV      S3IV      WCIV      WBIV      WTIV      WMIV      PCIV      KCIV      PBIV      KBIV      PTIV      KTIV      PMIV      KMIV
COEF02:AUTO ACC   1>                                                                      -0.03483  -0.03483  -0.03483  -0.03483  -0.03483  -0.03483  -0.03483  -0.03483
SKIM02:AUTO ACC   1>                                                                      PCAA      KCAA      PBAA      KBAA      PTAA      KTAA      PMAA      KMAA
COEF03:TERM/OVTT  1>-0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805
SKIM03:TERM/OVTT  1>DATE      S2TE      S3TE      WCOV      WBOV      WTOV      WMOV      PCOV      KCOV      PBOV      KBOV      PTOV      KTOV      PMOV      KMOV
* LIMIT COEF 04 TO PURPOSE 1
COEF PURP04        >1
COEF04:COST INC1  1>-0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202  -0.00202
SKIM04:COST INC1  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 05 TO PURPOSE 2
COEF PURP05        >2
COEF05:COST INC2  1>-0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101  -0.00101
SKIM05:COST INC2  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 06 TO PURPOSE 3
COEF PURP06        >3
COEF06:COST INC3  1>-0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067  -0.00067
SKIM06:COST INC3  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF PURP07        >4
* LIMIT COEF 07 TO PURPOSE 4
COEF07:COST INC4  1>-0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051  -0.00051
SKIM07:COST INC4  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF08:TRN XFERS  1>                              -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000
SKIM08:TRN XFERS  1>                              WCXF      WBXF      WTXF      WMXF      PCXF      KCXF      PBXF      KBXF      PTXF      KTXF      PMXF      KMXF
COEF09:TRN BRDPEN 1>                              -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805  -0.05805
SKIM09:TRN BRDPEN 1>                              WCXP      WBXP      WTXP      WMXP      PCXP      KCXP      PBXP      KBXP      PTXP      KTXP      PMXP      KMXP
*WALK WEIGHT
COEF10:TRN WLKWT  1>                              -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644  -0.04644
SKIM10:TRN WLKWT  1>                              WCWK      WBWK      WTWK      WMWK      PCWK      KCWK      PBWK      KBWK      PTWK      KTWK      PMWK      KMWK

*SYNTAX TO LIMIT UTILITY ELEMENT TO A PARTICULAR WALK SEGMENT IN THIS EXAMPLE
*    COEF 18 APPLIES ONLY TO WALK SEGMENT 1
*COEF WLKSEG18      >1

* ASSUMED MATRIX ORGANIZATION
* FILE 1 TRIP TABLE (SEPARATE FOR EACH PURPOSE)
* 1 INCOME 1 (HOME-BASED)/ALL NHB TRIPS
* 2 INCOME 2 (HOME-BASED)
* 3 INCOME 3 (HOME-BASED)
* 4 INCOME 4 (HOME-BASED)
*
* FILE 2 HIGHWAY SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* 1 SOV   TIME (MIN)
* 2 SOV   DIST (0.1 MILES)
* 3 SOV   TOLL (2007 CENTS)
* 4 HOV2  TIME (MIN)
* 5 HOV2  DIST (0.1 MILES)
```

```
* 6 HOV2  TOLL (2007 CENTS)
* 7 HOV3+ TIME (MIN)
* 8 HOV3+ DIST (0.1 MILES)
* 9 HOV3+ TOLL (2007 CENTS)
*
* FILE 3=COM. RAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 4=BUS SKIMS       (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 5=METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 6=BUS+METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
*  1 WLK ACC/EGR (.01 MIN)  15 PNR ACC/EGR (.01 MIN)  33 KNR ACC/EGR  (.01 MIN)
*  2 WLK OTHER   (.01 MIN)  16 PNR OTHER   (.01 MIN)  34 KNR OTHER   (.01 MIN)
*  3 WLK IWAIT   (.01 MIN)  17 PNR IWAIT   (.01 MIN)  35 KNR IWAIT   (.01 MIN)
*  4 WLK XWAIT   (.01 MIN)  18 PNR XWAIT   (.01 MIN)  36 KNR XWAIT   (.01 MIN)
*  5 WLK IVTT TOT(.01 MIN)  19 PNR IVTT TOT(.01 MIN)  37 KNR IVTT TOT(.01 MIN)
*  6 WLK IVTT CR (.01 MIN)  20 PNR IVTT CR (.01 MIN)  38 KNR IVTT CR (.01 MIN)
*  7 WLK IVTT XB (.01 MIN)  21 PNR IVTT XB (.01 MIN)  39 KNR IVTT XB (.01 MIN)
*  8 WLK IVTT MR (.01 MIN)  22 PNR IVTT MR (.01 MIN)  40 KNR IVTT MR (.01 MIN)
*  9 WLK IVTT NM (.01 MIN)  23 PNR IVTT NM (.01 MIN)  41 KNR IVTT NM (.01 MIN)
* 10 WLK IVTT NM2(.01 MIN)  24 PNR IVTT NM2(.01 MIN)  42 KNR IVTT NM2(.01 MIN)
* 11 WLK IVTT LB (.01 MIN)  25 PNR IVTT LB (.01 MIN)  43 KNR IVTT LB (.01 MIN)
* 12 WLK #XFERS  (NUMBER )  26 PNR #XFERS  (NUMBER )  44 KNR #XFERS  (NUMBER )
* 13 WLK COST    (07CENTS)  27 PNR COST    (07CENTS)  45 KNR COST    (07CENTS)
* 14 WLK XPEN    (.01 MIN)  28 PNR XPEN    (.01 MIN)  46 KNR XPEN    (.01 MIN)
*                           29 PNR ACC TIME(.01 MIN)  47 KNR ACC TIME(.01 MIN)
*                           30 PNR ACC DIST(.01 MIL)  48 KNR ACC DIST(.01 MIL)
*                           31 PNR ACC COST(07CENTS)
*                           32 PNR STA TERM(.01 MIN)
*
* FILE 8=ZDATA
*  1 HBW PARK COST (2007 CENTS)
*  2 HBS PARK COST (2007 CENTS)
*  3 HBO PARK COST (2007 CENTS)
*  4 NHB PARK COST (2007 CENTS)
*  5 TERMINAL TIME (HOME BASED) (MINUTES)
*  6 TERMINAL TIME (NON HOME BASED) (MINUTES)
*  7 ARC VIEW SHORT WALK PERCENT TO METRO
*  8 ARC VIEW LONG WALK PERCENT TO METRO
*  9 ARC VIEW SHORT WALK PERCENT TO ALL AM PK TRANSIT
* 10 ARC VIEW LONG WALK PERCENT TO ALL AM PK TRANSIT
* 11 ARC VIEW SHORT WALK PERCENT TO ALL OP TRANSIT
* 12 ARC VIEW LONG WALK PERCENT TO ALL OP TRANSIT
* 13 AREA TYPE
*    1=DC CORE
*    2=VA CORE
*    3=DC URBAN
*    4=MD URBAN
*    5=VA URBAN
*    6=MD OTHER
*    7=VA OTHER

* PARAMETERS
*=======================================================
* AUTO OPERATING COSTS IN CENTS/mile
COMPUTE AUOP       >10
* AUTO OCCUPANCY FOR 3+   Reduced from 3.5 to 3.35 on 3/1/07 rm
COMPUTE OCC3       >3.35

* TERMINAL TIMES, USE i/j805 FOR HBW, HBS, AND HBO. USE i/j806 FOR NHB
* HBW/HBS/HBO
COMPUTE TERI       >i805
COMPUTE TERJ       >j805
* NHB
*COMPUTE TERI       >i806
*COMPUTE TERJ       >j806

* PARK COSTS, USE i/j801 802 803 804 FOR HBW, HBS, HBO, NHB RESPECTIVELY
* HBW
*COMPUTE PRKC       >j801/2.
```

```
* HBS
* COMPUTE PRKC       >j802/2.
* HBO
COMPUTE PRKC       >j803/2.
* NHB
* COMPUTE PRKC       >j804

* Percent of productions in long-walk area that are assumed to walk = 25% (i.e., 75% drive)
COMPUTE PCLM       >0.25
COMPUTE PCLT       >0.25
* PERCENT WALKS-METRORAIL ONLY
COMPUTE PCMI       >(i807+PCLM*(i808-i807))/100.
COMPUTE PCMJ       >(j807+PCLM*(j808-j807))/100.
* PERCENT WALKS-PEAK
*COMPUTE PCTI       >(i809+PCLT*(i810-i809))/100.
*COMPUTE PCTJ       >(j809+PCLT*(j810-j809))/100.
* PERCENT WALKS-OFFPEAK
COMPUTE PCTI       >(i811+PCLT*(i812-i811))/100.
COMPUTE PCTJ       >(j811+PCLT*(j812-j811))/100.
COMPUTE PCMI       >MAX(PCMI,0)
COMPUTE PCMI       >MIN(PCMI,1)
COMPUTE PCMJ       >MAX(PCMJ,0)
COMPUTE PCMJ       >MIN(PCMJ,1)
COMPUTE PCTI       >MAX(PCTI,PCMI)
COMPUTE PCTI       >MIN(PCTI,1)
COMPUTE PCTJ       >MAX(PCTJ,PCMJ)
COMPUTE PCTJ       >MIN(PCTJ,1)
*
* DO TRIP SUBDIVISIONS
*
*  HOME BASED ALTERNATIVES
COMPUTE TRP1       >m101
COMPUTE TRP2       >m102
COMPUTE TRP3       >m103
COMPUTE TRP4       >m104
* NON-HOME BASED
*COMPUTE TRP1       >0.25*m101
*COMPUTE TRP2       >0.25*m101
*COMPUTE TRP3       >0.25*m101
*COMPUTE TRP4       >0.25*m101
*
* BE SURE TO UPDATE THE IVTT COEFFICIENT IN FTA SECTION FOR EACH PURPOSE
*
*=======================================================
*INITIALIZING ALL VARIABLES WITHIN IF STATEMENTS TO ZERO
COMPUTE DAIV       >0
COMPUTE DACS       >0
COMPUTE DATE       >0
COMPUTE S2IV       >0
COMPUTE S2CS       >0
COMPUTE S2TE       >0
COMPUTE S3IV       >0
COMPUTE S3CS       >0
COMPUTE S3TE       >0
COMPUTE WKIV       >0
COMPUTE WKOV       >0
COMPUTE WKXF       >0
COMPUTE WKCS       >0
COMPUTE WKXP       >0
COMPUTE WBIV       >0
COMPUTE WBOV       >0
COMPUTE WBXF       >0
COMPUTE WBCS       >0
COMPUTE WBXP       >0
COMPUTE WTIV       >0
COMPUTE WTOV       >0
COMPUTE WTXF       >0
COMPUTE WTCS       >0
```

```
COMPUTE WTXP       >0
COMPUTE WMIV       >0
COMPUTE WMOV       >0
COMPUTE WMXF       >0
COMPUTE WMCS       >0
COMPUTE WMXP       >0
COMPUTE PCIV       >0
COMPUTE PCAA       >0
COMPUTE PCOV       >0
COMPUTE PCXF       >0
COMPUTE PCCS       >0
COMPUTE PCXP       >0
COMPUTE PBIV       >0
COMPUTE PBAA       >0
COMPUTE PBOV       >0
COMPUTE PBXF       >0
COMPUTE PBCS       >0
COMPUTE PBXP       >0
COMPUTE PTIV       >0
COMPUTE PTAA       >0
COMPUTE PTOV       >0
COMPUTE PTXF       >0
COMPUTE PTCS       >0
COMPUTE PTXP       >0
COMPUTE PMIV       >0
COMPUTE PMAA       >0
COMPUTE PMOV       >0
COMPUTE PMXF       >0
COMPUTE PMCS       >0
COMPUTE PMXP       >0
COMPUTE KCIV       >0
COMPUTE KCAA       >0
COMPUTE KCOV       >0
COMPUTE KCXF       >0
COMPUTE KCCS       >0
COMPUTE KCXP       >0
COMPUTE KBIV       >0
COMPUTE KBAA       >0
COMPUTE KBOV       >0
COMPUTE KBXF       >0
COMPUTE KBCS       >0
COMPUTE KBXP       >0
COMPUTE KTIV       >0
COMPUTE KTAA       >0
COMPUTE KTOV       >0
COMPUTE KTXF       >0
COMPUTE KTCS       >0
COMPUTE KTXP       >0
COMPUTE KMIV       >0
COMPUTE KMAA       >0
COMPUTE KMOV       >0
COMPUTE KMXF       >0
COMPUTE KMCS       >0
COMPUTE KMXP       >0

COMPUTE WCWK       >0
COMPUTE WBWK       >0
COMPUTE WTWK       >0
COMPUTE WMWK       >0
COMPUTE PCWK       >0
COMPUTE KCWK       >0
COMPUTE PBWK       >0
COMPUTE KBWK       >0
COMPUTE PTWK       >0
COMPUTE KTWK       >0
COMPUTE PMWK       >0
COMPUTE KMWK       >0
```

```
* SKIM VALUES, Divide distances by 10 to convert tenths of miles to whole miles
* DRIVE ALONE
COMPUTE            >IF(m201>0)
COMPUTE DAIV       >m201
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(m204>0)
COMPUTE S2IV       >m204
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(m207>0)
COMPUTE S3IV       >m207
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

* Assign Intrazonal trips to Autos (mj11/04/05)
COMPUTE            >IF(P()=Q())
COMPUTE DAIV       >1
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(P()=Q())
COMPUTE S2IV       >1
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(P()=Q())
COMPUTE S3IV       >1
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

*End of Intrazonal trips

* WALK COMMUTER RAIL
COMPUTE            >IF(m305>0)
COMPUTE WCIV       >m305/100.
COMPUTE WCOV       >(m303+m304)/100.
COMPUTE WCXF       >m312
COMPUTE WCCS       >m313
COMPUTE WCXP       >m314/100.
COMPUTE WCWK       >(m301+m302)/100.
COMPUTE            >ENDIF

* WALK BUS
COMPUTE            >IF(m405>0)
COMPUTE WBIV       >m405/100.
COMPUTE WBOV       >(m403+m404)/100.
COMPUTE WBXF       >m412
COMPUTE WBCS       >m413
COMPUTE WBXP       >m414/100.
COMPUTE WBWK       >(m401+m402)/100.
COMPUTE            >ENDIF

* WALK BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m605>0)
COMPUTE WTIV       >m605/100.
```

```
COMPUTE WTOV       >(m603+m604)/100.
COMPUTE WTXF       >m612
COMPUTE WTCS       >m613
COMPUTE WTXP       >m614/100.
COMPUTE WTWK       >(m601+m602)/100.
COMPUTE            >ENDIF


* WALK METRORAIL
COMPUTE            >IF(m505>0)
COMPUTE WMIV       >m505/100.
COMPUTE WMOV       >(m503+m504)/100.
COMPUTE WMXF       >m512
COMPUTE WMCS       >m513
COMPUTE WMXP       >m514/100.
COMPUTE WMWK       >(m501+m502)/100.
COMPUTE            >ENDIF

* PNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE PCIV       >m319/100.
COMPUTE PCAA       >m329/100.
COMPUTE PCOV       >(m317+m318+m332)/100.
COMPUTE PCXF       >m326
COMPUTE PCCS       >m327+m331+m330/100*AUOP
COMPUTE PCXP       >m328/100.
COMPUTE PCWK       >(m315+m316)/100.
COMPUTE            >ENDIF

* PNR BUS
COMPUTE            >IF(m419>0)
COMPUTE PBIV       >m419/100.
COMPUTE PBAA       >m429/100.
COMPUTE PBOV       >(m417+m418+m432)/100.
COMPUTE PBXF       >m426
COMPUTE PBCS       >m427+m431+m430/100*AUOP
COMPUTE PBXP       >m428/100.
COMPUTE PBWK       >(m415+m416)/100.
COMPUTE            >ENDIF

* PNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m619>0)
COMPUTE PTIV       >m619/100.
COMPUTE PTAA       >m629/100.
COMPUTE PTOV       >(m617+m618+m632)/100.
COMPUTE PTXF       >m626
COMPUTE PTCS       >m627+m631+m630/100*AUOP
COMPUTE PTXP       >m628/100.
COMPUTE PTWK       >(m615+m616)/100.
COMPUTE            >ENDIF


* PNR METRORAIL
COMPUTE            >IF(m519>0)
COMPUTE PMIV       >m519/100.
COMPUTE PMAA       >m529/100.
COMPUTE PMOV       >(m517+m518+m532)/100.
COMPUTE PMXF       >m526
COMPUTE PMCS       >m527+m531+m530/100*AUOP
COMPUTE PMXP       >m528/100.
COMPUTE PMWK       >(m515+m516)/100.
COMPUTE            >ENDIF


* KNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE KCIV       >m319/100.
COMPUTE KCAA       >m329/100.
```

```
COMPUTE KCOV       >(m317+m318)/100.
COMPUTE KCXF       >m326
COMPUTE KCCS       >m327+m330/100*AUOP
COMPUTE KCXP       >m328/100.
COMPUTE KCWK       >(m315+m316)/100.
COMPUTE            >ENDIF


* KNR BUS
COMPUTE            >IF(m437>0)
COMPUTE KBIV       >m437/100.
COMPUTE KBAA       >m447/100.
COMPUTE KBOV       >(m435+m436)/100.
COMPUTE KBXF       >m444
COMPUTE KBCS       >m445+m448/100*AUOP
COMPUTE KBXP       >m446/100.
COMPUTE KBWK       >(m433+m434)/100.
COMPUTE            >ENDIF

* KNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m637>0)
COMPUTE KTIV       >m637/100.
COMPUTE KTAA       >m647/100.
COMPUTE KTOV       >(m635+m636)/100.
COMPUTE KTXF       >m644
COMPUTE KTCS       >m645+m648/100*AUOP
COMPUTE KTXP       >m646/100.
COMPUTE KTWK       >(m633+m634)/100.
COMPUTE            >ENDIF


* KNR METRORAIL
COMPUTE            >IF(m537>0)
COMPUTE KMIV       >m537/100.
COMPUTE KMAA       >m547/100.
COMPUTE KMOV       >(m535+m536)/100.
COMPUTE KMXF       >m544
COMPUTE KMCS       >m545+m548/100*AUOP
COMPUTE KMXP       >m546/100.
COMPUTE KMWK       >(m533+m534)/100.
COMPUTE            >ENDIF

*CONSTANTS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
PURP01 1INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 1INC 2     1>
PURP03 1INC 3     1>
PURP04 1INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 2INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 2INC 2     1>
PURP03 2INC 3     1>
PURP04 2INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 3INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 3INC 2     1>
PURP03 3INC 3     1>
PURP04 3INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 4INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 4INC 2     1>
PURP03 4INC 3     1>
PURP04 4INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 5INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 5INC 2     1>
PURP03 5INC 3     1>
PURP04 5INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
PURP01 6INC 1     1>                              2.000000  2.000000  2.000000  2.000000
PURP02 6INC 2     1>
PURP03 6INC 3     1>
PURP04 6INC 4     1>                              -2.00000  -2.00000  -2.00000  -2.00000
```

```
PURP01 7INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP02 7INC 2     1>
PURP03 7INC 3     1>
PURP04 7INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP01 8INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP02 8INC 2     1>
PURP03 8INC 3     1>
PURP04 8INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP01 9INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP02 9INC 2     1>
PURP03 9INC 3     1>
PURP04 9INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0110INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0210INC 2     1>
PURP0310INC 3     1>
PURP0410INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0111INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0211INC 2     1>
PURP0311INC 3     1>
PURP0411INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0112INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0212INC 2     1>
PURP0312INC 3     1>
PURP0412INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0113INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0213INC 2     1>
PURP0313INC 3     1>
PURP0413INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0114INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0214INC 2     1>
PURP0314INC 3     1>
PURP0414INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0115INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0215INC 2     1>
PURP0315INC 3     1>
PURP0415INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0116INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0216INC 2     1>
PURP0316INC 3     1>
PURP0416INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0117INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0217INC 2     1>
PURP0317INC 3     1>
PURP0417INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0118INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0218INC 2     1>
PURP0318INC 3     1>
PURP0418INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0119INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0219INC 2     1>
PURP0319INC 3     1>
PURP0419INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000
PURP0120INC 1     1>                            2.000000  2.000000  2.000000  2.000000
PURP0220INC 2     1>
PURP0320INC 3     1>
PURP0420INC 4     1>                            -2.00000  -2.00000  -2.00000  -2.00000

TRIPIN01           >TRP1
TRIPIN02           >TRP2
TRIPIN03           >TRP3
TRIPIN04           >TRP4
TRIPIFACT01        >tfi1
TRIPIFACT02        >tfi2
TRIPIFACT03        >tfi3
TRIPIFACT04        >tfi4
COMPUTE tfi1       >1.0
COMPUTE tfi2       >1.0
COMPUTE tfi3       >1.0
```

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COMPUTE tfi4       >1.0

*
*OUTPUT MATRICES AND OUTPUT FACTORS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
TRIPOUT01         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT01        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT02         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT02        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT03         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT03        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT04         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT04        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
**
**P AND A WALK PERCENTS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
WALK SEG CW 1 PCT 1>WSWM
WALK SEG CW 1 MODE1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 2 PCT 1>WSW1
WALK SEG CW 2 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 3 PCT 1>WSW2
WALK SEG CW 3 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG CW 4 PCT 1>WSW3
WALK SEG CW 4 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG MD 5 PCT 1>WSM1
WALK SEG MD 5 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG MD 6 PCT 1>WSM2
WALK SEG MD 6 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y
WALK SEG NT 7 PCT 1>WSNT
WALK SEG NT 7 MODE1>Y         Y         Y
*SYNTAX OF COMMAND TO ADD A COMPONENT TO A SPECIFIC WALK SEGMENT IF DESIRED
*WALK SEG CW 1 COEF1>                              -0.04747  -0.04747  -0.04747  -0.04747  -0.04747  -0.04747
*WALK SEG CW 1 VAR 1>                              WTSS      DTSS      DISS      WRSS      DRSS      DJSS
COMPUTE WSWM       >PCMI*PCMJ
COMPUTE WSW1       >(PCTI-PCMI)*PCMJ
COMPUTE WSW2       >(PCTI-PCMI)*(PCTJ-PCMJ)
COMPUTE WSW3       >PCMI*(PCTJ-PCMJ)
COMPUTE WSM1       >(1-PCTI)*PCMJ
COMPUTE WSM2       >(1-PCTI)*(PCTJ-PCMJ)
COMPUTE WSNT       >1-WSWM-WSW1-WSW2-WSW3-WSM1-WSM2

*NEST DEFINITIONS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
NEST 1,1=         1>Y         Y         Y
NEST 1,2=         1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
NEST 2,1=         1>                              Y         Y         Y         Y
NEST 2,2=         1>                                                                      Y                   Y                   Y                   Y
NEST 2,3=         1>                                                                                Y                   Y                   Y                   Y
NEST 3,1=         1>                              Y
NEST 3,2=         1>                                        Y
NEST 3,3=         1>                                                  Y
NEST 3,4=         1>                                                            Y
NEST 4,1          1>                                                                      Y
NEST 4,2          1>                                                                                          Y
NEST 4,3          1>                                                                                                              Y
NEST 4,4          1>                                                                                                                                  Y
NEST 5,1          1>                                                                                Y
NEST 5,2          1>                                                                                                    Y
NEST 5,3          1>                                                                                                                        Y
NEST 5,4          1>                                                                                                                                            Y
NEST 6,1          1>Y
NEST 6,2          1>          Y         Y
NEST 7,1          1>          Y
NEST 7,2          1>                    Y

IGRP DEFINITION    >i813
JGRP DEFINITION    >j813
* 1 DC CORE/URBAN-DC CORE
```

```
SEGMENT  1         >    1    1
SEGMENT  1         >    3    1
* 2 DC CORE/URBAN-VA CORE
SEGMENT  2         >    1    2
SEGMENT  2         >    3    2
* 3 DC CORE/URBAN-URBAN
SEGMENT  3         >    1    3
SEGMENT  3         >    3    3
SEGMENT  3         >    1    4
SEGMENT  3         >    3    4
SEGMENT  3         >    1    5
SEGMENT  3         >    3    5
* 4 DC CORE/URBAN-OTHER
SEGMENT  4         >    1    6
SEGMENT  4         >    3    6
SEGMENT  4         >    1    7
SEGMENT  4         >    3    7
* 5 MD URBAN-DC CORE
SEGMENT  5         >    4    1
* 6 MD URBAN-VA CORE
SEGMENT  6         >    4    2
* 7 MD URBAN-URBAN
SEGMENT  7         >    4    3
SEGMENT  7         >    4    4
SEGMENT  7         >    4    5
* 8 MD URBAN-OTHER
SEGMENT  8         >    4    6
SEGMENT  8         >    4    7
* 9 VA CORE/URBAN-DC CORE
SEGMENT  9         >    2    1
SEGMENT  9         >    5    1
*10 VA CORE/URBAN-VA CORE
SEGMENT 10         >    2    2
SEGMENT 10         >    5    2
*11 VA CORE/URBAN-URBAN
SEGMENT 11         >    2    3
SEGMENT 11         >    5    3
SEGMENT 11         >    2    4
SEGMENT 11         >    5    4
SEGMENT 11         >    2    5
SEGMENT 11         >    5    5
*12 VA CORE/URBAN-OTHER
SEGMENT 12         >    2    6
SEGMENT 12         >    5    6
SEGMENT 12         >    2    7
SEGMENT 12         >    5    7
*13 MD OTHER-DC CORE
SEGMENT 13         >    6    1
*14 MD OTHER-VA CORE
SEGMENT 14         >    6    2
*15 MD OTHER-URBAN
SEGMENT 15         >    6    3
SEGMENT 15         >    6    4
SEGMENT 15         >    6    5
*16 MD OTHER-OTHER
SEGMENT 16         >    6    6
SEGMENT 16         >    6    7
*17 VA OTHER-DC CORE
SEGMENT 17         >    7    1
*18 VA OTHER-VA CORE
SEGMENT 18         >    7    2
*19 VA OTHER-URBAN
SEGMENT 19         >    7    3
SEGMENT 19         >    7    4
SEGMENT 19         >    7    5
*20 VA OTHER-OTHER
SEGMENT 20         >    7    6
SEGMENT 20         >    7    7
```

```
* SEGMENT  1
NSTC 10 1GRND TOTAL>
NSTC 11 1AUTO      >      0.5    0.00000
NSTC 12 1TRANSIT   >      0.5    0.28790
NSTC 20 1TOTAL TRN >
NSTC 21 1WALK ACC  >      0.5    0.00000
NSTC 22 1PNR ACC   >      0.5   -3.11917
NSTC 23 1KNR ACC   >      0.5   -6.71996
NSTC 30 1WLK TRN
NSTC 31 1WLK CR    >      1.0   -0.51332
NSTC 32 1WLK BUS   >      1.0   -1.29548
NSTC 33 1WLK BU/MR >      1.0    0.70792
NSTC 34 1WLK METRO >      1.0    0.00000
NSTC 40 1PNR TRN
NSTC 41 1PNR CR    >      1.0   -0.14642
NSTC 42 1PNR BUS   >      1.0   -2.50638
NSTC 43 1PNR BU/MR >      1.0    0.93627
NSTC 44 1PNR METRO >      1.0    0.00000
NSTC 50 1KNR TRN
NSTC 51 1KNR CR    >      1.0    1.35815
NSTC 52 1KNR BUS   >      1.0    5.00578
NSTC 53 1KNR BU/MR >      1.0    8.98320
NSTC 54 1KNR METRO >      1.0    0.00000
NSTC 60 1AUTO
NSTC 61 1LOV       >      1.0    0.00000
NSTC 62 1HOV       >      0.5    0.17097
NSTC 70 1HOV
NSTC 71 1HOV2      >      1.0    0.00000
NSTC 72 1HOV3+     >      1.0   -0.45837
* SEGMENT  2
NSTC 10 2GRND TOTAL>
NSTC 11 2AUTO      >      0.5    0.00000
NSTC 12 2TRANSIT   >      0.5    1.41884
NSTC 20 2TOTAL TRN >
NSTC 21 2WALK ACC  >      0.5    0.00000
NSTC 22 2PNR ACC   >      0.5   -3.11114
NSTC 23 2KNR ACC   >      0.5   -5.47799
NSTC 30 2WLK TRN
NSTC 31 2WLK CR    >      1.0   -1.10797
NSTC 32 2WLK BUS   >      1.0  -10.16750
NSTC 33 2WLK BU/MR >      1.0   -3.84958
NSTC 34 2WLK METRO >      1.0    0.00000
NSTC 40 2PNR TRN
NSTC 41 2PNR CR    >      1.0    0.00001
NSTC 42 2PNR BUS   >      1.0    0.00001
NSTC 43 2PNR BU/MR >      1.0    0.00001
NSTC 44 2PNR METRO >      1.0    0.00000
NSTC 50 2KNR TRN
NSTC 51 2KNR CR    >      1.0    0.08861
NSTC 52 2KNR BUS   >      1.0    4.38995
NSTC 53 2KNR BU/MR >      1.0    0.08861
NSTC 54 2KNR METRO >      1.0    0.00000
NSTC 60 2AUTO
NSTC 61 2LOV       >      1.0    0.00000
NSTC 62 2HOV       >      0.5    0.24126
NSTC 70 2HOV
NSTC 71 2HOV2      >      1.0    0.00000
NSTC 72 2HOV3+     >      1.0   -0.40077
* SEGMENT  3
NSTC 10 3GRND TOTAL>
NSTC 11 3AUTO      >      0.5    0.00000
NSTC 12 3TRANSIT   >      0.5    0.16559
NSTC 20 3TOTAL TRN >
NSTC 21 3WALK ACC  >      0.5    0.00000
NSTC 22 3PNR ACC   >      0.5   -4.25246
NSTC 23 3KNR ACC   >      0.5   -6.69901
NSTC 30 3WLK TRN
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NSTC 31 3WLK CR    >      1.0   -0.79014
NSTC 32 3WLK BUS   >      1.0   -1.09477
NSTC 33 3WLK BU/MR >      1.0   -0.46336
NSTC 34 3WLK METRO >      1.0    0.00000
NSTC 40 3PNR TRN
NSTC 41 3PNR CR    >      1.0   -0.60083
NSTC 42 3PNR BUS   >      1.0   -4.21430
NSTC 43 3PNR BU/MR >      1.0    1.08829
NSTC 44 3PNR METRO >      1.0    0.00000
NSTC 50 3KNR TRN
NSTC 51 3KNR CR    >      1.0    0.59195
NSTC 52 3KNR BUS   >      1.0    1.92440
NSTC 53 3KNR BU/MR >      1.0    1.14715
NSTC 54 3KNR METRO >      1.0    0.00000
NSTC 60 3AUTO
NSTC 61 3LOV       >      1.0    0.00000
NSTC 62 3HOV       >      0.5    0.24583
NSTC 70 3HOV
NSTC 71 3HOV2      >      1.0    0.00000
NSTC 72 3HOV3+     >      1.0   -0.39568
* SEGMENT  4
NSTC 10 4GRND TOTAL>
NSTC 11 4AUTO      >      0.5    0.00000
NSTC 12 4TRANSIT   >      0.5    0.58692
NSTC 20 4TOTAL TRN >
NSTC 21 4WALK ACC  >      0.5    0.00000
NSTC 22 4PNR ACC   >      0.5   -3.41877
NSTC 23 4KNR ACC   >      0.5   -4.41463
NSTC 30 4WLK TRN
NSTC 31 4WLK CR    >      1.0   -0.21903
NSTC 32 4WLK BUS   >      1.0   -5.48558
NSTC 33 4WLK BU/MR >      1.0   -4.56740
NSTC 34 4WLK METRO >      1.0    0.00000
NSTC 40 4PNR TRN
NSTC 41 4PNR CR    >      1.0   -5.30874
NSTC 42 4PNR BUS   >      1.0   -0.88638
NSTC 43 4PNR BU/MR >      1.0   -5.30874
NSTC 44 4PNR METRO >      1.0    0.00000
NSTC 50 4KNR TRN
NSTC 51 4KNR CR    >      1.0   11.48762
NSTC 52 4KNR BUS   >      1.0   -1.78786
NSTC 53 4KNR BU/MR >      1.0   -2.56299
NSTC 54 4KNR METRO >      1.0    0.00000
NSTC 60 4AUTO
NSTC 61 4LOV       >      1.0    0.00000
NSTC 62 4HOV       >      0.5    0.22955
NSTC 70 4HOV
NSTC 71 4HOV2      >      1.0    0.00000
NSTC 72 4HOV3+     >      1.0   -0.41154
* SEGMENT  5
NSTC 10 5GRND TOTAL>
NSTC 11 5AUTO      >      0.5    0.00000
NSTC 12 5TRANSIT   >      0.5    3.06467
NSTC 20 5TOTAL TRN >
NSTC 21 5WALK ACC  >      0.5    0.00000
NSTC 22 5PNR ACC   >      0.5   -7.52891
NSTC 23 5KNR ACC   >      0.5   -9.76239
NSTC 30 5WLK TRN
NSTC 31 5WLK CR    >      1.0   -2.42067
NSTC 32 5WLK BUS   >      1.0   -7.81660
NSTC 33 5WLK BU/MR >      1.0   -4.68084
NSTC 34 5WLK METRO >      1.0    0.00000
NSTC 40 5PNR TRN
NSTC 41 5PNR CR    >      1.0    0.26010
NSTC 42 5PNR BUS   >      1.0    0.26010
NSTC 43 5PNR BU/MR >      1.0   14.31677
NSTC 44 5PNR METRO >      1.0    0.00000
NSTC 50 5KNR TRN
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NSTC 51 5KNR CR    >      1.0    0.85516
NSTC 52 5KNR BUS   >      1.0    0.85516
NSTC 53 5KNR BU/MR >      1.0   14.01538
NSTC 54 5KNR METRO >      1.0    0.00000
NSTC 60 5AUTO
NSTC 61 5LOV       >      1.0    0.00000
NSTC 62 5HOV       >      0.5    0.17947
NSTC 70 5HOV
NSTC 71 5HOV2      >      1.0    0.00000
NSTC 72 5HOV3+     >      1.0   -0.44915
* SEGMENT  6
NSTC 10 6GRND TOTAL>
NSTC 11 6AUTO      >      0.5    0.00000
NSTC 12 6TRANSIT   >      0.5    1.13941
NSTC 20 6TOTAL TRN >
NSTC 21 6WALK ACC  >      0.5    0.00000
NSTC 22 6PNR ACC   >      0.5   -5.96510
NSTC 23 6KNR ACC   >      0.5   -5.96510
NSTC 30 6WLK TRN
NSTC 31 6WLK CR    >      1.0    0.45068
NSTC 32 6WLK BUS   >      1.0    1.13693
NSTC 33 6WLK BU/MR >      1.0    1.09522
NSTC 34 6WLK METRO >      1.0    0.00000
NSTC 40 6PNR TRN
NSTC 41 6PNR CR    >      1.0    0.00001
NSTC 42 6PNR BUS   >      1.0    0.00001
NSTC 43 6PNR BU/MR >      1.0    0.00001
NSTC 44 6PNR METRO >      1.0    0.00000
NSTC 50 6KNR TRN
NSTC 51 6KNR CR    >      1.0    0.00001
NSTC 52 6KNR BUS   >      1.0    0.00001
NSTC 53 6KNR BU/MR >      1.0    0.00001
NSTC 54 6KNR METRO >      1.0    0.00000
NSTC 60 6AUTO
NSTC 61 6LOV       >      1.0    0.00000
NSTC 62 6HOV       >      0.5    0.24471
NSTC 70 6HOV
NSTC 71 6HOV2      >      1.0    0.00000
NSTC 72 6HOV3+     >      1.0   -0.39909
* SEGMENT  7
NSTC 10 7GRND TOTAL>
NSTC 11 7AUTO      >      0.5    0.00000
NSTC 12 7TRANSIT   >      0.5    0.54219
NSTC 20 7TOTAL TRN >
NSTC 21 7WALK ACC  >      0.5    0.00000
NSTC 22 7PNR ACC   >      0.5   -7.53488
NSTC 23 7KNR ACC   >      0.5  -10.07791
NSTC 30 7WLK TRN
NSTC 31 7WLK CR    >      1.0   -3.07713
NSTC 32 7WLK BUS   >      1.0   -4.54976
NSTC 33 7WLK BU/MR >      1.0   -2.86499
NSTC 34 7WLK METRO >      1.0    0.00000
NSTC 40 7PNR TRN
NSTC 41 7PNR CR    >      1.0    0.62078
NSTC 42 7PNR BUS   >      1.0    1.82883
NSTC 43 7PNR BU/MR >      1.0   -0.78885
NSTC 44 7PNR METRO >      1.0    0.00000
NSTC 50 7KNR TRN
NSTC 51 7KNR CR    >      1.0   -0.02476
NSTC 52 7KNR BUS   >      1.0    4.35092
NSTC 53 7KNR BU/MR >      1.0   -0.02476
NSTC 54 7KNR METRO >      1.0    0.00000
NSTC 60 7AUTO
NSTC 61 7LOV       >      1.0    0.00000
NSTC 62 7HOV       >      0.5    0.27208
NSTC 70 7HOV
NSTC 71 7HOV2      >      1.0    0.00000
NSTC 72 7HOV3+     >      1.0   -0.37221
```

```
* SEGMENT  8
NSTC 10 8GRND TOTAL>
NSTC 11 8AUTO      >      0.5    0.00000
NSTC 12 8TRANSIT   >      0.5   -0.57960
NSTC 20 8TOTAL TRN >
NSTC 21 8WALK ACC  >      0.5    0.00000
NSTC 22 8PNR ACC   >      0.5   -4.15232
NSTC 23 8KNR ACC   >      0.5   -7.36270
NSTC 30 8WLK TRN
NSTC 31 8WLK CR    >      1.0   -2.52567
NSTC 32 8WLK BUS   >      1.0   -2.81163
NSTC 33 8WLK BU/MR >      1.0   -2.39705
NSTC 34 8WLK METRO >      1.0    0.00000
NSTC 40 8PNR TRN
NSTC 41 8PNR CR    >      1.0    0.00001
NSTC 42 8PNR BUS   >      1.0    8.80583
NSTC 43 8PNR BU/MR >      1.0    0.00001
NSTC 44 8PNR METRO >      1.0    0.00000
NSTC 50 8KNR TRN
NSTC 51 8KNR CR    >      1.0    0.00001
NSTC 52 8KNR BUS   >      1.0    7.62702
NSTC 53 8KNR BU/MR >      1.0    2.18866
NSTC 54 8KNR METRO >      1.0    0.00000
NSTC 60 8AUTO
NSTC 61 8LOV       >      1.0    0.00000
NSTC 62 8HOV       >      0.5    0.28372
NSTC 70 8HOV
NSTC 71 8HOV2      >      1.0    0.00000
NSTC 72 8HOV3+     >      1.0   -0.36498
* SEGMENT  9
NSTC 10 9GRND TOTAL>
NSTC 11 9AUTO      >      0.5    0.00000
NSTC 12 9TRANSIT   >      0.5    4.92854
NSTC 20 9TOTAL TRN >
NSTC 21 9WALK ACC  >      0.5    0.00000
NSTC 22 9PNR ACC   >      0.5   -9.76499
NSTC 23 9KNR ACC   >      0.5  -12.88405
NSTC 30 9WLK TRN
NSTC 31 9WLK CR    >      1.0   -2.93914
NSTC 32 9WLK BUS   >      1.0  -12.74886
NSTC 33 9WLK BU/MR >      1.0  -10.52874
NSTC 34 9WLK METRO >      1.0    0.00000
NSTC 40 9PNR TRN
NSTC 41 9PNR CR    >      1.0    0.09826
NSTC 42 9PNR BUS   >      1.0    0.09826
NSTC 43 9PNR BU/MR >      1.0    2.24662
NSTC 44 9PNR METRO >      1.0    0.00000
NSTC 50 9KNR TRN
NSTC 51 9KNR CR    >      1.0    1.83201
NSTC 52 9KNR BUS   >      1.0    1.83201
NSTC 53 9KNR BU/MR >      1.0   13.73739
NSTC 54 9KNR METRO >      1.0    0.00000
NSTC 60 9AUTO
NSTC 61 9LOV       >      1.0    0.00000
NSTC 62 9HOV       >      0.5    0.16064
NSTC 70 9HOV
NSTC 71 9HOV2      >      1.0    0.00000
NSTC 72 9HOV3+     >      1.0   -0.46591
* SEGMENT 10
NSTC 1010GRND TOTAL>
NSTC 1110AUTO      >      0.5    0.00000
NSTC 1210TRANSIT   >      0.5   -0.88787
NSTC 2010TOTAL TRN >
NSTC 2110WALK ACC  >      0.5    0.00000
NSTC 2210PNR ACC   >      0.5   -7.25623
NSTC 2310KNR ACC   >      0.5   -7.25623
NSTC 3010WLK TRN
NSTC 3110WLK CR    >      1.0   -2.08615
```

```
NSTC 3210WLK BUS   >      1.0  -11.59586
NSTC 3310WLK BU/MR >      1.0   -7.15129
NSTC 3410WLK METRO >      1.0    0.00000
NSTC 4010PNR TRN
NSTC 4110PNR CR    >      1.0    0.00001
NSTC 4210PNR BUS   >      1.0    0.00001
NSTC 4310PNR BU/MR >      1.0    0.00001
NSTC 4410PNR METRO >      1.0    0.00000
NSTC 5010KNR TRN
NSTC 5110KNR CR    >      1.0    0.00001
NSTC 5210KNR BUS   >      1.0    0.00001
NSTC 5310KNR BU/MR >      1.0    0.00001
NSTC 5410KNR METRO >      1.0    0.00000
NSTC 6010AUTO
NSTC 6110LOV       >      1.0    0.00000
NSTC 6210HOV       >      0.5    0.19418
NSTC 7010HOV
NSTC 7110HOV2      >      1.0    0.00000
NSTC 7210HOV3+     >      1.0   -0.43764
* SEGMENT 11
NSTC 1011GRND TOTAL>
NSTC 1111AUTO      >      0.5    0.00000
NSTC 1211TRANSIT   >      0.5    0.39633
NSTC 2011TOTAL TRN >
NSTC 2111WALK ACC  >      0.5    0.00000
NSTC 2211PNR ACC   >      0.5   -7.00731
NSTC 2311KNR ACC   >      0.5   -9.03120
NSTC 3011WLK TRN
NSTC 3111WLK CR    >      1.0   -4.04893
NSTC 3211WLK BUS   >      1.0   -7.14579
NSTC 3311WLK BU/MR >      1.0   -0.87816
NSTC 3411WLK METRO >      1.0    0.00000
NSTC 4011PNR TRN
NSTC 4111PNR CR    >      1.0   -5.54906
NSTC 4211PNR BUS   >      1.0   -5.54906
NSTC 4311PNR BU/MR >      1.0    3.47100
NSTC 4411PNR METRO >      1.0    0.00000
NSTC 5011KNR TRN
NSTC 5111KNR CR    >      1.0   -2.24354
NSTC 5211KNR BUS   >      1.0    2.99947
NSTC 5311KNR BU/MR >      1.0   -2.24354
NSTC 5411KNR METRO >      1.0    0.00000
NSTC 6011AUTO
NSTC 6111LOV       >      1.0    0.00000
NSTC 6211HOV       >      0.5    0.26364
NSTC 7011HOV
NSTC 7111HOV2      >      1.0    0.00000
NSTC 7211HOV3+     >      1.0   -0.37879
* SEGMENT 12
NSTC 1012GRND TOTAL>
NSTC 1112AUTO      >      0.5    0.00000
NSTC 1212TRANSIT   >      0.5    0.98917
NSTC 2012TOTAL TRN >
NSTC 2112WALK ACC  >      0.5    0.00000
NSTC 2212PNR ACC   >      0.5   -6.60276
NSTC 2312KNR ACC   >      0.5   -6.72922
NSTC 3012WLK TRN
NSTC 3112WLK CR    >      1.0   -7.29898
NSTC 3212WLK BUS   >      1.0  -11.12636
NSTC 3312WLK BU/MR >      1.0   -8.81059
NSTC 3412WLK METRO >      1.0    0.00000
NSTC 4012PNR TRN
NSTC 4112PNR CR    >      1.0  -11.24439
NSTC 4212PNR BUS   >      1.0  -11.24439
NSTC 4312PNR BU/MR >      1.0  -11.24439
NSTC 4412PNR METRO >      1.0    0.00000
NSTC 5012KNR TRN
NSTC 5112KNR CR    >      1.0   -5.74787
```

```
NSTC 5212KNR BUS   >      1.0   -6.51591
NSTC 5312KNR BU/MR >      1.0   -5.74787
NSTC 5412KNR METRO >      1.0    0.00000
NSTC 6012AUTO
NSTC 6112LOV       >      1.0    0.00000
NSTC 6212HOV       >      0.5    0.25285
NSTC 7012HOV
NSTC 7112HOV2      >      1.0    0.00000
NSTC 7212HOV3+     >      1.0   -0.38982
* SEGMENT 13
NSTC 1013GRND TOTAL>
NSTC 1113AUTO      >      0.5    0.00000
NSTC 1213TRANSIT   >      0.5    1.98852
NSTC 2013TOTAL TRN >
NSTC 2113WALK ACC  >      0.5    0.00000
NSTC 2213PNR ACC   >      0.5   -5.23147
NSTC 2313KNR ACC   >      0.5   -7.33942
NSTC 3013WLK TRN
NSTC 3113WLK CR    >      1.0    9.59557
NSTC 3213WLK BUS   >      1.0   -3.37134
NSTC 3313WLK BU/MR >      1.0   -4.83682
NSTC 3413WLK METRO >      1.0    0.00000
NSTC 4013PNR TRN
NSTC 4113PNR CR    >      1.0    4.22555
NSTC 4213PNR BUS   >      1.0    7.10007
NSTC 4313PNR BU/MR >      1.0   10.69504
NSTC 4413PNR METRO >      1.0    0.00000
NSTC 5013KNR TRN
NSTC 5113KNR CR    >      1.0    1.98512
NSTC 5213KNR BUS   >      1.0    0.91344
NSTC 5313KNR BU/MR >      1.0    7.03098
NSTC 5413KNR METRO >      1.0    0.00000
NSTC 6013AUTO
NSTC 6113LOV       >      1.0    0.00000
NSTC 6213HOV       >      0.5    0.06605
NSTC 7013HOV
NSTC 7113HOV2      >      1.0    0.00000
NSTC 7213HOV3+     >      1.0   -0.56157
* SEGMENT 14
NSTC 1014GRND TOTAL>
NSTC 1114AUTO      >      0.5    0.00000
NSTC 1214TRANSIT   >      0.5    1.11710
NSTC 2014TOTAL TRN >
NSTC 2114WALK ACC  >      0.5    0.00000
NSTC 2214PNR ACC   >      0.5   -2.79842
NSTC 2314KNR ACC   >      0.5   -2.52735
NSTC 3014WLK TRN
NSTC 3114WLK CR    >      1.0   -3.39673
NSTC 3214WLK BUS   >      1.0   -3.39673
NSTC 3314WLK BU/MR >      1.0   -5.50107
NSTC 3414WLK METRO >      1.0    0.00000
NSTC 4014PNR TRN
NSTC 4114PNR CR    >      1.0    0.91269
NSTC 4214PNR BUS   >      1.0    0.91269
NSTC 4314PNR BU/MR >      1.0   13.69377
NSTC 4414PNR METRO >      1.0    0.00000
NSTC 5014KNR TRN
NSTC 5114KNR CR    >      1.0   -0.28930
NSTC 5214KNR BUS   >      1.0   -0.28930
NSTC 5314KNR BU/MR >      1.0    3.93862
NSTC 5414KNR METRO >      1.0    0.00000
NSTC 6014AUTO
NSTC 6114LOV       >      1.0    0.00000
NSTC 6214HOV       >      0.5    0.12010
NSTC 7014HOV
NSTC 7114HOV2      >      1.0    0.00000
NSTC 7214HOV3+     >      1.0   -0.49830
* SEGMENT 15
```

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NSTC 1015GRND TOTAL>
NSTC 1115AUTO      >      0.5    0.00000
NSTC 1215TRANSIT   >      0.5   -0.23717
NSTC 2015TOTAL TRN >
NSTC 2115WALK ACC  >      0.5    0.00000
NSTC 2215PNR ACC   >      0.5   -4.11341
NSTC 2315KNR ACC   >      0.5   -5.04971
NSTC 3015WLK TRN
NSTC 3115WLK CR    >      1.0    0.41576
NSTC 3215WLK BUS   >      1.0    0.51436
NSTC 3315WLK BU/MR >      1.0    0.28796
NSTC 3415WLK METRO >      1.0    0.00000
NSTC 4015PNR TRN
NSTC 4115PNR CR    >      1.0    2.72127
NSTC 4215PNR BUS   >      1.0    1.59156
NSTC 4315PNR BU/MR >      1.0    1.48568
NSTC 4415PNR METRO >      1.0    0.00000
NSTC 5015KNR TRN
NSTC 5115KNR CR    >      1.0    3.77690
NSTC 5215KNR BUS   >      1.0    4.42572
NSTC 5315KNR BU/MR >      1.0    3.05439
NSTC 5415KNR METRO >      1.0    0.00000
NSTC 6015AUTO
NSTC 6115LOV       >      1.0    0.00000
NSTC 6215HOV       >      0.5    0.16853
NSTC 7015HOV
NSTC 7115HOV2      >      1.0    0.00000
NSTC 7215HOV3+     >      1.0   -0.46622
* SEGMENT 16
NSTC 1016GRND TOTAL>
NSTC 1116AUTO      >      0.5    0.00000
NSTC 1216TRANSIT   >      0.5   -0.92251
NSTC 2016TOTAL TRN >
NSTC 2116WALK ACC  >      0.5    0.00000
NSTC 2216PNR ACC   >      0.5   -7.11268
NSTC 2316KNR ACC   >      0.5   -6.69452
NSTC 3016WLK TRN
NSTC 3116WLK CR    >      1.0   -2.09610
NSTC 3216WLK BUS   >      1.0    0.82368
NSTC 3316WLK BU/MR >      1.0    1.52207
NSTC 3416WLK METRO >      1.0    0.00000
NSTC 4016PNR TRN
NSTC 4116PNR CR    >      1.0   -5.86932
NSTC 4216PNR BUS   >      1.0    2.99271
NSTC 4316PNR BU/MR >      1.0  -41.56082
NSTC 4416PNR METRO >      1.0    0.00000
NSTC 5016KNR TRN
NSTC 5116KNR CR    >      1.0   -9.03597
NSTC 5216KNR BUS   >      1.0    3.44120
NSTC 5316KNR BU/MR >      1.0   -3.18403
NSTC 5416KNR METRO >      1.0    0.00000
NSTC 6016AUTO
NSTC 6116LOV       >      1.0    0.00000
NSTC 6216HOV       >      0.5    0.29163
NSTC 7016HOV
NSTC 7116HOV2      >      1.0    0.00000
NSTC 7216HOV3+     >      1.0   -0.35967
* SEGMENT 17
NSTC 1017GRND TOTAL>
NSTC 1117AUTO      >      0.5    0.00000
NSTC 1217TRANSIT   >      0.5    3.92237
NSTC 2017TOTAL TRN >
NSTC 2117WALK ACC  >      0.5    0.00000
NSTC 2217PNR ACC   >      0.5   -9.29415
NSTC 2317KNR ACC   >      0.5  -10.32199
NSTC 3017WLK TRN
NSTC 3117WLK CR    >      1.0   -4.48437
NSTC 3217WLK BUS   >      1.0   -6.69119
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NSTC 3317WLK BU/MR >      1.0   -7.28526
NSTC 3417WLK METRO >      1.0    0.00000
NSTC 4017PNR TRN
NSTC 4117PNR CR    >      1.0    0.81809
NSTC 4217PNR BUS   >      1.0    6.53746
NSTC 4317PNR BU/MR >      1.0    7.47622
NSTC 4417PNR METRO >      1.0    0.00000
NSTC 5017KNR TRN
NSTC 5117KNR CR    >      1.0    0.53022
NSTC 5217KNR BUS   >      1.0    0.53022
NSTC 5317KNR BU/MR >      1.0    4.92533
NSTC 5417KNR METRO >      1.0    0.00000
NSTC 6017AUTO
NSTC 6117LOV       >      1.0    0.00000
NSTC 6217HOV       >      0.5    0.10450
NSTC 7017HOV
NSTC 7117HOV2      >      1.0    0.00000
NSTC 7217HOV3+     >      1.0   -0.51905
* SEGMENT 18
NSTC 1018GRND TOTAL>
NSTC 1118AUTO      >      0.5    0.00000
NSTC 1218TRANSIT   >      0.5    1.13191
NSTC 2018TOTAL TRN >
NSTC 2118WALK ACC  >      0.5    0.00000
NSTC 2218PNR ACC   >      0.5   -6.60848
NSTC 2318KNR ACC   >      0.5   -9.15288
NSTC 3018WLK TRN
NSTC 3118WLK CR    >      1.0   -4.91613
NSTC 3218WLK BUS   >      1.0   -9.29822
NSTC 3318WLK BU/MR >      1.0   -8.83997
NSTC 3418WLK METRO >      1.0    0.00000
NSTC 4018PNR TRN
NSTC 4118PNR CR    >      1.0    0.03165
NSTC 4218PNR BUS   >      1.0   -4.45100
NSTC 4318PNR BU/MR >      1.0    6.56705
NSTC 4418PNR METRO >      1.0    0.00000
NSTC 5018KNR TRN
NSTC 5118KNR CR    >      1.0    0.64472
NSTC 5218KNR BUS   >      1.0    0.64472
NSTC 5318KNR BU/MR >      1.0    9.83568
NSTC 5418KNR METRO >      1.0    0.00000
NSTC 6018AUTO
NSTC 6118LOV       >      1.0    0.00000
NSTC 6218HOV       >      0.5    0.13048
NSTC 7018HOV
NSTC 7118HOV2      >      1.0    0.00000
NSTC 7218HOV3+     >      1.0   -0.49362
* SEGMENT 19
NSTC 1019GRND TOTAL>
NSTC 1119AUTO      >      0.5    0.00000
NSTC 1219TRANSIT   >      0.5    1.79117
NSTC 2019TOTAL TRN >
NSTC 2119WALK ACC  >      0.5    0.00000
NSTC 2219PNR ACC   >      0.5   -7.79895
NSTC 2319KNR ACC   >      0.5   -8.79349
NSTC 3019WLK TRN
NSTC 3119WLK CR    >      1.0   -6.82192
NSTC 3219WLK BUS   >      1.0  -10.44561
NSTC 3319WLK BU/MR >      1.0   -4.32243
NSTC 3419WLK METRO >      1.0    0.00000
NSTC 4019PNR TRN
NSTC 4119PNR CR    >      1.0   -1.04618
NSTC 4219PNR BUS   >      1.0   -1.78515
NSTC 4319PNR BU/MR >      1.0   -1.56792
NSTC 4419PNR METRO >      1.0    0.00000
NSTC 5019KNR TRN
NSTC 5119KNR CR    >      1.0   -0.11412
NSTC 5219KNR BUS   >      1.0    1.54293
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```
NSTC 5319KNR BU/MR >      1.0    1.95111
NSTC 5419KNR METRO >      1.0    0.00000
NSTC 6019AUTO
NSTC 6119LOV       >      1.0    0.00000
NSTC 6219HOV       >      0.5    0.17537
NSTC 7019HOV
NSTC 7119HOV2      >      1.0    0.00000
NSTC 7219HOV3+     >      1.0   -0.46287
* SEGMENT 20
NSTC 1020GRND TOTAL>
NSTC 1120AUTO      >      0.5    0.00000
NSTC 1220TRANSIT   >      0.5   -0.18760
NSTC 2020TOTAL TRN >
NSTC 2120WALK ACC  >      0.5    0.00000
NSTC 2220PNR ACC   >      0.5  -36.71054
NSTC 2320KNR ACC   >      0.5  -28.28559
NSTC 3020WLK TRN
NSTC 3120WLK CR    >      1.0   -4.59849
NSTC 3220WLK BUS   >      1.0   -4.01002
NSTC 3320WLK BU/MR >      1.0   -8.56252
NSTC 3420WLK METRO >      1.0    0.00000
NSTC 4020PNR TRN
NSTC 4120PNR CR    >      1.0  -51.74887
NSTC 4220PNR BUS   >      1.0  -43.56082
NSTC 4320PNR BU/MR >      1.0  -62.43666
NSTC 4420PNR METRO >      1.0    0.00000
NSTC 5020KNR TRN
NSTC 5120KNR CR    >      1.0  -71.21787
NSTC 5220KNR BUS   >      1.0  -60.57117
NSTC 5320KNR BU/MR >      1.0  -67.10375
NSTC 5420KNR METRO >      1.0    0.00000
NSTC 6020AUTO
NSTC 6120LOV       >      1.0    0.00000
NSTC 6220HOV       >      0.5    0.30325
NSTC 7020HOV
NSTC 7120HOV2      >      1.0    0.00000
NSTC 7220HOV3+     >      1.0   -0.34953

*DOWNTOWN=8
*SELI               >        8

*UNION STATION=64
*SELI               >       64

* =122
*SELI               >      122

*BETHESDA=345
*SELI               >      345

*SILVER SPRING=362
*SELI               >      362

*N.SILVER SPRING=464
*SELI               >      464

* =475
*SELI               >      475

*SHADY GROVE RD=578
*SELI               >      578

* =787
*SELI               >      787

*ANDREWS AFB=829
*SELI               >      829
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*NEW CARROLTON=927
*SELI               >       927

*BRISTOL=972
*SELI               >       972

*FREDERICK=1043
*SELI               >      1043

*JESSUP=1080
*SELI               >      1080

*SCAGGSVILLE=1091
*SELI               >      1091

*WALDORF=1216
*SELI               >      1216

*PENTAGON=1231
*SELI               >      1231

*ROSSLYN=1236
*SELI               >      1236

*ALEXANDRIA=1337
*SELI               >      1337

* =1455
*SELI               >      1455

*SPRINGFIELD=1502
*SELI               >      1502

*  =1511
*SELI               >      1511

*TYSONS CRNR=1537
*SELI               >      1537

*FT BELVOIR=1554
*SELI               >      1554

*VIENNA=1619
*SELI               >      1619

*DULES AP=1698
*SELI               >      1698

*RESTON=1716
*SELI               >      1716

*LEESBURG=1842
*SELI               >      1842

*BRUNSWICK=1863
*SELI               >      1863

*DALE CITY=1942
*SELI               >      1942

*MANASSAS=1967
*SELI               >      1967

*SPOTSYLVANIA=2110
*SELI               >      2110

* =2055
*SELI               >      2055
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*SELJ               >       63
*SELJ               >       64
*SELJ               >       77
*SELJ               >      100
*SELJ               >      344
*SELJ               >      345
*SELJ               >      362
*SELJ               >     1231
*SELJ               >     1236
*SELJ               >     1265
*SELJ               >     1337
*SELJ               >     1537
*SELI               >  523
*SELJ               >    9

TRACE              >         0
* OUTPUT %           >
*PROCSEL            >
PRINT MS           >HBO_NL_MC.PRN
INPUT PRINT FILE   >HBO_NL_MC.PRN
INPUT GOALS        >HBO_NL_MC.GOL
INFILE 1           >hbo_income.ptt
INFILE 2           >hwyop.skm
INFILE 3           >TRNOP_CR.SKM
INFILE 4           >TRNOP_AB.SKM
INFILE 5           >TRNOP_MR.SKM
INFILE 6           >TRNOP_BM.SKM
ZINFILE 8          >ZONEV2.A2F
OUTFILE 9          >HBO_NL_MC.MTT

* FTA USER BENEFITS SPECIFICATIONS
*FTA RESULTS FILE   >HBO_NL_MC.BEN
FTA TRANSIT COEFF  >-0.02322
FTA AUTO COEFF     >-0.02322
FTA PURPOSE NAME   >HBO
FTA PERIOD NAME    >ALLDAY
FTA ALTER. NAME    >CALIB
*CHOICE          1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
FTA AUTO NEST      >         1         1
FTA MOTORIZED?   1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
FTA TRANSIT?     1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
```

4 nhw_nl_mc.ctl

```
NHW OP NESTED LOGIT MC - #DATE:  2/15/2011 #VER:  21
CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
*
*
*LOGIT COEFFICIENTS BY CHOICE FOR EACH SKIM (NO INPUT SKIM IS
*EQUIVALENT TO A CONSTANT)
*CHOICE          1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
COEF01:IVTT      1>-0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860
SKIM01:IVTT      1>DAIV      S2IV      S3IV      WCIV      WBIV      WTIV      WMIV      PCIV      KCIV      PBIV      KBIV      PTIV      KTIV      PMIV      KMIV
COEF02:AUTO ACC  1>                                                                      -0.04290  -0.04290  -0.04290  -0.04290  -0.04290  -0.04290  -0.04290  -0.04290
SKIM02:AUTO ACC  1>                                                                      PCAA      KCAA      PBAA      KBAA      PTAA      KTAA      PMAA      KMAA
COEF03:TERM/OVTT 1>-0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150
SKIM03:TERM/OVTT 1>DATE      S2TE      S3TE      WCOV      WBOV      WTOV      WMOV      PCOV      KCOV      PBOV      KBOV      PTOV      KTOV      PMOV      KMOV
* LIMIT COEF 04 TO PURPOSE 1
COEF PURP04        >1
```

```
COEF04:COST INC1  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM04:COST INC1  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 05 TO PURPOSE 2
COEF PURP05        >2
COEF05:COST INC2  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM05:COST INC2  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 06 TO PURPOSE 3
COEF PURP06        >3
COEF06:COST INC3  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM06:COST INC3  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF PURP07        >4
* LIMIT COEF 07 TO PURPOSE 4
COEF07:COST INC4  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM07:COST INC4  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF08:TRN XFERS  1>                              -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000
SKIM08:TRN XFERS  1>                              WCXF      WBXF      WTXF      WMXF      PCXF      KCXF      PBXF      KBXF      PTXF      KTXF      PMXF      KMXF
COEF09:TRN BRDPEN 1>                              -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150
SKIM09:TRN BRDPEN 1>                              WCXP      WBXP      WTXP      WMXP      PCXP      KCXP      PBXP      KBXP      PTXP      KTXP      PMXP      KMXP
*WALK WEIGHT
COEF10:TRN WLKWT  1>                              -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720
SKIM10:TRN WLKWT  1>                              WCWK      WBWK      WTWK      WMWK      PCWK      KCWK      PBWK      KBWK      PTWK      KTWK      PMWK      KMWK

*SYNTAX TO LIMIT UTILITY ELEMENT TO A PARTICULAR WALK SEGMENT IN THIS EXAMPLE
*    COEF 18 APPLIES ONLY TO WALK SEGMENT 1
*COEF WLKSEG18      >1

* ASSUMED MATRIX ORGANIZATION
* FILE 1 TRIP TABLE (SEPARATE FOR EACH PURPOSE)
* 1 INCOME 1 (HOME-BASED)/ALL NHB TRIPS
* 2 INCOME 2 (HOME-BASED)
* 3 INCOME 3 (HOME-BASED)
* 4 INCOME 4 (HOME-BASED)
*
* FILE 2 HIGHWAY SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* 1 SOV   TIME (MIN)
* 2 SOV   DIST (0.1 MILES)
* 3 SOV   TOLL (2007 CENTS)
* 4 HOV2  TIME (MIN)
* 5 HOV2  DIST (0.1 MILES)
* 6 HOV2  TOLL (2007 CENTS)
* 7 HOV3+ TIME (MIN)
* 8 HOV3+ DIST (0.1 MILES)
* 9 HOV3+ TOLL (2007 CENTS)
*
* FILE 3=COM. RAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 4=BUS SKIMS       (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 5=METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 6=BUS+METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
*  1 WLK ACC/EGR (.01 MIN)  15 PNR ACC/EGR (.01 MIN)  33 KNR ACC/EGR  (.01 MIN)
*  2 WLK OTHER   (.01 MIN)  16 PNR OTHER   (.01 MIN)  34 KNR OTHER   (.01 MIN)
*  3 WLK IWAIT   (.01 MIN)  17 PNR IWAIT   (.01 MIN)  35 KNR IWAIT   (.01 MIN)
*  4 WLK XWAIT   (.01 MIN)  18 PNR XWAIT   (.01 MIN)  36 KNR XWAIT   (.01 MIN)
*  5 WLK IVTT TOT(.01 MIN)  19 PNR IVTT TOT(.01 MIN)  37 KNR IVTT TOT(.01 MIN)
*  6 WLK IVTT CR (.01 MIN)  20 PNR IVTT CR (.01 MIN)  38 KNR IVTT CR (.01 MIN)
*  7 WLK IVTT XB (.01 MIN)  21 PNR IVTT XB (.01 MIN)  39 KNR IVTT XB (.01 MIN)
*  8 WLK IVTT MR (.01 MIN)  22 PNR IVTT MR (.01 MIN)  40 KNR IVTT MR (.01 MIN)
*  9 WLK IVTT NM (.01 MIN)  23 PNR IVTT NM (.01 MIN)  41 KNR IVTT NM (.01 MIN)
* 10 WLK IVTT NM2(.01 MIN)  24 PNR IVTT NM2(.01 MIN)  42 KNR IVTT NM2(.01 MIN)
* 11 WLK IVTT LB (.01 MIN)  25 PNR IVTT LB (.01 MIN)  43 KNR IVTT LB (.01 MIN)
* 12 WLK #XFERS  (NUMBER )  26 PNR #XFERS  (NUMBER )  44 KNR #XFERS  (NUMBER )
* 13 WLK COST    (07CENTS)  27 PNR COST    (07CENTS)  45 KNR COST    (07CENTS)
* 14 WLK XPEN    (.01 MIN)  28 PNR XPEN    (.01 MIN)  46 KNR XPEN    (.01 MIN)
*                           29 PNR ACC TIME(.01 MIN)  47 KNR ACC TIME(.01 MIN)
*                           30 PNR ACC DIST(.01 MIL)  48 KNR ACC DIST(.01 MIL)
*                           31 PNR ACC COST(07CENTS)
*                           32 PNR STA TERM(.01 MIN)
*
* FILE 8=ZDATA
```

```
*  1 HBW PARK COST (2007 CENTS)
*  2 HBS PARK COST (2007 CENTS)
*  3 HBO PARK COST (2007 CENTS)
*  4 NHB PARK COST (2007 CENTS)
*  5 TERMINAL TIME (HOME BASED) (MINUTES)
*  6 TERMINAL TIME (NON HOME BASED) (MINUTES)
*  7 ARC VIEW SHORT WALK PERCENT TO METRO
*  8 ARC VIEW LONG WALK PERCENT TO METRO
*  9 ARC VIEW SHORT WALK PERCENT TO ALL AM PK TRANSIT
* 10 ARC VIEW LONG WALK PERCENT TO ALL AM PK TRANSIT
* 11 ARC VIEW SHORT WALK PERCENT TO ALL OP TRANSIT
* 12 ARC VIEW LONG WALK PERCENT TO ALL OP TRANSIT
* 13 AREA TYPE
*    1=DC CORE
*    2=VA CORE
*    3=DC URBAN
*    4=MD URBAN
*    5=VA URBAN
*    6=MD OTHER
*    7=VA OTHER

* PARAMETERS
*=======================================================
* AUTO OPERATING COSTS IN CENTS/mile
COMPUTE AUOP       >10
* AUTO OCCUPANCY FOR 3+   Reduced from 3.5 to 3.35 on 3/1/07 rm
COMPUTE OCC3       >3.35

* TERMINAL TIMES, USE i/j805 FOR HBW, HBS, AND HBO. USE i/j806 FOR NHB
* HBW/HBS/HBO
*COMPUTE TERI       >i805
*COMPUTE TERJ       >j805
* NHB
COMPUTE TERI       >i806
COMPUTE TERJ       >j806

* PARK COSTS, USE i/j801 802 803 804 FOR HBW, HBS, HBO, NHB RESPECTIVELY
* HBW
*COMPUTE PRKC       >j801/2.
* HBS
* COMPUTE PRKC       >j802/2.
* HBO
* COMPUTE PRKC       >j803/2.
* NHB
COMPUTE PRKC       >j804

* Percent of productions in long-walk area that are assumed to walk = 25% (i.e., 75% drive)
COMPUTE PCLM       >0.25
COMPUTE PCLT       >0.25
* PERCENT WALKS-METRORAIL ONLY
COMPUTE PCMI       >(i807+PCLM*(i808-i807))/100.
COMPUTE PCMJ       >(j807+PCLM*(j808-j807))/100.
* PERCENT WALKS-PEAK
*COMPUTE PCTI       >(i809+PCLT*(i810-i809))/100.
*COMPUTE PCTJ       >(j809+PCLT*(j810-j809))/100.
* PERCENT WALKS-OFFPEAK
COMPUTE PCTI       >(i811+PCLT*(i812-i811))/100.
COMPUTE PCTJ       >(j811+PCLT*(j812-j811))/100.
COMPUTE PCMI       >MAX(PCMI,0)
COMPUTE PCMI       >MIN(PCMI,1)
COMPUTE PCMJ       >MAX(PCMJ,0)
COMPUTE PCMJ       >MIN(PCMJ,1)
COMPUTE PCTI       >MAX(PCTI,PCMI)
COMPUTE PCTI       >MIN(PCTI,1)
COMPUTE PCTJ       >MAX(PCTJ,PCMJ)
COMPUTE PCTJ       >MIN(PCTJ,1)
*
* DO TRIP SUBDIVISIONS
```

```
*
*  HOME BASED ALTERNATIVES
*COMPUTE TRP1       >m101
*COMPUTE TRP2       >m102
*COMPUTE TRP3       >m103
*COMPUTE TRP4       >m104
* NON-HOME BASED
COMPUTE TRP1       >0.25*m101
COMPUTE TRP2       >0.25*m101
COMPUTE TRP3       >0.25*m101
COMPUTE TRP4       >0.25*m101
*
* BE SURE TO UPDATE THE IVTT COEFFICIENT IN FTA SECTION FOR EACH PURPOSE
*
*=======================================================
*INITIALIZING ALL VARIABLES WITHIN IF STATEMENTS TO ZERO
COMPUTE DAIV       >0
COMPUTE DACS       >0
COMPUTE DATE       >0
COMPUTE S2IV       >0
COMPUTE S2CS       >0
COMPUTE S2TE       >0
COMPUTE S3IV       >0
COMPUTE S3CS       >0
COMPUTE S3TE       >0
COMPUTE WKIV       >0
COMPUTE WKOV       >0
COMPUTE WKXF       >0
COMPUTE WKCS       >0
COMPUTE WKXP       >0
COMPUTE WBIV       >0
COMPUTE WBOV       >0
COMPUTE WBXF       >0
COMPUTE WBCS       >0
COMPUTE WBXP       >0
COMPUTE WTIV       >0
COMPUTE WTOV       >0
COMPUTE WTXF       >0
COMPUTE WTCS       >0
COMPUTE WTXP       >0
COMPUTE WMIV       >0
COMPUTE WMOV       >0
COMPUTE WMXF       >0
COMPUTE WMCS       >0
COMPUTE WMXP       >0
COMPUTE PCIV       >0
COMPUTE PCAA       >0
COMPUTE PCOV       >0
COMPUTE PCXF       >0
COMPUTE PCCS       >0
COMPUTE PCXP       >0
COMPUTE PBIV       >0
COMPUTE PBAA       >0
COMPUTE PBOV       >0
COMPUTE PBXF       >0
COMPUTE PBCS       >0
COMPUTE PBXP       >0
COMPUTE PTIV       >0
COMPUTE PTAA       >0
COMPUTE PTOV       >0
COMPUTE PTXF       >0
COMPUTE PTCS       >0
COMPUTE PTXP       >0
COMPUTE PMIV       >0
COMPUTE PMAA       >0
COMPUTE PMOV       >0
COMPUTE PMXF       >0
COMPUTE PMCS       >0
```

```
COMPUTE PMXP       >0
COMPUTE KCIV       >0
COMPUTE KCAA       >0
COMPUTE KCOV       >0
COMPUTE KCXF       >0
COMPUTE KCCS       >0
COMPUTE KCXP       >0
COMPUTE KBIV       >0
COMPUTE KBAA       >0
COMPUTE KBOV       >0
COMPUTE KBXF       >0
COMPUTE KBCS       >0
COMPUTE KBXP       >0
COMPUTE KTIV       >0
COMPUTE KTAA       >0
COMPUTE KTOV       >0
COMPUTE KTXF       >0
COMPUTE KTCS       >0
COMPUTE KTXP       >0
COMPUTE KMIV       >0
COMPUTE KMAA       >0
COMPUTE KMOV       >0
COMPUTE KMXF       >0
COMPUTE KMCS       >0
COMPUTE KMXP       >0

COMPUTE WCWK       >0
COMPUTE WBWK       >0
COMPUTE WTWK       >0
COMPUTE WMWK       >0
COMPUTE PCWK       >0
COMPUTE KCWK       >0
COMPUTE PBWK       >0
COMPUTE KBWK       >0
COMPUTE PTWK       >0
COMPUTE KTWK       >0
COMPUTE PMWK       >0
COMPUTE KMWK       >0

* SKIM VALUES, Divide distances by 10 to convert tenths of miles to whole miles
* DRIVE ALONE
COMPUTE            >IF(m201>0)
COMPUTE DAIV       >m201
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(m204>0)
COMPUTE S2IV       >m204
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(m207>0)
COMPUTE S3IV       >m207
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

* Assign Intrazonal trips to Autos (mj11/04/05)
COMPUTE            >IF(P()=Q())
COMPUTE DAIV       >1
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF
```

```
* SHARED RIDE 2
COMPUTE            >IF(P()=Q())
COMPUTE S2IV       >1
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(P()=Q())
COMPUTE S3IV       >1
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

*End of Intrazonal trips

* WALK COMMUTER RAIL
COMPUTE            >IF(m305>0)
COMPUTE WCIV       >m305/100.
COMPUTE WCOV       >(m303+m304)/100.
COMPUTE WCXF       >m312
COMPUTE WCCS       >m313
COMPUTE WCXP       >m314/100.
COMPUTE WCWK       >(m301+m302)/100.
COMPUTE            >ENDIF

* WALK BUS
COMPUTE            >IF(m405>0)
COMPUTE WBIV       >m405/100.
COMPUTE WBOV       >(m403+m404)/100.
COMPUTE WBXF       >m412
COMPUTE WBCS       >m413
COMPUTE WBXP       >m414/100.
COMPUTE WBWK       >(m401+m402)/100.
COMPUTE            >ENDIF

* WALK BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m605>0)
COMPUTE WTIV       >m605/100.
COMPUTE WTOV       >(m603+m604)/100.
COMPUTE WTXF       >m612
COMPUTE WTCS       >m613
COMPUTE WTXP       >m614/100.
COMPUTE WTWK       >(m601+m602)/100.
COMPUTE            >ENDIF


* WALK METRORAIL
COMPUTE            >IF(m505>0)
COMPUTE WMIV       >m505/100.
COMPUTE WMOV       >(m503+m504)/100.
COMPUTE WMXF       >m512
COMPUTE WMCS       >m513
COMPUTE WMXP       >m514/100.
COMPUTE WMWK       >(m501+m502)/100.
COMPUTE            >ENDIF

* PNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE PCIV       >m319/100.
COMPUTE PCAA       >m329/100.
COMPUTE PCOV       >(m317+m318+m332)/100.
COMPUTE PCXF       >m326
COMPUTE PCCS       >m327+m331+m330/100*AUOP
COMPUTE PCXP       >m328/100.
COMPUTE PCWK       >(m315+m316)/100.
COMPUTE            >ENDIF
```

```
* PNR BUS
COMPUTE            >IF(m419>0)
COMPUTE PBIV       >m419/100.
COMPUTE PBAA       >m429/100.
COMPUTE PBOV       >(m417+m418+m432)/100.
COMPUTE PBXF       >m426
COMPUTE PBCS       >m427+m431+m430/100*AUOP
COMPUTE PBXP       >m428/100.
COMPUTE PBWK       >(m415+m416)/100.
COMPUTE            >ENDIF

* PNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m619>0)
COMPUTE PTIV       >m619/100.
COMPUTE PTAA       >m629/100.
COMPUTE PTOV       >(m617+m618+m632)/100.
COMPUTE PTXF       >m626
COMPUTE PTCS       >m627+m631+m630/100*AUOP
COMPUTE PTXP       >m628/100.
COMPUTE PTWK       >(m615+m616)/100.
COMPUTE            >ENDIF


* PNR METRORAIL
COMPUTE            >IF(m519>0)
COMPUTE PMIV       >m519/100.
COMPUTE PMAA       >m529/100.
COMPUTE PMOV       >(m517+m518+m532)/100.
COMPUTE PMXF       >m526
COMPUTE PMCS       >m527+m531+m530/100*AUOP
COMPUTE PMXP       >m528/100.
COMPUTE PMWK       >(m515+m516)/100.
COMPUTE            >ENDIF


* KNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE KCIV       >m319/100.
COMPUTE KCAA       >m329/100.
COMPUTE KCOV       >(m317+m318)/100.
COMPUTE KCXF       >m326
COMPUTE KCCS       >m327+m330/100*AUOP
COMPUTE KCXP       >m328/100.
COMPUTE KCWK       >(m315+m316)/100.
COMPUTE            >ENDIF


* KNR BUS
COMPUTE            >IF(m437>0)
COMPUTE KBIV       >m437/100.
COMPUTE KBAA       >m447/100.
COMPUTE KBOV       >(m435+m436)/100.
COMPUTE KBXF       >m444
COMPUTE KBCS       >m445+m448/100*AUOP
COMPUTE KBXP       >m446/100.
COMPUTE KBWK       >(m433+m434)/100.
COMPUTE            >ENDIF

* KNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m637>0)
COMPUTE KTIV       >m637/100.
COMPUTE KTAA       >m647/100.
COMPUTE KTOV       >(m635+m636)/100.
COMPUTE KTXF       >m644
COMPUTE KTCS       >m645+m648/100*AUOP
COMPUTE KTXP       >m646/100.
COMPUTE KTWK       >(m633+m634)/100.
COMPUTE            >ENDIF
```

```
* KNR METRORAIL
COMPUTE            >IF(m537>0)
COMPUTE KMIV       >m537/100.
COMPUTE KMAA       >m547/100.
COMPUTE KMOV       >(m535+m536)/100.
COMPUTE KMXF       >m544
COMPUTE KMCS       >m545+m548/100*AUOP
COMPUTE KMXP       >m546/100.
COMPUTE KMWK       >(m533+m534)/100.
COMPUTE            >ENDIF


*CONSTANTS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
PURP01 1INC 1     1>
PURP02 1INC 2     1>
PURP03 1INC 3     1>
PURP04 1INC 4     1>

TRIPIN01           >TRP1
TRIPIN02           >TRP2
TRIPIN03           >TRP3
TRIPIN04           >TRP4
TRIPIFACT01        >tfi1
TRIPIFACT02        >tfi2
TRIPIFACT03        >tfi3
TRIPIFACT04        >tfi4
COMPUTE tfi1       >1.0
COMPUTE tfi2       >1.0
COMPUTE tfi3       >1.0
COMPUTE tfi4       >1.0

*
*OUTPUT MATRICES AND OUTPUT FACTORS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
TRIPOUT01         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT01        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT02         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT02        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT03         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT03        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT04         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT04        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
**
**P AND A WALK PERCENTS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
WALK SEG CW 1 PCT 1>WSWM
WALK SEG CW 1 MODE1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 2 PCT 1>WSW1
WALK SEG CW 2 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 3 PCT 1>WSW2
WALK SEG CW 3 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG CW 4 PCT 1>WSW3
WALK SEG CW 4 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG MD 5 PCT 1>WSM1
WALK SEG MD 5 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG MD 6 PCT 1>WSM2
WALK SEG MD 6 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y
WALK SEG NT 7 PCT 1>WSNT
WALK SEG NT 7 MODE1>Y         Y         Y
*SYNTAX OF COMMAND TO ADD A COMPONENT TO A SPECIFIC WALK SEGMENT IF DESIRED
*WALK SEG CW 1 COEF1>                              -0.04747  -0.04747  -0.04747  -0.04747  -0.04747  -0.04747
*WALK SEG CW 1 VAR 1>                              WTSS      DTSS      DISS      WRSS      DRSS      DJSS
COMPUTE WSWM       >PCMI*PCMJ
COMPUTE WSW1       >(PCTI-PCMI)*PCMJ
COMPUTE WSW2       >(PCTI-PCMI)*(PCTJ-PCMJ)
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COMPUTE WSW3       >PCMI*(PCTJ-PCMJ)
COMPUTE WSM1       >(1-PCTI)*PCMJ
COMPUTE WSM2       >(1-PCTI)*(PCTJ-PCMJ)
COMPUTE WSNT       >1-WSWM-WSW1-WSW2-WSW3-WSM1-WSM2

*NEST DEFINITIONS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
NEST 1,1=         1>Y         Y         Y
NEST 1,2=         1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
NEST 2,1=         1>                              Y         Y         Y         Y
NEST 2,2=         1>                                                                      Y                   Y                   Y                   Y
NEST 2,3=         1>                                                                                Y                   Y                   Y                   Y
NEST 3,1=         1>                              Y
NEST 3,2=         1>                                        Y
NEST 3,3=         1>                                                  Y
NEST 3,4=         1>                                                            Y
NEST 4,1          1>                                                                      Y
NEST 4,2          1>                                                                                          Y
NEST 4,3          1>                                                                                                              Y
NEST 4,4          1>                                                                                                                                  Y
NEST 5,1          1>                                                                                Y
NEST 5,2          1>                                                                                                    Y
NEST 5,3          1>                                                                                                                        Y
NEST 5,4          1>                                                                                                                                            Y
NEST 6,1          1>Y
NEST 6,2          1>          Y         Y
NEST 7,1          1>          Y
NEST 7,2          1>                    Y

IGRP DEFINITION    >i813
JGRP DEFINITION    >j813
* 1 DC CORE/URBAN-DC CORE
SEGMENT  1         >    1    1
SEGMENT  1         >    3    1
* 2 DC CORE/URBAN-VA CORE
SEGMENT  2         >    1    2
SEGMENT  2         >    3    2
* 3 DC CORE/URBAN-URBAN
SEGMENT  3         >    1    3
SEGMENT  3         >    3    3
SEGMENT  3         >    1    4
SEGMENT  3         >    3    4
SEGMENT  3         >    1    5
SEGMENT  3         >    3    5
* 4 DC CORE/URBAN-OTHER
SEGMENT  4         >    1    6
SEGMENT  4         >    3    6
SEGMENT  4         >    1    7
SEGMENT  4         >    3    7
* 5 MD URBAN-DC CORE
SEGMENT  5         >    4    1
* 6 MD URBAN-VA CORE
SEGMENT  6         >    4    2
* 7 MD URBAN-URBAN
SEGMENT  7         >    4    3
SEGMENT  7         >    4    4
SEGMENT  7         >    4    5
* 8 MD URBAN-OTHER
SEGMENT  8         >    4    6
SEGMENT  8         >    4    7
* 9 VA CORE/URBAN-DC CORE
SEGMENT  9         >    2    1
SEGMENT  9         >    5    1
*10 VA CORE/URBAN-VA CORE
SEGMENT 10         >    2    2
SEGMENT 10         >    5    2
*11 VA CORE/URBAN-URBAN
SEGMENT 11         >    2    3
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SEGMENT 11         >    5    3
SEGMENT 11         >    2    4
SEGMENT 11         >    5    4
SEGMENT 11         >    2    5
SEGMENT 11         >    5    5
*12 VA CORE/URBAN-OTHER
SEGMENT 12         >    2    6
SEGMENT 12         >    5    6
SEGMENT 12         >    2    7
SEGMENT 12         >    5    7
*13 MD OTHER-DC CORE
SEGMENT 13         >    6    1
*14 MD OTHER-VA CORE
SEGMENT 14         >    6    2
*15 MD OTHER-URBAN
SEGMENT 15         >    6    3
SEGMENT 15         >    6    4
SEGMENT 15         >    6    5
*16 MD OTHER-OTHER
SEGMENT 16         >    6    6
SEGMENT 16         >    6    7
*17 VA OTHER-DC CORE
SEGMENT 17         >    7    1
*18 VA OTHER-VA CORE
SEGMENT 18         >    7    2
*19 VA OTHER-URBAN
SEGMENT 19         >    7    3
SEGMENT 19         >    7    4
SEGMENT 19         >    7    5
*20 VA OTHER-OTHER
SEGMENT 20         >    7    6
SEGMENT 20         >    7    7

* SEGMENT  1
NSTC 10 1GRND TOTAL>
NSTC 11 1AUTO      >      0.5    0.00000
NSTC 12 1TRANSIT   >      0.5   -1.72791
NSTC 20 1TOTAL TRN >
NSTC 21 1WALK ACC  >      0.5    0.00000
NSTC 22 1PNR ACC   >      0.5   -3.05494
NSTC 23 1KNR ACC   >      0.5   -5.34386
NSTC 30 1WLK TRN
NSTC 31 1WLK CR    >      1.0   -0.27113
NSTC 32 1WLK BUS   >      1.0   -2.73886
NSTC 33 1WLK BU/MR >      1.0    6.18635
NSTC 34 1WLK METRO >      1.0    0.00000
NSTC 40 1PNR TRN
NSTC 41 1PNR CR    >      1.0    0.45014
NSTC 42 1PNR BUS   >      1.0   -0.08995
NSTC 43 1PNR BU/MR >      1.0    4.95534
NSTC 44 1PNR METRO >      1.0    0.00000
NSTC 50 1KNR TRN
NSTC 51 1KNR CR    >      1.0    1.69655
NSTC 52 1KNR BUS   >      1.0    4.39719
NSTC 53 1KNR BU/MR >      1.0   12.04612
NSTC 54 1KNR METRO >      1.0    0.00000
NSTC 60 1AUTO
NSTC 61 1LOV       >      1.0    0.00000
NSTC 62 1HOV       >      0.5   -5.61093
NSTC 70 1HOV
NSTC 71 1HOV2      >      1.0    0.00000
NSTC 72 1HOV3+     >      1.0   -6.86427
* SEGMENT  2
NSTC 10 2GRND TOTAL>
NSTC 11 2AUTO      >      0.5    0.00000
NSTC 12 2TRANSIT   >      0.5   -0.25445
NSTC 20 2TOTAL TRN >
NSTC 21 2WALK ACC  >      0.5    0.00000
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NSTC 22 2PNR ACC   >      0.5   -1.43604
NSTC 23 2KNR ACC   >      0.5   -2.46790
NSTC 30 2WLK TRN
NSTC 31 2WLK CR    >      1.0   -0.72108
NSTC 32 2WLK BUS   >      1.0   -0.72108
NSTC 33 2WLK BU/MR >      1.0    7.98410
NSTC 34 2WLK METRO >      1.0    0.00000
NSTC 40 2PNR TRN
NSTC 41 2PNR CR    >      1.0   -0.13895
NSTC 42 2PNR BUS   >      1.0   -0.13895
NSTC 43 2PNR BU/MR >      1.0    1.75789
NSTC 44 2PNR METRO >      1.0    0.00000
NSTC 50 2KNR TRN
NSTC 51 2KNR CR    >      1.0   -0.05792
NSTC 52 2KNR BUS   >      1.0   -0.05792
NSTC 53 2KNR BU/MR >      1.0   -0.05792
NSTC 54 2KNR METRO >      1.0    0.00000
NSTC 60 2AUTO
NSTC 61 2LOV       >      1.0    0.00000
NSTC 62 2HOV       >      0.5   -4.40653
NSTC 70 2HOV
NSTC 71 2HOV2      >      1.0    0.00000
NSTC 72 2HOV3+     >      1.0   -6.66054
* SEGMENT  3
NSTC 10 3GRND TOTAL>
NSTC 11 3AUTO      >      0.5    0.00000
NSTC 12 3TRANSIT   >      0.5   -0.26922
NSTC 20 3TOTAL TRN >
NSTC 21 3WALK ACC  >      0.5    0.00000
NSTC 22 3PNR ACC   >      0.5   -3.01505
NSTC 23 3KNR ACC   >      0.5   -5.71536
NSTC 30 3WLK TRN
NSTC 31 3WLK CR    >      1.0   -0.69975
NSTC 32 3WLK BUS   >      1.0   -1.97552
NSTC 33 3WLK BU/MR >      1.0    2.47299
NSTC 34 3WLK METRO >      1.0    0.00000
NSTC 40 3PNR TRN
NSTC 41 3PNR CR    >      1.0   -0.76159
NSTC 42 3PNR BUS   >      1.0   -6.05545
NSTC 43 3PNR BU/MR >      1.0   -0.71906
NSTC 44 3PNR METRO >      1.0    0.00000
NSTC 50 3KNR TRN
NSTC 51 3KNR CR    >      1.0    2.01565
NSTC 52 3KNR BUS   >      1.0    5.24924
NSTC 53 3KNR BU/MR >      1.0    7.78638
NSTC 54 3KNR METRO >      1.0    0.00000
NSTC 60 3AUTO
NSTC 61 3LOV       >      1.0    0.00000
NSTC 62 3HOV       >      0.5   -4.08016
NSTC 70 3HOV
NSTC 71 3HOV2      >      1.0    0.00000
NSTC 72 3HOV3+     >      1.0   -6.34957
* SEGMENT  4
NSTC 10 4GRND TOTAL>
NSTC 11 4AUTO      >      0.5    0.00000
NSTC 12 4TRANSIT   >      0.5    3.87963
NSTC 20 4TOTAL TRN >
NSTC 21 4WALK ACC  >      0.5    0.00000
NSTC 22 4PNR ACC   >      0.5   -3.04773
NSTC 23 4KNR ACC   >      0.5   -8.05703
NSTC 30 4WLK TRN
NSTC 31 4WLK CR    >      1.0   -7.02629
NSTC 32 4WLK BUS   >      1.0  -17.88690
NSTC 33 4WLK BU/MR >      1.0  -13.63727
NSTC 34 4WLK METRO >      1.0    0.00000
NSTC 40 4PNR TRN
NSTC 41 4PNR CR    >      1.0   -2.66764
NSTC 42 4PNR BUS   >      1.0   -8.02972
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NSTC 43 4PNR BU/MR >      1.0   -9.56061
NSTC 44 4PNR METRO >      1.0    0.00000
NSTC 50 4KNR TRN
NSTC 51 4KNR CR    >      1.0   -1.11632
NSTC 52 4KNR BUS   >      1.0   -0.08576
NSTC 53 4KNR BU/MR >      1.0   -5.00748
NSTC 54 4KNR METRO >      1.0    0.00000
NSTC 60 4AUTO
NSTC 61 4LOV       >      1.0    0.00000
NSTC 62 4HOV       >      0.5   -4.02572
NSTC 70 4HOV
NSTC 71 4HOV2      >      1.0    0.00000
NSTC 72 4HOV3+     >      1.0   -7.18357
* SEGMENT  5
NSTC 10 5GRND TOTAL>
NSTC 11 5AUTO      >      0.5    0.00000
NSTC 12 5TRANSIT   >      0.5   -1.63199
NSTC 20 5TOTAL TRN >
NSTC 21 5WALK ACC  >      0.5    0.00000
NSTC 22 5PNR ACC   >      0.5   -3.65080
NSTC 23 5KNR ACC   >      0.5   -5.77330
NSTC 30 5WLK TRN
NSTC 31 5WLK CR    >      1.0    0.65144
NSTC 32 5WLK BUS   >      1.0    0.21933
NSTC 33 5WLK BU/MR >      1.0    5.26821
NSTC 34 5WLK METRO >      1.0    0.00000
NSTC 40 5PNR TRN
NSTC 41 5PNR CR    >      1.0    0.98166
NSTC 42 5PNR BUS   >      1.0    0.98166
NSTC 43 5PNR BU/MR >      1.0   11.13444
NSTC 44 5PNR METRO >      1.0    0.00000
NSTC 50 5KNR TRN
NSTC 51 5KNR CR    >      1.0   -0.07457
NSTC 52 5KNR BUS   >      1.0   -0.07457
NSTC 53 5KNR BU/MR >      1.0   -0.07457
NSTC 54 5KNR METRO >      1.0    0.00000
NSTC 60 5AUTO
NSTC 61 5LOV       >      1.0    0.00000
NSTC 62 5HOV       >      0.5   -6.13679
NSTC 70 5HOV
NSTC 71 5HOV2      >      1.0    0.00000
NSTC 72 5HOV3+     >      1.0   -7.50877
* SEGMENT  6
NSTC 10 6GRND TOTAL>
NSTC 11 6AUTO      >      0.5    0.00000
NSTC 12 6TRANSIT   >      0.5    1.43580
NSTC 20 6TOTAL TRN >
NSTC 21 6WALK ACC  >      0.5    0.00000
NSTC 22 6PNR ACC   >      0.5   -6.14334
NSTC 23 6KNR ACC   >      0.5   -6.14334
NSTC 30 6WLK TRN
NSTC 31 6WLK CR    >      1.0    0.80406
NSTC 32 6WLK BUS   >      1.0    0.80406
NSTC 33 6WLK BU/MR >      1.0    9.90225
NSTC 34 6WLK METRO >      1.0    0.00000
NSTC 40 6PNR TRN
NSTC 41 6PNR CR    >      1.0    0.00001
NSTC 42 6PNR BUS   >      1.0    0.00001
NSTC 43 6PNR BU/MR >      1.0    0.00001
NSTC 44 6PNR METRO >      1.0    0.00000
NSTC 50 6KNR TRN
NSTC 51 6KNR CR    >      1.0    0.00001
NSTC 52 6KNR BUS   >      1.0    0.00001
NSTC 53 6KNR BU/MR >      1.0    0.00001
NSTC 54 6KNR METRO >      1.0    0.00000
NSTC 60 6AUTO
NSTC 61 6LOV       >      1.0    0.00000
NSTC 62 6HOV       >      0.5    0.02376
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NSTC 70 6HOV
NSTC 71 6HOV2      >      1.0    0.00000
NSTC 72 6HOV3+     >      1.0    0.02231
* SEGMENT  7
NSTC 10 7GRND TOTAL>
NSTC 11 7AUTO      >      0.5    0.00000
NSTC 12 7TRANSIT   >      0.5   -2.16233
NSTC 20 7TOTAL TRN >
NSTC 21 7WALK ACC  >      0.5    0.00000
NSTC 22 7PNR ACC   >      0.5   -5.35198
NSTC 23 7KNR ACC   >      0.5   -7.60287
NSTC 30 7WLK TRN
NSTC 31 7WLK CR    >      1.0    1.17616
NSTC 32 7WLK BUS   >      1.0    1.16950
NSTC 33 7WLK BU/MR >      1.0    7.85710
NSTC 34 7WLK METRO >      1.0    0.00000
NSTC 40 7PNR TRN
NSTC 41 7PNR CR    >      1.0    2.93932
NSTC 42 7PNR BUS   >      1.0   -0.31756
NSTC 43 7PNR BU/MR >      1.0   10.25594
NSTC 44 7PNR METRO >      1.0    0.00000
NSTC 50 7KNR TRN
NSTC 51 7KNR CR    >      1.0    7.02271
NSTC 52 7KNR BUS   >      1.0   12.46948
NSTC 53 7KNR BU/MR >      1.0   16.29355
NSTC 54 7KNR METRO >      1.0    0.00000
NSTC 60 7AUTO
NSTC 61 7LOV       >      1.0    0.00000
NSTC 62 7HOV       >      0.5   -3.98615
NSTC 70 7HOV
NSTC 71 7HOV2      >      1.0    0.00000
NSTC 72 7HOV3+     >      1.0   -6.18829
* SEGMENT  8
NSTC 10 8GRND TOTAL>
NSTC 11 8AUTO      >      0.5    0.00000
NSTC 12 8TRANSIT   >      0.5   -1.21524
NSTC 20 8TOTAL TRN >
NSTC 21 8WALK ACC  >      0.5    0.00000
NSTC 22 8PNR ACC   >      0.5   -3.30101
NSTC 23 8KNR ACC   >      0.5   -3.77062
NSTC 30 8WLK TRN
NSTC 31 8WLK CR    >      1.0    3.05842
NSTC 32 8WLK BUS   >      1.0    4.35008
NSTC 33 8WLK BU/MR >      1.0    3.40893
NSTC 34 8WLK METRO >      1.0    0.00000
NSTC 40 8PNR TRN
NSTC 41 8PNR CR    >      1.0   -2.49034
NSTC 42 8PNR BUS   >      1.0   -2.49034
NSTC 43 8PNR BU/MR >      1.0   -2.49034
NSTC 44 8PNR METRO >      1.0    0.00000
NSTC 50 8KNR TRN
NSTC 51 8KNR CR    >      1.0   -2.57086
NSTC 52 8KNR BUS   >      1.0   -2.57086
NSTC 53 8KNR BU/MR >      1.0   -2.57086
NSTC 54 8KNR METRO >      1.0    0.00000
NSTC 60 8AUTO
NSTC 61 8LOV       >      1.0    0.00000
NSTC 62 8HOV       >      0.5   -4.08380
NSTC 70 8HOV
NSTC 71 8HOV2      >      1.0    0.00000
NSTC 72 8HOV3+     >      1.0   -7.03008
* SEGMENT  9
NSTC 10 9GRND TOTAL>
NSTC 11 9AUTO      >      0.5    0.00000
NSTC 12 9TRANSIT   >      0.5   -1.77537
NSTC 20 9TOTAL TRN >
NSTC 21 9WALK ACC  >      0.5    0.00000
NSTC 22 9PNR ACC   >      0.5   -2.15661
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NSTC 23 9KNR ACC   >      0.5   -4.54160
NSTC 30 9WLK TRN
NSTC 31 9WLK CR    >      1.0   -0.72941
NSTC 32 9WLK BUS   >      1.0   -0.72941
NSTC 33 9WLK BU/MR >      1.0    5.48479
NSTC 34 9WLK METRO >      1.0    0.00000
NSTC 40 9PNR TRN
NSTC 41 9PNR CR    >      1.0    1.99902
NSTC 42 9PNR BUS   >      1.0    1.99902
NSTC 43 9PNR BU/MR >      1.0   10.63686
NSTC 44 9PNR METRO >      1.0    0.00000
NSTC 50 9KNR TRN
NSTC 51 9KNR CR    >      1.0    0.28579
NSTC 52 9KNR BUS   >      1.0    0.28579
NSTC 53 9KNR BU/MR >      1.0    7.76507
NSTC 54 9KNR METRO >      1.0    0.00000
NSTC 60 9AUTO
NSTC 61 9LOV       >      1.0    0.00000
NSTC 62 9HOV       >      0.5   -5.90159
NSTC 70 9HOV
NSTC 71 9HOV2      >      1.0    0.00000
NSTC 72 9HOV3+     >      1.0   -7.32631
* SEGMENT 10
NSTC 1010GRND TOTAL>
NSTC 1110AUTO      >      0.5    0.00000
NSTC 1210TRANSIT   >      0.5   -1.86065
NSTC 2010TOTAL TRN >
NSTC 2110WALK ACC  >      0.5    0.00000
NSTC 2210PNR ACC   >      0.5   -2.15213
NSTC 2310KNR ACC   >      0.5   -8.91447
NSTC 3010WLK TRN
NSTC 3110WLK CR    >      1.0   -0.14927
NSTC 3210WLK BUS   >      1.0   -1.78923
NSTC 3310WLK BU/MR >      1.0    2.78381
NSTC 3410WLK METRO >      1.0    0.00000
NSTC 4010PNR TRN
NSTC 4110PNR CR    >      1.0   -0.99840
NSTC 4210PNR BUS   >      1.0   -0.99840
NSTC 4310PNR BU/MR >      1.0   12.71164
NSTC 4410PNR METRO >      1.0    0.00000
NSTC 5010KNR TRN
NSTC 5110KNR CR    >      1.0    1.19633
NSTC 5210KNR BUS   >      1.0   11.93638
NSTC 5310KNR BU/MR >      1.0    1.19633
NSTC 5410KNR METRO >      1.0    0.00000
NSTC 6010AUTO
NSTC 6110LOV       >      1.0    0.00000
NSTC 6210HOV       >      0.5   -4.91079
NSTC 7010HOV
NSTC 7110HOV2      >      1.0    0.00000
NSTC 7210HOV3+     >      1.0   -6.90730
* SEGMENT 11
NSTC 1011GRND TOTAL>
NSTC 1111AUTO      >      0.5    0.00000
NSTC 1211TRANSIT   >      0.5   -1.69409
NSTC 2011TOTAL TRN >
NSTC 2111WALK ACC  >      0.5    0.00000
NSTC 2211PNR ACC   >      0.5   -4.61804
NSTC 2311KNR ACC   >      0.5   -9.04468
NSTC 3011WLK TRN
NSTC 3111WLK CR    >      1.0   -0.11905
NSTC 3211WLK BUS   >      1.0   -1.57767
NSTC 3311WLK BU/MR >      1.0    4.07756
NSTC 3411WLK METRO >      1.0    0.00000
NSTC 4011PNR TRN
NSTC 4111PNR CR    >      1.0    0.02884
NSTC 4211PNR BUS   >      1.0    0.02884
NSTC 4311PNR BU/MR >      1.0   10.03526
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NSTC 4411PNR METRO >      1.0    0.00000
NSTC 5011KNR TRN
NSTC 5111KNR CR    >      1.0    0.98223
NSTC 5211KNR BUS   >      1.0   11.35006
NSTC 5311KNR BU/MR >      1.0    0.98223
NSTC 5411KNR METRO >      1.0    0.00000
NSTC 6011AUTO
NSTC 6111LOV       >      1.0    0.00000
NSTC 6211HOV       >      0.5   -4.38382
NSTC 7011HOV
NSTC 7111HOV2      >      1.0    0.00000
NSTC 7211HOV3+     >      1.0   -6.53047
* SEGMENT 12
NSTC 1012GRND TOTAL>
NSTC 1112AUTO      >      0.5    0.00000
NSTC 1212TRANSIT   >      0.5    0.71744
NSTC 2012TOTAL TRN >
NSTC 2112WALK ACC  >      0.5    0.00000
NSTC 2212PNR ACC   >      0.5   -1.56360
NSTC 2312KNR ACC   >      0.5   -9.34429
NSTC 3012WLK TRN
NSTC 3112WLK CR    >      1.0   -6.95615
NSTC 3212WLK BUS   >      1.0  -11.71227
NSTC 3312WLK BU/MR >      1.0   -7.97387
NSTC 3412WLK METRO >      1.0    0.00000
NSTC 4012PNR TRN
NSTC 4112PNR CR    >      1.0   -3.31335
NSTC 4212PNR BUS   >      1.0   -7.07686
NSTC 4312PNR BU/MR >      1.0   -5.68244
NSTC 4412PNR METRO >      1.0    0.00000
NSTC 5012KNR TRN
NSTC 5112KNR CR    >      1.0    4.77777
NSTC 5212KNR BUS   >      1.0   10.19062
NSTC 5312KNR BU/MR >      1.0    3.06555
NSTC 5412KNR METRO >      1.0    0.00000
NSTC 6012AUTO
NSTC 6112LOV       >      1.0    0.00000
NSTC 6212HOV       >      0.5   -4.04424
NSTC 7012HOV
NSTC 7112HOV2      >      1.0    0.00000
NSTC 7212HOV3+     >      1.0   -6.74686
* SEGMENT 13
NSTC 1013GRND TOTAL>
NSTC 1113AUTO      >      0.5    0.00000
NSTC 1213TRANSIT   >      0.5   -1.29825
NSTC 2013TOTAL TRN >
NSTC 2113WALK ACC  >      0.5    0.00000
NSTC 2213PNR ACC   >      0.5   -5.95842
NSTC 2313KNR ACC   >      0.5   -6.65189
NSTC 3013WLK TRN
NSTC 3113WLK CR    >      1.0   -0.64490
NSTC 3213WLK BUS   >      1.0   -3.14487
NSTC 3313WLK BU/MR >      1.0   -0.08096
NSTC 3413WLK METRO >      1.0    0.00000
NSTC 4013PNR TRN
NSTC 4113PNR CR    >      1.0    1.62553
NSTC 4213PNR BUS   >      1.0    1.62553
NSTC 4313PNR BU/MR >      1.0   20.35991
NSTC 4413PNR METRO >      1.0    0.00000
NSTC 5013KNR TRN
NSTC 5113KNR CR    >      1.0    0.57046
NSTC 5213KNR BUS   >      1.0    7.28889
NSTC 5313KNR BU/MR >      1.0   11.54143
NSTC 5413KNR METRO >      1.0    0.00000
NSTC 6013AUTO
NSTC 6113LOV       >      1.0    0.00000
NSTC 6213HOV       >      0.5   -7.42181
NSTC 7013HOV
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NSTC 7113HOV2      >      1.0    0.00000
NSTC 7213HOV3+     >      1.0   -9.05013
* SEGMENT 14
NSTC 1014GRND TOTAL>
NSTC 1114AUTO      >      0.5    0.00000
NSTC 1214TRANSIT   >      0.5   -2.21037
NSTC 2014TOTAL TRN >
NSTC 2114WALK ACC  >      0.5    0.00000
NSTC 2214PNR ACC   >      0.5   -3.60335
NSTC 2314KNR ACC   >      0.5   -4.00996
NSTC 3014WLK TRN
NSTC 3114WLK CR    >      1.0    2.12415
NSTC 3214WLK BUS   >      1.0    2.12415
NSTC 3314WLK BU/MR >      1.0    5.73695
NSTC 3414WLK METRO >      1.0    0.00000
NSTC 4014PNR TRN
NSTC 4114PNR CR    >      1.0   -0.18147
NSTC 4214PNR BUS   >      1.0   -0.18147
NSTC 4314PNR BU/MR >      1.0   -0.18147
NSTC 4414PNR METRO >      1.0    0.00000
NSTC 5014KNR TRN
NSTC 5114KNR CR    >      1.0    0.72651
NSTC 5214KNR BUS   >      1.0    0.72651
NSTC 5314KNR BU/MR >      1.0   12.11003
NSTC 5414KNR METRO >      1.0    0.00000
NSTC 6014AUTO
NSTC 6114LOV       >      1.0    0.00000
NSTC 6214HOV       >      0.5   -8.61219
NSTC 7014HOV
NSTC 7114HOV2      >      1.0    0.00000
NSTC 7214HOV3+     >      1.0  -10.02262
* SEGMENT 15
NSTC 1015GRND TOTAL>
NSTC 1115AUTO      >      0.5    0.00000
NSTC 1215TRANSIT   >      0.5   -2.36196
NSTC 2015TOTAL TRN >
NSTC 2115WALK ACC  >      0.5    0.00000
NSTC 2215PNR ACC   >      0.5   -4.59038
NSTC 2315KNR ACC   >      0.5   -4.83181
NSTC 3015WLK TRN
NSTC 3115WLK CR    >      1.0    2.83105
NSTC 3215WLK BUS   >      1.0    3.35303
NSTC 3315WLK BU/MR >      1.0    5.78353
NSTC 3415WLK METRO >      1.0    0.00000
NSTC 4015PNR TRN
NSTC 4115PNR CR    >      1.0    1.84677
NSTC 4215PNR BUS   >      1.0    6.17315
NSTC 4315PNR BU/MR >      1.0   12.73990
NSTC 4415PNR METRO >      1.0    0.00000
NSTC 5015KNR TRN
NSTC 5115KNR CR    >      1.0    4.07621
NSTC 5215KNR BUS   >      1.0    9.83832
NSTC 5315KNR BU/MR >      1.0   11.45718
NSTC 5415KNR METRO >      1.0    0.00000
NSTC 6015AUTO
NSTC 6115LOV       >      1.0    0.00000
NSTC 6215HOV       >      0.5   -5.42543
NSTC 7015HOV
NSTC 7115HOV2      >      1.0    0.00000
NSTC 7215HOV3+     >      1.0   -8.36053
* SEGMENT 16
NSTC 1016GRND TOTAL>
NSTC 1116AUTO      >      0.5    0.00000
NSTC 1216TRANSIT   >      0.5   -1.32326
NSTC 2016TOTAL TRN >
NSTC 2116WALK ACC  >      0.5    0.00000
NSTC 2216PNR ACC   >      0.5   -7.38460
NSTC 2316KNR ACC   >      0.5   -8.02547
```

```
NSTC 3016WLK TRN
NSTC 3116WLK CR    >      1.0    3.08509
NSTC 3216WLK BUS   >      1.0    3.73329
NSTC 3316WLK BU/MR >      1.0    2.22245
NSTC 3416WLK METRO >      1.0    0.00000
NSTC 4016PNR TRN
NSTC 4116PNR CR    >      1.0   -4.17440
NSTC 4216PNR BUS   >      1.0    0.08839
NSTC 4316PNR BU/MR >      1.0  -18.00300
NSTC 4416PNR METRO >      1.0    0.00000
NSTC 5016KNR TRN
NSTC 5116KNR CR    >      1.0    9.18215
NSTC 5216KNR BUS   >      1.0   14.67757
NSTC 5316KNR BU/MR >      1.0   11.25128
NSTC 5416KNR METRO >      1.0    0.00000
NSTC 6016AUTO
NSTC 6116LOV       >      1.0    0.00000
NSTC 6216HOV       >      0.5   -3.09621
NSTC 7016HOV
NSTC 7116HOV2      >      1.0    0.00000
NSTC 7216HOV3+     >      1.0   -6.60928
* SEGMENT 17
NSTC 1017GRND TOTAL>
NSTC 1117AUTO      >      0.5    0.00000
NSTC 1217TRANSIT   >      0.5    0.09569
NSTC 2017TOTAL TRN >
NSTC 2117WALK ACC  >      0.5    0.00000
NSTC 2217PNR ACC   >      0.5   -7.34116
NSTC 2317KNR ACC   >      0.5   -7.77560
NSTC 3017WLK TRN
NSTC 3117WLK CR    >      1.0   -4.26828
NSTC 3217WLK BUS   >      1.0   -8.61489
NSTC 3317WLK BU/MR >      1.0   -5.73538
NSTC 3417WLK METRO >      1.0    0.00000
NSTC 4017PNR TRN
NSTC 4117PNR CR    >      1.0    0.98435
NSTC 4217PNR BUS   >      1.0    0.68072
NSTC 4317PNR BU/MR >      1.0   12.25494
NSTC 4417PNR METRO >      1.0    0.00000
NSTC 5017KNR TRN
NSTC 5117KNR CR    >      1.0   -0.12475
NSTC 5217KNR BUS   >      1.0   -0.12475
NSTC 5317KNR BU/MR >      1.0    6.76815
NSTC 5417KNR METRO >      1.0    0.00000
NSTC 6017AUTO
NSTC 6117LOV       >      1.0    0.00000
NSTC 6217HOV       >      0.5   -7.58427
NSTC 7017HOV
NSTC 7117HOV2      >      1.0    0.00000
NSTC 7217HOV3+     >      1.0  -11.31572
* SEGMENT 18
NSTC 1018GRND TOTAL>
NSTC 1118AUTO      >      0.5    0.00000
NSTC 1218TRANSIT   >      0.5   -2.83287
NSTC 2018TOTAL TRN >
NSTC 2118WALK ACC  >      0.5    0.00000
NSTC 2218PNR ACC   >      0.5   -4.02148
NSTC 2318KNR ACC   >      0.5   -4.52274
NSTC 3018WLK TRN
NSTC 3118WLK CR    >      1.0   -2.10615
NSTC 3218WLK BUS   >      1.0   -4.81480
NSTC 3318WLK BU/MR >      1.0   -0.96058
NSTC 3418WLK METRO >      1.0    0.00000
NSTC 4018PNR TRN
NSTC 4118PNR CR    >      1.0    0.33817
NSTC 4218PNR BUS   >      1.0   -1.94672
NSTC 4318PNR BU/MR >      1.0   13.98154
NSTC 4418PNR METRO >      1.0    0.00000
```

```
NSTC 5018KNR TRN
NSTC 5118KNR CR    >      1.0   -0.26484
NSTC 5218KNR BUS   >      1.0   -0.26484
NSTC 5318KNR BU/MR >      1.0   10.67888
NSTC 5418KNR METRO >      1.0    0.00000
NSTC 6018AUTO
NSTC 6118LOV       >      1.0    0.00000
NSTC 6218HOV       >      0.5   -6.81934
NSTC 7018HOV
NSTC 7118HOV2      >      1.0    0.00000
NSTC 7218HOV3+     >      1.0  -10.76883
* SEGMENT 19
NSTC 1019GRND TOTAL>
NSTC 1119AUTO      >      0.5    0.00000
NSTC 1219TRANSIT   >      0.5   -0.10525
NSTC 2019TOTAL TRN >
NSTC 2119WALK ACC  >      0.5    0.00000
NSTC 2219PNR ACC   >      0.5  -10.81618
NSTC 2319KNR ACC   >      0.5  -10.15112
NSTC 3019WLK TRN
NSTC 3119WLK CR    >      1.0   -7.32087
NSTC 3219WLK BUS   >      1.0  -11.72024
NSTC 3319WLK BU/MR >      1.0   -6.97662
NSTC 3419WLK METRO >      1.0    0.00000
NSTC 4019PNR TRN
NSTC 4119PNR CR    >      1.0    0.69843
NSTC 4219PNR BUS   >      1.0    0.69843
NSTC 4319PNR BU/MR >      1.0   11.07338
NSTC 4419PNR METRO >      1.0    0.00000
NSTC 5019KNR TRN
NSTC 5119KNR CR    >      1.0   -0.51112
NSTC 5219KNR BUS   >      1.0   -0.51112
NSTC 5319KNR BU/MR >      1.0    6.83586
NSTC 5419KNR METRO >      1.0    0.00000
NSTC 6019AUTO
NSTC 6119LOV       >      1.0    0.00000
NSTC 6219HOV       >      0.5   -6.57133
NSTC 7019HOV
NSTC 7119HOV2      >      1.0    0.00000
NSTC 7219HOV3+     >      1.0   -9.82683
* SEGMENT 20
NSTC 1020GRND TOTAL>
NSTC 1120AUTO      >      0.5    0.00000
NSTC 1220TRANSIT   >      0.5    0.96974
NSTC 2020TOTAL TRN >
NSTC 2120WALK ACC  >      0.5    0.00000
NSTC 2220PNR ACC   >      0.5  -20.75413
NSTC 2320KNR ACC   >      0.5  -20.40507
NSTC 3020WLK TRN
NSTC 3120WLK CR    >      1.0  -11.86172
NSTC 3220WLK BUS   >      1.0  -12.18018
NSTC 3320WLK BU/MR >      1.0   -7.50436
NSTC 3420WLK METRO >      1.0    0.00000
NSTC 4020PNR TRN
NSTC 4120PNR CR    >      1.0    0.00001
NSTC 4220PNR BUS   >      1.0   10.05122
NSTC 4320PNR BU/MR >      1.0   -7.47978
NSTC 4420PNR METRO >      1.0    0.00000
NSTC 5020KNR TRN
NSTC 5120KNR CR    >      1.0    0.00001
NSTC 5220KNR BUS   >      1.0    9.70637
NSTC 5320KNR BU/MR >      1.0    2.61377
NSTC 5420KNR METRO >      1.0    0.00000
NSTC 6020AUTO
NSTC 6120LOV       >      1.0    0.00000
NSTC 6220HOV       >      0.5   -3.40038
NSTC 7020HOV
NSTC 7120HOV2      >      1.0    0.00000
```

```
NSTC 7220HOV3+     >      1.0   -6.94047

*DOWNTOWN=8
*SELI               >         8

*UNION STATION=64
*SELI               >        64

* =122
*SELI               >       122

*BETHESDA=345
*SELI               >       345

*SILVER SPRING=362
*SELI               >       362

*N.SILVER SPRING=464
*SELI               >       464

* =475
*SELI               >       475

*SHADY GROVE RD=578
*SELI               >       578

* =787
*SELI               >       787

*ANDREWS AFB=829
*SELI               >       829

*NEW CARROLTON=927
*SELI               >       927

*BRISTOL=972
*SELI               >       972

*FREDERICK=1043
*SELI               >      1043

*JESSUP=1080
*SELI               >      1080

*SCAGGSVILLE=1091
*SELI               >      1091

*WALDORF=1216
*SELI               >      1216

*PENTAGON=1231
*SELI               >      1231

*ROSSLYN=1236
*SELI               >      1236

*ALEXANDRIA=1337
*SELI               >      1337

* =1455
*SELI               >      1455

*SPRINGFIELD=1502
*SELI               >      1502

*  =1511
*SELI               >      1511
```

```
*TYSONS CRNR=1537
*SELI              >      1537

*FT BELVOIR=1554
*SELI              >      1554

*VIENNA=1619
*SELI              >      1619

*DULES AP=1698
*SELI              >      1698

*RESTON=1716
*SELI              >      1716

*LEESBURG=1842
*SELI              >      1842

*BRUNSWICK=1863
*SELI              >      1863

*DALE CITY=1942
*SELI              >      1942

*MANASSAS=1967
*SELI              >      1967

*SPOTSYLVANIA=2110
*SELI              >      2110

* =2055
*SELI              >      2055


*SELJ              >         8
*SELJ              >        63
*SELJ              >        64
*SELJ              >        77
*SELJ              >       100
*SELJ              >       344
*SELJ              >       345
*SELJ              >       362
*SELJ              >      1231
*SELJ              >      1236
*SELJ              >      1265
*SELJ              >      1337
*SELJ              >      1537

*SELI              >  523
*SELJ              >    9

TRACE             >         0
* OUTPUT %          >
*PROCSEL           >
PRINT MS          >NHW_NL_MC.PRN
INPUT PRINT FILE  >NHW_NL_MC.PRN
INPUT GOALS       >NHW_NL_MC.GOL
INFILE 1          >nhw_income.ptt
INFILE 2          >hwyop.skm
INFILE 3          >TRNOP_CR.SKM
INFILE 4          >TRNOP_AB.SKM
INFILE 5          >TRNOP_MR.SKM
INFILE 6          >TRNOP_BM.SKM
ZINFILE 8         >ZONEV2.A2F
OUTFILE 9         >NHW_NL_MC.MTT

* FTA USER BENEFITS SPECIFICATIONS
*FTA RESULTS FILE   >NHB_NL_MC.BEN
```

```
FTA TRANSIT COEFF  >-0.02860
FTA AUTO COEFF     >-0.02860
FTA PURPOSE NAME   >NHB
FTA PERIOD NAME    >ALLDAY
FTA ALTER. NAME    >CALIB
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
FTA AUTO NEST      >         1         1
FTA MOTORIZED?    1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
FTA TRANSIT?      1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
```

5 nho_nl_mc.ctl

```
NHO OP NESTED LOGIT MC - #DATE:  2/15/2011 #VER:  21
CHOICE            1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
*
*
*LOGIT COEFFICIENTS BY CHOICE FOR EACH SKIM (NO INPUT SKIM IS
*EQUIVALENT TO A CONSTANT)
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
COEF01:IVTT       1>-0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860  -0.02860
SKIM01:IVTT       1>DAIV      S2IV      S3IV      WCIV      WBIV      WTIV      WMIV      PCIV      KCIV      PBIV      KBIV      PTIV      KTIV      PMIV      KMIV
COEF02:AUTO ACC   1>                                                                      -0.04290  -0.04290  -0.04290  -0.04290  -0.04290  -0.04290  -0.04290  -0.04290
SKIM02:AUTO ACC   1>                                                                      PCAA      KCAA      PBAA      KBAA      PTAA      KTAA      PMAA      KMAA
COEF03:TERM/OVTT  1>-0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150
SKIM03:TERM/OVTT  1>DATE      S2TE      S3TE      WCOV      WBOV      WTOV      WMOV      PCOV      KCOV      PBOV      KBOV      PTOV      KTOV      PMOV      KMOV
* LIMIT COEF 04 TO PURPOSE 1
COEF PURP04        >1
COEF04:COST INC1  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM04:COST INC1  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 05 TO PURPOSE 2
COEF PURP05        >2
COEF05:COST INC2  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM05:COST INC2  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
* LIMIT COEF 06 TO PURPOSE 3
COEF PURP06        >3
COEF06:COST INC3  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM06:COST INC3  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF PURP07        >4
* LIMIT COEF 07 TO PURPOSE 4
COEF07:COST INC4  1>-0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994  -0.00994
SKIM07:COST INC4  1>DACS      S2CS      S3CS      WCCS      WBCS      WTCS      WMCS      PCCS      KCCS      PBCS      KBCS      PTCS      KTCS      PMCS      KMCS
COEF08:TRN XFERS  1>                              -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000  -0.00000
SKIM08:TRN XFERS  1>                              WCXF      WBXF      WTXF      WMXF      PCXF      KCXF      PBXF      KBXF      PTXF      KTXF      PMXF      KMXF
COEF09:TRN BRDPEN 1>                              -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150  -0.07150
SKIM09:TRN BRDPEN 1>                              WCXP      WBXP      WTXP      WMXP      PCXP      KCXP      PBXP      KBXP      PTXP      KTXP      PMXP      KMXP
*WALK WEIGHT
COEF10:TRN WLKWT  1>                              -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720  -0.05720
SKIM10:TRN WLKWT  1>                              WCWK      WBWK      WTWK      WMWK      PCWK      KCWK      PBWK      KBWK      PTWK      KTWK      PMWK      KMWK

*SYNTAX TO LIMIT UTILITY ELEMENT TO A PARTICULAR WALK SEGMENT IN THIS EXAMPLE
*    COEF 18 APPLIES ONLY TO WALK SEGMENT 1
*COEF WLKSEG18      >1

* ASSUMED MATRIX ORGANIZATION
* FILE 1 TRIP TABLE (SEPARATE FOR EACH PURPOSE)
* 1 INCOME 1 (HOME-BASED)/ALL NHB TRIPS
* 2 INCOME 2 (HOME-BASED)
* 3 INCOME 3 (HOME-BASED)
* 4 INCOME 4 (HOME-BASED)
*
* FILE 2 HIGHWAY SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* 1 SOV   TIME (MIN)
* 2 SOV   DIST (0.1 MILES)
```

```
* 3 SOV   TOLL (2007 CENTS)
* 4 HOV2  TIME (MIN)
* 5 HOV2  DIST (0.1 MILES)
* 6 HOV2  TOLL (2007 CENTS)
* 7 HOV3+ TIME (MIN)
* 8 HOV3+ DIST (0.1 MILES)
* 9 HOV3+ TOLL (2007 CENTS)
*
* FILE 3=COM. RAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 4=BUS SKIMS       (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 5=METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
* FILE 6=BUS+METRORAIL SKIMS (SEPARATE FOR PEAK AND OFFPEAK)
*  1 WLK ACC/EGR (.01 MIN)  15 PNR ACC/EGR (.01 MIN)  33 KNR ACC/EGR  (.01 MIN)
*  2 WLK OTHER   (.01 MIN)  16 PNR OTHER   (.01 MIN)  34 KNR OTHER   (.01 MIN)
*  3 WLK IWAIT   (.01 MIN)  17 PNR IWAIT   (.01 MIN)  35 KNR IWAIT   (.01 MIN)
*  4 WLK XWAIT   (.01 MIN)  18 PNR XWAIT   (.01 MIN)  36 KNR XWAIT   (.01 MIN)
*  5 WLK IVTT TOT(.01 MIN)  19 PNR IVTT TOT(.01 MIN)  37 KNR IVTT TOT(.01 MIN)
*  6 WLK IVTT CR (.01 MIN)  20 PNR IVTT CR (.01 MIN)  38 KNR IVTT CR (.01 MIN)
*  7 WLK IVTT XB (.01 MIN)  21 PNR IVTT XB (.01 MIN)  39 KNR IVTT XB (.01 MIN)
*  8 WLK IVTT MR (.01 MIN)  22 PNR IVTT MR (.01 MIN)  40 KNR IVTT MR (.01 MIN)
*  9 WLK IVTT NM (.01 MIN)  23 PNR IVTT NM (.01 MIN)  41 KNR IVTT NM (.01 MIN)
* 10 WLK IVTT NM2(.01 MIN)  24 PNR IVTT NM2(.01 MIN)  42 KNR IVTT NM2(.01 MIN)
* 11 WLK IVTT LB (.01 MIN)  25 PNR IVTT LB (.01 MIN)  43 KNR IVTT LB (.01 MIN)
* 12 WLK #XFERS  (NUMBER )  26 PNR #XFERS  (NUMBER )  44 KNR #XFERS  (NUMBER )
* 13 WLK COST    (07CENTS)  27 PNR COST    (07CENTS)  45 KNR COST    (07CENTS)
* 14 WLK XPEN    (.01 MIN)  28 PNR XPEN    (.01 MIN)  46 KNR XPEN    (.01 MIN)
*                           29 PNR ACC TIME(.01 MIN)  47 KNR ACC TIME(.01 MIN)
*                           30 PNR ACC DIST(.01 MIL)  48 KNR ACC DIST(.01 MIL)
*                           31 PNR ACC COST(07CENTS)
*                           32 PNR STA TERM(.01 MIN)
*
* FILE 8=ZDATA
*  1 HBW PARK COST (2007 CENTS)
*  2 HBS PARK COST (2007 CENTS)
*  3 HBO PARK COST (2007 CENTS)
*  4 NHB PARK COST (2007 CENTS)
*  5 TERMINAL TIME (HOME BASED) (MINUTES)
*  6 TERMINAL TIME (NON HOME BASED) (MINUTES)
*  7 ARC VIEW SHORT WALK PERCENT TO METRO
*  8 ARC VIEW LONG WALK PERCENT TO METRO
*  9 ARC VIEW SHORT WALK PERCENT TO ALL AM PK TRANSIT
* 10 ARC VIEW LONG WALK PERCENT TO ALL AM PK TRANSIT
* 11 ARC VIEW SHORT WALK PERCENT TO ALL OP TRANSIT
* 12 ARC VIEW LONG WALK PERCENT TO ALL OP TRANSIT
* 13 AREA TYPE
*    1=DC CORE
*    2=VA CORE
*    3=DC URBAN
*    4=MD URBAN
*    5=VA URBAN
*    6=MD OTHER
*    7=VA OTHER

* PARAMETERS
*=======================================================
* AUTO OPERATING COSTS IN CENTS/mile
COMPUTE AUOP       >10
* AUTO OCCUPANCY FOR 3+   Reduced from 3.5 to 3.35 on 3/1/07 rm
COMPUTE OCC3       >3.35

* TERMINAL TIMES, USE i/j805 FOR HBW, HBS, AND HBO. USE i/j806 FOR NHB
* HBW/HBS/HBO
*COMPUTE TERI       >i805
*COMPUTE TERJ       >j805
* NHB
COMPUTE TERI       >i806
COMPUTE TERJ       >j806
```

```
* PARK COSTS, USE i/j801 802 803 804 FOR HBW, HBS, HBO, NHB RESPECTIVELY
* HBW
*COMPUTE PRKC       >j801/2.
* HBS
* COMPUTE PRKC       >j802/2.
* HBO
* COMPUTE PRKC       >j803/2.
* NHB
COMPUTE PRKC       >j804

* Percent of productions in long-walk area that are assumed to walk = 25% (i.e., 75% drive)
COMPUTE PCLM       >0.25
COMPUTE PCLT       >0.25
* PERCENT WALKS-METRORAIL ONLY
COMPUTE PCMI       >(i807+PCLM*(i808-i807))/100.
COMPUTE PCMJ       >(j807+PCLM*(j808-j807))/100.
* PERCENT WALKS-PEAK
*COMPUTE PCTI       >(i809+PCLT*(i810-i809))/100.
*COMPUTE PCTJ       >(j809+PCLT*(j810-j809))/100.
* PERCENT WALKS-OFFPEAK
COMPUTE PCTI       >(i811+PCLT*(i812-i811))/100.
COMPUTE PCTJ       >(j811+PCLT*(j812-j811))/100.
COMPUTE PCMI       >MAX(PCMI,0)
COMPUTE PCMI       >MIN(PCMI,1)
COMPUTE PCMJ       >MAX(PCMJ,0)
COMPUTE PCMJ       >MIN(PCMJ,1)
COMPUTE PCTI       >MAX(PCTI,PCMI)
COMPUTE PCTI       >MIN(PCTI,1)
COMPUTE PCTJ       >MAX(PCTJ,PCMJ)
COMPUTE PCTJ       >MIN(PCTJ,1)
*
* DO TRIP SUBDIVISIONS
*
*  HOME BASED ALTERNATIVES
*COMPUTE TRP1       >m101
*COMPUTE TRP2       >m102
*COMPUTE TRP3       >m103
*COMPUTE TRP4       >m104
* NON-HOME BASED
COMPUTE TRP1       >0.25*m101
COMPUTE TRP2       >0.25*m101
COMPUTE TRP3       >0.25*m101
COMPUTE TRP4       >0.25*m101
*
* BE SURE TO UPDATE THE IVTT COEFFICIENT IN FTA SECTION FOR EACH PURPOSE
*
*=====================================================
*INITIALIZING ALL VARIABLES WITHIN IF STATEMENTS TO ZERO
COMPUTE DAIV       >0
COMPUTE DACS       >0
COMPUTE DATE       >0
COMPUTE S2IV       >0
COMPUTE S2CS       >0
COMPUTE S2TE       >0
COMPUTE S3IV       >0
COMPUTE S3CS       >0
COMPUTE S3TE       >0
COMPUTE WKIV       >0
COMPUTE WKOV       >0
COMPUTE WKXF       >0
COMPUTE WKCS       >0
COMPUTE WKXP       >0
COMPUTE WBIV       >0
COMPUTE WBOV       >0
COMPUTE WBXF       >0
COMPUTE WBCS       >0
COMPUTE WBXP       >0
COMPUTE WTIV       >0
```

```
COMPUTE WTOV       >0
COMPUTE WTXF       >0
COMPUTE WTCS       >0
COMPUTE WTXP       >0
COMPUTE WMIV       >0
COMPUTE WMOV       >0
COMPUTE WMXF       >0
COMPUTE WMCS       >0
COMPUTE WMXP       >0
COMPUTE PCIV       >0
COMPUTE PCAA       >0
COMPUTE PCOV       >0
COMPUTE PCXF       >0
COMPUTE PCCS       >0
COMPUTE PCXP       >0
COMPUTE PBIV       >0
COMPUTE PBAA       >0
COMPUTE PBOV       >0
COMPUTE PBXF       >0
COMPUTE PBCS       >0
COMPUTE PBXP       >0
COMPUTE PTIV       >0
COMPUTE PTAA       >0
COMPUTE PTOV       >0
COMPUTE PTXF       >0
COMPUTE PTCS       >0
COMPUTE PTXP       >0
COMPUTE PMIV       >0
COMPUTE PMAA       >0
COMPUTE PMOV       >0
COMPUTE PMXF       >0
COMPUTE PMCS       >0
COMPUTE PMXP       >0
COMPUTE KCIV       >0
COMPUTE KCAA       >0
COMPUTE KCOV       >0
COMPUTE KCXF       >0
COMPUTE KCCS       >0
COMPUTE KCXP       >0
COMPUTE KBIV       >0
COMPUTE KBAA       >0
COMPUTE KBOV       >0
COMPUTE KBXF       >0
COMPUTE KBCS       >0
COMPUTE KBXP       >0
COMPUTE KTIV       >0
COMPUTE KTAA       >0
COMPUTE KTOV       >0
COMPUTE KTXF       >0
COMPUTE KTCS       >0
COMPUTE KTXP       >0
COMPUTE KMIV       >0
COMPUTE KMAA       >0
COMPUTE KMOV       >0
COMPUTE KMXF       >0
COMPUTE KMCS       >0
COMPUTE KMXP       >0

COMPUTE WCWK       >0
COMPUTE WBWK       >0
COMPUTE WTWK       >0
COMPUTE WMWK       >0
COMPUTE PCWK       >0
COMPUTE KCWK       >0
COMPUTE PBWK       >0
COMPUTE KBWK       >0
COMPUTE PTWK       >0
COMPUTE KTWK       >0
```

```
COMPUTE PMWK       >0
COMPUTE KMWK       >0

* SKIM VALUES, Divide distances by 10 to convert tenths of miles to whole miles
* DRIVE ALONE
COMPUTE            >IF(m201>0)
COMPUTE DAIV       >m201
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(m204>0)
COMPUTE S2IV       >m204
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(m207>0)
COMPUTE S3IV       >m207
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

* Assign Intrazonal trips to Autos (mj11/04/05)
COMPUTE            >IF(P()=Q())
COMPUTE DAIV       >1
COMPUTE DACS       >m202/10*AUOP+m203+PRKC
COMPUTE DATE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 2
COMPUTE            >IF(P()=Q())
COMPUTE S2IV       >1
COMPUTE S2CS       >(m205/10*AUOP+m206+PRKC)/2.0
COMPUTE S2TE       >TERI+TERJ
COMPUTE            >ENDIF

* SHARED RIDE 3
COMPUTE            >IF(P()=Q())
COMPUTE S3IV       >1
COMPUTE S3CS       >(m208/10*AUOP+m209+PRKC)/OCC3
COMPUTE S3TE       >TERI+TERJ
COMPUTE            >ENDIF

*End of Intrazonal trips

* WALK COMMUTER RAIL
COMPUTE            >IF(m305>0)
COMPUTE WCIV       >m305/100.
COMPUTE WCOV       >(m303+m304)/100.
COMPUTE WCXF       >m312
COMPUTE WCCS       >m313
COMPUTE WCXP       >m314/100.
COMPUTE WCWK       >(m301+m302)/100.
COMPUTE            >ENDIF

* WALK BUS
COMPUTE            >IF(m405>0)
COMPUTE WBIV       >m405/100.
COMPUTE WBOV       >(m403+m404)/100.
COMPUTE WBXF       >m412
COMPUTE WBCS       >m413
COMPUTE WBXP       >m414/100.
COMPUTE WBWK       >(m401+m402)/100.
COMPUTE            >ENDIF
```

```
* WALK BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m605>0)
COMPUTE WTIV       >m605/100.
COMPUTE WTOV       >(m603+m604)/100.
COMPUTE WTXF       >m612
COMPUTE WTCS       >m613
COMPUTE WTXP       >m614/100.
COMPUTE WTWK       >(m601+m602)/100.
COMPUTE            >ENDIF


* WALK METRORAIL
COMPUTE            >IF(m505>0)
COMPUTE WMIV       >m505/100.
COMPUTE WMOV       >(m503+m504)/100.
COMPUTE WMXF       >m512
COMPUTE WMCS       >m513
COMPUTE WMXP       >m514/100.
COMPUTE WMWK       >(m501+m502)/100.
COMPUTE            >ENDIF

* PNR COMMUTER RAIL
COMPUTE            >IF(m319>0)
COMPUTE PCIV       >m319/100.
COMPUTE PCAA       >m329/100.
COMPUTE PCOV       >(m317+m318+m332)/100.
COMPUTE PCXF       >m326
COMPUTE PCCS       >m327+m331+m330/100*AUOP
COMPUTE PCXP       >m328/100.
COMPUTE PCWK       >(m315+m316)/100.
COMPUTE            >ENDIF

* PNR BUS
COMPUTE            >IF(m419>0)
COMPUTE PBIV       >m419/100.
COMPUTE PBAA       >m429/100.
COMPUTE PBOV       >(m417+m418+m432)/100.
COMPUTE PBXF       >m426
COMPUTE PBCS       >m427+m431+m430/100*AUOP
COMPUTE PBXP       >m428/100.
COMPUTE PBWK       >(m415+m416)/100.
COMPUTE            >ENDIF

* PNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m619>0)
COMPUTE PTIV       >m619/100.
COMPUTE PTAA       >m629/100.
COMPUTE PTOV       >(m617+m618+m632)/100.
COMPUTE PTXF       >m626
COMPUTE PTCS       >m627+m631+m630/100*AUOP
COMPUTE PTXP       >m628/100.
COMPUTE PTWK       >(m615+m616)/100.
COMPUTE            >ENDIF


* PNR METRORAIL
COMPUTE            >IF(m519>0)
COMPUTE PMIV       >m519/100.
COMPUTE PMAA       >m529/100.
COMPUTE PMOV       >(m517+m518+m532)/100.
COMPUTE PMXF       >m526
COMPUTE PMCS       >m527+m531+m530/100*AUOP
COMPUTE PMXP       >m528/100.
COMPUTE PMWK       >(m515+m516)/100.
COMPUTE            >ENDIF


* KNR COMMUTER RAIL
```

```
COMPUTE            >IF(m319>0)
COMPUTE KCIV       >m319/100.
COMPUTE KCAA       >m329/100.
COMPUTE KCOV       >(m317+m318)/100.
COMPUTE KCXF       >m326
COMPUTE KCCS       >m327+m330/100*AUOP
COMPUTE KCXP       >m328/100.
COMPUTE KCWK       >(m315+m316)/100.
COMPUTE            >ENDIF


* KNR BUS
COMPUTE            >IF(m437>0)
COMPUTE KBIV       >m437/100.
COMPUTE KBAA       >m447/100.
COMPUTE KBOV       >(m435+m436)/100.
COMPUTE KBXF       >m444
COMPUTE KBCS       >m445+m448/100*AUOP
COMPUTE KBXP       >m446/100.
COMPUTE KBWK       >(m433+m434)/100.
COMPUTE            >ENDIF

* KNR BUS/METRORAIL (TRANSIT)
COMPUTE            >IF(m637>0)
COMPUTE KTIV       >m637/100.
COMPUTE KTAA       >m647/100.
COMPUTE KTOV       >(m635+m636)/100.
COMPUTE KTXF       >m644
COMPUTE KTCS       >m645+m648/100*AUOP
COMPUTE KTXP       >m646/100.
COMPUTE KTWK       >(m633+m634)/100.
COMPUTE            >ENDIF


* KNR METRORAIL
COMPUTE            >IF(m537>0)
COMPUTE KMIV       >m537/100.
COMPUTE KMAA       >m547/100.
COMPUTE KMOV       >(m535+m536)/100.
COMPUTE KMXF       >m544
COMPUTE KMCS       >m545+m548/100*AUOP
COMPUTE KMXP       >m546/100.
COMPUTE KMWK       >(m533+m534)/100.
COMPUTE            >ENDIF


*CONSTANTS BY CHOICE FOR EACH PURPOSE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
PURP01 1INC 1     1>
PURP02 1INC 2     1>
PURP03 1INC 3     1>
PURP04 1INC 4     1>

TRIPIN01           >TRP1
TRIPIN02           >TRP2
TRIPIN03           >TRP3
TRIPIN04           >TRP4
TRIPIFACT01        >tfi1
TRIPIFACT02        >tfi2
TRIPIFACT03        >tfi3
TRIPIFACT04        >tfi4
COMPUTE tfi1       >1.0
COMPUTE tfi2       >1.0
COMPUTE tfi3       >1.0
COMPUTE tfi4       >1.0

*
*OUTPUT MATRICES AND OUTPUT FACTORS BY CHOICE FOR EACH PURPOSE
```

```
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
TRIPOUT01         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT01        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT02         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT02        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT03         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT03        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
TRIPOUT04         1>m901      m902      m903      m904      m905      m906      m907      m908      m908      m909      m910      m911      m912      m913      m914
TRIPFACT04        1>1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00      1.00
**
**P AND A WALK PERCENTS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
WALK SEG CW 1 PCT 1>WSWM
WALK SEG CW 1 MODE1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 2 PCT 1>WSW1
WALK SEG CW 2 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG CW 3 PCT 1>WSW2
WALK SEG CW 3 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG CW 4 PCT 1>WSW3
WALK SEG CW 4 MODE1>Y         Y         Y         Y         Y         Y                   Y         Y         Y         Y         Y         Y
WALK SEG MD 5 PCT 1>WSM1
WALK SEG MD 5 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y         Y         Y
WALK SEG MD 6 PCT 1>WSM2
WALK SEG MD 6 MODE1>Y         Y         Y                                                 Y         Y         Y         Y         Y         Y
WALK SEG NT 7 PCT 1>WSNT
WALK SEG NT 7 MODE1>Y         Y         Y
*SYNTAX OF COMMAND TO ADD A COMPONENT TO A SPECIFIC WALK SEGMENT IF DESIRED
*WALK SEG CW 1 COEF1>                              -0.04747  -0.04747  -0.04747  -0.04747  -0.04747  -0.04747
*WALK SEG CW 1 VAR 1>                              WTSS      DTSS      DISS      WRSS      DRSS      DJSS
COMPUTE WSWM       >PCMI*PCMJ
COMPUTE WSW1       >(PCTI-PCMI)*PCMJ
COMPUTE WSW2       >(PCTI-PCMI)*(PCTJ-PCMJ)
COMPUTE WSW3       >PCMI*(PCTJ-PCMJ)
COMPUTE WSM1       >(1-PCTI)*PCMJ
COMPUTE WSM2       >(1-PCTI)*(PCTJ-PCMJ)
COMPUTE WSNT       >1-WSWM-WSW1-WSW2-WSW3-WSM1-WSM2

*NEST DEFINITIONS BY CHOICE
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
NEST 1,1=         1>Y         Y         Y
NEST 1,2=         1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
NEST 2,1=         1>                              Y         Y         Y         Y
NEST 2,2=         1>                                                                      Y                   Y                   Y                   Y
NEST 2,3=         1>                                                                                Y                   Y                   Y                   Y
NEST 3,1=         1>                              Y
NEST 3,2=         1>                                        Y
NEST 3,3=         1>                                                  Y
NEST 3,4=         1>                                                            Y
NEST 4,1          1>                                                                      Y
NEST 4,2          1>                                                                                          Y
NEST 4,3          1>                                                                                                              Y
NEST 4,4          1>                                                                                                                                  Y
NEST 5,1          1>                                                                                Y
NEST 5,2          1>                                                                                                    Y
NEST 5,3          1>                                                                                                                        Y
NEST 5,4          1>                                                                                                                                            Y
NEST 6,1          1>Y
NEST 6,2          1>          Y         Y
NEST 7,1          1>          Y
NEST 7,2          1>                    Y

IGRP DEFINITION    >i813
JGRP DEFINITION    >j813
* 1 DC CORE/URBAN-DC CORE
SEGMENT  1         >    1    1
SEGMENT  1         >    3    1
* 2 DC CORE/URBAN-VA CORE
SEGMENT  2         >    1    2
```

```
SEGMENT  2         >    3    2
* 3 DC CORE/URBAN-URBAN
SEGMENT  3         >    1    3
SEGMENT  3         >    3    3
SEGMENT  3         >    1    4
SEGMENT  3         >    3    4
SEGMENT  3         >    1    5
SEGMENT  3         >    3    5
* 4 DC CORE/URBAN-OTHER
SEGMENT  4         >    1    6
SEGMENT  4         >    3    6
SEGMENT  4         >    1    7
SEGMENT  4         >    3    7
* 5 MD URBAN-DC CORE
SEGMENT  5         >    4    1
* 6 MD URBAN-VA CORE
SEGMENT  6         >    4    2
* 7 MD URBAN-URBAN
SEGMENT  7         >    4    3
SEGMENT  7         >    4    4
SEGMENT  7         >    4    5
* 8 MD URBAN-OTHER
SEGMENT  8         >    4    6
SEGMENT  8         >    4    7
* 9 VA CORE/URBAN-DC CORE
SEGMENT  9         >    2    1
SEGMENT  9         >    5    1
*10 VA CORE/URBAN-VA CORE
SEGMENT 10         >    2    2
SEGMENT 10         >    5    2
*11 VA CORE/URBAN-URBAN
SEGMENT 11         >    2    3
SEGMENT 11         >    5    3
SEGMENT 11         >    2    4
SEGMENT 11         >    5    4
SEGMENT 11         >    2    5
SEGMENT 11         >    5    5
*12 VA CORE/URBAN-OTHER
SEGMENT 12         >    2    6
SEGMENT 12         >    5    6
SEGMENT 12         >    2    7
SEGMENT 12         >    5    7
*13 MD OTHER-DC CORE
SEGMENT 13         >    6    1
*14 MD OTHER-VA CORE
SEGMENT 14         >    6    2
*15 MD OTHER-URBAN
SEGMENT 15         >    6    3
SEGMENT 15         >    6    4
SEGMENT 15         >    6    5
*16 MD OTHER-OTHER
SEGMENT 16         >    6    6
SEGMENT 16         >    6    7
*17 VA OTHER-DC CORE
SEGMENT 17         >    7    1
*18 VA OTHER-VA CORE
SEGMENT 18         >    7    2
*19 VA OTHER-URBAN
SEGMENT 19         >    7    3
SEGMENT 19         >    7    4
SEGMENT 19         >    7    5
*20 VA OTHER-OTHER
SEGMENT 20         >    7    6
SEGMENT 20         >    7    7

* SEGMENT  1
NSTC 10 1GRND TOTAL>
NSTC 11 1AUTO      >      0.5    0.00000
```

```
NSTC 12 1TRANSIT   >      0.5   -2.79940
NSTC 20 1TOTAL TRN >
NSTC 21 1WALK ACC  >      0.5    0.00000
NSTC 22 1PNR ACC   >      0.5   -1.84837
NSTC 23 1KNR ACC   >      0.5   -4.17146
NSTC 30 1WLK TRN
NSTC 31 1WLK CR    >      1.0    0.20484
NSTC 32 1WLK BUS   >      1.0   -0.79826
NSTC 33 1WLK BU/MR >      1.0    5.89389
NSTC 34 1WLK METRO >      1.0    0.00000
NSTC 40 1PNR TRN
NSTC 41 1PNR CR    >      1.0    0.60893
NSTC 42 1PNR BUS   >      1.0    1.05871
NSTC 43 1PNR BU/MR >      1.0    6.61895
NSTC 44 1PNR METRO >      1.0    0.00000
NSTC 50 1KNR TRN
NSTC 51 1KNR CR    >      1.0    1.48677
NSTC 52 1KNR BUS   >      1.0    6.74646
NSTC 53 1KNR BU/MR >      1.0    6.55526
NSTC 54 1KNR METRO >      1.0    0.00000
NSTC 60 1AUTO
NSTC 61 1LOV       >      1.0    0.00000
NSTC 62 1HOV       >      0.5   -4.12309
NSTC 70 1HOV
NSTC 71 1HOV2      >      1.0    0.00000
NSTC 72 1HOV3+     >      1.0   -3.78036
* SEGMENT  2
NSTC 10 2GRND TOTAL>
NSTC 11 2AUTO      >      0.5    0.00000
NSTC 12 2TRANSIT   >      0.5    6.66589
NSTC 20 2TOTAL TRN >
NSTC 21 2WALK ACC  >      0.5    0.00000
NSTC 22 2PNR ACC   >      0.5   -7.09233
NSTC 23 2KNR ACC   >      0.5   -6.11546
NSTC 30 2WLK TRN
NSTC 31 2WLK CR    >      1.0   -0.72076
NSTC 32 2WLK BUS   >      1.0  -24.24038
NSTC 33 2WLK BU/MR >      1.0   -1.73932
NSTC 34 2WLK METRO >      1.0    0.00000
NSTC 40 2PNR TRN
NSTC 41 2PNR CR    >      1.0   -1.02876
NSTC 42 2PNR BUS   >      1.0   -1.02876
NSTC 43 2PNR BU/MR >      1.0   -1.02876
NSTC 44 2PNR METRO >      1.0    0.00000
NSTC 50 2KNR TRN
NSTC 51 2KNR CR    >      1.0   -0.22800
NSTC 52 2KNR BUS   >      1.0   -0.22800
NSTC 53 2KNR BU/MR >      1.0   -0.22800
NSTC 54 2KNR METRO >      1.0    0.00000
NSTC 60 2AUTO
NSTC 61 2LOV       >      1.0    0.00000
NSTC 62 2HOV       >      0.5    0.00001
NSTC 70 2HOV
NSTC 71 2HOV2      >      1.0    0.00000
NSTC 72 2HOV3+     >      1.0    0.00001
* SEGMENT  3
NSTC 10 3GRND TOTAL>
NSTC 11 3AUTO      >      0.5    0.00000
NSTC 12 3TRANSIT   >      0.5   -0.89996
NSTC 20 3TOTAL TRN >
NSTC 21 3WALK ACC  >      0.5    0.00000
NSTC 22 3PNR ACC   >      0.5   -5.77632
NSTC 23 3KNR ACC   >      0.5   -4.99454
NSTC 30 3WLK TRN
NSTC 31 3WLK CR    >      1.0   -0.71036
NSTC 32 3WLK BUS   >      1.0   -1.52618
NSTC 33 3WLK BU/MR >      1.0    1.56716
NSTC 34 3WLK METRO >      1.0    0.00000
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NSTC 40 3PNR TRN
NSTC 41 3PNR CR    >      1.0    4.92630
NSTC 42 3PNR BUS   >      1.0    3.96500
NSTC 43 3PNR BU/MR >      1.0    9.97120
NSTC 44 3PNR METRO >      1.0    0.00000
NSTC 50 3KNR TRN
NSTC 51 3KNR CR    >      1.0    1.91286
NSTC 52 3KNR BUS   >      1.0    4.20770
NSTC 53 3KNR BU/MR >      1.0    6.57791
NSTC 54 3KNR METRO >      1.0    0.00000
NSTC 60 3AUTO
NSTC 61 3LOV       >      1.0    0.00000
NSTC 62 3HOV       >      0.5   -2.06937
NSTC 70 3HOV
NSTC 71 3HOV2      >      1.0    0.00000
NSTC 72 3HOV3+     >      1.0   -2.55971
* SEGMENT  4
NSTC 10 4GRND TOTAL>
NSTC 11 4AUTO      >      0.5    0.00000
NSTC 12 4TRANSIT   >      0.5    1.81353
NSTC 20 4TOTAL TRN >
NSTC 21 4WALK ACC  >      0.5    0.00000
NSTC 22 4PNR ACC   >      0.5   -6.79031
NSTC 23 4KNR ACC   >      0.5   -6.75820
NSTC 30 4WLK TRN
NSTC 31 4WLK CR    >      1.0    9.22502
NSTC 32 4WLK BUS   >      1.0   -8.40012
NSTC 33 4WLK BU/MR >      1.0   -4.63401
NSTC 34 4WLK METRO >      1.0    0.00000
NSTC 40 4PNR TRN
NSTC 41 4PNR CR    >      1.0   29.43701
NSTC 42 4PNR BUS   >      1.0   -0.59172
NSTC 43 4PNR BU/MR >      1.0   -0.59172
NSTC 44 4PNR METRO >      1.0    0.00000
NSTC 50 4KNR TRN
NSTC 51 4KNR CR    >      1.0   33.55258
NSTC 52 4KNR BUS   >      1.0    4.46141
NSTC 53 4KNR BU/MR >      1.0    2.75279
NSTC 54 4KNR METRO >      1.0    0.00000
NSTC 60 4AUTO
NSTC 61 4LOV       >      1.0    0.00000
NSTC 62 4HOV       >      0.5   -1.96601
NSTC 70 4HOV
NSTC 71 4HOV2      >      1.0    0.00000
NSTC 72 4HOV3+     >      1.0   -2.70161
* SEGMENT  5
NSTC 10 5GRND TOTAL>
NSTC 11 5AUTO      >      0.5    0.00000
NSTC 12 5TRANSIT   >      0.5   -2.67957
NSTC 20 5TOTAL TRN >
NSTC 21 5WALK ACC  >      0.5    0.00000
NSTC 22 5PNR ACC   >      0.5   -4.14833
NSTC 23 5KNR ACC   >      0.5   -5.20365
NSTC 30 5WLK TRN
NSTC 31 5WLK CR    >      1.0   -0.06315
NSTC 32 5WLK BUS   >      1.0   -0.24002
NSTC 33 5WLK BU/MR >      1.0   -0.06460
NSTC 34 5WLK METRO >      1.0    0.00000
NSTC 40 5PNR TRN
NSTC 41 5PNR CR    >      1.0    1.99552
NSTC 42 5PNR BUS   >      1.0    1.99552
NSTC 43 5PNR BU/MR >      1.0   11.87014
NSTC 44 5PNR METRO >      1.0    0.00000
NSTC 50 5KNR TRN
NSTC 51 5KNR CR    >      1.0   -0.15685
NSTC 52 5KNR BUS   >      1.0   -0.15685
NSTC 53 5KNR BU/MR >      1.0   -0.15685
NSTC 54 5KNR METRO >      1.0    0.00000
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NSTC 60 5AUTO
NSTC 61 5LOV       >      1.0    0.00000
NSTC 62 5HOV       >      0.5   -4.76053
NSTC 70 5HOV
NSTC 71 5HOV2      >      1.0    0.00000
NSTC 72 5HOV3+     >      1.0   -4.28271
* SEGMENT  6
NSTC 10 6GRND TOTAL>
NSTC 11 6AUTO      >      0.5    0.00000
NSTC 12 6TRANSIT   >      0.5    1.74517
NSTC 20 6TOTAL TRN >
NSTC 21 6WALK ACC  >      0.5    0.00000
NSTC 22 6PNR ACC   >      0.5   -7.44381
NSTC 23 6KNR ACC   >      0.5   -7.44381
NSTC 30 6WLK TRN
NSTC 31 6WLK CR    >      1.0   -2.23808
NSTC 32 6WLK BUS   >      1.0   -2.23808
NSTC 33 6WLK BU/MR >      1.0   -2.23808
NSTC 34 6WLK METRO >      1.0    0.00000
NSTC 40 6PNR TRN
NSTC 41 6PNR CR    >      1.0    0.00001
NSTC 42 6PNR BUS   >      1.0    0.00001
NSTC 43 6PNR BU/MR >      1.0    0.00001
NSTC 44 6PNR METRO >      1.0    0.00000
NSTC 50 6KNR TRN
NSTC 51 6KNR CR    >      1.0    0.00001
NSTC 52 6KNR BUS   >      1.0    0.00001
NSTC 53 6KNR BU/MR >      1.0    0.00001
NSTC 54 6KNR METRO >      1.0    0.00000
NSTC 60 6AUTO
NSTC 61 6LOV       >      1.0    0.00000
NSTC 62 6HOV       >      0.5   -0.15056
NSTC 70 6HOV
NSTC 71 6HOV2      >      1.0    0.00000
NSTC 72 6HOV3+     >      1.0   -0.00566
* SEGMENT  7
NSTC 10 7GRND TOTAL>
NSTC 11 7AUTO      >      0.5    0.00000
NSTC 12 7TRANSIT   >      0.5   -2.49219
NSTC 20 7TOTAL TRN >
NSTC 21 7WALK ACC  >      0.5    0.00000
NSTC 22 7PNR ACC   >      0.5   -4.24556
NSTC 23 7KNR ACC   >      0.5   -5.62656
NSTC 30 7WLK TRN
NSTC 31 7WLK CR    >      1.0    1.66679
NSTC 32 7WLK BUS   >      1.0    2.02304
NSTC 33 7WLK BU/MR >      1.0    5.10893
NSTC 34 7WLK METRO >      1.0    0.00000
NSTC 40 7PNR TRN
NSTC 41 7PNR CR    >      1.0    0.00001
NSTC 42 7PNR BUS   >      1.0    8.93620
NSTC 43 7PNR BU/MR >      1.0    0.00001
NSTC 44 7PNR METRO >      1.0    0.00000
NSTC 50 7KNR TRN
NSTC 51 7KNR CR    >      1.0    2.02668
NSTC 52 7KNR BUS   >      1.0    8.10758
NSTC 53 7KNR BU/MR >      1.0    2.02668
NSTC 54 7KNR METRO >      1.0    0.00000
NSTC 60 7AUTO
NSTC 61 7LOV       >      1.0    0.00000
NSTC 62 7HOV       >      0.5   -2.06662
NSTC 70 7HOV
NSTC 71 7HOV2      >      1.0    0.00000
NSTC 72 7HOV3+     >      1.0   -2.37601
* SEGMENT  8
NSTC 10 8GRND TOTAL>
NSTC 11 8AUTO      >      0.5    0.00000
NSTC 12 8TRANSIT   >      0.5   -2.17083
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NSTC 20 8TOTAL TRN >
NSTC 21 8WALK ACC  >      0.5    0.00000
NSTC 22 8PNR ACC   >      0.5   -1.61688
NSTC 23 8KNR ACC   >      0.5   -3.50183
NSTC 30 8WLK TRN
NSTC 31 8WLK CR    >      1.0    9.44240
NSTC 32 8WLK BUS   >      1.0    6.48931
NSTC 33 8WLK BU/MR >      1.0    7.81350
NSTC 34 8WLK METRO >      1.0    0.00000
NSTC 40 8PNR TRN
NSTC 41 8PNR CR    >      1.0    0.00001
NSTC 42 8PNR BUS   >      1.0    0.00001
NSTC 43 8PNR BU/MR >      1.0    0.00001
NSTC 44 8PNR METRO >      1.0    0.00000
NSTC 50 8KNR TRN
NSTC 51 8KNR CR    >      1.0    0.00001
NSTC 52 8KNR BUS   >      1.0   10.63682
NSTC 53 8KNR BU/MR >      1.0    0.00001
NSTC 54 8KNR METRO >      1.0    0.00000
NSTC 60 8AUTO
NSTC 61 8LOV       >      1.0    0.00000
NSTC 62 8HOV       >      0.5   -1.29451
NSTC 70 8HOV
NSTC 71 8HOV2      >      1.0    0.00000
NSTC 72 8HOV3+     >      1.0   -2.00165
* SEGMENT  9
NSTC 10 9GRND TOTAL>
NSTC 11 9AUTO      >      0.5    0.00000
NSTC 12 9TRANSIT   >      0.5    7.38100
NSTC 20 9TOTAL TRN >
NSTC 21 9WALK ACC  >      0.5    0.00000
NSTC 22 9PNR ACC   >      0.5   -8.84491
NSTC 23 9KNR ACC   >      0.5  -15.02431
NSTC 30 9WLK TRN
NSTC 31 9WLK CR    >      1.0   -2.33964
NSTC 32 9WLK BUS   >      1.0  -21.05933
NSTC 33 9WLK BU/MR >      1.0  -14.76081
NSTC 34 9WLK METRO >      1.0    0.00000
NSTC 40 9PNR TRN
NSTC 41 9PNR CR    >      1.0   -0.48169
NSTC 42 9PNR BUS   >      1.0   -0.48169
NSTC 43 9PNR BU/MR >      1.0    3.33322
NSTC 44 9PNR METRO >      1.0    0.00000
NSTC 50 9KNR TRN
NSTC 51 9KNR CR    >      1.0    3.39315
NSTC 52 9KNR BUS   >      1.0    3.39315
NSTC 53 9KNR BU/MR >      1.0   21.23409
NSTC 54 9KNR METRO >      1.0    0.00000
NSTC 60 9AUTO
NSTC 61 9LOV       >      1.0    0.00000
NSTC 62 9HOV       >      0.5    0.00001
NSTC 70 9HOV
NSTC 71 9HOV2      >      1.0    0.00000
NSTC 72 9HOV3+     >      1.0    0.00001
* SEGMENT 10
NSTC 1010GRND TOTAL>
NSTC 1110AUTO      >      0.5    0.00000
NSTC 1210TRANSIT   >      0.5   -2.17637
NSTC 2010TOTAL TRN >
NSTC 2110WALK ACC  >      0.5    0.00000
NSTC 2210PNR ACC   >      0.5   -3.38936
NSTC 2310KNR ACC   >      0.5   -5.32400
NSTC 3010WLK TRN
NSTC 3110WLK CR    >      1.0   -1.27123
NSTC 3210WLK BUS   >      1.0   -6.37577
NSTC 3310WLK BU/MR >      1.0   -1.27123
NSTC 3410WLK METRO >      1.0    0.00000
NSTC 4010PNR TRN
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NSTC 4110PNR CR    >      1.0    0.00001
NSTC 4210PNR BUS   >      1.0    0.00001
NSTC 4310PNR BU/MR >      1.0    0.00001
NSTC 4410PNR METRO >      1.0    0.00000
NSTC 5010KNR TRN
NSTC 5110KNR CR    >      1.0    2.84486
NSTC 5210KNR BUS   >      1.0    2.84486
NSTC 5310KNR BU/MR >      1.0   22.05581
NSTC 5410KNR METRO >      1.0    0.00000
NSTC 6010AUTO
NSTC 6110LOV       >      1.0    0.00000
NSTC 6210HOV       >      0.5   -2.88938
NSTC 7010HOV
NSTC 7110HOV2      >      1.0    0.00000
NSTC 7210HOV3+     >      1.0   -3.53411
* SEGMENT 11
NSTC 1011GRND TOTAL>
NSTC 1111AUTO      >      0.5    0.00000
NSTC 1211TRANSIT   >      0.5   -0.90682
NSTC 2011TOTAL TRN >
NSTC 2111WALK ACC  >      0.5    0.00000
NSTC 2211PNR ACC   >      0.5   -4.52561
NSTC 2311KNR ACC   >      0.5   -8.88134
NSTC 3011WLK TRN
NSTC 3111WLK CR    >      1.0   -2.75044
NSTC 3211WLK BUS   >      1.0   -6.15743
NSTC 3311WLK BU/MR >      1.0   -1.28675
NSTC 3411WLK METRO >      1.0    0.00000
NSTC 4011PNR TRN
NSTC 4111PNR CR    >      1.0    0.00001
NSTC 4211PNR BUS   >      1.0    0.00001
NSTC 4311PNR BU/MR >      1.0    0.00001
NSTC 4411PNR METRO >      1.0    0.00000
NSTC 5011KNR TRN
NSTC 5111KNR CR    >      1.0    6.08200
NSTC 5211KNR BUS   >      1.0    6.08200
NSTC 5311KNR BU/MR >      1.0   13.73378
NSTC 5411KNR METRO >      1.0    0.00000
NSTC 6011AUTO
NSTC 6111LOV       >      1.0    0.00000
NSTC 6211HOV       >      0.5   -2.40661
NSTC 7011HOV
NSTC 7111HOV2      >      1.0    0.00000
NSTC 7211HOV3+     >      1.0   -2.82431
* SEGMENT 12
NSTC 1012GRND TOTAL>
NSTC 1112AUTO      >      0.5    0.00000
NSTC 1212TRANSIT   >      0.5   -0.94876
NSTC 2012TOTAL TRN >
NSTC 2112WALK ACC  >      0.5    0.00000
NSTC 2212PNR ACC   >      0.5   -4.42707
NSTC 2312KNR ACC   >      0.5   -9.38975
NSTC 3012WLK TRN
NSTC 3112WLK CR    >      1.0   -8.30055
NSTC 3212WLK BUS   >      1.0   -8.91234
NSTC 3312WLK BU/MR >      1.0   -9.04551
NSTC 3412WLK METRO >      1.0    0.00000
NSTC 4012PNR TRN
NSTC 4112PNR CR    >      1.0    0.00001
NSTC 4212PNR BUS   >      1.0    0.00001
NSTC 4312PNR BU/MR >      1.0    0.00001
NSTC 4412PNR METRO >      1.0    0.00000
NSTC 5012KNR TRN
NSTC 5112KNR CR    >      1.0    0.00001
NSTC 5212KNR BUS   >      1.0   11.03922
NSTC 5312KNR BU/MR >      1.0    0.00001
NSTC 5412KNR METRO >      1.0    0.00000
NSTC 6012AUTO
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NSTC 6112LOV       >      1.0    0.00000
NSTC 6212HOV       >      0.5   -1.63296
NSTC 7012HOV
NSTC 7112HOV2      >      1.0    0.00000
NSTC 7212HOV3+     >      1.0   -2.15310
* SEGMENT 13
NSTC 1013GRND TOTAL>
NSTC 1113AUTO      >      0.5    0.00000
NSTC 1213TRANSIT   >      0.5   -3.39057
NSTC 2013TOTAL TRN >
NSTC 2113WALK ACC  >      0.5    0.00000
NSTC 2213PNR ACC   >      0.5   -3.59109
NSTC 2313KNR ACC   >      0.5   -4.68242
NSTC 3013WLK TRN
NSTC 3113WLK CR    >      1.0   42.27050
NSTC 3213WLK BUS   >      1.0    2.09834
NSTC 3313WLK BU/MR >      1.0    2.66576
NSTC 3413WLK METRO >      1.0    0.00000
NSTC 4013PNR TRN
NSTC 4113PNR CR    >      1.0   13.62812
NSTC 4213PNR BUS   >      1.0    2.89090
NSTC 4313PNR BU/MR >      1.0   12.36861
NSTC 4413PNR METRO >      1.0    0.00000
NSTC 5013KNR TRN
NSTC 5113KNR CR    >      1.0    9.33587
NSTC 5213KNR BUS   >      1.0    8.26731
NSTC 5313KNR BU/MR >      1.0   14.06068
NSTC 5413KNR METRO >      1.0    0.00000
NSTC 6013AUTO
NSTC 6113LOV       >      1.0    0.00000
NSTC 6213HOV       >      0.5   -5.86751
NSTC 7013HOV
NSTC 7113HOV2      >      1.0    0.00000
NSTC 7213HOV3+     >      1.0   -5.44843
* SEGMENT 14
NSTC 1014GRND TOTAL>
NSTC 1114AUTO      >      0.5    0.00000
NSTC 1214TRANSIT   >      0.5    3.09348
NSTC 2014TOTAL TRN >
NSTC 2114WALK ACC  >      0.5    0.00000
NSTC 2214PNR ACC   >      0.5   -4.62461
NSTC 2314KNR ACC   >      0.5   -5.08095
NSTC 3014WLK TRN
NSTC 3114WLK CR    >      1.0   -4.80539
NSTC 3214WLK BUS   >      1.0   -4.80539
NSTC 3314WLK BU/MR >      1.0   -4.80539
NSTC 3414WLK METRO >      1.0    0.00000
NSTC 4014PNR TRN
NSTC 4114PNR CR    >      1.0   15.86303
NSTC 4214PNR BUS   >      1.0   13.98883
NSTC 4314PNR BU/MR >      1.0   46.46480
NSTC 4414PNR METRO >      1.0    0.00000
NSTC 5014KNR TRN
NSTC 5114KNR CR    >      1.0   18.58546
NSTC 5214KNR BUS   >      1.0    5.64624
NSTC 5314KNR BU/MR >      1.0    5.64624
NSTC 5414KNR METRO >      1.0    0.00000
NSTC 6014AUTO
NSTC 6114LOV       >      1.0    0.00000
NSTC 6214HOV       >      0.5    0.29721
NSTC 7014HOV
NSTC 7114HOV2      >      1.0    0.00000
NSTC 7214HOV3+     >      1.0    0.32805
* SEGMENT 15
NSTC 1015GRND TOTAL>
NSTC 1115AUTO      >      0.5    0.00000
NSTC 1215TRANSIT   >      0.5   -2.65419
NSTC 2015TOTAL TRN >
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NSTC 2115WALK ACC  >      0.5    0.00000
NSTC 2215PNR ACC   >      0.5   -5.23523
NSTC 2315KNR ACC   >      0.5   -4.60431
NSTC 3015WLK TRN
NSTC 3115WLK CR    >      1.0   19.07042
NSTC 3215WLK BUS   >      1.0    3.79597
NSTC 3315WLK BU/MR >      1.0    5.99265
NSTC 3415WLK METRO >      1.0    0.00000
NSTC 4015PNR TRN
NSTC 4115PNR CR    >      1.0   11.43031
NSTC 4215PNR BUS   >      1.0    4.20364
NSTC 4315PNR BU/MR >      1.0   13.88682
NSTC 4415PNR METRO >      1.0    0.00000
NSTC 5015KNR TRN
NSTC 5115KNR CR    >      1.0    6.61859
NSTC 5215KNR BUS   >      1.0    7.64793
NSTC 5315KNR BU/MR >      1.0   14.00992
NSTC 5415KNR METRO >      1.0    0.00000
NSTC 6015AUTO
NSTC 6115LOV       >      1.0    0.00000
NSTC 6215HOV       >      0.5   -2.57685
NSTC 7015HOV
NSTC 7115HOV2      >      1.0    0.00000
NSTC 7215HOV3+     >      1.0   -3.12945
* SEGMENT 16
NSTC 1016GRND TOTAL>
NSTC 1116AUTO      >      0.5    0.00000
NSTC 1216TRANSIT   >      0.5   -2.60924
NSTC 2016TOTAL TRN >
NSTC 2116WALK ACC  >      0.5    0.00000
NSTC 2216PNR ACC   >      0.5   -4.14436
NSTC 2316KNR ACC   >      0.5   -6.67051
NSTC 3016WLK TRN
NSTC 3116WLK CR    >      1.0   -0.92006
NSTC 3216WLK BUS   >      1.0    6.38009
NSTC 3316WLK BU/MR >      1.0    0.63709
NSTC 3416WLK METRO >      1.0    0.00000
NSTC 4016PNR TRN
NSTC 4116PNR CR    >      1.0    0.00001
NSTC 4216PNR BUS   >      1.0    9.81032
NSTC 4316PNR BU/MR >      1.0    0.00001
NSTC 4416PNR METRO >      1.0    0.00000
NSTC 5016KNR TRN
NSTC 5116KNR CR    >      1.0    0.00001
NSTC 5216KNR BUS   >      1.0   11.01168
NSTC 5316KNR BU/MR >      1.0    0.00001
NSTC 5416KNR METRO >      1.0    0.00000
NSTC 6016AUTO
NSTC 6116LOV       >      1.0    0.00000
NSTC 6216HOV       >      0.5   -0.86763
NSTC 7016HOV
NSTC 7116HOV2      >      1.0    0.00000
NSTC 7216HOV3+     >      1.0   -1.57341
* SEGMENT 17
NSTC 1017GRND TOTAL>
NSTC 1117AUTO      >      0.5    0.00000
NSTC 1217TRANSIT   >      0.5    1.10240
NSTC 2017TOTAL TRN >
NSTC 2117WALK ACC  >      0.5    0.00000
NSTC 2217PNR ACC   >      0.5   -7.16469
NSTC 2317KNR ACC   >      0.5   -9.12999
NSTC 3017WLK TRN
NSTC 3117WLK CR    >      1.0   -8.32821
NSTC 3217WLK BUS   >      1.0   -8.32821
NSTC 3317WLK BU/MR >      1.0   -6.40876
NSTC 3417WLK METRO >      1.0    0.00000
NSTC 4017PNR TRN
NSTC 4117PNR CR    >      1.0    0.66474
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```
NSTC 4217PNR BUS   >      1.0    0.66474
NSTC 4317PNR BU/MR >      1.0    8.79081
NSTC 4417PNR METRO >      1.0    0.00000
NSTC 5017KNR TRN
NSTC 5117KNR CR    >      1.0    3.45530
NSTC 5217KNR BUS   >      1.0    3.45530
NSTC 5317KNR BU/MR >      1.0   13.44788
NSTC 5417KNR METRO >      1.0    0.00000
NSTC 6017AUTO
NSTC 6117LOV       >      1.0    0.00000
NSTC 6217HOV       >      0.5   -6.46989
NSTC 7017HOV
NSTC 7117HOV2      >      1.0    0.00000
NSTC 7217HOV3+     >      1.0   -7.36165
* SEGMENT 18
NSTC 1018GRND TOTAL>
NSTC 1118AUTO      >      0.5    0.00000
NSTC 1218TRANSIT   >      0.5   -3.55718
NSTC 2018TOTAL TRN >
NSTC 2118WALK ACC  >      0.5    0.00000
NSTC 2218PNR ACC   >      0.5   -5.74791
NSTC 2318KNR ACC   >      0.5   -7.08541
NSTC 3018WLK TRN
NSTC 3118WLK CR    >      1.0    0.00001
NSTC 3218WLK BUS   >      1.0    0.52805
NSTC 3318WLK BU/MR >      1.0    5.50778
NSTC 3418WLK METRO >      1.0    0.00000
NSTC 4018PNR TRN
NSTC 4118PNR CR    >      1.0   -0.79432
NSTC 4218PNR BUS   >      1.0   -0.79432
NSTC 4318PNR BU/MR >      1.0   -0.79432
NSTC 4418PNR METRO >      1.0    0.00000
NSTC 5018KNR TRN
NSTC 5118KNR CR    >      1.0    0.00001
NSTC 5218KNR BUS   >      1.0    0.00001
NSTC 5318KNR BU/MR >      1.0    0.00001
NSTC 5418KNR METRO >      1.0    0.00000
NSTC 6018AUTO
NSTC 6118LOV       >      1.0    0.00000
NSTC 6218HOV       >      0.5   -4.40651
NSTC 7018HOV
NSTC 7118HOV2      >      1.0    0.00000
NSTC 7218HOV3+     >      1.0   -4.51476
* SEGMENT 19
NSTC 1019GRND TOTAL>
NSTC 1119AUTO      >      0.5    0.00000
NSTC 1219TRANSIT   >      0.5   -1.79696
NSTC 2019TOTAL TRN >
NSTC 2119WALK ACC  >      0.5    0.00000
NSTC 2219PNR ACC   >      0.5   -5.36525
NSTC 2319KNR ACC   >      0.5   -5.32156
NSTC 3019WLK TRN
NSTC 3119WLK CR    >      1.0   -1.90189
NSTC 3219WLK BUS   >      1.0   -5.05339
NSTC 3319WLK BU/MR >      1.0    4.35728
NSTC 3419WLK METRO >      1.0    0.00000
NSTC 4019PNR TRN
NSTC 4119PNR CR    >      1.0   -3.27708
NSTC 4219PNR BUS   >      1.0   -3.27708
NSTC 4319PNR BU/MR >      1.0   -1.95458
NSTC 4419PNR METRO >      1.0    0.00000
NSTC 5019KNR TRN
NSTC 5119KNR CR    >      1.0   -3.63259
NSTC 5219KNR BUS   >      1.0   -3.63259
NSTC 5319KNR BU/MR >      1.0   -3.63259
NSTC 5419KNR METRO >      1.0    0.00000
NSTC 6019AUTO
NSTC 6119LOV       >      1.0    0.00000
```

```
NSTC 6219HOV       >      0.5   -2.80665
NSTC 7019HOV
NSTC 7119HOV2      >      1.0    0.00000
NSTC 7219HOV3+     >      1.0   -3.44227
* SEGMENT 20
NSTC 1020GRND TOTAL>
NSTC 1120AUTO      >      0.5    0.00000
NSTC 1220TRANSIT   >      0.5   -2.50302
NSTC 2020TOTAL TRN >
NSTC 2120WALK ACC  >      0.5    0.00000
NSTC 2220PNR ACC   >      0.5  -67.00577
NSTC 2320KNR ACC   >      0.5  -44.64660
NSTC 3020WLK TRN
NSTC 3120WLK CR    >      1.0  -48.21400
NSTC 3220WLK BUS   >      1.0  -46.15216
NSTC 3320WLK BU/MR >      1.0  -78.04065
NSTC 3420WLK METRO >      1.0    0.00000
NSTC 4020PNR TRN
NSTC 4120PNR CR    >      1.0    0.00001
NSTC 4220PNR BUS   >      1.0   20.60816
NSTC 4320PNR BU/MR >      1.0    0.00001
NSTC 4420PNR METRO >      1.0    0.00000
NSTC 5020KNR TRN
NSTC 5120KNR CR    >      1.0  -21.76479
NSTC 5220KNR BUS   >      1.0  -10.16862
NSTC 5320KNR BU/MR >      1.0  -21.76479
NSTC 5420KNR METRO >      1.0    0.00000
NSTC 6020AUTO
NSTC 6120LOV       >      1.0    0.00000
NSTC 6220HOV       >      0.5   -0.85131
NSTC 7020HOV
NSTC 7120HOV2      >      1.0    0.00000
NSTC 7220HOV3+     >      1.0   -1.54186

*DOWNTOWN=8
*SELI               >         8

*UNION STATION=64
*SELI               >        64

* =122
*SELI               >       122

*BETHESDA=345
*SELI               >       345

*SILVER SPRING=362
*SELI               >       362

*N.SILVER SPRING=464
*SELI               >       464

* =475
*SELI               >       475

*SHADY GROVE RD=578
*SELI               >       578

* =787
*SELI               >       787

*ANDREWS AFB=829
*SELI               >       829

*NEW CARROLTON=927
*SELI               >       927

*BRISTOL=972
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*SELI              >       972

*FREDERICK=1043
*SELI              >      1043

*JESSUP=1080
*SELI              >      1080

*SCAGGSVILLE=1091
*SELI              >      1091

*WALDORF=1216
*SELI              >      1216

*PENTAGON=1231
*SELI              >      1231

*ROSSLYN=1236
*SELI              >      1236

*ALEXANDRIA=1337
*SELI              >      1337

* =1455
*SELI              >      1455

*SPRINGFIELD=1502
*SELI              >      1502

*  =1511
*SELI              >      1511

*TYSONS CRNR=1537
*SELI              >      1537

*FT BELVOIR=1554
*SELI              >      1554

*VIENNA=1619
*SELI              >      1619

*DULES AP=1698
*SELI              >      1698

*RESTON=1716
*SELI              >      1716

*LEESBURG=1842
*SELI              >      1842

*BRUNSWICK=1863
*SELI              >      1863

*DALE CITY=1942
*SELI              >      1942

*MANASSAS=1967
*SELI              >      1967

*SPOTSYLVANIA=2110
*SELI              >      2110

* =2055
*SELI              >      2055


*SELJ              >         8
*SELJ              >        63
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*SELJ               >       64
*SELJ               >       77
*SELJ               >      100
*SELJ               >      344
*SELJ               >      345
*SELJ               >      362
*SELJ               >     1231
*SELJ               >     1236
*SELJ               >     1265
*SELJ               >     1337
*SELJ               >     1537

*SELI               >  523
*SELJ               >    9

TRACE              >        0
* OUTPUT %           >
*PROCSEL            >
PRINT MS           >NHO_NL_MC.PRN
INPUT PRINT FILE   >NHO_NL_MC.PRN
INPUT GOALS        >NHO_NL_MC.GOL
INFILE 1           >nho_income.ptt
INFILE 2           >hwyop.skm
INFILE 3           >TRNOP_CR.SKM
INFILE 4           >TRNOP_AB.SKM
INFILE 5           >TRNOP_MR.SKM
INFILE 6           >TRNOP_BM.SKM
ZINFILE 8          >ZONEV2.A2F
OUTFILE 9          >NHO_NL_MC.MTT

* FTA USER BENEFITS SPECIFICATIONS
*FTA RESULTS FILE   >NHB_NL_MC.BEN
FTA TRANSIT COEFF  >-0.02860
FTA AUTO COEFF     >-0.02860
FTA PURPOSE NAME   >NHB
FTA PERIOD NAME    >ALLDAY
FTA ALTER. NAME    >CALIB
*CHOICE           1>DR ALONE  SR2       SR3+      WK-CR     WK-BUS    WK-BU/MR  WK-MR     PNR-CR    KNR-CR    PNR-BUS   KNR-BUS   PNR-BU/MR KNR-BU/MR PNR-MR    KNR-MR
FTA AUTO NEST      >        1         1
FTA MOTORIZED?    1>Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
FTA TRANSIT?      1>                              Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y         Y
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