National Capital Region Transportation Planning Board

TPB Travel Forecasting Model, Version 2.2

Specification, Validation, and User's Guide

March 1, 2008

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The Metropolitan Washington Council of Governments (COG) and the National Capital Region Transportation Planning Board (TPB).

COG serves as the regional planning organization for the Washington metropolitan area. COG works toward solutions to regional problems, especially those related to regional growth, transportation, housing, human services, and the environment. The TPB is the designated Metropolitan Planning Organization (MPO) for transportation for the Washington region. Members of the TPB include representatives of local governments; state transportation agencies; the Maryland and Virginia General Assemblies; the Washington Metropolitan Area Transit Authority; and non-voting members from the Metropolitan Washington Airports Authority and federal agencies.

Credits

Program Administration:	James C. Hogan
Technical Manager:	Ronald Milone
Authors:	Ronald Milone, Hamid Humeida, Mark Moran, & Meseret Seifu

Abstract: This report describes the latest version of the regional travel model, Version 2.2, for the Washington, D.C. area including the model specification, the model validation, and a user's guide. This work represents a continuation of an ongoing models development plan that was formulated in FY-93 by the Travel Forecasting Subcommittee (TFS), a subcommittee of the TPB's Technical Committee. Previous models included the Version 2.1D #50 and 2.1/TP+ Release C. The Version 2.2 model incorporates many changes that were recommended as a result of a formal review of 2.1/TP+ Release C model by a TRB-based expert review panel.

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Metropolitan Washington Council of Governments
777 N. Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4239
Tel. (202) 962-3200

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Chapter 1 Introduction

The Metropolitan Washington Council of Governments (COG) serves as the regional planning organization for the Washington, D.C. metropolitan area. The National Capital Region Transportation Planning Board (TPB) is the designated Metropolitan Planning Organization (MPO) which functions to coordinate transportation planning among the various federal, state, and local agencies in the Washington region. Like most major MPOs in the United States, the TPB maintains a four-step transportation planning model that is used to evaluate transportation plans and programs, including air quality planning, in accordance with federal requirements. The TPB's travel model is periodically refined as new data is collected, as new questions arise from local decision-makers, and as more advanced methods emerge from the research community. This report documents the TPB's most recently developed travel model, Version 2.2. The Version 2.2 model supplants the previous Version 2.1D #50 travel model which was released in November 2004 (COG/TPB 2004.11.17A, B).

The Version 2.2 model is a product of the TPB's Models Development program which functions to promote both short- and long-term improvements to the travel forecasting methods used in the Washington, D.C. region. The program operates under the review and guidance of the Travel Forecasting Subcommittee (TFS) - a subcommittee of the Transportation Planning Board's Technical Committee that is comprised of representatives from state and local transportation agencies, local transportation consultants, and interested citizens. Many TFS members have a stake in the TPB's technical methods because the regional model is commonly used or adapted by the local agencies for project planning. The TFS closely monitored the Version 2.2 development and testing during FY-2007 and the beginning of FY-2008.

The TPB's approach to models development is one that favors incremental change to currently adopted application methods. Consequently, the Version 2.2 model is very similar in structure and operation to the previous Version 2.1D #50 model. The Version 2.2 model was not exhaustively re-estimated with new survey data, but some adjustments were nonetheless made to several modeling steps based on the 2000 Census Transportation Planning Package (CTPP). Model adjustments were also implemented on the basis of 2005 Highway Performance Monitoring System (HPMS) information.

The remainder of this chapter details the major refinements of the Version 2.2 model (Sections 1.1 and 1.2), an overview of the model (Section 1.3), and a discussion on the modeling approach used for simulating planned HOT lanes (Section 1.4). The report subsequently addresses the specification of the model (Chapters 2 through 8), the model validation results (Chapter 9), and a description of the model application (Chapters 10 through 21). The validation section also describes a number of sensitivity tests that were undertaken by TPB staff during FY-2007 as a means for assessing the model's reasonability. Finally, a series of technical appendices follow at the end of this document, including jurisdictional travel summaries, program scripts, and flowcharts which graphically depict the modeling process.

1.1 *Summary of Refinements in Version 2.2 Model*

The Version 2.2 model refinements were implemented in three developmental phases. The first phase was undertaken during calendar year 2006 and included the majority of refinements featured in the model. The refinements are listed below:

- An explicit commercial vehicle model has been integrated into the four-step model. This particular improvement was one of several recommendations made by an expert review panel following a formal review of TPB's past travel forecasting procedures. Previously, the commercial vehicle travel market was accounted for in the non-home-based (NHB) purpose, as is the case with many regional travel models. This is not desirable, however, since commercial travel is quite different from resident NHB travel in terms of trip generation, and travel lengths, and mode usage. The Version 2.2 model now simulates commercial travel using explicit trip generation, trip distribution, and time-of-day models. The final trip tables are further modified with an adjustment matrix to enable closer matches of estimated and observed commercial counts at the assignment step. Section 1.2 (below) provides additional detail on the commercial vehicle model development.
- Base and future year external and through trips are basic inputs to the travel model that are developed on a year-by-year basis. The traffic growth assumption at each external station has, in recent years, been assumed to be 3% per year. This growth assumption has recently been revisited based on an analysis of the future capacity at individual external stations, historical traffic growth at individual stations, and projected socio-economic growth trends between 2000 and 2030. Based on this analysis, the growth assumption has been revised on a station-by-station basis. The growth now varies from 1.1% to 2.7% per year. Thus, external traffic forecasts now generated in the Version 2.2 model over 30 years is substantially lower than that assumed in the Version 2.1D model. Additionally, the process for developing external and through travel files has been updated so that the commercial vehicle travel at external stations is explicitly developed.
- The volume-delay functions used in the user equilibrium highway assignment step have been revised. One result of the revision is that freeway speeds in the model may now congest down to 2 mph under extreme congested conditions, compared to a minimum speed of 11 to 13 mph that was used in the Version 2.1D model. Furthermore, a queuing delay function has been added to freeway and ramp links. The function imposes additional time on freeways links to represent queuing based on the V/C ratio. The queuing delay ranges from 0 minutes, at V/Cs of 0.8 or less, to 14 minutes at V/Cs of 1.4 or higher. Both the revised volume-delay curves and the queuing time were developed to eliminate a limited number of hyper-loaded links, i.e., links with simulated volumes that exceed the daily capacity of the link.
- Many of the adjustment factors historically used in TPB models, such as K-factors and geographic mode choice adjustments, have been removed in the Version 2.2 model. During the last formal review of the TPB models, it was indicated that staff should be more judicious about using such factors because they could potentially undermine the consistency and explanatory logic of the model. Many of the model adjustments used in the Version

2.1D model have been excluded from Version 2.2, including bridge penalties, non-work K-factors in trip distribution, and all non-work geographic transit and car occupancy adjustments used in the mode choice model. Some HBW K-factors were deemed necessary and maintained in Version 2.2 based on a comparison of estimated trips and Census trip estimates at the jurisdictional level. The overall number of HBW K-factors in the Version 2.2 model is less than that used in the Version 2.1D model. It is important to point out, however, that the removal of such factors has resulted in somewhat diminished model performance for some metrics, particularly at finer levels of geography.

- The demographic models, which are used to disaggregate the total number of households in a zone among joint income, size, and vehicle ownership classes, have been re-estimated using the 2000 Census data. It is important to note that the zonal income index that is maintained in the standard zonal land use file (ZONE.ASC) has been reformulated in accordance with the 2000 Census re-estimation.
- Several legacy Fortran programs have been converted into TP+ scripts. These include programs historically used for computing zonal transit fares (MFARE1 and MFARE2) and for applying the trip generation model (CGTGV2TP). These programs have been converted to TP+ scripts to facilitate transparency and to allow for flexibility in the implementation of future program modifications. The transit fares scripts are named MFARE1.S and MFARE2.S. The trip generation script is named Trip_Generation.S.
- A new TP+ script named Set_CPI.S has been added to the model chain to develop base deflation factors for converting transit and highway costs from current-year to base-/constant-year values. This capability will facilitate the consistency in cost deflation across modes, and will also enable the analyst to quickly specify alternative cost escalation policies.
- Exogenous airport trip forecasts have been updated using the 2000 Regional Air Passenger Survey. Prior forecasts were developed from the 1998 Air Passenger Survey.
- Prior TPB model versions have required that transit line files be provided in the older MINUTP TRNPTH format. Transit line files developed for the Version 2.2 model now reflect the newer TP+ TRNBUILD format. This newer format will allow for more accurate and consistent coding of transit lines over time. For example, using the newer format, one can designate bus stops as board-only or alight-only (useful for accurately coding express bus service). Similarly, one can code run times for sub-sections of a route, not just for the entire route, a feature useful for the accurate depiction of transit lines that undergo extensions or cutbacks.
- Several minor mechanical changes have also been made to scripts and batch files to streamline the application process, or to comply with the latest TP+ versions that are now released.

The first phase of model development was summarized in a draft report released to the TFS on January 19, 2007 (COG/TPB 2007.1.19). The second phase of model development occurred between January 2007 and October 2007. The refinements made during this period were related to minor mechanical corrections to the model application and to modifications that were deemed necessary after various tests of the model were evaluated. These refinements are detailed below.

- The number of user equilibrium iterations (UEIs) used in the highway assignment process was increased from 20 to 60 iterations. Realistically, a more fully converged condition would require more than 60 UEIs, but the increase from 20 to 60 was determined to strike a reasonable balance between substantially reducing the amount of 'noise' detected in comparisons between highway alternatives and yet enabling a reasonable turn-around time within the existing computational environment.
- The annual traffic growth rate assumption at the I-95 external station in Virginia (station 2149) was increased from 2.7% to 3.0%. The increased growth rate was used to better reflect the expected effect of planned HOT lanes on I-95 facility that are now included in the 2007 CLRP, including increased road capacity and spurred development in that area.
- Staff investigations into the development of HOT lane tolls uncovered problems with the queuing delay function described above. The highway network contains numerous freeway segments that *could* be represented by a single highway link, but instead, are represented by multiple links. It became apparent to TPB staff that the application of the queuing delay function to these types of freeway links resulted in unrealistically large delay times, for two reasons. First, the queuing function should realistically be applied on links associated with an intersection (i.e., on links forming the junction of two facilities) and not on links that happen to subdivide a single freeway section (these are sometimes referred to as 'dummy links'). Second, these dummy links are typically very short in distance, which, in turn, causes the queuing delay time to be very large as it is currently applied. Consequently, a link coding device was implemented to disable the queuing function from being applied to dummy links. The automatic generation of a special network link attribute named AllowQue was added to the highway network building routine. The attribute is now used to identify dummy links (i.e., where AllowQue equals 0) and to disable the queuing delay process. AllowQue is set to a value of 1 for non-dummy links, which enables the application of the queuing delay function as previously developed.
- The NHB F-factor was adjusted slightly as a means of fine-tuning the 2005 estimated and observed VMT match at the regional level.

The model resulting from the second phase of development was, for the first time, applied in support of air quality conformity work carried out in the fall of 2007 (associated with the 2007 CLRP and FY 2008-2013 TIP). The model was documented in another draft report (COG/TPB 2008.1.18). The third and final phase of development was undertaken after the January 18, 2008 TFS meeting. The third phase involved further refinements to the queuing delay function and adjustments to the development of highway skims used for the mode choice process. The refinements in the third phase were primarily focused on improving corridor level results, specifically relating to HOT lane modeling. These improvements had a negligible affect on regional modeling results.

1.2 *Commercial Vehicle Model*

One of the major improvements of the TPB's Version 2.2 model is an explicit commercial vehicle model. Some additional background information is provided in this report section. The model was developed on the basis of a commercial vehicle survey that was conducted during the spring and summer of 2005. Commercial vehicle counts were collected at 144 locations throughout the region. The locations selected for the commercial vehicle survey were deemed to be representative of facility types and area classifications that are distinguished in the regional model.

The model was developed using an innovative and cost-effective approach that has been successfully implemented at other metropolitan areas (including Baltimore). The calibration approach has been characterized as one that starts with the answer and works backward. The calibration steps undertaken to develop the model were as follows (Allen, 2005A):

1) After the survey data were cleaned, a model was developed to develop daily commercial vehicle volumes for the universe of highway links. The "synthetic" commercial counts were developed using a model developed from the sampled counts.
2) With the counts assigned to network links, an 'observed' trip table was derived. Methods for building a trip table from network link volumes are commonly available. The observed trip table was used as the basis for a model calibration.
3) A borrowed trip generation and distribution model was used to develop a starting trip table. A 'single-unit truck' F-factor from the Transportation Modeling Improvement Program (TMIP) Quick Response Freight Manual was ultimately selected for the proposed distribution model. The trip-ends of the starting trip table were compared to those of the observed trip table and assessed. Trip-generation adjustments were made iteratively so as to eliminate biases attributable to zonal characteristics or special generators.
4) After trip-end biases were eliminated, a comparison of the starting trip table and the observed trip table yielded, for the most part, random differences. These differences were then addressed with the development of an adjustment matrix (or a "delta table") used to correct the starting table to match the observed trip table, at the interchange level. Delta tables may be either additive or multiplicative. The additive approach was ultimately selected. Separate delta tables were developed for internal and external commercial trips.
5) A time of day model was then developed to apportion commercial trips to the three time-of-day periods used in the TPB model.

The final parameters used in the trip generation, trip distribution, and time of day models are detailed in the appropriate sections of this report. It is important to point out that, with the provision of the commercial model, a measured reduction in the NHB trip generation rate was necessary to avoid double counting. It is also important to understand that the delta table, itself, is an integral component of the commercial model application in addition to the generation, distribution, and time of day components. The delta table is used uniformly for base and forecast years.

1.3 *Overview of Version 2.2 Model*

The Version 2.2 travel model, like its predecessors, Version 2.1D #50 and Version 2.1 C, is an aggregate, trip-based, four-step model that uses the TPB's existing 2,191 transportation analysis zone (TAZ) system. The study area is comprised of 22 jurisdictions in all, extending over the District of Columbia and three states: the Maryland, Virginia, and West Virginia as shown on

Figure 1-1. It is important to note that this study area extends well beyond the COG member area, as well as, beyond the non-attainment area that is used in air quality planning work. A graphic showing the essential inputs and outputs of the Version 2.2 modeling process is shown on Figure 1-2.

The demographic models are used to disaggregate the total number of zonal households across 64 cross-classes: 4 household income groups[1] by 4 household size groups (1, 2, 3, 4+ persons) by 4 vehicle availability groups (0, 1, 2, and 3+ vehicles available). The allocation of households to each cross-class is made at traffic analysis zone (TAZ) level. The figure indicates that peak-hour transit accessibility measures are used as part of the demographic (vehicle availability) submodel step.

The trip generation models are next applied to compute daily person trip productions and attractions by purpose. The modeled purposes include four resident travel types (home-based work [HBW], home-based shop [HBS], home-based other [HBO], and non-home-based [NHB]), a commercial vehicle purpose (consisting of both autos and light duty trucks), and two truck types, Medium and Heavy. Medium trucks are those with two axles and 6 or more tires. Heavy trucks comprise all combination vehicles.

[1] The income levels used approximate household income quartiles, based on the 2000 CTPP.

Figure 1-1 Modeled area: 2,191 TAZ, 22 jurisdictions

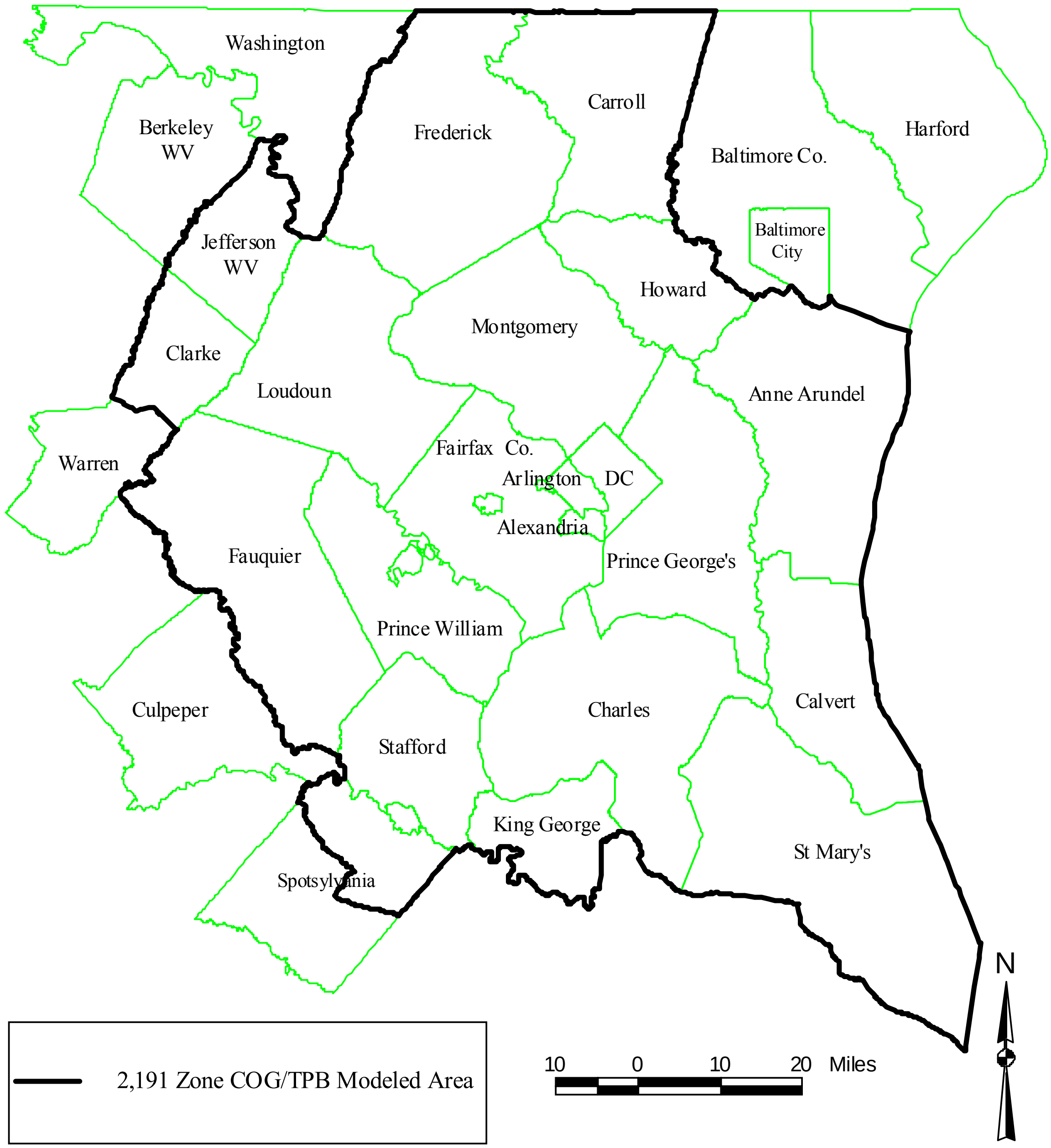
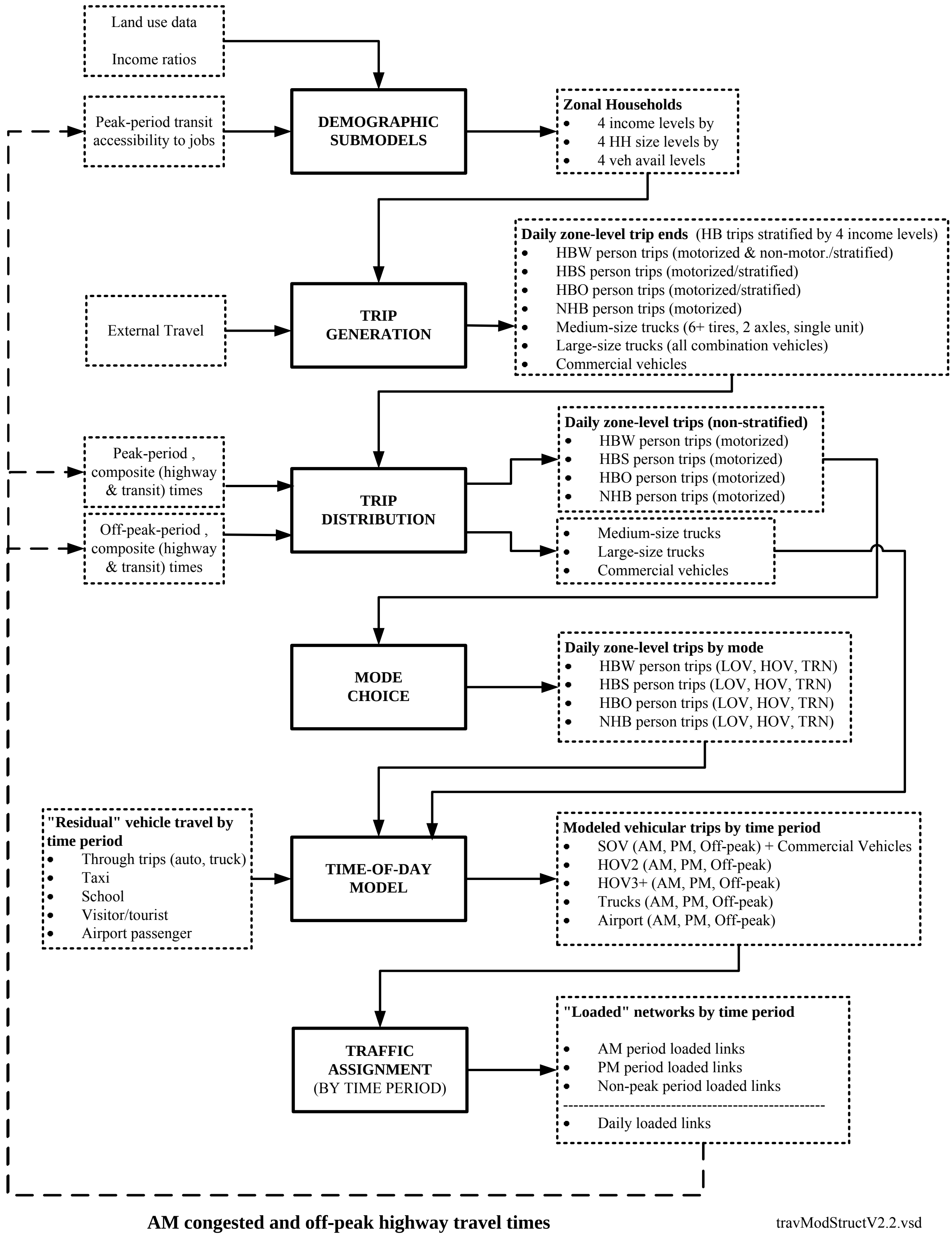


Figure 1-2 Version 2.2 Travel Model Structure



Trip generation involves the application of daily trip rates to the number of households in each of the 64 classes and to jobs. The HBW trip rates reflect both motorized (i.e., transit and automobile) and non-motorized (i.e., bicycle and walk) person travel. Trip rates associated with the remaining modeled purposes represent motorized (i.e., transit and automobile) person travel only. The non-motorized component of HBW trip-ends generated is subsequently extracted from the total trip-ends prior to trip distribution. Trip attractions are computed by purpose as a function of gross land use categories. External (i.e., external-to-internal, X/I, and internal-to-external, I/X) productions and attractions are entered as an exogenous input, by purpose, into the trip generation process. External travel relates to auto person, commercial vehicle and truck travel only. External transit travel is not represented in the external trip inputs and is not estimated in the travel model. The trip generation process yields productions and attractions, which are stratified by the four income levels for the home-based purposes, and non-stratified for the NHB, commercial vehicle, and truck-related purposes.

The trip distribution model uses the standard gravity model formulation and makes use of a composite time function that represents a blending of transit and highway travel times. The distribution step involves separate gravity model runs for 27 travel markets, given that home-based purposes are income stratified, and external travel is modeled separately by purpose and facility type (interstate travel vs. non-interstate). However, the trip distribution process ultimately results in seven daily trip tables corresponding to the basic motorized person, commercial, and truck purposes.

The mode choice process consists of four models corresponding to the HBW, HBS, HBO and NHB purposes. The models are used to apportion total motorized person trips among auto driver, auto passenger, and transit modes. The HBW model also distinguishes auto trips that utilize special preferential HOV facilities that have been coded into the highway network.

The time-of-day model apportions daily resident travel among three time periods: AM peak period (6:00 AM - 9:00 AM), PM peak period (4:00 PM - 7:00 PM) and off-peak period (all remaining hours). The model consists of survey-based factors that are applied on the basis of purpose, mode, and directionality, i.e. home-to-non-home or non-home-to-home. This step also includes provisions for apportioning daily residual travel[2] and truck travel among the three time periods. The time-of-day process ultimately produces three 'total vehicle' trip tables, one for each of the three time periods.

The Version 2.2 traffic assignment process consists of three separate assignment executions corresponding to the above mentioned time periods. Each traffic assignment execution consists of 60 fixed user equilibrium iterations (or UEIs). To respect the various highway path options and prohibitions in the Washington region, five separate markets (trip tables) are loaded during each assignment execution: single-occupant vehicles (including commercial vehicles), 2-occupant vehicles, 3+occupant vehicles, trucks (Medium and Heavy), and airport passenger vehicles. Although separate link volumes are developed for each of the five markets, the final

[2] Residual travel is also referred to as 'miscellaneous' travel which represents special travel markets that are typically not (or not well) represented in home-interview surveys; it is comprised of taxi, school, visitor/tourist, and air passenger auto driver travel.

loaded links file ultimately contains total volumes, speeds, and V/C ratios for each time period. The highway assignment report file includes a number of equilibrium closure statistics, the newest of which is the "relative gap" (RELGAP)[3].

Figure 1-2 also indicates that the modeling process includes a speed feedback loop. The AM and off-peak SOV restrained times resulting from the traffic assignment step are fed back into trip generation (via transit accessibility), trip distribution, and mode choice steps. In standard application, the four-step process is executed a total of seven times, including an initial pass which uses 'synthetic' highway speed inputs and exogenous mode choice percentages, and six subsequent passes where traffic assignment-based highway speeds are used and the mode choice model is executed. A link-level method of successive averaging (MSA) process is applied after each successive highway assignment process to ensure that highway volumes (and hence speeds) will stabilize. The MSA averaging is performed on the basis of total (non-segmented) link volumes, and is performed individually for each time period.

1.4 *Special Modeling Applications*

A standard 'stand-alone' model execution is sometimes insufficient for representing a special policy condition that is relevant to a particular travel forecast. In these instances, the travel model execution will utilize modeling outputs generated from a previous model execution. There are two such special modeling procedures that have been used in this regard in the TPB's most recent modeling work.

The first such procedure is known as the 'transit constraint' option. TPB forecasts have, in recent years, been subject to a Metrorail-related capacity limitation in the core area. It is currently assumed that, beyond the year 2010, all transit trips moving to and through the regional core area will not exceed 2010 levels. Consequently, procedures have been added to all post-2010 model executions to compare the modeled transit trip table (resulting from each iteration) with a pre-existing 2010 transit trip table and to ensure that appropriate modeled transit movements do not exceed 2010 levels (transit trips in excess of the constrained levels are converted back into auto trips).

A second procedure, known as the 'HOV-3+ skims substitution' option, is related to the modeling of planned HOT (High Occupancy Toll) lanes in Northern Virginia. Modeling this type of facility has proven to be especially challenging given:

1. The special operating characteristics of the facility (i.e., the tolls will change in real time to maintain a service speed at or near free-flow levels);
2. the stipulation that SOV's and 2-occupant HOVs will pay for the HOT lane access while 3+ occupant HOVs will be allowed access at no charge; and
3. the stipulation that the HOV travel market will suffer no service degradation from the HOT lane operation.

[3] The relative gap closure statistic was added to TP+ in Version 4.0.

Obviously, a central modeling objective in representing HOT lanes is to specify detailed toll rates that will result in demand levels that do not degrade the prevailing speed on the HOT facility. Another modeling objective is to ensure that HOV 3+ service levels will remain unaffected by the HOT operation. To achieve these two objectives, the following four steps are currently undertaken on a year-by-year basis to simulate HOT lanes in Virginia.

1) The travel model is fully executed whereby all Virginia HOT lanes in the highway network are coded as HOV 3+-priority lanes. The resulting HOV 3+ LOS skim files corresponding to each iteration (pump-prime, iteration 1,…, iteration 6) are preserved for later use. This step is known as the 'base' execution.

2) The travel model is fully executed again. This time, the Virgina HOT lanes are coded as mixed use lanes (i.e., allowing access by both SOVs and HOVs). The HOT lanes are assigned a 'straw' toll level of 20 cents per mile during the peak periods and 15 cents per mile during the off-peak. The toll is included into the overall highway impedance during path building in the traffic assignment step. Therefore, the toll level impacts the loading in the HOT lane facility.

3) The final (iteration 6) highway assignment process (including three traffic assignments for each time period) resulting from Step 2 is run iteratively, on a trial-and-error basis, to identify HOT lane toll rates (cents/mile) which yield optimum speeds on the facility. The toll rates are developed on a freeway segment by segment basis. The queuing delay function is disabled on the HOT lane facility during this particular step as such delay will presumably be minimal given the special operating conditions of the facility. At the end of each assignment execution, the segment level volume and speed is evaluated and the toll rate is adjusted incrementally. The toll level is increased when the desired segment speed is too low. The result of this process is a file containing 'final' toll rates for each HOT lane freeway segment, by time period.

4) The model is again executed as in Step 2, such that: 1) the final HOT lane toll rates developed in Step 3 are invoked and 2) the HOV 3+ skims developed in Step 1 are used as 'overrides' to the HOV 3+ skims that would be normally developed as part of the modeling process. The result of this execution produces the final loaded links (this step is referred to as the 'final' run).

In summary, TPB travel forecasts involving HOT-lane scenarios are developed using two separate model executions: 1) the 'base' run from which HOV 3+ skims are developed, and the 'final' run which uses specially developed HOT lane toll rates and the HOV 3+ skims from the base run.

Highway skims used by the mode choice model normally consist of time, distance and toll matrix tables. The TPB mode choice model distinguishes tolls on variably priced facilities from tolls charged on fixed price facilities. Variably priced facilities are those that levy differential toll charges by time period (such as the planned ICC electronic toll lanes (ETLs) in Maryland or the planned HOT lanes in Virginia). Fixed toll facilities are those that levy toll charges that do not fluctuate during the day. The TPB model expresses toll values on variably priced facilities as equivalent minutes that are added to the highway time, rather than as monetary values expressed in the toll matrix. Tolls charged on fixed price facilities, however, are expressed as monetary values.

Chapter 2 Inputs to the Travel Model

This chapter describes the land use and exogenous travel files that have been prepared for the Version 2.2 model application. Zonal land use forecasts are periodically updated from COG's Cooperative Forecasting Program. The most recent land use release is known as Round 7.1. Exogenous trip files used in the Version 2.2 model represent special travel markets that need to be accounted for in the regional forecast. Such markets include external trip-ends, through trips, airport passengers trips, and 'miscellaneous' (or taxi, school, and visitor/ tourist) trips.

2.1 *Round 7.1 Land Use*

The Version 2.2 model requires that a zonal land use file be provided in a standard format for each simulated year. Land use forecasts are periodically updated through COG's Cooperative Forecast program. The most recent set of land use forecasts was released in August 2007[4]. The Cooperative Forecast provides of zonal projections of households, household population, group quarters population, and employment by category (i.e., retail, office, industrial, and other). The land use file also includes a jurisdiction code that is utilized by the travel model, ranging from 0 to 23. The Cooperative Forecasting program's Round 7.1 land use forecasts were provided for the years 2000 through 2030, in five-year increments.

Procedures to prepare standardized land use files supporting the TPB travel model have, in recent years, included a provision to factor employment on a jurisdictional basis to account for definitional differences between planning agencies. These employment adjustments were applied to the Round 7.1 files (COG/TPB 2007.08.27), but the adjustments were made only to jurisdictions outside of the COG member area. In addition to land activity data, the standard zonal land use file includes additional data that do not vary by year, including zonal area, a zonal household income index (the ratio of the zonal median income to the regional median income), and the airline distance to the nearest external station. The index is used in the demographic modeling process, specifically, the household income sub-model. The household income index was recently updated using the 2000 CTPP (COG/TPB 2006.08.11). The index used in previous files was based on the 1990 CTPP.

The Round 7.1 regional land use totals over time are listed on Table 2-1. The totals shown in between the five-year increments have been linearly interpolated. (Intermediate years are typically required for air quality planning work, and so files are generally prepared for all years between the base and horizon year in a given land use round).

[4] Reference: August 24, 2008 Memorandum from Paul DesJardin to Michael Clifford on the Subject: Final Round 7.1 Cooperative Forecast TAZ File.

Table 2-1 Round 7.1 Land Use Forecasts for Version 2.2 Modeling (w/ CTPP Employment Adjustments)

Year	HH	HHPOP	GQPop	TotPop	TotEMP(1,2)	OffEMP	RetEMP	IndEMP	OthEMP
2000	2,143,451	5,632,014	116,105	5,748,119	3,441,381	1,630,149	628,912	459,906	722,414
2001	2,186,197	5,737,713	119,668	5,857,403	3,494,997	1,654,026	638,140	471,719	731,144
2002	2,228,949	5,843,440	123,244	5,966,696	3,548,630	1,677,886	647,362	483,533	739,902
2003	2,271,740	5,949,100	126,863	6,075,951	3,602,284	1,701,726	656,573	495,275	748,657
2004	2,314,492	6,054,827	130,439	6,185,244	3,655,917	1,725,586	665,795	507,089	757,415
2005	2,357,238	6,160,526	134,002	6,294,528	3,709,533	1,749,463	675,023	518,902	766,145
2006	2,399,015	6,262,725	134,639	6,397,389	3,782,185	1,789,143	687,011	527,266	778,735
2007	2,440,792	6,364,933	135,301	6,500,236	3,854,849	1,828,871	699,005	535,604	791,360
2008	2,482,578	6,467,172	135,966	6,603,136	3,927,538	1,868,563	711,001	543,962	804,021
2009	2,524,355	6,569,380	136,628	6,705,983	4,000,202	1,908,291	722,995	552,300	816,646
2010	2,566,132	6,671,579	137,265	6,808,844	4,072,854	1,947,971	734,983	560,664	829,236
2011	2,605,822	6,761,365	137,755	6,899,125	4,133,475	1,981,003	744,821	568,523	839,049
2012	2,645,490	6,851,197	138,245	6,989,465	4,194,092	2,014,020	754,692	576,407	848,893
2013	2,685,233	6,941,005	138,795	7,079,777	4,254,748	2,047,081	764,628	584,336	858,783
2014	2,724,901	7,030,837	139,285	7,170,117	4,315,365	2,080,098	774,499	592,220	868,627
2015	2,764,591	7,120,623	139,775	7,260,398	4,375,986	2,113,130	784,337	600,079	878,440
2016	2,798,787	7,201,940	140,165	7,342,114	4,434,370	2,144,237	794,157	607,441	888,528
2017	2,833,031	7,283,227	140,562	7,423,813	4,492,772	2,175,337	803,969	614,806	898,609
2018	2,867,273	7,364,519	141,012	7,505,507	4,551,188	2,206,497	813,828	622,173	908,741
2019	2,901,517	7,445,806	141,409	7,587,206	4,609,590	2,237,597	823,640	629,538	918,822
2020	2,935,713	7,527,123	141,799	7,668,922	4,667,974	2,268,704	833,460	636,900	928,910
2021	2,964,737	7,593,499	142,396	7,735,893	4,720,353	2,296,094	841,147	644,028	939,011
2022	2,993,788	7,659,857	142,998	7,802,857	4,772,760	2,323,505	848,885	651,187	949,141
2023	3,022,842	7,726,221	143,619	7,869,838	4,825,216	2,350,939	856,635	658,369	959,315
2024	3,051,893	7,792,579	144,221	7,936,802	4,877,623	2,378,350	864,373	665,528	969,445
2025	3,080,917	7,858,955	144,818	8,003,773	4,930,002	2,405,740	872,060	672,656	979,546
2026	3,104,706	7,913,911	145,593	8,059,505	4,975,299	2,428,268	879,594	678,768	988,585
2027	3,128,522	7,968,819	146,384	8,115,193	5,020,598	2,450,796	887,174	684,894	997,668
2028	3,152,377	8,023,763	147,175	8,170,948	5,065,971	2,473,400	894,737	691,044	1,006,856
2029	3,176,193	8,078,671	147,966	8,226,636	5,111,270	2,495,928	902,317	697,170	1,015,939
2030	3,199,982	8,133,627	148,741	8,282,368	5,156,567	2,518,456	909,851	703,282	1,024,978

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Ref: Rnd71_70a_Comparison.xls

2.2 *External and Through Forecasts*

External and through travel files are geographically referenced to 46 external stations which identify the entry and exit points of the highway network located at the periphery of the modeled study area. The stations are numbered from 2145 to 2191. The Version 2.2 model requires six files relating to external (I-X and X-I) and through (X-X) travel, for a given simulation year. These include:

1. a through auto driver trip table (excluding commercial vehicle trips);
2. a through truck (medium/heavy) trip table;
3. a through commercial vehicle trip table;
4. a file containing external commercial vehicle trip-ends, at the external station level;
5. a file containing external auto-person and truck productions by purpose (excluding commercial trips), at the external station level;
6. a file containing external auto-person and truck attractions by purpose (excluding commercial trips), at the external station level;

External and through trips are generally developed using an assumed growth rate at each external station, and an observed traffic 'profile' at each external station, indicating the proportion of through and external travel and the proportions of travel modes and purposes (the proportions were developed from previous external surveys). The external traffic forecasts are currently based on varying growth rates depending on the station location, from 1.1% to 3.0% depending on location. The average annual growth rate across all stations is approximately 1.8%. Previous documents detail the development of the external traffic rates (COG/TPB 2006.06.30, Chapter 2).

A summary of the revised external and through trips are shown on Table 2-2. The projected total level of external travel between 2000 and 2030 is shown to grow from 1,215,800 to 2,083,800, which reflects an average annual growth rate of about 1.8%. External productions and attractions are shown by travel mode and purpose, in Table 2-3 and Table 2-4, respectively.

Table 2-2 External and Through Auto/Truck Trips by Year

Year	AAWDT	Auto Dr. Control	Trucks Control	Auto XX Trip-Ends	ComVeh XX Trip-Ends	Auto Driver X-I Trips	Auto Driver I-X Trips	Truck XX Trip-Ends	Truck XI Trips	Truck IX Trips
2000	1,215,783	1,003,776	114,016	70,027	5,318	486,084	442,347	59,702	27,157	27,157
2001	1,242,112	1,025,791	116,675	71,652	5,444	496,868	451,827	61,119	27,778	27,778
2002	1,268,838	1,048,138	119,374	73,301	5,572	507,815	461,450	62,557	28,408	28,408
2003	1,295,968	1,070,823	122,114	74,976	5,702	518,927	471,218	64,017	29,048	29,048
2004	1,323,510	1,093,852	124,895	76,675	5,834	530,208	481,135	65,499	29,698	29,698
2005	1,351,466	1,117,228	127,719	78,401	5,968	541,659	491,201	67,003	30,358	30,358
2006	1,386,887	1,146,845	131,296	80,587	6,137	556,167	503,954	68,909	31,193	31,193
2007	1,422,976	1,177,022	134,940	82,814	6,310	570,949	516,948	70,851	32,045	32,045
2008	1,459,746	1,207,767	138,654	85,084	6,486	586,010	530,187	72,830	32,912	32,912
2009	1,497,210	1,239,093	142,437	87,396	6,665	601,355	543,676	74,846	33,796	33,796
2010	1,535,381	1,271,009	146,292	89,752	6,848	616,990	557,420	76,900	34,696	34,696
2011	1,565,186	1,295,930	149,302	91,591	6,991	629,197	568,151	78,504	35,399	35,399
2012	1,595,422	1,321,212	152,356	93,457	7,136	641,582	579,038	80,131	36,113	36,113
2013	1,626,094	1,346,859	155,454	95,350	7,282	654,145	590,082	81,781	36,836	36,836
2014	1,657,211	1,372,878	158,596	97,271	7,431	666,891	601,285	83,456	37,570	37,570
2015	1,688,778	1,399,273	161,784	99,219	7,582	679,820	612,651	85,154	38,315	38,315
2016	1,717,575	1,423,351	164,692	100,996	7,720	691,615	623,020	86,704	38,994	38,994
2017	1,746,746	1,447,743	167,638	102,797	7,860	703,564	633,523	88,274	39,682	39,682
2018	1,776,297	1,472,452	170,623	104,620	8,001	715,668	644,163	89,864	40,379	40,379
2019	1,806,232	1,497,482	173,646	106,468	8,145	727,929	654,941	91,475	41,086	41,086
2020	1,836,557	1,522,838	176,708	108,339	8,290	740,350	665,860	93,107	41,801	41,801
2021	1,862,500	1,544,531	179,329	109,941	8,414	750,976	675,201	94,503	42,413	42,413
2022	1,888,728	1,566,462	181,977	111,559	8,540	761,719	684,644	95,914	43,032	43,032
2023	1,915,245	1,588,634	184,655	113,196	8,666	772,580	694,191	97,341	43,657	43,657
2024	1,942,052	1,611,049	187,363	114,850	8,795	783,560	703,844	98,783	44,290	44,290
2025	1,969,153	1,633,710	190,100	116,523	8,925	794,661	713,602	100,242	44,929	44,929
2026	1,991,679	1,652,545	192,375	117,913	9,032	803,887	721,712	101,454	45,460	45,460
2027	2,014,408	1,671,550	194,670	119,316	9,141	813,197	729,896	102,677	45,996	45,996
2028	2,037,342	1,690,726	196,986	120,731	9,251	822,590	738,153	103,911	46,537	46,537
2029	2,060,484	1,710,076	199,323	122,160	9,362	832,069	746,485	105,156	47,083	47,083
2030	2,083,834	1,729,600	201,681	123,601	9,473	841,633	754,893	106,413	47,634	47,634

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Ref : External_Summary.xls

Table 2-3 External Auto/Truck Productions by Year

Year	HBWXI AutoDrv	HBSXI AutoDrv	HBOXI AutoDrv	NHBXI AutoDrv	ComvXI Vehs	HBWXI AutoPsn	HBSXI AutoPsn	HBOXI AutoPsn	NHBXI AutoPsn	ComVeh XI Psn	Med XI	Hvy XI	Auto XI Drv	TruckXI Total
2000	236,559	42,352	117,778	56,408	32,987	272,043	69,457	189,623	72,203	42,223	3,637	23,520	486,084	27,157
2001	241,902	43,183	120,471	57,549	33,736	278,187	70,821	193,959	73,662	43,182	3,718	24,047	496,841	27,765
2002	247,332	44,029	123,208	58,708	34,497	284,432	72,207	198,365	75,146	44,156	3,802	24,583	507,774	28,384
2003	252,850	44,888	125,989	59,886	35,271	290,777	73,616	202,843	76,654	45,146	3,886	25,127	518,883	29,013
2004	258,455	45,760	128,815	61,082	36,057	297,223	75,047	207,392	78,185	46,152	3,972	25,679	530,169	29,651
2005	264,131	46,644	131,675	62,294	36,852	303,750	76,496	211,997	79,736	47,171	4,059	26,239	541,596	30,298
2006	271,716	47,825	135,498	63,913	37,916	312,473	78,432	218,152	81,808	48,532	4,175	26,987	556,867	31,162
2007	279,440	49,027	139,392	65,562	38,999	321,357	80,405	224,421	83,919	49,918	4,293	27,748	572,420	32,042
2008	287,323	50,254	143,365	67,244	40,104	330,422	82,417	230,818	86,072	51,333	4,414	28,526	588,291	32,940
2009	295,363	51,506	147,418	68,960	41,231	339,668	84,470	237,343	88,269	52,776	4,537	29,318	604,479	33,856
2010	303,579	52,785	151,559	70,714	42,383	349,116	86,567	244,010	90,514	54,250	4,663	30,128	621,019	34,791
2011	309,447	53,699	154,517	71,967	43,206	355,864	88,066	248,772	92,117	55,303	4,753	30,707	632,834	35,460
2012	315,420	54,628	157,527	73,242	44,043	362,733	89,591	253,619	93,749	56,375	4,844	31,296	644,861	36,140
2013	321,464	55,569	160,573	74,532	44,890	369,683	91,134	258,523	95,400	57,460	4,937	31,892	657,028	36,829
2014	327,595	56,524	163,664	75,840	45,750	376,734	92,699	263,498	97,076	58,560	5,031	32,496	669,372	37,527
2015	333,831	57,495	166,807	77,171	46,624	383,905	94,291	268,559	98,779	59,679	5,126	33,111	681,927	38,238
2016	339,208	58,332	169,517	78,319	47,378	390,089	95,664	272,923	100,249	60,644	5,209	33,641	692,755	38,850
2017	344,674	59,183	172,272	79,486	48,144	396,375	97,059	277,358	101,742	61,625	5,293	34,180	703,758	39,473
2018	350,191	60,042	175,053	80,664	48,918	402,720	98,468	281,836	103,250	62,615	5,377	34,724	714,868	40,101
2019	355,779	60,911	177,870	81,856	49,701	409,146	99,895	286,370	104,776	63,618	5,463	35,275	726,118	40,738
2020	361,437	61,792	180,722	83,064	50,495	415,653	101,339	290,962	106,322	64,633	5,549	35,833	737,510	41,383
2021	366,517	62,583	183,282	84,149	51,207	421,495	102,636	295,084	107,710	65,545	5,627	36,334	747,738	41,961
2022	371,667	63,385	185,878	85,248	51,929	427,417	103,951	299,263	109,117	66,469	5,706	36,842	758,106	42,548
2023	376,852	64,192	188,491	86,355	52,656	433,380	105,275	303,471	110,534	67,399	5,785	37,353	768,546	43,139
2024	382,107	65,010	191,140	87,476	53,393	439,423	106,617	307,735	111,970	68,342	5,866	37,871	779,126	43,737
2025	387,415	65,836	193,815	88,609	54,137	445,527	107,972	312,043	113,420	69,295	5,947	38,395	789,812	44,342
2026	392,179	66,578	196,217	89,626	54,805	451,006	109,188	315,909	114,722	70,150	6,020	38,864	799,405	44,885
2027	396,997	67,328	198,645	90,655	55,480	456,546	110,418	319,818	116,038	71,014	6,094	39,339	809,104	45,433
2028	401,866	68,086	201,099	91,694	56,163	462,146	111,661	323,770	117,368	71,888	6,169	39,820	818,909	45,988
2029	406,771	68,850	203,572	92,741	56,850	467,787	112,914	327,750	118,708	72,769	6,244	40,303	828,784	46,547
2030	411,728	69,622	206,070	93,799	57,545	473,488	114,179	331,773	120,063	73,658	6,320	40,792	838,765	47,111

Ref: ExtXIpurp_CV.txt, extrnalPsAs.xls

Table 2-4 External Auto/Truck Attractions by Year

Year	HBWXI AutoDrv	HBSXI AutoDrv	HBOXI AutoDrv	NHBXI AutoDrv	ComvXI Vehs	HBWXI AutoPsn	HBSXI AutoPsn	HBOXI AutoPsn	NHBXI AutoPsn	ComVeh XI Psn	Med XI	Hvy XI	Auto XI Drv	TruckXI Total
2000	146,581	41,644	164,738	56,400	32,983	168,568	68,297	265,229	72,193	42,219	3,637	23,520	442,347	27,157
2001	149,570	42,509	168,383	57,541	33,732	172,006	69,715	271,097	73,652	43,177	3,718	24,047	451,736	27,765
2002	152,609	43,388	172,088	58,700	34,494	175,501	71,157	277,062	75,136	44,152	3,802	24,583	461,279	28,384
2003	155,697	44,281	175,853	59,877	35,267	179,052	72,621	283,123	76,643	45,142	3,886	25,127	470,976	29,013
2004	158,834	45,189	179,677	61,074	36,053	182,659	74,109	289,281	78,174	46,147	3,972	25,679	480,827	29,651
2005	162,010	46,107	183,550	62,285	36,848	186,312	75,616	295,515	79,725	47,166	4,059	26,239	490,801	30,298
2006	166,255	47,335	188,725	63,904	37,911	191,193	77,630	303,846	81,797	48,527	4,175	26,987	504,130	31,162
2007	170,578	48,586	193,995	65,553	38,994	196,164	79,681	312,332	83,908	49,913	4,293	27,748	517,706	32,042
2008	174,989	49,862	199,373	67,235	40,099	201,237	81,773	320,991	86,061	51,327	4,414	28,526	531,558	32,940
2009	179,488	51,163	204,859	68,951	41,226	206,412	83,908	329,822	88,258	52,770	4,537	29,318	545,688	33,856
2010	184,086	52,493	210,464	70,705	42,378	211,699	86,089	338,847	90,502	54,244	4,663	30,128	560,125	34,791
2011	187,370	53,443	214,468	71,957	43,200	215,475	87,647	345,293	92,105	55,296	4,753	30,707	570,438	35,460
2012	190,713	54,410	218,543	73,232	44,038	219,319	89,232	351,854	93,737	56,368	4,844	31,296	580,935	36,140
2013	194,094	55,388	222,666	74,522	44,885	223,209	90,837	358,492	95,388	57,452	4,937	31,892	591,556	36,829
2014	197,525	56,381	226,849	75,831	45,744	227,154	92,464	365,227	97,063	58,552	5,031	32,496	602,330	37,527
2015	201,015	57,390	231,104	77,162	46,618	231,168	94,120	372,077	98,767	59,671	5,126	33,111	613,289	38,238
2016	204,025	58,261	234,773	78,309	47,372	234,628	95,547	377,984	100,236	60,636	5,209	33,641	622,739	38,850
2017	207,083	59,145	238,501	79,476	48,138	238,146	96,998	383,987	101,729	61,617	5,293	34,180	632,344	39,473
2018	210,171	60,039	242,266	80,654	48,912	241,697	98,463	390,048	103,237	62,607	5,377	34,724	642,041	40,101
2019	213,298	60,943	246,079	81,846	49,695	245,293	99,947	396,186	104,763	63,609	5,463	35,275	651,861	40,738
2020	216,464	61,859	249,939	83,054	50,488	248,934	101,449	402,402	106,309	64,625	5,549	35,833	661,804	41,383
2021	219,307	62,681	253,405	84,138	51,200	252,203	102,797	407,982	107,697	65,536	5,627	36,334	670,731	41,961
2022	222,189	63,515	256,918	85,237	51,922	255,517	104,165	413,639	109,104	66,460	5,706	36,842	679,782	42,548
2023	225,091	64,354	260,456	86,344	52,649	258,854	105,541	419,334	110,520	67,390	5,785	37,353	688,894	43,139
2024	228,032	65,205	264,041	87,466	53,385	262,236	106,936	425,107	111,956	68,333	5,866	37,871	698,129	43,737
2025	231,002	66,064	267,663	88,598	54,129	265,652	108,345	430,937	113,406	69,286	5,947	38,395	707,456	44,342
2026	233,668	66,835	270,913	89,615	54,797	268,718	109,610	436,170	114,708	70,140	6,020	38,864	715,829	44,885
2027	236,364	67,615	274,200	90,643	55,472	271,818	110,889	441,462	116,024	71,005	6,094	39,339	724,295	45,433
2028	239,089	68,403	277,522	91,683	56,155	274,952	112,182	446,811	117,354	71,878	6,169	39,820	732,853	45,988
2029	241,834	69,197	280,869	92,730	56,843	278,109	113,484	452,199	118,694	72,758	6,244	40,303	741,472	46,547
2030	244,608	70,000	284,251	93,788	57,537	281,299	114,800	457,644	120,048	73,648	6,320	40,792	750,184	47,111

Ref: ExtIXpurp_CV.txt, extrnalPsAs.xls

2.3 Miscellaneous and Airport Passenger Trip Forecasts

The remaining exogenous travel markets consist of taxis, school, and visitor/tourist auto driver trips (collectively referred to as 'miscellaneous trips') and airport passenger auto driver trips. The miscellaneous trip totals, shown by year on Table 2-5, are based on surveyed travel patterns that have been growth factored through time. The airport passenger forecasts are shown on Table 2-6. The airport trips have been recently updated using the 2000 COG Air Passenger Survey (COG/TPB 2006.06.30, Chapter 6). The trip tables represent auto travel to each of the three major airports serving the Washington/Baltimore area.

Table 2-5 Miscellaneous Auto Driver Forecasts

Year	School	Taxi	Visitor/ Tourist
2000	250,448	111,246	222,227
2001	255,129	113,337	226,490
2002	259,809	115,428	230,753
2003	264,490	117,518	235,016
2004	269,170	119,609	239,279
2005	273,851	121,700	243,542
2006	278,407	123,715	247,527
2007	282,964	125,730	251,512
2008	287,520	127,746	255,496
2009	292,077	129,761	259,481
2010	296,633	131,776	263,466
2011	300,347	134,043	267,660
2012	304,060	136,310	271,853
2013	307,774	138,578	276,047
2014	311,487	140,845	280,240
2015	315,201	143,112	284,434
2016	318,127	144,191	286,834
2017	321,053	145,270	289,234
2018	323,979	146,350	291,633
2019	326,905	147,429	294,033
2020	329,831	148,508	296,433
2021	332,552	149,544	298,480
2022	335,273	150,580	300,527
2023	337,994	151,616	302,574
2024	340,715	152,652	304,621
2025	343,436	153,688	306,668
2026	346,932	155,598	309,981
2027	350,429	157,508	313,294
2028	353,925	159,418	316,607
2029	357,422	161,328	319,920
2030	360,918	163,238	323,233

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Table 2-6 Air Passenger Auto Driver Trips by Year and Airport

	Airport			
Year	National	Dulles	BWI	Total
2000	18,746	16,585	14,486	49,817
2001	18,339	16,595	14,810	49,744
2002	17,933	16,603	15,134	49,670
2003	17,526	16,612	15,459	49,597
2004	17,119	16,620	15,783	49,522
2005	16,713	16,630	16,107	49,450
2006	17,199	18,405	17,333	52,937
2007	17,687	20,180	18,559	56,426
2008	18,174	21,956	19,785	59,915
2009	18,662	23,731	21,011	63,404
2010	19,149	25,506	22,237	66,892
2011	19,346	27,459	23,126	69,931
2012	19,543	29,412	24,014	72,969
2013	19,740	31,365	24,903	76,008
2014	19,937	33,319	25,792	79,048
2015	20,135	35,272	26,681	82,088
2016	20,331	36,754	27,341	84,426
2017	20,528	38,237	28,001	86,766
2018	20,725	39,720	28,662	89,107
2019	20,921	41,203	29,322	91,446
2020	21,118	42,685	29,982	93,785
2021	21,314	43,657	30,375	95,346
2022	21,511	44,630	30,767	96,908
2023	21,711	45,603	31,161	98,475
2024	21,908	46,576	31,553	100,037
2025	22,104	47,548	31,945	101,597
2026	22,299	48,630	32,337	103,266
2027	22,495	49,713	32,729	104,937
2028	22,695	50,796	33,121	106,612
2029	22,891	51,879	33,513	108,283
2030	23,086	52,961	33,905	109,952

Subdirectory: I:\ateam\mod_inputs\airport\2007-08-24_Rnd71Based

Ref: Airport_Summary.xls

Chapter 3 Demographic models

This chapter describes the specification of demographic modeling process used within the Version 2.2 model. The models were recently re-estimated using the 2000 CTPP and a more detailed discussion of the model development can be found in earlier work (COG/TPB 2006.06.30, Chapter 2).

3.1 *Demographic Sub-models*

The demographic models are used to distribute the total number of households in a given zone among 64 classes. The classes are established by three dimensions:

- Household size (1, 2, 3, or 4+ persons per household);
- Household income (Income "quartile" 1, 2, 3, or 4); and
- Vehicle ownership/availability (0, 1, 2, or 3+ vehicles per household).

According to the 2000 CTPP, the median household income for the TPB modeled area is approximately $63,800 in 1999 dollars. The household income quartiles based on the 2000 CTPP and are defined as discrete ranges shown on Table 3-1.

Table 3-1 2000 CTPP Household Income Quartile Ranges

Quartile	Income range (1999 dollars)
First	Less than $36,199
Second	$36,100 to $63,799
Third	$63,800 to $100,699
Fourth	$100,700 or more

It is important to point out that the number of households in each income range, as tabulated from the Census, does not equal 25% precisely as one might expect. The Census data does not provide individual household income data, but rather, reports household income tabulations *at zone level* in terms of the number of households falling in 26 discrete income ranges. The reported income ranges at zone level do not conform neatly to the regional quartile ranges shown above, and so, there is some degree of approximation in the tabulation of the number of zonal households in each quartile group.

A submodel was developed for each of the three socio-economic dimensions. The household size sub-model uses Census-based relationships to estimate the percent of households in each integer class of household size, given the zone's average household size. The household income sub-model uses similar Census-based relationships to estimate the percent of households in each income class, given the zone's median household income. Lastly, the vehicle ownership model uses a disaggregate logit formulation to estimate the percentage of households in each of the four vehicle-availability classes. The logit model makes use of the household size and income information developed in prior steps. The model specifications are detailed below.

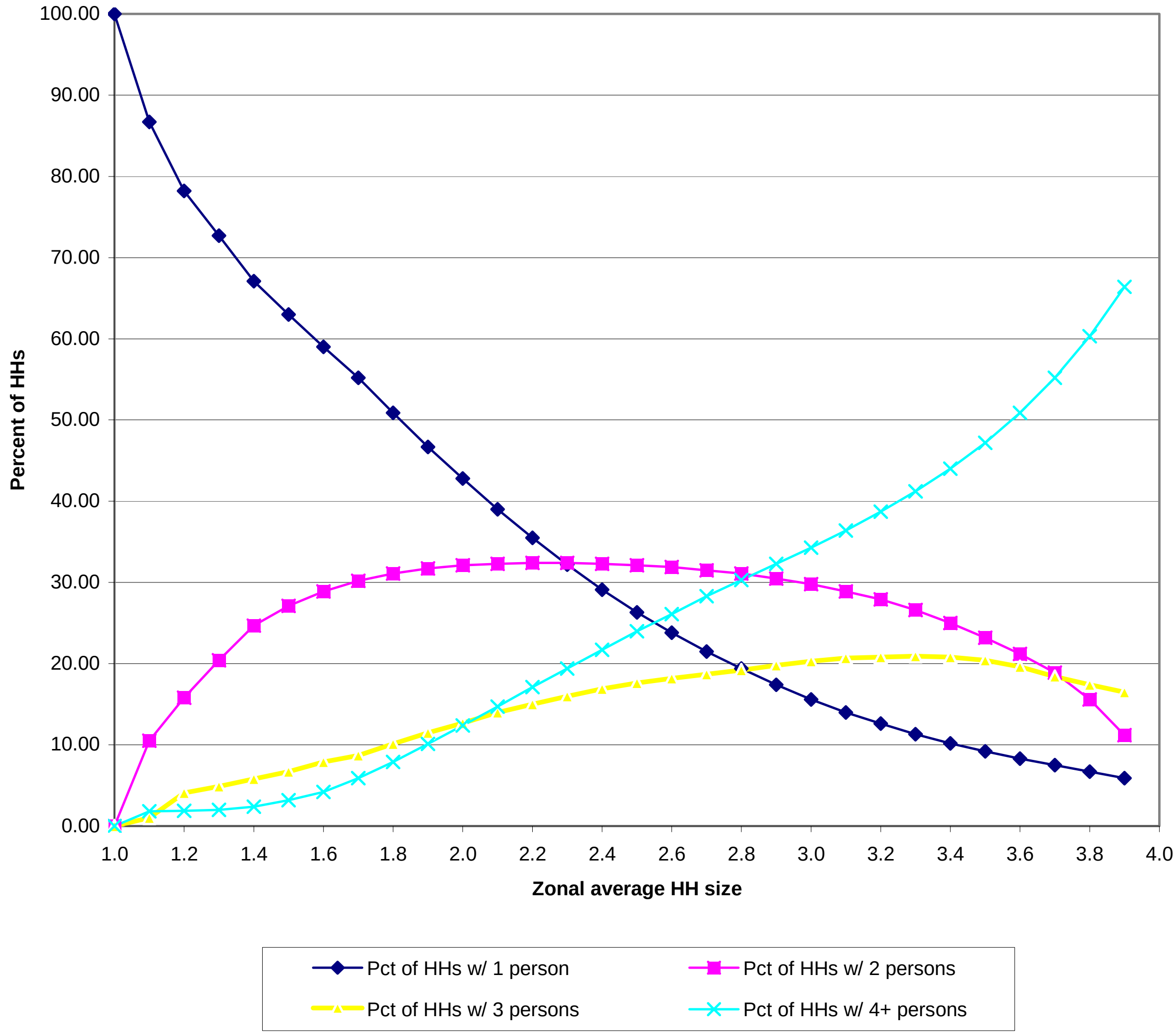
3.2 Household Size Sub-model

The household size sub-model is an "aggregate share" model. The model is essentially a family of four curves used to allocate the total number of households among integer size levels, based on the average household size of a given zone. Each curve uses the same independent variable:

Curve	Dependent variable	Independent variable
1	Percent of HHs with 1 person	Average zonal household size
2	Percent of HHs with 2 persons	Average zonal household size
3	Percent of HHs with 3 persons	Average zonal household size
4	Percent of HHs with 4+ persons	Average zonal household size

The final model is shown in graphical form in Figure 3-1 and in tabular form in Table 3-2.

Figure 3-1 Household size sub-model: Graphical form



Ref: Demographic_v22.xls HHsizg

Table 3-2 Household size sub-model: Tabular form

Ave zonal HH size	Pct of HHs with 1-pers.	Pct of HHs with 2-pers.	Pct of HHs with 3-pers.	Pct of HHs with 4+pers.	Total percent
1.0	100.00%	0.00%	0.00%	0.00%	100.00%
1.1	86.70%	10.50%	1.00%	1.80%	100.00%
1.2	78.20%	15.80%	4.10%	1.90%	100.00%
1.3	72.70%	20.40%	4.90%	2.00%	100.00%
1.4	67.10%	24.70%	5.80%	2.40%	100.00%
1.5	63.00%	27.10%	6.70%	3.20%	100.00%
1.6	59.00%	28.90%	7.90%	4.20%	100.00%
1.7	55.20%	30.20%	8.70%	5.90%	100.00%
1.8	50.90%	31.10%	10.10%	7.90%	100.00%
1.9	46.70%	31.70%	11.50%	10.10%	100.00%
2.0	42.80%	32.10%	12.70%	12.40%	100.00%
2.1	39.00%	32.30%	14.00%	14.70%	100.00%
2.2	35.50%	32.40%	15.00%	17.10%	100.00%
2.3	32.20%	32.40%	16.00%	19.40%	100.00%
2.4	29.10%	32.30%	16.90%	21.70%	100.00%
2.5	26.30%	32.10%	17.60%	24.00%	100.00%
2.6	23.80%	31.90%	18.20%	26.10%	100.00%
2.7	21.50%	31.50%	18.70%	28.30%	100.00%
2.8	19.40%	31.10%	19.20%	30.30%	100.00%
2.9	17.40%	30.50%	19.80%	32.30%	100.00%
3.0	15.60%	29.80%	20.30%	34.30%	100.00%
3.1	14.00%	28.90%	20.70%	36.40%	100.00%
3.2	12.60%	27.90%	20.80%	38.70%	100.00%
3.3	11.30%	26.60%	20.90%	41.20%	100.00%
3.4	10.20%	25.00%	20.80%	44.00%	100.00%
3.5	9.20%	23.20%	20.40%	47.20%	100.00%
3.6	8.30%	21.20%	19.60%	50.90%	100.00%
3.7	7.50%	18.90%	18.40%	55.20%	100.00%
3.8	6.70%	15.60%	17.40%	60.30%	100.00%
3.9	5.90%	11.20%	16.50%	66.40%	100.00%

Ref: **:** Demographic_v22.xls *HhsizT*

3.2 *Household Income Sub-model*

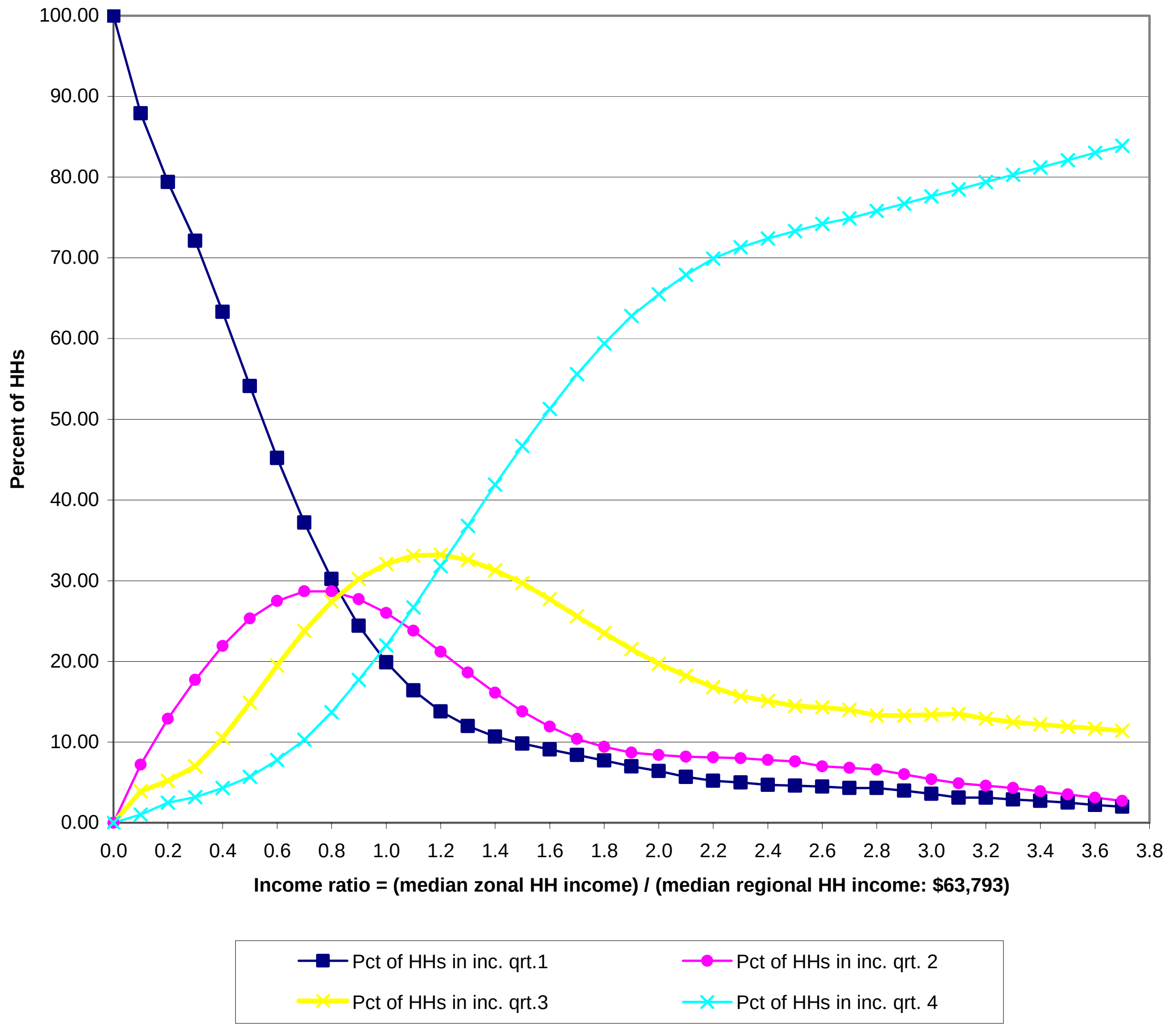
The household income sub-model is also an "aggregate share" model and is, therefore, similar in form to the household size sub-model. The household income sub-model is used to estimate the share of households in each of the four income quartiles in each zone, given the median household income for the zone. As a surrogate for the median zonal household income, the following normalized variable was used as the independent variable for the model:

Equation 3-1 Income ratio equation

$$\text{Income ratio} = (\text{zonal median HH income}) / (\text{regional median HH income}) \quad \text{in 1999 dollars}$$

The final model is shown in graphical form in Figure 3-2 and in tabular form in Table 3-3.

Figure 3-2 Household income sub-model: Graphical form



Ref: Demographic_v22.xls HHIncG

Table 3-3 Household income sub-model: Tabular form

Income ratio	Pct of HHs in inc. qrt.1	Pct of HHs in inc. qrt. 2	Pct of HHs in inc. qrt.3	Pct of HHs in inc. qrt. 4	Total percent
0.0	100.00%	0.00%	0.00%	0.00%	100.00%
0.1	87.90%	7.20%	3.90%	1.00%	100.00%
0.2	79.40%	12.90%	5.20%	2.50%	100.00%
0.3	72.10%	17.70%	7.00%	3.20%	100.00%
0.4	63.30%	21.90%	10.50%	4.30%	100.00%
0.5	54.10%	25.30%	14.90%	5.70%	100.00%
0.6	45.20%	27.50%	19.50%	7.80%	100.00%
0.7	37.20%	28.70%	23.80%	10.30%	100.00%
0.8	30.20%	28.70%	27.40%	13.70%	100.00%
0.9	24.40%	27.70%	30.20%	17.70%	100.00%
1.0	19.90%	26.00%	32.10%	22.00%	100.00%
1.1	16.40%	23.80%	33.10%	26.70%	100.00%
1.2	13.80%	21.20%	33.20%	31.80%	100.00%
1.3	12.00%	18.60%	32.60%	36.80%	100.00%
1.4	10.70%	16.10%	31.30%	41.90%	100.00%
1.5	9.80%	13.80%	29.70%	46.70%	100.00%
1.6	9.10%	11.90%	27.70%	51.30%	100.00%
1.7	8.40%	10.40%	25.60%	55.60%	100.00%
1.8	7.70%	9.40%	23.50%	59.40%	100.00%
1.9	7.00%	8.70%	21.50%	62.80%	100.00%
2.0	6.40%	8.40%	19.70%	65.50%	100.00%
2.1	5.70%	8.20%	18.20%	67.90%	100.00%
2.2	5.20%	8.10%	16.80%	69.90%	100.00%
2.3	5.00%	8.00%	15.70%	71.30%	100.00%
2.4	4.70%	7.80%	15.10%	72.40%	100.00%
2.5	4.60%	7.60%	14.50%	73.30%	100.00%
2.6	4.50%	7.00%	14.30%	74.20%	100.00%
2.7	4.30%	6.80%	14.00%	74.90%	100.00%
2.8	4.30%	6.60%	13.30%	75.80%	100.00%
2.9	4.00%	6.00%	13.30%	76.70%	100.00%
3.0	3.60%	5.40%	13.40%	77.60%	100.00%
3.1	3.10%	4.90%	13.50%	78.50%	100.00%
3.2	3.10%	4.60%	12.90%	79.40%	100.00%
3.3	2.90%	4.30%	12.50%	80.30%	100.00%
3.4	2.70%	3.90%	12.20%	81.20%	100.00%
3.5	2.50%	3.50%	11.90%	82.10%	100.00%
3.6	2.20%	3.10%	11.70%	83.00%	100.00%
3.7	2.00%	2.70%	11.40%	83.90%	100.00%

Ref: Demographic_v22.xls HHIncT

3.4 Vehicle Availability Sub-model

The vehicle availability sub-model is the last demographic sub-model. It is a disaggregate choice model that apportions households among vehicle availability levels. The variables considered are household size, household income (furnished by the previous models), the area type, and transit accessibility defined as the number of jobs accessible in 40 minutes using AM transit service. The model is shown on Table 3-4.

Table 3-4 Vehicle availability model

No. of vehicles 0	1	2	3+	Variable name	Coeff.
	x			Constant	1.0138
		x		Constant	-2.3381
			x	Constant	-5.1710
		x		HH size	0.8700
			x	HH size	1.3026
	x			Income level 2 dummy	1.2376
		x		Income level 2 dummy	1.7892
			x	Income level 2 dummy	1.8221
	x			Income level 3 dummy	1.3285
		x		Income level 3 dummy	2.4831
			x	Income level 3 dummy	2.7395
	x			Income level 4 dummy	1.9991
		x		Income level 4 dummy	3.7372
			x	Income level 4 dummy	4.1987
	x			Tot emp w/in 40 min transit (AM pk)	-1.10E-06
		x		Tot emp w/in 40 min transit (AM pk)	-1.82E-06
			x	Tot emp w/in 40 min transit (AM pk)	-2.05E-06
	x			Area type (1 to 7)	0.0668
		x		Area type (1 to 7)	0.2783
			x	Area type (1 to 7)	0.4093
	x			DC dummy	-0.9246
		x		DC dummy	-1.0751
			x	DC dummy	-1.6334

Ref:Demographicu.1Tpp.xls VA

Chapter 4 Trip Generation

The Version 2.2 trip generation process computes zonal trip productions and trip attractions, for each modeled purpose. This chapter details the trip generation model pertaining to resident, commercial vehicle, and truck purposes.

4.1 *Model Structure*

The generation model is used to compute the number of daily motorized person trips and truck trips produced and attracted to each traffic analysis zone. Motorized person trips are defined as those using automobile, motorcycle, or transit modes. Resident trips consist of four purposes:

- Home-Based Work (HBW)
- Home-Based Shopping (HBS)
- Home-Based Other (HBO)
- Non-Home-Based (NHB) – excluding Commercial trips

Truck trips are developed for two vehicle types:

- Medium (single unit, two axles, 6 or more tires)
- Heavy (all combination vehicles)
- Commercial vehicles (autos and light duty trucks)

The commercial vehicle purpose was subsumed within the NHB purpose in previous TPB models. The Version 2.2 model now accounts for commercial trips as a separate and distinct trip purpose. Both the NHB and commercial trips are inclusive of light trucks. The trip generation process also estimates productions and attractions associated with HBW non-motorized (walk and bicycle) trips. The non-motorized trips are ultimately removed from the 'final' trip-ends prior to the trip distribution step. The trip generation model produces home-based productions and attractions which are stratified by the four income levels.

The resident trip generation process can be envisioned as a series of five sequential steps. These are:

1) Trip production model;
2) Internal-to-external trip extraction model;
3) Non-motorized HBW trip extraction model;
4) Trip attraction model; and
5) Home-based attraction income disaggregation model.

These five models are specified below.

4.2 *Trip Production Model*

The trip production model is a cross-classification type model involving the application of trip rates which are applied to households in specific socio-economic categories. The trip rates are specific to each purpose. The cross-classes established for the Version 2.2 model are structured by the four household income, four household size, and four vehicle availability levels developed by the demographic models. The total number of cross-classes equals 64 (i.e., 4 x 4 x 4). The trip rates are displayed, by purpose on Table 4-1, Table 4-2, Table 4-3, and Table 4-4.

Prior TPB travel models have included the application of a global trip production factor of 1.50 to the non-work (i.e., HBS, HBO, and NHB) trip productions so that the traffic assignment model will validate to counts. This underestimation of the model is believed to be due principally to the under-reporting of non-work trips and the fact that there was no explicit commercial vehicle model, so these trips were included in the NHB purpose. Without such an adjustment factor, the simulated vehicle miles of travel (VMT) assigned to the highway network would fall short of the observed VMT. This factoring of non-work trips procedure is carried forth into the Version 2.2 model, except that the global factor applied to the NHB purpose has been reduced from 1.50 to 1.168, to avoid the double-counting of commercial trips, which were subsumed in earlier models. Appendix A contains a description of all the adjustment factors using in the travel model.

4.3 *The Internal-to-External Trip Extraction Model*

External (I-X, X-I) travel is entered exogenously into the trip generation process and is passed through to the final trip-ends, unaltered. Since the trip production rates reflect both internal and internal-to-external (I-X) travel generated by households in the modeled area, it is, therefore, necessary to remove the I-X portion of total trip productions to avoid double-counting. The model used to remove I-X trips is specified as the following equation, and is shown graphically in Figure 4-1:

Equation 4-1 Percent of total trips productions that are I-X

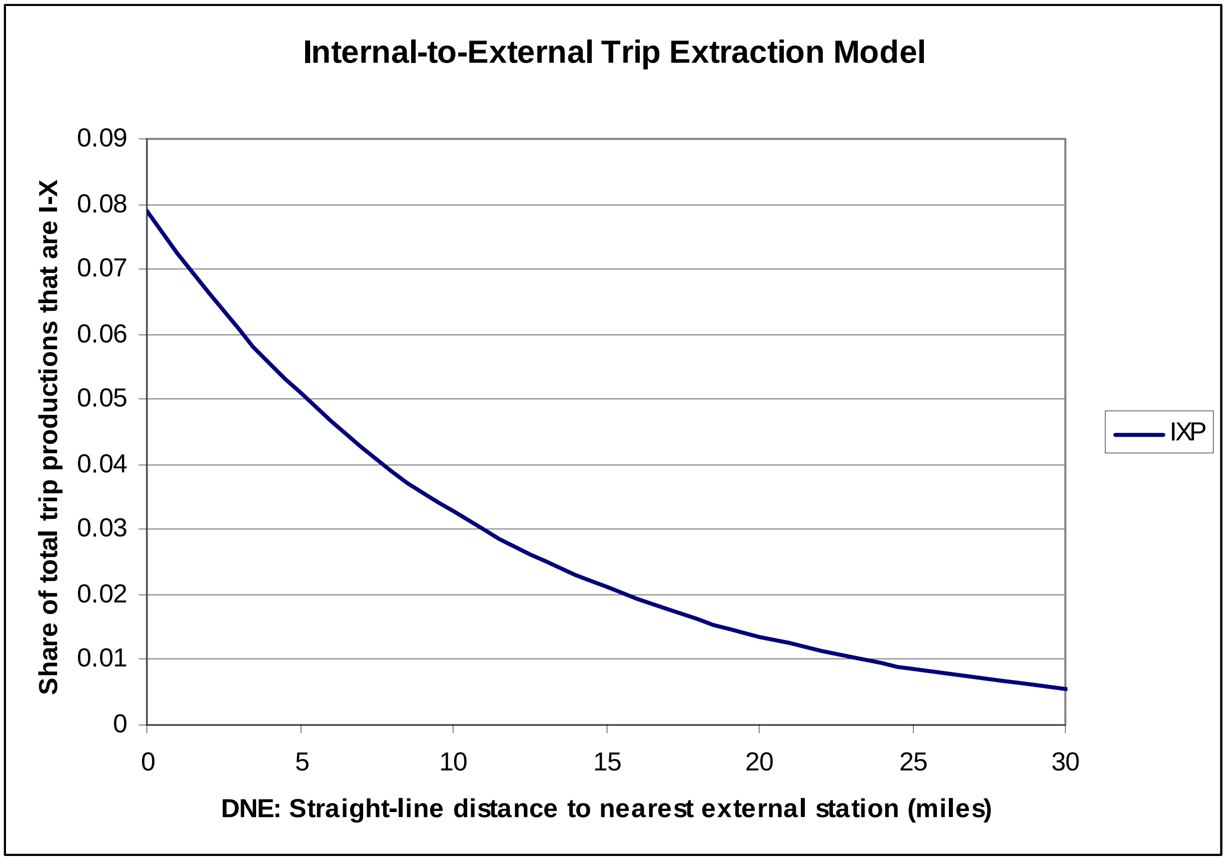
$$IXP = 0.079 \mathrm{Exp}(-0.088 * DNE)$$

where:

IXP	=	the percent of total trip productions that are I-X
DNE	=	the 'straight-line' distance to the nearest external station (in miles)
Exp	=	the exponential function

This function captures the fact that, as the distance to the nearest external station increases, the share of total trip productions that is attracted to external locations (I-X) drops.

Figure 4-1 Internal-to-External Trip Extraction Model



Ref: tripExtractionModel.xls

Table 4-1 Final HBW Trip Production Rates

Income Level	HH Size	Vehicles 0	1	2	3+	Sub-Total
1	1	0.69	0.85	0.75	0.96	**0.79**
	2	1.08	1.08	1.41	1.41	**1.22**
	3	1.10	1.52	1.94	1.94	**1.66**
	4+	1.66	1.66	1.94	1.94	**1.81**
	Subtotal	**0.91**	**1.07**	**1.58**	**1.74**	**1.20**
2	1	1.02	1.18	1.30	1.53	**1.17**
	2	1.35	1.35	1.53	2.12	**1.53**
	3	1.66	1.66	1.79	2.12	**1.85**
	4+	1.85	1.85	2.05	2.43	**2.10**
	Subtotal	**1.21**	**1.34**	**1.73**	**2.23**	**1.61**
3	1	1.02	1.22	1.22	1.22	**1.20**
	2	1.46	1.46	1.84	2.15	**1.77**
	3	1.66	1.66	2.02	3.02	**2.36**
	4+	2.30	2.30	2.30	3.08	**2.55**
	Subtotal	**1.31**	**1.46**	**2.03**	**2.87**	**2.04**
4	1	1.33	1.33	1.33	2.00	**1.34**
	2	1.45	1.45	1.84	2.15	**1.80**
	3	1.67	1.67	2.02	3.02	**2.43**
	4+	3.33	3.33	3.33	3.36	**3.35**
	Subtotal	**1.67**	**1.72**	**2.34**	**3.05**	**2.42**
	TOTAL	**1.05**	**1.33**	**2.02**	**2.72**	**1.85**

Table 4-2 Final HBS Trip Production Rates

Income Level	HH Size	Vehicles				Sub-Total
		0	**1**	**2**	**3+**	
1	1	0.22	0.60	0.60	0.63	**0.46**
	2	0.22	0.68	0.68	0.68	**0.60**
	3	0.22	0.68	0.84	0.84	**0.68**
	4+	0.22	0.68	0.96	1.00	**0.76**
	Subtotal	**0.22**	**0.64**	**0.77**	**0.85**	**0.58**
2	1	0.22	0.60	0.60	0.63	**0.55**
	2	0.29	0.68	0.68	0.84	**0.68**
	3	0.40	0.96	0.96	1.04	**0.96**
	4+	0.45	0.96	1.00	1.10	**1.01**
	Subtotal	**0.27**	**0.70**	**0.83**	**1.01**	**0.76**
3	1	0.29	0.67	0.67	0.67	**0.62**
	2	0.43	0.68	0.90	0.96	**0.83**
	3	0.50	0.96	1.00	1.14	**1.05**
	4+	0.60	0.96	1.14	1.40	**1.21**
	Subtotal	**0.38**	**0.73**	**1.00**	**1.22**	**0.96**
4	1	0.43	0.86	0.86	0.86	**0.81**
	2	0.89	0.89	0.96	0.98	**0.95**
	3	0.90	1.04	1.15	1.20	**1.16**
	4+	1.09	1.28	1.33	1.66	**1.46**
	Subtotal	**0.68**	**0.95**	**1.11**	**1.39**	**1.16**
	TOTAL	**0.27**	**0.72**	**0.97**	**1.22**	**0.88**

Table 4-3 Final HBO Trip Production Rates

		Vehicles				
Income Level	**HH Size**	**0**	**1**	**2**	**3+**	**Sub-Total**
1	1	0.42	1.12	1.44	1.44	**0.89**
	2	0.54	1.70	1.77	1.80	**1.54**
	3	1.28	2.40	2.61	2.39	**2.29**
	4+	1.36	2.90	4.27	3.82	**3.29**
	Subtotal	**0.62**	**1.61**	**2.45**	**2.74**	**1.66**
2	1	0.69	1.16	1.47	1.47	**1.12**
	2	0.89	1.89	1.97	2.04	**1.90**
	3	1.35	2.50	3.19	3.47	**3.02**
	4+	0.75	3.49	4.27	5.67	**4.40**
	Subtotal	**0.81**	**1.72**	**2.88**	**3.99**	**2.42**
3	1	0.71	1.04	1.47	1.47	**1.04**
	2	0.89	2.16	2.46	2.66	**2.34**
	3	1.55	2.84	3.19	3.56	**3.28**
	4+	3.45	4.65	5.39	6.50	**5.68**
	Subtotal	**1.00**	**1.95**	**3.68**	**4.70**	**3.37**
4	1	0.71	1.09	1.08	2.00	**1.05**
	2	1.57	1.81	2.46	2.46	**2.28**
	3	3.45	3.45	3.94	3.94	**3.89**
	4+	4.15	4.84	5.92	6.74	**6.17**
	Subtotal	**1.57**	**2.22**	**3.81**	**5.02**	**3.84**
	TOTAL	**0.75**	**1.81**	**3.40**	**4.52**	**2.88**

Table 4-4 Final NHB Trip Production Rates

Income Level	HH Size	Vehicles				Sub-Total
		0	1	2	3+	
1	1	0.20	1.26	1.26	1.26	**0.88**
	2	0.30	1.26	1.43	1.43	**1.17**
	3	0.40	1.43	1.43	1.43	**1.26**
	4+	0.50	1.50	1.60	1.70	**1.42**
	Subtotal	**0.27**	**1.30**	**1.45**	**1.52**	**1.11**
2	1	0.30	1.26	1.40	1.49	**1.14**
	2	0.40	1.26	2.20	2.20	**1.83**
	3	0.50	1.76	2.60	2.80	**2.36**
	4+	0.60	1.98	2.80	2.97	**2.64**
	Subtotal	**0.36**	**1.39**	**2.42**	**2.69**	**1.90**
3	1	0.40	1.52	1.57	1.57	**1.39**
	2	0.50	1.62	2.33	2.54	**2.10**
	3	0.60	2.48	2.89	2.89	**2.83**
	4+	0.61	2.19	2.92	4.20	**3.26**
	Subtotal	**0.46**	**1.73**	**2.64**	**3.41**	**2.50**
4	1	0.60	1.76	1.76	2.40	**1.64**
	2	0.70	1.76	2.40	2.69	**2.30**
	3	0.80	2.72	2.81	3.10	**2.92**
	4+	0.90	1.54	3.35	4.38	**3.62**
	Subtotal	**0.68**	**1.84**	**2.77**	**3.67**	**2.83**
	TOTAL	**0.33**	**1.50**	**2.48**	**3.21**	**2.13**

4.4 *Non-Motorized HBW Trip Extraction Model*

The HBW trip rates reflect both motorized and non-motorized travel. The inclusion of non-motorized trips was intended to allow the modeler the ability to relate land use policy (e.g. land use mix, density, etc.) to the level of walking and bicycling, and its explicit effect on the reduction of motorized HBW travel. However, the decision was also made early on that non-motorized trips should not be carried forth into trip distribution and mode choice steps given that the non-motorized trips are extremely dissimilar in spatial scale compared to that of motorized travel (non-motorized trips predominantly occur within zones, or between adjacent zones). The model is based on the area type variable, an index ranging from 1 to 7 that is based on both population density and employment density within 1 mile of a given zone, as shown in the table below:

Table 4-5 Area Type Definitions (1-7) as a function of population and employment density

One-Mile 'Floating' Population Density (pop/sq mi)	One-Mile 'Floating' Employment Density (Emp / Sq mi)						
	0-100	101-500	501-1,500	1,501-5,000	5,001-15,0000	15,001-35,000	35,001+
0-100	7	7	5	5	2	2	2
101-350	7	5	5	5	2	2	2
351-1,500	6	6	5	5	2	2	2
1,501-3,500	6	6	4	3	2	2	2
3,501-6,500	4	4	3	3	2	2	1
6,501-10,000	4	3	3	3	2	2	1
10,001+	3	3	3	2	2	2	1

The area type code, therefore, represents both the intensity of land use development as well as the mix of home and job locations. This variable is also used as a basis for highway link capacities and free-flow speeds. The model, shown on Table 4-6, expresses the share of non-motorized travel based on the area type designation of the zone

Table 4-6 Average share of HBW non-motorized productions as a function of area type

Area Type	Avg. Share of HBW Non-Motorized Productions
1	0.4033
2	0.1116
3	0.0320
4 – 7	0.0235

The extraction of non-motorized trips at the attraction end is done using the equation below.

Equation 4-2 Extraction of non-motorized trips at the attraction end of trip

NMAttrs = 0.8982 * NMProds

where:

NMAttrs	=	The number of non-motorized attractions
NMProds	=	The number of non-motorized productions

Subject to following condition:

If NMAttrs > Total Attractions, then NMAttrs = Total Attractions * 0.187%

4.5 *Trip Attraction Model*

The trip attraction models are essentially regression equations which are detailed on Table 4-7. In the case of HBS and NHB trips, the equations vary further by area type. The equations were developed using district-level data from the 1994 Household Travel Survey.

Table 4-7 Summary of the Trip Attraction Models

Trip Purpose	Area Type	No. of Observations	Independent Variable(s)	Attraction Rates
HBW	All (Area Type 1-7)	253	Total Employment	1.11
HBS	Area Type 1	8	Retail Employment	0.29
	Area Type 2	32	Retail Employment	2.44
	Area Type 3-7	180	Retail Employment	3.35
HBO	All (Area Type 1-7)	266	Retail Employment Non-Retail Employment Household Population	1.30 0.30 0.77
NHB	Area Type 1	9	Non-Retail Employment	0.42
	Area Type 2-7	257	Retail Employment Non-Retail Employment Household Population	2.77 0.49 0.28

Notes:

- HBW model reflects motorized and non-motorized person travel. HBS, HBO, and NHB models reflect motorized person travel only.

4.6 *HB Trip Attraction Income Disaggregation Model*

The trip attraction model provides the *total* number of trip attractions for each purpose. In order to support the income stratified trip distribution process (discussed in the next chapter), a technique for allocating total home-based attractions among four income levels is necessary. The stratification of trip productions is not problematic since income is one of the dimensions used in the cross-class structure.

A simple technique is used to apportion total HB attractions among the four income groups. Income shares, developed from the 1994 Household Travel Survey, are applied on the basis of purpose and area type, as shown on Table 4-8. The table indicates that the distributions of attractions by income group, for each purpose, generally do not vary dramatically on average.

Table 4-8 Income Distribution (Percents) of Home-Based Trip Attractions

Purpose	Area Type Code	Income 1	Income 2	Income 3	Income 4	Total
HBW	1	12.20	17.82	28.97	41.01	100.00
	2	15.59	17.14	30.06	37.21	100.00
	3	15.23	21.53	33.30	29.94	100.00
	4-7	20.62	25.01	32.36	22.01	100.00
HBS	1-2	17.65	17.90	30.66	33.78	100.00
	3	15.01	20.10	37.32	27.57	100.00
	4-7	14.46	20.55	30.51	34.48	100.00
HBO	1-2	15.88	16.65	30.39	37.08	100.00
	3	9.71	16.26	38.42	35.61	100.00
	4-7	13.09	21.19	34.56	31.16	100.00

Source: 1994 HTS

4.7 *Truck Model*

The truck trip generation process is based on the rates that have been in use for several years. The rates, shown on Table 4-9, are based on fixed locations and land activity variables. This model will be updated in upcoming work planning for the latter half of this fiscal year.

Table 4-9 Truck trip generation rates as a function of truck type, location, and land use category

Vehicle Type	Location	Land Use Category				
		Office	Retail	Industrial	Other	HH
Medium Truck (Single Unit 6+ Tires)	Regional. Core	0.01	0.17	0.09	0.04	0.04
	DC Non-Core	0.01	0.17	0.19	0.04	0.04
	VA 10-mi Sq.	0.01	0.17	0.14	0.04	0.04
	Other	0.01	0.17	0.11	0.04	0.04
Heavy Truck (All Combination Vehicles)	Regional. Core	-	0.04	0.03	0.03	-
	DC Non-Core	-	0.04	0.13	0.03	-
	VA 10-mi Sq.	-	0.04	0.04	0.03	-
	Other	-	0.04	0.11	0.03	-

Ref.: tgcheck.xls

4.8 *Commercial Vehicle Model*

The trip generation of zonal commercial vehicle trips is developed with the equation shown below (Allen, 2007):

Equation 4-3 Trip generation of commercial vehicle trips

COM productions = (0.056 * indemp + 0.168 * offemp + 0.494 * retemp + 0.082 * othemp + 0.130 * HH) * ATFAC

(attractions = productions, by zone)

where:

Indemp = industrial employment
offemp = office employment
retemp = retail employment
othemp = other employment
HH = households
ATFAC = area type adjustment factor:

Area type	Factor
1	1.05
2	0.90
6	1.20
7	1.15

Note: no factor is applied to area types 3-5.

Chapter 5 Trip Distribution

As with previous model specifications, the Version 2.2 trip distribution model involves a standard gravity model approach and the use of a composite (highway and transit) travel time impedance measure. The model also employs income stratification as well as special external auto and truck distribution models. The primary trip distribution updates to the Version 2.2 model include:

- a reduced number of K-factors used for the HBW purpose;
- The complete elimination of K-factors for HBS, HBO, and NHB;
- The removal of inter-jurisdictional time penalties, including bridge penalties;
- The additional commercial vehicle purpose has been added.

A detailed discussion of the model structure follows below.

5.1 *Model Structure*

The Version 2.2 trip distribution model is used to develop zonal trip tables corresponding to the six basic purposes established above: HBW, HBS, HBO, and NHB motorized person trips, commercial vehicle trips, and Medium and Heavy truck trips. The Version 2.2 trip distribution process consists of several different distribution models that are developed for special travel markets within the six basic purposes. Table 5-1 indicates the 27 specific trip markets that are modeled.

Table 5-1 Trip distribution markets

Purpose/Mode	**Internal Person Models**	**External Person Models**
HBW person	4 Income Strata	2 Facility Types (Interstate /Arterial)
HBS person	4 Income Strata	2 Facility Types (Interstate /Arterial)
HBO person	4 Income Strata	2 Facility Types (Interstate /Arterial)
NHB person	1 (non-stratified)	2 Facility Types (Interstate /Arterial)
Commercial Vehicles	1 (non-stratified)	1 (non-stratified)
Medium Truck	1 (non-stratified)	1 (non-stratified)
Heavy Truck	1 (non-stratified)	1 (non-stratified)
Total Intl./Extl. Markets	**16**	**11**
Total Markets Modeled	**27**	

5.2 *Internal Motorized Person Models*

The Version 2.2 trip distribution model includes income stratification for the home-based trip purposes. The model also makes use of a composite time formulation involving both highway and transit travel times. The composite time formulation is desirable since many corridors in the Washington region are well served by transit, and the consideration of highway time only (as has been used in some previous model versions) has the potential to understate accessibility. The definition of the composite impedance is:

Equation 5-1 Composite Impedance Equation

$$\mathrm{CT_i} = \frac{1.0}{1.0/HT + P_i/TT}$$

Where:

- CT_i = composite time for income group 'i' for a given interchange.
- HT = un-weighted highway time (including terminal times)
- TT = un-weighted transit time (in-vehicle and out-of-vehicle time)
- P_i = regional transit share of income group 'i' for a given purpose

The highway and transit times used in the formulation vary by purpose. AM peak highway/transit times are used for the HBW purpose and off-peak highway/transit times are used for the remaining HBS, HBO, and NHB purposes.

The regional transit shares used in the formulation vary by purpose and income group. The transit shares, shown in Table 5-2, have been taken from the HTS. The exhibit indicates the work transit shares (shown as percents) vary by income from 0.1402 to 0.2572. The transit percentages for the remaining purposes vary by income group from 0.0075 to 0.0755. Since these values are relatively small, the effect of highway times will be generally more predominant on the overall composite time function compared to the effect of transit times for most interchanges.

Some points can be made regarding the composite time function. First, for interchanges that are not served by transit, the composite time function reflects highway time. Second, the presence of transit service will generally contribute small benefit to the travel time since the regional transit shares are relatively small. Nonetheless, the composite time function will still reflect *some* travel time benefit with the presence of competitive transit service. This benefit would not be captured with an impedance measure based on highway time alone.

The highway time in the composite time function consists of both over-the-network time combined with terminal times (both production and attraction-end times). The highway time <u>also includes</u> toll values accumulated along the path that have been transformed into equivalent minutes. The time-cost equivalents are provided by income level and purpose, and are shown on Table 5-3. These equivalents were developed using 2000 CTPP income data and are described in greater detail in Chapter 11.

Table 5-2 Summary of Motorized Trips by Purpose, Mode, and Income Level

Source: 1994 COG/TPB Household Travel Survey
All trips geocoded within the HTS survey area

Purpose	Mode	Income Level <30k	30k - 50k	50k - 75k	>75k	Total
HBW	Auto Driver	265,104	402,570	660,332	742,078	2,070,084
	Auto Passenger	41,854	47,055	73,652	76,477	239,038
	Auto Person Subtotal:	306,958	449,625	733,984	818,555	2,309,122
	Average Auto Occupancy	*1.2*	*1.1*	*1.1*	*1.1*	*1.12*
	Transit	106,263	78,376	116,054	133,428	434,121
	Auto Person & Transit Subtotal:	413,221	528,001	850,038	951,983	2,743,243
	Transit Percentage	*25.72%*	*14.84%*	*13.65%*	*14.02%*	*15.83%*
HBS	Auto Driver	179,240	222,468	395,854	361,316	1,158,878
	Auto Passenger	42,034	51,234	85,486	90,586	269,340
	Auto Person Subtotal:	221,274	273,702	481,340	451,902	1,428,218
	Average Auto Occupancy	*1.2*	*1.2*	*1.2*	*1.3*	*1.23*
	Transit	12,092	6,601	4,521	3,435	26,649
	Auto Person & Transit Subtotal:	233,366	280,303	485,861	455,337	1,454,867
	Transit Percentage	*5.18%*	*2.35%*	*0.93%*	*0.75%*	*1.83%*
HBO	Auto Driver	378,412	541,343	1,003,575	1,044,304	2,967,634
	Auto Passenger	158,697	210,756	465,074	478,663	1,313,190
	Auto Person Subtotal:	537,109	752,099	1,468,649	1,522,967	4,280,824
	Average Auto Occupancy	*1.4*	*1.4*	*1.5*	*1.5*	*1.44*
	Transit	43,863	24,177	27,803	38,078	133,921
	Auto Person & Transit Subtotal:	580,972	776,276	1,496,452	1,561,045	4,414,745
	Transit Percentage	*7.55%*	*3.11%*	*1.86%*	*2.44%*	*3.03%*
NHB	Auto Driver	317,239	488,048	859,926	878,859	2,544,072
	Auto Passenger	74,157	108,357	215,941	239,842	638,297
	Auto Person Subtotal:	391,396	596,405	1,075,867	1,118,701	3,182,369
	Average Auto Occupancy	*1.2*	*1.2*	*1.3*	*1.3*	*1.25*
	Transit	28,671	28,320	46,358	58,052	161,401
	Auto Person & Transit Subtotal:	420,067	624,725	1,122,225	1,176,753	3,343,770
	Transit Percentage	*6.83%*	*4.53%*	*4.13%*	*4.93%*	*4.83%*
All Purposes	Auto Driver	1,139,995	1,654,429	2,919,687	3,026,557	8,740,668
	Auto Passenger	316,742	417,402	840,153	885,568	2,459,865
	Auto Person Subtotal:	1,456,737	2,071,831	3,759,840	3,912,125	11,200,533
	Average Auto Occupancy	*1.3*	*1.3*	*1.3*	*1.3*	*1.28*
	Transit	190,889	137,474	194,736	232,993	756,092
	Auto Person & Transit Subtotal:	1,647,626	2,209,305	3,954,576	4,145,118	11,956,625
	Transit Percentage	*11.59%*	*6.22%*	*4.92%*	*5.62%*	*6.32%*

Ref: 94htstrip2.1.xls

Table 5-3 Work & Non-Work Time – Toll Dollar Equivalents by Income Level

Annual Household Income Quartile	(b) Work Equivalent (minutes per 1994 $)	(c) Non-Work Equivalent (minutes per 1994 $)
1	21.1	30.2
2	7.8	11.1
3	4.6	6.6
4	2.3	3.3

5.3 External Auto Person / Truck Models

The external trip distribution models segment markets by purpose and facility. Facilities are distinguished as interstates (or interstate-like facilities) and arterial facilities. The rationale behind this distinction is that arterial facilities tend to serve more localized traffic associated with shorter trip lengths while interstate travel is associated with longer trip lengths. In contrast, the external truck models (medium and heavy) are not segmented by facility types.

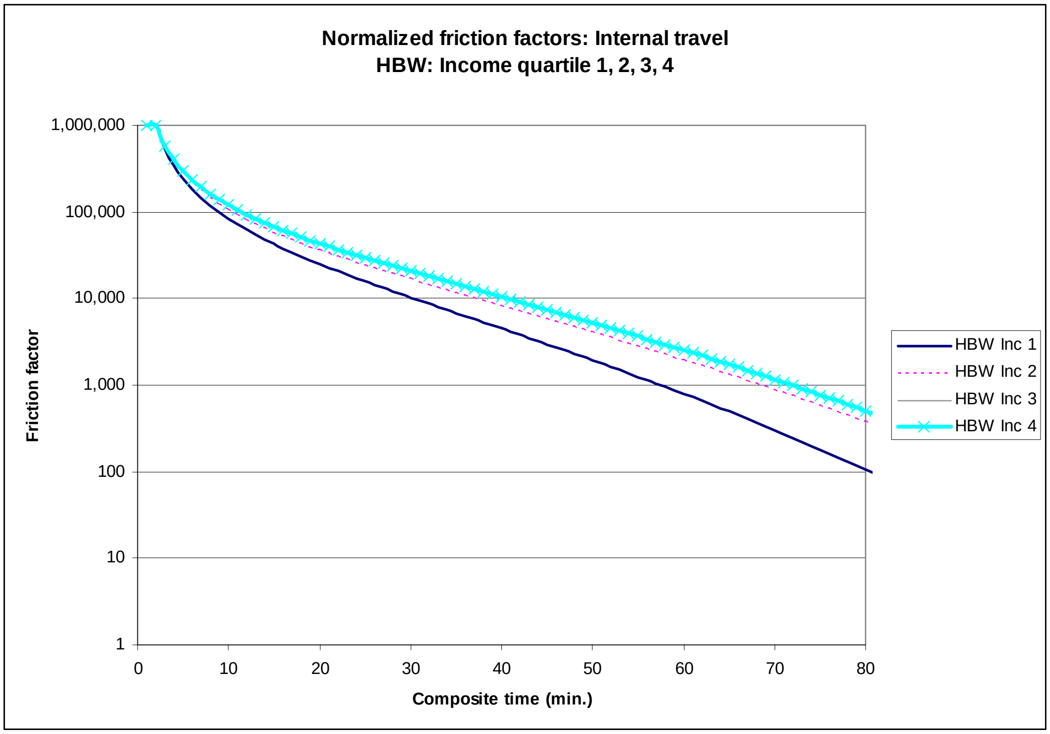
The modeled network contains 47 external stations, numbered consecutively from 2145 to 2191. Among these stations interstate-type facilities are defined as I-95 north and south (external stations 2149, 2182), US 301 (2146), US 15/29 (2154), I-66 (2156), I-70 east and west (2166, 2180), US 15 north (2179), US 1& I-195 (2183), MD 295 (2184), I-97 (2187), and US50/301, Bay Bridge (2191). All remaining stations are defined as arterial-type facilities.

The highway time is used as the impedance measure in the distribution of external trips. AM peak time is used for the HBW purpose and off-peak times are used for all remaining purposes. The external calibration does not make use of time penalties added into the impedance files. However, the impedances are altered in that extremely large time values were inserted into internal and through (I-I, X-X) interchanges to preclude those types of interchanges from occurring in the trip distribution process.

5.4 Friction Factor Summary

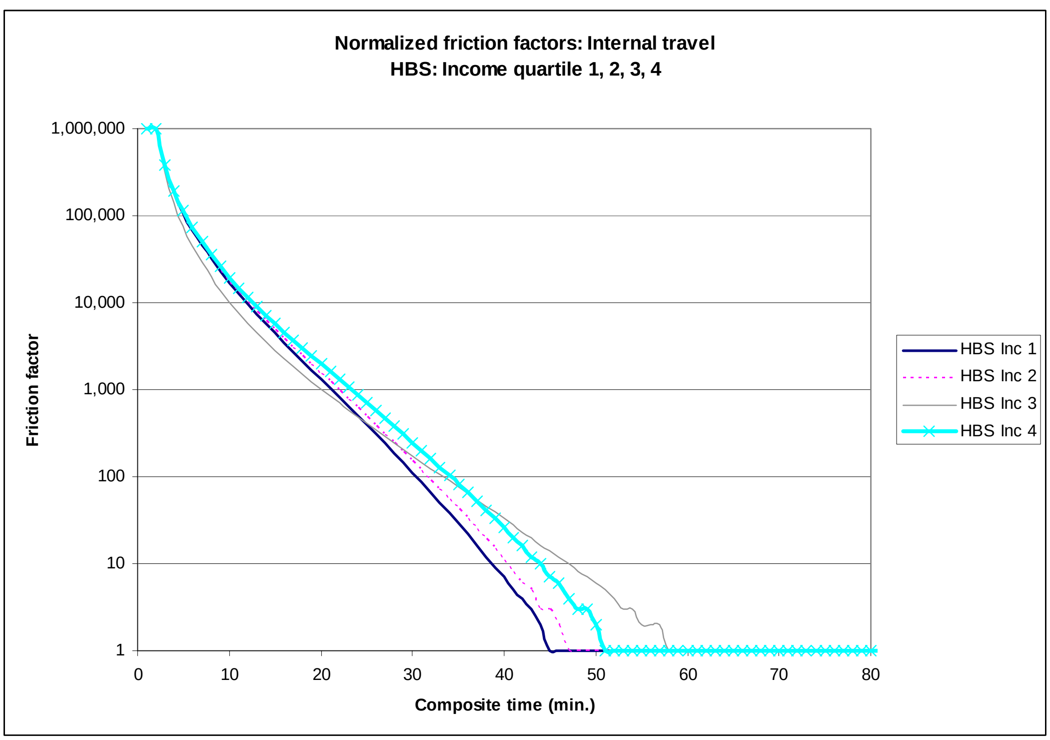
The friction factors, or F-factors, for internal travel are shown in graphical form in Figure 5-1, Figure 5-2, Figure 5-3, and Figure 5-4. The same information is shown in tabular form in Table 5-4. The friction factors for commercial vehicle travel, both internal and external, are shown in Figure 5-5. The friction factors for external travel are shown in Figure 5-6, Figure 5-7, and Figure 5-8.

Figure 5-1 Friction factors for HBW, internal travel



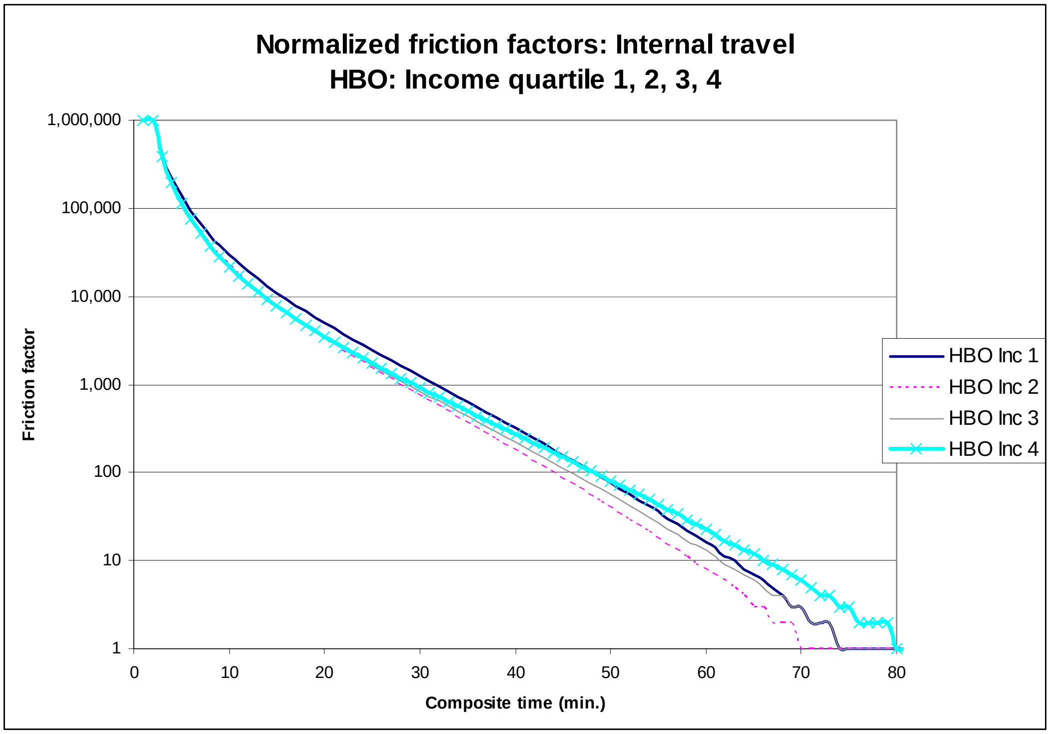
Ref: v22_f_factors.xls

Figure 5-2 Friction factors for HBS, internal travel



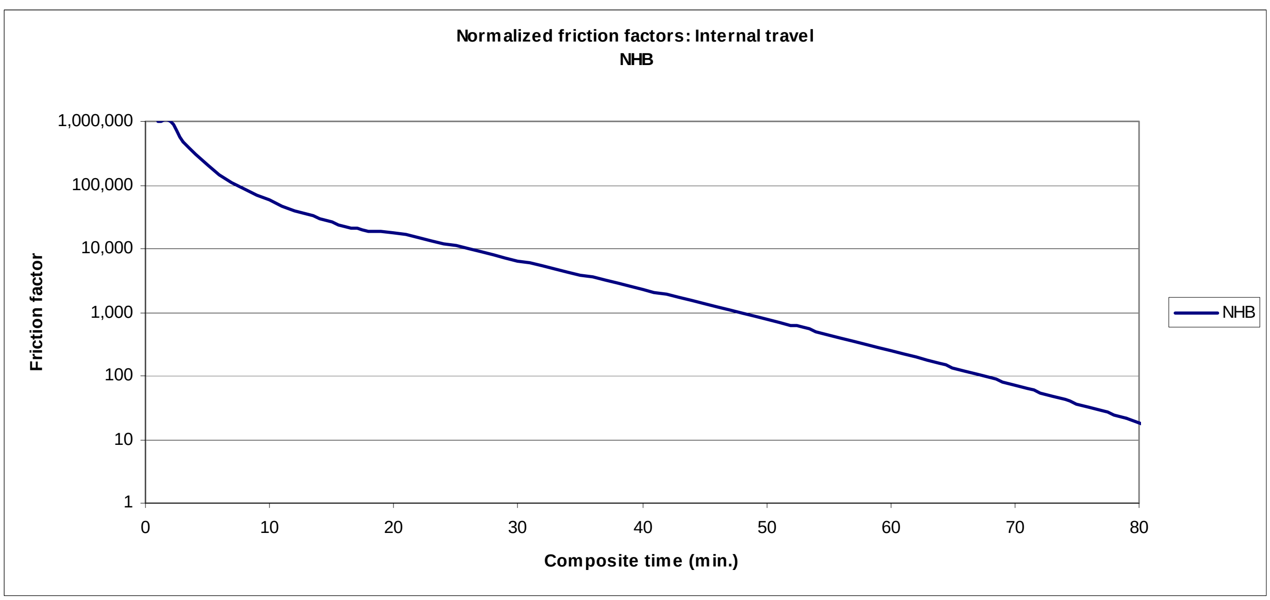
Ref: v22_f_factors.xls

Figure 5-3 Friction factors for HBO, internal travel



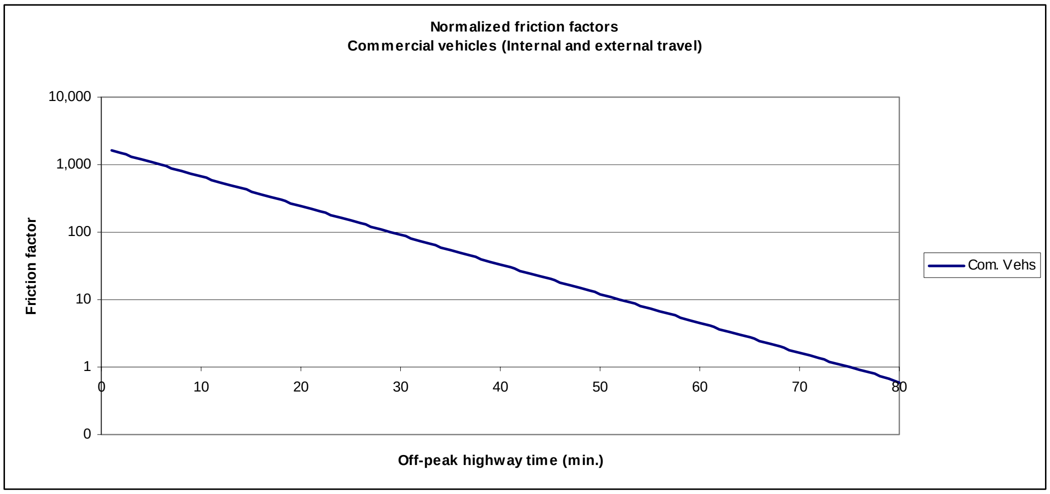
Ref: v22_f_factors.xls

Figure 5-4 Friction factors for NHB, internal travel



Ref: v22_f_factors.xls

Figure 5-5 Friction factors for commercial vehicle trips (both internal and external travel)



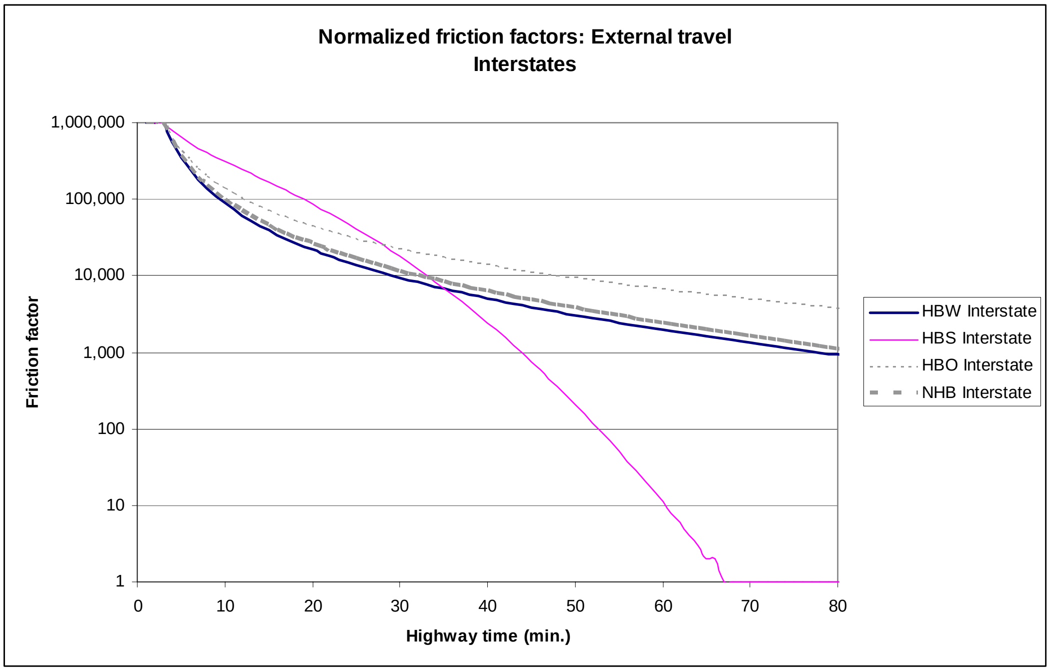
Ref: v22_f_factors.xls

Table 5-4 Friction factors for internal travel: HBW, HBS, HBO, NHB, commercial vehicles

Comp. Time (min)	HBW				HBS				HBO				NHB	Com.
	Inc 1	Inc 2	Inc 3	Inc 4	Inc 1	Inc 2	Inc 3	Inc 4	Inc 1	Inc 2	Inc 3	Inc 4		Vehs
1	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	1,629
2	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	1,474
3	534,862	566,562	586,872	584,487	375,164	376,643	318,181	382,415	416,158	387,467	387,021	382,823	486,880	1,333
4	346,225	382,193	405,901	403,096	187,206	188,666	142,136	193,948	225,057	199,164	198,868	195,320	294,634	1,207
5	246,589	281,175	304,449	301,683	107,995	109,279	75,734	113,614	139,174	118,391	118,244	115,574	199,021	1,092
6	186,490	218,449	240,292	237,689	68,132	69,246	45,071	72,786	93,608	77,092	77,050	75,064	144,039	988
7	146,952	176,174	196,388	193,977	45,635	46,606	28,927	49,529	66,675	53,422	53,452	51,966	109,278	894
8	119,294	145,983	164,616	162,394	31,883	32,735	19,608	35,182	49,498	38,721	38,800	37,680	85,782	809
9	99,042	123,469	140,645	138,600	22,971	23,723	13,848	25,796	37,907	29,031	29,143	28,294	69,089	732
10	83,678	106,108	121,966	120,081	16,935	17,600	10,098	19,374	29,737	22,343	22,479	21,834	56,765	662
11	71,688	92,358	107,029	105,291	12,704	13,295	7,552	14,824	23,778	17,557	17,708	17,220	47,384	599
12	62,115	81,228	94,831	93,226	9,658	10,183	5,764	11,509	19,307	14,030	14,190	13,823	40,064	542
13	54,323	72,054	84,694	83,208	7,418	7,884	4,475	9,038	15,875	11,366	11,532	11,260	34,232	491
14	47,879	64,375	76,143	74,767	5,741	6,155	3,522	7,163	13,190	9,314	9,482	9,284	29,506	444
15	42,476	57,863	68,839	67,564	4,470	4,836	2,805	5,718	11,054	7,705	7,873	7,735	25,619	402
16	37,892	52,279	62,533	61,349	3,495	3,819	2,256	4,590	9,331	6,424	6,591	6,501	22,381	363
17	33,964	47,443	57,035	55,935	2,742	3,026	1,829	3,701	7,926	5,393	5,557	5,506	21,000	329
18	30,566	43,219	52,203	51,181	2,155	2,404	1,494	2,995	6,767	4,554	4,714	4,693	19,073	298
19	27,605	39,500	47,925	46,974	1,695	1,913	1,227	2,429	5,802	3,864	4,019	4,022	18,426	269
20	25,006	36,206	44,112	43,228	1,334	1,524	1,014	1,974	4,994	3,292	3,442	3,465	17,350	244
21	22,711	33,269	40,696	39,873	1,050	1,215	841	1,606	4,312	2,814	2,959	2,997	17,014	220
22	20,674	30,638	37,618	36,852	826	968	700	1,308	3,733	2,413	2,552	2,602	15,196	199
23	18,857	28,269	34,833	34,120	648	771	585	1,065	3,239	2,075	2,207	2,267	13,598	180
24	17,228	26,126	32,302	31,639	508	613	490	867	2,815	1,787	1,914	1,980	12,190	163
25	15,764	24,182	29,994	29,377	398	487	411	705	2,451	1,543	1,663	1,734	10,944	148
26	14,442	22,410	27,882	27,309	310	386	346	573	2,136	1,333	1,447	1,522	9,838	134
27	13,246	20,792	25,944	25,412	242	305	291	466	1,864	1,154	1,261	1,338	8,852	121
28	12,160	19,309	24,161	23,667	187	241	246	377	1,628	999	1,101	1,179	7,972	109
29	11,171	17,947	22,517	22,058	145	190	208	306	1,422	866	961	1,039	7,185	99
30	10,270	16,693	20,997	20,572	112	149	175	247	1,243	751	841	918	6,478	90
31	9,447	15,536	19,590	19,196	86	117	148	199	1,086	652	735	811	5,844	81
32	8,693	14,467	18,284	17,919	66	91	125	160	950	565	644	718	5,272	73
33	8,002	13,477	17,072	16,734	50	71	106	129	830	491	563	635	4,759	66
34	7,368	12,560	15,943	15,632	38	55	90	103	725	426	493	563	4,294	60
35	6,785	11,708	14,892	14,605	29	42	76	82	634	369	432	499	3,875	54
36	6,249	10,916	13,913	13,648	22	33	64	66	554	320	378	442	3,497	49
37	5,755	10,179	12,998	12,754	16	25	54	52	483	277	331	392	3,156	45
38	5,300	9,493	12,144	11,920	12	19	46	41	422	240	290	348	2,846	40
39	4,881	8,854	11,346	11,140	9	15	39	33	367	208	254	309	2,566	36
40	4,494	8,258	10,599	10,411	7	11	33	26	320	180	222	274	2,313	33
41	4,137	7,701	9,901	9,729	5	8	28	20	279	156	194	243	2,083	30
42	3,808	7,181	9,247	9,090	4	6	23	16	242	134	169	215	1,876	27
43	3,504	6,696	8,635	8,491	3	5	20	12	210	116	148	191	1,688	24
44	3,223	6,242	8,061	7,931	2	3	16	10	183	100	129	169	1,519	22
45	2,963	5,818	7,524	7,406	1	3	14	7	158	86	113	150	1,365	20
46	2,724	5,422	7,020	6,913	1	2	12	6	137	74	98	133	1,226	18
47	2,502	5,051	6,548	6,452	1	1	10	4	119	64	85	117	1,100	16
48	2,298	4,704	6,106	6,019	1	1	8	3	103	55	74	104	987	15
49	2,109	4,380	5,692	5,614	1	1	7	3	88	47	65	92	885	13
50	1,935	4,077	5,303	5,234	1	1	6	2	76	40	56	81	792	12
51	1,774	3,793	4,940	4,878	1	1	5	1	66	34	49	72	710	11
52	1,626	3,528	4,599	4,544	1	1	4	1	56	29	42	63	634	10
53	1,489	3,280	4,280	4,232	1	1	3	1	48	25	36	56	567	9
54	1,363	3,049	3,981	3,939	1	1	3	1	42	21	31	49	505	8
55	1,247	2,832	3,701	3,664	1	1	2	1	36	18	27	43	451	7
56	1,140	2,630	3,440	3,408	1	1	2	1	30	15	23	38	402	7
57	1,041	2,441	3,195	3,167	1	1	2	1	26	13	20	34	357	6
58	951	2,264	2,966	2,942	1	1	1	1	22	11	17	29	318	5
59	868	2,099	2,752	2,732	1	1	1	1	19	9	15	26	283	5
60	791	1,945	2,552	2,536	1	1	1	1	16	8	13	23	251	4
61	721	1,802	2,365	2,352	1	1	1	1	14	7	11	20	221	4
62	656	1,668	2,191	2,180	1	1	1	1	11	6	9	17	196	4
63	597	1,544	2,028	2,020	1	1	1	1	10	5	8	15	174	3
64	543	1,427	1,877	1,871	1	1	1	1	8	4	7	13	154	3
65	493	1,319	1,735	1,731	1	1	1	1	7	3	6	12	136	3
66	447	1,219	1,604	1,601	1	1	1	1	6	3	5	10	119	2
67	406	1,125	1,481	1,480	1	1	1	1	5	2	4	9	105	2
68	368	1,038	1,367	1,367	1	1	1	1	4	2	4	8	92	2
69	333	957	1,261	1,262	1	1	1	1	3	2	3	7	81	2
70	301	882	1,162	1,165	1	1	1	1	3	1	3	6	71	2

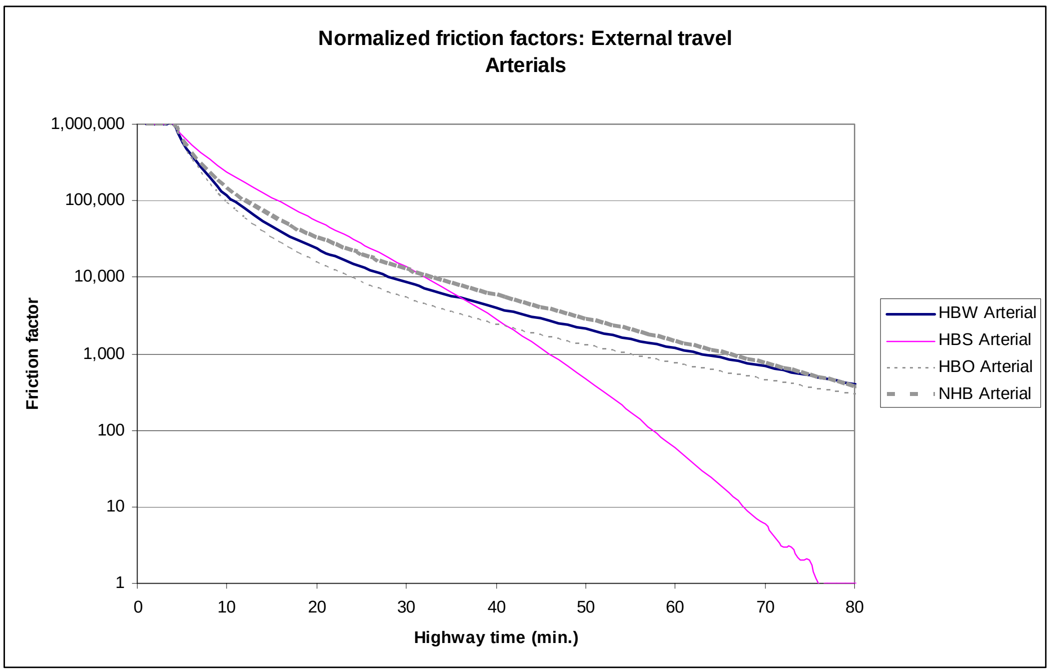
Ref: v22_f_factors.xls

Figure 5-6 Friction factors for external travel on interstates



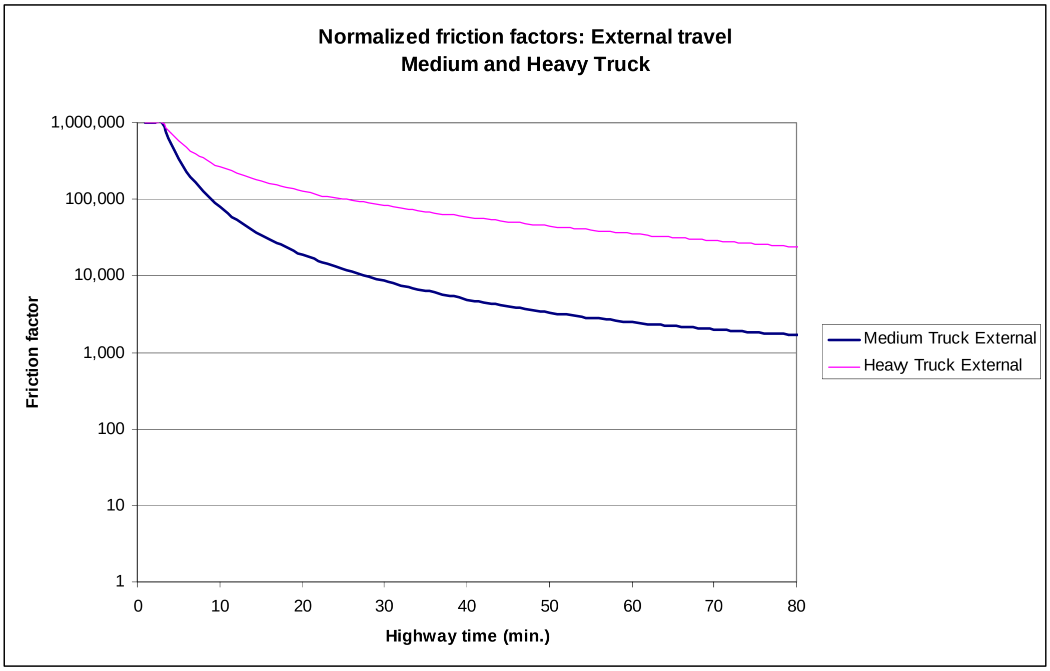
Ref: v22_f_factors.xls

Figure 5-7 Friction factors for external travel on arterials



Ref: v22_f_factors.xls

Figure 5-8 Friction factors for external travel: Heavy and medium truck



Ref: v22_f_factors.xls

Table 5-5 Friction factors for external travel: Interstate, arterial, medium & heavy truck, commercial vehicles

HighwayTime (min)	HBW Interstate	HBS Interstate	HBO Interstate	NHB Interstate	HBW Arterial	HBS Arterial	HBO Arterial	NHB Arterial	Medium Truck External	Heavy Truck External	Comm Vehs
1	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	1,629
2	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	1,474
3	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	984,609	1,333
4	554,679	777,594	615,654	570,003	984,609	984,609	984,609	984,609	539,457	723,621	1,207
5	355,325	641,659	427,667	372,910	590,136	709,738	556,119	622,434	338,371	569,788	1,092
6	246,882	543,380	317,518	263,572	388,216	539,905	348,612	427,490	231,213	468,652	988
7	181,418	467,715	246,809	196,487	272,306	425,824	234,823	310,836	167,614	397,234	894
8	138,887	406,863	198,396	152,294	200,170	344,544	166,714	235,615	126,889	344,185	809
9	109,702	356,371	163,619	121,600	152,496	284,052	123,206	184,340	99,294	303,267	732
10	88,811	313,505	137,691	99,391	119,490	237,502	93,977	147,852	79,760	270,769	662
11	73,343	276,499	117,780	82,787	95,778	200,729	73,538	120,982	65,442	244,351	599
12	61,571	244,160	102,114	70,039	78,219	171,065	58,769	100,633	54,643	222,462	542
13	52,404	215,648	89,538	60,031	64,886	146,728	47,805	84,862	46,305	204,035	491
14	45,127	190,357	79,269	52,027	54,546	126,484	39,474	72,397	39,735	188,314	444
15	39,254	167,832	70,762	45,522	46,379	109,454	33,020	62,377	34,470	174,746	402
16	34,444	147,722	63,624	40,161	39,827	94,994	27,933	54,206	30,188	162,919	363
17	30,457	129,747	57,568	35,689	34,498	82,624	23,864	47,458	26,659	152,520	329
18	27,114	113,682	52,381	31,919	30,111	71,975	20,567	41,823	23,718	143,305	298
19	24,284	99,334	47,898	28,709	26,461	62,763	17,863	37,070	21,242	135,084	269
20	21,868	86,539	43,995	25,954	23,394	54,761	15,623	33,026	19,138	127,704	244
21	19,787	75,154	40,573	23,571	20,795	47,789	13,749	29,558	17,336	121,043	220
22	17,983	65,048	37,553	21,495	18,575	41,699	12,169	26,562	15,781	115,001	199
23	16,410	56,104	34,873	19,675	16,667	36,370	10,826	23,959	14,430	109,495	180
24	15,028	48,213	32,482	18,071	15,014	31,701	9,676	21,682	13,249	104,457	163
25	13,808	41,278	30,339	16,650	13,576	27,607	8,686	19,681	12,211	99,829	148
26	12,727	35,203	28,410	15,384	12,316	24,016	7,828	17,913	11,294	95,564	134
27	11,763	29,905	26,666	14,252	11,208	20,866	7,080	16,344	10,479	91,619	121
28	10,901	25,301	25,083	13,235	10,229	18,104	6,426	14,947	9,754	87,961	109
29	10,126	21,318	23,642	12,319	9,359	15,684	5,850	13,697	9,104	84,558	99
30	9,427	17,888	22,325	11,489	8,585	13,565	5,341	12,576	8,519	81,385	90
31	8,795	14,946	21,119	10,736	7,892	11,712	4,890	11,566	7,993	78,419	81
32	8,221	12,435	20,010	10,051	7,270	10,093	4,488	10,654	7,516	75,641	73
33	7,699	10,301	18,989	9,425	6,710	8,681	4,129	9,828	7,083	73,032	66
34	7,222	8,495	18,045	8,852	6,205	7,452	3,807	9,079	6,690	70,577	60
35	6,785	6,976	17,172	8,326	5,747	6,383	3,517	8,396	6,330	68,264	54
36	6,384	5,702	16,361	7,841	5,331	5,456	3,256	7,774	6,001	66,080	49
37	6,016	4,641	15,607	7,395	4,953	4,653	3,019	7,206	5,699	64,014	45
38	5,676	3,760	14,905	6,982	4,608	3,959	2,805	6,685	5,422	62,057	40
39	5,362	3,032	14,249	6,600	4,292	3,361	2,610	6,207	5,166	60,201	36
40	5,071	2,434	13,636	6,245	4,003	2,846	2,432	5,768	4,930	58,437	33
41	4,802	1,945	13,062	5,916	3,738	2,404	2,270	5,364	4,712	56,759	30
42	4,552	1,547	12,524	5,609	3,494	2,026	2,121	4,992	4,510	55,161	27
43	4,319	1,225	12,017	5,323	3,269	1,703	1,985	4,648	4,322	53,636	24
44	4,101	965	11,541	5,055	3,061	1,428	1,860	4,330	4,147	52,181	22
45	3,899	757	11,092	4,805	2,869	1,194	1,745	4,037	3,984	50,789	20
46	3,709	591	10,669	4,571	2,692	996	1,639	3,764	3,833	49,458	18
47	3,531	459	10,269	4,351	2,527	829	1,540	3,512	3,691	48,182	16
48	3,365	355	9,890	4,145	2,374	687	1,450	3,278	3,558	46,959	15
49	3,209	273	9,532	3,951	2,232	569	1,365	3,060	3,434	45,786	13
50	3,062	209	9,192	3,768	2,100	469	1,287	2,858	3,318	44,658	12
51	2,924	160	8,869	3,596	1,977	386	1,215	2,670	3,209	43,574	11
52	2,793	121	8,563	3,434	1,862	317	1,147	2,495	3,106	42,531	10
53	2,671	91	8,271	3,280	1,755	259	1,084	2,332	3,009	41,526	9
54	2,555	69	7,994	3,135	1,655	212	1,026	2,180	2,919	40,558	8
55	2,445	51	7,730	2,998	1,561	172	971	2,038	2,833	39,625	7
56	2,342	38	7,478	2,868	1,473	140	920	1,905	2,752	38,724	7
57	2,243	28	7,237	2,745	1,391	113	872	1,782	2,676	37,854	6
58	2,150	21	7,008	2,628	1,314	91	827	1,666	2,604	37,013	5
59	2,062	15	6,788	2,518	1,242	73	785	1,558	2,535	36,199	5
60	1,979	11	6,578	2,412	1,174	59	745	1,458	2,471	35,413	4
61	1,899	8	6,377	2,312	1,110	47	708	1,363	2,410	34,651	4
62	1,824	6	6,184	2,217	1,050	38	673	1,275	2,352	33,913	4
63	1,752	4	5,999	2,127	993	30	641	1,193	2,297	33,198	3
64	1,683	3	5,822	2,040	940	24	610	1,115	2,245	32,505	3
65	1,618	2	5,652	1,958	890	19	580	1,043	2,195	31,832	3
66	1,556	2	5,489	1,880	843	15	553	976	2,148	31,179	2
67	1,497	1	5,332	1,805	798	12	527	912	2,104	30,544	2
68	1440	1	5181	1733	756	9	502	853	2061	29928	2
69	1386	1	5035	1665	717	7	479	798	2021	29329	2
70	1335	1	4895	1600	679	6	457	746	1983	28747	2

Ref: v22_f_factors.xls

Chapter 6 Mode Choice

The Version 2.2 mode choice model is identical to that used in the Version 2.1D#50 model except that many of the geographic adjustment factors used to fine-tune transit percentages and car occupancies at county-to county levels have been removed. This chapter details the specification of the model.

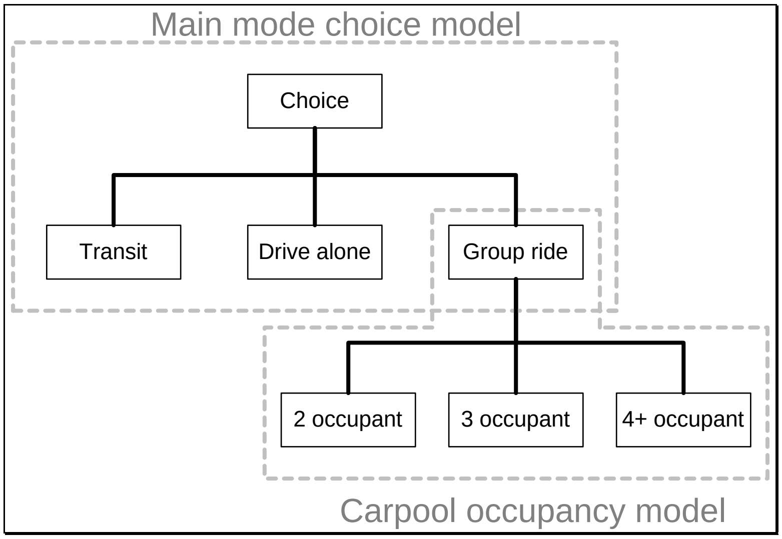
6.1 *Model Structure*

The mode choice model estimates the share of person trips made by each travel mode. Estimates are made at the zone-to-zone interchange level, but are usually presented at the jurisdiction interchange level or regional level. The following modes are represented in the Version 2.2 model:

- TR Transit
- DA Drive alone
- GR2 Group ride, two occupants
- GR3 Group ride, three occupants
- GR4 Group ride, four or more occupants

There are four separate and distinct mode choice models -- one for each trip purpose: HBW, HBS, HBO, and NHB. Each of the four models is comprised of two sub-models: a "main mode choice model" and a "carpool occupancy model." The main mode choice model allocates person trips among transit, drive alone, and group ride (carpool) modes. The carpool occupancy model allocates group-ride person trips among 2-person carpool, 3-person carpool, and 4+person carpool modes. The structure of the COG/TPB mode choice model (Versions 1, 2, 2.0, 2.1D, and 2.2) is shown in Figure 6-1. Each sub-model is a multinomial logit model. The two sub-models are applied in a sequential manner, so the model form is referred to as a "sequential multinomial logit model." The carpool occupancy model is executed first. The resulting occupancy information is then used within the main model to determine average costs associated with each person in the carpool mode.

Figure 6-1 Structure of the TPB mode choice model



mcstruct.vsd

Market segmentation in the mode choice models is established on the basis of household vehicle ownership, access mode to transit, and the walking distance to/from transit service. Vehicle ownership is defined as the number of vehicles available to a household (0, 1, or 2+). There are three general access mode types:

Table 6-1 Access modes used in the mode choice model

Access mode	Description
Walk-access	Both ends of the trip are within walking distance of transit
Drive-access	The origin end of the trip is beyond walking distance to transit
No access	The destination end of the trip is beyond walking distance to transit, so transit cannot be used for the trip

Walking distance to/from transit is defined as being either "short" or "long," based on the following definitions:

Table 6-2 Definition of short and long walk to transit

Distance to a rail station	Distance to a bus stop	Walking distance to/from transit
0 - 0.33 miles	Any	Short
0.33 - 1.00 miles	Any	Long
> 1.00 mile	0 - 0.33 miles	Short
> 1.00 mile	0.33 - 1.00 miles	Long
> 1.00 mile	> 1.00 mile	Beyond walking distance to/from transit

Thus, each zone is made up of zero or more short-walk areas, zero or more long-walk areas, and zero or more beyond-walking-distance areas. This market segmentation by walking distance to/from transit is referred to as the "two-tier walk-access" segmentation, since there are two main types of walk access: short and long. Distances are straight-line distances ("as the crow flies").

6.2 *Treatment of Parking Costs and Terminal Times*

Parking costs and highway terminal time assumptions

In applying the Version 2.2 model, prior to the execution of the mode choice model programs are used to generate zonal files containing zonal parking costs and highway terminal times. The files are, in turn, read into the mode choice model upon execution. A graph of daily HBW and hourly non-HBW parking costs, as a function of zonal employment density, is shown in Figure 6-2. The non-HBW hourly parking cost is assumed to be one-third of the daily HBW rate, subject to a minimum employment density of 80,000 employees per sq. mile.

Highway terminal time is typically associated with the average time spent parking or un-parking an automobile. The current mode choice model application program considers highway terminal time only at the attraction end. Highway time is calculated as a function of employment density, as shown in the table below:

Employment density range (Emp/Sq. Mi.)	Highway terminal time (minutes)
0 - 4,617	1
4,618 - 6,631	2
6,632 - 11,562	4
11,563 - 32,985	6
32,986 +	8

Auto Operating Costs

The Auto operating cost in the mode choice model relate to expenditures directly associated with the requirements of an automobile trip including fuel, oil, maintenance, tire wear, etc. (auto ownership costs including insurance, registration fees, etc. are not included). The mode choice model expresses operating costs as a per mile rate (1994 cents per mi) that is specified as a parameter (UPARMS(12)). The parameter values currently vary by year and are shown on the table below.

year	Auto Operating Cost Rate (1994 cents/mi)
1994	9.1
2000	8.5
2005	8.3
2010	8.2
2015	8.1
2020	8.0
2025	7.9
2030	7.8

Figure 6-2 Parking cost model for the Version 2.2 model set

parkingCostModelUpdate.xls

The final set of adjusted mode choice models is shown in Table 6-3 through Table 6-10.

Table 6-3 Final adjusted HBW mode choice model (main model)

Utility TR	Utility DA	Utility GR	Variable name	Alogit coeff name	Coeff.
x	x	x	IVTT	IVTT	-0.03000
x			OVTT	OVTT	-0.07500
x	x	x	Cost	Cost	-0.00425
	x		0-veh HH dummy	ve0dumda	-4.83100
	x		1-veh HH dummy	ve1dumda	-0.85460
	x		2+veh HH dummy	ve2dumda	0.08240
		x	0-veh HH dummy	ve0dumgr	-4.61750
		x	1-veh HH dummy	ve1dumgr	-2.40710
		x	2+veh HH dummy	ve2dumgr	-1.89790
x*			0-veh HH & drv acc dummy		-2.04990
x*			1-veh HH & drv acc dummy	ve1autacc	-0.58760
x*			2+veh HH & drv acc dummy	ve2autacc	-0.35710
x			Land-use mix index, prod end	LUmixiTR	4.449E-05
	x		Land-use mix index, attr end	LUmixjDA	-2.518E-05
			Value of time**		$4.23
			OVTT / IVTT		2.50

Notes:
* This variable relates to only drive-access transit trips.
** For the work purpose, one would expect a VOT between $4.44 and $8.88 in 1994 dollars.
VOT = 0.60 * (IVTT/Cost), where 0.60 converts cents/min to dollars/hour
Ref: adj_dab_mb.xls, final

Table 6-4 Final adjusted HBW mode choice model (carpool occupancy model)

Utility 2	Utility 3	Utility 4+	Variable name	Alogit coeff name	Coeff.
x	x	x	Operating cost	opcost	-0.01124
x	x	x	Parking cost	pkcost	-0.02318
x	x	x	Toll	toll	-0.05077
	x	x	Time saved by HOV3+ relat. to HOV2	timsav	0.03611
	x		1-vehicle HH dummy	Oc31vdum	-1.47162
	x		2+vehicle HH dummy	Oc32vdum	-1.88085
		x	1-vehicle HH dummy	Oc41vdum	-3.04973
		x	2+vehicle HH dummy	Oc42vdum	-2.54494

Ref: adj_dab_mb.xls, final

Table 6-5 Final adjusted HBS mode choice model (main model)

Utility TR	DA	GR	Variable name	Alogit coeff name	Coeff.
x	x	x	IVTT	IVTT	-0.00912
x			OVTT	OVTT	-0.02432
x	x	x	Cost	Cost	-0.00416
	x		0-veh HH dummy	ve0dumda	-3.03700
	x		1-veh HH dummy	ve1dumda	2.27200
	x		2+veh HH dummy	ve2dumda	3.75100
		x	0-veh HH dummy	ve0dumgr	-0.88800
		x	1-veh HH dummy	ve1dumgr	1.92900
		x	2+veh HH dummy	ve2dumgr	3.50700
x*			0-veh HH & drv acc dummy		-2.90000
x*			1-veh HH & drv acc dummy		0.00000
x*			2+veh HH & drv acc dummy		2.00000
x			Land-use mix index, attr end	LUmixjTR	4.869E-05
	x		Land-use mix index, prod end	LUmixiDA	2.627E-05
	x		Land-use mix index, attr end	LUmixjDA	2.438E-05
x			Metrorail use dummy	metrodum	0.84404
			Value of time**		$1.31
			OVTT / IVTT		2.67

Notes:
* This variable relates to only drive-access transit trips.
** For non-work trips, one would expect a VOT between $1.11 and $4.44 in 1994 dollars.
VOT = 0.60 * (IVTT/Cost), where 0.60 converts cents/min to dollars/hour
Ref: adj_dab_mb.xls, final

Table 6-6 Final adjusted HBS mode choice model (carpool occupancy model)

Utility 2	3	4+	Variable name	Alogit coeff name	Coeff.
x	x	x	IVTT	IVTT	-0.45633
	x		1-vehicle HH dummy	Oc31vdum	-0.92201
	x		2+vehicle HH dummy	Oc32vdum	-0.48966
		x	1-vehicle HH dummy	Oc41vdum	-1.51854
		x	2+vehicle HH dummy	Oc42vdum	-0.84071

Ref: adj_dab_mb.xls, final

Table 6-7 Final adjusted HBO mode choice model (main model)

Utility TR	DA	GR	Variable name	Alogit coeff name	Coeff.
x	x	x	IVTT	IVTT	-0.01902
x			OVTT	OVTT	-0.04991
x	x	x	LnCost	LnCost	-0.78384
	x		0-veh HH dummy	ve0dumda	-4.35730
	x		1-veh HH dummy	ve1dumda	0.00470
	x		2+veh HH dummy	ve2dumda	0.31110
		x	0-veh HH dummy	ve0dumgr	-3.19380
		x	1-veh HH dummy	ve1dumgr	-0.50410
		x	2+veh HH dummy	ve2dumgr	0.04990
x*			0-veh HH & drv acc dummy		-2.90000
x*			1-veh HH & drv acc dummy		-1.10000
x*			2+veh HH & drv acc dummy		-0.65000
x			Land-use mix index, prod end	LUmixiTR	5.194E-05
x			Land-use mix index, attr end	LUmixjTR	2.307E-05
	x		Land-use mix index, prod end	LUmixiDA	2.585E-05
	x		Land-use mix index, attr end	LUmixjDA	2.171E-05
x			Metrorail use dummy	fmetdum	0.69708
x			Short walk to short walk dummy	SWtoSWmkt	0.41346
			Value of time**		$0.74
			OVTT / IVTT		2.62
			Average cost, cents/trip, 1994 $	51.06	

Notes:
* This variable relates to only drive-access transit trips.
** For the non-work purpose, one would expect a VOT between $1.11 and $4.44 in 1994 dollars.
VOT w/ ln(cost) = 0.60 * (ave. trip cost) * (Time/Cost).
Ref: adj_dab_mb.xls, final

Table 6-8 Final adjusted HBO mode choice model (carpool occupancy model)

Utility 2	3	4+	Variable name	Alogit coeff name	Coeff.
x	x	x	IVTT	IVTT	-0.68530
	x		1-vehicle HH dummy	Oc31vdum	-0.31756
	x		2+vehicle HH dummy	Oc32vdum	-0.15151
		x	2+vehicle HH dummy	Oc42vdum	0.21854

Ref: adj_dab_mb.xls, final

Table 6-9 Final adjusted NHB mode choice model (main model)

Utility TR	DA	GR	Variable name	Alogit coeff name	Coeff.
	x		Constant	DAconst	0.85410
		x	Constant	GRconst	-0.07600
x*			Drive-access transit dummy		-1.40000
x	x	x	IVTT	IVTT	-0.03242
x			OVTT	OVTT	-0.06695
x	x	x	LnCost	LnCost	-0.86043
x			Land-use mix index, attr end	TRLUmixj	1.659E-05
	x		Land-use mix index, prod end	DALUmixi	1.369E-05
	x		Land-use mix index, attr end	DALUmixj	1.300E-05
x			Metrorail use dummy	Metrodum	1.47447
x			Short walk to short walk dummy	SWtoSWmkt	0.76998
			Value of time**		$1.46
			OVTT / IVTT		2.07
			Average cost, cents/trip, 1994 $	64.63	

Notes:
* This variable relates to only drive-access transit trips.
** For the non-work purpose, one would expect a VOT between $1.11 and $4.44 in 1994 dollars.
VOT w/ ln(cost) = 0.60 * (ave. trip cost) * (Time/Cost).
Ref: adj_dab_mb.xls, final

Table 6-10 adjusted NHB mode choice model (carpool occupancy model)

Utility 2	3	4+	Variable name	Alogit coeff name	Coeff.
	x		Constant	Const3oc	-0.92477
		x	Constant	Const4oc	-1.41003
	x	x	IVTT	IVTT	-0.00709
x	x		Highway distance	hwydst	-0.00187

Ref: adj_dab_mb.xls, final

Chapter 7 Time-of-Day Model

The Version 2.2 time-of-day model functions to apportion daily vehicle trips among three time modeled periods, prior to the traffic assignment step. Peak-hour factors corresponding to the three time periods are also required to support the traffic assignment process. This chapter presents the details of the model and the development of the peaking factors.

7.1 Model Structure

The Time-of-Day Model addresses the temporal dimension of travel subsequent to the mode choice step. The time of day model functions to convert daily trips by purpose and mode to specific time periods, in preparation for the traffic assignment step. The modeled time periods are defined as the AM peak period (6-9AM), PM peak period (4-7PM) and the off-peak period (all remaining hours).

The conversion of daily trips for the resident trip purposes (HBW, HBS, HBO, and NHB) are made with the application of temporal factors that have been developed directly from the HTS. The factors, shown as Table 7-2, have been developed from detailed trips-in-motion summaries. The factors are applied on the basis of purpose, mode, and direction of the trip, with respect to the home-end of the trip.

The truck and various non-modeled auto driver travel markets are also converted from daily trip tables to the three time periods using a system of temporal factors. The factors are summarized in Table 7-1.

Table 7-1 Version 2.2 Temporal Factors (Percentages) For Truck and Non-Modeled Travel Markets

Time Period	Travel Market							
	X-X Truck	Medium Truck	Heavy Truck	X-X Auto Dr	Taxi Auto Dr	Tourist Auto Dr	School Auto Dr	Airport Auto Dr
AM	23.00	19.50	15.40	18.00	9.00	33.00	33.00	18.00
PM	11.00	15.20	13.00	22.00	27.00	33.00	33.00	29.00
Off-Peak	66.00	65.30	71.60	60.00	64.00	34.00	34.00	53.00

The temporal medium and heavy truck factors above were derived from the most recent Federal guidance on freight modeling[5]. The through (X-X) truck factors were developed from the 1996 COG Truck External Survey. The remaining temporal factors were based on professional judgment.

The daily commercial vehicle trips are apportioned among the AM, PM, and off-peak periods based on a 23%, 27%, and 50% split, respectively. The directional production/attraction split within the AM, PM, and off-peak periods is 70/30, 30/70, and 50/50, respectively. It should be added that the resulting trips are subject to small trip increments (or 'deltas') that are added to the modeled trips on an i/j basis in order to better match observed commercial link volumes. The delta

[5] Quick Response Freight Manual, TMIP, Sept. 1996, (pg 4-38)

trips were developed separately for internal and external trips through a rigorous calibration process called adaptable assignment (Allen, 2005B).

In application these factors are assumed to remain *constant* over time. Although it is reasonable to expect, that congestion will encourage traffic spreading from the AM and PM periods to the off-peak, the peak spreading phenomenon is complex and not well understood in the profession. Instead of addressing this issue in the regional model, TPB accounts for peak spreading issues in its travel model post-processor (a.k.a. the mobile emissions post processor), where hourly volume and speed estimates are formulated.

Another important temporal parameter in the traffic assignment process is the peaking factor, which is the proportion of traffic in a given time period which occurs in the peak hour. Link speeds are a function of the volume-to-capacity (V/C) ratio. The peaking factor is necessary for converting hourly lane capacities into 'period lane capacities', from which V/C ratios are computed. The Version 2.2 model requires peaking factors for the AM, PM, and Off-peak time periods. To arrive at regionally appropriate peaking factors, an analysis of total auto driver trips from the HTS was summarized to the modeled time periods. The maximum hourly volume occurring within each time period was then determined. The resulting peaking factors are shown below.

Peak Hour Factors (Percentages)	
AM Period (6:00-9:00AM):	40%
PM Period (4:00-7:00PM):	37%
Off-Peak (All Other Hours):	12%

Table 7-2 Observed travel distributions during peak and non-peak time periods by purpose, mode, and direction

(Source: 1994 COG/TPB Household Travel Survey)

		Home to Non-Home Direction				Non-Home to Home Direction			
Purpose	Mode	AM Pk Prd. 6-9AM	PM Pk. Prd. 4-7PM	Non-Pk. Prd.	Total	AM Pk Prd. 6-9AM	PM Pk. Prd. 4-7PM	Non-Pk. Prd.	Total
HBW	Transit	71%	5%	25%	100%	1%	72%	27%	100%
	Auto Driver	68%	3%	30%	100%	1%	63%	35%	100%
	Auto Passenger	74%	4%	23%	100%	1%	69%	30%	100%
	Auto Person	69%	3%	29%	100%	1%	64%	35%	100%
	Drive Alone	66%	3%	31%	100%	2%	61%	37%	100%
	Carpool Person	75%	3%	22%	100%	1%	72%	27%	100%
	Motorized Person	69%	3%	28%	100%	1%	66%	33%	100%
HBS	Transit	24%	15%	62%	100%	2%	35%	64%	100%
	Auto Driver	11%	21%	69%	100%	2%	32%	67%	100%
	Auto Passenger	5%	28%	68%	100%	0%	32%	67%	100%
	Auto Person	9%	22%	69%	100%	2%	32%	67%	100%
	Drive Alone	13%	18%	69%	100%	2%	32%	66%	100%
	Carpool Person	6%	27%	68%	100%	1%	31%	68%	100%
	Motorized Person	10%	22%	69%	100%	2%	31%	67%	100%
HBO	Transit	38%	13%	49%	100%	2%	35%	63%	100%
	Auto Driver	24%	21%	54%	100%	5%	29%	67%	100%
	Auto Passenger	31%	28%	41%	100%	1%	30%	69%	100%
	Auto Person	27%	23%	50%	100%	4%	29%	67%	100%
	Drive Alone	23%	19%	58%	100%	7%	26%	68%	100%
	Carpool Person	29%	27%	45%	100%	2%	32%	67%	100%
	Motorized Person	34%	21%	46%	100%	3%	28%	69%	100%
NHB	Transit	14%	31%	55%	100%	14%	31%	55%	100%
	Auto Driver	9%	27%	65%	100%	9%	27%	65%	100%
	Auto Passenger	8%	27%	65%	100%	8%	27%	65%	100%
	Auto Person	8%	27%	65%	100%	8%	27%	65%	100%
	Drive Alone	9%	26%	65%	100%	9%	26%	65%	100%
	Carpool Person	7%	28%	65%	100%	7%	28%	65%	100%
	Motorized Person	9%	25%	66%	100%	9%	25%	66%	100%

Note: The distributions shown are based on time-in-motion summaries.

Ref: todpkftr.xls

Chapter 8 Traffic Assignment / Feedback

The traffic assignment step is used to load a trip table onto the highway network in order to producing network link flows and speeds. The process culminates in the estimation of network link volumes, which, in turn, enable the estimation of highway link speeds. The traffic assignment process of the Version 2.2 model is detailed in this chapter.

8.1 *Model Application and Structure*

The traffic assignment step is executed seven times during a given model run. The first assignment is called the "pump prime" traffic assignment. The last six traffic assignments are called iteration 1, 2, 3, 4, 5, and 6. For each of the seven traffic assignments, there are actually three individual assignments, one for each of the three time-of-day periods: AM (6:00 to 9:00), PM (4:00 to 7:00), and off-peak (the remaining 18 hours of the day). The trips loaded in each time period are comprised of *all* purposes, as allocated by the time-of-day model. Each of the three assignments utilize a user equilibrium algorithm that is applied using 60 fixed iterations. The algorithm used in the equilibrium approach attempts to increasingly minimize the delay of all trips in the system with each iteration pass. An important component of the equilibrium assignment process is the volume-delay function (VDF). VDFs are used to develop link speeds at the end of each loading pass. It represents the ratio of congested travel time to the free-flow time as a function of the volume-to-capacity (V/C) ratio. The function typically varies by facility type. Another important property of the function is the capacity definition: in this case, volume reaches capacity at a V/C ratio of 1.0, where the capacity is the level-of-service (LOS) 'E' capacity. The restrained speed calculation is also subject to the assumed free flow speeds and capacity assumptions, which vary by facility type and area type. The Version 2.2 capacities and free flow speeds are defined in Table 8-1 and Table 8-2.

Conical volume delay functions are a class of "well behaved" volume delay functions. Spiess (1989) lists a number of characteristics that define a set of "well behaved" functions, including:

1. Function is strictly increasing. This is a necessary condition for the assignment to converge to a unique solution.
2. Capacity is defined as the volume at which the congested speed is half the free-flow speed.
3. The derivative of the function exists and is strictly increasing.
4. The slope of the function at a V/C ratio of 1 is equal to α

In equation form, the conical VDF is:

Equation 8-1 Conical volume delay function (VDF)

$$t/t_0 = f^C(x) = 2 + \sqrt{\alpha^2(1-x)^2 + \beta^2} - \alpha(1-x) - \beta$$

where

$$\alpha = \text{Slope of the function at V/C} = 1 \text{ (slope must be} > 1.0)$$

$$\beta = \frac{2\alpha - 1}{2\alpha - 2}$$

$$t/t_0 = \text{Ratio of congested travel time to free-flow travel time}$$

Table 8-3 shows, in tabular form, the conical VDFs used in the Version 2.2 travel model. There is a separate curve for each facility type, although ramps and freeways are assumed to have the same VDF. The conical VDFs are shown in graphical form in Figure 8-1 (for V/C >1) and Figure 8-2 (for V/C ≤ 1). In reality, no link would ever have a V/C ratio above one. However, in a typical regional travel model, V/C ratios above 1 do occur, so the VDF needs to account for this domain. Figure 8-1 shows the behavior of the Version 2.2 conical VDFs for large V/C ratios (V/C >1). The curve for freeways is the steepest, followed by expressways, then major arterials, minor arterials, and collectors. A steeper cure means more sensitivity to high V/C ratios, forcing excess traffic off of these facilities. Figure 8-2 shows the behavior of the Version 2.2 conical VDFs for V/Cs less than or equal to one. In this area of V/C ratio, the freeways show the least sensitivity to V/C ratio, but, as the V/C ratio approaches 1, the freeway VDFs have the steepest slope (a slope of 15).

In Figure 8-3, Figure 8-4, Figure 8-5, Figure 8-6, and Figure 8-7, the vertical axis now shows congested speed (not ratio of congested to free-flow travel time). Table 8-4 show the same information as the aforementioned five figures, but in tabular form. One can see that, for freeways, the congested speed drops to about 2 mph at a V/C ratio of 2.00. For arterials, the congested speeds drops to about 2 or 3 mph at a V/C = 2.0. For collectors, speeds drop to about 2 to 4 mph when the V/C ratio hits 2.0. By contrast, in the Version 2.1D #50 travel model, there was a speed "floor" for freeways, such that the minimum speed at for high V/C ratios (V/C > 1.75) was 11 to 13 mph.

In addition to the aforementioned change in VDFs, the Version 2.2 model includes one other major change with respect to the Version 2.1D #50 model: the inclusion of a queuing function, for ramps and freeways only, which was added to mimic the queuing that occurs in congested networks, but is difficult to represent in traditional, link-based static user equilibrium traffic models. One of the motivations behind including this queuing function was to reduce the number of hyper-congested links that occurred in the modeled network. According to this function, which is based on a sigmoid function, a queuing time is added to excessively congested freeway and ramp links. As shown in Figure 8-8, the queuing time ranges from 0 minutes, at low V/Cs (V/C ≤ 0.80) to a maximum of 14 minutes at high V/Cs (above V/C = 1.5).

Thus, previously, congested time was:

Equation 8-2 Congested time without queuing function

$T_C \quad = \quad T_0 * \text{VDF f(V/C)}$

Now, in the Version 2.2 travel model, for ramps and freeway links:

Equation 8-3 Congested time with queuing function (freeways and ramps only)

$T_C \quad = \quad [\ T_0 * \text{VDF f(V/C)}\ ] + \text{Queuing Time f(V/C)}$

The main benefit of the new queuing function is that is prevents hyper-loading of links (i.e., cases where the estimated daily volume exceeds the daily capacity of the link). However, there are is a caveat to keep in mind: The link time is independent of link distance, which means the link speed can drop to extremely low levels. For example, a 14-minute delay is a much larger delay on a one-tenth-mile link than on a one-mile link. It should be added that the queuing function is applied to only to links that are associated with an interchange or to adjacent links that have capacity differences.

The time on the link with a large queuing time, realistically reflects queuing delay that occurs on 'upstream links'. Static assignments are limited in their ability to represent the operational details of traffic. One typically needs to move to dynamic assignments to accurately simulate freeway operations.

Table 8-1 LOS E Capacities

		Area Type						
Facility Type		**1**	**2**	**3**	**4**	**5**	**6**	**7**
Centroids	FT = 0	3,150	3,150	3,150	3,150	3,150	3,150	3,150
Freeways	FT = 1	1,500	1,600	1,800	1,800	2,000	2,000	2,100
Major Arterials	FT = 2	800	800	960	960	1,260	1,260	1,260
Minor Arterials	FT = 3	500	600	700	840	1,000	1,000	1,000
Collectors	FT = 4	300	400	500	700	700	700	800
Expressways	FT = 5	900	1,000	1,000	1,200	1,500	1,500	1,500
Ramps	FT = 6	1,500	1,600	1,800	1,800	2,000	2,000	2,100

Ref: vdf_v21d.xls

Table 8-2 Free-Flow Speeds

		Area Type						
Facility Type		**1**	**2**	**3**	**4**	**5**	**6**	**7**
Centroids	FT = 0	15	15	20	25	30	30	35
Freeways	FT = 1	55	55	60	60	67	67	67
Major Arterials	FT = 2	25	25	35	35	40	45	45
Minor Arterials	FT = 3	20	20	30	30	35	40	40
Collectors	FT = 4	15	15	20	20	25	30	30
Expressways	FT = 5	45	45	50	50	50	55	55
Ramps	FT = 6	55	55	60	60	67	67	67

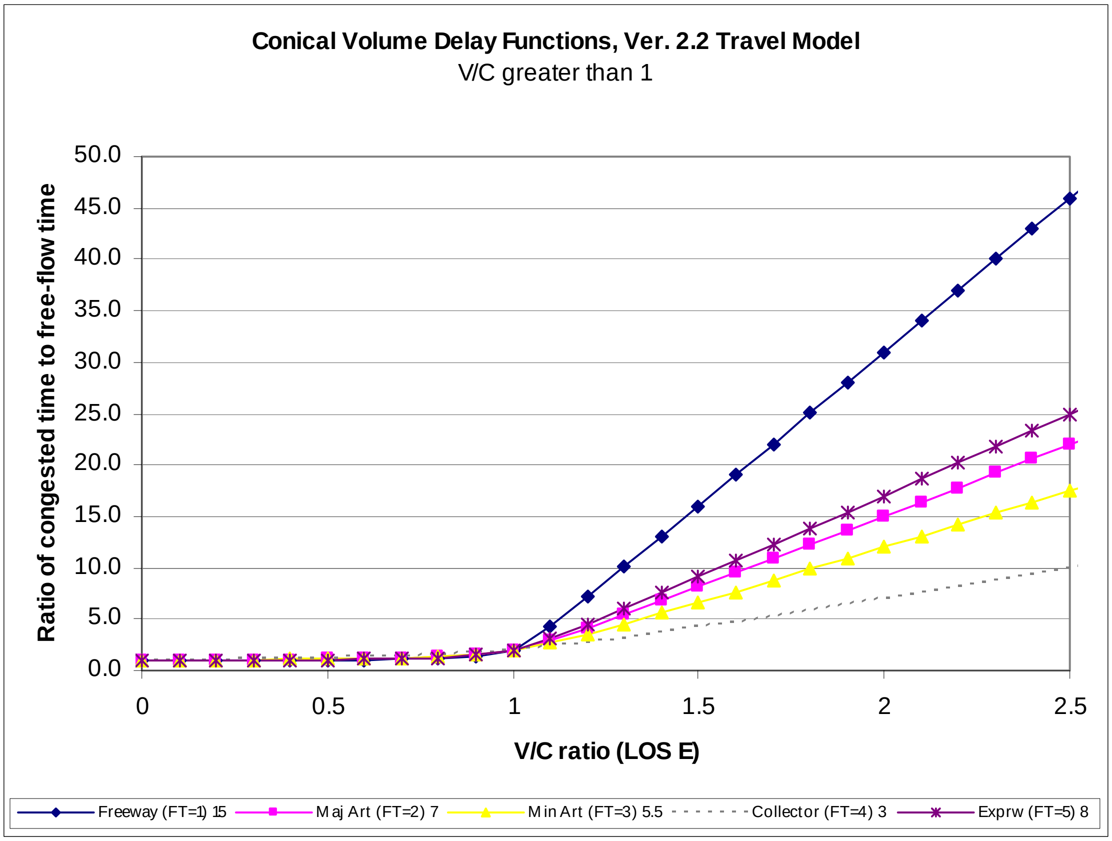
Ref: vdf_v21d.xls

Table 8-3 Conical volume-delay functions used in the Version 2.2 travel model: Tabular format

	Centroid (FT=0)	Freeway (FT=1)	Maj Art (FT=2)	Min Art (FT=3)	Collector (FT=4)	Exprw (FT=5)	Ramps (FT=6)
a		15	7	5.5	3	8	15
b		1.035714	1.083333	1.111111	1.25	1.071429	1.035714
v/c	**t/t0**	**t/t0**	**t/t0**	**t/t0**	**t/t0**	**t/t0**	**t/t0**
0	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.1	1.000	1.004	1.009	1.012	1.025	1.008	1.004
0.2	1.000	1.009	1.020	1.027	1.056	1.018	1.009
0.3	1.000	1.015	1.035	1.046	1.094	1.030	1.015
0.4	1.000	1.024	1.054	1.071	1.141	1.047	1.024
0.5	1.000	1.035	1.080	1.105	1.203	1.070	1.035
0.6	1.000	1.053	1.119	1.154	1.283	1.103	1.053
0.7	1.000	1.082	1.180	1.228	1.390	1.157	1.082
0.8	1.000	1.138	1.287	1.352	1.537	1.254	1.138
0.9	1.000	1.287	1.506	1.579	1.735	1.466	1.287
1	1.000	2.000	2.000	2.000	2.000	2.000	2.000
1.1	1.000	4.287	2.906	2.679	2.335	3.066	4.287
1.2	1.000	7.138	4.087	3.552	2.737	4.454	7.138
1.3	1.000	10.082	5.380	4.528	3.190	5.957	10.082
1.4	1.000	13.053	6.719	5.554	3.683	7.503	13.053
1.5	1.000	16.035	8.080	6.605	4.203	9.070	16.035
1.6	1.000	19.024	9.454	7.671	4.741	10.647	19.024
1.7	1.000	22.015	10.835	8.746	5.294	12.230	22.015
1.8	1.000	25.009	12.220	9.827	5.856	13.818	25.009
1.9	1.000	28.004	13.609	10.912	6.425	15.408	28.004
2	1.000	31.000	15.000	12.000	7.000	17.000	31.000
2.1	1.000	33.997	16.393	13.090	7.579	18.594	33.997
2.2	1.000	36.994	17.786	14.182	8.161	20.188	36.994
2.3	1.000	39.992	19.181	15.275	8.745	21.784	39.992
2.4	1.000	42.990	20.576	16.369	9.332	23.380	42.990
2.5	1.000	45.988	21.972	17.463	9.920	24.976	45.988
2.6	1.000	48.987	23.369	18.559	10.510	26.573	48.987
2.7	1.000	51.985	24.766	19.655	11.101	28.171	51.985
2.8	1.000	54.984	26.163	20.751	11.693	29.768	54.984
2.9	1.000	57.983	27.561	21.848	12.285	31.366	57.983
3	1.000	60.982	28.959	22.945	12.879	32.964	60.982
999.9	1.000	60.982	28.959	22.945	12.879	32.964	60.982

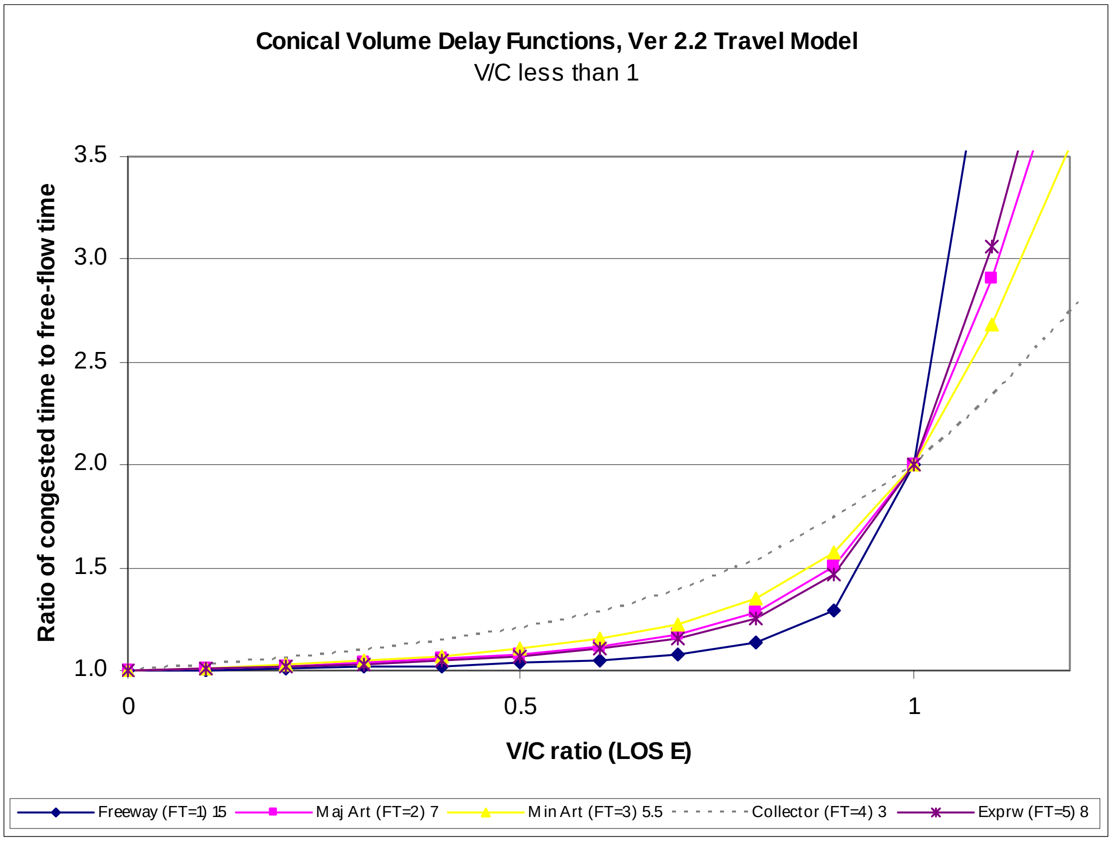
Ref: conical_vdf_v22.xls

Figure 8-1 Conical volume-delay functions used in the Version 2.2 travel model: V/C > 1



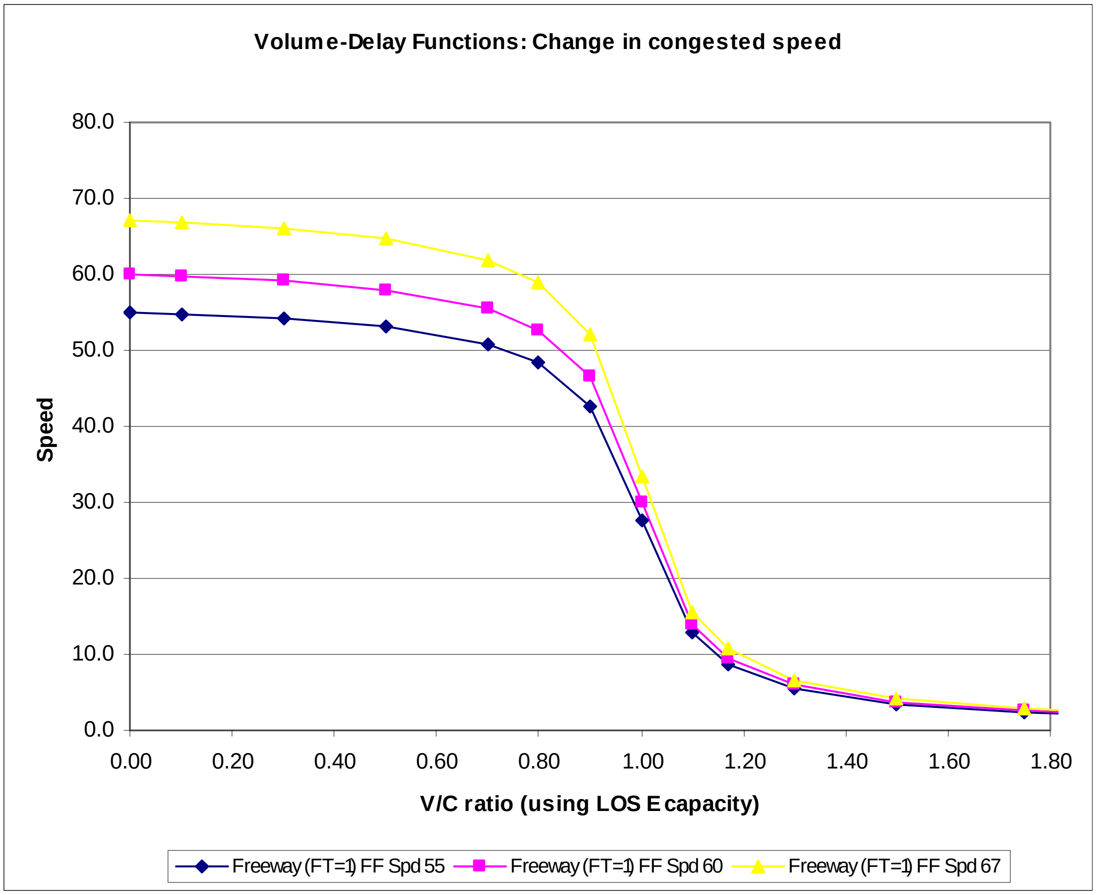
Ref: conical_vdf_v22.xls

Figure 8-2 Conical volume-delay functions used in the Version 2.2 travel model: V/C < 1



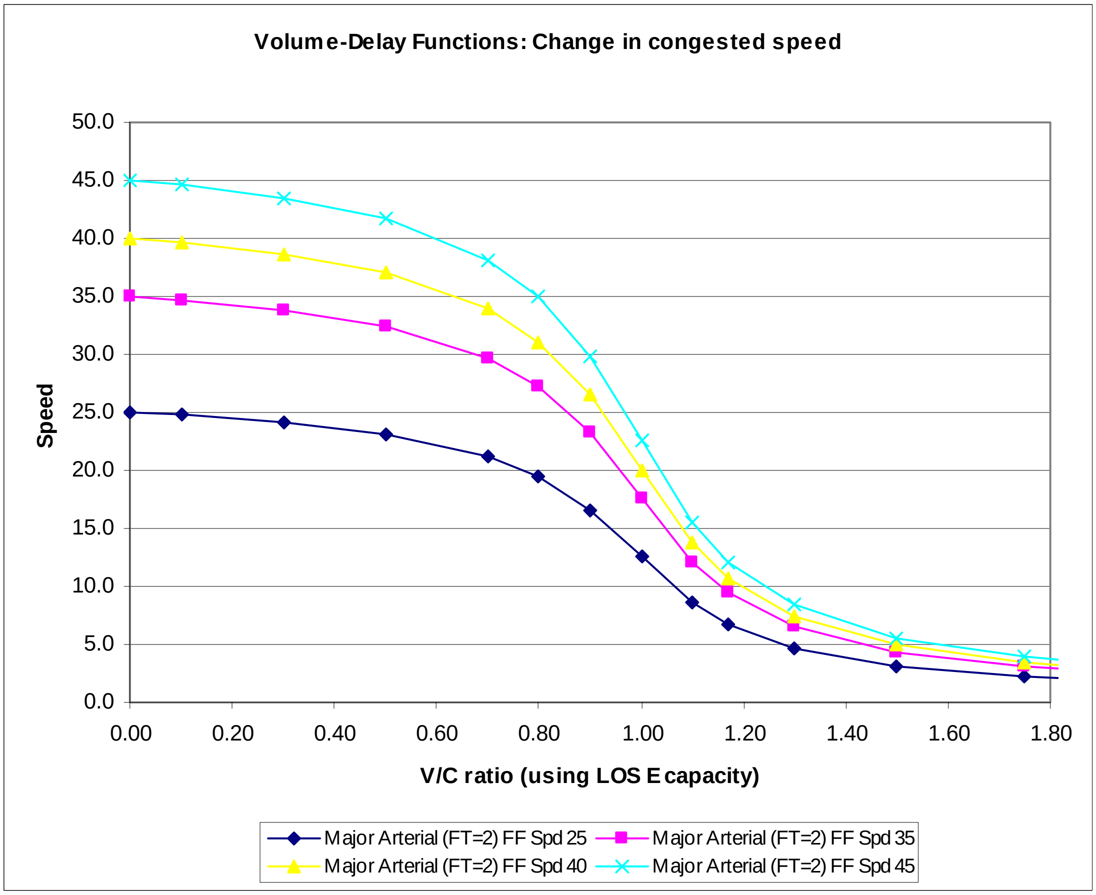
Ref: conical_vdf_v22.xls

Figure 8-3 Volume-delay functions used in the Version 2.2 travel model: Freeways



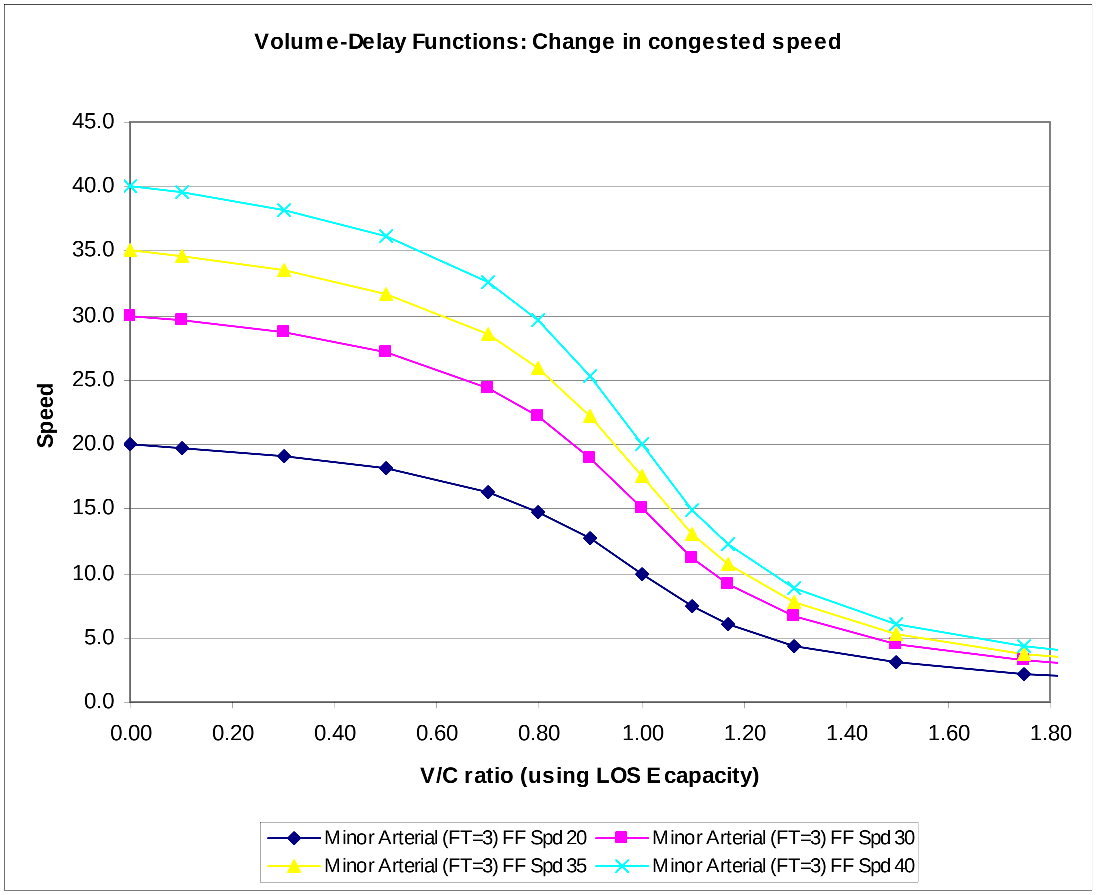
Ref: conical_vdf_v22.xls

Figure 8-4 Volume-delay functions used in the Version 2.2 travel model: Major Arterials



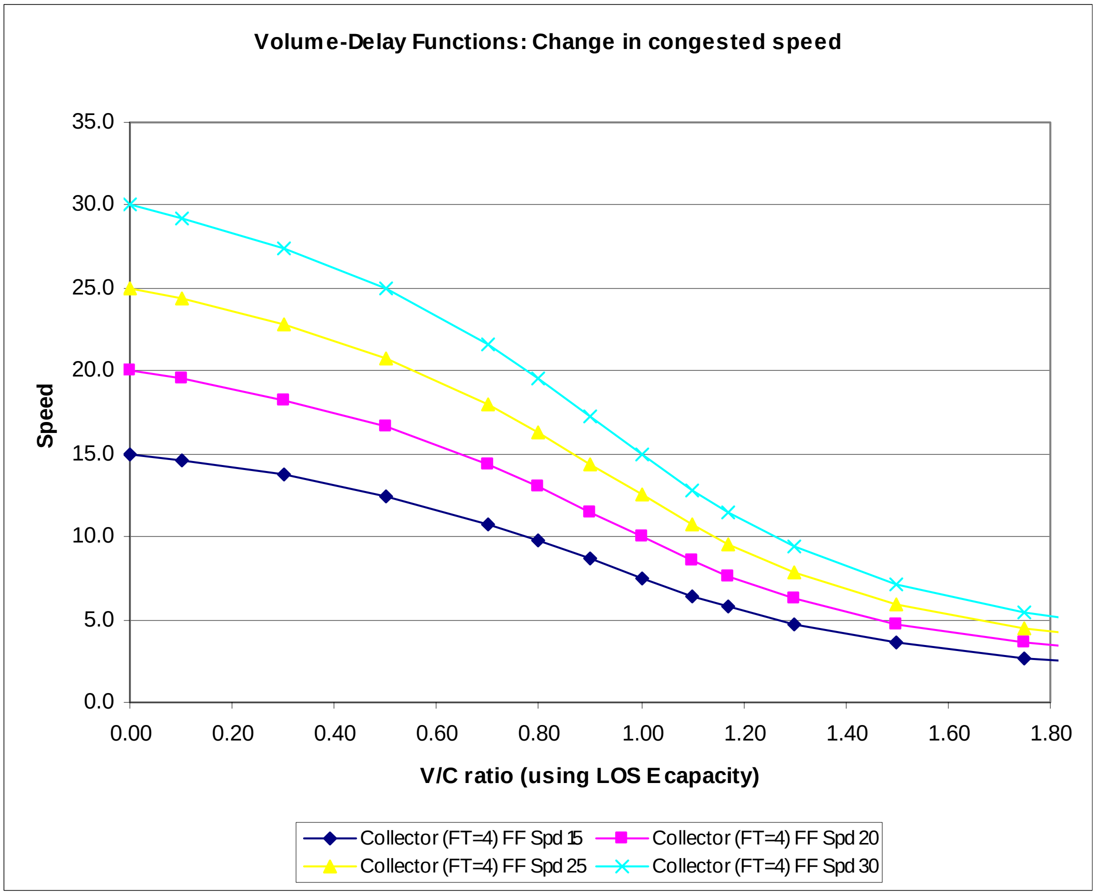
Ref: conical_vdf_v22.xls

Figure 8-5 Volume-delay functions used in the Version 2.2 travel model: Minor Arterials



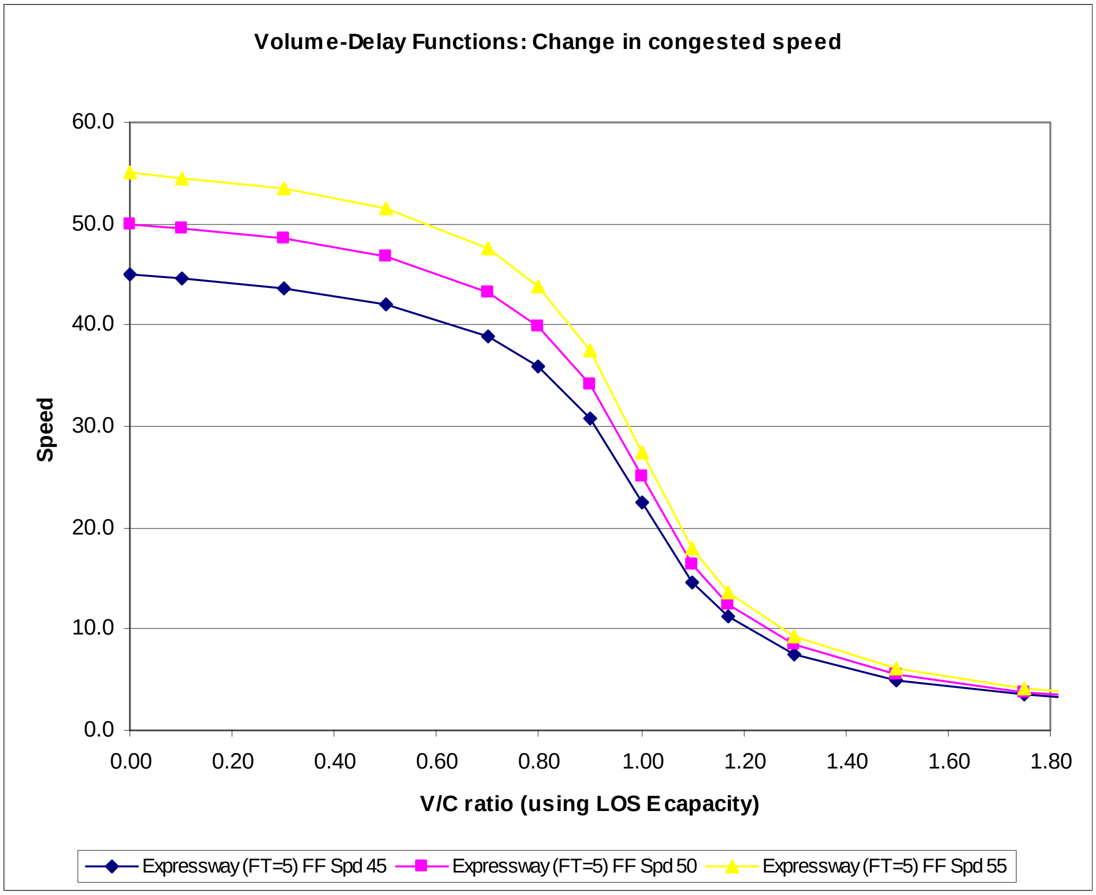
Ref: conical_vdf_v22.xls

Figure 8-6 Volume-delay functions used in the Version 2.2 travel model: Collectors



Ref: conical_vdf_v22.xls

Figure 8-7 Volume-delay functions used in the Version 2.2 travel model: Expressways



Ref: conical_vdf_v22.xls

Table 8-4 Volume-delay functions used in the Version 2.2, travel model: Speeds, Part 1 of 2

	Freeway (FT=1)			Major Arterial (FT=2)				Minor Arterial (FT=3)			
	FF Spd 55	FF Spd 60	FF Spd 67	FF Spd 25	FF Spd 35	FF Spd 40	FF Spd 45	FF Spd 20	FF Spd 30	FF Spd 35	FF Spd 40
V/C	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd
0.00	55.00	60.00	67.00	25.00	35.00	40.00	45.00	20.00	30.00	35.00	40.00
0.10	54.78	59.76	66.74	24.77	34.68	39.64	44.59	19.76	29.64	34.58	39.52
0.30	54.17	59.10	65.99	24.15	33.82	38.65	43.48	19.12	28.68	33.46	38.24
0.50	53.12	57.95	64.71	23.14	32.39	37.02	41.65	18.10	27.15	31.68	36.20
0.70	50.83	55.46	61.93	21.19	29.67	33.91	38.15	16.28	24.43	28.50	32.57
0.80	48.33	52.72	58.87	19.43	27.20	31.08	34.97	14.79	22.18	25.88	29.58
0.90	42.73	46.62	52.05	16.60	23.23	26.55	29.87	12.67	19.00	22.17	25.34
1.00	27.50	30.00	33.50	12.50	17.50	20.00	22.50	10.00	15.00	17.50	20.00
1.10	12.83	14.00	15.63	8.60	12.04	13.76	15.48	7.47	11.20	13.07	14.93
1.17	8.78	9.57	10.69	6.73	9.42	10.76	12.11	6.10	9.16	10.68	12.21
1.30	5.46	5.95	6.65	4.65	6.51	7.44	8.36	4.42	6.63	7.73	8.83
1.50	3.43	3.74	4.18	3.09	4.33	4.95	5.57	3.03	4.54	5.30	6.06
1.75	2.34	2.55	2.85	2.17	3.04	3.47	3.90	2.15	3.23	3.77	4.31
2.00	1.77	1.94	2.16	1.67	2.33	2.67	3.00	1.67	2.50	2.92	3.33

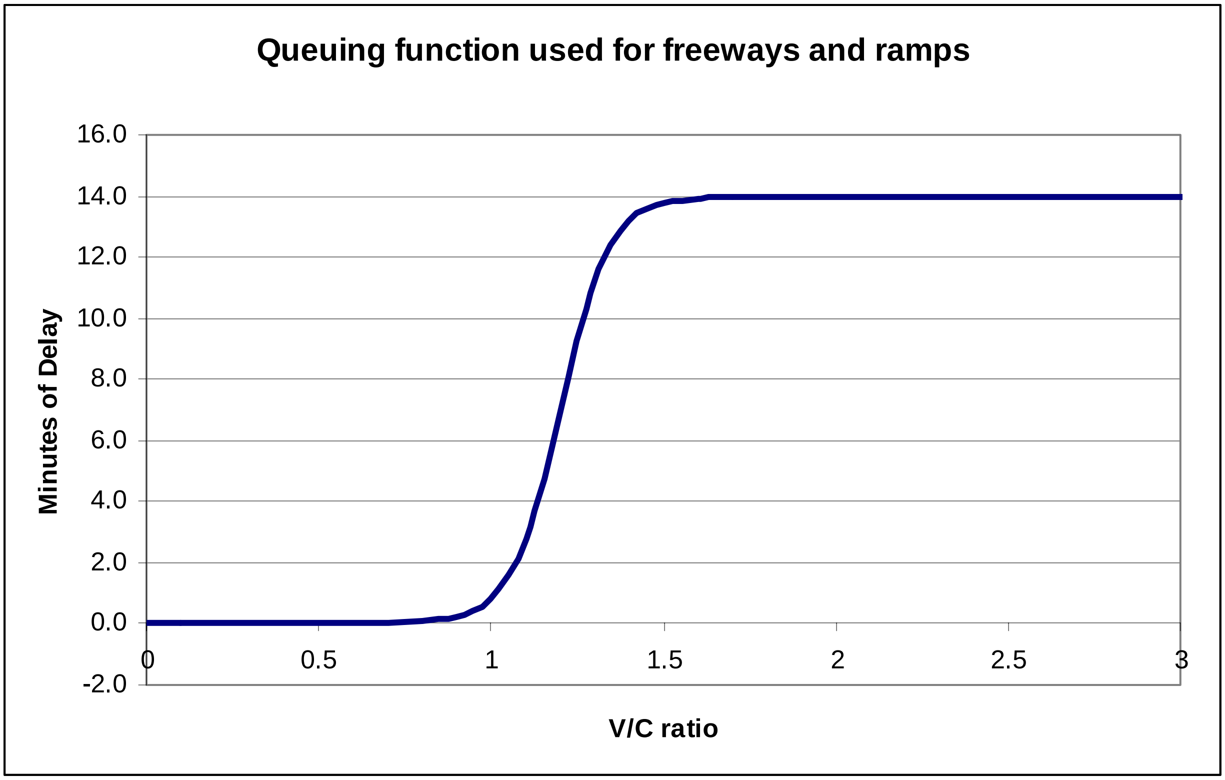
Ref: vdf_v21d.xls

Table 8-5 Volume-delay functions used in the Version 2.2, travel model: Speeds, Part 1 of 2

Collector (FT=4)				Expressway (FT=5)		
FF Spd 15	FF Spd 20	FF Spd 25	FF Spd 30	FF Spd 45	FF Spd 50	FF Spd 55
ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd	ConSpd
15.00	20.00	25.00	30.00	45.00	50.00	55.00
14.63	19.51	24.38	29.26	44.65	49.61	54.57
13.71	18.28	22.85	27.43	43.68	48.54	53.39
12.47	16.63	20.79	24.95	42.07	46.75	51.42
10.79	14.39	17.98	21.58	38.90	43.22	47.54
9.76	13.02	16.27	19.52	35.88	39.87	43.85
8.64	11.52	14.41	17.29	30.70	34.11	37.52
7.50	10.00	12.50	15.00	22.50	25.00	27.50
6.42	8.56	10.70	12.85	14.68	16.31	17.94
5.75	7.66	9.58	11.49	11.19	12.44	13.68
4.70	6.27	7.84	9.40	7.55	8.39	9.23
3.57	4.76	5.95	7.14	4.96	5.51	6.06
2.69	3.59	4.49	5.38	3.46	3.84	4.22
2.14	2.86	3.57	4.29	2.65	2.94	3.24

Ref: vdf_v21d.xls

Figure 8-8 Queuing function used for freeways and ramps



Ref: conical_vdf_v22.xls

Chapter 9 Validation

This chapter briefly describes some performance results of the Version 2.2 model and also provides travel statistics from the most recent TPB forecasts. This chapter also contains a section describing sensitivity testing that was undertaken during FY-2007.

9.1 *Validation Summaries*

A summary of state level estimated and observed vehicle-miles-of-travel (VMT) is shown in Table 9-1 . The table reflects the 12-county MSA area which is a subset of the modeled study area. The table indicates that the model over-estimates VMT slightly in the District of Columbia and Virgina (by 4% and 1%, respectively) and slightly under-estimates VMT in Maryland by 1%. VMT for the entire MSA agrees well. Jurisdiction-level VMT performance based on a *sample* of 5,400 daily counts is shown in Table 9-2. The performance on Table 9-2 is shown to be more volatile as would be expected with a sample of counts at the jurisdiction level. The overall link RMSE is 41%.

Screenline locations currently analyzed by TPB staff are provided on Figure 9-1 and Figure 9-2. 2005 Screenline level performance is shown on Table 9-3. The table also indicates the percentage of screenline links with observed counts is about 37%. Overall, estimated screenline counts are 2% higher than the observed counts.

Transit performance is shown on Table 9-4. The table shows estimated and observed year 2000 transit trips and percentages for both the 2.2 and 2.1D models. Given that no household travel survey data exist for the year 2000, observed figures shown were developed at the jurisdiction level using a combination of data sources including the 2000 WMATA Bus On-Board Survey and available transit boarding data. The observed transit trips were based re Version 2.2 now over estimates total transit about 7% in contrast to the underestimation of 4% shown for the Version 2.1D model. This reduced performance is attributed largely to a reduction in the use of K-factors and transit adjustments that were previously implemented in the Version 2.1D model. Interestingly, the Version 2.2 model matches observed HBW transit trips within 1%.

A summary of global statistics over time (from 2000 to 2030) is shown on Table 9-5. The table displays available forecasts using the Version 2.2 from 2000 through and 2030. It should be noted that the Version 2.2 2030 forecast produces about 8% less VMT that that produced by the previous 2.1D model.

Table 9-1 2005 Estimated/Observed (HPMS)VMT for the Washington, DC MSA (VMT in thousands)

VMT - V2.2 Iterations			
MSA	Est(000s)	Obs(000s)	E-O Ratio
DC	8,999	8,619	1.04
MD	56,002	56,806	0.99
VA	51,031	50,733	1.01
MSA Total	116,032	116,158	1.00

Note: VMT shown excludes local traffic

Jurisdictions in the MSA are:
District of Columbia, Montgomery County, Prince George's County, Arlington County, City of Alexandria, Fairfax County, Loudoun County, Prince William County, Frederick County, Charles County, Calvert County, Stafford County.

Table 9-2 Year 2005 Estimated and Observed VMT Summary by Jurisdiction (VMT in thousands)

	Version 2.2			
Jurisdiction	Est	Obs	Ratio Est / Obs	Number of Counts
District of Columbia	3,169	2,670	1.19	578
Montgomery	9,010	8,437	1.07	594
Prince George's	9,168	10,162	0.90	520
Arlington	1,675	1,727	0.97	268
Alexandria	820	788	1.04	124
Fairfax	12,938	12,895	1.00	1,191
Loudoun	2,077	2,304	0.90	226
Prince William	4,033	4,469	0.90	358
Frederick	6,429	5,111	1.26	248
Howard	6,484	6,463	1.00	180
Anne Arundel	9,301	9,089	1.02	324
Charles	1,435	1,660	0.86	94
Carroll	2,025	2,000	1.01	130
Calvert	734	983	0.75	64
St. Mary's	950	1,005	0.95	86
King George	729	615	1.19	32
Fredericksburg	276	415	0.67	24
Stafford	2,337	2,184	1.07	112
Spotsylvania	1,303	1,712	0.76	82
Fauquier	2,352	2,244	1.05	89
Clarke	700	582	1.20	36
Jefferson	68	30	2.27	2
Total	**78,013**	**77,545**	**1.01**	**5,362**

Ref: Sum_vmt_2005_V22.xls

Figure 9-1 Highway Network Screen lines Map 1 of 2

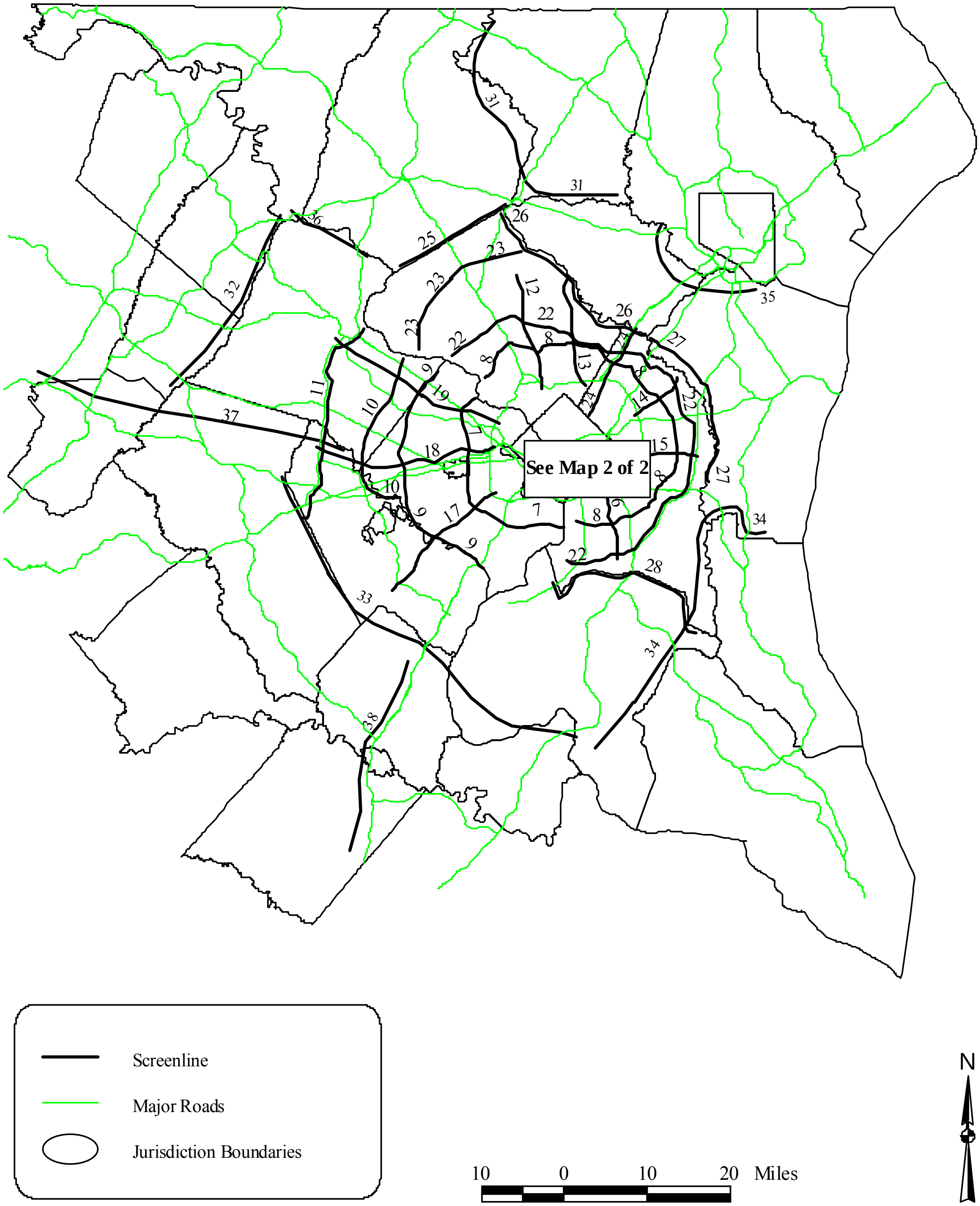


Figure 9-2 Highway Network Screen lines (Inside the Capital Beltway) Map 2 of 2

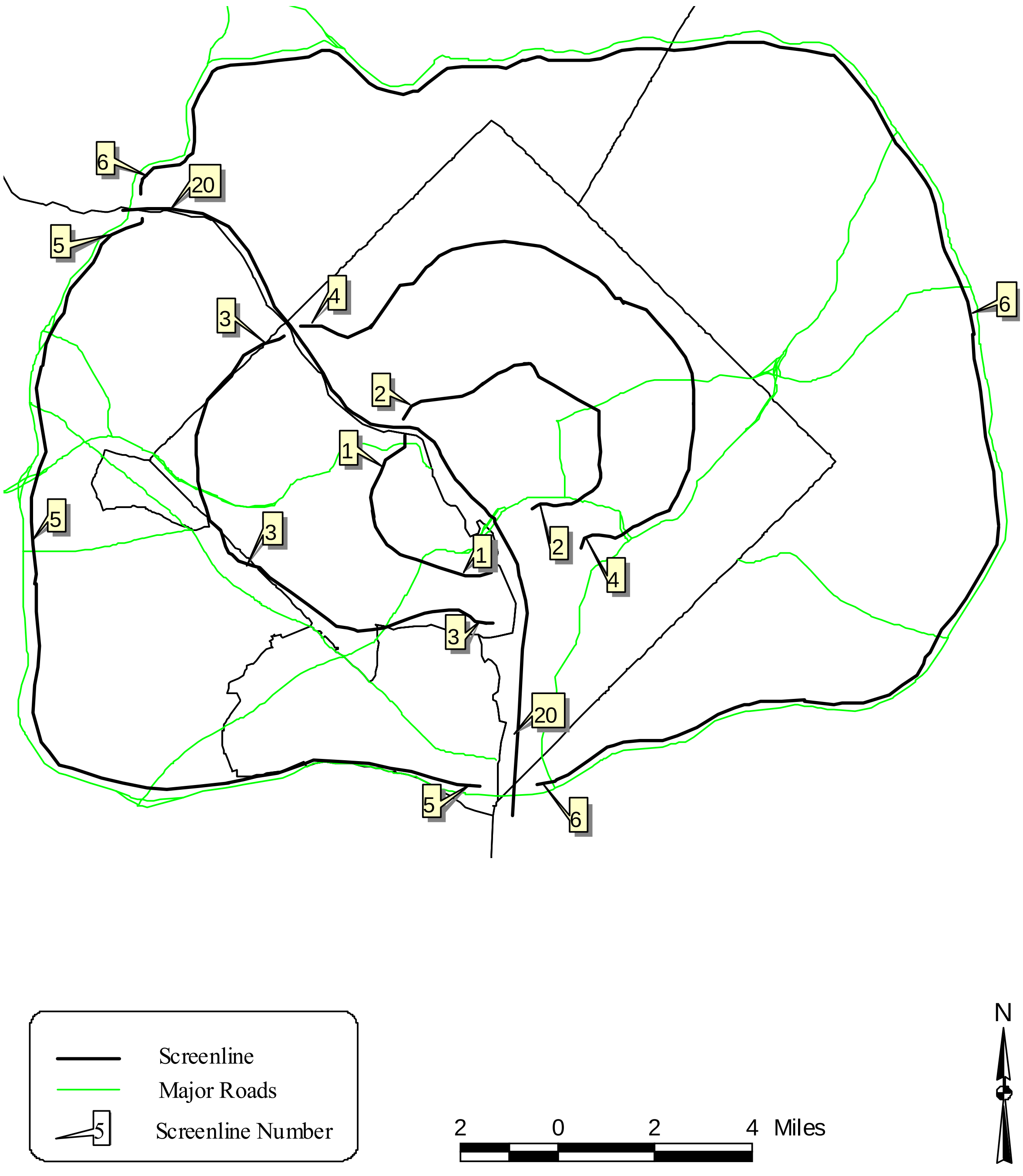


Table 9-3 Year 2005 Estimated and Observed Daily Screenline Crossings (in thousands)

	Version 2.2					
Screenline No.	Est	Obs	Ratio Est / Obs	No. of links w/ Screenline Code	No. of links w/ Counts	% of links w/ Counts
1	325	304	1.07	40	18	45.0%
2	396	294	1.35	74	14	18.9%
3	381	356	1.07	56	22	39.3%
4	485	366	1.33	66	22	33.3%
5	394	378	1.04	52	14	26.9%
6	1,050	992	1.06	100	40	40.0%
7	667	720	0.93	66	30	45.5%
8	521	494	1.05	102	22	21.6%
9	685	664	1.03	46	26	56.5%
10	77	122	0.63	20	8	40.0%
11	6	12	0.50	18	4	22.2%
12	234	272	0.86	32	6	18.8%
13	234	240	0.98	18	4	22.2%
14	187	244	0.77	16	2	12.5%
15	172	216	0.80	12	2	16.7%
16	133	162	0.82	16	2	12.5%
17	84	92	0.91	30	10	33.3%
18	248	306	0.81	35	18	51.4%
19	394	442	0.89	42	20	47.6%
20	1,037	958	1.08	14	14	100.0%
22	559	558	1.00	118	26	22.0%
23	156	140	1.11	24	8	33.3%
24	253	296	0.85	28	4	14.3%
25	14	10	1.40	8	2	25.0%
26	372	318	1.17	20	12	60.0%
27	177	154	1.15	16	8	50.0%
28	31	28	1.11	10	2	20.0%
31	111	72	1.54	20	12	60.0%
32	76	40	1.90	8	4	50.0%
33	104	80	1.30	14	6	42.9%
34	74	84	0.88	14	10	71.4%
35	792	854	0.93	42	30	71.4%
36	48	24	2.00	6	4	66.7%
37	49	38	1.29	10	8	80.0%
38	152	168	0.90	18	14	77.8%
Total	**10,678**	**10,498**	**1.02**	**1,211**	**448**	**37.0%**

Ref: Sum_links_2005_V22.xls

Table 9-4 Year 2000 Estimated Vs. Observed Transit Trips and Percentages by Purpose

				V21D#50		V22	
Purpose	**Est V2.1D50**	**Est V22**	**Obs**	**Diff. (Est-Obs)**	**Ratio (Est/Obs)**	**Diff. (Est-Obs)**	**Ratio (Est/Obs)**
HBW	502,001	532,028	538,582	-36,581	0.93	-5,914	0.99
Pct. Transit	*16.78%*	*18.25%*	*17.80%*	*-1.02%*	*0.94*	*0.47%*	*1.03*
HBS	34,079	46,674	33,262	817	1.02	13,395	1.4
Pct. Transit	*1.39%*	*1.90%*	*1.36%*	*0.03%*	*1.02*	*0.53%*	*1.39*
HBO	163,864	226,217	151,645	12,219	1.08	74,614	1.49
Pct. Transit	*2.24%*	*3.04%*	*2.07%*	*0.16%*	*1.08*	*0.97%*	*1.47*
NHB	156,238	144,484	166,461	-10,223	0.94	-21,912	0.87
Pct. Transit	*2.90%*	*3.54%*	*3.09%*	*-0.18%*	*0.94*	*0.45%*	*1.15*
Total	856,182	949,403	889,950	-33,768	0.96	60,183	1.07
Pct. Transit	*4.72%*	*5.62%*	*4.89%*	*-0.18%*	*0.96*	*0.73%*	*1.15*

Ref: compare_mceo_00_uns_scr.xls

Note: This summary excludes some portions of the modeled study where complete modal data was unavailable.

1. For home-based travel, the excluded area is:
   a) external trips, both IX and XI;
   b) trips FROM the following jurisdictions: St. Mary's, Clarke, Jefferson, Spotsylvania, Fredericksburg, or King George.
2. For non-home-based travel, the excluded area is:
   a) external trips, both IX and XI;
   b) trips FROM the following jurisdictions: Carroll, Howard, Anne Arundel, St. Mary's, Clarke, Jefferson, Spotsylvania, Fredericksburg, or King George;
   c) trips TO the following jurisdictions: Carroll, Howard, and Anne Arundel.

3. Given that no household travel survey data exist for the year 2000, observed figures were developed at the jurisdiction level using a combination of data sources including the 2000 WMATA Bus On-Board Survey and available transit boarding data.

Ref: compare_mceo_00_uns_scr.xls

Table 9-5 Summary of Version 2.2 travel model output: Years 2000, 2005, 2008, 2009, 2010, 2020, and 2030

	2000	2002	2005	2008	2009	2010	2020	2030
Households	2,143,451	2,228,949	2,357,238	2,482,578	2,524,355	2,566,132	2,935,713	3,199,982
Employment	3,441,381	3,548,630	3,709,533	3,927,538	4,000,202	4,072,854	4,667,974	5,156,567
HH Population	5,632,014	5,843,440	6,160,526	6,467,172	6,569,380	6,671,579	7,527,123	8,133,627
HH & GQ Population	5,748,119	5,966,696	6,294,528	6,603,136	6,705,983	6,808,844	7,668,922	8,282,368
Extl. Productions/ HBW Auto Person	272,044	284,407	303,657	328,884	337,611	346,502	416,669	474,282
Extl. Productions/ HBS Auto Person	69,459	72,207	76,475	82,082	84,016	85,990	101,577	114,371
Extl. Productions/ HBO Auto Person	189,625	198,445	212,187	230,204	236,430	242,779	292,873	333,994
Extl. Productions/ NHB Auto Person	72,207	75,156	79,751	85,774	87,860	89,984	106,738	120,497
Extl. Productions/ Auto Person Subtotal	603,335	630,215	672,070	726,944	745,917	765,255	917,857	1,043,144
Extl. Productions/ Medium Truck	3,637	3,803	4,066	4,407	4,529	4,650	5,608	6,386
Extl. Productions/ Heavy Truck	23,517	24,605	26,292	28,504	29,266	30,046	36,194	41,246
Extl. Productions/ Truck Subtotal	27,154	28,408	30,358	32,911	33,795	34,696	41,802	47,632
Extl. Attractions/ HBW Auto Person	168,565	175,558	186,443	200,708	205,639	210,670	250,348	282,929
Extl. Attractions/ HBS Auto Person	68,295	71,141	75,566	81,367	83,373	85,421	101,552	114,800
Extl. Attractions/ HBO Auto Person	265,224	277,245	295,960	320,489	328,974	337,618	405,837	461,850
Extl. Attractions/ NHB Auto Person	72,193	75,146	79,741	85,765	87,852	89,975	106,726	120,480
Extl. Attractions/ Auto Person Subtotal	574,277	599,090	637,710	688,329	705,838	723,684	864,463	980,059
Extl. Attractions/ Medium Truck	3,637	3,803	4,066	4,407	4,529	4,650	5,608	6,386
Extl. Attractions/ Heavy Truck	23,517	24,605	26,292	28,504	29,266	30,046	36,194	41,246
Extl. Attractions/ Truck Subtotal	27,154	28,408	30,358	32,911	33,795	34,696	41,802	47,632
Inc. Grp 1 HHs	511,232	527,594	552,147	581,074	590,716	600,354	688,765	756,667
Inc. Grp 2 HHs	491,350	510,062	538,139	566,138	575,471	584,797	668,955	732,621
Inc. Grp 3 HHs	590,697	615,948	653,833	688,972	700,681	712,383	814,743	888,293
Inc. Grp 4 HHs	550,170	575,311	613,033	646,393	657,487	668,578	762,166	821,137
HHs Subtotal	2,143,449	2,228,916	2,357,152	2,482,576	2,524,354	2,566,111	2,934,630	3,198,717
1- person HHs	538,032	561,187	599,096	633,362	645,710	659,316	781,733	872,858
2- person HHs	658,172	685,312	723,030	763,473	776,402	789,537	903,985	985,693
3- person HHs	378,224	393,187	413,897	435,741	442,627	449,195	506,372	546,520
4+ person HHs	569,021	589,229	621,128	650,000	659,614	668,063	742,539	793,646
HHs Subtotal	2,143,449	2,228,916	2,357,152	2,482,576	2,524,354	2,566,111	2,934,630	3,198,717

Table 9-5 Continued

	2000	2002	2005	2008	2009	2010	2020	2030
0 Vehicle HHs	203,964	212,773	223,840	238,267	242,832	247,829	305,299	344,095
1 Vehicle HHs	707,229	736,174	780,136	825,221	840,136	855,922	997,684	1,100,104
2 Vehicle HHs	832,294	864,472	914,166	960,681	976,044	991,121	1,111,455	1,198,498
3+ Vehicle HHs	399,962	415,496	439,009	458,407	465,342	471,239	520,192	556,021
HHs Subtotal	2,143,449	2,228,916	2,357,152	2,482,576	2,524,354	2,566,111	2,934,630	3,198,717
HBW Motorized Person Trips	4,042,371	4,206,863	4,452,589	4,691,981	4,772,724	4,851,223	5,520,591	5,998,223
HBS Motorized Person Trips	3,115,213	3,238,309	3,424,414	3,604,819	3,665,332	3,724,264	4,221,728	4,572,878
HBO Motorized Person Trips	9,617,389	9,982,462	10,538,709	11,068,366	11,247,313	11,416,548	12,862,727	13,885,744
NHB Motorized Person Trips	5,288,525	5,500,460	5,821,285	6,121,426	6,222,287	6,319,199	7,144,973	7,732,312
Total Motorized Person Trips	22,063,498	22,928,094	24,236,997	25,486,592	25,907,656	26,311,234	29,750,018	32,189,157
Motorized Person Trips per HH	10.29	10.29	10.28	10.27	10.26	10.25	10.13	10.06
Motorized Person Trips per capita	3.84	3.84	3.85	3.86	3.86	3.86	3.88	3.89
Non-Motorized HBW Trips	171,190	176,620	187,605	202,788	207,088	212,140	255,813	292,322
HBW Auto Driver Trips	3,104,883	3,222,166	3,435,096	3,608,447	3,671,155	3,718,878	4,189,402	4,560,854
HBS Auto Driver Trips	2,463,202	2,558,806	2,707,208	2,856,711	2,905,725	2,953,453	3,362,463	3,657,434
HBO Auto Driver Trips	7,023,506	7,279,400	7,730,049	8,123,526	8,255,302	8,370,205	9,424,657	10,195,673
NHB Auto Driver Trips	4,008,890	4,167,216	4,431,255	4,668,066	4,746,146	4,821,244	5,456,854	5,939,469
Total Auto Driver Trips	16,600,481	17,227,588	18,303,608	19,256,750	19,578,328	19,863,780	22,433,375	24,353,430
HBW Auto Passenger Trips	388,769	399,265	423,839	443,820	453,759	478,028	559,236	605,514
HBS Auto Passenger Trips	603,820	624,315	661,837	687,019	697,271	707,218	778,185	827,011
HBO Auto Passenger Trips	2,362,736	2,455,135	2,570,070	2,683,246	2,723,626	2,772,089	3,092,845	3,312,917
NHB Auto Passenger Trips	1,133,627	1,172,964	1,231,776	1,282,305	1,301,641	1,320,893	1,466,645	1,557,665
Total Auto Passenger Trips	4,488,952	4,651,679	4,887,522	5,096,390	5,176,297	5,278,228	5,896,911	6,303,106
HBW Auto Occupancies	1.13	1.12	1.12	1.12	1.12	1.13	1.13	1.13
HBS Auto Occupancies	1.25	1.24	1.24	1.24	1.24	1.24	1.23	1.23
HBO Auto Occupancies	1.34	1.34	1.33	1.33	1.33	1.33	1.33	1.32
NHB Auto Occupancies	1.28	1.28	1.28	1.27	1.27	1.27	1.27	1.26
Total Auto Occupancies	1.27	1.27	1.27	1.26	1.26	1.27	1.26	1.26
HBW Transit Trips	548,719	585,432	593,654	639,714	647,810	654,317	771,953	831,855
HBS Transit Trips	48,191	55,188	55,369	61,089	62,336	63,593	81,080	88,433
HBO Transit Trips	231,147	247,927	238,590	261,594	268,385	274,254	345,225	377,154
NHB Transit Trips	146,008	160,280	158,254	171,055	174,500	177,062	221,474	235,179
Total Transit Trips	974,065	1,048,827	1,045,867	1,133,452	1,153,031	1,169,226	1,419,732	1,532,621

Table 9-5 Continued

	2000	2002	2005	2008	2009	2010	2020	2030
HBW Transit Percentage	13.57	13.92	13.33	13.63	13.57	13.49	13.98	13.87
HBS Transit Percentage	1.55	1.70	1.62	1.69	1.70	1.71	1.92	1.93
HBO Transit Percentage	2.40	2.48	2.26	2.36	2.39	2.40	2.68	2.72
NHB Transit Percentage	2.76	2.91	2.72	2.79	2.80	2.80	3.10	3.04
Total Transit Percentage	4.41	4.57	4.32	4.45	4.45	4.44	4.77	4.76
Medium Truck	300,878	311,681	327,698	345,140	350,904	356,764	406,316	445,597
Heavy Truck	155,454	161,137	169,148	179,646	182,736	186,055	216,310	241,350
Misc. Auto Driver	583,921	605,990	639,093	670,762	681,319	691,875	774,772	847,389
Through (X-X) Auto&Comm.Veh	37,330	39,077	41,818	45,414	46,663	47,931	57,941	66,161
Through (X-X) Trucks	29,852	31,278	33,503	36,416	37,419	38,451	46,553	53,208
Airport Passenger Auto Drivers	49,723	49,587	49,386	59,843	63,329	66,814	93,695	109,850
Commercial Vehicles (Int/&Extl)	1,106,977	1,138,667	1,192,674	1,253,727	1,273,090	1,291,666	1,459,519	1,588,697
Total Vehicle Trips	18,864,616	19,565,006	20,756,928	21,847,699	22,213,788	22,543,335	25,488,481	27,705,682
Freeway VMT	55,849,994	56,786,378	58,335,530	61,111,096	62,093,542	65,069,992	76,496,196	79,474,462
Major Art VMT	54,383,358	55,208,250	57,861,637	59,666,652	60,583,300	60,846,916	65,629,818	68,692,292
Minor Art VMT	17,591,588	18,306,610	19,425,613	21,497,757	21,795,387	22,296,948	26,257,607	28,771,123
Collector VMT	7,769,214	8,096,571	8,999,803	9,261,847	9,537,546	9,403,336	10,575,394	11,956,868
Express. VMT	7,258,345	6,996,197	7,197,834	6,692,589	6,695,175	6,744,647	7,597,914	9,415,956
Ramp VMT	1,198,906	1,209,478	1,264,393	1,275,501	1,285,624	1,349,825	1,496,838	1,573,213
Total VMT	144,051,405	146,603,484	153,084,810	159,505,444	161,990,573	165,711,665	188,053,767	199,883,914
VMT per Capita	25.06	24.57	24.32	24.16	24.16	24.34	24.52	24.13
VMT per HH	67.21	65.77	64.94	64.25	64.17	64.58	64.06	62.46
VMT per Vehicle Trip	7.64	7.49	7.38	7.30	7.29	7.35	7.38	7.21
Avg. Daily Speed(mph)	35.22	34.74	33.82	33.34	32.98	33.28	32.73	31.31
VHT	6,090,588	6,296,163	6,933,143	7,406,094	7,634,341	7,705,018	9,221,064	10,710,405
VHD	2,639,468	2,775,079	3,225,747	3,523,909	3,688,458	3,690,215	4,651,342	5,802,928

Ref: View_From_Space_V22.xls

9.2 *Sensitivity Testing*

TPB staff worked with the TFS in formulating a series of sensitivity tests during the spring and summer of 2007. The sensitivity tests were not undertaken with the 'final' Version 2.2 model that is specified in this report, but rather, were undertaken with the draft form of the model that was available in the spring of 2007. The sensitivity work focused on two 'dynamic validation' tests and a single future transit fare test. Dynamic validation refers to an assessment of travel pattern changes when a critical highway link is either modified or removed, for a base year condition. Two such tests where studied:

1) the removal of the John Phillip Sousa Bridge and;
2) a reduction in the directional lanes, from 4 to 3, on the American Legion (Capital Beltway) Bridge.

A transit fare sensitivity test was also undertaken for the year 2030. The standard escalation assumption that transit fares will rise directly with the historical inflation rate was modified to reflect a rise of *one-half* of the inflation rate.

The results of the dynamic validation tests were generally found to be reasonable. The Sousa bridge closure resulted in a VMT decrease of 50,000 (from a base of 143 million vehicle miles) and an increase of 7,100 transit trips (from a base of 981,000 total transit trips). The general decrease in VMT was attributed to what one would expect with a loss of bridge capacity: increased congestion and a reduction in mobility. Some TFS members commented that a bridge closure might result in an increase in VMT due to traffic re-routing. Ultimately it was agreed that increased VMT due to re-routing would likely be a short-term effect that a long range forecasting model would not capture. The most significant trip distribution change at the jurisdiction level was a decrease in 5,100 auto driver trips between Prince George's County and the District, as one would expect. Accordingly, transit trips for the same interchange increased by 5,600 trips. The American Legion Bridge lane reduction resulted in a decrease of 211,000 vehicle miles, with no significant difference in transit trips at the jurisdiction level. The differences in auto driver trip patterns reflected diminished interaction between Montgomery County and Fairfax County (-12,400) as well as in the reverse direction (-10,600). Accordingly, auto driver trips within Montgomery County increased by 16,000. These are results that one would expect. Bandwidth volume-difference plots indicated that shifts in travel patterns were reasonable.

When assuming that 2030 transit fares will grow at one-half the rate of inflation, as opposed to the standard assumption that fares will escalate directly with the rate of inflation, regional transit trips increased by 284 thousand, from 1.535 million to 1.819 million trips. This result reasonably matched expectations. The increase in transit ridership, in turn, caused a reduction in the regional VMT by about 300 thousand, from 199.9 million to 199.6 million. The calculated HBW fare elasticity implied by this test was -0.29, which is in line with the commonly cited elasticity value of -0.30.

TPB staff also summarized estimated and observed vehicular crossings of the Metro Core and the Capital Beltway, as a way of checking on how well the model was matching directional counts by time of day. Observed cordon counts are normally collected in the inbound direction during the AM-peak period, and in the outbound direction during the PM peak period. These data are one-day counts that are periodically surveyed (typically, every 3 to 6 years). Observed Metro Core counts were assembled from the years 1996, 2002, and 2006. Beltway counts were assembled for the years 1995, 1998, and 2001. These observed count sets were compared against comparable simulated crossings for the years 2000 and 2005. Generally the 2000 and 2005 model results trended reasonably the observed data in all cases, except for the Metro Core Cordon in the PM/outbound direction where the model appeared to over-estimate traffic crossings by over 30%. The over-estimation of PM outbound traffic perhaps indicates where the regional time-of-day model (which essentially involves global factors that are applied by purpose and direction) falls short in capturing 'real world' policies affecting traveling schedules. Such policies might include, for example, the staggered work scheduling that is offered to the federal employees (which happen to be concentrated in the regional core). This type of policy would, of course, tend to spread the peak travel pattern. The time-of-day model could potentially be adjusted to account for this type of policy, but at the same time, the TPB should be wary about adding adjustments when staff has recently been working to remove external factors from the model. Furthermore, the use of such adjustments may reflect a policy that may not continue over time.

The sensitivity testing described above was considered useful for assessing the Version 2.2 model's response to various test conditions. This type of analysis will continue to be undertaken as a validation step as part of model development future work.

Chapter 10 Model Application Overview

The Version 2.2 travel model is executed on microcomputer running Windows XP Professional (32-bit version), Windows XP Home (32-bit version), or Windows Server 2003 (32-bit version)[1]. The 64-bit version of Windows should not be used for executing the Version 2.2 model because several of the Fortran programs used in the Version 2.2 model are not compatible with that type of operating system. TPB staff has executed Version 2.2 using Intel-based computers, but alternative "clones" (e.g., AMD) should suffice as well.

The Version 2.2 travel model is executed with Cube Base and TP+ application software (version 4.1.1). This commercial software package is available from Citilabs[2] and must be installed on the microcomputer before the Version 2.2 model is applied. The use of earlier TP+ versions is not recommended[3].

Computers running the Version 2.2 model should be equipped with at least 2 GB RAM of memory and a minimum hard drive size of 100 GB. The microcomputer marketplace now offers machines with multiple central processing units (CPUs). A "Quad Core" CPU is currently recommended for minimizing model running times, as opposed to the Dual Core CPU or single-core CPU which are generally lower in price. Multiple CPU machines are preferred over single core computers because they enable one to more easily multitask as model is in execution. TPB's fastest computer is currently a single processor Quad Core Intel Xeon X5365, with a clock speed of 3.00 GHz, and bus speed of 1,333 MHz. This computer can complete a model run in half the time needed by a similar computer using two Dual Core CPUs.

Model run times are approximately 20-30 hours in duration, depending on hardware and modeled scenarios ("out" year model executions generally require longer running times than do "base" year executions). These run times do not reflect the incorporation of distributed processing (DP) which increases processing speed by enabling the use of multiple CPUs for a single modeling process. The DP capability has recently been made available, but has not yet been incorporated into the TPB travel model. Each scenario (e.g., 2002, 2020, etc.) results in approximately 1,000 output files, requiring 3.5 GB of hard disk space.

A powerful text editor is also strongly recommended to support modeling work. TPB staff uses both KEDIT, a commercial package (http://www.kedit.com/), and PSPad, a freeware text editor (http://www.pspad.com/). PSPad can be configured to highlight (color code) syntax for various languages (e.g., SAS, Fortran, and TP+). Color coding of syntax can help eliminate syntax errors. TPB also recommends using the following utility software:

[1] Other Windows operating systems such as Windows Vista have not been tested by TPB staff.
[2] The Citilabs website is: www.citilabs.com
[3] To determine which version of TP+ is installed in Windows, select Start => All Programs => Citilabs Licensed Software => TP+ Models and Utilities => TP+. Click the button "About TPPLUS". All of the modules listed (e.g., TPMAIN, HWYLOAD, HWYNET, MATRIX, TRNBUILD, LIBRARY) should explicitly indicate Version 4.1.1. COG/TPB staff currently uses Cube Base Version 4.1.1.

- Windows “Open Command Window Here” PowerToy (CmdHere.exe), which allows one to right-click a folder in Windows Explorer and open a command window at that folder/subdirectory location.
- 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 outlined on Figure 10-1. The figure indicates that an initial (or pump-prime) iteration occurs where a first pass of the four-step process occurs using *initial* AM and off-peak highway speeds, and *initial* mode choice percentages (i.e., the mode choice model is not executed in the initial 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 assigned to the highway network.

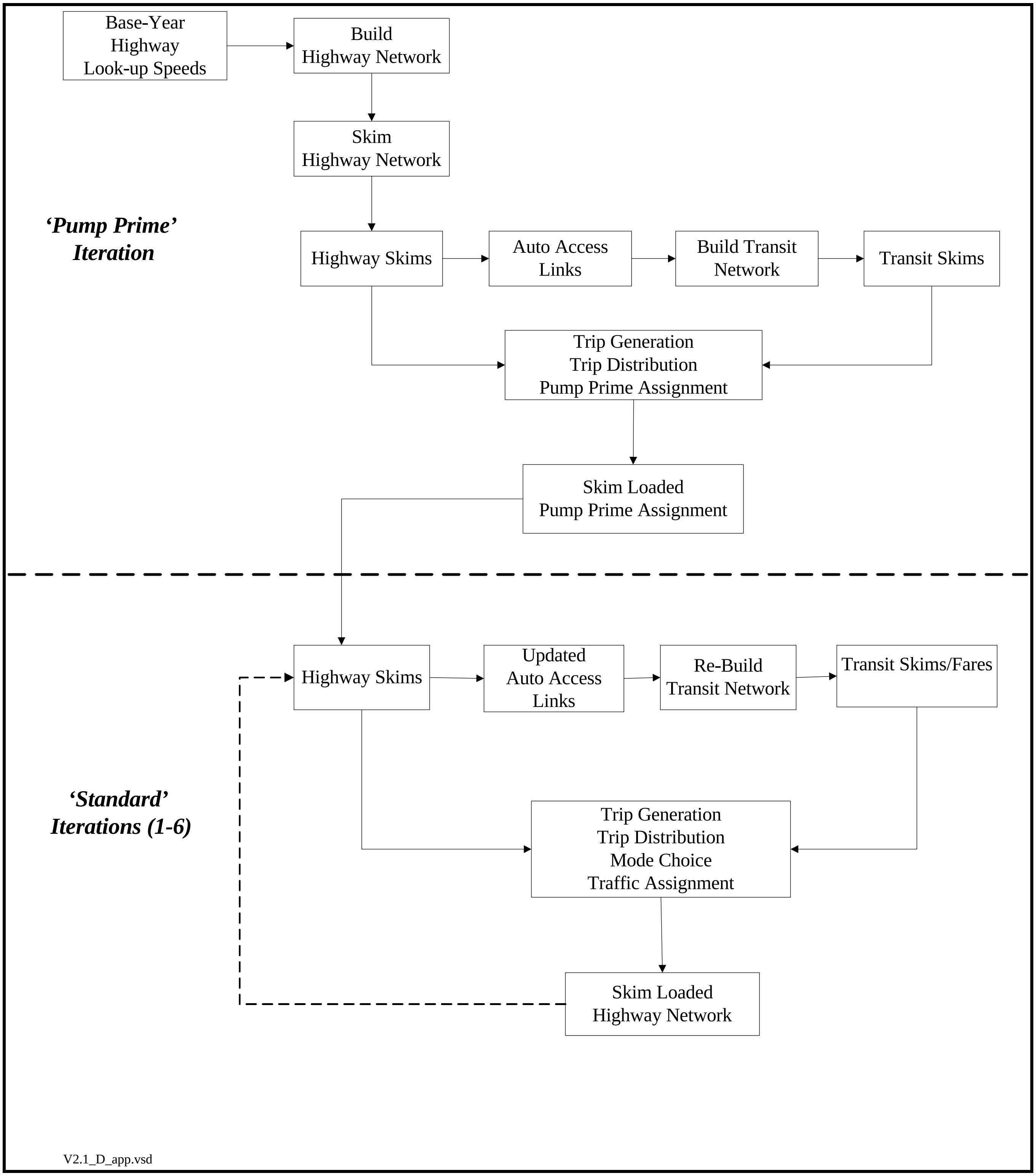
The next series of ‘standard’ iterations (1 through 6) involve the execution of the complete four step model which includes: 1) a mode choice model execution and 2) the use of recycled traffic assignment based speeds as input. The AM peak and off-peak restrained highway times are used to update the zone-to-PNR 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 three time periods pertaining to the AM-peak period (6-9 AM), PM-peak period (4-7 PM), and off-peak period (all other hours of the day). The three 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 three time 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’ sixth iteration link volume equals 5/6 of the ‘final’ fifth iteration link volume plus 1/6 of the sixth iteration assigned volume.

Figure 10-1 Application process of the Version 2.2 travel model



Typically, by the sixth iteration, over 99% of the highway links yield restrained speeds that are within +/-2 mph of the previous (fifth) iteration speed. Although a fixed number of speed feedback iterations (6) are used, the modeler should check the highway assignment report file (i6_Highway_Assignment.rpt) to make sure that key convergence metrics (e.g., relative gap or RELGAP) are within desired tolerances. Convergence metrics can vary depending on the type of study being conducted.

10.1 *Executing the Model*

A structured application procedure has been established for applying the Version 2.2 model from a command-prompt window. The procedure involves:

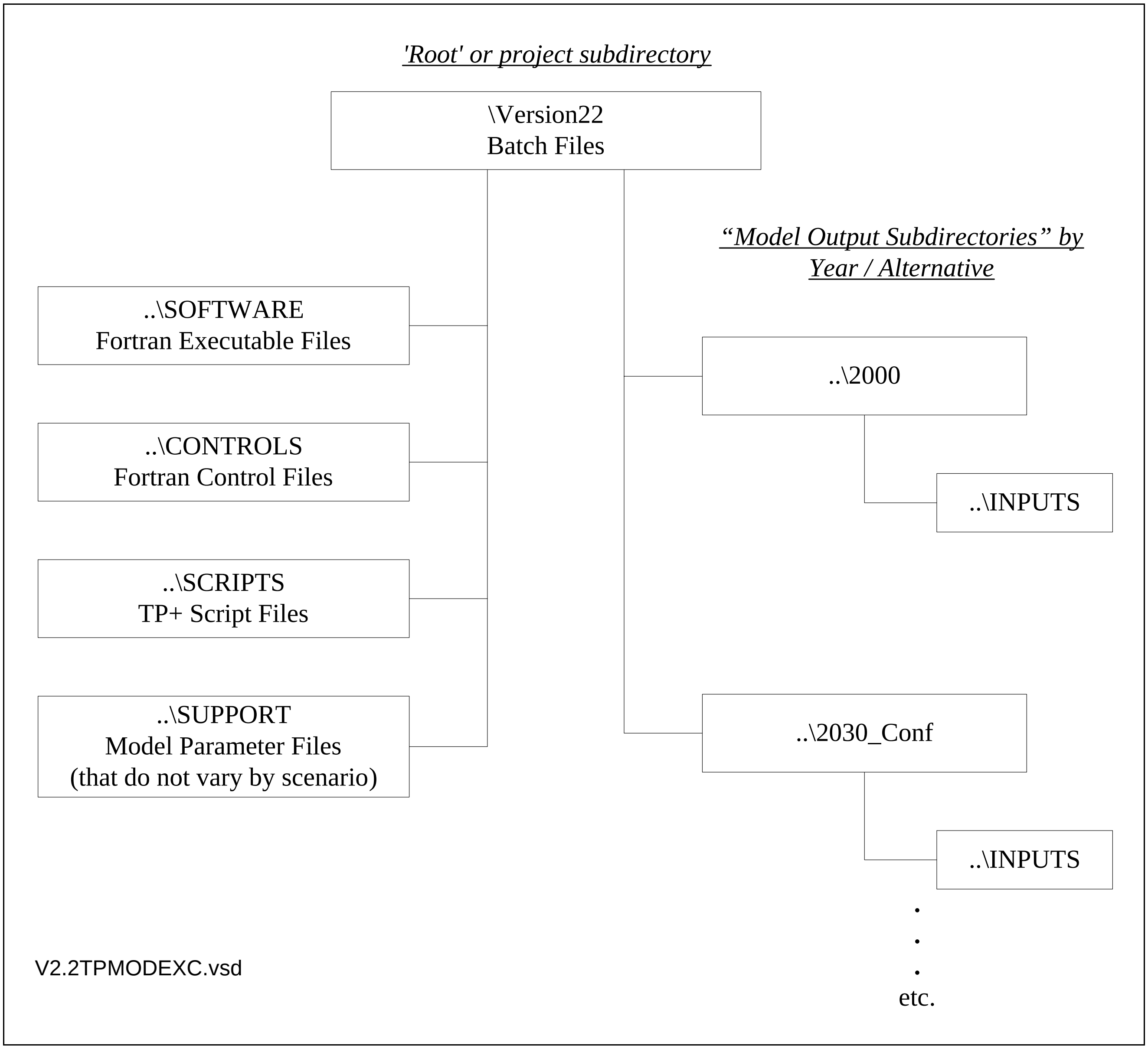
1. A series of pre-established batch files;
2. A standardized subdirectory system, in which input files, output files, TP+ scripts, etc. are rigidly organized; and
3. The use of generically named input and output files, which are stored in designated locations in the subdirectory system.

An example subdirectory structure for applying the Version 2.2 model is shown graphically on Figure 10-2. A ‘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 (the name is typically related to a particular study or project). On the left side of the figure, there are four specially designated subdirectories under the root which are established specifically for Fortran executables (*\SOFTWARE*), control files that are required by some of the executables (*\CONTROLS*), TP+ 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 be altered or renamed.

The right side of Figure 10-2 shows subdirectories that are established for model inputs and outputs of one or more alternatives or scenarios. The figure indicates that each alternative subdirectory has its own *\INPUTS* subdirectory where all necessary model inputs are stored and 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 scenario-specific subdirectory (e.g., ..\2000 on Figure 10-2) is arbitrarily named and typically has some relation to a scenario being modeled. The user may establish one or many such alternative subdirectories as long as a unique \INPUTS subdirectory exists under it. \INPUTS subdirectories can not be shared among more than one alternative.

Pre-established ‘parent’ and ‘child’ batch files for executing the model reside in the root subdirectory. Typically ‘parent’ batch files are prepared for each modeled scenario while ‘child’ batch files remain unaltered. The ‘child’ batch files function to execute individual modeling steps, such as the trip generation step or the traffic assignment step. ‘Child’ batch files generally call TP+ scripts and/or program executables. The ‘child’ batch files also assign names to report files that result from each model step. Listing files are typically assigned *.RPT or *.TAB naming extensions. The former refers to TP+ listings while the latter refers to a subset 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 line command. The 'parent' batch file also establishes environment variables that are used in the child batch files and TP+ scripts, such as the iteration number, the model year, and the model description.

Figure 10-2 Subdirectory Structure for executing the Version 2.2 Model



All of the files in the *\INPUTS* subdirectory are assigned generic filenames as listed on Table 10-1. 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 10-1 must exist unless they are listed as optional. The advantage of using generic names is that the input and output filenames referenced in each TP+ script and control file do not need to be updated. A list of the Fortran residing in the \SOFTWARE subdirectory is shown on Table 10-2. There are fewer executables used by the Versions 2.2 model than have been used in previous TPB models, since several Fortran routines have been converted to TP+ scripts.

A listing of ‘child’ batch files is provided on Table 10-3. The table also indicates the programs and/or TP+ 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 on Table 10-4. The table indicates that there are 72 batch files 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 6 standard iterations. A ‘parent’ batch file is used to string each of the 72 ‘child’ batch files together during a typical model execution. The ‘parent’ batch files, like ‘child’ batch files, reside in the root subdirectory. A ‘parent’ batch file is 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 10-1 Input Files Required for the Version 2.2 Model Execution

	Input Type	Filename	Description	Text or Binary
1	Land use	ZONE.ASC	Zonal Land Use	Text
2	Land use	AREAOVER.ASC	Zone Area Type Override File	Text
3	Network, highway	LINK.ASC	Highway Links	Text
4	Network, highway	NODE.ASC	Highway Node File	Text
5	Network, highway	TAZAMSPD.LKP	AM TAZ/Facility Type Speed Look-up	Text
6	Network, highway	TAZOPSPD.LKP	Off-Peak TAZ/Facility Type Speed Look-up	Text
7	Network, highway	AMSPD.LKP	AM Facility/Area Type Speed Look-up	Text
8	Network, highway	OPSPD.LKP	Off-Peak Facility/Area Type Speed Look-up	Text
9	Network, highway	TOLL.ESC	Highway Toll Value / Deflator File	Text
10	Network, highway	TOLL.INC	Highway Toll /Time Equivalent by Income Grp.	Text
11	Network, highway	TOLL.SKM	Highway Toll/Time Equivalent by Veh. Type	Text
12	Network, transit	MODE1AM.TB,… MODE9AM.TB	AM Transit Line Files, Mode 1 to 9	Text
13	Network, transit	MODE1OP.TB,… MODE9OP.TB	Off-peak Transit Line Files, Mode 1 to 9	Text
14	Network, transit	STA_TPP.BSE	Rail Station/PNR File	Text
15	Network, transit	RAIL_LNK.BSE	Rail Links	Text
16	Network, transit	TRNPEN.DAT	Metrorail Station Network Turn Penalty File	Text
17	Network, transit	GISWKAAM.ASC	GIS AM Zonal Walk Area File	Text
18	Network, transit	GISWKAOP.ASC	GIS Off-Peak Zonal Walk Area File	Text
19	Network, transit	GISWKLAM.ASC	GIS AM Walk Link File	Text
20	Network, transit	GISWKLOP.ASC	GIS Off-Peak Walk Link File	Text
21	Network, transit	LBUS_TIMFTRS.ASC	Local Bus Time Degradation Factors	Text
22	Network, transit	RIVERSTP.BNA	River Coordinate File	Text
23	Network, transit	TAZFRZN.ASC	TAZ/Bus Fare Zone Equivalency	Text
24	Network, transit	BUSFARAM.ASC	MFARE2 AM Bus Fare Zone Matrix	Text
25	Network, transit	BUSFAROP.ASC	MFARE2 Off-Peak Fare Zone Matrix	Text
26	Network, transit	HBOMC.OLD	Initial HBO Mode Choice Trips	Binary
27	Network, transit	HBSMC.OLD	Initial HBS Mode Choice Trips	Binary
28	Network, transit	HBWMC.OLD	Initial HBW Mode Choice Trips	Binary
29	Network, transit	NHBMC.OLD	Initial NHB Mode Choice Trips	Binary
30	Network, transit	mfare1_Sta_Disc.ASC	Metrorail Station Discount File	Text
31	Network, transit	Tariff.txt	WMATA Tariff policy control file	Text
32	Network, transit	CPI_FILE.txt	Historical CPI file	Text
33	Network, transit	walk_am.old	Extra AM transit access links (optional input file)	Text
34	Network, transit	walk_op.old	Extra Off-Peak transit access links (optional input file)	Text
35	Trip	AEXT.ASC	Zonal External Attractions	Text
36	Trip	PEXT.ASC	Zonal External Productions	Text
37	Trip	CV_ExtThru_Ends.ASC	Zonal Commercial Vehicles External and Through trip ends	Text
38	Trip	AIRPAX.ADR	Air Passenger Auto Dr. Trips	Binary
39	Trip	SCHL.ADR	School Auto Dr. Trips	Binary
40	Trip	TAXI.ADR	Taxi Auto Dr. Trips	Binary
41	Trip	VISI.ADR	Visitor/Tourist Auto Dr. Trips	Binary
42	Trip	XXAUT.VTT	Through Auto Drivers	Binary
43	Trip	XXTRK.VTT	Through Trucks	Binary
44	Trip	XXCV.VTT	Through Commercial Vehicles trips	Binary

Ref: v22_inputs.xls

Table 10-2 Non-TP+ Software Required for Version 2.2 Model Execution

Executable Name	Size (bytes)	Date	Program Function	Comments	Requires a Control File?
STAPROTP.EXE	141,568	2/25/2005	Creates support files for transit network building from station file		Yes
NODESTB.EXE	421,396	6/27/2007	Reads TRNBUILD route/line files; Creates formated stop node file	Executed 2X to process AM/Off-Pk transit lines	Yes
SORTLINE.EXE	45,056	12/3/2007	Sorts the stop nodes file	Executed 2X to process AM/Off-Pk transit lines	No
CNTCONN2.EXE	488,668	6/26/2007	Creates walk access links (TAZs to transit stops)	Executed 2X to process AM/Off-Pk transit lines	Yes
GIS_PROC.EXE	48,258	12/6/2002	Computes avg short/long walk times from GIS-based area files	Executed 2X to process AM/Off-Pk GIS 'Area' Files	Yes
WLKLNKTP.EXE	122,864	5/24/2004	Creates 'final' walk-access files for transit network building	Executed 2X to process AM/Off-Pk transit lines	Yes
COGMCA1.EXE	232,468	6/2/2004	Creates the zonal data file ("A1-deck") for the mode choice model	Executed 4 times (once for each purpose)	Yes
COGMC.EXE	561,486	4/6/2001	Applies COG's mode choice model	Executed 4 times (once for each purpose)	Yes
EXTRTAB.EXE	24,663	7/26/2001	Extracts sections from TP+ report files.	Program is 'called' by many TP+ Scripts	No

Ref: v22_software.xls

Table 10-3 'Child' Batch Files Used in the Version 2.2 Model Execution

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	Staprotp.exe Highway_Build_Toll.s	Extract transit network elements from station file. Build highway network
PP_Highway_PNR.bat	Pump_Prime_Skims.s	Create initial AM/ off-peak hwy. skims & auto access links
Highway_PNR.bat	Auto_Access.s	Create current iteration auto access links
PP_Transit_Prep.bat	NodesTB.exe Cntconn2.exe Gis_proc.exe Wlklnktp.exe Update_Wklinks.s Prefartp.s	Create base transit network, walk links, and transit fare file
Transit_Skim.bat	Transit_Skims.s	Create transit skims of initial or current iteration
Transit_Fare.bat	Metrorail_Skims.s Mfare1.s Mfare2.s	Create current iteration transit fares
Trip_Generation.bat	Demo_models.s Trip_Generation.s CV_Trip_Generation.s COGMCA1.exe	Execute daily trip generation
Trip_Distribution.bat	Trip_Distribution.s CV_Trip_Distribution.s	Execute daily trip distribution
Mode_Choice.bat or Mode_Choice_TC.bat or HSR10_Mode_Choice.bat or HSR20_Mode_Choice_TC10.bat or HSR30_Mode_Choice_TC10.bat	COGMC.exe MC_Summary.s MC_Constraint.s MC_ConSummary.s	Execute daily mode choice model (optionally execute mode choice model with the Transit Constraint (TC) and/or with HOV Skim Replacement (HSR))
PP_Auto_Drivers.bat	PP_Auto_Drivers.s	Generate initial auto drivers (without mode choice model)
Auto_Driver.bat	MC_Auto_Drivers.s	Generate initial auto drivers after mode choice model
Time-of-Day.bat	Time-of-Day.s CV_Time-of-Day.s Misc_Time-of-Day.s	Convert daily modeled trips to AM, PM, and Off-peak
Highway_Assignment.bat	Highway_Assignment.s	Execute user equilibrium hwy. assignment using Frank-Wolfe algorithm
Highway_Skims.bat	Highway_Skims.s	Create highway skims from assignment

Ref: Flowchart_Table.xls

Table 10-4 Sequence of Version 2.2 model 'Child' Batch Files Executed by Iteration

Batch File	Scripts / Programs	PP (Initial (Pump Prime) Iteration)	1 (Standard Iterations)	2	3	4	5	6
Set_Factors.bat	Set_Factors.s	1						
Set_CPI.bat	Set_CPI.s	2						
PP_Highway_Build.bat	Staprotp.exe Highway_Build_Toll.s	3						
PP_Highway_PNR.bat	Pump_Prime_Skims.s	4						
Highway_PNR.bat	Auto_Access.s		13	23	33	43	53	63
PP_Transit_Prep.bat	NodesTB.exe Cntconn2.exe Gis_proc.exe Wlklnktp.exe Update_Wklinks.s Prefartp.s	5						
Transit_Skim.bat	Transit_Skims.s	6	14	24	34	44	54	64
Transit_Fare.bat	Metrorail_Skims.s Mfare1.S Mfare2.s		15	25	35	45	55	65
Trip_Generation.bat	Trip_Generation.s CV_Trip_Generation.s	7	16	26	36	46	56	66
Trip_Distribution.bat	Trip_Distribution.s CV_Trip_Distribution.s	8	17	27	37	47	57	67
Mode_Choice.bat or Mode_Choice_TC.bat or HSR10_Mode_Choice.bat or HSR20_Mode_Choice_TC10.bat or HSR30_Mode_Choice_TC10.bat	COGMC.exe MC_Summary.s MC_Constraint.s MC_ConSummary.s		18	28	38	48	58	68
PP_Auto_Drivers.bat	PP_Auto_Drivers.s	9						
Auto_Driver.bat	MC_Auto_Drivers.s		19	29	39	49	59	69
Time-of-Day.bat	Time-of-Day.s CV_Time-of-Day.s Misc_Time-of-Day.s	10	20	30	40	50	60	70
Highway_Assignment.bat	Highway_Assignment.s	11	21	31	41	51	61	71
Highway_Skims.bat	Highway_Skims.s	12	22	32	42	52	62	72

Ref: Flowchart_Table.xls

10.2 *Launching a Model Run*

The model is normally launched with a very small ‘wrapper’ batch file that executes the ‘parent’ batch file which, in turn, executes ‘child’ batch files (as described above). The model execution begins when the ‘wrapper’ file name is manually typed in a command window that is opened to the root subdirectory. This may be done expeditiously by opening Windows Explorer, navigating to the root directory, selecting the root subdirectory, and right-clicking the mouse, choosing “Open Command Window Here” in Windows XP.[4] The command prompt should show something like this:

```
C:\user\cgv22>
```

All ‘wrapper’, ‘parent’, and ‘child‘ batch (*.bat) files normally exist in the root directory. An example ‘wrapper’ batch file for initiating a model run for the year 2000 (RUNALL2000.bat) is shown below.

```
:: runall2000.bat, 2008-01-04
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2000_ModDev
set runbat=runall_2000.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

The batch file first specifies the root subdirectory (set root=…), specifies the output subdirectory (set scenar=…), and specifies the ‘parent’ batch file (set runbat=…). The ‘fullpth’ variable specifies the full path of the output subdirectory. With these key parameters established, the batch file initiates the model run as a line command. The basic syntax of the execution command is:

<runall batch file name> <name of the scenario specific subdirectory>

For example, the command:

[4] In Windows XP, the “Open Command Windows Here” option is not available, unless you install the Windows XP Power Toy, “Command Here” application (http://www.microsoft.com/windowsxp/downloads/powertoys/xppowertoys.mspx).

```
runall_2000.bat 2000
```

will execute the "runall_2000.bat" batch file using the "2000" subdirectory as the scenario subdirectory. For example, here is the beginning of the information sent for a year-2000 model run:

```
C:\user\cgv22>set _year_=2000

C:\user\cgv22>set _alt_=Base

C:\user\cgv22>rem ====== Pump Prime Iteration ==========================================

C:\user\cgv22>set _iter_=pp

C:\user\cgv22>set _prev_=pp

C:\user\cgv22>call Set_Factors.bat 2000

C:\user\cgv22>cd support

C:\user\cgv22\support>del tppl*.*

C:\user\cgv22\support>del set_factors.rpt

C:\user\cgv22\support>start /w TPPLUS.EXE ..\scripts\Set_Factors.s /start -Ptppl -S..\support

C:\user\cgv22\support>if errorlevel 1 goto error

C:\user\cgv22\support>copy tppl*.prn set_factors.rpt
tppl0001.PRN
        1 file(s) copied.
```

This information includes both "standard output" and "standard error." "Standard output" is the information that is normally written to the screen as a model run is in process. "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 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."

Typically, due to the long run times, a model run is launched in the evening and is ready the next morning (or later). When launching a model run, we typically re-direct the standard error to a file. This allows us to review the file the next morning to make sure that there were no error messages (or at least, no critical error messages). Otherwise, the error messages would be simply sent to the screen, which has a limited number of lines it will store (The screen buffer may be controlled by the user. It is typically around 300 to 700 lines). The following command will launch a model run and re-direct standard error to a file:

```
cmd /c runall_2000.bat 2000 2> errs2000.txt
```

The “cmd /c” starts a new instance of the Windows XP command interpreter in the current command window. The “2>” ensures that only standard error, not standard output, is sent to the file.

A further enhancement on the run command is to use the “timethis.exe” utility from the Windows 2000 Resource Kit. This file is freely available on the Web. This utility will report the run time for a given command. Thus,

```
C:\user\cgv22> timethis “cmd /c runall_2000.bat 2000 2> errs2000.txt”
```

will result in the following report on the screen at the end of the model run:

```
TimeThis :  Command Line :  cmd /c runall_2000.bat    2000  2> errs2000.txt
TimeThis :    Start Time :  Wed Sep 08 16:54:43 2004
TimeThis :      End Time :  Thu Sep 09 08:39:32 2004
TimeThis :  Elapsed Time :  15:44:48.772
```

The quotes around the command are necessary when re-direction is used.

The final enhancement is to re-direct the standard output to a file. In the past, if you redirected the standard output to a file, you would see nothing on the screen until the model run was done. Now, we use a free utility called “tee.exe” that splits the standard output into two copies, sending one to a file and one to the screen.[5] Thus, the final command is:

```
timethis "cmd /c runall_2000.bat    2000  2> errs2000.txt" | tee scr_outp2000.txt
```

Table 10-5 contains a listing of the key files resulting from the final iteration.

[5] http://www.csc.calpoly.edu/~bfriesen/software/console.shtml.

Table 10-5 Listing of Final Iteration (I6) Files Produced by the Version 2.2 Model

File Name	Model Step File Created	File Contents	File Type	File Format
i6_AM_WK.STA	Transit Network Building	Metrorail station-to-station file (t1-2: boarding, alighting station)	Zonal Skim Matrix	TP+ binary
i6_AM_DR.STA	Transit Network Building	Metrorail station-to-station file (t1-2: boarding, alighting station)	Zonal Skim Matrix	TP+ binary
i6_OP_WK.STA	Transit Network Building	Metrorail station-to-station file (t1-2: boarding, alighting station)	Zonal Skim Matrix	TP+ binary
i6_OP_DR.STA	Transit Network Building	Metrorail station-to-station file (t1-2: boarding, alighting station)	Zonal Skim Matrix	TP+ binary
i6_AM_WK.SKM	Transit Network Building	Transit component skims file t1-6: xfr wlk, dr acc.,ini.wait, xfr wait,bus ivt., metrorail ivt	Zonal Skim Matrix	MINUTP binary
i6_AM_DR.SKM	Transit Network Building	Transit component skims file t1-6: xfr wlk, dr acc.,ini.wait, xfr wait,bus ivt., metrorail ivt	Zonal Skim Matrix	MINUTP binary
i6_OP_WK.SKM	Transit Network Building	Transit component skims file t1-6: xfr wlk, dr acc.,ini.wait, xfr wait,bus ivt., metrorail ivt	Zonal Skim Matrix	MINUTP binary
i6_OP_DR.SKM	Transit Network Building	Transit component skims file t1-6: xfr wlk, dr acc.,ini.wait, xfr wait,bus ivt., metrorail ivt	Zonal Skim Matrix	MINUTP binary
i6_AM_WK.TTT	Transit Network Building	Total AM walk acc. transit time skims (t1/ total transit time (min))	Zonal Skim Matrix	TP+ binary
i6_AM_DR.TTT	Transit Network Building	Total AM drive acc. transit time skims (t1/ total transit time (min))	Zonal Skim Matrix	TP+ binary
i6_OP_WK.TTT	Transit Network Building	Total OP walk acc. transit time skims (t1/ total transit time (min))	Zonal Skim Matrix	TP+ binary
i6_OP_DR.TTT	Transit Network Building	Total OP drive acc. transit time skims (t1/ total transit time (min))	Zonal Skim Matrix	TP+ binary
i6_AM_WK.FAR	Transit Fare Building	Total AM walk acc. transit fare skim (t1/ total transit fare ('94 cents)	Zonal Skim Matrix	MINUTP binary
i6_AM_DR.FAR	Transit Fare Building	Total AM drive acc. transit fare skim (t1/ total transit fare ('94 cents)	Zonal Skim Matrix	MINUTP binary
i6_OP_WK.FAR	Transit Fare Building	Total OP walk acc. transit fare skim (t1/ total transit fare ('94 cents)	Zonal Skim Matrix	MINUTP binary
i6_OP_DR.FAR	Transit Fare Building	Total OP drive acc. transit fare skim (t1/ total transit fare ('94 cents)	Zonal Skim Matrix	MINUTP binary
i6HH_Veh.dat	Demographic Model	Zonal HHs by Vehs. Avail (0, 1, 2+)	Zonal Attribute File	Text
i6HHI1_SV.ASC	Demographic Model	Zonal Income level 1 HHs by size (1, 2, 3, 4) and vehs. Avail (0, 1, 2, 3+)	Zonal Attribute File	Text
i6HHI2_SV.ASC	Demographic Model	Zonal Income level 2 HHs by size (1, 2, 3, 4) and vehs. Avail (0, 1, 2, 3+)	Zonal Attribute File	Text
i6HHI3_SV.ASC	Demographic Model	Zonal Income level 3 HHs by size (1, 2, 3, 4) and vehs. Avail (0, 1, 2, 3+)	Zonal Attribute File	Text
i6HHI4_SV.ASC	Demographic Model	Zonal Income level 4 HHs by size (1, 2, 3, 4) and vehs. Avail (0, 1, 2, 3+)	Zonal Attribute File	Text
i6_Demo_Models.txt	Demographic Model	Regional Summary Report		Text
i6_Trip_Generation.txt	Trip Generation	Jurisdictional Summary Report		Text
hbwesti6.ptt	Trip Distribution	Daily HBW Person trips (t1-7: Income 1,.., Income 4, Extl_ Interstate, Extl_ Arterial, Total)	Zonal Trip Matrix	TP+ binary
hbsesti6.ptt	Trip Distribution	Daily HBS Person trips (t1-7: Income 1,.., Income 4, Extl_ Interstate, Extl_ Arterial, Total)	Zonal Trip Matrix	TP+ binary
hboesti6.ptt	Trip Distribution	Daily HBO Person trips (t1-7: Income 1,.., Income 4, Extl_ Interstate, Extl_ Arterial, Total)	Zonal Trip Matrix	TP+ binary
nhbesti6.ptt	Trip Distribution	Daily NHB Person trips (t1-4: Internal, Extl_ Interstate, Extl_ Arterial, Total)	Zonal Trip Matrix	TP+ binary
mtkesti6.vtt	Trip Distribution	Daily Medium truck trips (t1-3: Internal, External, Total)	Zonal Trip Matrix	TP+ binary
htkesti6.vtt	Trip Distribution	Daily Heavy truck trips (t1-3: Internal, External, Total)	Zonal Trip Matrix	TP+ binary
com.trp	Trip Distribution	Daily Commercial trips (t1)	Zonal Trip Matrix	TP+ binary

Table 10-5 Continued

File Name	Model Step File Created	File Contents	File Type	File Format
i6_hbwmu.ptt	Trip Distribution	Daily HBW Total Internal and External Person trips (t1)	Zonal Trip Matrix	MINUTP binary
i6_hbsmu.ptt	Trip Distribution	Daily HBS Total Internal and External Person trips (t1)	Zonal Trip Matrix	MINUTP binary
i6_hbomu.ptt	Trip Distribution	Daily HBO Total Internal and External Person trips (t1)	Zonal Trip Matrix	MINUTP binary
i6_nhbmu.ptt	Trip Distribution	Daily NHB Total Internal and External Person trips (t1)	Zonal Trip Matrix	MINUTP binary
i6_TrpDst.tab	Trip Distribution	Juris. I/J Summary Report		Text
mc_hbwi6.fin	Mode Choice	Daily Modal HBW trips, t1-7: sv_Adr, sv_Apns,wk_Trn,dr_Trn, hv2_Adrs,hv_Psns,hv3_adrs	Zonal Trip Matrix	MINUTP binary
mc_hbsi6.fin	Mode Choice	Daily Modal HBS trips, t1-7: sv_Adr, sv_Apns,wk_Trn,dr_Trn, hv2_Adrs,hv_Psns,hv3_adrs	Zonal Trip Matrix	MINUTP binary
mc_hboi6.fin	Mode Choice	Daily Modal HBO trips, t1-7: sv_Adr, sv_Apns,wk_Trn,dr_Trn, hv2_Adrs,hv_Psns,hv3_adrs	Zonal Trip Matrix	MINUTP binary
mc_nhbi6.fin	Mode Choice	Daily Modal NHB trips, t1-7: sv_Adr, sv_Apns,wk_Trn,dr_Trn, hv2_Adrs,hv_Psns,hv3_adrs	Zonal Trip Matrix	MINUTP binary
MC_ALLi6.FIN	Mode Choice	Daily Modal ALL trips, t1-7: sv_Adr, sv_Apns,wk_Trn,dr_Trn, hv2_Adrs,hv_Psns,hv3_adrs	Zonal Trip Matrix	TP+ binary
i6_mc_summary.tab	Mode Choice	Juris. I/J Summary Report		Text
HBWi6.ADR	(Post-) Mode Choice	Daily HBW Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
HBSi6.ADR	(Post-) Mode Choice	Daily HBS Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
HBOi6.ADR	(Post-) Mode Choice	Daily HBO Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
NHBi6.ADR	(Post-) Mode Choice	Daily NHB Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
i6_mc_Auto_Drivers.tab	(Post-) Mode Choice	Regional Summary Report		Text
AMi6.ADR	Time-of-Day	AM Period Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
PMi6.ADR	Time-of-Day	PM Period Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
OPi6.ADR	Time-of-Day	Off-pk. Period Auto Dr. trips by Occupancy t1-3: i-occ, 2-occ, 3+occ	Zonal Trip Matrix	TP+ binary
i6tmcom.trp	Time-of-Day	Commercial Veh. Trips by Period t1-3: AM, PM, Off-Pk.	Zonal Trip Matrix	TP+ binary
i6_Time-of-Day.tab	Time-of-Day	Regional Summary Report		Text
MISCAMi6.TT	Time-of-Day	AM truck/misc.auto dr trips t1-8: xx_trk, xx_auto, taxi, tourist,school, med_trk, hvy_trk, air_pax	Zonal Trip Matrix	TP+ binary
MISCPMi6.TT	Time-of-Day	PM truck/misc.auto dr trips t1-8: xx_trk, xx_auto, taxi, tourist,school, med_trk, hvy_trk, air_pax	Zonal Trip Matrix	TP+ binary
MISCOPi6.TT	Time-of-Day	Off-Pk truck/misc.auto dr trips t1-8: xx_trk, xx_auto, taxi, tourist,school, med_trk, hvy_trk, air_pax	Zonal Trip Matrix	TP+ binary
i6_Misc_Time-of-Day.tab	Time-of-Day	Regional Summary Report		Text
i6AM.VTT	Traffic Assignment	AM Vehicle Trips by market t1-5: SOV/Com_Veh., HOV2, HOV3+, Med/Hvy Truck, Airport_Pax	Zonal Trip Matrix	TP+ binary
i6PM.VTT	Traffic Assignment	PM Vehicle Trips by market t1-5: SOV/Com_Veh., HOV2, HOV3+, Med/Hvy Truck, Airport_Pax	Zonal Trip Matrix	TP+ binary
i6OP.VTT	Traffic Assignment	Off-Pk Vehicle Trips by market t1-5: SOV/Com_Veh., HOV2, HOV3+, Med/Hvy Truck, Airport_Pax	Zonal Trip Matrix	TP+ binary
I6HWY.NET	Traffic Assignment	Loaded Highway Network I6 Volume, Speed, VC by time period		TP+ binary
i6_Highway_Assignment.tab	Traffic Assignment	Regional Summary Report		Text
sovi6am.skm	Highway Skimming	AM SOV Restrained Highway skims t1-3: time(min), Distance (1/10s mi), Toll ('94 cents)	Zonal Skim Matrix	MINUTP binary
hov2i6am.skm	Highway Skimming	AM HOV 2-occ Restrained Highway skims t1-3: time(min), Distance (1/10s mi), Toll ('94 cents)	Zonal Skim Matrix	MINUTP binary
hov3i6am.skm	Highway Skimming	AM HOV 3+Occ Restrained Highway skims t1-3: time(min), Distance (1/10s mi), Toll ('94 cents)	Zonal Skim Matrix	MINUTP binary
sovi6op.skm	Highway Skimming	Off-Pk. SOV Restrained Highway skims t1-3: time(min), Distance (1/10s mi), Toll ('94 cents)	Zonal Skim Matrix	MINUTP binary
hov2i6op.skm	Highway Skimming	Off-Pk. HOV 2-occ Restrained Highway skims t1-3: time(min), Distance (1/10s mi), Toll ('94 cents)	Zonal Skim Matrix	MINUTP binary
hov3i6op.skm	Highway Skimming	Off-Pk. HOV 3+Occ Restrained Highway skims t1-3: time(min), Distance (1/10s mi), Toll ('94 cents)	Zonal Skim Matrix	MINUTP binary

Ref: ver2 2model_outputs_i6b.xls

Chapter 11 Set-Up Programs and Highway Network Building

User Provided Input(s):

CPI schedule and parameter file	\Inputs\CPI_File.txt	Text
Time penalty files (null)	\Support\???Pen.03	Text
Zonal Land Use File	\Inputs\ZONE.ASC	Text
Node Coordinate File	\Inputs\NODE.ASC	Text
Link File	\Inputs\LINK.ASC	Text
Station/PNR Lot File	\Inputs\STA_TPP.BSE	Text
Metrorail/Commuter Rail Link File	\Inputs\RAIL_LNK.BSE	Text
Initial Speed Lookup Files	\Inputs\TAZAMSPD.LKP, \Inputs\TAZOPSPD.LKP, \Inputs\AMSPD.LKP, \Inputs\OPSPD.LKP	Text
Area Type Override File	\Inputs\AREAOVER.ASC	Text
Toll Parameter File	\Inputs\TOLL.ESC	Text

Key Output(s):

Highway, Transit deflator files	`Trn_Deflator.txt` `Hwy_Deflator.txt`	Text
K-factor matrices	\Support\<???>K.dat	Binary
Freeway Node File	`TRN_FWYN.ASC`	Text
Unloaded/Built Highway Network File	`ZONEHWY.NET`	Binary
TRNBUILD Station Node/Link Files	`MET_NODE.TB, COM_NODE.TB,` `MET_LINK.TB, COM_LINK.TB`	Text
TRNBUILD Walk Link File	`WLKNET.TB`	Text

TRNBUILD PNR Node/Link Files	`MET_PNRN.TB, MET_PNRL.TB,`
	`COM_PNRN.TB, COM_PNRL.TB,`
	`BUS_PNRN.TB, BUS_PNRL.TB`
		Text

TRNBUILD Bus/Station Connect Link Files	`MET_BUS.TB, COM_BUS.TB`	Text
MFARE1 A1 Deck File	`MFARE1.A1`	Text
MFARE1 Metrorail Link File	`METLNKM1.TB`	Text
		Text
TAZ/PNR Equivalence table	`TAZPNR.ASC`	Text
Highway and Transit Coordinate (XY) File	`TRN_NODE.ASC`	Text
Zonal Highway Terminal Time File	`ZTERMTM.ASC`	Text
Station PNR Coordinate File	`STAPNR.XYS`	Text

Program File(s):

STAPROTP.EXE, TP+

Control/Support File(s):

STAPROTP.CTL (Control files for the STAPROTP Program)
SET_FACTORS.S, SET_CPI.S, HIGHWAY_BUILD_TOLL.S (TP+ scripts)

Application Details:

The Set_Factors.S script is used to establish K-factors and time penalty files (which are currently null values for the Version 2.2 model). The Set_CPI.S script is used to create highway and transit deflation factors in small text files that are used in subsequent modeling steps. Set_CPI.S reads a small file (CPI_File.txt) which contains a CPI schedule taken from the U.S. Bureau of Labor Statistics. The CPI schedule and also uses the environment variable _*year*_ from the RUNALL_????.bat file to calculate the deflation factors automatically. It should be noted that the CPI_File.txt includes a parameter named INFLATIONFTR that may be used to alter the CPI growth rate assumption in developing future deflation factors. The default value for this parameter is 1.0, which implies that the historical inflation rate is assumed. This value may be altered to reflect alternate growth assumptions if desired.

The purpose of the highway network building process is to establish a single binary highway network containing link attributes corresponding to AM peak, PM peak, and off-peak time periods. The process requires a highway link file and a nodes file and several supporting files. The nodes file contains the x/y coordinate units of each highway node, in Maryland State Plane coordinates, NAD83, in whole feet. HIGHWAY_BUILD_TOLL.S is the TP+ script that is used. The script first determines the nearest zone centroid associated with each link in the highway network.[6] It then determines the area type of each zone in the region based on land activity density. The density measure is defined jointly by population and employment densities for a one-mile 'floating' radius about each zone as shown on Table 11-1. Note that zonal area type override values may be specified in the AREAOVR.ASC file.

Table 11-1 Version 2 Highway Network Area Type Definitions

Relationship of Area Type Codes to Land Use Density

One-Mile 'Floating' Pop. Density (Pop/Sq mi.)	One-Mile 'Floating' Employment Density (Emp / Sq mi)						
	0-100	101-500	501-1,500	1,501-5,000	5,001-15,000	15,001-35,000	35,001+
0-100	7	7	5	5	2	2	2
101-350	7	5	5	5	2	2	2
351-1,500	6	6	5	5	2	2	2
1,501-3,500	6	6	4	3	2	2	2
3,501-6,500	4	4	3	3	2	2	1
6,501-10,000	4	3	3	3	2	2	1
10,001+	3	3	3	2	2	2	1

The highway network building process is used to convert text link records into a binary network file. The script also performs other functions. It creates transit walk-network links which are used in the transit network building process. The script also builds zonal highway terminal times. Highway terminal times vary from 2 to 8 minutes as a function of employment density.

[6] Each link is associated with one zone, but there is no guarantee that each zone is associated with a link.

Finally, procedures have been placed in the script to identify freeway links to be excused from queuing delay procedures (as described in Chapter 1). A variable named AllowQue variable is established for this purpose.

The STAPROTP program is used to create transit link and node files in TRNBUILD format, on the basis of two user-prepared files. Table 11-2 describes the control cards that are required for the program. One input file, called a 'station' file (sta_tpp.bse), contains attributes associated with all base and future transit stations and PNR lots. The second file is a "rail link" file, which contains distances and speeds of all fixed guideway links pertaining to Metrorail and commuter rail systems. The program also creates a TAZ-PNR equivalence file that is used in the building of drive access links. Finally, the program also creates three files that support the fare (MFARE) development process, a Metrorail link and node file, and the zonal data file (the "A1 deck") for the METRORAIL_SKIMS.S and MFARE1.S programs.

The input file format descriptions for the HIGHWAY_BUILD_TOLL.S and STAPROTP programs are shown at the end of this chapter.

Table 11-2 STAPROTP Control Parameters

Type	***Name***	***Description***
&files	Statf	Station file input
	Rlnkf	Rail link file input
	Metlnkm1	Metrorail Link file for MFARE1 process
	Metlnkf	Metrorail Link file in TRNBUILD format
	Comlnkf	Comm.Rail Link file in TRNBUILD format
	Metnodm1	Metrorail Node file for MFARE1 program
	Metnodf	Metrorail Node file in TRNBUILD format
	Comnodf	Comm. Rail Node file in TRNBUILD format
	Metpnrf	Metrorail PNR Node file in TRNBUILD format
	Compnrf	Comm. Rail PNR Node file in TRNBUILD format
	Buspnf	Bus PNR node file in TRNBUILD format
	Mpnlf	Metrorail/PNR Connect link file in TRNBUILD format
	Cpnrlf	Comm. Rail /PNR Connect link file in TRNBUILD format
	Bpnlf	Bus /PNR connect link file in TRNBUILD format
	Metblf	Metrorail/Bus connect link file in TRNBUILD format
	Comblf	Comm.Rail/Bus connect link file in TRNBUILD format
	Mf1a1	A1 deck for the MFARE1 program
	Tazpnrf	TAZ / PNR equivalience in MATRIX-ready format
	S_pxyf	Station/PNR XYS file

Highway Toll Modeling

Pathbuilding procedures in the Version 2.2 model are based on either highway time or a combination of highway time and transit time. The methodology for incorporating highway toll sensitivity into the model essentially involves converting link-coded highway *tolls* into *equivalent minutes.* The equivalent minutes are then added to the highway time during pathbuilding. This type of approach effectively reduces travel demand on tolled paths and increases demand on competing non-tolled paths for a given i/j. In developing highway toll-time equivalents, the nature of pathbuilding in trip distribution and highway assignment steps is considered. Trip distribution is applied using income stratification, while the traffic assignment distinguishes path by vehicle type. Therefore the toll modeling approach involves time-cost equivalent parameters that are provided on the basis of both income and vehicle types.
To apply the toll modeling procedure, the analyst: 1) codes highway tolls appropriately in the highway network, and 2) prepares three parameter files in the *INPUTS* subdirectory. The three files are relatively small text files generically named *TOLL.ESC*, *TOLL.INC*, and *TOLL.SKM*.

Toll coding in the highway network is reflected with two highway link attributes: *TOLL* and *TOLLGRP*. *TOLL* is the monetary value of the fee charged at the link location in current year cents. The current year should be consistent with the transit fare tariff year assumed in the MFARE2 program. *TOLLGRP* is a 4-digit facility type index. The *TOLLGRP* value should be coded with a non-zero value if the *TOLL* value is non-zero. (If the *TOLL* value of a given link is non-zero and the *TOLLGRP* value equals zero, the highway network building process automatically imposes a *TOLLGRP* override value of '1'). If the analyst wishes to reflect a per-mile *TOLL* value on a link, there is no need to code a manually calculated *TOLL* value on the link. In this instance, the *TOLL* value should not be coded, but a unique *TOLLGRP* code should be assigned to the link and an associated per-mile rate should be specified in the *TOLL.ESC* file (described below). The highway building process ultimately creates six period-specific toll attributes: *AMTOLL, PMTOLL, OPTOLL* (tolls by time-of-day on all toll facilities) and *AMTOLL_VP, PMTOLL_VP, OPTOLL_VP* (tolls by time-of-day on variable priced facilities only).

The TOLL.ESC file is a TP+ script section that is called into the highway network building process. It contains five 'look-up tables' named *ESCFAC, DSTFAC*, *TTFAC*, *TG_ATOVR*, and *TOLLTYPE* which contain user-specified parameters that vary by *TOLLGRP* codes. *ESCFAC* values are override deflation factors used to convert current year tolls into constant 1994 values. *ESCFAC* values are normally set to zero, in which case, the default deflation factor defined in the file Hwy_Deflator.txt is used. This parameter exists to provide flexibility in specifying toll deflation differences by between tolled facilities, if desired by the analyst. The most recent model runs have been executed with consistent deflation assumptions between tolls and transit fares. *DSTFAC* values are optional per-mile rates (current-year cents per mile) that may be specified at the user's option as a special network coding expedient. During highway building, the *DSTFAC* factor is applied to the coded distance and the *TOLL* value is automatically assigned the result. If this option is not exercised, all *DSTFAC* values must be set to zero. The *TTFAC* are optional factors that may be used to alter the *AMTOLL*, *PMTOLL, or OPTOLL* values described above on a facility basis. The default *TTFAC* values are '1.0'. If, for example, the analyst wishes to set the off-peak toll to one-half of the coded *TOLL* value, then the off-peak

TTFAC value would be set to ‘0.50’ instead of ‘1.0’. The *TG_ATOVR* lookup enables the option to change the area type designation on the tolled link. Because of the technique used to formulate area types, it is possible that adjacent links may have different area type codes, and hence, different capacities. Differences in capacities typically hamper the estimation of HOT lane toll rates. *TG_ATOVR* may be used to enforce area type homogeneity within a given toll segment ton ensure that the segment capacity is consistent. Finally, the *TOLLTYPE* lookup is used to distinguish fix-price type toll facilities (coded as ‘1’) from variably priced facilities (coded as ‘2’). All coded toll groups must be coded as either ‘1’ or ‘2’.

The time-cost equivalents by income level are specified in the *TOLL.INC* file. This is another TP+ script section that is called into the trip distribution process. The equivalent time values are reasonable average values, which should generally not be altered. The income-based time equivalents are shown on the table below. The hourly household wage rates were developed from the 2000 Census (Washington PMSA) income data, assuming 1,920 working hours per year and an average of 1.38 workers per household. The work equivalent values are based on a 50% average time valuation time while the non-work purpose is based on a 35% time valuation.

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

Annual Household Income Quartile	**(a) Hourly Wage Rate (2000 $)**	**(b) Work Equivalent** (minutes per 1994 $)	**(c) Non-Work Equivalent** (minutes per 1994 $)
1	$6.60	21.1	30.2
2	$17.93	7.8	11.1
3	$30.19	4.6	6.6
4	$60.39	2.3	3.3

The assumed time-toll equivalents by vehicle type are shown on the table below. These equivalents are specified in the *TOLL.SKM* file (this file is called by the traffic assignment and highway skimming programs). The equivalent minutes are based on an average 1994 household income of $62,500. Airport vehicle time equivalents are based on the ‘full’ average value of time for all time periods. The SOV time equivalents are based on a 50% and 35% time valuation in the peak and off-peak periods. The HOV time equivalents are based on a 40% and 30% time valuation in the peak and off-peak periods. Truck time equivalents are set to 2.5 times the prevailing SOV values. These values should generally not be altered.

Peak/Off-Peak Time – Dollar Equivalents (Minutes/Dollar) by Vehicle Type

Vehicle Type	**Peak Period Equivalent** (minutes per 1994 $)	**Off-Peak Period Equivalent** (minutes per 1994 $)
Airport Auto	2.5	2.5
Single Occupant Auto	5.1	7.3
Multi-Occupant Auto	6.4	8.5
Truck	12.8	18.3

The *TOLL.SKM* files also enable the analyst to specify time period-specific toll factors by vehicle type and tolled facility using *AM_TFAC*, *PM_TFAC*, and *OP_TFAC* lookup tables. These lookup tables are provided as an optional coding expedient. Default values of ‘1.0’should be maintained if this option is not used. Example listings of the *TOLL.ESC*, *TOLL.INC*, and *TOLL.SKM* files follow below.

```
| ;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
;|/////////////////////////////////////////////////////////////////////|
;|//     TOLL.ESC  -- Version 2.2/TP+ Toll Escaltion - by toll group |
;|/////////////////////////////////////////////////////////////////////|
;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
;
;
;    ============================================
;    = TOLL ESCALATION OVERRIDE FACTORS         =
;    = by TOLL GROUP                            =
;    = TABLE LOOKUP                             =
;    = For converting current year cents to     =
;    = 1994 cents                               =
;    = Note these are used to override the      =
;    = default deflation factor set in the file =
;    = named HWY_Deflator.txt                   =
;    ============================================
;
; If the value is 0 below, default value will be taken
; from HWY_Deflator.txt
 LOOKUP NAME= ESCFAC,
        LOOKUP[1] = 1, RESULT=2,
        FAIL= 0,0,0,INTERPOLATE=F,
;   Toll  Escalation Toll Rate
;   Grp   Factor
;   ---   ------
 R=" 1    0.00000     ",  ;
   " 2    0.00000     ",  ;
   " 3    0.00000     "   ;
; end of toll escalation lookup
;
;    ==================================================
;    = TOLL Distance Rates by TOLL GROUP (optional)   =
;    =                                                =
;    = Factor for computing tolls based on distance   =
;    =  in current year cents per mile                =
;    ==================================================
 LOOKUP NAME= DSTFAC,
        LOOKUP[1] = 1, RESULT=2,
        FAIL= 0,0,0,INTERPOLATE=F,

;   Toll  Toll Rate
;   Grp   Cents/mi (in current yr$)
;   ---   ------
 R=" 1    0.0000    ",  ;
   " 2    0.0000    ",  ;
   " 3    0.0000    "   ;
; end of toll distance rate lookup
;
;    ==================================================
;    = TOLL Time of Day Factors by Toll Group         =
;    =                                                =
;    = Factor for converting link-coded toll to       =
;    = specific time periods by link group            =
;    ==================================================
 LOOKUP NAME= TTFAC,
        LOOKUP[1] = 1, RESULT=2,  ; AM       Toll factor
        LOOKUP[2] = 1, RESULT=3,  ; PM       Toll factor
        LOOKUP[3] = 1, RESULT=4,  ; Off-Peak Toll factor
        FAIL= 0,0,0,INTERPOLATE=F,

;   Toll  AM Toll PM Toll  Off-Peak
;   Grp   Factor  Factor   Toll Factor
;   ---   ------  ------   ------
 R=" 1    1.0000  1.0000   1.0000   ",  ;
   " 2    1.0000  1.0000   1.0000   ",  ;
   " 3    1.0000  1.0000   1.0000   ",  ;
   " 4    1.0000  1.0000   1.0000   "   ;
; end of toll time adjustment factor lookup
;
```

```
;    ============================================
;    = Min. & Max                               =
;    = Area Type overide       by TOLL GROUP    =
;    =                                          =
;    =                                          =
;    ============================================
;
; If the value is 0 below, default value will be
; based on the standard zonal density
; the override must be >= 1 and <=7
 LOOKUP NAME= TG_ATOVR,
        LOOKUP[1] = 1, RESULT=2,
        FAIL= 0,0,0,INTERPOLATE=F,
;   Toll  Area Type Override
;   Grp   Min  Max
;   ---   ---- ---
 R=" 1    0     0   ",  ;
   " 2    0     0   ",  ;
   " 9    0     0   ",  ;
   "10    0     0   "   ;
; end of Area type override
;    ============================================
;    = Min. & Max                               =
;    = Area Type overide       by TOLL GROUP    =
;    =                                          =
;    =                                          =
;    ============================================
;
; If the value is 0 below, default value will be
; based on the standard zonal density
; the override must be >= 1 and <=7

 LOOKUP NAME= TG_ATOVR,
        LOOKUP[1] = 1, RESULT=2,
        FAIL= 0,0,0,INTERPOLATE=F,

;   Toll  Area Type Override
;   Grp   Min  Max
;   ---   ---- ---
 R=" 1    0     0   ",  ;
   " 2    0     0   ",  ;
   " 3    5     7   ",  ;
   " 4    5     7   ",  ;
   " 5    5     7   ",  ;
   " 6    5     7   "   ;
; end of Area type override

; start of TOLL TYPE LOOKUP
;    ============================================
;    = TOLL Type LOOKUP table for each toll group
;    =      1='Fixed Toll' facility (e.g., Dulles Toll Road)
;    =      2= variable or managed toll facility
;    =           (such as VA HOT lanes or ICC)
;    ============================================
;
;
 LOOKUP NAME= TOLLTYPE,
        LOOKUP[1] = 1, RESULT=2,
        FAIL= 0,0,0,INTERPOLATE=F,
;
;   Toll  TOLL
;   Grp   TYPE 1/2
;   ---   ---- ---
 R=" 1    1      ",  ;
   " 2    2      ",  ;
   " 3    2      ",  ;
   " 4    2      ",  ;
   " 5    2      ",  ;
   " 6    2      "   ;
; end of Toll Type Lookup
```

```
;|//////////////////////////////////////////////////////////////////////|
;|// TOLL.INC  - Version 2.2     Toll Income Params   (Extl Ctl File)|
;|//////////////////////////////////////////////////////////////////////|
;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
;
;
;     ================================================================
;     = Equivalent Toll Minutes by Time Prd & Income Group           =
;     = in minutes per 1994 dollars    6/08/04 rm =
;     ================================================================
;    AM Peak         Off Peak
;---------------   ----------------
 i1PKEQM = 21.1     I1OPEQM = 30.2                ; <--- INC 1
 i2PKEQM =  7.8     I2OPEQM = 11.1                ; <--- INC 2
 i3PKEQM =  4.6     I3OPEQM =  6.6                ; <--- INC 3
 i4PKEQM =  2.3     I4OPEQM =  3.3                ; <--- INC 4
;
; END
```

```
;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
;|///////////////////////////////////////////////////////////////////////|
;|// TOLL.SKM  - Version 2.2     Toll Skim Params (TP+ Extl Ctl File)|
;|///////////////////////////////////////////////////////////////////////|
;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

;     ================================================================
;     = Equivalent Toll Minutes by Time Prd & Vehicle Type            =
;     = in minutes per 1994 dollar - rm 6/8/04                        =
;     ================================================================
;    AM Peak         Off Peak          PM Peak
;---------------  ---------------     --------------
    SVAMEQM =  5.1     SVOPEQM =  7.3     SVPMEQM =  5.1 ; <--- SOVs
    H2AMEQM =  6.4     H2OPEQM =  8.5     H2PMEQM =  6.4 ; <--- HOVs-2 Occ
    H3AMEQM =  6.4     H3OPEQM =  8.5     H3PMEQM =  6.4 ; <--- HOVs-3+Occ
    TKAMEQM = 12.8     TKOPEQM = 18.3     TKPMEQM = 12.8 ; <--- Trucks
    APAMEQM =  2.5     APOPEQM =  2.5     APPMEQM =  2.5 ; <--- Apaxs

;     =================================================================
;     = AM Peak Toll Adjustment Factor(AM_TFAC)                        =
;     =    by Toll Group & Vehicle Type                                =
;     =================================================================
 LOOKUP NAME= AM_TFAC,
        LOOKUP[1]  = 1, RESULT=2,   ; sov toll factor as f(toll group#)
        LOOKUP[2]  = 1, RESULT=3,   ; hv2 toll factor as f(toll group#)
        LOOKUP[3]  = 1, RESULT=4,   ; hv3+toll factor as f(toll group#)
        LOOKUP[4]  = 1, RESULT=5,   ; Trk toll factor as f(toll group#)
        LOOKUP[5]  = 1, RESULT=6,   ; Apx toll factor as f(toll group#)
        FAIL= 0,0,0,INTERPOLATE=F,
;   Toll   SOV  HOV2  HOV3+ Trk   APAX
;   Grp   TFtr  TFtr  TFtr  TFtr  TFtr
;   ---   ----  ----  ----  ----  ----
 R=" 1    1.0   1.0   1.0   1.0   1.0  ",
   " 2    1.0   1.0   1.0   1.0   1.0  ",
   " 3    1.0   1.0   1.0   1.0   1.0  ",
   " 4    1.0   1.0   1.0   1.0   1.0  ",
   " 5    1.0   1.0   1.0   1.0   1.0  ",
   " 6    1.0   1.0   1.0   1.0   1.0  ",
   " 7    1.0   1.0   1.0   1.0   1.0  ",
   " 8    1.0   1.0   1.0   1.0   1.0  ",
   " 9    1.0   1.0   1.0   1.0   1.0  "
; (END of AM toll adjustment factor lookup)

;     =================================================================
;     = Off Peak Toll Adjustment Factor(OP_TFAC)                       =
;     =    by Toll Group & Vehicle Type                                =
;     =================================================================
 LOOKUP NAME= OP_TFAC,
        LOOKUP[1]  = 1, RESULT=2,   ; sov toll factor as f(toll group#)
        LOOKUP[2]  = 1, RESULT=3,   ; hv2 toll factor as f(toll group#)
        LOOKUP[3]  = 1, RESULT=4,   ; hv3+toll factor as f(toll group#)
        LOOKUP[4]  = 1, RESULT=5,   ; Trk toll factor as f(toll group#)
        LOOKUP[5]  = 1, RESULT=6,   ; Apx toll factor as f(toll group#)
        FAIL= 0,0,0,INTERPOLATE=F,
;
;   Toll   SOV  HOV2  HOV3+ Trk   APAX
;   Grp   TFtr  TFtr  TFtr  TFtr  TFtr
;   ---   ----  ----  ----  ----  ----
 R=" 1    1.0   1.0   1.0   1.0   1.0  ",
   " 2    1.0   1.0   1.0   1.0   1.0  ",
   " 3    1.0   1.0   1.0   1.0   1.0  ",
   " 4    1.0   1.0   1.0   1.0   1.0  ",
   " 5    1.0   1.0   1.0   1.0   1.0  ",
   " 6    1.0   1.0   1.0   1.0   1.0  ",
   " 7    1.0   1.0   1.0   1.0   1.0  ",
   " 8    1.0   1.0   1.0   1.0   1.0  ",
   " 9    1.0   1.0   1.0   1.0   1.0  "
; (END of Off peak toll adjustment factor lookup)
;
```

```
;      ==================================================================
;      =  PM Peak Toll Adjustment Factor(PM_TFAC)                        =
;      =     by Toll Group & Vehicle Type                                =
;      ==================================================================
 LOOKUP NAME= PM_TFAC,
        LOOKUP[1]  = 1, RESULT=2,   ; sov toll factor as f(toll group#)
        LOOKUP[2]  = 1, RESULT=3,   ; hv2 toll factor as f(toll group#)
        LOOKUP[3]  = 1, RESULT=4,   ; hv3+toll factor as f(toll group#)
        LOOKUP[4]  = 1, RESULT=5,   ; Trk toll factor as f(toll group#)
        LOOKUP[5]  = 1, RESULT=6,   ; Apx toll factor as f(toll group#)
        FAIL= 0,0,0,INTERPOLATE=F,
;
;   Toll   SOV  HOV2  HOV3+ Trk   APAX
;   Grp   TFtr  TFtr  TFtr  TFtr  TFtr
;   ---   ----  ----  ----  ----  ----
 R=" 1    1.0   1.0   1.0   1.0   1.0  ",
   " 2    1.0   1.0   1.0   1.0   1.0  ",
   " 3    1.0   1.0   1.0   1.0   1.0  ",
   " 4    1.0   1.0   1.0   1.0   1.0  ",
   " 5    1.0   1.0   1.0   1.0   1.0  ",
   " 6    1.0   1.0   1.0   1.0   1.0  ",
   " 7    1.0   1.0   1.0   1.0   1.0  ",
   " 8    1.0   1.0   1.0   1.0   1.0  ",
   " 9    1.0   1.0   1.0   1.0   1.0  "
; (END of PM peak toll adjustment factor lookup)
```

Input File Descriptions and Formats:

1. Land Use File (zone.asc)

Table 11-3 Land Use File Format Description

Columns	*Format*	*Field Description*
1- 4	I4	TAZ (1-2,191)
8- 15	I8	Households
16- 23	I8	Household Population
24- 31	I8	Group Quarters Population
32- 39	I8	Total Population
40- 47	I8	Total Employment
48- 55	I8	Industrial Employment
56- 63	I8	Retail Employment
64- 71	I8	Office Employment
72- 79	I8	Other Employment
80- 81	I2	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*
83- 92	F10.4	Gross Land Area (in sq. miles)
94- 95	I2	Ratio of zonal HH median income to regional median HH income in tenths (i.e. 10 = 1.0), per 2000 CTPP.
97- 98	I2	Airline distance to the nearest external station in whole miles.

Table 11-4 Node Coordinate File Format Description

Columns	*Format*	*Field Description*
1- 6	I6	Highway Node Number
7- 14	I8	X-Coordinate (NAD83-based in whole feet)
15- 22	I8	Y-Coordinate (NAD83-based in whole feet)

3. Base Highway Link File (link.asc)

Table 11-5 Base Highway Link File Format Description

Columns	***Format***	***Field Description***
1-5	I5	A node
6-10	I5	B node
13-17	F5.2	Link Distance (in whole miles with explicit decimal)
23-24	I2	Unused (place marker for Speed Class)*
26-27	I2	Unused (place marker for Capacity Class)*
30-33	I4	Daily Ground Count in thousands
35-36	I2	Daily Ground Count Quality Code
39-40	I2	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*
51-52	I2	Screenline Code
54-55	I2	Link Facility Type Code (0-6) *0/centroids, 1/Freeways, 2/Major Art., 3/Minor Art, 4/ Collector, 5/ Expressway, 6/ Ramp (future use)*
61-64	I4	Toll Value in current year dollars
66-69	I4	Toll Group Code (1-9999)
81-82	I2	AM Peak No. of Lanes
84-85	I2	AM Peak Limit Code (0-9)
87-88	I2	PM Peak No. of Lanes
90-91	I2	PM Peak Limit Code (0-9)
93-94	I2	Off-Peak No. of Lanes
96-97	I2	Off-Peak Limit Code (0-9)
99-102	I4	Unused (place marker for TAZ)*
107-116	A/N	Project ID

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 ASCII input file link.asc.*

4. Consolidated Station / PNR lot file (sta_tpp.bse)

Table 11-6 Consolidated Station / PNR Lot File Format Description

Columns	***Format***	***Field Description***
1-5	I5	Sequence Number
10	A1	Mode Code (M=Metrorail, C=Commuter rail, B=Bus, L=Light rail, N= BRT/street car)
15	A1	Parking Available? (Y/N)
18	A1	Station Active? (Y/N)
21-45	A25	Station Name/PNR lot name
46-50	I5	Network Centroid (2251-2500)
51-55	I5	TAZ location of Station/PNR lot (1-2191)
56-60	I5	Rail Station Node (7301-7399, 7600-7733)
61-65	I5	Parking lot node
66-70	I5	1^{st} Bus Node
71-75	I5	2^{nd} Bus Node
76-80	I5	3rd Bus Node
81-85	I5	4th Bus Node
91-100	I10	X Coord.of Station / PNR lot (NAD83-based in ft.)
101-110	I10	Y Coord.of Station / PNR lot (NAD83-based in ft.)
111-140		(Unused)
141-145	I5	Year of Station/PNR lot Opening (unused)

5. Rail Link File (rail_lnk.bse)

Table 11-7 Rail Link File Format Description

Columns	***Format***	***Field Description***
1-5	I5	A Node
6-10	I5	B Node
15-19	I5	Distance in $1/100^{th}$s of miles
21-25	F5.2	Speed (mph)
37-37	I1	Rail Mode Number (3-5)

Chapter 12 Auto Access Link Development

Input(s):

Built Highway Network File	`ZONEHWY.NET`	Text
TAZ/PNR Equivalency File	`TAZPNR.ASC`	Text
Restrained Highway Skims	`??_AM.SKM, ??_OP.SKM`	Binary
Time / Toll Value Equivalent File	`TOLL.SKM`	Text
TAZ Coordinate File	`BASEZON.DAT`	Text

Output(s):

AM Peak/Off-Peak Auto Connect Link File, TRNBUILD Format	`PNR_AM.TB, PNR_OP.TB`	Text

Program File(s):

TP+

Control/Support File(s):

PUMP_PRIME_SKIMS.S, AUTO_ACCESS.S

Application Details:

The highway skim and PNR access link development process is used to create peak and off-peak drive access links, used later for transit network building, directly from skimmed highway times, by time period. Two TP+ scripts are used to accomplish this. PUMP_PRIME_SKIMS.S establishes initial highway skims by first building peak and off-peak highway skims on the basis of default, congested highway speeds. The program also utilizes a TAZ-PNR equivalence file and writes a text file containing link information for all zones origins to zone destinations which are representative of PNR lots, subject to the following conditions:

1) The airline distance from the zone to the PNR lot must be within 4.0 miles for DC, Arlington County, and Alexandria; within 5 miles for Montgomery, Fairfax, and Prince George’s counties; and within 8 miles for all remaining jurisdictions.
2) Zone to PNR connections will not cross the Potomac River except for origin zones in Loudoun County and Jefferson County since the MARC system in Maryland does serve commuters from those jurisdictions.

The AUTO_ACCESS.S builds auto access links in a similar manner as the PUMP_PRIME.S script, except that the zone-to-PNR link speeds are updated based on the AM and Off-peak highway skims resulting from the initial (or ‘pump prime’) assignment.

Chapter 13 Pre-Transit Network Processing

Input(s):

Freeway Node File	`TRN_FWYN.ASC`	Text
Rivers Location File	`RIVERSTP.BNA`	Text
Peak & Off-Peak Transit Line Files, TRNBUILD Format	`MODE???.TB`	Text
Peak & Off-Peak Walk Area Files (from GIS)	`GISWKAAM.ASC, GISWKAOP.ASC`	Text
Peak & Off-Peak Walk Link Files (from GIS)	`GISWKLAM.ASC, GISWKLOP.ASC`	Text
		Text
Transit Stop Node File	`NT_AM.ASC, NT_OP.ASC`	Text
Highway and Transit Coordinate (XY) File	`TRN_NODE.ASC`	Text
TAZ/Bus Fare Zone Equivalency File	`TAZFRZN.ASC`	Text

Output(s):

Off-Peak Walk Link File, TRNBUILD Format	`WALK_AM.TB, WALK_OP.TB`	Text
Peak and Off-Peak Transit line files, TRNBUILD Format	`MODE???.TB`	Text
A2 Deck for MFARE Process	`FARE_A2.ASC`	Text

Program File(s):

CNTCONN2.EXE
NODESTB.EXE
GIS_PROC.EXE
WLKLNKTP.EXE
TP+

Control/Support File(s):

CNTCONN2 Control (CTL) files, NODESTB Control Files, WLKLNKTP Control (CTL) files,
UPDATE_WKLINKS.S (TP+ script)
PREFARTP.S (TP+ script)

Application Details:

The pre-transit skimming process involves a number of utility programs that create transit line files and transit walk access files used in AM-peak and off-peak transit network building, specifically the walk access links and transit line files. The process also creates a zonal file that is used in the MFARE2 process. The current procedure requires transit line files be provided in TRNBUILD format. Two GIS-generated zone files are also needed: one which contains a measure of the area in long/short walk-to-transit areas, and another which relates each TAZ centroid to the nearest transit stop node within one mile.

Walk links are generally developed as follows. The NODESTP program is applied to write out all stop nodes associated with each transit line in a relatively 'neat' text format. The CNTCONN2 program then uses the stop nodes file, a freeway node file, and a file containing the coordinates of water body alignments to generate zone-to-transit-stop links. The GIS_PROC program, next, reads the GIS walk area file, which contains a measure of the area in each zone that is in a 'short' and/or a 'long' walk shed to transit service. The program simply converts the area-based information into short and long walk area percentages. The sum of the short walk and long walk zonal percentages will always range from 0 to 100. If a zone contains, for example, 100% short walk area, by definition, the long walk area and the no-walk area of that zone must be 0%. The GIS walk percent file also contains the average short and long walk distances to transit service and the closest bus node and rail node to each zone, based purely on the zone's spatial disposition to the transit network. Finally, the WLKLNKTP program reads the GIS walk link file and the CNTCONN2 and GIS_PROC output files to construct the final walk access link file. Specifically, the program undertakes the following steps:

1) Walk access links to bus stops are extracted from the CNTCONN2 output file;
2) Walk access links to rail stations are extracted from the GIS walk link file;
3) Uniform walk access distances are computed for each TAZ based on the average short/long walk distances (weighted by the short/long walk area percents). If a walk-access link to a rail station has a GIS-based distance that is longer than the area-based distance, then the access link is omitted from the final walk access file. Walk access links are uniformly assigned an average speed of 3 mph.

An TP+ scripts is called into the batch process. PREFARTP.S reads a zone file containing bus fare zone equivalents and inserts Metrorail walk percents from the GIS transit walk area file, thus creating the 'A2' zone file used in the fare development process.

If desired, the analyst may invoke a capability in the development of walk links to consider previously developed walk links from another alternative to be merged with those generated for the current working alternative. This capability was developed to better address walk access consistency between years/alternatives. The user must copy the pre-existing walk links file into the 'INPUTS' subdirectory of the current alternative and assign it the name WALK_??.OLD, where ?? refers to 'AM' or ' OP'. If these files are installed in the \INPUTS subdirectory then the UPDATE_WKLINKS.S script will be executed. The program performs the merging function.

The control file descriptions used with the pre-transit network programs and file format descriptions of the input files used are provided at the end of this chapter.

Table 13-1 CNTCONN2 Control Parameters

Type	***Name***	***Description***
&files	Node_file	Highway and Transit XY file
	Lnk_file	Transit line/stop node file
	Xnod_file	Freeway node file
	Scr_file	River location file
	Out_file	Output walk link file
	Rpt_file	Output report file
&specs	Miles	Number of coordinate units per mile
	Max_zone	Maximum zone number
	Max_node	Maximum node number
	Max_walk	Maximum walk distance criterion
	Dev_fac	Directional Node Search adjustment
	Max_conn	Maximum number of walk links generated
	Mod_type	(set to 1)
	Nodesfmt	(set to T)
	Modes	Mode number for Walk Access Connection
	Tmespd	Walk Speed Assumption
	Dumdst	(set to F)
	Trnpth	(T/F) to generate TRNPTH walk file output
	Trnbld	(T/F) to generate TRNBUILD walk file output

Table 13-2 NODESTB Control Parameters

Type	***Name***	***Description***
&files	Fline(1)	TRNPTH Line File 1
	Fline(2)	TRNPTH Line File 2
	Fline(3)	TRNPTH Line File 3
	Fline(4)	TRNPTH Line File 4
	Fline(5)	TRNPTH Line File 5
	Fline(6)	TRNPTH Line File 6
	Fline(7)	TRNPTH Line File 7
	Fline(8)	TRNPTH Line File 8
	Fnodes	Nodes output file name
	Frpt	Nodes report listing
&params	Period	(set to 0)
&options	STONLY	(Set to T)
	Plain	(Set to T)
&facils	(unused)	(unused)

Table 13-3 WLKLNKTP Control Parameters

Type	*Name*	*Description*
&FILES	gisslf	GIS-Short Walk, Long Walk File
	Cntconnf	CNTCONN2 Output file
	Gisconnf	GIS-TAZ to Transit stop node file
	Fwlkpctf	‘final’ walk access link file (TRNBUILD fmt.)
	Finwlkf	Final Walk Access link output file
&PARAMS	Railnr11	Minimum rail (Metrorail, Commuter rail) node number
	Railnr12	Maximum rail (Metrorail, Commuter rail) node number

Table 13-4 PREFARTP Control Parameters

Type	*Name*	*Description*
&files	Gismetf	Transit walk area input file
	fwlkpctf	‘final’ walk percentage file
	Bfarezf	TAZ/Bus fare zone input file
	A2deckf	Output A2 deck output file (for MFARE2)

Input File Descriptions and Formats:

Table 13-5 'Raw' GIS-Based Transit Walk Area File Format Description (GISWKA??.ASC)

Columns	*Format*	*Field Description*
4-8	I5	TAZ Number
9-17	I9	Total Land Area
24-30	I7	'short' walk area to rail (metrorail, commuter rail)
36-42	I7	'long' walk area to rail metrorail, commuter rail
49-55	I7	'short' walk area to non-rail transit
61-67	I7	'long' walk area to non-rail transit
73-81	I9	Non-walking area to ANY transit
85-91	I7	Avg 'Short' Walk Distance to Metrorail (in miles)
95-101	I7	Avg 'Long' Walk Distance to Metrorail (in miles)
106-112	I7	Avg 'Short' Walk Distance to Commuter Rail (in miles)
116-122	I7	Avg 'Long' Walk Distance to Commuter Rail (in miles)
127-133	I7	Avg 'Short' Walk Distance to Bus (in miles)
137-143	I7	Avg 'Long' Walk Distance to Bus (in miles)
149-155	I7	Avg'Short' Walk Distance to ANY Transit (in miles)
161-167	I7	Avg 'Long' Walk Distance to ANY Transit (in miles)
170-174	I5	Nearest Rail Station (Metrorail or Commuter Rail) w/in 1.0 mi
176-180	I5	Nearest Bus Stop Node w/in 1.0 mi

Note: area measurements are in square miles and do not include major bodies of water;
'short' references below are defined as within 1/3 mile;
'long' walk areas are those beyond 1/3 of a mile and within 1.0 mile

Table 13-6 GIS-Walk Link File Format Description (GISWKL??.ASC)

Columns	*Format*	*Field Description*
1-5	I5	TAZ Number
6-10	I5	Transit Stop nodes within 1.0 mile
11-15	F5.2	Distance from TAZ centroid to stop node in miles

Table 13-7 TAZ / Bus Fare Zone Equivalency File Format Description (TAZFRZN.ASC)

Columns	*Format*	*Field Description*
Zonal data (All lines in the file)		
1-4	I4	TAZ Number (1-2141) 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)
45-48	I4	Special transit service fare (cents)
49-50	I2	Jurisdiction code (0/DC, 1/MD, 2/VA Area 1 (Fairfax Co.), 3/VA Area 2 (non-Fairfax Co.)
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 14 Transit Skim File Development

Input(s):

Peak, Off-Peak Highway Networks	ZONEHWY.NET	Binary
Peak, Off-Peak Transit Line Files, TRNBUILD Format	MODE???.TB	Text
Peak and Off-Peak Walk Access Links, TRNBUILD Format	WALK_AM.TB, WALK_OP.TB	Text
Peak/Off-Peak Zonal Drive Access Links, TRNBUILD Format	PNR_AM.TB, PNR_OP.TB	Text
Walk Network Links, TRNBUILD Format	WLKNET.TB	Text
Rail Links File, TRNBUILD Format	MET_LINK.TB, COM_LINK.TB	Text
Rail Node File, TRNBUILD Format	MET_NODE.TB, COM_NODE.TB	Text
PNR/Bus, Station Connect Links/Nodes, TRNBUILD Format	BUS_PNRN.TB, BUS_PNRL.TB, MET_PNRN.TB, MET_PNRL.TB, COM_PNRN.TB, COM_PNRL.TB	Text
Station/Bus Connect Links, TRNBUILD Format	MET_BUS.TB, COM_BUS.TB	Text
Local Bus Time Factors	LBUS_TIMFTRS.ASC	Text

Output(s):

Peak/Off-Pk Walk Access Total Trn time skims	??_AM_WK.ttt, ??_OP_WK.ttt	Binary
Peak/Off-Pk Drive Access Total Trn time skims	??_AM_DR.ttt, ??_OP_DR.ttt	Binary
Peak/Off-Pk Walk Access Skims	??_AM_WK.SKM, ??_OP_WK.SKM	Binary
Peak/Off-Pk Drive Access Skims	??_AM_DR.SKM, ??_OP_DR.SKM	Binary
Peak/Off-Pk Walk Access Station-to-Station Tables	??_AM_WK.STA, ??_OP_WK.STA	Binary
Peak/Off-Pk Drive Access Station-to-Station Tables	??_AM_DR.STA, ??_OP_DR.STA	Binary
Transit Accessibility File	JOBACC.ASC	Text

Program File(s):

TP+

Control/Support File(s):

TRANSIT_SKIMS.S

Application Details:

The transit skimming process is used to create transit level-of-service files to serve the mode choice model and to provide for the development of accessibility variables for the vehicle availability model. It also provides Metrorail on/off station information used in the creation of transit fares. TRNBUILD is executed in four 'loops' corresponding to two access types (walk and drive) and two time periods (AM-peak and off-peak). Each procedure requires several input files: a binary highway network, rail network links, transit line files, zone access links, walking links, and a variety of connection links.

There are 16 values used to represent the various travel modes in the TRNBUILD module, as shown below:

Mode number	Description
1 - 10	**Transit Modes:** 1/Local Metrobus, 2/Express Metrobus, 3/Metrorail, 4/Commuter rail, 5/Unused, 6/ Non-Metrobus Primary Local bus, 7 Non-Metrorail Primary Express Bus, 8/ Secondary Local Bus, 9/ Secondary Express Bus
	Non-Transit Modes:
11	Drive access
12	Bus/rail walk connect
13	'Downtown' walk link
14	Unused
15	PNR/rail walk connect
16	Zonal walk access/egress link

Peak and off-peak transit bus line files are normally prepared by mode. They are coded directly over the highway networks. Transit service in the AM peak period is represented by the headways and run times in effect from 7-8 AM,[7] and transit service in the off-peak period is represented by the headways and run times in effect from 10 AM - 3 PM. Although the off-peak period covers 5 hours, the maximum headway coded on the transit line files is 60 minutes. Transit in-vehicle times are controlled by the RUNTIME parameter coded on each transit line. This means that bus running times are not computed on the basis of highway link-coded speeds over which lines are coded, but rather, are based on actual bus schedule times.

In transit pathbuilding, out-of-vehicle time is weighted at 2.5 times the in-vehicle time. The first two transfers are assigned perceived time penalties of 6 minutes; the third transfer is effectively disallowed as it is assigned a perceived time of 60.0 minutes. For cases where a given interchange is served by multiple bus lines, headways are combined for all lines that are within 5 minutes of the minimum time available.

Each skimming process results in three types of zonal skim files: the mode choice model skim file (SKM), the Metrorail on/off station file (STA), and the total transit time file (TTT). The mode choice skim file contains six tables:

1) Walk transfer time
2) Drive access time
3) Initial wait time
4) Transfer wait time

[7] This peak period definition is relaxed, however, to reflect earlier hourly periods for some express services that originate in the outer fringes of the study area.

5) Non-Metrorail In-Vehicle time
6) Metrorail In-Vehicle Time

Note that the walk time does not include zonal walk access/egress time, as that component is entered to the mode choice model as a zone variable. The script also adjusts the non-Metrorail in-vehicle time from adjustment factors in the file named `LBUS_TIMFTRS.ASC` to account for bus speed degradation over time. The Metrorail station file contains two files:

1) Metrorail Boarding Station No. (1-150)
2) Metrorail Alighting Station No. (1-150)

The third file contains a single table containing the total transit time, including zone walk access and egress time. The script also creates a file reflecting access to employment opportunities within 40 minutes via AM peak transit service. This measure is a variable that is used later in the vehicle availability model.

The transit skimming script also reads a file containing local bus factors used to degrade local bus times skims to incorporate the effect of growing highway congestion.

Chapter 15 Transit Fare Development

Input(s):

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
Deflation factor file	Trn_deflator.txt	Text
WMATA tariff parameters	Inputs\tarrif.txt	Text
Metrorail station discount file	Inputs\mfare1_sta_disc.asc	Text
Peak/Off-Peak Station-to-Station Tables	??_AM_WK.STA, ??_OP_WK.STA	Binary
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):

Peak/Off-Peak Transit Fare Files	MF_AM_WK.FAR, MF_OP_WK.FAR, MF_AM_DR.FAR, MF_OP_DR.FAR	Binary

Control/Support File(s):

METRORAIL_SKIMS.S, MFARE1.S, MFARE2.S

Application Details:

The MWCOG transit fare computation process, sometimes referred to as the *MFARE1/2* process, serves to compute transit fares used in the mode choice process. The process ultimately produces four total fare files representing walk/drive-access transit fares for the AM peak period, and walk/drive-access transit fares for the off-peak period.

The METRORAIL_SKIMS.S script is used to create Metrorail station-to-station distance skims. The skims are, then, entered to the MFARE1.S program, which calculates peak and off-peak Metrorail fares between station pairs. The peak and off-peak Metrorail fares are next entered to the MFARE2.S program which is used to calculate zone-to-zone transit fares.

Input File Descriptions and Formats

Table 15-1 Metrorail Station Link File Format Description (METLNKM1.TB)

Columns	*Format*	*Field Description*
12-16	I5	Station A-node (either dummy station centroid connector or station-to-station link)
18-22	I5	Station B-node (either dummy station centroid connector or station-to-station link)
32-41	I4	Distance in miles
58-62	I5	Speed (mph)

Table 15-2 Metrorail Station XY File Format Description (METNODM1.TB)

Columns	*Format*	*Field Description*
9-13	I5	Station Number (1-150)
19-26	I8	Station X Coordinate
32-39	I8	Station Y Coordinate

Table 15-3 Bus Fare Matrix File Format Description (BUSFAR??.ASC)

Columns are Space-delimited	*Field Description*
	Origin Bus Zone No. (1-21)
	Bus Fare value From Origin Zone to Destination zone 1
	Bus Fare value From Origin Zone to Destination zone 2
	Bus Fare value From Origin Zone to Destination zone 3
	…
	Bus Fare value From Origin Zone to Destination zone 21

Table 15-4 TAZ / Bus Fare Zone Equivalency File Format Description (FARE_A2.ASC)

Columns are Space-delimited	*Field Description*
	TAZ (1-2191)
	Bus Fare Zone 1 associated with TAZ
	Bus Fare Zone 2 associated with TAZ
	TAZ Origin Walk Pct to Metrorail in 10ths of pcts
	TAZ Destination Walk Pct to Metrorail in 10ths of pcts
	Bus Fare Zone 1 associated with Metrorail station (TAZ 1-150)
	Bus Fare Zone 2 associated with Metrorail station (TAZ 1-150)
	Jur. Code (0/DC, 1/MD, 2/VA-Area1, 3/VA-Area2)
	Origin-end Bus fare override value (default=0)
	Destination-end Bus fare override value (default=0)

Chapter 16 Demographic Submodels

Input(s):

Zonal Land Use File	Inputs\ZONE.ASC	Text
Zonal Area Type File	BASEZON.DAT	Text
Transit Accessibility File	JOBACC.ASC	Text
Zonal Households by Vehicle Ownership Levels	HH_VEH.DAT	Text
Zonal Short/Long Walk Access Time File	SHLG??.ASC	Text

Output(s):

Zonal HHs of Income Level 1, Stratified by Size and Vehicle Avail.	HHI1_SV.DAT	Text
Zonal HHs of Income Level 2, Stratified by Size and Vehicle Avail.	HHI2_SV.DAT	Text
Zonal HHs of Income Level 3, Stratified by Size and Vehicle Avail.	HHI3_SV.DAT	Text
Zonal HHs of Income Level 4, Stratified by Size and Vehicle Avail.	HHI4_SV.DAT	Text
Interim Output: Zonal Household Size, Income Level File	HHSIZINC.DAT	Text
Interim Output: Households by Number of Vehicles (0, 1, 2+)	HH_VEH.DAT	Text
HBW Zonal A1 Deck (for the Mode Choice Model)	HBWV2.A1F	Text
HBS Zonal A1 Deck (for the Mode Choice Model)	HBSV2.A1F	Text
HBO Zonal A1 Deck (for the Mode Choice Model)	HBOV2.A1F	Text
NHB Zonal A1 Deck (for the Mode Choice Model)	NHBV2.A1F	Text

Program File(s):

COGMCA1.EXE

Control/Support File(s):

COGMCA1.CTL (Control file for COGMCA1 Program)
DEMO_MODELS.S

Application Details:

The Demographic models are applied using the TP+ script named Demo_Models.S. The COGMCA1 program is used to establish the zonal (A1-deck) file inputs to the COGMC mode choice program. The control file of the COGMCA1 program and file formats of the input and output files are provided below.

Table 16-1 COGMCA1 Control Parameters

Type	*Name*	*Description*
&files	*Input files*	
	Landusef	Land Use File
	Amshlgf	Peak transit walk area file (Output file from GIS_PROC program)
	Opshlgf	Off-Peak transit walk area file (Output file from GIS_PROC program)
	Carownf	Zonal File for Total HH by Veh Avail Levels (0, 1, 2+) (Output file from VEHAV program)
	Ouput files	
	Hbwa1v2	HBW Zonal A1 Deck for the Mode Choice Program
	Hbsa1v2	HBS Zonal A1 Deck for the Mode Choice Program
	Hboa1v2	HBO Zonal A1 Deck for the Mode Choice Program
	Nhba1v2	NHB Zonal A1 Deck for the Mode Choice Program

Input and Interim Output File Descriptions and Formats

1. Land Use File

2. Zonal Area Type File

Table 16-2 Zonal Area Type File Format Description (BASEZON.DAT)

Columns	*Format*	*Field Description*
1-5	I5	TAZ
7-14	I8	X Coordinate of TAZ
15-22	I8	Y Coordinate of TAZ
23-28	F6.0	Total Population of TAZ
29-34	F6.0	Total Employment of TAZ
35-42	F8.4	Total Land Area of TAZ
43-49	F7.0	One-mile ‘Floating’ Population Density of TAZ
50-56	F7.0	One-mile ‘Floating’ Employment Density of TAZ
59-59	I1	Area Type Code (1-7)

3. Transit Walk Area Percentage File

Table 16-3 Transit Walk Area Percentage File Format Description (SHLG??.FIN)

Columns	*Format*	*Field Description*
1-5	I5	TAZ
6-10	I5	Percentage of TAZ in Short-Walk Transit Service Area
11-15	I5	Percentage of TAZ in Long-Walk Transit Service Area
33-37	F5.1	Avg. short walk time to Transit (in min.) / (ranging from 0 – 6.7)
38-42	F5.1	Avg. long walk time to Transit (in min.) / (ranging from 6.7 – 20.0)

Table 16-4 Zonal Household Income File (Est_Zonal_HH_Inc.txt)

Columns	*Format*	*Field Description*
1-4	I4	TAZ
5 -16	F12.2	Zonal HHs of Income level 1
17 -28	F12.2	Zonal HHs of Income level 2
29 -40	F12.2	Zonal HHs of Income level 3
41 -52	F12.2	Zonal HHs of Income level 4

Table 16-5 Zonal Household Size File (Est_Zonal_HH_Size.txt)

Columns	*Format*	*Field Description*
1-4	I4	TAZ
5 -16	F12.2	Zonal HHs in Size group 1
17 -28	F12.2	Zonal HHs in Size group 2
29 -40	F12.2	Zonal HHs in Size group 3
41 -52	F12.2	Zonal HHs in Size group 4+

Table 16-6 Zonal Household Vehicle Ownership File (Est_Zonal_HH_VehAv.txt)

Columns	*Format*	*Field Description*
1-4	I4	TAZ
5 -16	F12.2	Households with 0 vehicles available
17 -28	F12.2	Households with 1 vehicles available
29 -40	F12.2	Households with 2 vehicles available
41 -52	F12.2	Households with 3+ vehicles available

Table 16-7 Zonal Households by Vehicle Ownership Levels (HH_VEH.DAT)

Columns	*Format*	*Field Description*
1-5	I5	TAZ
6-11	I6	Households with 0 vehicles available
12-17	I6	Households with 1 vehicles available
18-23	I6	Households with 2+ vehicles available

Table 16-8 Transit Accessibility File (JOBACC.ASC)

Columns	*Format*	*Field Description*
1-5	I5	TAZ
32-40	F9.0	AM transit accessibility via transit within 40 minutes

Chapter 17 Trip Generation

Input(s):

Zonal Land Use File	ZONE.ASC	Text
Zonal HHs of Income Level 1, Stratified by Size and Vehicle Avail.	HHI1_SV.ASC	Text
Zonal HHs of Income Level 2, Stratified by Size and Vehicle Avail.	HHI2_SV.ASC	Text
Zonal HHs of Income Level 3, Stratified by Size and Vehicle Avail.	HHI3_SV.ASC	Text
Zonal HHs of Income Level 4, Stratified by Size and Vehicle Avail.	HHI4_SV.ASC	Text
Zonal Adjustment File, Purpose-Specific: HBW, HBS, HBO, NHB, MEDTRK, HVYTRK	ADJZPAF7.UPW, ADJZPAF7.UPS, ADJZPAF7.UPO, ADJZPAF7.UPN, ADJZPAF7.UPM, ADJZPAF7.UPH	Text
External Production File	PEXT.ASC	Text
External Attraction File	AEXT.ASC	Text
Zonal Area Type File	BASEZON.DAT	Text

Output(s):

Trip End, Production-Attraction Files	HBWpros_ALL.TXT,HBWpros_INC.TXT, HBWattrs_ALL.TXT,HBWattrs_INC.TXT, HBSpros_ALL.TXT,HBSpros_INC.TXT, HBSattrs_ALL.TXT,HBSattrs_INC.TXT, HBOpros_ALL.TXT,HBOpros_INC.TXT, HBOattrs_ALL.TXT,HBOattrs_INC.TXT, NHBpros_ALL.TXT,NHBpros_INT.TXT, NHBattrs_ALL.TXT,NHBattrs_INT.TXT, MTKpros_ALL.TXT,MTKpros_INT.TXT, MTKattrs_ALL.TXT,MTKattrs_INT.TXT, HTKpros_ALL.TXT,HTKpros_INT.TXT, HTKattrs_ALL.TXT,HTKattrs_INT.TXT	Text
HBW Non-Motorized Trip Ends	HBW_NM_PsAs.ASC	Text

Control/Support File(s):

TRIP_GENERATION.S
CV_TRIP_GENERATION.S

Application Details:

The trip generation process consists of two TP+ scripts functions to generate trip-end (production and attraction) files corresponding to seven purposes. The home-based trip-end files are stratified by income level. The program also writes non-stratified trip-end files for the home-based purposes as well. The trip generation process is applied separately for each of the six modeled purposes.

The program reads a general land use file and four (income-based) files which are generated by the demographic modeling process. The program also reads a file containing the area type of each zone and zonal file containing aggregate adjustment factors. Finally, an external production file and an external attraction file containing external productions and attractions by purpose are required.

1) Initial internal zonal attractions are computed, based on the modeled rates. Total attractions are accumulated. If the purpose is NHB, Medium Truck, or Heavy Truck, then the internal productions are set equal to the computed attractions.
2) Internal trip productions are computed based on the modeled trip rates, and if used, adjustment factors. The I-X residential trip productions are computed and extracted from the total productions. The HBW non-motorized trip productions are computed and removed from the total productions. Total internal productions (and non-motorized productions for the HBW purpose) are accumulated.
3) Non-motorized HBW attractions are computed, and scaled to match the non-motorized production total from above.
4) External productions and attractions are read in at the external station level.
5) A scaling factor for internal attractions is computed, as follows:

$$SFIA = ((IP + EP) - EA) / IA$$

Where:

SFIA = Scaling factor applied to internal attractions
IP = Total Internal Productions
EP = Total External Productions
EA = Total External Attractions
IA = Total Internal Attractions

6) The scaling factor is applied to internal attractions.
7) Total Home-based attractions are disaggregated by income level.
8) Final trip-ends (Ps and As) are written out. For the home based purposes, income stratified trip-ends (internal Ps, As only) and total trip-ends (internal and external Ps and As) are written. Only total trip-ends (internal and external Ps and As) are written for the NHB and truck purposes.

File format descriptions are provided below.

Input File Descriptions and Formats

1. Land Use File

2. Zonal HH File, Income Stratified

Table 17-1 Zonal HH File Format Description (HHI?_SV.DAT)

Columns	Format	Field Description
1-4	I4	TAZ
5 -16	F12.2	HH in Size group 1, Veh. Availability. Group 1
17 -28	F12.2	HH in Size group 1, Veh. Availability. Group 2
29 -40	F12.2	HH in Size group 1, Veh. Availability. Group 3
41 -52	F12.2	HH in Size group 1, Veh. Availability. Group 4
53 -64	F12.2	HH in Size group 2, Veh. Availability. Group 1
65 -76	F12.2	HH in Size group 2, Veh. Availability. Group 2
77 -88	F12.2	HH in Size group 2, Veh. Availability. Group 3
89 -100	F12.2	HH in Size group 2, Veh. Availability. Group 4
101 -112	F12.2	HH in Size group 3, Veh. Availability. Group 1
113 -124	F12.2	HH in Size group 3, Veh. Availability. Group 2
125 -136	F12.2	HH in Size group 3, Veh. Availability. Group 3
137 -148	F12.2	HH in Size group 3, Veh. Availability. Group 4
149 -160	F12.2	HH in Size group 4, Veh. Availability. Group 1
161 -172	F12.2	HH in Size group 4, Veh. Availability. Group 2
173 -184	F12.2	HH in Size group 4, Veh. Availability. Group 3
185 -196	F12.2	HH in Size group 4, Veh. Availability. Group 4

4. Zonal Adjustment File (Purpose-Specific)

Table 17-2 Zonal Adjustment File Format Description (ADJZPAF7.UP?)

Columns	Format	Field Description
1-5	I5	TAZ
6-10	F5.2	Income group 1 production adjustment factor
11-15	F5.2	Income group 2 production adjustment factor
16-20	F5.2	Income group 3 production adjustment factor
21-25	F5.2	Income group 4 production adjustment factor
26-30	F5.2	Income group 1 attraction adjustment factor
31-35	F5.2	Income group 2 attraction adjustment factor
36-40	F5.2	Income group 3 attraction adjustment factor

41-45	F5.2	Income group 4 attraction adjustment factor
46-80		(unused)

4. External Production / Attraction File

Table 17-3 External Production / Attraction File (PEXT.ASC, AEXT.ASC)

Columns	*Format*	*Field Description*
1-4	I4	TAZ
6-12	I7	HBW Daily External Auto Person Trip Ps/As
14-20	I7	HBS Daily External Auto Person Trip Ps/As
22-28	I7	HBO Daily External Auto Person Trip Ps/As
30-36	I7	NHB Daily External Auto Person Trip Ps/As
38-44	I7	Daily External Medium Truck Trips Ps/As
46-52	I7	Daily External Heavy Truck Trips Ps/As

5. Zonal Area Type File

Chapter 18 Trip Distribution

input(s):

Trip End, Production-Attraction Files	HBWpros_ALL.TXT,HBWpros_INC.TXT, HBWattrs_ALL.TXT,HBWattrs_INC.TXT, HBSpros_ALL.TXT,HBSpros_INC.TXT, HBSattrs_ALL.TXT,HBSattrs_INC.TXT, HBOpros_ALL.TXT,HBOpros_INC.TXT, HBOattrs_ALL.TXT,HBOattrs_INC.TXT, NHBpros_ALL.TXT,NHBpros_INT.TXT, NHBattrs_ALL.TXT,NHBattrs_INT.TXT, MTKpros_ALL.TXT,MTKpros_INT.TXT, MTKattrs_ALL.TXT,MTKattrs_INT.TXT, HTKpros_ALL.TXT,HTKpros_INT.TXT, HTKattrs_ALL.TXT,HTKattrs_INT.TXT,	Text
SOV Peak, Off-Peak Highway Skims	??_AM.SKM, ??_OP.SKM	Binary
Peak Transit Walk Access Skims	??_AM_WK.SKM	Binary
Off-Peak Transit Walk Access Skims	??_OP_WK.SKM	Binary
Peak Transit Drive Access Skims	??_AM_DR.SKM	Binary
Off-Peak Transit Drive Access Skims	??_OP_DR.SKM	Binary
Land Use File	ZONE.ASC	Text
Highway Terminal Time File	ZTERMTM.ASC	Text
F-Factor Files	HBWV2.FFS, HBSV2.FFS, HBOV2.FFS, N_TV2.FFS	Text
K-Factor Files	HBWK.DAT, HBSK.DAT, HBOK.DAT, NHBK.DAT, MTKK.DAT, HTKK.DAT	Binary
Time penalty Files	HBWPEN.DAT, HBSPEN.DAT, HBOPEN.DAT, NHBPEN.DAT	Binary
Income level Toll/Time Equivalent File	TOLL.INC	Text

Output(s):

6 Trip Tables (HBW, HBS, HBO, NHB, Med Truck, Heavy Truck)	HBWEST??.PTT, HBSEST??.PTT, HBOEST??.PTT, NHBEST??.PTT, MTKEST??.PTT, HTKEST??.PTT	Binary

Program File(s):

TP+, EXTRTAB.EXE

Control/Support File(s):

TRIP_DISTRIBUTION.S
CV_TRIP_DISTRIBUTION.S

Application Details:

The trip distribution process is a TP+ script used to apply the trip distribution process for all iterations. The following procedure is used:

1. Terminal times are added to the highway network times (both peak and off-peak).

2. Composite impedances are developed by purpose.

3. Trip distribution models are run for 27 markets. The three HB purposes use separate models for 4 internal income strata, and two external models for interstate, arterial facilities. The NHB purpose involves a single internal model and two external models as before. Finally the two truck purposes each use separate internal and external models.

The script writes out total HBW, HBS, HBO, and NHB person trips to separate files, in MINUTP format. This is a requirement for running the mode choice model. It also contains a summary routine in which person trips are summarized at jurisdiction level. The trip distribution process also includes a utility program, EXTRTAB.EXE. This is a commonly used program throughout the Version 2.1/TP+ process where MATRIX scripts are used. The program is used to read a TP+ report listing, and to extract out portions of the listing where special summaries exist. This saves time that would ordinarily be spent searching through the report file for key sections. In many cases the TP+ report files are quite voluminous.

Input File Descriptions and Formats

1. Land Use File

2. Highway Terminal Time File

Table 18-1 Highway Terminal Time File (ZTERMTM.ASC)

Columns	***Format***	***Field Description***
1-4	I4	TAZ
27-28	I2	Highway terminal time (minutes)

Chapter 19 Mode Choice

Input(s):

Daily Person Trip Table	??_HBWMU.PTT, ??_HBSMU.PTT, ??_HBOMU.PTT, ??_NHBMU.PTT	Binary
Walk Access Transit Skims	??_AM_WK.SKM, ??_OP_WK.SKM	Binary
Drive Access Transit Skims	??_AM_DR.SKM, ??_OP_DR.SKM	Binary
Walk Access Transit Fares	??_AM_WK.FAR, ??_OP_WK.FAR	Binary
Drive Access Transit Fares	??_AM_DR.FAR, ??_OP_DR.FAR	Binary
SOV Highway Skims	SOV??AM.SKM, SOV??OP.SKM	Binary
HOV2 Highway Skims	HOV2??AM.SKM, HOV2??OP.SKM	Binary
HOV 3+ Highway Skims	HOV3??AM.SKM, HOV3??OP.SKM	Binary
Zonal (A1) File	HBWV2.A1F, HBSV2.A1F, HBOV2.A1F, NHBV2.A1F	Text
Transit Percentage Adjustment File	MCTF_HBW.ASC, MCTF_HBS.ASC, MCTF_HBO.ASC, MCTF_NHB.ASC	Text
Car Occupancy Adjustment Files	MCCF_HBW.ASC, MCCF_HBS.ASC, MCCF_HBO.ASC, MCCF_NHB.ASC	Text
Non-work Transit Factors File (unused)	MC_FAC.ASC	Text

Output(s):

LOV Auto Driver, LOV Auto Person, Walk Access Transit Trips, Drive Access Transit Trips, HOV Auto Driver Trips, HOV Auto Person Trips	MC_HBW??.FIN, ETC.	MINUTP Binary

Program File(s):

COGMC.EXE, EXTRTAB.EXE

Control/Support File(s):

Control Files: HBWMC.SET, HBSMC.SET, HBOMC.SET, NHBMC.SET
Jurisdiction-level factor files: MCTF_HBW.ASC, MCTF_HBS.ASC, MCTF_HBO.ASC, MCTF_NHB.ASC, MCCF_HBW.ASC, MCCF_HBS.ASC, MCCF_HBO.ASC, MCCF_NHB.ASC, MC_FAC.ASC
Scripts: MC_SUMMARY.S, MC_CONSTRAINT.S, MC_CONSUMMARY.S,

Application Details:

The mode choice model is run separately for each purpose. Each run requires:

- LOV and HOV highway skims;

- Walk access and drive access transit skims;
- Walk access and drive access transit fares;
- A zone file containing short/long walk area percentages, parking costs, and households by vehicle availability levels
- Transit and car occupancy adjustment factors, at the jurisdiction interchange level

The program generally writes out binary files containing trip tables by mode. The files include LOV auto driver trips, LOV auto person trips, walk access transit trips, drive access transit trips, HOV auto drivers and HOV auto persons. At present HOV trips are generated for the HBW purpose only. It is important to point out that the HOV trips generated by the mode choice model *are only those that utilize HOV-dedicated lanes for a substantial portion of the trip*. The model allocates the remaining carpool traffic in the LOV trips. The ADR_UPDATE.S script is used after the mode choice process to disaggregate LOV trips among 1, 2, and 3+ occupant levels

The current mode choice program version requires that the user specify all parameters explicitly in the control cards. The calibrated model parameters, for each purpose, are listed below.

It has been noted that some non-work intrazonal person trip interchanges resulting from the trip distribution process have been found to exceed 32,767. This value is larger than what the current mode choice program can currently accommodate. These cases represent a small number of interchanges and do not impact transit estimation at all. The summary program MC_SUMMARY addresses this potential problem and updates the mode choice output files. The program sets these person trips to LOV persons and auto drivers (using an assumed average occupancy), in such a manner that no person trips are lost. The summary program MC_CONSUMMARY is used to produce summaries for when the mode choice constraint through the regional core is applied (typically for runs after 2010).

Input file format descriptions for the mode choice model are shown in Table 19-2 and Table 19-3. A summary of user-defined parameters (UPARMS) is shown in Table 19-4.

Transit Constraint

Recent travel modeling at COG/TPB has added processing steps, generally referred to as the “transit constraint.” The constraint was implemented to reflect the assumption that the core capacity of the transit system will not support expected passenger demand *beyond* projected 2010 levels. The transit constraint was therefore applied to impose a transit trip maximum on forecasted transit trips, as established by 2010 transit trip flows, for those trips destined *to or through* the regional core. The resulting *displaced* transit trips resulting from the constraining process were subsequently allocated among automobile modes. The transit constraint process is implemented with a special batch file (which takes the place of Mode_Choice.Bat) and two scripts:

1) MC_Constraint.S	(TP+ script file residing in the ..\SCRIPTS subdirectory)
2) MC_ConSummary.S	(TP+ script file residing in the ..\SCRIPTS subdirectory)
3) Mode_Choice_TC.bat	(application batch file residing in the ‘route’ subdirectory)

Detailed information on each file is provided below.

MC_Constraint.S

The MC_Constraint.S script is used to work through the necessary matrix manipulations for applying Version 2.2 transit constraint process, specifically:

1) The program reads the constrained (2010) and forecasted/unconstrained zone level transit trips resulting from the mode choice model and calculates peak transit trips for both years;

2) Both sets of zone-level transit trips are compressed to determine the aggregate trip flows *to and through* the regional core, and aggregate factors are computed for constraining the forecasted transit trips;

3) The aggregate transit constraint factors are applied to the zone-level forecasted transit trips and automobile trips are adjusted to incorporate the displaced transit trips.

The above constraint process varies slightly from the Version 1 approach in that it includes a step to extract peak period trips from daily trips. Since Version 1 model produced HBW transit trips only, the transit constraint approach included the simplifying assumption that *all* such trips occur during the peak period. Therefore, the forecasted *daily* transit trips moving to or through the regional core were adjusted to match the constraining 2010 *daily* totals. Given that the travel model produces *both* work and non-work transit trips, a more detailed method to extract peak period transit trips from the daily travel was deemed necessary. Unlike work trips, the majority of non-work transit trips occurs outside of the peak period and is therefore irrelevant to system capacity issues. Table 19-1 specifies temporal transit trip distributions (percentages) summarized on the basis of purpose and orientation. The distributions were developed previously from the COG/TPB 1994 Household Travel Survey and deemed reasonable for developing peak transit travel estimates more precisely. It is currently assumed that the temporal distributions will remain *constant* through time, as there is currently no observed basis for determining how hourly travel distributions will change.

Table 19-1 Temporal Distribution (%) of Transit Trips by Orientation, Time Period, and Purpose

Trip Orientation	Time Period	Purpose			
		HBW	***HBS***	***HBO***	***NHB***
Home to Work	*AM (6:00-9:00 AM)*	70	24	38	14
	PM (4:00-7:00 PM)	5	15	13	31
	Off-Peak Hours	25	61	49	55
	Subtotal	100	100	100	100
Work to Home	*AM (6:00-9:00 AM)*	1	2	2	14
	PM (4:00-7:00 PM)	72	35	35	31
	Off-Peak Hours	27	63	63	55
	Subtotal	100	100	100	100

Source: 1994 COG HTS

Equation (1) shows the general form by which the temporal factors are applied to the 2010 and forecasted daily zonal transit trips to arrive at trip estimates for a specific time period (in step1).

(1) $PrdTrips_{ij} = [HWF * DayTrips_{ij} / 2.0] + [WHF * DayTrips_{ji} / 2.0]$

Where:

$PrdTrips_{ij}$ = estimated trips in a specific time period between zones i & j
HWF = Home-to-Work factor for period
WHF = Work-to-Home factor for period
$DayTrips_{ij}$ = Daily transit trips (P/A format) between zones i & j
$DayTrips_{ji}$ = Daily transit trips (P/A format) between zones j & i

Four files are written corresponding to each modeled purpose. Each file contains three zonal trip tables: 1) total peak period transit trips (*both* AM & PM, 2) off-peak transit trips, and 3) daily transit trips. A concise summary of the transit trip totals by time period is provided on an ASCII file named MC_Constraint.tab (see example listing in Attachment 1).

2010 and unconstrained peak period transit trips are each compressed from zone level to '3 by 3' superdistrict trip tables, by purpose, to allow for a computation of adjustment factors that will subsequently be applied to the unconstrained zonal transit trips (step 2). The 3 superdistricts are defined as: 1) Virgina, Non-Regional Core (including W. Virginia), 2) Virgina & DC Regional Core, and 3) Maryland & DC Non-Regional Core[8]. Adjustment factors representing the ratio of constrained to unconstrained transit trips are computed for interchanges representing trips to or through the regional core (1/2, 1/3, 3/1, and 3/2). Factors associated with all other interchanges are initialized to a value of 1.00. Daily constrained forecasted transit trips are computed by purpose and are defined as shown in equation (2):

(2) $DConFTrn_{ij} = DUncFTrn_{ij} - PUncFTrn_{ij} + P10Trn_{ij}$

[8] External stations intentionally not considered in the matrix compression.

Where:
$DConFTrn_{ij}$ = Daily Constrained Forecasted transit trips from superdistrict i to j
$DUncFTrn_{ij}$ = Daily Unconstrained Forecasted transit trips from superdistrict i to j
$PUncFTrn_{ij}$ = Peak period Unconstrained Forecasted transit trips from superdistrict i to j
$P10Trn_{ij}$ = Peak period 2010 transit trips from superdistrict i to j

The equation simply indicates that the resulting constrained forecasted transit trips are comprised of unconstrained off-peak trips plus 2010 peak period transit trips. Four small (9-record) ASCII files are written out for each purpose. The files are named TCONFTR.HBW, TCONFTR.HBS, TCONFTR.HBO, and TCONFTR.NHB. Each file contains interchange level totals at the 3 by 3 interchange level, for the interchanges of interest.

- Interchange as a two-digit number, eg '11' refers to origin 1, destination 1, etc.
- Constrained (2010) peak transit trips
- Constrained (2010) daily transit trips
- Unconstrained (forecasted) peak transit trips
- Unconstrained (forecasted) daily transit trips
- Final/constrained forecasted daily transit trips
- Adjustment factor (constrained / unconstrained forecasted daily transit trips)

The ASCII files containing the transit adjustment factors are read into the third and final step of the script (as lookup tables). Logically, the resulting adjustment factors *should* always be greater than zero and less than 1.00. The final (constrained) regional transit totals computed at the 3 by 3 level are also carried forward (via the TP+ LOG command) so that they can be checked against the zone level transit totals computed at the third step. During step 3, the unconstrained zone-level trip file resulting from the mode choice model is modified on an *interchange* basis to reflect the transit constraint. The standard set of tables on the file are shown below:

1) LOV Auto Drivers (including HOVs on general use facilities)
2) LOV Auto Persons (including HOV persons on general use facilities)
3) Walk Access Transit
4) Drive Access Transit
5) HOV 2-Occ Auto Drivers (on Priority Facilities/HBW only)
6) HOV Auto Person (on Priority Facilities/HBW only)
7) HOV3+-Occ. Auto Drivers (on Priority Facilities/HBW only)

The constraint factors are first applied uniformly to both walk-access and drive-access transit trips. Next, the transit residual is computed as the difference between unconstrained and constrained transit trips. If HOV persons (t6) exist, the transit residual is apportioned and added to the existing LOV and HOV persons based upon the existing proportion, otherwise the transit residual is added to the LOV persons (t2). Finally, the residual LOV/HOV auto drivers are computed and added to the existing auto driver tables (t1,t7) from the associated residual auto persons based on the existing auto driver percentage in the cell. For cases where displaced transit trips exist but no auto persons exist, a default auto driver percentage is used. The default percentages are based on the 1994 HTS and are shown below:

Default Auto Driver Percentages

Purpose	Default Value	Implied Car Occupancy
HBW	90.09%	1.11
HBS	81.30%	1.23
HBO	68.97%	1.45
NHB	80.00%	1.25

A concise summary of the constrained and unconstrained transit trip totals by mode is provided on an ASCII file named MC_Constraint.tab. This file should be reviewed for reasonability. Note that regional input and output person trip totals will not match perfectly because the TP+ ‘bucket-rounding’ function is invoked after the calculations are made for all interchanges.

MC_ConSummary.S

This script is used to generate jurisdictional trip summaries of the modified mode choice output file. An ASCII listing file named MC_ConSummary.tab is ultimately generated. This file may be compared to MC_Summary.tab which contains a jurisdictional summary of the unconstrained trips which is normally generated after the mode choice model is executed.

Mode_Choice_TC.bat

The Mode_Choice_TC.bat file *replaces* the standard batch file used to execute the mode choice model (Mode_Choice.bat). The file resides in the top-level subdirectory along with the pre-existing application batch files. Prior to running batch file, 2010 transit trip tables *must* exist on the machine of execution. The user also *must* specify the path of the pre-existing 2010 transit trip tables produced by the mode choice model. The path of the 2010 mode choice files is normally defined in the 'RUNALL' batch file as an environment variable near the top of the batch file, as shown on the example line below:

set _path10_=...

A section of the "runall" batch file checks that the 'standard' mode choice output files do, in fact, exist in the user-specified path. If the files are not detected the batch operation will exit to a 'pause' statement, thus halting the process execution. Beyond defining the _path10_ variable, the user will normally apply the batch file as is.

Irrespective of whether the constrained batch file (Mode_Choice_TC.bat) or the unconstrained batch file (Mode_Choice.bat) is used, the resultant mode choice output files produced will be named, MC_HBW.FIN, MC_HBS.FIN, MC_HBO.FIN, and MC_NHB.FIN.

Input File Descriptions and Formats

Table 19-2 Zonal File, or "A1 Deck," Format Description (???v2.a1f)

Columns	*Format*	*Field Description*
1-5	I5	TAZ number
6-11	I6	Households with 0 Vehicles Available
12-17	I6	Households with 1 Vehicle Available
18-23	I6	Households with 2+ Vehicles Available
24-27	I4	Percent Short (0.00-0.33 mi) Walk to Transit
28-31	I4	Percent Long (0.34-1.00 mi) Walk to Transit
32-38	I7	Total Employment (normally unspecified for Version 2 application)
39-46	F8.4	Land Area in Sq. Miles
47-51	I5	Daily / Hourly Parking Cost in 1994 cents
52-54	I3	Attraction Zone Highway Terminal Time in minutes
55-58	I4	Average Short Walk Access Time in minutes
59-62	I4	Average Long Walk Access Time in minutes
63-69	I7	Land Use 'Mix' Measure, defined as: (HHPD*NEMPD) / (HHPD+NEMPD) Where: HHPD = HH Population density (pop/sq mi) NEMPD = Employment density, where employment has been Normalized to HH Population.

Table 19-3 Transit and Car Occupancy Adjustment Factor File Format Description (mc?f_???.asc)

Columns	*Format*	*Field Description*
1-5	I5	Origin District Code (1-20)
6-12	F7.4	Factor for Destination District 1
13-19	F7.4	Factor for Destination District 2
20-26	F7.4	Factor for Destination District 3
…	…	…
139-145	F7.4	Factor for Destination District 20

Table 19-4 Mode Choice Parameter Listing, Values which may be changed by user

COG/TPB Model, Version 2.2

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
ZONES	I	2191	2191	2191	2191	Highest zone number for matrices
UPARMS(1)	I	2	0	0	0	Carpool occupancy criterion A. 0 or 1 means that no special HOV roadways are available. Otherwise, value must lie between 2 and 4 inclusive.
UPARMS(2)	R	0	0	0	0	Proportion of intrazonal trips which use transit
UPARMS(3)	R	1	1	1	1	Proportion of intrazonal trips which are auto drivers
UPARMS(4)	R	0	0	0	0	Proportion of internal/external trips which use transit
UPARMS(5)	R	0.87	0.61	0.62	0.78	Proportion of internal/external auto person trips that are auto driver
UPARMS(6)	I	3	0	0	0	Carpool occupancy criterion B. 0 or 1 means that there is no second type of HOV roadway. Otherwise, value must lie between 2 and 4 inclusive and must exceed UPARMS(1)
UPARMS(10)	R	1	1	1	1	Factor to scale input highway and HOV travel times to whole minutes
UPARMS(11)	R	0.1	0.1	0.1	0.1	Factor to scale input highway and HOV distances to whole minutes
UPARMS(12)	R	9.1	9.1	9.1	9.1	Auto operating cost in cents per mile (1994 dollars)
UPARMS(13)	R	82.5	82.5	82.5	82.5	Consumer price index (CPI-U), all items, urban consumers, for June 1980 (base: 1982-84 = 100) **NOT USED**
UPARMS(14)	R	82.5	82.5	82.5	82.5	Forecast year consumer price index (CPI-U) **NOT USED**
UPARMS(16)	I	2	2	2	2	Apply sub-model to estimate daily parking cost? (1=yes, 2=no)
UPARMS(17)	I	2	2	2	2	Apply sub-model to estimate highway terminal times? (1=yes, 2=no)
UPARMS(18)	I	7	7	7	7	Mode choice model application option: 5 = Apply work and non-work models, non-work input is person trips; 6 = Apply work and non-work models, non-work input is vehicle trips; 7 = Apply work and non-work models, non-work input is vehicle trips
UPARMS(19)	I	2	2	2	2	Print input zonal data report? (1=yes, 2=no)
UPARMS(20)	I	1	1	1	1	Print transformed zonal data report? (1=yes, 2=no)
UPARMS(21)	I	1	1	1	1	“Dry run” option: 1 = Full program run 2 = Read and print parameters only 3 = Read/print parameters and read/print zonal data only (MODAS & MODBS)

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
UPARMS(22)	R	0.9	0.27	0.75	1	Average daily work person trips per household for 0-auto households
UPARMS(23)	R	1.25	0.72	1.81	0	Average daily work person trips per household for 1-auto households (value not used for NHB model)
UPARMS(24)	R	2.15	1.11	3.71	0	Average daily work person trips per household for 2+auto households (value not used for NHB model)
UPARMS(26)	R	2.845	2.845	2.845	2.845	Average daily non-work person trips per household for 0-auto households
UPARMS(27)	R	3.703	3.703	3.703	0	Average daily non-work person trips per household for 1-auto households (value not used for NHB model)
UPARMS(28)	R	4.732	4.732	4.732	0	Average daily non-work person trips per household for 2+auto households (value not used for NHB model)
UPARMS(30)	I	1	1	1	1	Print system variable frequency average variable value, and trips by access area reports? (1=yes, 2=no)

Ref: mcUparmsV21d19.xls
Type: I = integers; R = decimal value; L = logical (true or false)

Table 19-5 Mode Choice Parameter Listing, Values which should not be changed by user

COG/TPB Model, Version 2.2

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
UPARMS(15)	R	4.55	4.36	4.36	4.38	Average auto occupancy for the 4+person-per-automobile integer occupancy mode
UPARMS(31)	R	0.075	0.02432	0.04991	0.06695	Coefficient on transit walk time
UPARMS(32)	R	0.075	0.02432	0.04991	0.06695	Coefficient on transit initial wait time (“wait 1”)
UPARMS(33)	R	0.075	0.02432	0.04991	0.06695	Coefficient on transfer time (“wait 2”)
UPARMS(34)	R	0.03	0.00912	0.01902	0.03242	Coefficient on transit non-Metrorail IVTT
UPARMS(35)	R	0.03	0.00912	0.01902	0.03242	Coefficient on transit Metrorail IVTT
UPARMS(36)	R	0	-2.627E-05	-2.585E-05	-1.369E-05	Drive alone coefficient on land-use mix index variable at production zone
UPARMS(37)	R	2.518E-05	-2.438E-05	-2.171E-05	-1.300E-05	Drive alone coefficient on land-use mix index variable at attraction zone
UPARMS(38)	R	0	0	0	0	Group ride coefficient on land-use mix index variable at production zone
UPARMS(39)	R	0	0	0	0	Group ride coefficient on land-use mix index variable at attraction zone
UPARMS(40)	R	0.00425	0.00416	0	0	Coefficient on transit fare
UPARMS(41)	R	0	0	0	0	Natural log of highway cost for CP2, CP3, and CP4+ in the carpool occupancy model
UPARMS(42)	R	0.03	0.00912	0.01902	0.03242	Coefficient on transit auto-connect time
UPARMS(43)	R	2.0499	2.9	2.9	1.4	Transit auto-connect bias coefficient for 0-auto households
UPARMS(44)	R	0.5876	0	1.1	0	Transit auto-connect bias coefficient for 1-auto households
UPARMS(45)	R	0.3571	-2	0.65	0	Transit auto-connect bias coefficient for 2+auto households
UPARMS(46)	R	-4.449E-05	0	-5.194E-05	0	Transit coefficient on land-use mix index variable at production zone
UPARMS(47)	R	0.03	0.00912	0.01902	0.03242	Coefficient on drive alone highway terminal (excess) time
UPARMS(48)	R	0.03	0.00912	0.01902	0.03242	Coefficient on drive alone highway IVTT

Keyword	Type	Purpose				Description
		HBW	**HBS**	**HBO**	**NHB**	
UPARMS(49)	R	0.00425	0.00416	0	0	Coefficient on drive alone highway operating cost
UPARMS(50)	R	0.00425	0.00416	0	0	Coefficient on drive alone highway parking cost
UPARMS(51)	R	0.00425	0.00416	0	0	Coefficient on drive alone highway toll
UPARMS(52)	R	0	0	0	0	Coefficient on drive alone highway distance
UPARMS(53)	R	4.831	3.037	4.3573	-0.8541	Drive alone bias coefficient for 0-auto households
UPARMS(54)	R	0.8546	-2.272	-0.0047	0	Drive alone bias coefficient for 1-auto households
UPARMS(55)	R	-0.0824	-3.751	-0.3111	0	Drive alone bias coefficient for 2+ auto households
UPARMS(56)	R	0	-4.869E-05	-2.307E-05	-1.659E-05	Transit coefficient on land-use mix index variable at attraction zone
UPARMS(57)	R	0.03	0.00912	0.01902	0.03242	Coefficient on group ride highway terminal (excess) time
UPARMS(58)	R	0.03	0.00912	0.01902	0.03242	Coefficient on group ride highway IVTT
UPARMS(59)	R	0.00425	0.00416	0	0	Coefficient on group ride highway operating cost
UPARMS(60)	R	0.00425	0.00416	0	0	Coefficient on group ride highway parking cost
UPARMS(61)	R	0.00425	0.00416	0	0	Coefficient on group ride highway toll
UPARMS(62)	R	0	0	0	0	Coefficient on group ride highway distance
UPARMS(63)	R	4.6175	0.888	3.1938	0.076	Group ride bias coefficient for 0-auto households
UPARMS(64)	R	2.4071	-1.929	0.5041	0	Group ride bias coefficient for 1-auto households
UPARMS(65)	R	1.8979	-3.507	-0.0499	0	Group ride bias coefficient for 2+ auto households
UPARMS(66)	R	0	0	0.78384	0.86043	Natural log of highway cost for drive alone and group ride in the mode choice model
UPARMS(67)	R	0	0.45633	0.6853	0.00709	Coefficient on 2 persons: Auto highway terminal (excess) time
UPARMS(68)	R	0	0.45633	0.6853	0.00709	Coefficient on 2 persons: Auto highway IVTT
UPARMS(69)	R	0.01124	0	0	0	Coefficient on 2 persons: Auto highway operating cost
UPARMS(70)	R	0.02318	0	0	0	Coefficient on 2 persons: Auto parking cost
UPARMS(71)	R	0.05077	0	0	0	Coefficient on 2 persons: Auto highway toll
UPARMS(72)	R	0	0	0	0.00187	Coefficient on 2 persons: Auto highway distance

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
UPARMS(73)	R	0	0.45633	0.6853	0.00709	Coefficient on 3 persons: Auto highway terminal (excess) time
UPARMS(74)	R	0	0.45633	0.6853	0.00709	Coefficient on 3 persons: Auto highway IVTT
UPARMS(75)	R	0.01124	0	0	0	Coefficient on 3 persons: Auto highway operating cost
UPARMS(76)	R	0.02318	0	0	0	Coefficient on 3 persons: Auto parking cost
UPARMS(77)	R	0.05077	0	0	0	Coefficient on 3 persons: Auto highway toll
UPARMS(78)	R	0	0	0	0.00187	Coefficient on 3 persons: Auto highway distance
UPARMS(79)	R	0	0	0	0.92477	3-person auto bias coefficient for 0-auto households
UPARMS(80)	R	1.47162	0.92201	0.31756	0	3-person auto bias coefficient for 1-auto households
UPARMS(81)	R	1.88085	0.48966	0.15151	0	3-person auto bias coefficient for 2+ auto households
UPARMS(82)	R	0	0	0.78384	0.86043	Natural log of transit fare for transit mode in the mode choice model
UPARMS(83)	R	0	0.45633	0.6853	0.00709	Coefficient on 4+ persons: Auto highway terminal (excess) time
UPARMS(84)	R	0	0.45633	0.6853	0.00709	Coefficient on 4+ persons: Auto highway IVTT
UPARMS(85)	R	0.01124	0	0	0	Coefficient on 4+ persons: Auto highway operating cost
UPARMS(86)	R	0.02318	0	0	0	Coefficient on 4+ persons: Auto parking cost
UPARMS(87)	R	0.05077	0	0	0	Coefficient on 4+ persons: Auto highway toll
UPARMS(88)	R	0	0	0	0	Coefficient on 4+ persons: Auto highway distance
UPARMS(89)	R	0	0	0	1.41003	4+person auto bias coefficient for 0-auto households
UPARMS(90)	R	3.04973	1.51854	0	0	4+person auto bias coefficient for 1-auto households
UPARMS(91)	R	2.54494	0.84071	-0.21854	0	4+person auto bias coefficient for 2+ auto households
UPARMS(92)	R	0	0	-0.41346	-0.76998	Transit bias coefficient for short walk to short (or single) walk access market
UPARMS(93)	R	0	0	0	0	Transit bias coefficient for short (or single) walk to long walk access market
UPARMS(94)	R	0	0	0	0	Transit bias coefficient for long walk to short (or single) walk access market
UPARMS(95)	I	3	3	3	1	Number of socio-economic stratifications in the model

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
UPARMS(96)	R	0	0	0	0	Transit bias coefficient for long walk to long walk access market
UPARMS(97)	R	0	0	0	0	Transit bias coefficient for drive access to short (or single) walk access market
UPARMS(98)	R	-0.03611	0	0	0	Coefficient on HOV highway time savings (compared to normal highway network) for 3- & 4+occ.
UPARMS(99)	R	0	-0.84404	-0.69708	-1.47447	Metrorail bias coefficient (applies if Metrorail is more than 25% of total transit run time)
UPARMS(100)	R	0	0	0	0	Transit bias coefficient for drive access to long walk access market
OrigSLWalk	L	t	t	t	t	If True, apply short/long walk methodology at the production (origin) end, else apply single walk methodology.
DestSLWalk	L	t	t	t	t	If True, apply short/long walk methodology at the attraction (destination) end, else apply single walk methodology.
UseShort	L	t	t	t	t	If True, use the short walk percentages and walk times as the “single” walk values, else use the long walk percentages and walk times.

Ref: mcUparmsV21d19.xls

Type: I = integers; R = decimal value; L = logical (true or false)

Chapter 20 Time-of-Day Processing

Input(s):

Daily Auto Driver Trips, by Occupancy Levels	`HBW??.ADR, HBS??.ADR, HBO??.ADR, NHB??.ADR, COM.TRP`	Binary
Daily Miscellaneous and Truck Trips (From the \Inputs subdirectory)	`VISI.ADR, TAXI.ADR, SCHL.ADR, AIRPAX.ADR, XXTRK.VTT, XXAUT.VTT, MTKEST??.VTT, HTKEST??.VTT, XXCV.trp`	Binary
Time of Day Percent File by Purpose, Mode, and Direction	`V2TODTPP.PAR`	text / TP+ script

Output(s):

Trip Tables by Time Period	`AM??.ADR, PM??.ADR, OP??.ADR, ??TMCOM.TRP`	Binary
Miscellaneous Time-of-Day Files	`MISCAM.TT, MISCPM.TT, MISCOP.TT`	Binary

Program File(s):

TP+, EXTRTAB.EXE

Control/Support File(s):

TIME-OF-DAY.S, MISC_TIME-OF-DAY.S, V2TODTPP.PAR, CV_TIME-OF-DAY.S

Application Details:

The TIME-OF-DAY, CV_Time-of-Day, and MISC_TIME-OF-DAY scripts are used to apportion modeled auto driver trips and non-modeled vehicle trips among the three time periods. Each program applies the percentages to each trip table on the basis of purpose, occupancy level, and direction. The time of day factors exist on a parameter file that is ‘called’ into the TP+ scripts. The parameter file is named V2TODTPP.PAR. A listing of the parameter file is shown below:

```
;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
;|/////////////////////////////////////////////////////////////////////|
;|//     V2TODTPP.PAR --  Version 2 Time Period Factors              //|
;|/////////////////////////////////////////////////////////////////////|
;|\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
;  NOTE: Time Period Definitions:
;             AM Peak  Period: 6:00 AM - 9:00 AM
;             PM Peak  Period: 4:00 PM - 7:00 PM
;             Off-Peak Period: All other hours
;
; I-I med/heavy truck pcts. updated 9/04/02(rjm) based on 9/96
; Quick Response Freight Manual temporal distributions (pg 4-38)
;
;                      Period       Purpose   Mode        Direction
;                     --------      -------   ----        ---------
; Start of HBW
AMWADHNP = 67.72    ; AM  Pk Prd    HBW     Auto Driver  H -> NH
PMWADHNP =  2.78    ; PM  Pk Prd    HBW     Auto Driver  H -> NH
OPWADHNP = 29.50    ; NON Pk Prd    HBW     Auto Driver  H -> NH

AMWADNHP =  1.41    ; AM  Pk Prd    HBW     Auto Driver  NH -> H
PMWADNHP = 63.29    ; PM  Pk Prd    HBW     Auto Driver  NH -> H
OPWADNHP = 35.30    ; NON Pk Prd    HBW     Auto Driver  NH -> H
;
AMWDAHNP = 66.39    ; AM  Pk Prd    HBW     Drive Alone  H -> NH
PMWDAHNP =  2.80    ; PM  Pk Prd    HBW     Drive Alone  H -> NH
OPWDAHNP = 30.81    ; NON Pk Prd    HBW     Drive Alone  H -> NH

AMWDANHP =  1.50    ; AM  Pk Prd    HBW     Drive Alone  NH -> H
PMWDANHP = 61.21    ; PM  Pk Prd    HBW     Drive Alone  NH -> H
OPWDANHP = 37.29    ; NON Pk Prd    HBW     Drive Alone  NH -> H
;
AMWCPHNP = 74.66    ; AM  Pk Prd    HBW     CarPool Psn  H -> NH
PMWCPHNP =  3.04    ; PM  Pk Prd    HBW     CarPool Psn  H -> NH
OPWCPHNP = 22.30    ; NON Pk Prd    HBW     CarPool Psn  H -> NH

AMWCPNHP =  0.87    ; AM  Pk Prd    HBW     CarPool Psn  NH -> H
PMWCPNHP = 72.39    ; PM  Pk Prd    HBW     CarPool Psn  NH -> H
OPWCPNHP = 26.74    ; NON Pk Prd    HBW     CarPool Psn  NH -> H
; End of HBW
;
; Start of HBS
AMSADHNP = 10.62    ; AM  Pk Prd    HBS     Auto Driver  H -> NH
PMSADHNP = 20.69    ; PM  Pk Prd    HBS     Auto Driver  H -> NH
OPSADHNP = 68.69    ; NON Pk Prd    HBS     Auto Driver  H -> NH

AMSADNHP =  1.75    ; AM  Pk Prd    HBS     Auto Driver  NH -> H
PMSADNHP = 31.49    ; PM  Pk Prd    HBS     Auto Driver  NH -> H
OPSADNHP = 66.76    ; NON Pk Prd    HBS     Auto Driver  NH -> H
;
AMSDAHNP = 12.66    ; AM  Pk Prd    HBS     Drive Alone  H -> NH
PMSDAHNP = 18.12    ; PM  Pk Prd    HBS     Drive Alone  H -> NH
OPSDAHNP = 69.22    ; NON Pk Prd    HBS     Drive Alone  H -> NH

AMSDANHP =  2.33    ; AM  Pk Prd    HBS     Drive Alone  NH -> H
PMSDANHP = 31.82    ; PM  Pk Prd    HBS     Drive Alone  NH -> H
OPSDANHP = 65.85    ; NON Pk Prd    HBS     Drive Alone  NH -> H
;
AMSCPHNP =  5.85    ; AM  Pk Prd    HBS     CarPool Psn  H -> NH
PMSCPHNP = 26.45    ; PM  Pk Prd    HBS     CarPool Psn  H -> NH
OPSCPHNP = 67.70    ; NON Pk Prd    HBS     CarPool Psn  H -> NH

AMSCPNHP =  0.47    ; AM  Pk Prd    HBS     CarPool Psn  NH -> H
PMSCPNHP = 31.37    ; PM  Pk Prd    HBS     CarPool Psn  NH -> H
OPSCPNHP = 68.16    ; NON Pk Prd    HBS     CarPool Psn  NH -> H
; End of HBS
;
; Start of HBO
AMOADHNP = 24.40    ; AM  Pk Prd    HBO     Auto Driver  H -> NH
PMOADHNP = 21.42    ; PM  Pk Prd    HBO     Auto Driver  H -> NH
OPOADHNP = 54.18    ; NON Pk Prd    HBO     Auto Driver  H -> NH

AMOADNHP =  4.98    ; AM  Pk Prd    HBO     Auto Driver  NH -> H
PMOADNHP = 28.54    ; PM  Pk Prd    HBO     Auto Driver  NH -> H
OPOADNHP = 66.48    ; NON Pk Prd    HBO     Auto Driver  NH -> H
;
AMODAHNP = 23.37    ; AM  Pk Prd    HBO     Drive Alone  H -> NH
PMODAHNP = 18.59    ; PM  Pk Prd    HBO     Drive Alone  H -> NH
OPODAHNP = 58.04    ; NON Pk Prd    HBO     Drive Alone  H -> NH

AMODANHP =  6.48    ; AM  Pk Prd    HBO     Drive Alone  NH -> H
PMODANHP = 25.83    ; PM  Pk Prd    HBO     Drive Alone  NH -> H
OPODANHP = 67.69    ; NON Pk Prd    HBO     Drive Alone  NH -> H
;


AMOCPHNP = 28.66    ; AM  Pk Prd    HBO     CarPool Psn  H -> NH
PMOCPHNP = 26.61    ; PM  Pk Prd    HBO     CarPool Psn  H -> NH
OPOCPHNP = 44.73    ; NON Pk Prd    HBO     CarPool Psn  H -> NH

AMOCPNHP =  1.89    ; AM  Pk Prd    HBO     CarPool Psn  NH -> H
PMOCPNHP = 31.46    ; PM  Pk Prd    HBO     CarPool Psn  NH -> H
OPOCPNHP = 66.65    ; NON Pk Prd    HBO     CarPool Psn  NH -> H
; End of HBO

;
; Start of NHB
AMNADHNP =  8.49    ; AM  Pk Prd    NHB     Auto Driver  H -> NH
PMNADHNP = 26.97    ; PM  Pk Prd    NHB     Auto Driver  H -> NH
OPNADHNP = 64.54    ; NON Pk Prd    NHB     Auto Driver  H -> NH

AMNADNHP =  8.49    ; AM  Pk Prd    NHB     Auto Driver  NH -> H
PMNADNHP = 26.97    ; PM  Pk Prd    NHB     Auto Driver  NH -> H
OPNADNHP = 64.54    ; NON Pk Prd    NHB     Auto Driver  NH -> H
```

```
;
AMNDAHNP =  9.41    ; AM  Pk Prd    NHB     Drive Alone  H -> NH
PMNDAHNP = 25.94    ; PM  Pk Prd    NHB     Drive Alone  H -> NH
OPNDAHNP = 64.65    ; NON Pk Prd    NHB     Drive Alone  H -> NH

AMNDANHP =  9.41    ; AM  Pk Prd    NHB     Drive Alone  NH -> H
PMNDANHP = 25.94    ; PM  Pk Prd    NHB     Drive Alone  NH -> H
OPNDANHP = 64.65    ; NON Pk Prd    NHB     Drive Alone  NH -> H
;
AMNCPHNP =  7.04    ; AM  Pk Prd    NHB     CarPool Psn  H -> NH
PMNCPHNP = 28.15    ; PM  Pk Prd    NHB     CarPool Psn  H -> NH
OPNCPHNP = 64.81    ; NON Pk Prd    NHB     CarPool Psn  H -> NH

AMNCPNHP =  7.04    ; AM  Pk Prd    NHB     CarPool Psn  NH -> H
PMNCPNHP = 28.15    ; PM  Pk Prd    NHB     CarPool Psn  NH -> H
OPNCPNHP = 64.81    ; NON Pk Prd    NHB     CarPool Psn  NH -> H
; End of NHB
;
; Start of Through, Internal Trucks and Through Auto Driver
AMXXTRKP = 23.00    ; AM  Pk Prd    XX      Trucks
PMXXTRKP = 11.00    ; PM  Pk Prd    XX      Trucks
OPXXTRKP = 66.00    ; NON Pk Prd    XX      Trucks
;
AMIIMTKP = 19.50    ; AM  Pk Prd    II      Med. Trucks
PMIIMTKP = 15.20    ; PM  Pk Prd    II      Med. Trucks
OPIIMTKP = 65.30    ; NON Pk Prd    II      Med. Trucks
;
AMIIHTKP = 15.40    ; AM  Pk Prd    II      Hvy. Trucks
PMIIHTKP = 13.00    ; PM  Pk Prd    II      Hvy. Trucks
OPIIHTKP = 71.60    ; NON Pk Prd    II      Hvy. Trucks
;
AMXXADRP = 18.00    ; AM  Pk Prd    XX      Auto Driver
PMXXADRP = 22.00    ; PM  Pk Prd    XX      Auto Driver
OPXXADRP = 60.00    ; NON Pk Prd    XX      Auto Driver
; End of Through, Internal Trucks and Through Auto Driver
;
; Start of Misc. Auto Driver Trips (Taxi, Visitor, School)
AMTAXISP =  9.00    ; AM  Pk Prd            Taxi Auto Driver
PMTAXISP = 27.00    ; PM  Pk Prd            Taxi Auto Driver
OPTAXISP = 64.00    ; NON Pk Prd            Taxi Auto Driver
;
AMVISITP = 33.00    ; AM  Pk Prd            Visitor Auto Driver
PMVISITP = 33.00    ; PM  Pk Prd            Visitor Auto Driver
OPVISITP = 34.00    ; NON Pk Prd            Visitor Auto Driver
;
AMSCHOOP = 33.00    ; AM  Pk Prd            School Auto Driver
PMSCHOOP = 33.00    ; PM  Pk Prd            School Auto Driver
OPSCHOOP = 34.00    ; NON Pk Prd            School Auto Driver
;
AMAIRPXP = 18.00    ; AM  Pk Prd            Air Pax, Auto Dr.
PMAIRPXP = 29.00    ; PM  Pk Prd            Air Pax, Auto Dr.
OPAIRPXP = 53.00    ; NON Pk Prd            Air Pax, Auto Dr.
; End of Misc. Auto Driver Trips (Taxi, Visitor, School)
```

Chapter 21 Traffic Assignment

Input(s):

Volume delay and queuing parameters	..\support\Conical_VDF_22.txt ..\support\Queuing_time.txt	Text
Modeled vehicle trip tables by occupant level and time period	`AM??.ADR, PM??.ADR, OP??.ADR, ??TMCOM.TRP`	Binary
Non-modeled vehicle and truck trip tables by time period	`MISCAM.TT, MISCPM.TT, MISCOP.TT`	Binary
Network File	`ZONEHWY.NET, PPHWY.NET, I1HWY.NET, ETC., I5HWY.NET`	Binary

Output(s):

Highway assignment output files		
Total Vehicle Trip by 5 Markets T1 – SOVs, Commercial vehicles T2 – HOV- 2 occ. vehicles T3 – HOV- 3+occ. Vehicles T4- Medium/Heavy trucks T5- Airport passenger vehicles	`??AM.VTT, ??PM.VTT, ??OP.VTT`	Binary
Loaded Links Files by Time Period	`??HWY.NET`	Binary
Highway skim output files		
SOV??AM.SKM SOV??OP.SKM HOV2??AM.SKM HOV2??OP.SKM HOV3??AM.SKM HOV3??OP.SKM	Skim files used for trip distribution All files contain 3 tables: 1- Time (min) 2- Distance (1/10ths mi) 3- Toll (1994 cents)	Binary
SOV??AM_MC.SKM SOV??OP_MC.SKM HOV2??AM_MC.SKM HOV2??OP_MC.SKM HOV3??AM_MC.SKM HOV3??OP_MC.SKM	Skims files used in mode choice All files contain 3 tables: 1 – Time including equivalent minutes on variably priced toll facilities (min) 2 – Distance 1/10ths mi) 3 – Toll on fixed price facilities only (1994 cents)	Binary

Program File(s):

TP+

Control/Support File(s):

HIGHWAY_ASSIGNMENT.S, HIGHWAY_SKIMS.S

Application Details:

The traffic assignment process involves running three individual loadings for the three time periods (AM, PM, and off-peak periods). The traffic assignment process is executed seven times: pump prime, first, second, third, fourth, fifth, and sixth iteration. Each assignment run utilizes a user equilibrium algorithm that is run for 60 fixed iterations.

The assignment process is executed with TP+ script named HIGHWAY_ASSIGNMENT.S. The script reads seven trip files:

1. AM SOV, HOV-2 occupant, and HOV 3+ occupant auto driver trips
2. PM SOV, HOV-2 occupant, and HOV 3+ occupant auto driver trips
3. Off-peak SOV, HOV-2 occupant, and HOV 3+ occupant auto driver trips
4. Commercial vehicle trips by time period
5. AM truck and non-modeled trips
6. PM truck and non-modeled trips
7. Off-peak truck and non-modeled trips

The program first collapses the seven files into three files (AM,PM and Off-peak) containing five tables: 1) 1-occupant auto drivers (including commercial vehicle trips), 2) 2-occupant auto drivers, 3) 3+occupant auto drivers, 4) trucks (medium and heavy), and 5) airport passenger vehicle trips.

The assignment process for any given iteration is executed for each time period. After the three time-period-specific assignments, a summary routine follows to compute daily (24-hour) statistics. The traffic assignment process produces an output (or 'loaded links') file corresponding to each iteration of the travel model. The succession of loaded links files produced during a model execution is as follows:

PPHWY.NET (Loaded Links file resulting from the 'pump-prime' iteration)
I1HWY.NET (Loaded Links file resulting from standard iteration 1)
I2HWY.NET (Loaded Links file resulting from standard iteration 2)
.
.
.
I6HWY.NET (Loaded Links file resulting from standard iteration 6)

There are 14 network link variables produced from each assignment execution, including the time period-specific volume, VC ratio, volume-day value, and restrained speed, as well as the daily volume and daily VMT. The general form of the variable naming is as follows:

<AA> <BB><CCC>

Where *<AA>* refers to the iteration (PP, I1, I2,…I6), *<BB>* refers to the time period (AM, PM, OP, 24), and *<CCC>* refers to the variable type (VOL, VC, VDF, SPD, VMT). The results of each assignment execution are preserved, so the number of loaded link attributes generally increases with each model iteration. The 'final' assignment results are associated with the 6th (and final) iteration, namely: I6AMVOL, I6AMVC, I6AMVDF, I6AMSPD, …, I6OPSPD, I624VOL, and I624VMT. A comprehensive listing of the link attributes that normally result from a complete model execution is shown as Table 21-1.

Table 21-1 Link variables on the final loaded-link highway network (i6hwy.net)

Variable	Format	Description
A	5	A node
B	5	B node
DISTANCE	5.2	Link distance (miles)
SPDCLASS	2	Speed class
CAPCLASS	2	Capacity class
COUNT	3	Daily ground count in thousands (AAWT)
JUR	2	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	2	Screenline code (1-20, 22-28, 31-38)
FTYPE	1	Link Facility Type Code (0-6): 0/centroids, 1/Freeways, 2/Major Art., 3/Minor Art, 4/Collector, 5/Expressway, 6/Ramp (future use)
TOLL	3	Toll Value in current year dollars
TOLLGRP	1	Toll Group Code (1-9)
AMLANE	1	AM Peak No. of Lanes
AMLIMIT	1	AM Peak Limit Code (0-9) See note #1
PMLANE	1	PM Peak No. of Lanes
PMLIMIT	1	PM Peak Limit Code (0-9) See note #1
OPLANE	1	Off-Peak No. of Lanes
OPLIMIT	1	Off-Peak Limit Code (0-9) See note #1
PROJ_ID	A/N	Project ID
TAZ	4	Transportation Analysis Zone associated with the link
AREATP	1	Area type (1-7)
DEFLATIONFTR	6.3	Factor for deflating current year tolls to 1994 values
AMTOLL	9.5	Final AM period toll value derived from TOLL & TOLLGRP
PMTOLL	9.5	Final PM period toll value derived from TOLL & TOLLGRP
OPTOLL	9.5	Final OP period toll value derived from TOLL & TOLLGRP
PPAMSPD	8.5	Pump prime iteration, AM speed (mph)
PPOPSPD	2	Pump prime iteration, off-peak speed (mph)
PPPMSPD	2	Pump prime iteration, PM speed (mph)
AMHTIME	8.5	Highway link time in minutes, computed from the pump-prime speeds, AM
PMHTIME	8.5	Highway link time in minutes, computed from the pump-prime speeds, PM
OPHTIME	8.5	Highway link time in minutes, computed from the pump-prime speeds, OP
ALLOWQUE	1	0 or 1 (0/ disallow queuing delay / 1 /allow queuing delay)
PPAMVOL	11.5	Pump prime iteration, AM estimated volume
PPAMVC	7.5	Pump prime iteration, AM estimated volume-to-capacity ratio
PPAMVDF	7.5	Pump prime iteration, AM VDF value for the corresponding VC ratio
PPAMQTIMEPEN	7.5	Pump prime Iteration AM Queuing Delay time (min)
PPPMVOL	11.5	Pump prime iteration, PM estimated volume
PPPMVC	8.5	Pump prime iteration, PM estimated volume-to-capacity ratio
PPPMVDF	7.5	Pump prime iteration, PM VDF value for the corresponding VC ratio
PPPMQTIMEPEN	7.5	Pump prime Iteration PM Queuing Delay time (min)
PPOPVOL	11.5	Pump prime iteration, off-peak estimated volume
PPOPVC	7.5	Pump prime iteration, off-peak estimated volume-to-capacity ratio
PPOPVDF	7.5	Pump prime iteration, off-peak VDF value for the corresponding VC ratio
PPOPQTIMEPEN	7.5	Pump prime Iteration OP Queuing Delay time (min)
PP24VOL	12.5	Pump prime iteration, daily (24-hour) estimated volume (AAWDT)

Variable	**Format**	**Description**
PP24VMT	12.5	Pump prime iteration, daily (24-hour) estimated vehicle miles of travel
I1AMVOL	11.5	First iteration, AM estimated volume
I1AMVC	7.5	First iteration, AM estimated volume-to-capacity ratio
I1AMVDF	7.5	First iteration, AM VDF value for the corresponding VC ratio
I1AMSPD	8.5	First iteration, AM speed (mph)
I1AMQTIMEPEN	7.5	First Iteration AM Queuing Delay time (min)
I1PMVOL	11.5	First iteration, PM estimated volume
I1PMVC	7.5	First iteration, PM estimated volume-to-capacity ratio
I1PMVDF	7.5	First iteration, PM VDF value for the corresponding VC ratio
I1PMSPD	8.5	First iteration, PM speed (mph)
I1PMQTIMEPEN	7.5	First Iteration PM Queuing Delay time (min)
I1OPVOL	11.5	First iteration, OP estimated volume
I1OPVC	7.5	First iteration, OP estimated volume-to-capacity ratio
I1OPVDF	7.5	First iteration, OP VDF value for the corresponding VC ratio
I1OPSPD	8.5	First iteration, OP speed (mph)
I1OPQTIMEPEN	7.5	First Iteration OP Queuing Delay time (min)
I124VOL	12.5	First iteration, daily (24-hour) estimated volume (AAWDT)
I124VMT	12.5	First iteration, daily (24-hour) estimated vehicle miles of travel
* * *	* * *	* * * Etc. * * *
I6AMVOL	5	Sixth iteration, AM estimated volume
I6AMVC	7.5	Sixth iteration, AM estimated volume-to-capacity ratio
I6AMVDF	7.5	Sixth iteration, AM VDF value for the corresponding VC ratio
I6AMSPD	8.5	Sixth iteration, AM speed (mph)
I6AMQTIMEPEN	7.5	Sixth Iteration AM Queuing Delay time (min)
I6PMVOL	5	Sixth iteration, PM estimated volume
I6PMVC	7.5	Sixth iteration, PM estimated volume-to-capacity ratio
I6PMVDF	7.5	Sixth iteration, PM VDF value for the corresponding VC ratio
I6PMSPD	8.5	Sixth iteration, PM speed (mph)
I6PMQTIMEPEN	7.5	Sixth Iteration PM Queuing Delay time (min)
I6OPVOL	5	Sixth iteration, OP estimated volume
I6OPVC	7.5	Sixth iteration, OP estimated volume-to-capacity ratio
I6OPVDF	7.5	Sixth iteration, OP VDF value for the corresponding VC ratio
I6OPSPD	8.5	Sixth iteration, OP speed (mph)
I6OPQTIMEPEN	7.5	Sixth Iteration OP Queuing Delay time (min)
I624VOL	6	Sixth iteration, daily (24-hour) estimated volume (AAWDT)
I624VMT	12.5	Sixth iteration, daily (24-hour) estimated vehicle miles of travel

Notes:

1. 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).

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Appendix A. Model adjustment factors

Ref:

1 Trip Distribution Adjustments

1.1 Background

Historically, two sets of adjustment factors have been applied to the trip distribution model. The first set has been a series of time penalties applied sparingly to a matrix of twelve superdistricts to address physical barrier effects on trip patterns and to address jurisdictional effects (e.g., school trips and shopping trips tend to remain in a given traveler's residence jurisdiction). The time penalties were not developed in a mechanical process, but were developed after running and rerunning the calibration process with different time penalty sets. An analysis of the results was conducted between iterations.

A second set of adjustment factors was introduced during model application. Commonly referenced as K-factors, 52 individual values were applied in the Version 2.1 D #50 model. This is a reduction from the 68 K-factors that were employed in the Version 2.1C model, and reflects the improvements obtained with the introduction of other model and data input enhancements in the Version 2.1 D #50 model. Furthermore, of the remaining 52 K-factors in the Version 2.1 D #50 model, 32 were dampened (i.e., their values were made closer to 1.0). The breakdown, by trip purpose, of these factors were as follows:

HBW - 29 factors
HBS - 8 factors
HBO - 10 factors
NHB - 5 factors

K-factors were developed in the application of the model for the entire modeled area, after the F-factor calibration was completed. The K-factors were developed separately for each purpose, after several application iterations.

1.2 Version 2.2 Travel Model

The Version 2.2 model has a greatly reduced set of adjustment factors compared with the Version 2.1D #50 model. All time penalties have been removed, as have all non-work K-factors. HBW purpose K-factors have been further reduced to eleven, eight of which involve travel into or within the District of Columbia. The remaining three involve intra-jurisdiction movements within Montgomery County, Frederick County, and Fairfax County. These eleven K-factors are presented in Table 1-1, illustrating a substantial reduction in the number of such factors when compared with the Version 2.1D #50 model.

The eight remaining K-factors, involving the District of Columbia, reflect a continuing federal government presence, a larger "downtown" than one finds in many other cities of similar size, and the influence of a major heavy rail transit system in attracting trips to the central city. Simple time and cost variables in the impedance function of the travel demand model presently cannot explain these effects adequately.

Appendix A Model adjustment factors

Table 1-1 Trip distribution K-factors in the Version 2.1D #50 and Version 2.2 travel models

Interchange	V2.1 D#50 HBW	V2.2 HBW	Change from 2.1D to V2.2
dc cr - dc cr	2.0		removed
dc cr - dc ncr	2.2		removed
dc ncr - dc cr	1.8	1.7	reduced magnitude
dc ncr - dc ncr			
dc ncr - mtg			
dc ncr - ffx			
dc ncr - extls			
mtg - dc cr	2.0	2.0	maintained
mtg - dc ncr	1.7		removed
mtg - mtg	2.0	1.6	reduced magnitude
mtg - how	0.5		removed
mtg - aa	0.2		removed
pg - dc cr	1.4		removed
pg - dc ncr	1.4		removed
pg - pg	1.5		removed
pg - how	0.5		removed
pg - aa	0.5		removed
pg - mtg			
pg - extls			
pw - dc cr	2.8	3.2	increased magnitude
arl cr - dc cr	2.5	2.5	maintained
arl cr - dc ncr	1.8		removed
arl ncr - arl ncr			
arl ncr - dc cr	2.4	1.7	reduced magnitude
alx - alx			
alx - dc cr	1.9	1.6	reduced magnitude
how - mtg			
how - pg	2.2		removed
how - extls/balt	2.5		removed
aa - aa	0.5		removed
aa - pg			
ffx - dc cr	2.2	2.0	reduced magnitude
ffx - dc ncr	1.3	1.4	increased magnitude
ffx - ffx	0.9	0.8	reduced magnitude
ffx - arl ncr	1.3		removed
frd - frd		0.9	added
frd - aa	0.2		removed
frd - how	0.2		removed
chs - chs			
chs - dc cr	2.2		removed
chs - pg	2.0		removed
car - car			

Ref: k_facs_v22_summary.xls

Fairfax County illustrates an additional behavioral pattern which simple time and cost variables in modeling cannot explain. The county has experienced substantial growth in employment during the past two decades, and is projected to continue this trend. However, there remains a significant amount of interaction with the District of Columbia, largely in terms of commutation to government employment and to other jobs related to government employment. Given the large growth in employment projected within Fairfax County in the future, a gravity model will likely understate this commutation into the central jurisdictions unless K-factors are applied. A K-factor less than 1.0 was therefore applied to intra-Fairfax County estimated trip patterns.

Montgomery County also is a major generator of employment. However, a K-factor greater than 1.0 for intra-county travel was retained, albeit reduced in magnitude from that employed in the Version 2.1D #50 model, to reflect the tendency of the model to otherwise send trips northward into Howard and Anne Arundel Counties with their growing concentrations of employment. Previous K-factors less than 1.0 for trips destined to these counties from TPB member jurisdictions have been removed in the Version 2.2 model.

Finally, a K-factor less than 1.0 was added in the Version 2.2 model for intra-Frederick County travel (including City of Frederick). The size of TPB zones in that jurisdiction, coupled with the projected employment growth, tends to result in overestimation of intra-county travel unless a K-factor is applied. It is hoped that future zone refinement may reduce the need for this adjustment.

In conclusion, many of the K-factors employed in the Version 2.1D #50 model have been removed with the Version 2.2 model, and the few that remain have largely been dampened as well. The result is a model which substantially moves toward the goal of eliminating adjustment factors. As noted earlier, the effect of this is to produce a model which will likely have a looser fit in the year 2000 validation year at finer levels of geography than previous COG/TPB travel demand models. As the region continues to grow, some of the time-honored adjustments may no longer apply as they have in the past.

2 Mode Choice Adjustments

2.1 Background

As part of the Version 2.2 travel model, the existing multinomial logit (MNL) mode choice model was recalibrated. In the past, this calibration/validation was done for a 1994 base year, using observed trips from the 1994 Household Travel Survey. This time, however, the base year was 2000, using Census Transportation Planning Package (CTPP) trips. Since we are using Census data, which records only information about work trips, only home-based work (HBW) was adjusted. Non-work (HBS, HBO, NHB) mode choice models were not adjusted.

A full-scale mode choice calibration would typically consist of three steps:

1. Statistical estimation of utility equation coefficients and constants;
2. A system-wide adjustment of the model, where constants are adjusted until certain control totals match;

3. A jurisdiction-level or superdistrict-level adjustment.

In this case, due to time limitations, we conducted only the third step – superdistrict-level adjustments. For the first two calibration steps, we used what was developed in the last calibration exercise, done in 2002 and 2004 (See COG/TPB 2002.12).

The Version 2 mode choice model consists of four models, one per trip purpose. Each model consists of two sub-models: a main model and a carpool occupancy model. The main model apportions motorized person trips across three modes: drive alone (DA), transit (TR), and carpool (also referred to as group ride, or GR). Within the group ride mode, the carpool occupancy model apportions carpool person trips across three modes: 2-person carpool, 3-person carpool, and 4+person carpool. After model estimation, the system-wide aggregate adjustments are made. These adjusted models are shown in the main body of this report and are the input to the jurisdiction-level aggregate adjustment process described in this appendix.

The COG mode choice model is applied using a Fortran program named COGMC.EXE. This program was written in the mid 1980s, and has been revised numerous times, most recently in January 1999 and April 2001 (Allen 1999). This program allows one to apply two sets of jurisdiction-level or superdistrict-level factors to each of the four mode choice models:

- Transit percent adjustment factors (TPAFs) and
- Car occupancy adjustment factors (COAFs)

The current implementation of COGMC.EXE allows for up to 20 user-defined superdistricts. The superdistrict area system that is currently used is shown in Figure 2-1 and Table 2-1. Note that two transportation analysis zones (648 and 650) that used to be in Prince George's County are now in Montgomery County. This change affects the superdistrict definitions compared to what was used in 2002 and 2004.

The TPAFs can be used to help ensure that the estimated percent transit matches the observed percent transit at the jurisdiction-interchange level. Raising the TPAF value for a cell (jurisdiction-to-jurisdiction interchange) has the effect of raising the estimated percent transit for that cell. Although TPAFs act on the *percent* transit, they also help ensure that the estimated transit person *trips* match the observed transit person *trips*. The COAFs can be used to ensure that the estimated average vehicle occupancies (AVOs) match the observed AVOs at the jurisdiction-interchange level. They affect the split of auto person trips into auto driver and auto passenger. Raising the COAF value for a cell has the effect of raising the share of auto person trips that are auto passenger trips.

Thus, each of the four mode choice models has two factor files, and each factor file (TPAF or COAF) is a 20x20 matrix of factors. The output of the jurisdiction-level adjustment process is usually eight factor files (four TPAFs and four COAFs). However, this time, we generated only one file: the HBW TPAF file. The other seven files were turned off (i.e., they were filled with values of 1.000).

Figure 2-1Superdistrict system used for transit percent adjustment factors (TPAFs) and car occupancy adjustment factors (COAFs)

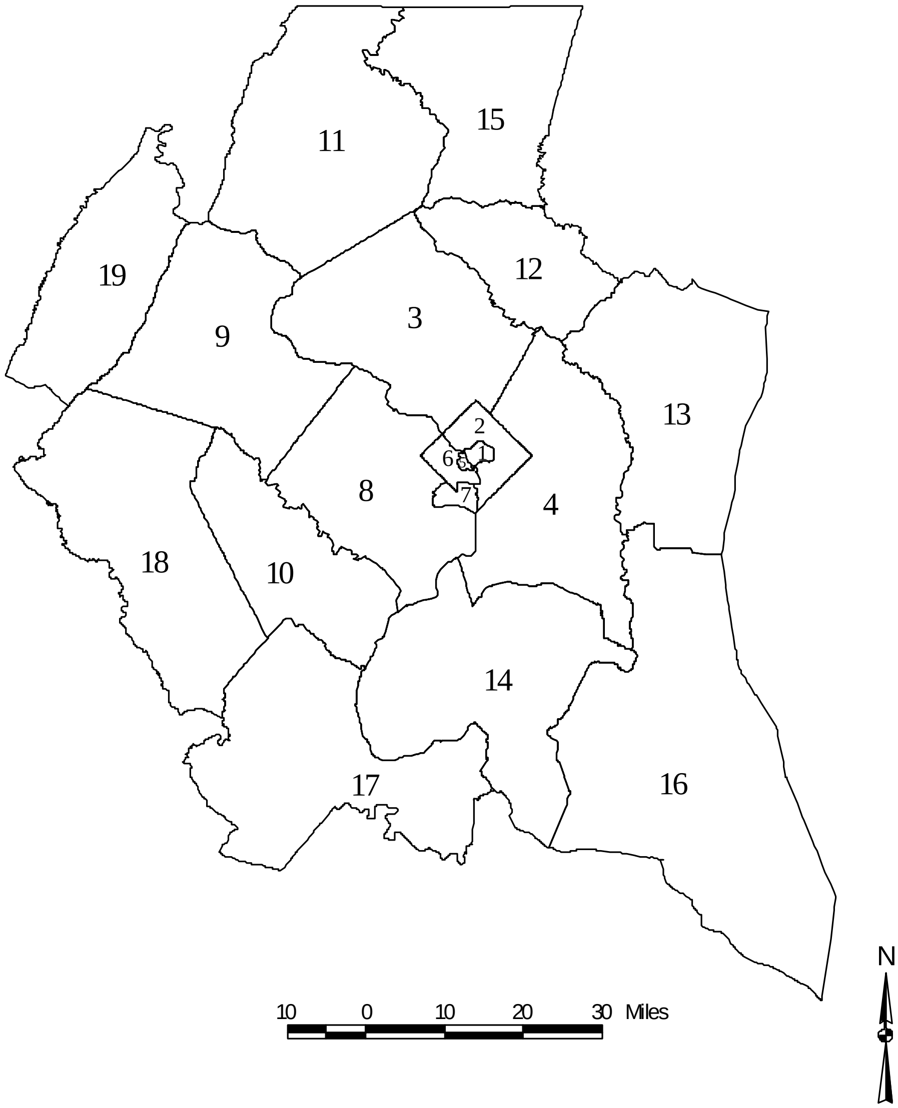

Table 2-1 Superdistricts defined in terms of TAZ

Super-district No.	Jurisdiction	TAZ Range
1	District of Columbia, core	1-88
2	District of Columbia, non-core	89-319
3	Montgomery Co.	320-639,648,650
4	Prince George's Co.	640-647,649,651-1029
5	Arlington Co., core	1230-1238
6	Arlington Co., non-core	1239-1329
7	Alexandria	1330-1399
8	Fairfax Co.	1400-1779
9	Loudoun Co.	1780-1919
10	Prince William Co.	1920-2069
11	Frederick Co.	1030-1059
12	Howard Co.	1080-1109
13	Anne Arundel Co.	1110-1149
14	Charles Co.	1200-1229
15	Carroll Co.	1060-1079
16	Calvert Co. & Saint Mary's Co.	1150-1169,1170-1199
17	King George Co.; Fredericksburg; Stafford Co.; Spotsylvania Co.	2070-2079,2100-2104,2080-2099,2105-2141
18	Fauquier Co., VA	2115-2129
19	Clarke Co., Va. and Jefferson Co., WVa.	2130-2134,2135-2144
20	Externals	2145-2191

Year-2000 TPAFs were calculated for HBW only, and then, only a subset of the year-2000 HBW TPAFs were retained for the final file – primarily those on the diagonal, with others being re-set to a value of 1.000 – (See Table 2-2). TPAFs for the non-work purposes were left turned off (i.e., with values of 1.000). Year-2000 COAFs were calculated for all four purposes (HBW, HBS, HBO, and NHB), then it was decided not to use these, since it was felt that, although the 2000 Census data is robust for jurisdiction-to-jurisdiction person trip patterns, it may not be accurate enough for auto-driver trip patterns. Consequently, no COAFs are used (i.e., they all have a value of one).

Table 2-2 Final HBW TPAF file

1	1.2076	.9693	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	1.0976	1.3469	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	.5864	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.1166	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000	.5807	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.8858	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	.5000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
18	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Ref: I:\ateam\model_dev\Version_2.2P_CV\Support \mctf_hbw.asc

Appendix B. Year 2000 mode choice summary (final, i6, iteration)

Ref: i6_mc_summary.tab

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: LOV Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4326	2987	753	689	502	812	344	1382	40	16	2	1	33	64	0	0	4	3	0	0	0	0	932	12890
2 DC NC	45342	32148	14311	12989	3997	6008	2277	8427	166	60	30	4	631	1010	15	3	65	2	1	1	1	0	7831	135319
3 MTG	48009	26911	270580	24917	3919	6268	1579	19909	643	80	5288	329	7131	2781	10	0	26	3	0	167	1	0	19025	437576
4 PG	57597	65148	32625	157004	5774	9996	5411	11974	105	45	61	17	9335	21157	726	316	3954	0	0	1	2	99	17912	399259
5 ARLCR	999	263	140	50	578	418	141	560	19	7	0	0	1	1	0	0	1	0	1	0	0	0	104	3283
6 ARNCR	16603	5364	3087	922	5333	18724	5041	23675	598	204	11	0	22	50	2	0	5	15	6	1	3	0	1972	81638
7 ALX	9658	3212	1144	1031	2853	8174	12843	20021	213	246	3	0	11	33	3	0	10	11	19	0	18	1	1056	60560
8 FFX	39739	16698	13199	4469	10332	26589	28415	319973	23693	10999	107	0	91	125	6	3	63	903	288	56	299	5	7720	503772
9 LDN	659	484	2084	76	361	795	350	46199	42799	1128	2135	25	64	5	0	0	0	422	4	1475	1	0	2559	101625
10 PW	1745	425	438	242	544	1744	4246	62563	3948	78379	21	0	2	2	0	0	2	2975	3280	43	3051	90	2046	165786
11 FRD	245	469	20448	487	65	80	13	833	2922	19	75056	3229	4537	692	0	0	0	3	0	2066	0	0	9326	120490
12 CAR	22	69	4561	613	1	2	0	37	160	0	10661	49534	7387	1209	0	0	1	0	0	178	0	0	13754	88189
13 HOW	2338	3641	15169	14668	180	264	68	518	71	1	3006	773	50122	16876	4	0	8	1	0	98	0	0	21378	129184
14 AAR	6923	8235	5471	30468	511	798	299	486	5	1	94	49	17821	159689	811	44	237	0	0	1	0	1	27322	259266
15 CAL	1040	1831	278	6857	104	159	115	155	0	0	0	0	74	3308	17820	8620	1436	0	0	0	1	96	320	42214
16 STM	124	307	23	2055	8	23	26	30	0	2	0	0	1	105	2409	39763	3815	1	13	0	34	1015	164	49918
17 CHS	3168	4793	406	16606	326	557	542	731	1	4	0	0	26	791	1297	2285	30877	0	22	0	63	1653	514	64662
18 FAU	4	3	20	2	4	19	22	5742	1708	6254	15	0	0	0	0	0	0	13648	1059	136	976	29	1007	30648
19 STA	32	26	11	19	42	151	473	5065	41	9135	0	0	0	0	0	5	24	1426	19584	0	13705	746	1645	52130
20 CL/JF	5	19	1339	12	3	3	1	1262	5379	227	3828	48	131	7	0	0	0	288	1	17936	1	0	4779	35269
21 SP/FB	7	4	3	2	6	20	99	1305	8	3075	0	0	0	0	2	5	18	502	6605	0	37814	660	5150	55285
22 KGEO	1	6	0	83	0	0	1	13	0	119	0	0	0	0	19	123	476	19	426	0	962	7427	182	9857
23 EXTL	4531	5018	18344	18401	664	1451	907	13437	4995	7140	20998	18824	28364	62750	576	388	1043	5230	2685	9773	10332	815	0	236666
TOTAL	243117	178061	404434	292662	36107	83055	63213	544297	87514	117141	121316	72833	125784	270655	23700	51555	42065	25452	33994	31932	67264	12637	146698	3075486

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: LOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4992	3403	882	809	578	945	401	1623	58	23	2	1	42	83	1	0	5	5	0	0	0	2	1074	14929
2 DC NC	52629	35356	16343	14899	4575	6983	2608	9788	218	69	37	4	775	1269	19	3	82	3	2	1	2	0	9001	154666
3 MTG	56524	30134	298554	27759	4547	7280	1805	22591	754	103	5982	377	8009	3169	11	0	31	3	0	200	2	0	21861	489696
4 PG	67322	72652	37040	171454	6630	11675	6095	13730	126	55	72	19	10444	23758	832	365	4377	2	0	1	4	125	20602	447380
5 ARLCR	1160	292	161	56	608	477	159	635	25	7	0	0	1	3	0	0	1	0	1	0	0	0	120	3706
6 ARNCR	18580	5900	3505	1029	5934	20946	5604	26462	722	236	15	0	29	55	2	0	6	17	9	1	7	0	2266	91325
7 ALX	10588	3486	1270	1142	3103	9130	14016	22392	258	288	3	0	15	40	3	1	13	13	23	0	19	1	1207	67011
8 FFX	41336	17572	14671	4936	10750	28201	31136	349222	26250	12177	128	1	102	147	6	3	72	1018	334	71	356	10	8899	547398
9 LDN	659	491	2264	79	364	792	353	51648	46440	1290	2402	29	81	8	0	0	0	478	5	1643	1	0	2942	111969
10 PW	1775	451	450	267	572	1861	4626	68009	4448	84603	27	0	2	1	0	0	1	3362	3681	54	3522	108	2343	180163
11 FRD	325	570	23513	591	82	95	18	1092	3406	22	79768	3642	5305	836	0	0	0	6	0	2371	0	0	10719	132361
12 CAR	30	84	5312	721	1	2	0	56	203	0	12163	51746	8382	1406	0	0	1	0	0	224	0	0	15808	96139
13 HOW	2865	4195	17208	16378	217	320	83	621	86	1	3459	863	53262	18656	4	0	11	2	0	123	0	0	24572	142926
14 AAR	8574	9545	6451	34333	620	987	359	578	6	1	120	56	19905	171531	912	54	274	0	0	3	1	1	31406	285717
15 CAL	1312	2140	344	7814	127	197	136	190	0	0	0	0	94	3793	18887	9617	1658	0	0	0	2	125	368	46804
16 STM	165	370	30	2392	11	29	30	37	0	3	0	0	3	133	2718	42764	4308	1	19	0	45	1213	191	54462
17 CHS	3908	5504	499	18706	386	681	627	851	1	6	0	0	33	936	1462	2596	32763	0	28	0	80	1951	595	71613
18 FAU	4	3	20	2	3	20	22	6507	1958	7009	18	1	0	0	0	0	0	14415	1187	159	1112	33	1158	33631
19 STA	34	28	13	20	47	168	530	5566	47	10177	0	0	0	0	0	7	33	1619	20608	1	15048	850	1892	56688
20 CL/JF	5	23	1667	15	1	4	1	1692	6223	273	4384	60	169	11	0	0	0	339	1	18833	1	0	5495	39197
21 SP/FB	7	5	2	6	4	24	114	1461	11	3568	0	0	0	0	2	5	26	593	7317	0	39711	760	5919	59535
22 KGEO	1	8	0	106	0	0	1	13	1	145	0	0	0	2	24	153	571	24	484	0	1090	7763	209	10595
23 EXTL	5205	5767	21087	21152	764	1671	1042	15442	5745	8205	24137	21635	32607	72122	663	448	1193	6013	3081	11232	11878	939	0	272028
TOTAL	278000	197979	451286	324666	39924	92488	69766	600206	96986	128261	132717	78434	139260	297959	25546	56016	45426	27913	36780	34917	72881	13881	168647	3409939

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	13725	3768	1246	470	1050	1542	400	1216	0	3	0	0	3	2	0	0	0	0	0	0	0	0	0	23425
2 DC NC	83219	24529	9491	4032	3627	5197	1138	3174	0	4	0	0	32	25	0	0	0	0	0	0	0	0	0	134468
3 MTG	45733	7751	29799	2056	1805	2514	361	2097	0	0	0	0	9	1	0	0	0	0	0	0	0	0	0	92126
4 PG	51544	15853	6692	13164	3126	4776	974	1546	0	0	0	0	119	69	0	0	0	0	0	0	0	0	0	97863
5 ARLCR	2225	189	95	18	202	420	73	288	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3510
6 ARNCR	21490	2127	1007	161	3573	4273	1515	5663	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	39812
7 ALX	11431	1269	468	102	1881	4618	3252	3465	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	26489
8 FFX	41298	4280	2137	261	5415	11326	4970	14278	23	85	0	0	0	1	0	0	0	0	0	0	0	0	0	84074
9 LDN	414	52	139	2	108	208	15	2217	323	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3478
10 PW	5205	242	117	15	591	1134	1359	4131	0	2693	0	0	0	0	0	0	0	0	0	0	0	0	0	15487
11 FRD	159	74	1279	4	17	15	3	2	0	0	262	0	0	0	0	0	0	0	0	0	0	0	0	1815
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	2044	626	1434	416	97	119	14	45	0	0	0	0	830	71	0	0	0	0	0	0	0	0	0	5696
14 AAR	5837	1329	726	710	264	351	57	50	0	0	0	0	202	341	5	0	0	0	0	0	0	0	0	9872
15 CAL	1522	493	63	107	75	113	24	18	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	2457
16 STM	218	80	9	32	10	18	5	4	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	417
17 CHS	4243	1220	155	335	236	351	84	65	0	0	0	0	0	0	0	0	65	0	0	0	0	0	0	6754
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	99	14	5	3	41	91	105	220	0	7	0	0	0	0	0	0	0	0	10	0	4	0	0	599
20 CL/JF	9	4	137	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	153
21 SP/FB	31	3	2	1	3	16	30	94	0	3	0	0	0	0	0	0	0	0	18	0	23	0	0	224
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	290446	63903	55001	21890	22122	37083	14379	38573	347	2800	262	0	1195	510	47	0	106	0	28	0	27	0	0	548719

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	231	55	46	0	39	190	26	287	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	878
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	1522	222	34	45	189	360	12	7	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	2396
7 ALX	1558	266	149	48	260	307	0	74	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	2669
8 FFX	21027	4322	1248	470	3830	7623	1347	6259	8	0	0	0	8	17	0	0	1	0	0	0	0	0	0	46160
9 LDN	980	328	521	42	429	882	265	3987	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	7437
10 PW	5826	593	374	139	1038	2335	1544	7838	23	2	1	0	0	3	0	0	1	0	0	0	0	0	0	19717
11 FRD	36	14	5	0	12	28	5	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166
12 CAR	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
13 HOW	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	7	7	12	3	4	29	19	472	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	554
19 STA	215	67	30	19	148	350	316	1454	5	15	0	0	0	0	0	0	1	0	0	0	0	0	0	2620
20 CL/JF	26	11	4	0	7	11	2	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	199
21 SP/FB	71	21	11	8	24	81	105	563	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	900
22 KGEO	1	1	0	1	0	0	1	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	13
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	31500	5907	2435	775	5980	12198	3642	21154	44	30	1	0	10	33	0	0	4	0	0	0	0	0	0	83713

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: HOV AUTO Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	85	30	15	0	19	67	10	126	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	355
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	565	83	8	19	75	137	4	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	893
7 ALX	443	82	45	13	75	92	0	26	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	778
8 FFX	7425	1690	451	168	1478	2945	521	2586	6	0	0	0	2	6	0	0	0	0	0	0	0	0	0	17278
9 LDN	289	106	174	17	145	296	89	1350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2466
10 PW	1720	191	134	39	334	738	471	2654	4	0	0	0	1	1	0	0	1	0	0	0	0	0	0	6288
11 FRD	11	4	2	0	3	11	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	2	1	5	1	2	13	8	194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	226
19 STA	58	21	8	5	43	102	89	414	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	747
20 CL/JF	4	5	1	0	2	1	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
21 SP/FB	19	5	4	2	6	25	27	159	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	252
22 KGEO	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	10621	2219	847	264	2182	4427	1220	7578	15	10	0	0	3	10	0	0	1	0	0	0	0	0	0	29397

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4326	2987	753	689	502	812	344	1382	40	16	2	1	33	64	0	0	4	3	0	0	0	0	932	12890
2 DC NC	45342	32148	14311	12989	3997	6008	2277	8427	166	60	30	4	631	1010	15	3	65	2	1	1	1	0	7831	135319
3 MTG	48094	26941	270595	24917	3938	6335	1589	20035	646	80	5288	329	7131	2781	10	0	26	3	0	167	1	0	19025	437931
4 PG	57597	65148	32625	157004	5774	9996	5411	11974	105	45	61	17	9335	21157	726	316	3954	0	0	1	2	99	17912	399259
5 ARLCR	999	263	140	50	578	418	141	560	19	7	0	0	1	1	0	0	1	0	1	0	0	0	104	3283
6 ARNCR	17168	5447	3095	941	5408	18861	5045	23676	598	204	11	0	22	51	2	0	5	15	6	1	3	0	1972	82531
7 ALX	10101	3294	1189	1044	2928	8266	12843	20047	213	246	3	0	11	35	3	0	10	11	19	0	18	1	1056	61338
8 FFX	47164	18388	13650	4637	11810	29534	28936	322559	23699	10999	107	0	93	131	6	3	63	903	288	56	299	5	7720	521050
9 LDN	948	590	2258	93	506	1091	439	47549	42799	1128	2135	25	64	5	0	0	0	422	4	1475	1	0	2559	104091
10 PW	3465	616	572	281	878	2482	4717	65217	3952	78379	21	0	3	3	0	0	3	2975	3280	43	3051	90	2046	172074
11 FRD	256	473	20450	487	68	91	14	857	2922	19	75056	3229	4537	692	0	0	0	3	0	2066	0	0	9326	120546
12 CAR	22	69	4561	613	1	2	0	37	160	0	10661	49534	7387	1209	0	0	1	0	0	178	0	0	13754	88189
13 HOW	2338	3641	15169	14668	180	264	68	518	71	1	3006	773	50122	16876	4	0	8	1	0	98	0	0	21378	129184
14 AAR	6923	8235	5471	30468	511	798	299	486	5	1	94	49	17821	159689	811	44	237	0	0	1	0	1	27322	259266
15 CAL	1040	1831	278	6857	104	159	115	155	0	0	0	0	74	3308	17820	8620	1436	0	0	0	1	96	320	42214
16 STM	124	307	23	2055	8	23	26	30	0	2	0	0	1	105	2409	39763	3815	1	13	0	34	1015	164	49918
17 CHS	3168	4793	406	16606	326	557	542	731	1	4	0	0	26	791	1297	2285	30877	0	22	0	63	1653	514	64662
18 FAU	6	4	25	3	6	32	30	5936	1708	6254	15	0	0	0	0	0	0	13648	1059	136	976	29	1007	30874
19 STA	90	47	19	24	85	253	562	5479	43	9140	0	0	0	0	0	5	24	1426	19584	0	13705	746	1645	52877
20 CL/JF	9	24	1340	12	5	4	1	1304	5379	227	3828	48	131	7	0	0	0	288	1	17936	1	0	4779	35324
21 SP/FB	26	9	7	4	12	45	126	1464	8	3080	0	0	0	0	2	5	18	502	6605	0	37814	660	5150	55537
22 KGEO	1	7	0	83	0	0	1	15	0	119	0	0	0	0	19	123	476	19	426	0	962	7427	182	9860
23 EXTL	4531	5018	18344	18401	664	1451	907	13437	4995	7140	20998	18824	28364	62750	576	388	1043	5230	2685	9773	10332	815	0	236666
TOTAL	253738	180280	405281	292926	38289	87482	64433	551875	87529	117151	121316	72833	125787	270665	23700	51555	42066	25452	33994	31932	67264	12637	146698	3104883

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4992	3403	882	809	578	945	401	1623	58	23	2	1	42	83	1	0	5	5	0	0	0	2	1074	14929
2 DC NC	52629	35356	16343	14899	4575	6983	2608	9788	218	69	37	4	775	1269	19	3	82	3	2	1	2	0	9001	154666
3 MTG	56755	30189	298600	27759	4586	7470	1831	22878	758	103	5982	377	8009	3169	11	0	31	3	0	200	2	0	21861	490574
4 PG	67322	72652	37040	171454	6630	11675	6095	13730	126	55	72	19	10444	23758	832	365	4377	2	0	1	4	125	20602	447380
5 ARLCR	1160	292	161	56	608	477	159	635	25	7	0	0	1	3	0	0	1	0	1	0	0	0	120	3706
6 ARNCR	20102	6122	3539	1074	6123	21306	5616	26469	722	236	15	0	29	60	2	0	6	17	9	1	7	0	2266	93721
7 ALX	12146	3752	1419	1190	3363	9437	14016	22466	258	288	3	0	16	46	3	1	13	13	23	0	19	1	1207	69680
8 FFX	62363	21894	15919	5406	14580	35824	32483	355481	26258	12177	128	1	110	164	6	3	73	1018	334	71	356	10	8899	593558
9 LDN	1639	819	2785	121	793	1674	618	55635	46440	1290	2402	29	82	10	0	0	0	478	5	1643	1	0	2942	119406
10 PW	7601	1044	824	406	1610	4196	6170	75847	4471	84605	28	0	2	4	0	0	2	3362	3681	54	3522	108	2343	199880
11 FRD	361	584	23518	591	94	123	23	1158	3406	22	79768	3642	5305	836	0	0	0	6	0	2371	0	0	10719	132527
12 CAR	30	84	5313	721	1	3	0	56	203	0	12163	51746	8382	1406	0	0	1	0	0	224	0	0	15808	96141
13 HOW	2865	4195	17208	16378	217	321	83	622	86	1	3459	863	53262	18656	4	0	11	2	0	123	0	0	24572	142928
14 AAR	8574	9545	6451	34333	620	987	359	578	6	1	120	56	19905	171531	912	54	274	0	0	3	1	1	31406	285717
15 CAL	1312	2140	344	7814	127	197	136	190	0	0	0	0	94	3793	18887	9617	1658	0	0	0	2	125	368	46804
16 STM	165	370	30	2392	11	29	30	37	0	3	0	0	3	133	2718	42764	4308	1	19	0	45	1213	191	54462
17 CHS	3908	5504	499	18706	386	681	627	851	1	6	0	0	33	936	1462	2596	32763	0	28	0	80	1951	595	71613
18 FAU	11	10	32	5	7	49	41	6979	1958	7009	18	1	0	0	0	0	1	14415	1187	159	1112	33	1158	34185
19 STA	249	95	43	39	195	518	846	7020	52	10192	0	0	0	0	0	7	34	1619	20608	1	15048	850	1892	59308
20 CL/JF	31	34	1671	15	8	15	3	1830	6223	273	4384	60	169	11	0	0	0	339	1	18833	1	0	5495	39396
21 SP/FB	78	26	13	14	28	105	219	2024	15	3580	0	0	0	0	2	5	26	593	7317	0	39711	760	5919	60435
22 KGEO	2	9	0	107	0	0	2	21	1	146	0	0	0	2	24	153	571	24	484	0	1090	7763	209	10608
23 EXTL	5205	5767	21087	21152	764	1671	1042	15442	5745	8205	24137	21635	32607	72122	663	448	1193	6013	3081	11232	11878	939	0	272028
TOTAL	309500	203886	453721	325441	45904	104686	73408	621360	97030	128291	132718	78434	139270	297992	25546	56016	45430	27913	36780	34917	72881	13881	168647	3493652

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: Total Motorized Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	18717	7171	2128	1279	1628	2487	801	2839	58	26	2	1	45	85	1	0	5	5	0	0	0	2	1074	38354
2 DC NC	135848	59885	25834	18931	8202	12180	3746	12962	218	73	37	4	807	1294	19	3	82	3	2	1	2	0	9001	289134
3 MTG	102488	37940	328399	29815	6391	9984	2192	24975	758	103	5982	377	8018	3170	11	0	31	3	0	200	2	0	21861	582700
4 PG	118866	88505	43732	184618	9756	16451	7069	15276	126	55	72	19	10563	23827	832	365	4377	2	0	1	4	125	20602	545243
5 ARLCR	3385	481	256	74	810	897	232	923	25	7	0	0	1	3	0	0	1	0	1	0	0	0	120	7216
6 ARNCR	41592	8249	4546	1235	9696	25579	7131	32132	723	238	15	0	29	60	2	0	6	17	9	1	7	0	2266	133533
7 ALX	23577	5021	1887	1292	5244	14055	17268	25931	258	291	3	0	16	46	3	1	13	13	23	0	19	1	1207	96169
8 FFX	103661	26174	18056	5667	19995	47150	37453	369759	26281	12262	128	1	110	165	6	3	73	1018	334	71	356	10	8899	677632
9 LDN	2053	871	2924	123	901	1882	633	57852	46763	1290	2402	29	82	10	0	0	0	478	5	1643	1	0	2942	122884
10 PW	12806	1286	941	421	2201	5330	7529	79978	4471	87298	28	0	2	4	0	0	2	3362	3681	54	3522	108	2343	215367
11 FRD	520	658	24797	595	111	138	26	1160	3406	22	80030	3642	5305	836	0	0	0	6	0	2371	0	0	10719	134342
12 CAR	30	84	5313	721	1	3	0	56	203	0	12163	51746	8382	1406	0	0	1	0	0	224	0	0	15808	96141
13 HOW	4909	4821	18642	16794	314	440	97	667	86	1	3459	863	54092	18727	4	0	11	2	0	123	0	0	24572	148624
14 AAR	14411	10874	7177	35043	884	1338	416	628	6	1	120	56	20107	171872	917	54	274	0	0	3	1	1	31406	295589
15 CAL	2834	2633	407	7921	202	310	160	208	0	0	0	0	94	3793	18929	9617	1658	0	0	0	2	125	368	49261
16 STM	383	450	39	2424	21	47	35	41	0	3	0	0	3	133	2718	42764	4349	1	19	0	45	1213	191	54879
17 CHS	8151	6724	654	19041	622	1032	711	916	1	6	0	0	33	936	1462	2596	32828	0	28	0	80	1951	595	78367
18 FAU	11	10	32	5	7	49	41	6979	1958	7009	18	1	0	0	0	0	1	14415	1187	159	1112	33	1158	34185
19 STA	348	109	48	42	236	609	951	7240	52	10199	0	0	0	0	0	7	34	1619	20618	1	15052	850	1892	59907
20 CL/JF	40	38	1808	16	9	16	3	1830	6223	273	4384	60	169	11	0	0	0	339	1	18833	1	0	5495	39549
21 SP/FB	109	29	15	15	31	121	249	2118	15	3583	0	0	0	0	2	5	26	593	7335	0	39734	760	5919	60659
22 KGEO	2	9	0	107	0	0	2	21	1	146	0	0	0	2	24	153	571	24	484	0	1090	7763	209	10608
23 EXTL	5205	5767	21087	21152	764	1671	1042	15442	5745	8205	24137	21635	32607	72122	663	448	1193	6013	3081	11232	11878	939	0	272028
TOTAL	599946	267789	508722	347331	68026	141769	87787	659933	97377	131091	132980	78434	140465	298502	25593	56016	45536	27913	36808	34917	72908	13881	168647	4042371

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: Transit Percentage

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	73.3	52.5	58.6	36.7	64.5	62.0	49.9	42.8	0	11.5	0	0	6.7	2.4	0	0	0	0	0	0	0	0	0	61.1
2 DC NC	61.3	41.0	36.7	21.3	44.2	42.7	30.4	24.5	0	5.5	0	0	4.0	1.9	0	0	0	0	0	0	0	0	0	46.5
3 MTG	44.6	20.4	9.1	6.9	28.2	25.2	16.5	8.4	0	0	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	15.8
4 PG	43.4	17.9	15.3	7.1	32.0	29.0	13.8	10.1	0	0	0	0	1.1	0.3	0	0	0	0	0	0	0	0	0	17.9
5 ARLCR	65.7	39.3	37.1	24.3	24.9	46.8	31.5	31.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48.6
6 ARNCR	51.7	25.8	22.2	13.0	36.9	16.7	21.2	17.6	0.1	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	29.8
7 ALX	48.5	25.3	24.8	7.9	35.9	32.9	18.8	13.4	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	27.5
8 FFX	39.8	16.4	11.8	4.6	27.1	24.0	13.3	3.9	0.1	0.7	0	0	0	0.6	0	0	0	0	0	0	0	0	0	12.4
9 LDN	20.2	6.0	4.8	1.6	12.0	11.1	2.4	3.8	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8
10 PW	40.6	18.8	12.4	3.6	26.9	21.3	18.1	5.2	0	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	7.2
11 FRD	30.6	11.2	5.2	0.7	15.3	10.9	11.5	0.2	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	1.4
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	41.6	13.0	7.7	2.5	30.9	27.0	14.4	6.7	0	0	0	0	1.5	0.4	0	0	0	0	0	0	0	0	0	3.8
14 AAR	40.5	12.2	10.1	2.0	29.9	26.2	13.7	8.0	0	0	0	0	1.0	0.2	0.5	0	0	0	0	0	0	0	0	3.3
15 CAL	53.7	18.7	15.5	1.4	37.1	36.5	15.0	8.7	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	5.0
16 STM	56.9	17.8	23.1	1.3	47.6	38.3	14.3	9.8	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0.8
17 CHS	52.1	18.1	23.7	1.8	37.9	34.0	11.8	7.1	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	8.6
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	28.4	12.8	10.4	7.1	17.4	14.9	11.0	3.0	0	0.1	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0	1.0
20 CL/JF	22.5	10.5	7.6	6.3	11.1	6.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
21 SP/FB	28.4	10.3	13.3	6.7	9.7	13.2	12.0	4.4	0	0.1	0	0	0	0	0	0	0	0	0.2	0	0.1	0	0	0.4
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	48.4	23.9	10.8	6.3	32.5	26.2	16.4	5.8	0.4	2.1	0.2	0	0.9	0.2	0.2	0	0.2	0	0.1	0	0.0	0	0	13.6

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBW MODE: Avg. Auto Occupancy

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.15	1.14	1.17	1.17	1.15	1.16	1.17	1.17	1.45	1.44	1.00	1.00	1.27	1.30	1.00	0	1.25	1.67	0	0	0	2.00	1.15	1.16
2 DC NC	1.16	1.10	1.14	1.15	1.14	1.16	1.15	1.16	1.31	1.15	1.23	1.00	1.23	1.26	1.27	1.00	1.26	1.50	2.00	1.00	2.00	0	1.15	1.14
3 MTG	1.18	1.12	1.10	1.11	1.16	1.18	1.15	1.14	1.17	1.29	1.13	1.15	1.12	1.14	1.10	0	1.19	1.00	0	1.20	2.00	0	1.15	1.12
4 PG	1.17	1.12	1.14	1.09	1.15	1.17	1.13	1.15	1.20	1.22	1.18	1.12	1.12	1.12	1.15	1.16	1.11	2.00	0	1.00	2.00	1.26	1.15	1.12
5 ARLCR	1.16	1.11	1.15	1.12	1.05	1.14	1.13	1.13	1.32	1.00	0	0	1.00	3.00	0	0	1.00	0	1.00	0	0	0	1.15	1.13
6 ARNCR	1.17	1.12	1.14	1.14	1.13	1.13	1.11	1.12	1.21	1.16	1.36	0	1.32	1.18	1.00	0	1.20	1.13	1.50	1.00	2.33	0	1.15	1.14
7 ALX	1.20	1.14	1.19	1.14	1.15	1.14	1.09	1.12	1.21	1.17	1.00	0	1.45	1.31	1.00	1.00	1.30	1.18	1.21	0	1.06	1.00	1.14	1.14
8 FFX	1.32	1.19	1.17	1.17	1.23	1.21	1.12	1.10	1.11	1.11	1.20	1.00	1.18	1.25	1.00	1.00	1.16	1.13	1.16	1.27	1.19	2.00	1.15	1.14
9 LDN	1.73	1.39	1.23	1.30	1.57	1.53	1.41	1.17	1.09	1.14	1.13	1.16	1.28	2.00	0	0	0	1.13	1.25	1.11	1.00	0	1.15	1.15
10 PW	2.19	1.69	1.44	1.44	1.83	1.69	1.31	1.16	1.13	1.08	1.33	0	0.67	1.33	0	0	0.67	1.13	1.12	1.26	1.15	1.20	1.15	1.16
11 FRD	1.41	1.23	1.15	1.21	1.38	1.35	1.64	1.35	1.17	1.16	1.06	1.13	1.17	1.21	0	0	0	2.00	0	1.15	0	0	1.15	1.10
12 CAR	1.36	1.22	1.16	1.18	1.00	1.50	0	1.51	1.27	0	1.14	1.04	1.13	1.16	0	0	1.00	0	0	1.26	0	0	1.15	1.09
13 HOW	1.23	1.15	1.13	1.12	1.21	1.22	1.22	1.20	1.21	1.00	1.15	1.12	1.06	1.11	1.00	0	1.38	2.00	0	1.26	0	0	1.15	1.11
14 AAR	1.24	1.16	1.18	1.13	1.21	1.24	1.20	1.19	1.20	1.00	1.28	1.14	1.12	1.07	1.12	1.23	1.16	0	0	3.00	1.00	1.00	1.15	1.10
15 CAL	1.26	1.17	1.24	1.14	1.22	1.24	1.18	1.23	0	0	0	0	1.27	1.15	1.06	1.12	1.15	0	0	0	2.00	1.30	1.15	1.11
16 STM	1.33	1.21	1.30	1.16	1.38	1.26	1.15	1.23	0	1.50	0	0	3.00	1.27	1.13	1.08	1.13	1.00	1.46	0	1.32	1.20	1.16	1.09
17 CHS	1.23	1.15	1.23	1.13	1.18	1.22	1.16	1.16	1.00	1.50	0	0	1.27	1.18	1.13	1.14	1.06	0	1.27	0	1.27	1.18	1.16	1.11
18 FAU	1.83	2.50	1.28	1.67	1.17	1.53	1.37	1.18	1.15	1.12	1.20	1.00	0	0	0	0	1.00	1.06	1.12	1.17	1.14	1.14	1.15	1.11
19 STA	2.77	2.02	2.26	1.63	2.29	2.05	1.51	1.28	1.21	1.12	0	0	0	0	0	1.40	1.42	1.14	1.05	1.00	1.10	1.14	1.15	1.12
20 CL/JF	3.44	1.42	1.25	1.25	1.60	3.75	3.00	1.40	1.16	1.20	1.15	1.25	1.29	1.57	0	0	0	1.18	1.00	1.05	1.00	0	1.15	1.12
21 SP/FB	3.00	2.89	1.86	3.50	2.33	2.33	1.74	1.38	1.88	1.16	0	0	0	0	1.00	1.00	1.44	1.18	1.11	0	1.05	1.15	1.15	1.09
22 KGEO	2.00	1.29	0	1.29	0	0	2.00	1.40	1.00	1.23	0	0	0	2.00	1.26	1.24	1.20	1.26	1.14	0	1.13	1.05	1.15	1.08
23 EXTL	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.15	1.15	1.15	1.15	1.15	0	1.15
TOTAL	1.22	1.13	1.12	1.11	1.20	1.20	1.14	1.13	1.11	1.10	1.09	1.08	1.11	1.10	1.08	1.09	1.08	1.10	1.08	1.09	1.08	1.10	1.15	1.13

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: LOV Auto Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	3796	2887	535	651	236	3341	658	543	17	21	24	2	10	30	4	13	15	2	72	11	160	0	4	13032
2 DC NC	7921	70769	20330	22495	741	11969	2684	2090	99	84	74	6	162	203	14	71	117	17	410	49	665	2	35	141007
3 MTG	471	9157	381313	22552	91	1422	226	2497	119	113	1028	43	3310	474	21	95	113	21	542	71	1031	4	829	425543
4 PG	788	6883	12341	258826	74	1133	2234	1802	164	210	199	16	3181	10215	256	200	9571	41	860	97	1639	9	876	311615
5 ARLCR	140	110	35	13	1784	2104	269	329	4	3	2	0	0	2	0	0	11	1	6	0	9	0	1	4823
6 ARNCR	530	509	358	97	804	58849	5076	10680	40	54	8	0	3	18	1	9	15	3	45	7	113	0	4	77223
7 ALX	191	185	49	163	138	14485	38767	11728	12	150	6	1	6	12	1	7	13	1	41	2	84	0	8	66050
8 FFX	265	453	2721	714	387	24209	18295	413985	24454	11583	309	37	102	331	48	368	328	339	1808	284	3295	24	88	504427
9 LDN	9	17	259	94	2	130	32	4530	58478	133	705	11	31	86	12	17	39	71	464	1615	909	4	531	68179
10 PW	11	26	276	120	8	188	230	6932	696	116594	126	17	41	121	25	73	98	2261	5427	93	3551	5	85	137004
11 FRD	26	40	3121	209	9	139	83	504	382	96	67246	529	256	119	9	0	26	24	387	285	363	0	3691	77544
12 CAR	37	60	856	383	10	190	122	748	388	103	882	35704	1246	192	11	2	35	34	91	34	64	0	14313	55505
13 HOW	4	5	1904	4833	2	29	16	56	23	25	699	191	66689	3450	3	23	20	6	147	28	280	0	6640	85073
14 AAR	37	82	728	7007	10	183	115	644	282	162	156	10	6606	179282	569	88	167	32	777	47	1021	4	6606	204615
15 CAL	12	32	238	673	2	77	48	269	86	69	46	4	47	301	24810	2196	81	12	315	7	478	3	5	29811
16 STM	38	51	369	384	6	142	100	566	151	83	7	0	72	113	215	29304	563	14	669	0	667	2	4	33520
17 CHS	29	37	252	1679	1	82	64	349	162	69	38	1	54	69	564	587	44431	13	387	0	451	18	13	49350
18 FAU	4	17	138	73	0	44	26	245	391	553	44	1	27	39	3	2	18	17133	2563	31	846	2	479	22679
19 STA	0	2	12	2	0	3	0	15	1	827	2	0	0	4	0	2	1	7	29877	1	10064	0	116	40936
20 CL/JF	15	25	289	126	5	85	50	371	806	53	204	1	65	62	1	0	12	25	450	19329	303	0	6559	28836
21 SP/FB	0	0	3	1	0	2	1	2	2	4	0	0	1	0	0	0	0	0	1834	0	35195	0	623	37668
22 KGEO	10	18	116	93	4	57	37	228	115	41	0	0	16	38	6	11	43	14	561	0	1104	3665	226	6403
23 EXTL	0	11	527	1457	0	3	2	54	62	191	2416	6313	6041	16595	1	2	8	1323	966	1296	4883	208	0	42359
TOTAL	14334	91376	426770	322645	4314	118866	69135	459167	86934	131221	74221	42887	87966	211756	26574	33070	55725	21394	48699	23287	67175	3950	41736	2463202

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: LOV Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4452	3639	672	874	276	4178	845	710	22	30	38	3	19	40	4	24	26	3	115	21	254	0	4	16249
2 DC NC	10310	84825	26466	30782	915	15554	3574	2883	156	122	121	17	240	307	21	124	188	31	667	93	1082	5	56	178539
3 MTG	609	11875	470159	30332	109	1921	311	3412	186	179	1448	62	4598	683	37	183	179	33	921	121	1780	6	1354	530498
4 PG	1072	9162	16549	321242	89	1514	3012	2537	260	332	355	28	4353	14221	364	334	13290	64	1439	190	2805	15	1448	394675
5 ARLCR	173	136	47	18	1807	2598	339	418	5	4	2	0	1	2	0	1	15	1	11	0	14	0	1	5593
6 ARNCR	676	666	470	136	971	68110	6551	13896	63	75	13	0	5	30	2	13	22	5	71	12	171	0	14	91972
7 ALX	260	237	68	221	175	18542	45021	15313	19	203	13	2	6	18	3	10	19	3	69	7	124	0	11	80344
8 FFX	368	626	3786	1042	483	32058	24225	510518	33144	15894	511	56	160	528	79	651	566	500	2847	465	5344	39	141	634031
9 LDN	10	23	401	166	4	191	53	6183	70317	212	1014	14	59	163	21	32	64	107	806	2278	1588	7	868	84581
10 PW	11	34	435	201	9	265	330	9556	981	142457	218	26	68	221	39	131	178	3155	7887	168	5353	8	144	171875
11 FRD	40	63	4444	356	10	224	141	839	588	168	78698	736	387	202	20	1	50	48	736	409	684	0	6058	94902
12 CAR	59	98	1310	630	16	311	206	1266	665	181	1287	38875	1773	319	20	3	68	62	169	57	122	0	23466	70963
13 HOW	5	7	2647	6533	4	45	24	87	35	43	1021	266	75846	4751	6	44	34	11	271	43	521	2	10885	103131
14 AAR	52	127	1120	9707	12	270	179	1045	503	285	279	13	9098	204288	796	148	271	59	1431	88	1887	8	10830	242496
15 CAL	19	46	398	981	3	115	77	451	158	123	85	7	80	438	28391	3059	129	18	571	16	872	5	8	36050
16 STM	58	87	644	638	9	232	155	978	274	151	13	1	133	189	307	33656	803	21	1184	0	1162	3	7	40705
17 CHS	37	59	415	2361	4	123	87	555	282	121	75	2	87	113	791	814	50107	22	662	2	775	29	18	57541
18 FAU	7	23	233	129	1	68	42	373	553	791	75	3	45	74	4	2	31	19492	3679	47	1279	3	784	27738
19 STA	0	2	17	3	0	5	2	22	4	1138	5	0	1	5	0	4	2	9	34165	3	13781	0	191	49359
20 CL/JF	26	41	478	226	6	146	87	624	1172	92	298	2	111	120	1	0	22	40	823	20692	555	0	10753	36315
21 SP/FB	0	0	5	2	0	3	1	4	3	6	0	0	2	0	0	0	0	0	2517	0	38354	0	1021	41918
22 KGEO	17	30	209	162	5	96	63	395	211	68	0	0	30	70	8	19	67	24	822	0	1600	3838	372	8106
23 EXTL	0	15	862	2391	0	3	3	86	106	319	3966	10345	9906	27204	1	5	12	2167	1581	2123	8005	341	0	69441
TOTAL	18261	111821	531835	409133	4908	146572	85328	572151	109707	162994	89535	50458	107008	253986	30915	39258	66143	25875	63444	26835	88112	4309	68434	3067022

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	573	637	154	121	87	940	140	104	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	2759
2 DC NC	1762	6407	3513	2699	219	2357	417	240	0	0	0	0	5	1	0	0	0	0	0	0	5	0	0	17625
3 MTG	34	716	9508	326	11	103	15	32	0	1	0	0	8	1	0	0	0	0	0	0	2	0	0	10757
4 PG	56	418	537	2952	9	81	55	41	0	0	0	0	8	9	0	0	0	0	0	0	0	0	0	4166
5 ARLCR	21	9	4	0	23	217	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	318
6 ARNCR	51	47	13	6	115	1817	200	457	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2706
7 ALX	4	10	3	1	14	623	850	362	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1867
8 FFX	5	24	79	10	55	1501	930	4056	2	67	0	0	0	0	0	0	0	0	0	0	0	0	0	6729
9 LDN	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
10 PW	0	0	1	1	2	3	2	32	0	1131	0	0	0	0	0	0	0	0	0	0	0	0	0	1172
11 FRD	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	1	8	0	0	0	0	0	0	0	0	16	2	0	0	0	0	0	0	0	0	0	27
14 AAR	0	1	8	4	2	3	0	4	0	0	0	0	2	5	0	0	0	0	0	0	0	0	0	29
15 CAL	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2506	8269	13821	6128	537	7646	2631	5350	28	1201	8	0	39	18	0	0	0	0	0	0	9	0	0	48191

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: HOV AUTO Driver

DESTINATION

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
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: Auto Driver

DESTINATION

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
1 DC CR	3796	2887	535	651	236	3341	658	543	17	21	24	2	10	30	4	13	15	2	72	11	160	0	4	13032
2 DC NC	7921	70769	20330	22495	741	11969	2684	2090	99	84	74	6	162	203	14	71	117	17	410	49	665	2	35	141007
3 MTG	471	9157	381313	22552	91	1422	226	2497	119	113	1028	43	3310	474	21	95	113	21	542	71	1031	4	829	425543
4 PG	788	6883	12341	258826	74	1133	2234	1802	164	210	199	16	3181	10215	256	200	9571	41	860	97	1639	9	876	311615
5 ARLCR	140	110	35	13	1784	2104	269	329	4	3	2	0	0	2	0	0	11	1	6	0	9	0	1	4823
6 ARNCR	530	509	358	97	804	58849	5076	10680	40	54	8	0	3	18	1	9	15	3	45	7	113	0	4	77223
7 ALX	191	185	49	163	138	14485	38767	11728	12	150	6	1	6	12	1	7	13	1	41	2	84	0	8	66050
8 FFX	265	453	2721	714	387	24209	18295	413985	24454	11583	309	37	102	331	48	368	328	339	1808	284	3295	24	88	504427
9 LDN	9	17	259	94	2	130	32	4530	58478	133	705	11	31	86	12	17	39	71	464	1615	909	4	531	68179
10 PW	11	26	276	120	8	188	230	6932	696	116594	126	17	41	121	25	73	98	2261	5427	93	3551	5	85	137004
11 FRD	26	40	3121	209	9	139	83	504	382	96	67246	529	256	119	9	0	26	24	387	285	363	0	3691	77544
12 CAR	37	60	856	383	10	190	122	748	388	103	882	35704	1246	192	11	2	35	34	91	34	64	0	14313	55505
13 HOW	4	5	1904	4833	2	29	16	56	23	25	699	191	66689	3450	3	23	20	6	147	28	280	0	6640	85073
14 AAR	37	82	728	7007	10	183	115	644	282	162	156	10	6606	179282	569	88	167	32	777	47	1021	4	6606	204615
15 CAL	12	32	238	673	2	77	48	269	86	69	46	4	47	301	24810	2196	81	12	315	7	478	3	5	29811
16 STM	38	51	369	384	6	142	100	566	151	83	7	0	72	113	215	29304	563	14	669	0	667	2	4	33520
17 CHS	29	37	252	1679	1	82	64	349	162	69	38	1	54	69	564	587	44431	13	387	0	451	18	13	49350
18 FAU	4	17	138	73	0	44	26	245	391	553	44	1	27	39	3	2	18	17133	2563	31	846	2	479	22679
19 STA	0	2	12	2	0	3	0	15	1	827	2	0	0	4	0	2	1	7	29877	1	10064	0	116	40936
20 CL/JF	15	25	289	126	5	85	50	371	806	53	204	1	65	62	1	0	12	25	450	19329	303	0	6559	28836
21 SP/FB	0	0	3	1	0	2	1	2	2	4	0	0	1	0	0	0	0	0	1834	0	35195	0	623	37668
22 KGEO	10	18	116	93	4	57	37	228	115	41	0	0	16	38	6	11	43	14	561	0	1104	3665	226	6403
23 EXTL	0	11	527	1457	0	3	2	54	62	191	2416	6313	6041	16595	1	2	8	1323	966	1296	4883	208	0	42359
TOTAL	14334	91376	426770	322645	4314	118866	69135	459167	86934	131221	74221	42887	87966	211756	26574	33070	55725	21394	48699	23287	67175	3950	41736	2463202

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4452	3639	672	874	276	4178	845	710	22	30	38	3	19	40	4	24	26	3	115	21	254	0	4	16249
2 DC NC	10310	84825	26466	30782	915	15554	3574	2883	156	122	121	17	240	307	21	124	188	31	667	93	1082	5	56	178539
3 MTG	609	11875	470159	30332	109	1921	311	3412	186	179	1448	62	4598	683	37	183	179	33	921	121	1780	6	1354	530498
4 PG	1072	9162	16549	321242	89	1514	3012	2537	260	332	355	28	4353	14221	364	334	13290	64	1439	190	2805	15	1448	394675
5 ARLCR	173	136	47	18	1807	2598	339	418	5	4	2	0	1	2	0	1	15	1	11	0	14	0	1	5593
6 ARNCR	676	666	470	136	971	68110	6551	13896	63	75	13	0	5	30	2	13	22	5	71	12	171	0	14	91972
7 ALX	260	237	68	221	175	18542	45021	15313	19	203	13	2	6	18	3	10	19	3	69	7	124	0	11	80344
8 FFX	368	626	3786	1042	483	32058	24225	510518	33144	15894	511	56	160	528	79	651	566	500	2847	465	5344	39	141	634031
9 LDN	10	23	401	166	4	191	53	6183	70317	212	1014	14	59	163	21	32	64	107	806	2278	1588	7	868	84581
10 PW	11	34	435	201	9	265	330	9556	981	142457	218	26	68	221	39	131	178	3155	7887	168	5353	8	144	171875
11 FRD	40	63	4444	356	10	224	141	839	588	168	78698	736	387	202	20	1	50	48	736	409	684	0	6058	94902
12 CAR	59	98	1310	630	16	311	206	1266	665	181	1287	38875	1773	319	20	3	68	62	169	57	122	0	23466	70963
13 HOW	5	7	2647	6533	4	45	24	87	35	43	1021	266	75846	4751	6	44	34	11	271	43	521	2	10885	103131
14 AAR	52	127	1120	9707	12	270	179	1045	503	285	279	13	9098	204288	796	148	271	59	1431	88	1887	8	10830	242496
15 CAL	19	46	398	981	3	115	77	451	158	123	85	7	80	438	28391	3059	129	18	571	16	872	5	8	36050
16 STM	58	87	644	638	9	232	155	978	274	151	13	1	133	189	307	33656	803	21	1184	0	1162	3	7	40705
17 CHS	37	59	415	2361	4	123	87	555	282	121	75	2	87	113	791	814	50107	22	662	2	775	29	18	57541
18 FAU	7	23	233	129	1	68	42	373	553	791	75	3	45	74	4	2	31	19492	3679	47	1279	3	784	27738
19 STA	0	2	17	3	0	5	2	22	4	1138	5	0	1	5	0	4	2	9	34165	3	13781	0	191	49359
20 CL/JF	26	41	478	226	6	146	87	624	1172	92	298	2	111	120	1	0	22	40	823	20692	555	0	10753	36315
21 SP/FB	0	0	5	2	0	3	1	4	3	6	0	0	2	0	0	0	0	0	2517	0	38354	0	1021	41918
22 KGEO	17	30	209	162	5	96	63	395	211	68	0	0	30	70	8	19	67	24	822	0	1600	3838	372	8106
23 EXTL	0	15	862	2391	0	3	3	86	106	319	3966	10345	9906	27204	1	5	12	2167	1581	2123	8005	341	0	69441
TOTAL	18261	111821	531835	409133	4908	146572	85328	572151	109707	162994	89535	50458	107008	253986	30915	39258	66143	25875	63444	26835	88112	4309	68434	3067022

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBS MODE: Total Motorized Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	5025	4276	826	995	363	5118	985	814	22	32	38	3	19	40	4	24	26	3	115	21	255	0	4	19008
2 DC NC	12072	91232	29979	33481	1134	17911	3991	3123	156	122	121	17	245	308	21	124	188	31	667	93	1087	5	56	196164
3 MTG	643	12591	479667	30658	120	2024	326	3444	186	180	1448	62	4606	684	37	183	179	33	921	121	1782	6	1354	541255
4 PG	1128	9580	17086	324194	98	1595	3067	2578	260	332	355	28	4361	14230	364	334	13290	64	1439	190	2805	15	1448	398841
5 ARLCR	194	145	51	18	1830	2815	361	440	5	4	2	0	1	2	0	1	15	1	11	0	14	0	1	5911
6 ARNCR	727	713	483	142	1086	69927	6751	14353	63	75	13	0	5	30	2	13	22	5	71	12	171	0	14	94678
7 ALX	264	247	71	222	189	19165	45871	15675	19	203	13	2	6	18	3	10	19	3	69	7	124	0	11	82211
8 FFX	373	650	3865	1052	538	33559	25155	514574	33146	15961	511	56	160	528	79	651	566	500	2847	465	5344	39	141	640760
9 LDN	10	23	401	166	4	191	53	6183	70343	212	1014	14	59	163	21	32	64	107	806	2278	1588	7	868	84607
10 PW	11	34	436	202	11	268	332	9588	981	143588	218	26	68	221	39	131	178	3155	7887	168	5353	8	144	173047
11 FRD	40	63	4444	356	10	224	141	839	588	168	78706	736	387	202	20	1	50	48	736	409	684	0	6058	94910
12 CAR	59	98	1310	630	16	311	206	1266	665	181	1287	38875	1773	319	20	3	68	62	169	57	122	0	23466	70963
13 HOW	5	7	2648	6541	4	45	24	87	35	43	1021	266	75862	4753	6	44	34	11	271	43	521	2	10885	103158
14 AAR	52	128	1128	9711	14	273	179	1049	503	285	279	13	9100	204293	796	148	271	59	1431	88	1887	8	10830	242525
15 CAL	19	46	398	981	3	116	77	451	158	123	85	7	80	438	28391	3059	129	18	571	16	872	5	8	36051
16 STM	58	87	644	638	9	232	155	978	274	151	13	1	133	189	307	33656	803	21	1184	0	1162	3	7	40705
17 CHS	37	59	415	2361	4	123	87	555	282	121	75	2	87	113	791	814	50107	22	662	2	775	29	18	57541
18 FAU	7	23	233	129	1	68	42	373	553	791	75	3	45	74	4	2	31	19492	3679	47	1279	3	784	27738
19 STA	0	2	17	3	0	5	2	22	4	1138	5	0	1	5	0	4	2	9	34165	3	13782	0	191	49360
20 CL/JF	26	41	478	226	6	146	87	624	1172	92	298	2	111	120	1	0	22	40	823	20692	555	0	10753	36315
21 SP/FB	0	0	5	2	0	3	1	4	3	6	0	0	2	0	0	0	0	0	2517	0	38354	0	1021	41918
22 KGEO	17	30	209	162	5	96	63	395	211	68	0	0	30	70	8	19	67	24	822	0	1600	3838	372	8106
23 EXTL	0	15	862	2391	0	3	3	86	106	319	3966	10345	9906	27204	1	5	12	2167	1581	2123	8005	341	0	69441
TOTAL	20767	120090	545656	415261	5445	154218	87959	577501	109735	164195	89543	50458	107047	254004	30915	39258	66143	25875	63444	26835	88121	4309	68434	3115213

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: HBS   MODE: Transit Percentage

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	11.4	14.9	18.6	12.2	24.0	18.4	14.2	12.8	0	6.3	0	0	0	0	0	0	0	0	0	0	0.4	0	0	14.5
2 DC NC	14.6	7.0	11.7	8.1	19.3	13.2	10.4	7.7	0	0	0	0	2.0	0.3	0	0	0	0	0	0	0.5	0	0	9.0
3 MTG	5.3	5.7	2.0	1.1	9.2	5.1	4.6	0.9	0	0.6	0	0	0.2	0.1	0	0	0	0	0	0	0.1	0	0	2.0
4 PG	5.0	4.4	3.1	0.9	9.2	5.1	1.8	1.6	0	0	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	1.0
5 ARLCR	10.8	6.2	7.8	0	1.3	7.7	6.1	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.4
6 ARNCR	7.0	6.6	2.7	4.2	10.6	2.6	3.0	3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9
7 ALX	1.5	4.0	4.2	0.5	7.4	3.3	1.9	2.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3
8 FFX	1.3	3.7	2.0	1.0	10.2	4.5	3.7	0.8	0.0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1
9 LDN	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
10 PW	0	0	0.2	0.5	18.2	1.1	0.6	0.3	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7
11 FRD	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0.0	0.1	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0	0.8	0.7	0.0	14.3	1.1	0	0.4	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	12.1	6.9	2.5	1.5	9.9	5.0	3.0	0.9	0.0	0.7	0.0	0	0.0	0.0	0	0	0	0	0	0	0.0	0	0	1.5

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: HBS   MODE: Avg. Auto Occupancy

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.17	1.26	1.26	1.34	1.17	1.25	1.28	1.31	1.29	1.43	1.58	1.50	1.90	1.33	1.00	1.85	1.73	1.50	1.60	1.91	1.59	0	1.00	1.25
2 DC NC	1.30	1.20	1.30	1.37	1.23	1.30	1.33	1.38	1.58	1.45	1.64	2.83	1.48	1.51	1.50	1.75	1.61	1.82	1.63	1.90	1.63	2.50	1.60	1.27
3 MTG	1.29	1.30	1.23	1.34	1.20	1.35	1.38	1.37	1.56	1.58	1.41	1.44	1.39	1.44	1.76	1.93	1.58	1.57	1.70	1.70	1.73	1.50	1.63	1.25
4 PG	1.36	1.33	1.34	1.24	1.20	1.34	1.35	1.41	1.59	1.58	1.78	1.75	1.37	1.39	1.42	1.67	1.39	1.56	1.67	1.96	1.71	1.67	1.65	1.27
5 ARLCR	1.24	1.24	1.34	1.38	1.01	1.23	1.26	1.27	1.25	1.33	1.00	0	1.00	1.00	0	1.00	1.36	1.00	1.83	0	1.56	0	1.00	1.16
6 ARNCR	1.28	1.31	1.31	1.40	1.21	1.16	1.29	1.30	1.58	1.39	1.63	0	1.67	1.67	2.00	1.44	1.47	1.67	1.58	1.71	1.51	0	3.50	1.19
7 ALX	1.36	1.28	1.39	1.36	1.27	1.28	1.16	1.31	1.58	1.35	2.17	2.00	1.00	1.50	3.00	1.43	1.46	3.00	1.68	3.50	1.48	0	1.38	1.22
8 FFX	1.39	1.38	1.39	1.46	1.25	1.32	1.32	1.23	1.36	1.37	1.65	1.51	1.57	1.60	1.65	1.77	1.73	1.47	1.57	1.64	1.62	1.63	1.60	1.26
9 LDN	1.11	1.35	1.55	1.77	2.00	1.47	1.66	1.36	1.20	1.59	1.44	1.27	1.90	1.90	1.75	1.88	1.64	1.51	1.74	1.41	1.75	1.75	1.63	1.24
10 PW	1.00	1.31	1.58	1.68	1.13	1.41	1.43	1.38	1.41	1.22	1.73	1.53	1.66	1.83	1.56	1.79	1.82	1.40	1.45	1.81	1.51	1.60	1.69	1.25
11 FRD	1.54	1.58	1.42	1.70	1.11	1.61	1.70	1.66	1.54	1.75	1.17	1.39	1.51	1.70	2.22	1.00	1.92	2.00	1.90	1.44	1.88	0	1.64	1.22
12 CAR	1.59	1.63	1.53	1.64	1.60	1.64	1.69	1.69	1.71	1.76	1.46	1.09	1.42	1.66	1.82	1.50	1.94	1.82	1.86	1.68	1.91	0	1.64	1.28
13 HOW	1.25	1.40	1.39	1.35	2.00	1.55	1.50	1.55	1.52	1.72	1.46	1.39	1.14	1.38	2.00	1.91	1.70	1.83	1.84	1.54	1.86	2.00	1.64	1.21
14 AAR	1.41	1.55	1.54	1.39	1.20	1.48	1.56	1.62	1.78	1.76	1.79	1.30	1.38	1.14	1.40	1.68	1.62	1.84	1.84	1.87	1.85	2.00	1.64	1.19
15 CAL	1.58	1.44	1.67	1.46	1.50	1.49	1.60	1.68	1.84	1.78	1.85	1.75	1.70	1.46	1.14	1.39	1.59	1.50	1.81	2.29	1.82	1.67	1.60	1.21
16 STM	1.53	1.71	1.75	1.66	1.50	1.63	1.55	1.73	1.81	1.82	1.86	1.00	1.85	1.67	1.43	1.15	1.43	1.50	1.77	0	1.74	1.50	1.75	1.21
17 CHS	1.28	1.59	1.65	1.41	4.00	1.50	1.36	1.59	1.74	1.75	1.97	2.00	1.61	1.64	1.40	1.39	1.13	1.69	1.71	2.00	1.72	1.61	1.38	1.17
18 FAU	1.75	1.35	1.69	1.77	1.00	1.55	1.62	1.52	1.41	1.43	1.70	3.00	1.67	1.90	1.33	1.00	1.72	1.14	1.44	1.52	1.51	1.50	1.64	1.22
19 STA	0	1.00	1.42	1.50	0	1.67	2.00	1.47	4.00	1.38	2.50	0	1.00	1.25	0	2.00	2.00	1.29	1.14	3.00	1.37	0	1.65	1.21
20 CL/JF	1.73	1.64	1.65	1.79	1.20	1.72	1.74	1.68	1.45	1.74	1.46	2.00	1.71	1.94	1.00	0	1.83	1.60	1.83	1.07	1.83	0	1.64	1.26
21 SP/FB	0	0	1.67	2.00	0	1.50	1.00	2.00	1.50	1.50	0	0	2.00	0	0	0	0	0	1.37	0	1.09	0	1.64	1.11
22 KGEO	1.70	1.67	1.80	1.74	1.25	1.68	1.70	1.73	1.83	1.66	0	0	1.88	1.84	1.33	1.73	1.56	1.71	1.47	0	1.45	1.05	1.65	1.27
23 EXTL	0	1.36	1.64	1.64	0	1.00	1.50	1.59	1.71	1.67	1.64	1.64	1.64	1.64	1.00	2.50	1.50	1.64	1.64	1.64	1.64	1.64	0	1.64
TOTAL	1.27	1.22	1.25	1.27	1.14	1.23	1.23	1.25	1.26	1.24	1.21	1.18	1.22	1.20	1.16	1.19	1.19	1.21	1.30	1.15	1.31	1.09	1.64	1.25

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: LOV Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	12970	8270	1145	1266	341	1605	408	947	13	19	0	1	10	42	0	0	3	3	0	2	1	0	440	27486
2 DC NC	54413	270573	54046	43152	2764	13420	4325	11263	238	93	18	7	712	1167	37	10	173	13	7	12	18	7	7668	464136
3 MTG	12197	47395	1020439	44947	1280	7902	1846	27455	1266	132	6397	650	14509	3219	13	19	46	18	41	243	62	14	22840	1212930
4 PG	25105	78284	47590	635316	1308	5693	7025	9941	85	208	49	26	9840	26201	806	237	9292	28	34	25	38	24	16044	873199
5 ARLCR	1066	1013	320	138	3185	2548	494	1084	10	12	0	0	0	3	0	0	2	1	0	1	0	0	124	10001
6 ARNCR	13947	11080	4952	2061	5576	140568	17190	50508	574	340	6	1	27	65	2	4	18	15	15	6	13	6	3220	250194
7 ALX	5919	4740	1197	1788	1670	17033	63710	28644	87	505	2	1	13	27	3	0	32	8	32	4	13	2	1518	126948
8 FFX	14400	11281	14541	5481	3743	49003	42835	1065013	38307	19031	36	24	86	201	14	23	95	949	662	84	377	27	16014	1282227
9 LDN	167	148	703	68	38	498	106	21873	182680	700	1405	26	34	46	4	0	10	453	5	3771	21	2	2983	215741
10 PW	1247	826	539	472	279	2929	3781	59611	3425	302601	27	20	36	118	4	22	29	1858	5131	94	2927	21	5644	391641
11 FRD	119	201	18162	221	19	103	56	481	2452	59	218966	4499	4279	341	7	0	28	25	35	3646	34	0	9941	263674
12 CAR	124	166	2198	233	25	110	73	337	81	66	5169	143549	5284	325	5	2	28	30	5	37	2	0	14197	172046
13 HOW	234	1032	13142	9803	7	44	26	153	34	18	1441	1385	188406	15890	4	11	9	7	13	58	9	2	13896	245624
14 AAR	1466	4248	4151	35428	64	287	263	663	91	103	80	55	22134	514816	1566	51	295	35	46	26	35	18	30899	616820
15 CAL	230	578	263	4331	19	85	103	295	34	51	16	12	45	3424	86752	6061	1162	8	29	5	23	7	585	104118
16 STM	116	142	249	681	15	85	31	236	22	44	4	2	56	112	2006	100404	3584	9	26	0	21	288	437	108570
17 CHS	625	1172	223	11800	32	162	312	567	33	46	23	8	38	286	866	2540	137610	28	29	6	35	1108	1116	158665
18 FAU	98	101	218	109	16	174	66	5571	1339	5127	26	12	37	82	4	8	30	42919	2424	291	1023	17	1685	61377
19 STA	40	30	50	30	7	75	126	1094	13	4004	9	0	11	23	2	5	3	539	73774	7	14053	142	2439	96476
20 CL/JF	120	174	565	161	20	113	64	385	4849	153	4422	21	99	59	4	0	13	426	23	58844	7	1	4703	75226
21 SP/FB	36	45	83	44	4	34	27	191	20	907	7	0	10	19	1	9	14	310	10829	1	105756	43	7705	126095
22 KGEO	98	133	176	130	17	88	45	246	51	78	0	0	13	44	8	82	533	91	868	0	602	19107	350	22760
23 EXTL	1594	4787	15226	10172	184	2009	1120	10626	2471	3145	6960	7839	11393	25350	313	273	697	951	1794	4375	6053	220	0	117552
TOTAL	146331	446419	1200178	807832	20613	244568	144032	1297184	238175	337442	245063	158138	257072	591860	92421	109761	153706	48724	95822	71538	131123	21056	164448	7023506

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: LOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	16076	11620	1597	1821	468	2200	567	1349	18	22	0	1	13	59	1	1	7	3	0	3	1	0	722	36549
2 DC NC	78949	356600	80322	65887	3979	19504	6396	16936	362	142	28	12	1096	1803	63	16	261	19	12	21	26	7	12367	644808
3 MTG	18044	70887	1351172	68563	1883	11744	2779	42054	1969	199	9923	1003	22390	4948	27	38	70	28	62	378	98	22	36836	1645117
4 PG	37456	118606	72226	829705	1918	8403	10648	15244	124	310	77	40	15090	40447	1277	360	14437	45	73	41	63	38	25872	1192500
5 ARLCR	1478	1409	455	194	3371	3525	692	1532	16	18	0	0	1	5	0	0	2	1	0	1	0	0	199	12899
6 ARNCR	20190	16141	7334	3064	7957	176490	25306	75472	863	519	7	2	37	98	4	4	24	19	21	12	19	7	5189	338779
7 ALX	8622	6956	1766	2681	2426	24831	79646	42567	136	758	3	1	16	42	4	0	44	12	44	4	21	3	2451	173034
8 FFX	21483	16957	22127	8392	5503	73054	64528	1420016	59123	29328	54	40	136	309	18	41	144	1456	1035	141	580	38	25831	1750334
9 LDN	243	221	1094	102	57	750	164	33752	224491	1078	2181	38	63	71	4	0	17	703	10	5883	32	6	4808	275768
10 PW	1874	1257	821	720	422	4374	5742	91839	5311	386060	46	35	58	188	6	28	43	2894	7954	148	4531	40	9105	523496
11 FRD	176	306	28142	342	30	151	85	742	3809	89	272993	7011	6652	527	11	2	43	40	57	5674	58	0	16029	342969
12 CAR	188	253	3404	367	38	164	112	518	125	106	8043	157846	8211	507	7	3	51	47	8	64	4	0	22895	202961
13 HOW	350	1574	20271	15090	10	65	38	237	53	32	2246	2157	222000	24559	5	16	16	8	20	90	15	3	22414	311269
14 AAR	2211	6486	6375	54700	97	430	397	1019	142	162	123	84	34135	663552	2434	80	452	53	74	45	58	24	49834	822967
15 CAL	352	886	406	6730	27	130	156	454	57	78	32	16	71	5335	98808	9416	1807	15	41	8	38	16	943	125822
16 STM	169	224	400	1056	20	127	51	371	36	75	8	2	92	177	3116	119158	5584	18	37	0	38	444	703	131906
17 CHS	945	1793	352	18312	43	241	474	877	53	71	34	15	62	442	1352	3964	159378	42	46	12	53	1727	1803	192091
18 FAU	149	152	332	172	22	261	104	8624	2083	7971	43	19	61	129	7	15	46	47739	3778	451	1587	26	2717	76488
19 STA	60	46	78	43	12	111	193	1693	22	6221	14	1	15	38	3	9	6	842	94805	12	21803	220	3936	130183
20 CL/JF	183	263	870	251	31	166	98	593	7535	237	6865	37	150	94	5	0	24	665	37	65334	11	1	7588	91038
21 SP/FB	52	71	126	69	6	51	40	294	32	1399	14	0	16	29	2	14	22	477	16742	2	117113	67	12429	149067
22 KGEO	148	200	279	202	25	129	69	380	87	120	0	0	20	68	12	127	830	143	1352	0	933	20906	562	26592
23 EXTL	2570	7723	24558	16404	295	3244	1807	17140	3984	5075	11228	12642	18372	40891	502	442	1125	1536	2888	7065	9760	354	0	189605
TOTAL	211968	620631	1624507	1094867	28640	330145	200092	1773703	310431	440070	313962	181002	328757	784318	107668	133734	184433	56805	129096	85389	156842	23949	265233	9386242

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	7134	3944	924	648	344	1342	245	474	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	15058
2 DC NC	34152	27399	12017	7279	1270	4740	1067	1813	0	5	0	0	29	19	0	0	1	0	0	0	0	0	0	89791
3 MTG	5365	6270	22404	2024	285	962	171	485	0	0	0	0	26	2	0	0	0	0	0	0	0	0	0	37994
4 PG	7310	6210	2899	6628	241	739	247	267	0	0	0	0	25	16	0	0	0	0	0	0	0	0	0	24582
5 ARLCR	1057	333	109	37	116	595	122	236	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2606
6 ARNCR	8994	2345	846	269	1329	7780	1775	4461	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	27808
7 ALX	2402	633	163	92	350	2106	1748	1594	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	9092
8 FFX	4018	1066	634	150	643	4710	1930	8733	2	56	0	0	0	0	0	0	0	0	0	0	1	0	0	21943
9 LDN	0	0	0	0	0	0	0	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	87
10 PW	89	7	5	0	22	52	42	165	0	1412	0	0	0	0	0	0	0	0	0	0	0	0	0	1794
11 FRD	0	0	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	35
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	19	9	18	13	0	0	0	1	0	0	0	0	35	6	0	0	0	0	0	0	0	0	0	101
14 AAR	65	60	51	45	1	7	3	3	0	0	0	0	4	14	0	0	0	0	0	0	0	0	0	253
15 CAL	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	70606	48276	40070	17187	4601	23033	7350	18232	89	1487	35	0	122	57	0	0	1	0	0	0	1	0	0	231147

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: HOV AUTO Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: Auto Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	12970	8270	1145	1266	341	1605	408	947	13	19	0	1	10	42	0	0	3	3	0	2	1	0	440	27486
2 DC NC	54413	270573	54046	43152	2764	13420	4325	11263	238	93	18	7	712	1167	37	10	173	13	7	12	18	7	7668	464136
3 MTG	12197	47395	1020439	44947	1280	7902	1846	27455	1266	132	6397	650	14509	3219	13	19	46	18	41	243	62	14	22840	1212930
4 PG	25105	78284	47590	635316	1308	5693	7025	9941	85	208	49	26	9840	26201	806	237	9292	28	34	25	38	24	16044	873199
5 ARLCR	1066	1013	320	138	3185	2548	494	1084	10	12	0	0	0	3	0	0	2	1	0	1	0	0	124	10001
6 ARNCR	13947	11080	4952	2061	5576	140568	17190	50508	574	340	6	1	27	65	2	4	18	15	15	6	13	6	3220	250194
7 ALX	5919	4740	1197	1788	1670	17033	63710	28644	87	505	2	1	13	27	3	0	32	8	32	4	13	2	1518	126948
8 FFX	14400	11281	14541	5481	3743	49003	42835	1065013	38307	19031	36	24	86	201	14	23	95	949	662	84	377	27	16014	1282227
9 LDN	167	148	703	68	38	498	106	21873	182680	700	1405	26	34	46	4	0	10	453	5	3771	21	2	2983	215741
10 PW	1247	826	539	472	279	2929	3781	59611	3425	302601	27	20	36	118	4	22	29	1858	5131	94	2927	21	5644	391641
11 FRD	119	201	18162	221	19	103	56	481	2452	59	218966	4499	4279	341	7	0	28	25	35	3646	34	0	9941	263674
12 CAR	124	166	2198	233	25	110	73	337	81	66	5169	143549	5284	325	5	2	28	30	5	37	2	0	14197	172046
13 HOW	234	1032	13142	9803	7	44	26	153	34	18	1441	1385	188406	15890	4	11	9	7	13	58	9	2	13896	245624
14 AAR	1466	4248	4151	35428	64	287	263	663	91	103	80	55	22134	514816	1566	51	295	35	46	26	35	18	30899	616820
15 CAL	230	578	263	4331	19	85	103	295	34	51	16	12	45	3424	86752	6061	1162	8	29	5	23	7	585	104118
16 STM	116	142	249	681	15	85	31	236	22	44	4	2	56	112	2006	100404	3584	9	26	0	21	288	437	108570
17 CHS	625	1172	223	11800	32	162	312	567	33	46	23	8	38	286	866	2540	137610	28	29	6	35	1108	1116	158665
18 FAU	98	101	218	109	16	174	66	5571	1339	5127	26	12	37	82	4	8	30	42919	2424	291	1023	17	1685	61377
19 STA	40	30	50	30	7	75	126	1094	13	4004	9	0	11	23	2	5	3	539	73774	7	14053	142	2439	96476
20 CL/JF	120	174	565	161	20	113	64	385	4849	153	4422	21	99	59	4	0	13	426	23	58844	7	1	4703	75226
21 SP/FB	36	45	83	44	4	34	27	191	20	907	7	0	10	19	1	9	14	310	10829	1	105756	43	7705	126095
22 KGEO	98	133	176	130	17	88	45	246	51	78	0	0	13	44	8	82	533	91	868	0	602	19107	350	22760
23 EXTL	1594	4787	15226	10172	184	2009	1120	10626	2471	3145	6960	7839	11393	25350	313	273	697	951	1794	4375	6053	220	0	117552
TOTAL	146331	446419	1200178	807832	20613	244568	144032	1297184	238175	337442	245063	158138	257072	591860	92421	109761	153706	48724	95822	71538	131123	21056	164448	7023506

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	16076	11620	1597	1821	468	2200	567	1349	18	22	0	1	13	59	1	1	7	3	0	3	1	0	722	36549
2 DC NC	78949	356600	80322	65887	3979	19504	6396	16936	362	142	28	12	1096	1803	63	16	261	19	12	21	26	7	12367	644808
3 MTG	18044	70887	1351172	68563	1883	11744	2779	42054	1969	199	9923	1003	22390	4948	27	38	70	28	62	378	98	22	36836	1645117
4 PG	37456	118606	72226	829705	1918	8403	10648	15244	124	310	77	40	15090	40447	1277	360	14437	45	73	41	63	38	25872	1192500
5 ARLCR	1478	1409	455	194	3371	3525	692	1532	16	18	0	0	1	5	0	0	2	1	0	1	0	0	199	12899
6 ARNCR	20190	16141	7334	3064	7957	176490	25306	75472	863	519	7	2	37	98	4	4	24	19	21	12	19	7	5189	338779
7 ALX	8622	6956	1766	2681	2426	24831	79646	42567	136	758	3	1	16	42	4	0	44	12	44	4	21	3	2451	173034
8 FFX	21483	16957	22127	8392	5503	73054	64528	1420016	59123	29328	54	40	136	309	18	41	144	1456	1035	141	580	38	25831	1750334
9 LDN	243	221	1094	102	57	750	164	33752	224491	1078	2181	38	63	71	4	0	17	703	10	5883	32	6	4808	275768
10 PW	1874	1257	821	720	422	4374	5742	91839	5311	386060	46	35	58	188	6	28	43	2894	7954	148	4531	40	9105	523496
11 FRD	176	306	28142	342	30	151	85	742	3809	89	272993	7011	6652	527	11	2	43	40	57	5674	58	0	16029	342969
12 CAR	188	253	3404	367	38	164	112	518	125	106	8043	157846	8211	507	7	3	51	47	8	64	4	0	22895	202961
13 HOW	350	1574	20271	15090	10	65	38	237	53	32	2246	2157	222000	24559	5	16	16	8	20	90	15	3	22414	311269
14 AAR	2211	6486	6375	54700	97	430	397	1019	142	162	123	84	34135	663552	2434	80	452	53	74	45	58	24	49834	822967
15 CAL	352	886	406	6730	27	130	156	454	57	78	32	16	71	5335	98808	9416	1807	15	41	8	38	16	943	125822
16 STM	169	224	400	1056	20	127	51	371	36	75	8	2	92	177	3116	119158	5584	18	37	0	38	444	703	131906
17 CHS	945	1793	352	18312	43	241	474	877	53	71	34	15	62	442	1352	3964	159378	42	46	12	53	1727	1803	192091
18 FAU	149	152	332	172	22	261	104	8624	2083	7971	43	19	61	129	7	15	46	47739	3778	451	1587	26	2717	76488
19 STA	60	46	78	43	12	111	193	1693	22	6221	14	1	15	38	3	9	6	842	94805	12	21803	220	3936	130183
20 CL/JF	183	263	870	251	31	166	98	593	7535	237	6865	37	150	94	5	0	24	665	37	65334	11	1	7588	91038
21 SP/FB	52	71	126	69	6	51	40	294	32	1399	14	0	16	29	2	14	22	477	16742	2	117113	67	12429	149067
22 KGEO	148	200	279	202	25	129	69	380	87	120	0	0	20	68	12	127	830	143	1352	0	933	20906	562	26592
23 EXTL	2570	7723	24558	16404	295	3244	1807	17140	3984	5075	11228	12642	18372	40891	502	442	1125	1536	2888	7065	9760	354	0	189605
TOTAL	211968	620631	1624507	1094867	28640	330145	200092	1773703	310431	440070	313962	181002	328757	784318	107668	133734	184433	56805	129096	85389	156842	23949	265233	9386242

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: Total Motorized Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	23210	15564	2521	2469	812	3542	812	1823	18	22	0	1	16	59	1	1	7	3	0	3	1	0	722	51607
2 DC NC	113101	383999	92339	73166	5249	24244	7463	18749	362	147	28	12	1125	1822	63	16	262	19	12	21	26	7	12367	734599
3 MTG	23409	77157	1373576	70587	2168	12706	2950	42539	1969	199	9923	1003	22416	4950	27	38	70	28	62	378	98	22	36836	1683111
4 PG	44766	124816	75125	836333	2159	9142	10895	15511	124	310	77	40	15115	40463	1277	360	14437	45	73	41	63	38	25872	1217082
5 ARLCR	2535	1742	564	231	3487	4120	814	1768	16	19	0	0	1	5	0	0	2	1	0	1	0	0	199	15505
6 ARNCR	29184	18486	8180	3333	9286	184270	27081	79933	863	528	7	2	37	98	4	4	24	19	21	12	19	7	5189	366587
7 ALX	11024	7589	1929	2773	2776	26937	81394	44161	136	762	3	1	16	42	4	0	44	12	44	4	21	3	2451	182126
8 FFX	25501	18023	22761	8542	6146	77764	66458	1428749	59125	29384	54	40	136	309	18	41	144	1456	1035	141	581	38	25831	1772277
9 LDN	243	221	1094	102	57	750	164	33752	224578	1078	2181	38	63	71	4	0	17	703	10	5883	32	6	4808	275855
10 PW	1963	1264	826	720	444	4426	5784	92004	5311	387472	46	35	58	188	6	28	43	2894	7954	148	4531	40	9105	525290
11 FRD	176	306	28142	342	30	151	85	742	3809	89	273028	7011	6652	527	11	2	43	40	57	5674	58	0	16029	343004
12 CAR	188	253	3404	367	38	164	112	518	125	106	8043	157846	8211	507	7	3	51	47	8	64	4	0	22895	202961
13 HOW	369	1583	20289	15103	10	65	38	238	53	32	2246	2157	222035	24565	5	16	16	8	20	90	15	3	22414	311370
14 AAR	2276	6546	6426	54745	98	437	400	1022	142	162	123	84	34139	663566	2434	80	452	53	74	45	58	24	49834	823220
15 CAL	353	886	406	6732	27	130	156	454	57	78	32	16	71	5335	98808	9416	1807	15	41	8	38	16	943	125825
16 STM	169	224	400	1056	20	127	51	371	36	75	8	2	92	177	3116	119158	5584	18	37	0	38	444	703	131906
17 CHS	945	1793	352	18312	43	241	474	877	53	71	34	15	62	442	1352	3964	159378	42	46	12	53	1727	1803	192091
18 FAU	149	152	332	172	22	261	104	8624	2083	7971	43	19	61	129	7	15	46	47739	3778	451	1587	26	2717	76488
19 STA	60	46	78	43	12	111	193	1693	22	6221	14	1	15	38	3	9	6	842	94805	12	21803	220	3936	130183
20 CL/JF	183	263	870	251	31	166	98	593	7535	237	6865	37	150	94	5	0	24	665	37	65334	11	1	7588	91038
21 SP/FB	52	71	126	69	6	51	40	294	32	1399	14	0	16	29	2	14	22	477	16742	2	117113	67	12429	149067
22 KGEO	148	200	279	202	25	129	69	380	87	120	0	0	20	68	12	127	830	143	1352	0	933	20906	562	26592
23 EXTL	2570	7723	24558	16404	295	3244	1807	17140	3984	5075	11228	12642	18372	40891	502	442	1125	1536	2888	7065	9760	354	0	189605
TOTAL	282574	668907	1664577	1112054	33241	353178	207442	1791935	310520	441557	313997	181002	328879	784375	107668	133734	184434	56805	129096	85389	156843	23949	265233	9617389

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: Transit Percentage

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	30.7	25.3	36.7	26.2	42.4	37.9	30.2	26.0	0	0	0	0	18.8	0	0	0	0	0	0	0	0	0	0	29.2
2 DC NC	30.2	7.1	13.0	9.9	24.2	19.6	14.3	9.7	0	3.4	0	0	2.6	1.0	0	0	0.4	0	0	0	0	0	0	12.2
3 MTG	22.9	8.1	1.6	2.9	13.1	7.6	5.8	1.1	0	0	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	2.3
4 PG	16.3	5.0	3.9	0.8	11.2	8.1	2.3	1.7	0	0	0	0	0.2	0.0	0	0	0	0	0	0	0	0	0	2.0
5 ARLCR	41.7	19.1	19.3	16.0	3.3	14.4	15.0	13.3	0	5.3	0	0	0	0	0	0	0	0	0	0	0	0	0	16.8
6 ARNCR	30.8	12.7	10.3	8.1	14.3	4.2	6.6	5.6	0	1.7	0	0	0	0	0	0	0	0	0	0	0	0	0	7.6
7 ALX	21.8	8.3	8.4	3.3	12.6	7.8	2.1	3.6	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	5.0
8 FFX	15.8	5.9	2.8	1.8	10.5	6.1	2.9	0.6	0.0	0.2	0	0	0	0	0	0	0	0	0	0	0.2	0	0	1.2
9 LDN	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
10 PW	4.5	0.6	0.6	0	5.0	1.2	0.7	0.2	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
11 FRD	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	5.1	0.6	0.1	0.1	0	0	0	0.4	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	2.9	0.9	0.8	0.1	1.0	1.6	0.8	0.3	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0.3	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	25.0	7.2	2.4	1.5	13.8	6.5	3.5	1.0	0.0	0.3	0.0	0	0.0	0.0	0	0	0.0	0	0	0	0.0	0	0	2.4

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: HBO MODE: Avg. Auto Occupancy

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.24	1.41	1.39	1.44	1.37	1.37	1.39	1.42	1.38	1.16	0	1.00	1.30	1.40	1.00	1.00	2.33	1.00	0	1.50	1.00	0	1.64	1.33
2 DC NC	1.45	1.32	1.49	1.53	1.44	1.45	1.48	1.50	1.52	1.53	1.56	1.71	1.54	1.54	1.70	1.60	1.51	1.46	1.71	1.75	1.44	1.00	1.61	1.39
3 MTG	1.48	1.50	1.32	1.53	1.47	1.49	1.51	1.53	1.56	1.51	1.55	1.54	1.54	1.54	2.08	2.00	1.52	1.56	1.51	1.56	1.58	1.57	1.61	1.36
4 PG	1.49	1.52	1.52	1.31	1.47	1.48	1.52	1.53	1.46	1.49	1.57	1.54	1.53	1.54	1.58	1.52	1.55	1.61	2.15	1.64	1.66	1.58	1.61	1.37
5 ARLCR	1.39	1.39	1.42	1.41	1.06	1.38	1.40	1.41	1.60	1.50	0	0	1.00	1.67	0	0	1.00	1.00	0	1.00	0	0	1.60	1.29
6 ARNCR	1.45	1.46	1.48	1.49	1.43	1.26	1.47	1.49	1.50	1.53	1.17	2.00	1.37	1.51	2.00	1.00	1.33	1.27	1.40	2.00	1.46	1.17	1.61	1.35
7 ALX	1.46	1.47	1.48	1.50	1.45	1.46	1.25	1.49	1.56	1.50	1.50	1.00	1.23	1.56	1.33	0	1.38	1.50	1.38	1.00	1.62	1.50	1.61	1.36
8 FFX	1.49	1.50	1.52	1.53	1.47	1.49	1.51	1.33	1.54	1.54	1.50	1.67	1.58	1.54	1.29	1.78	1.52	1.53	1.56	1.68	1.54	1.41	1.61	1.37
9 LDN	1.46	1.49	1.56	1.50	1.50	1.51	1.55	1.54	1.23	1.54	1.55	1.46	1.85	1.54	1.00	0	1.70	1.55	2.00	1.56	1.52	3.00	1.61	1.28
10 PW	1.50	1.52	1.52	1.53	1.51	1.49	1.52	1.54	1.55	1.28	1.70	1.75	1.61	1.59	1.50	1.27	1.48	1.56	1.55	1.57	1.55	1.90	1.61	1.34
11 FRD	1.48	1.52	1.55	1.55	1.58	1.47	1.52	1.54	1.55	1.51	1.25	1.56	1.55	1.55	1.57	2.00	1.54	1.60	1.63	1.56	1.71	0	1.61	1.30
12 CAR	1.52	1.52	1.55	1.58	1.52	1.49	1.53	1.54	1.54	1.61	1.56	1.10	1.55	1.56	1.40	1.50	1.82	1.57	1.60	1.73	2.00	0	1.61	1.18
13 HOW	1.50	1.53	1.54	1.54	1.43	1.48	1.46	1.55	1.56	1.78	1.56	1.56	1.18	1.55	1.25	1.45	1.78	1.14	1.54	1.55	1.67	1.50	1.61	1.27
14 AAR	1.51	1.53	1.54	1.54	1.52	1.50	1.51	1.54	1.56	1.57	1.54	1.53	1.54	1.29	1.55	1.57	1.53	1.51	1.61	1.73	1.66	1.33	1.61	1.33
15 CAL	1.53	1.53	1.54	1.55	1.42	1.53	1.51	1.54	1.68	1.53	2.00	1.33	1.58	1.56	1.14	1.55	1.56	1.88	1.41	1.60	1.65	2.29	1.61	1.21
16 STM	1.46	1.58	1.61	1.55	1.33	1.49	1.65	1.57	1.64	1.70	2.00	1.00	1.64	1.58	1.55	1.19	1.56	2.00	1.42	0	1.81	1.54	1.61	1.21
17 CHS	1.51	1.53	1.58	1.55	1.34	1.49	1.52	1.55	1.61	1.54	1.48	1.88	1.63	1.55	1.56	1.56	1.16	1.50	1.59	2.00	1.51	1.56	1.62	1.21
18 FAU	1.52	1.50	1.52	1.58	1.38	1.50	1.58	1.55	1.56	1.55	1.65	1.58	1.65	1.57	1.75	1.88	1.53	1.11	1.56	1.55	1.55	1.53	1.61	1.25
19 STA	1.50	1.53	1.56	1.43	1.71	1.48	1.53	1.55	1.69	1.55	1.56	1.00	1.36	1.65	1.50	1.80	2.00	1.56	1.29	1.71	1.55	1.55	1.61	1.35
20 CL/JF	1.52	1.51	1.54	1.56	1.55	1.47	1.53	1.54	1.55	1.55	1.55	1.76	1.52	1.59	1.25	0	1.85	1.56	1.61	1.11	1.57	1.00	1.61	1.21
21 SP/FB	1.44	1.58	1.52	1.57	1.50	1.50	1.48	1.54	1.60	1.54	2.00	0	1.60	1.53	2.00	1.56	1.57	1.54	1.55	2.00	1.11	1.56	1.61	1.18
22 KGEO	1.51	1.50	1.59	1.55	1.47	1.47	1.53	1.54	1.71	1.54	0	0	1.54	1.55	1.50	1.55	1.56	1.57	1.56	0	1.55	1.09	1.61	1.17
23 EXTL	1.61	1.61	1.61	1.61	1.60	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.60	1.62	1.61	1.62	1.61	1.61	1.61	1.61	0	1.61
TOTAL	1.45	1.39	1.35	1.36	1.39	1.35	1.39	1.37	1.30	1.30	1.28	1.14	1.28	1.33	1.16	1.22	1.20	1.17	1.35	1.19	1.20	1.14	1.61	1.34

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: NHB MODE: LOV Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	42650	34147	11007	19888	2404	14115	7389	15697	242	632	20	3	374	1116	58	2	333	5	16	3	2	2	851	150956
2 DC NC	26211	68449	32818	40780	1894	10624	5816	13550	237	492	85	8	1465	2703	136	8	592	6	11	1	4	0	1606	207496
3 MTG	8956	33289	482192	44994	1168	7396	2802	28144	1257	598	10534	1350	15469	4987	46	7	96	23	10	148	4	0	6105	649575
4 PG	16978	40331	46267	284033	962	5544	7098	12735	82	627	111	111	14377	30863	2041	293	8520	2	19	3	3	9	5897	476906
5 ARLCR	1922	2109	1143	1072	1897	3581	1690	3764	56	167	3	2	16	44	3	0	20	2	5	0	2	0	82	17580
6 ARNCR	11289	11369	6984	6014	3373	46087	14284	38962	695	1623	23	3	88	249	14	5	110	36	51	1	18	0	600	141878
7 ALX	7069	6331	2663	6314	1593	14164	34508	35195	204	2460	6	0	42	204	34	1	237	16	104	1	41	0	427	111614
8 FFX	14566	13763	24890	12481	3647	39093	36190	516450	30659	36899	169	4	250	389	59	10	412	1705	956	68	362	0	2914	735936
9 LDN	284	238	1117	80	58	720	225	32588	79192	2506	1670	26	45	7	1	0	3	495	5	1606	2	1	668	121537
10 PW	864	634	586	681	205	1895	2794	38603	2370	136629	8	2	2	14	3	0	16	2960	3341	29	1369	7	798	193810
11 FRD	41	142	14625	165	8	62	16	304	1941	14	116888	3735	2989	204	3	0	1	5	3	1590	1	0	2275	145012
12 CAR	4	16	2031	164	2	3	2	17	37	2	4564	78752	3545	336	0	0	0	2	1	32	0	0	2141	91651
13 HOW	440	1555	16508	15455	15	88	46	271	34	7	2475	2624	106983	23108	11	1	17	1	1	25	2	1	10255	179923
14 AAR	1240	2834	5674	31073	53	244	233	396	6	17	181	259	23748	254647	1407	13	303	2	5	1	2	0	18005	340343
15 CAL	96	214	74	3008	5	26	52	75	3	6	1	2	16	2019	32397	3062	1262	0	1	0	1	1	86	42407
16 STM	11	23	15	650	2	3	10	21	1	3	1	0	5	34	3872	52988	2975	0	2	0	4	82	57	60759
17 CHS	459	829	128	11013	26	138	347	501	4	20	2	2	20	426	963	1779	61456	2	4	0	2	227	205	78553
18 FAU	10	8	15	3	3	39	20	1820	478	3390	5	0	1	3	0	0	0	15203	532	68	269	2	184	22053
19 STA	37	22	14	25	8	84	176	1388	5	4566	3	1	1	4	0	1	2	643	27849	1	9353	160	327	44670
20 CL/JF	3	2	285	2	0	1	2	113	2392	51	2303	39	49	6	0	0	2	114	1	29894	0	0	1287	36546
21 SP/FB	13	11	8	13	4	34	81	616	4	2325	2	0	1	7	0	2	3	342	10270	0	75928	284	1482	91430
22 KGEO	4	0	6	24	0	1	0	11	1	29	0	0	1	4	5	103	425	4	350	0	595	10304	94	11961
23 EXTL	884	1628	6268	5921	82	585	407	2962	662	810	2273	2156	10794	17215	91	52	209	185	321	1249	1449	91	0	56294
TOTAL	134031	217944	655318	483853	17409	144527	114188	744183	120562	193873	141327	89079	180281	338589	41144	58327	76994	21753	43858	34720	89413	11171	56346	4008890

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: NHB MODE: LOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	53811	45984	14813	27077	3210	18876	9957	21278	327	866	29	3	514	1511	84	4	450	8	22	4	4	2	1090	199924
2 DC NC	35249	87983	44322	55647	2535	14200	7853	18396	325	669	114	9	2010	3695	191	13	798	9	12	1	4	0	2066	276101
3 MTG	12070	44955	619982	61473	1556	9954	3818	38408	1735	835	14500	1867	21248	6836	61	10	130	26	12	190	5	1	7839	847511
4 PG	23122	55042	63215	365032	1300	7467	9670	17466	119	859	159	151	19733	42503	2807	396	11762	4	28	4	3	10	7564	628416
5 ARLCR	2550	2808	1523	1440	2049	4712	2251	5035	76	224	7	2	20	59	4	0	26	3	7	0	2	1	106	22905
6 ARNCR	15036	15169	9353	8098	4445	56148	19052	52386	941	2196	38	3	119	332	18	6	149	52	66	1	21	1	769	184399
7 ALX	9526	8537	3611	8587	2120	18935	42722	47741	287	3346	9	0	56	283	45	4	325	18	148	1	53	0	553	146907
8 FFX	19771	18671	33993	17116	4895	52649	49136	668790	42141	50683	242	6	342	526	73	13	569	2354	1322	89	495	0	3713	967589
9 LDN	384	327	1534	109	84	973	309	44800	97217	3457	2308	36	59	8	1	0	3	679	5	2225	2	1	851	155372
10 PW	1172	870	820	927	269	2560	3822	53024	3267	169523	10	3	4	22	3	0	27	4093	4615	42	1885	12	1020	247990
11 FRD	56	194	20139	227	12	80	22	422	2677	16	142831	5156	4128	282	3	0	3	6	4	2196	2	0	2917	181373
12 CAR	4	22	2805	224	2	5	4	23	50	5	6305	87286	4893	464	0	0	0	2	1	45	0	0	2743	104883
13 HOW	597	2127	22671	21231	21	116	65	370	52	7	3417	3618	125580	31800	16	2	21	1	1	37	2	1	13145	224898
14 AAR	1695	3878	7786	42777	70	324	323	543	9	24	244	360	32686	303151	1940	17	424	2	5	1	5	0	23080	419344
15 CAL	129	298	99	4153	6	34	72	102	3	8	2	3	23	2788	37456	4230	1744	1	1	0	1	3	111	51267
16 STM	13	34	22	893	2	3	13	31	1	7	1	0	7	53	5346	63232	4115	0	2	0	4	111	74	73964
17 CHS	627	1135	174	15188	35	188	475	690	4	31	2	4	31	590	1329	2458	71480	2	6	0	2	311	263	95025
18 FAU	12	10	24	6	5	54	24	2512	658	4678	5	0	1	4	0	0	0	16787	736	93	372	2	238	26221
19 STA	49	32	18	37	10	112	244	1910	7	6304	4	1	1	4	1	2	3	890	31315	2	12895	221	418	54480
20 CL/JF	3	2	395	5	0	1	2	158	3304	70	3180	54	69	7	0	0	2	158	2	33624	0	0	1651	42687
21 SP/FB	19	13	13	16	5	46	110	851	4	3206	3	0	2	9	1	2	5	470	14159	0	84215	392	1900	105441
22 KGEO	4	2	8	33	0	2	0	13	2	40	0	0	2	4	7	143	588	6	484	0	821	11368	120	13647
23 EXTL	1131	2084	8038	7598	101	754	525	3795	852	1033	2907	2764	13835	22076	113	70	269	232	413	1605	1859	119	0	72173
TOTAL	177030	290177	855358	637894	22732	188193	150469	978744	154058	248087	176317	101326	225363	417007	49499	70602	92893	25803	53366	40160	102652	12556	72231	5142517

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: NHB   MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	23066	4512	3866	1971	1409	4986	1283	2089	0	14	0	0	2	1	0	0	1	0	0	0	0	0	0	43200
2 DC NC	14301	2608	4500	1269	576	1896	455	657	0	2	0	0	4	1	0	0	0	0	0	0	0	0	0	26269
3 MTG	6760	3923	12267	964	381	1115	264	540	0	3	0	0	2	0	0	0	1	0	0	0	0	0	0	26220
4 PG	5768	1621	1494	825	180	562	167	182	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	10801
5 ARLCR	2041	332	237	84	109	500	198	259	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3762
6 ARNCR	8871	1280	900	275	707	2104	609	1509	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	16258
7 ALX	3139	410	252	96	326	993	506	496	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	6222
8 FFX	4840	711	675	153	531	2489	797	2681	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	12883
9 LDN	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
10 PW	66	10	3	2	11	31	29	34	0	118	0	0	0	0	0	0	0	0	0	0	0	0	0	304
11 FRD	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	15	2	2	0	0	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	24
14 AAR	11	10	29	3	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	68878	15419	24225	5642	4230	14682	4310	8447	2	152	6	0	9	3	0	0	3	0	0	0	0	0	0	146008

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: NHB   MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: NHB MODE: HOV AUTO Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: NHB MODE: Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	42650	34147	11007	19888	2404	14115	7389	15697	242	632	20	3	374	1116	58	2	333	5	16	3	2	2	851	150956
2 DC NC	26211	68449	32818	40780	1894	10624	5816	13550	237	492	85	8	1465	2703	136	8	592	6	11	1	4	0	1606	207496
3 MTG	8956	33289	482192	44994	1168	7396	2802	28144	1257	598	10534	1350	15469	4987	46	7	96	23	10	148	4	0	6105	649575
4 PG	16978	40331	46267	284033	962	5544	7098	12735	82	627	111	111	14377	30863	2041	293	8520	2	19	3	3	9	5897	476906
5 ARLCR	1922	2109	1143	1072	1897	3581	1690	3764	56	167	3	2	16	44	3	0	20	2	5	0	2	0	82	17580
6 ARNCR	11289	11369	6984	6014	3373	46087	14284	38962	695	1623	23	3	88	249	14	5	110	36	51	1	18	0	600	141878
7 ALX	7069	6331	2663	6314	1593	14164	34508	35195	204	2460	6	0	42	204	34	1	237	16	104	1	41	0	427	111614
8 FFX	14566	13763	24890	12481	3647	39093	36190	516450	30659	36899	169	4	250	389	59	10	412	1705	956	68	362	0	2914	735936
9 LDN	284	238	1117	80	58	720	225	32588	79192	2506	1670	26	45	7	1	0	3	495	5	1606	2	1	668	121537
10 PW	864	634	586	681	205	1895	2794	38603	2370	136629	8	2	2	14	3	0	16	2960	3341	29	1369	7	798	193810
11 FRD	41	142	14625	165	8	62	16	304	1941	14	116888	3735	2989	204	3	0	1	5	3	1590	1	0	2275	145012
12 CAR	4	16	2031	164	2	3	2	17	37	2	4564	78752	3545	336	0	0	0	2	1	32	0	0	2141	91651
13 HOW	440	1555	16508	15455	15	88	46	271	34	7	2475	2624	106983	23108	11	1	17	1	1	25	2	1	10255	179923
14 AAR	1240	2834	5674	31073	53	244	233	396	6	17	181	259	23748	254647	1407	13	303	2	5	1	2	0	18005	340343
15 CAL	96	214	74	3008	5	26	52	75	3	6	1	2	16	2019	32397	3062	1262	0	1	0	1	1	86	42407
16 STM	11	23	15	650	2	3	10	21	1	3	1	0	5	34	3872	52988	2975	0	2	0	4	82	57	60759
17 CHS	459	829	128	11013	26	138	347	501	4	20	2	2	20	426	963	1779	61456	2	4	0	2	227	205	78553
18 FAU	10	8	15	3	3	39	20	1820	478	3390	5	0	1	3	0	0	0	15203	532	68	269	2	184	22053
19 STA	37	22	14	25	8	84	176	1388	5	4566	3	1	1	4	0	1	2	643	27849	1	9353	160	327	44670
20 CL/JF	3	2	285	2	0	1	2	113	2392	51	2303	39	49	6	0	0	2	114	1	29894	0	0	1287	36546
21 SP/FB	13	11	8	13	4	34	81	616	4	2325	2	0	1	7	0	2	3	342	10270	0	75928	284	1482	91430
22 KGEO	4	0	6	24	0	1	0	11	1	29	0	0	1	4	5	103	425	4	350	0	595	10304	94	11961
23 EXTL	884	1628	6268	5921	82	585	407	2962	662	810	2273	2156	10794	17215	91	52	209	185	321	1249	1449	91	0	56294
TOTAL	134031	217944	655318	483853	17409	144527	114188	744183	120562	193873	141327	89079	180281	338589	41144	58327	76994	21753	43858	34720	89413	11171	56346	4008890

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: NHB   MODE: Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	53811	45984	14813	27077	3210	18876	9957	21278	327	866	29	3	514	1511	84	4	450	8	22	4	4	2	1090	199924
2 DC NC	35249	87983	44322	55647	2535	14200	7853	18396	325	669	114	9	2010	3695	191	13	798	9	12	1	4	0	2066	276101
3 MTG	12070	44955	619982	61473	1556	9954	3818	38408	1735	835	14500	1867	21248	6836	61	10	130	26	12	190	5	1	7839	847511
4 PG	23122	55042	63215	365032	1300	7467	9670	17466	119	859	159	151	19733	42503	2807	396	11762	4	28	4	3	10	7564	628416
5 ARLCR	2550	2808	1523	1440	2049	4712	2251	5035	76	224	7	2	20	59	4	0	26	3	7	0	2	1	106	22905
6 ARNCR	15036	15169	9353	8098	4445	56148	19052	52386	941	2196	38	3	119	332	18	6	149	52	66	1	21	1	769	184399
7 ALX	9526	8537	3611	8587	2120	18935	42722	47741	287	3346	9	0	56	283	45	4	325	18	148	1	53	0	553	146907
8 FFX	19771	18671	33993	17116	4895	52649	49136	668790	42141	50683	242	6	342	526	73	13	569	2354	1322	89	495	0	3713	967589
9 LDN	384	327	1534	109	84	973	309	44800	97217	3457	2308	36	59	8	1	0	3	679	5	2225	2	1	851	155372
10 PW	1172	870	820	927	269	2560	3822	53024	3267	169523	10	3	4	22	3	0	27	4093	4615	42	1885	12	1020	247990
11 FRD	56	194	20139	227	12	80	22	422	2677	16	142831	5156	4128	282	3	0	3	6	4	2196	2	0	2917	181373
12 CAR	4	22	2805	224	2	5	4	23	50	5	6305	87286	4893	464	0	0	0	2	1	45	0	0	2743	104883
13 HOW	597	2127	22671	21231	21	116	65	370	52	7	3417	3618	125580	31800	16	2	21	1	1	37	2	1	13145	224898
14 AAR	1695	3878	7786	42777	70	324	323	543	9	24	244	360	32686	303151	1940	17	424	2	5	1	5	0	23080	419344
15 CAL	129	298	99	4153	6	34	72	102	3	8	2	3	23	2788	37456	4230	1744	1	1	0	1	3	111	51267
16 STM	13	34	22	893	2	3	13	31	1	7	1	0	7	53	5346	63232	4115	0	2	0	4	111	74	73964
17 CHS	627	1135	174	15188	35	188	475	690	4	31	2	4	31	590	1329	2458	71480	2	6	0	2	311	263	95025
18 FAU	12	10	24	6	5	54	24	2512	658	4678	5	0	1	4	0	0	0	16787	736	93	372	2	238	26221
19 STA	49	32	18	37	10	112	244	1910	7	6304	4	1	1	4	1	2	3	890	31315	2	12895	221	418	54480
20 CL/JF	3	2	395	5	0	1	2	158	3304	70	3180	54	69	7	0	0	2	158	2	33624	0	0	1651	42687
21 SP/FB	19	13	13	16	5	46	110	851	4	3206	3	0	2	9	1	2	5	470	14159	0	84215	392	1900	105441
22 KGEO	4	2	8	33	0	2	0	13	2	40	0	0	2	4	7	143	588	6	484	0	821	11368	120	13647
23 EXTL	1131	2084	8038	7598	101	754	525	3795	852	1033	2907	2764	13835	22076	113	70	269	232	413	1605	1859	119	0	72173
TOTAL	177030	290177	855358	637894	22732	188193	150469	978744	154058	248087	176317	101326	225363	417007	49499	70602	92893	25803	53366	40160	102652	12556	72231	5142517

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: NHB   MODE: Total Motorized Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	76877	50496	18679	29048	4619	23862	11240	23367	327	880	29	3	516	1512	84	4	451	8	22	4	4	2	1090	243124
2 DC NC	49550	90591	48822	56916	3111	16096	8308	19053	325	671	114	9	2014	3696	191	13	798	9	12	1	4	0	2066	302370
3 MTG	18830	48878	632249	62437	1937	11069	4082	38948	1735	838	14500	1867	21250	6836	61	10	131	26	12	190	5	1	7839	873731
4 PG	28890	56663	64709	365857	1480	8029	9837	17648	119	860	159	151	19733	42503	2807	396	11763	4	28	4	3	10	7564	639217
5 ARLCR	4591	3140	1760	1524	2158	5212	2449	5294	76	225	7	2	20	60	4	0	26	3	7	0	2	1	106	26667
6 ARNCR	23907	16449	10253	8373	5152	58252	19661	53895	941	2199	38	3	119	332	18	6	149	52	66	1	21	1	769	200657
7 ALX	12665	8947	3863	8683	2446	19928	43228	48237	287	3350	9	0	56	283	45	4	325	18	148	1	53	0	553	153129
8 FFX	24611	19382	34668	17269	5426	55138	49933	671471	42141	50689	242	6	342	526	73	13	569	2354	1322	89	495	0	3713	980472
9 LDN	384	327	1534	109	84	973	309	44800	97219	3457	2308	36	59	8	1	0	3	679	5	2225	2	1	851	155374
10 PW	1238	880	823	929	280	2591	3851	53058	3267	169641	10	3	4	22	3	0	27	4093	4615	42	1885	12	1020	248294
11 FRD	56	194	20139	227	12	80	22	422	2677	16	142837	5156	4128	282	3	0	3	6	4	2196	2	0	2917	181379
12 CAR	4	22	2805	224	2	5	4	23	50	5	6305	87286	4893	464	0	0	0	2	1	45	0	0	2743	104883
13 HOW	612	2129	22673	21231	21	120	65	370	52	7	3417	3618	125581	31800	16	2	21	1	1	37	2	1	13145	224922
14 AAR	1706	3888	7815	42780	70	326	325	543	9	24	244	360	32686	303151	1940	17	424	2	5	1	5	0	23080	419401
15 CAL	129	298	99	4153	6	34	72	102	3	8	2	3	23	2788	37456	4230	1744	1	1	0	1	3	111	51267
16 STM	13	34	22	893	2	3	13	31	1	7	1	0	7	53	5346	63232	4115	0	2	0	4	111	74	73964
17 CHS	627	1135	174	15188	35	188	475	690	4	31	2	4	31	590	1329	2458	71480	2	6	0	2	311	263	95025
18 FAU	12	10	24	6	5	54	24	2512	658	4678	5	0	1	4	0	0	0	16787	736	93	372	2	238	26221
19 STA	49	32	18	37	10	112	244	1910	7	6304	4	1	1	4	1	2	3	890	31315	2	12895	221	418	54480
20 CL/JF	3	2	395	5	0	1	2	158	3304	70	3180	54	69	7	0	0	2	158	2	33624	0	0	1651	42687
21 SP/FB	19	13	13	16	5	46	110	851	4	3206	3	0	2	9	1	2	5	470	14159	0	84215	392	1900	105441
22 KGEO	4	2	8	33	0	2	0	13	2	40	0	0	2	4	7	143	588	6	484	0	821	11368	120	13647
23 EXTL	1131	2084	8038	7598	101	754	525	3795	852	1033	2907	2764	13835	22076	113	70	269	232	413	1605	1859	119	0	72173
TOTAL	245908	305596	879583	643536	26962	202875	154779	987191	154060	248239	176323	101326	225372	417010	49499	70602	92896	25803	53366	40160	102652	12556	72231	5288525

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: NHB MODE: Transit Percentage

ORIGIN	DESTINATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	30.0	8.9	20.7	6.8	30.5	20.9	11.4	8.9	0	1.6	0	0	0.4	0.1	0	0	0.2	0	0	0	0	0	0	17.8
2 DC NC	28.9	2.9	9.2	2.2	18.5	11.8	5.5	3.4	0	0.3	0	0	0.2	0.0	0	0	0	0	0	0	0	0	0	8.7
3 MTG	35.9	8.0	1.9	1.5	19.7	10.1	6.5	1.4	0	0.4	0	0	0.0	0	0	0	0.8	0	0	0	0	0	0	3.0
4 PG	20.0	2.9	2.3	0.2	12.2	7.0	1.7	1.0	0	0.1	0	0	0	0	0	0	0.0	0	0	0	0	0	0	1.7
5 ARLCR	44.5	10.6	13.5	5.5	5.1	9.6	8.1	4.9	0	0.4	0	0	0	1.7	0	0	0	0	0	0	0	0	0	14.1
6 ARNCR	37.1	7.8	8.8	3.3	13.7	3.6	3.1	2.8	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	8.1
7 ALX	24.8	4.6	6.5	1.1	13.3	5.0	1.2	1.0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	4.1
8 FFX	19.7	3.7	1.9	0.9	9.8	4.5	1.6	0.4	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3
9 LDN	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
10 PW	5.3	1.1	0.4	0.2	3.9	1.2	0.8	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
11 FRD	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	2.5	0.1	0.0	0	0	3.3	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0.6	0.3	0.4	0.0	0	0.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	28.0	5.0	2.8	0.9	15.7	7.2	2.8	0.9	0.0	0.1	0.0	0	0.0	0.0	0	0	0.0	0	0	0	0	0	0	2.8

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: NHB MODE: Avg. Auto Occupancy

ORIGIN	DESTINATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.26	1.35	1.35	1.36	1.34	1.34	1.35	1.36	1.35	1.37	1.45	1.00	1.37	1.35	1.45	2.00	1.35	1.60	1.38	1.33	2.00	1.00	1.28	1.32
2 DC NC	1.34	1.29	1.35	1.36	1.34	1.34	1.35	1.36	1.37	1.36	1.34	1.13	1.37	1.37	1.40	1.63	1.35	1.50	1.09	1.00	1.00	0	1.29	1.33
3 MTG	1.35	1.35	1.29	1.37	1.33	1.35	1.36	1.36	1.38	1.40	1.38	1.38	1.37	1.37	1.33	1.43	1.35	1.13	1.20	1.28	1.25	1.00	1.28	1.30
4 PG	1.36	1.36	1.37	1.29	1.35	1.35	1.36	1.37	1.45	1.37	1.43	1.36	1.37	1.38	1.38	1.35	1.38	2.00	1.47	1.33	1.00	1.11	1.28	1.32
5 ARLCR	1.33	1.33	1.33	1.34	1.08	1.32	1.33	1.34	1.36	1.34	2.33	1.00	1.25	1.34	1.33	0	1.30	1.50	1.40	0	1.00	1.00	1.29	1.30
6 ARNCR	1.33	1.33	1.34	1.35	1.32	1.22	1.33	1.34	1.35	1.35	1.65	1.00	1.35	1.33	1.29	1.20	1.35	1.44	1.29	1.00	1.17	1.00	1.28	1.30
7 ALX	1.35	1.35	1.36	1.36	1.33	1.34	1.24	1.36	1.41	1.36	1.50	0	1.33	1.39	1.32	4.00	1.37	1.13	1.42	1.00	1.29	0	1.30	1.32
8 FFX	1.36	1.36	1.37	1.37	1.34	1.35	1.36	1.29	1.37	1.37	1.43	1.50	1.37	1.35	1.24	1.30	1.38	1.38	1.38	1.31	1.37	0	1.27	1.31
9 LDN	1.35	1.37	1.37	1.36	1.45	1.35	1.37	1.37	1.23	1.38	1.38	1.38	1.31	1.14	1.00	0	1.00	1.37	1.00	1.39	1.00	1.00	1.27	1.28
10 PW	1.36	1.37	1.40	1.36	1.31	1.35	1.37	1.37	1.38	1.24	1.25	1.50	2.00	1.57	1.00	0	1.69	1.38	1.38	1.45	1.38	1.71	1.28	1.28
11 FRD	1.37	1.37	1.38	1.38	1.50	1.29	1.38	1.39	1.38	1.14	1.22	1.38	1.38	1.38	1.00	0	3.00	1.20	1.33	1.38	2.00	0	1.28	1.25
12 CAR	1.00	1.38	1.38	1.37	1.00	1.67	2.00	1.35	1.35	2.50	1.38	1.11	1.38	1.38	0	0	0	1.00	1.00	1.41	0	0	1.28	1.14
13 HOW	1.36	1.37	1.37	1.37	1.40	1.32	1.41	1.37	1.53	1.00	1.38	1.38	1.17	1.38	1.45	2.00	1.24	1.00	1.00	1.48	1.00	1.00	1.28	1.25
14 AAR	1.37	1.37	1.37	1.38	1.32	1.33	1.39	1.37	1.50	1.41	1.35	1.39	1.38	1.19	1.38	1.31	1.40	1.00	1.00	1.00	2.50	0	1.28	1.23
15 CAL	1.34	1.39	1.34	1.38	1.20	1.31	1.38	1.36	1.00	1.33	2.00	1.50	1.44	1.38	1.16	1.38	1.38	1.00	1.00	0	1.00	3.00	1.29	1.21
16 STM	1.18	1.48	1.47	1.37	1.00	1.00	1.30	1.48	1.00	2.33	1.00	0	1.40	1.56	1.38	1.19	1.38	0	1.00	0	1.00	1.35	1.30	1.22
17 CHS	1.37	1.37	1.36	1.38	1.35	1.36	1.37	1.38	1.00	1.55	1.00	2.00	1.55	1.38	1.38	1.38	1.16	1.00	1.50	0	1.00	1.37	1.28	1.21
18 FAU	1.20	1.25	1.60	2.00	1.67	1.38	1.20	1.38	1.38	1.38	1.00	0	1.00	1.33	0	0	0	1.10	1.38	1.37	1.38	1.00	1.29	1.19
19 STA	1.32	1.45	1.29	1.48	1.25	1.33	1.39	1.38	1.40	1.38	1.33	1.00	1.00	1.00	1.00	2.00	1.50	1.38	1.12	2.00	1.38	1.38	1.28	1.22
20 CL/JF	1.00	1.00	1.39	2.50	0	1.00	1.00	1.40	1.38	1.37	1.38	1.38	1.41	1.17	0	0	1.00	1.39	2.00	1.12	0	0	1.28	1.17
21 SP/FB	1.46	1.18	1.63	1.23	1.25	1.35	1.36	1.38	1.00	1.38	1.50	0	2.00	1.29	1.00	1.00	1.67	1.37	1.38	0	1.11	1.38	1.28	1.15
22 KGEO	1.00	2.00	1.33	1.38	0	2.00	0	1.18	2.00	1.38	0	0	2.00	1.00	1.40	1.39	1.38	1.50	1.38	0	1.38	1.10	1.28	1.14
23 EXTL	1.28	1.28	1.28	1.28	1.23	1.29	1.29	1.28	1.29	1.28	1.28	1.28	1.28	1.28	1.24	1.35	1.29	1.25	1.29	1.29	1.28	1.31	0	1.28
TOTAL	1.32	1.33	1.31	1.32	1.31	1.30	1.32	1.32	1.28	1.28	1.25	1.14	1.25	1.23	1.20	1.21	1.21	1.19	1.22	1.16	1.15	1.12	1.28	1.28

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: ALL   MODE: LOV Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	63742	48291	13440	22494	3483	19873	8799	18569	312	688	46	7	427	1252	62	15	355	13	88	16	163	2	2227	204364
2 DC NC	133887	441939	121505	119416	9396	42021	15102	35330	740	729	207	25	2970	5083	202	92	947	38	429	63	688	9	17140	947958
3 MTG	69633	116752	2154524	137410	6458	22988	6453	78005	3285	923	23247	2372	40419	11461	90	121	281	65	593	629	1098	18	48799	2725624
4 PG	100468	190646	138823	1335179	8118	22366	21768	36452	436	1090	420	170	36733	88436	3829	1046	31337	71	913	126	1682	141	40729	2060979
5 ARLCR	4127	3495	1638	1273	7444	8651	2594	5737	89	189	5	2	17	50	3	0	34	4	12	1	11	0	311	35687
6 ARNCR	42369	28322	15381	9094	15086	264228	41591	123825	1907	2221	48	4	140	382	19	18	148	69	117	15	147	6	5796	550933
7 ALX	22837	14468	5053	9296	6254	53856	149828	95588	516	3361	17	2	72	276	41	8	292	36	196	7	156	3	3009	365172
8 FFX	68970	42195	55351	23145	18109	138894	125735	2315421	117113	78512	621	65	529	1046	127	404	898	3896	3714	492	4333	56	26736	3026362
9 LDN	1119	887	4163	318	459	2143	713	105190	363149	4467	5915	88	174	144	17	17	52	1441	478	8467	933	7	6741	507082
10 PW	3867	1911	1839	1515	1036	6756	11051	167709	10439	634203	182	39	81	255	32	95	145	10054	17179	259	10898	123	8573	888241
11 FRD	431	852	56356	1082	101	384	168	2122	7697	188	478156	11992	12061	1356	19	0	55	57	425	7587	398	0	25233	606720
12 CAR	187	311	9646	1393	38	305	197	1139	666	171	21276	307539	17462	2062	16	4	64	66	97	281	66	0	44405	407391
13 HOW	3016	6233	46723	44759	204	425	156	998	162	51	7621	4973	412200	59324	22	35	54	15	161	209	291	3	52169	639804
14 AAR	9666	15399	16024	103976	638	1512	910	2189	384	283	511	373	70309	1108434	4353	196	1002	69	828	75	1058	23	82832	1421044
15 CAL	1378	2655	853	14869	130	347	318	794	123	126	63	18	182	9052	161779	19939	3941	20	345	12	503	107	996	218550
16 STM	289	523	656	3770	31	253	167	853	174	132	12	2	134	364	8502	222459	10937	24	710	0	726	1387	662	252767
17 CHS	4281	6831	1009	41098	385	939	1265	2148	200	139	63	11	138	1572	3690	7191	274374	43	442	6	551	3006	1848	351230
18 FAU	116	129	391	187	23	276	134	13378	3916	15324	90	13	65	124	7	10	48	88903	6578	526	3114	50	3355	136757
19 STA	109	80	87	76	57	313	775	7562	60	18532	14	1	12	31	2	13	30	2615	151084	9	47175	1048	4527	234212
20 CL/JF	143	220	2478	301	28	202	117	2131	13426	484	10757	109	344	134	5	0	27	853	475	126003	311	1	17328	175877
21 SP/FB	56	60	97	60	14	90	208	2114	34	6311	9	0	12	26	3	16	35	1154	29538	1	254693	987	14960	310478
22 KGEO	113	157	298	330	21	146	83	498	167	267	0	0	30	86	38	319	1477	128	2205	0	3263	40503	852	50981
23 EXTL	7009	11444	40365	35951	930	4048	2436	27079	8190	11286	32647	35132	56592	121910	981	715	1957	7689	5766	16693	22717	1334	0	452871
TOTAL	537813	933800	2686700	1906992	78443	591016	390568	3044831	533185	779677	581927	362937	651103	1412860	183839	252713	328490	117323	222373	161477	354975	48814	409228	16571084

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: ALL   MODE: LOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	79331	64646	17964	30581	4532	26199	11770	24960	425	941	69	8	588	1693	90	29	488	19	137	28	259	4	2890	267651
2 DC NC	177137	564764	167453	167215	12004	56241	20431	48003	1061	1002	300	42	4121	7074	294	156	1329	62	693	116	1114	12	23490	1254114
3 MTG	87247	157851	2739867	188127	8095	30899	8713	106465	4644	1316	31853	3309	56245	15636	136	231	410	90	995	889	1885	29	67890	3512822
4 PG	128972	255462	189030	1687433	9937	29059	29425	48977	629	1556	663	238	49620	120929	5280	1455	43866	115	1540	236	2875	188	55486	2662971
5 ARLCR	5361	4645	2186	1708	7835	11312	3441	7620	122	253	9	2	23	69	4	1	44	5	19	1	16	1	426	45103
6 ARNCR	54482	37876	20662	12327	19307	321694	56513	168216	2589	3026	73	5	190	515	26	23	201	93	167	26	218	8	8238	706475
7 ALX	28996	19216	6715	12631	7824	71438	181405	128013	700	4595	28	3	93	383	55	15	401	46	284	12	217	4	4222	467296
8 FFX	82958	53826	74577	31486	21631	185962	169025	2948546	160658	108082	935	103	740	1510	176	708	1351	5328	5538	766	6775	87	38584	3899352
9 LDN	1296	1062	5293	456	509	2706	879	136383	438465	6037	7905	117	262	250	26	32	84	1967	826	12029	1623	14	9469	627690
10 PW	4832	2612	2526	2115	1272	9060	14520	222428	14007	782643	301	64	132	432	48	159	249	13504	24137	412	15291	168	12612	1123524
11 FRD	597	1133	76238	1516	134	550	266	3095	10480	295	574290	16545	16472	1847	34	3	96	100	797	10650	744	0	35723	751605
12 CAR	281	457	12831	1942	57	482	322	1863	1043	292	27798	335753	23259	2696	27	6	120	111	178	390	126	0	64912	474946
13 HOW	3817	7903	62797	59232	252	546	210	1315	226	83	10143	6904	476688	79766	31	62	82	22	292	293	538	6	71016	782224
14 AAR	12532	20036	21732	141517	799	2011	1258	3185	660	472	766	513	95824	1342522	6082	299	1421	114	1510	137	1951	33	115150	1770524
15 CAL	1812	3370	1247	19678	163	476	441	1197	218	209	119	26	268	12354	183542	26322	5338	34	613	24	913	149	1430	259943
16 STM	405	715	1096	4979	42	391	249	1417	311	236	22	3	235	552	11487	258810	14810	40	1242	0	1249	1771	975	301037
17 CHS	5517	8491	1440	54567	468	1233	1663	2973	340	229	111	21	213	2081	4934	9832	313728	66	742	14	910	4018	2679	416270
18 FAU	172	188	609	309	31	403	192	18016	5252	20449	141	23	107	207	11	17	77	98433	9380	750	4350	64	4897	164078
19 STA	143	108	126	103	69	396	969	9191	80	23840	23	2	17	47	4	22	44	3360	180893	18	63527	1291	6437	290710
20 CL/JF	217	329	3410	497	38	317	188	3067	18234	672	14727	153	499	232	6	0	48	1202	863	138483	567	1	25487	209237
21 SP/FB	78	89	146	93	15	124	265	2610	50	8179	17	0	20	38	5	21	53	1540	40735	2	279393	1219	21269	355961
22 KGEO	170	240	496	503	30	227	133	801	301	373	0	0	52	144	51	442	2056	197	3142	0	4444	43875	1263	58940
23 EXTL	8906	15589	54545	47545	1160	5672	3377	36463	10687	14632	42238	47386	74720	162293	1279	965	2599	9948	7963	22025	31502	1753	0	603247
TOTAL	685259	1220608	3462986	2466560	96204	757398	505655	3924804	671182	979412	712531	411220	800388	1753270	213628	299610	388895	136396	282686	187301	420487	54695	574545	21005720

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: ALL MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	44498	12861	6190	3210	2890	8810	2068	3883	0	19	0	0	8	3	0	0	1	0	0	0	1	0	0	84442
2 DC NC	133434	60943	29521	15279	5692	14190	3077	5884	0	11	0	0	70	46	0	0	1	0	0	0	5	0	0	268153
3 MTG	57892	18660	73978	5370	2482	4694	811	3154	0	4	0	0	45	4	0	0	1	0	0	0	2	0	0	167097
4 PG	64678	24102	11622	23569	3556	6158	1443	2036	0	1	0	0	152	94	0	0	1	0	0	0	0	0	0	137412
5 ARLCR	5344	863	445	139	450	1732	415	805	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	10196
6 ARNCR	39406	5799	2766	711	5724	15974	4099	12090	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	86584
7 ALX	16976	2322	886	291	2571	8340	6356	5917	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	43670
8 FFX	50161	6081	3525	574	6644	20026	8627	29748	27	214	0	0	0	1	0	0	0	0	0	0	1	0	0	125629
9 LDN	414	52	139	2	108	208	15	2217	438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3593
10 PW	5360	259	126	18	626	1220	1432	4362	0	5354	0	0	0	0	0	0	0	0	0	0	0	0	0	18757
11 FRD	159	74	1279	4	17	15	3	2	0	0	311	0	0	0	0	0	0	0	0	0	0	0	0	1864
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	2078	637	1455	437	97	123	14	46	0	0	0	0	882	79	0	0	0	0	0	0	0	0	0	5848
14 AAR	5913	1400	814	762	267	363	62	57	0	0	0	0	208	360	5	0	0	0	0	0	0	0	0	10211
15 CAL	1523	493	63	109	75	114	24	18	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	2461
16 STM	218	80	9	32	10	18	5	4	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	417
17 CHS	4243	1220	155	335	236	351	84	65	0	0	0	0	0	0	0	0	65	0	0	0	0	0	0	6754
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	99	14	5	3	41	91	105	220	0	7	0	0	0	0	0	0	0	0	10	0	5	0	0	600
20 CL/JF	9	4	137	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	153
21 SP/FB	31	3	2	1	3	16	30	94	0	3	0	0	0	0	0	0	0	0	18	0	23	0	0	224
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	432436	135867	133117	50847	31490	82444	28670	70602	466	5640	311	0	1365	588	47	0	110	0	28	0	37	0	0	974065

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: ALL MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	231	55	46	0	39	190	26	287	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	878
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	1522	222	34	45	189	360	12	7	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	2396
7 ALX	1558	266	149	48	260	307	0	74	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	2669
8 FFX	21027	4322	1248	470	3830	7623	1347	6259	8	0	0	0	8	17	0	0	1	0	0	0	0	0	0	46160
9 LDN	980	328	521	42	429	882	265	3987	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	7437
10 PW	5826	593	374	139	1038	2335	1544	7838	23	2	1	0	0	3	0	0	1	0	0	0	0	0	0	19717
11 FRD	36	14	5	0	12	28	5	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166
12 CAR	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
13 HOW	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	7	7	12	3	4	29	19	472	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	554
19 STA	215	67	30	19	148	350	316	1454	5	15	0	0	0	0	0	0	1	0	0	0	0	0	0	2620
20 CL/JF	26	11	4	0	7	11	2	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	199
21 SP/FB	71	21	11	8	24	81	105	563	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	900
22 KGEO	1	1	0	1	0	0	1	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	13
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	31500	5907	2435	775	5980	12198	3642	21154	44	30	1	0	10	33	0	0	4	0	0	0	0	0	0	83713

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: ALL MODE: HOV AUTO Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	85	30	15	0	19	67	10	126	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	355
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	565	83	8	19	75	137	4	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	893
7 ALX	443	82	45	13	75	92	0	26	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	778
8 FFX	7425	1690	451	168	1478	2945	521	2586	6	0	0	0	2	6	0	0	0	0	0	0	0	0	0	17278
9 LDN	289	106	174	17	145	296	89	1350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2466
10 PW	1720	191	134	39	334	738	471	2654	4	0	0	0	1	1	0	0	1	0	0	0	0	0	0	6288
11 FRD	11	4	2	0	3	11	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	2	1	5	1	2	13	8	194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	226
19 STA	58	21	8	5	43	102	89	414	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	747
20 CL/JF	4	5	1	0	2	1	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
21 SP/FB	19	5	4	2	6	25	27	159	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	252
22 KGEO	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	10621	2219	847	264	2182	4427	1220	7578	15	10	0	0	3	10	0	0	1	0	0	0	0	0	0	29397

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: ALL MODE: Auto Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	63742	48291	13440	22494	3483	19873	8799	18569	312	688	46	7	427	1252	62	15	355	13	88	16	163	2	2227	204364
2 DC NC	133887	441939	121505	119416	9396	42021	15102	35330	740	729	207	25	2970	5083	202	92	947	38	429	63	688	9	17140	947958
3 MTG	69718	116782	2154539	137410	6477	23055	6463	78131	3288	923	23247	2372	40419	11461	90	121	281	65	593	629	1098	18	48799	2725979
4 PG	100468	190646	138823	1335179	8118	22366	21768	36452	436	1090	420	170	36733	88436	3829	1046	31337	71	913	126	1682	141	40729	2060979
5 ARLCR	4127	3495	1638	1273	7444	8651	2594	5737	89	189	5	2	17	50	3	0	34	4	12	1	11	0	311	35687
6 ARNCR	42934	28405	15389	9113	15161	264365	41595	123826	1907	2221	48	4	140	383	19	18	148	69	117	15	147	6	5796	551826
7 ALX	23280	14550	5098	9309	6329	53948	149828	95614	516	3361	17	2	72	278	41	8	292	36	196	7	156	3	3009	365950
8 FFX	76395	43885	55802	23313	19587	141839	126256	2318007	117119	78512	621	65	531	1052	127	404	898	3896	3714	492	4333	56	26736	3043640
9 LDN	1408	993	4337	335	604	2439	802	106540	363149	4467	5915	88	174	144	17	17	52	1441	478	8467	933	7	6741	509548
10 PW	5587	2102	1973	1554	1370	7494	11522	170363	10443	634203	182	39	82	256	32	95	146	10054	17179	259	10898	123	8573	894529
11 FRD	442	856	56358	1082	104	395	169	2146	7697	188	478156	11992	12061	1356	19	0	55	57	425	7587	398	0	25233	606776
12 CAR	187	311	9646	1393	38	305	197	1139	666	171	21276	307539	17462	2062	16	4	64	66	97	281	66	0	44405	407391
13 HOW	3016	6233	46723	44759	204	425	156	998	162	51	7621	4973	412200	59324	22	35	54	15	161	209	291	3	52169	639804
14 AAR	9666	15399	16024	103976	638	1512	910	2189	384	283	511	373	70309	1108434	4353	196	1002	69	828	75	1058	23	82832	1421044
15 CAL	1378	2655	853	14869	130	347	318	794	123	126	63	18	182	9052	161779	19939	3941	20	345	12	503	107	996	218550
16 STM	289	523	656	3770	31	253	167	853	174	132	12	2	134	364	8502	222459	10937	24	710	0	726	1387	662	252767
17 CHS	4281	6831	1009	41098	385	939	1265	2148	200	139	63	11	138	1572	3690	7191	274374	43	442	6	551	3006	1848	351230
18 FAU	118	130	396	188	25	289	142	13572	3916	15324	90	13	65	124	7	10	48	88903	6578	526	3114	50	3355	136983
19 STA	167	101	95	81	100	415	864	7976	62	18537	14	1	12	31	2	13	30	2615	151084	9	47175	1048	4527	234959
20 CL/JF	147	225	2479	301	30	203	117	2173	13426	484	10757	109	344	134	5	0	27	853	475	126003	311	1	17328	175932
21 SP/FB	75	65	101	62	20	115	235	2273	34	6316	9	0	12	26	3	16	35	1154	29538	1	254693	987	14960	310730
22 KGEO	113	158	298	330	21	146	83	500	167	267	0	0	30	86	38	319	1477	128	2205	0	3263	40503	852	50984
23 EXTL	7009	11444	40365	35951	930	4048	2436	27079	8190	11286	32647	35132	56592	121910	981	715	1957	7689	5766	16693	22717	1334	0	452871
TOTAL	548434	936019	2687547	1907256	80625	595443	391788	3052409	533200	779687	581927	362937	651106	1412870	183839	252713	328491	117323	222373	161477	354975	48814	409228	16600481

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: ALL MODE: Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	79331	64646	17964	30581	4532	26199	11770	24960	425	941	69	8	588	1693	90	29	488	19	137	28	259	4	2890	267651
2 DC NC	177137	564764	167453	167215	12004	56241	20431	48003	1061	1002	300	42	4121	7074	294	156	1329	62	693	116	1114	12	23490	1254114
3 MTG	87478	157906	2739913	188127	8134	31089	8739	106752	4648	1316	31853	3309	56245	15636	136	231	410	90	995	889	1885	29	67890	3513700
4 PG	128972	255462	189030	1687433	9937	29059	29425	48977	629	1556	663	238	49620	120929	5280	1455	43866	115	1540	236	2875	188	55486	2662971
5 ARLCR	5361	4645	2186	1708	7835	11312	3441	7620	122	253	9	2	23	69	4	1	44	5	19	1	16	1	426	45103
6 ARNCR	56004	38098	20696	12372	19496	322054	56525	168223	2589	3026	73	5	190	520	26	23	201	93	167	26	218	8	8238	708871
7 ALX	30554	19482	6864	12679	8084	71745	181405	128087	700	4595	28	3	94	389	55	15	401	46	284	12	217	4	4222	469965
8 FFX	103985	58148	75825	31956	25461	193585	170372	2954805	160666	108082	935	103	748	1527	176	708	1352	5328	5538	766	6775	87	38584	3945512
9 LDN	2276	1390	5814	498	938	3588	1144	140370	438465	6037	7905	117	263	252	26	32	84	1967	826	12029	1623	14	9469	635127
10 PW	10658	3205	2900	2254	2310	11395	16064	230266	14030	782645	302	64	132	435	48	159	250	13504	24137	412	15291	168	12612	1143241
11 FRD	633	1147	76243	1516	146	578	271	3161	10480	295	574290	16545	16472	1847	34	3	96	100	797	10650	744	0	35723	751771
12 CAR	281	457	12832	1942	57	483	322	1863	1043	292	27798	335753	23259	2696	27	6	120	111	178	390	126	0	64912	474948
13 HOW	3817	7903	62797	59232	252	547	210	1316	226	83	10143	6904	476688	79766	31	62	82	22	292	293	538	6	71016	782226
14 AAR	12532	20036	21732	141517	799	2011	1258	3185	660	472	766	513	95824	1342522	6082	299	1421	114	1510	137	1951	33	115150	1770524
15 CAL	1812	3370	1247	19678	163	476	441	1197	218	209	119	26	268	12354	183542	26322	5338	34	613	24	913	149	1430	259943
16 STM	405	715	1096	4979	42	391	249	1417	311	236	22	3	235	552	11487	258810	14810	40	1242	0	1249	1771	975	301037
17 CHS	5517	8491	1440	54567	468	1233	1663	2973	340	229	111	21	213	2081	4934	9832	313728	66	742	14	910	4018	2679	416270
18 FAU	179	195	621	312	35	432	211	18488	5252	20449	141	23	107	207	11	17	78	98433	9380	750	4350	64	4897	164632
19 STA	358	175	156	122	217	746	1285	10645	85	23855	23	2	17	47	4	22	45	3360	180893	18	63527	1291	6437	293330
20 CL/JF	243	340	3414	497	45	328	190	3205	18234	672	14727	153	499	232	6	0	48	1202	863	138483	567	1	25487	209436
21 SP/FB	149	110	157	101	39	205	370	3173	54	8191	17	0	20	38	5	21	53	1540	40735	2	279393	1219	21269	356861
22 KGEO	171	241	496	504	30	227	134	809	301	374	0	0	52	144	51	442	2056	197	3142	0	4444	43875	1263	58953
23 EXTL	8906	15589	54545	47545	1160	5672	3377	36463	10687	14632	42238	47386	74720	162293	1279	965	2599	9948	7963	22025	31502	1753	0	603247
TOTAL	716759	1226515	3465421	2467335	102184	769596	509297	3945958	671226	979442	712532	411220	800398	1753303	213628	299610	388899	136396	282686	187301	420487	54695	574545	21089433

Simulation - Year: 2000 Alternative: Version2.2_Jan08 Iteration: i6
Purpose: ALL MODE: Total Motorized Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	123829	77507	24154	33791	7422	35009	13838	28843	425	960	69	8	596	1696	90	29	489	19	137	28	260	4	2890	352093
2 DC NC	310571	625707	196974	182494	17696	70431	23508	53887	1061	1013	300	42	4191	7120	294	156	1330	62	693	116	1119	12	23490	1522267
3 MTG	145370	176566	2813891	193497	10616	35783	9550	109906	4648	1320	31853	3309	56290	15640	136	231	411	90	995	889	1887	29	67890	3680797
4 PG	193650	279564	200652	1711002	13493	35217	30868	51013	629	1557	663	238	49772	121023	5280	1455	43867	115	1540	236	2875	188	55486	2800383
5 ARLCR	10705	5508	2631	1847	8285	13044	3856	8425	122	255	9	2	23	70	4	1	44	5	19	1	16	1	426	55299
6 ARNCR	95410	43897	23462	13083	25220	338028	60624	180313	2590	3040	73	5	190	520	26	23	201	93	167	26	218	8	8238	795455
7 ALX	47530	21804	7750	12970	10655	80085	187761	134004	700	4606	28	3	94	389	55	15	401	46	284	12	217	4	4222	513635
8 FFX	154146	64229	79350	32530	32105	213611	178999	2984553	160693	108296	935	103	748	1528	176	708	1352	5328	5538	766	6776	87	38584	4071141
9 LDN	2690	1442	5953	500	1046	3796	1159	142587	438903	6037	7905	117	263	252	26	32	84	1967	826	12029	1623	14	9469	638720
10 PW	16018	3464	3026	2272	2936	12615	17496	234628	14030	787999	302	64	132	435	48	159	250	13504	24137	412	15291	168	12612	1161998
11 FRD	792	1221	77522	1520	163	593	274	3163	10480	295	574601	16545	16472	1847	34	3	96	100	797	10650	744	0	35723	753635
12 CAR	281	457	12832	1942	57	483	322	1863	1043	292	27798	335753	23259	2696	27	6	120	111	178	390	126	0	64912	474948
13 HOW	5895	8540	64252	59669	349	670	224	1362	226	83	10143	6904	477570	79845	31	62	82	22	292	293	538	6	71016	788074
14 AAR	18445	21436	22546	142279	1066	2374	1320	3242	660	472	766	513	96032	1342882	6087	299	1421	114	1510	137	1951	33	115150	1780735
15 CAL	3335	3863	1310	19787	238	590	465	1215	218	209	119	26	268	12354	183584	26322	5338	34	613	24	913	149	1430	262404
16 STM	623	795	1105	5011	52	409	254	1421	311	236	22	3	235	552	11487	258810	14851	40	1242	0	1249	1771	975	301454
17 CHS	9760	9711	1595	54902	704	1584	1747	3038	340	229	111	21	213	2081	4934	9832	313793	66	742	14	910	4018	2679	423024
18 FAU	179	195	621	312	35	432	211	18488	5252	20449	141	23	107	207	11	17	78	98433	9380	750	4350	64	4897	164632
19 STA	457	189	161	125	258	837	1390	10865	85	23862	23	2	17	47	4	22	45	3360	180903	18	63532	1291	6437	293930
20 CL/JF	252	344	3551	498	46	329	190	3205	18234	672	14727	153	499	232	6	0	48	1202	863	138483	567	1	25487	209589
21 SP/FB	180	113	159	102	42	221	400	3267	54	8194	17	0	20	38	5	21	53	1540	40753	2	279416	1219	21269	357085
22 KGEO	171	241	496	504	30	227	134	809	301	374	0	0	52	144	51	442	2056	197	3142	0	4444	43875	1263	58953
23 EXTL	8906	15589	54545	47545	1160	5672	3377	36463	10687	14632	42238	47386	74720	162293	1279	965	2599	9948	7963	22025	31502	1753	0	603247
TOTAL	1149195	1362382	3598538	2518182	133674	852040	537967	4016560	671692	985082	712843	411220	801763	1753891	213675	299610	389009	136396	282714	187301	420524	54695	574545	22063498

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: ALL   MODE: Transit Percentage

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	35.9	16.6	25.6	9.5	38.9	25.2	14.9	13.5	0	2.0	0	0	1.3	0.2	0	0	0.2	0	0	0	0.4	0	0	24.0
2 DC NC	43.0	9.7	15.0	8.4	32.2	20.1	13.1	10.9	0	1.1	0	0	1.7	0.6	0	0	0.1	0	0	0	0.4	0	0	17.6
3 MTG	39.8	10.6	2.6	2.8	23.4	13.1	8.5	2.9	0	0.3	0	0	0.1	0.0	0	0	0.2	0	0	0	0.1	0	0	4.5
4 PG	33.4	8.6	5.8	1.4	26.4	17.5	4.7	4.0	0	0.1	0	0	0.3	0.1	0	0	0.0	0	0	0	0	0	0	4.9
5 ARLCR	49.9	15.7	16.9	7.5	5.4	13.3	10.8	9.6	0	0.8	0	0	0	1.4	0	0	0	0	0	0	0	0	0	18.4
6 ARNCR	41.3	13.2	11.8	5.4	22.7	4.7	6.8	6.7	0.0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	10.9
7 ALX	35.7	10.6	11.4	2.2	24.1	10.4	3.4	4.4	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	8.5
8 FFX	32.5	9.5	4.4	1.8	20.7	9.4	4.8	1.0	0.0	0.2	0	0	0	0.1	0	0	0	0	0	0	0.0	0	0	3.1
9 LDN	15.4	3.6	2.3	0.4	10.3	5.5	1.3	1.6	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
10 PW	33.5	7.5	4.2	0.8	21.3	9.7	8.2	1.9	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6
11 FRD	20.1	6.1	1.6	0.3	10.4	2.5	1.1	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.2
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	35.3	7.5	2.3	0.7	27.8	18.4	6.3	3.4	0	0	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	0.7
14 AAR	32.1	6.5	3.6	0.5	25.0	15.3	4.7	1.8	0	0	0	0	0.2	0.0	0.1	0	0	0	0	0	0	0	0	0.6
15 CAL	45.7	12.8	4.8	0.6	31.5	19.3	5.2	1.5	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.9
16 STM	35.0	10.1	0.8	0.6	19.2	4.4	2.0	0.3	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.1
17 CHS	43.5	12.6	9.7	0.6	33.5	22.2	4.8	2.1	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	1.6
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	21.7	7.4	3.1	2.4	15.9	10.9	7.6	2.0	0	0.0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0	0.2
20 CL/JF	3.6	1.2	3.9	0.2	2.2	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
21 SP/FB	17.2	2.7	1.3	1.0	7.1	7.2	7.5	2.9	0	0.0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0	0.1
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	37.6	10.0	3.7	2.0	23.6	9.7	5.3	1.8	0.1	0.6	0.0	0	0.2	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0	4.4

Simulation - Year: 2000 Alternative: Version2.2_Jan08   Iteration: i6
Purpose: ALL   MODE: Avg. Auto Occupancy

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.24	1.34	1.34	1.36	1.30	1.32	1.34	1.34	1.36	1.37	1.50	1.14	1.38	1.35	1.45	1.93	1.37	1.46	1.56	1.75	1.59	2.00	1.30	1.31
2 DC NC	1.32	1.28	1.38	1.40	1.28	1.34	1.35	1.36	1.43	1.37	1.45	1.68	1.39	1.39	1.46	1.70	1.40	1.63	1.62	1.84	1.62	1.33	1.37	1.32
3 MTG	1.25	1.35	1.27	1.37	1.26	1.35	1.35	1.37	1.41	1.43	1.37	1.40	1.39	1.36	1.51	1.91	1.46	1.38	1.68	1.41	1.72	1.61	1.39	1.29
4 PG	1.28	1.34	1.36	1.26	1.22	1.30	1.35	1.34	1.44	1.43	1.58	1.40	1.35	1.37	1.38	1.39	1.40	1.62	1.69	1.87	1.71	1.33	1.36	1.29
5 ARLCR	1.30	1.33	1.33	1.34	1.05	1.31	1.33	1.33	1.37	1.34	1.80	1.00	1.35	1.38	1.33	1.00	1.29	1.25	1.58	1.00	1.45	1.00	1.37	1.26
6 ARNCR	1.30	1.34	1.34	1.36	1.29	1.22	1.36	1.36	1.36	1.36	1.52	1.25	1.36	1.36	1.37	1.28	1.36	1.35	1.43	1.73	1.48	1.33	1.42	1.28
7 ALX	1.31	1.34	1.35	1.36	1.28	1.33	1.21	1.34	1.36	1.37	1.65	1.50	1.31	1.40	1.34	1.88	1.37	1.28	1.45	1.71	1.39	1.33	1.40	1.28
8 FFX	1.36	1.33	1.36	1.37	1.30	1.36	1.35	1.27	1.37	1.38	1.51	1.58	1.41	1.45	1.39	1.75	1.51	1.37	1.49	1.56	1.56	1.55	1.44	1.30
9 LDN	1.62	1.40	1.34	1.49	1.55	1.47	1.43	1.32	1.21	1.35	1.34	1.33	1.51	1.75	1.53	1.88	1.62	1.37	1.73	1.42	1.74	2.00	1.40	1.25
10 PW	1.91	1.52	1.47	1.45	1.69	1.52	1.39	1.35	1.34	1.23	1.66	1.64	1.61	1.70	1.50	1.67	1.71	1.34	1.41	1.59	1.40	1.37	1.47	1.28
11 FRD	1.43	1.34	1.35	1.40	1.40	1.46	1.60	1.47	1.36	1.57	1.20	1.38	1.37	1.36	1.79	3.00	1.75	1.75	1.88	1.40	1.87	0	1.42	1.24
12 CAR	1.50	1.47	1.33	1.39	1.50	1.58	1.63	1.64	1.57	1.71	1.31	1.09	1.33	1.31	1.69	1.50	1.88	1.68	1.84	1.39	1.91	0	1.46	1.17
13 HOW	1.27	1.27	1.34	1.32	1.24	1.29	1.35	1.32	1.40	1.63	1.33	1.39	1.16	1.34	1.41	1.77	1.52	1.47	1.81	1.40	1.85	2.00	1.36	1.22
14 AAR	1.30	1.30	1.36	1.36	1.25	1.33	1.38	1.46	1.72	1.67	1.50	1.38	1.36	1.21	1.40	1.53	1.42	1.65	1.82	1.83	1.84	1.43	1.39	1.25
15 CAL	1.31	1.27	1.46	1.32	1.25	1.37	1.39	1.51	1.77	1.66	1.89	1.44	1.47	1.36	1.13	1.32	1.35	1.70	1.78	2.00	1.82	1.39	1.44	1.19
16 STM	1.40	1.37	1.67	1.32	1.35	1.55	1.49	1.66	1.79	1.79	1.83	1.50	1.75	1.52	1.35	1.16	1.35	1.67	1.75	0	1.72	1.28	1.47	1.19
17 CHS	1.29	1.24	1.43	1.33	1.22	1.31	1.31	1.38	1.70	1.65	1.76	1.91	1.54	1.32	1.34	1.37	1.14	1.53	1.68	2.33	1.65	1.34	1.45	1.19
18 FAU	1.52	1.50	1.57	1.66	1.40	1.49	1.49	1.36	1.34	1.33	1.57	1.77	1.65	1.67	1.57	1.70	1.63	1.11	1.43	1.43	1.40	1.28	1.46	1.20
19 STA	2.14	1.73	1.64	1.51	2.17	1.80	1.49	1.33	1.37	1.29	1.64	2.00	1.42	1.52	2.00	1.69	1.50	1.28	1.20	2.00	1.35	1.23	1.42	1.25
20 CL/JF	1.65	1.51	1.38	1.65	1.50	1.62	1.62	1.47	1.36	1.39	1.37	1.40	1.45	1.73	1.20	0	1.78	1.41	1.82	1.10	1.82	1.00	1.47	1.19
21 SP/FB	1.99	1.69	1.55	1.63	1.95	1.78	1.57	1.40	1.59	1.30	1.89	0	1.67	1.46	1.67	1.31	1.51	1.33	1.38	2.00	1.10	1.24	1.42	1.15
22 KGEO	1.51	1.53	1.66	1.53	1.43	1.55	1.61	1.62	1.80	1.40	0	0	1.73	1.67	1.34	1.39	1.39	1.54	1.42	0	1.36	1.08	1.48	1.16
23 EXTL	1.27	1.36	1.35	1.32	1.25	1.40	1.39	1.35	1.30	1.30	1.29	1.35	1.32	1.33	1.30	1.35	1.33	1.29	1.38	1.32	1.39	1.31	0	1.33
TOTAL	1.31	1.31	1.29	1.29	1.27	1.29	1.30	1.29	1.26	1.26	1.22	1.13	1.23	1.24	1.16	1.19	1.18	1.16	1.27	1.16	1.18	1.12	1.40	1.27

Appendix B Year 2000 mode choice summary (final, i6, iteration)

Appendix C. Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Ref: compare_mceo_00ctpp_HBW.doc

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Auto Driver

DESTINATION

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	4326	2987	753	689	502	812	344	1382	40	16	0	0	0	0	0	0	4	3	0	0	0	0	0	11858
2 DC NC	45342	32148	14311	12989	3997	6008	2277	8427	166	60	30	0	0	0	15	3	65	2	1	1	1	0	0	125843
3 MTG	48094	26941	270595	24917	3938	6335	1589	20035	646	80	5288	0	0	0	10	0	26	3	0	167	1	0	0	408665
4 PG	57597	65148	32625	157004	5774	9996	5411	11974	105	45	61	0	0	0	726	316	3954	0	0	0	2	99	0	350837
5 ARLCR	999	263	140	50	578	418	141	560	19	7	0	0	0	0	0	0	0	0	1	0	0	0	0	3176
6 ARNCR	17168	5447	3095	941	5408	18861	5045	23676	598	204	11	0	0	0	0	0	5	15	6	0	3	0	0	80483
7 ALX	10101	3294	1189	1044	2928	8266	12843	20047	213	246	3	0	0	0	3	0	10	11	19	0	18	1	0	60236
8 FFX	47164	18388	13650	4637	11810	29534	28936	322559	23699	10999	107	0	0	0	6	3	63	903	288	56	299	5	0	513106
9 LDN	948	590	2258	93	506	1091	439	47549	42799	1128	2135	0	0	0	0	0	0	422	4	1475	1	0	0	101438
10 PW	3465	616	572	281	878	2482	4717	65217	3952	78379	21	0	0	0	0	0	3	2975	3280	43	3051	90	0	170022
11 FRD	256	473	20450	487	68	91	14	857	2922	19	75056	0	0	0	0	0	0	3	0	2066	0	0	0	102762
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	1040	1831	278	6857	104	159	115	155	0	0	0	0	0	0	17820	8620	1436	0	0	0	1	96	0	38512
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	3168	4793	406	16606	326	557	542	731	1	4	0	0	0	0	1297	2285	30877	0	22	0	63	1653	0	63331
18 FAU	6	4	25	3	6	32	30	5936	1708	6254	15	0	0	0	0	0	0	13648	1059	136	976	29	0	29867
19 STA	90	47	19	24	85	253	562	5479	43	9140	0	0	0	0	0	5	24	1426	19584	0	13705	746	0	51232
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	239764	162970	360366	226622	36908	84895	63005	534584	76911	106581	82727	0	0	0	19877	11232	36467	19411	24264	3944	18121	2719	0	2111368

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Transit

DESTINATION

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	13725	3768	1246	470	1050	1542	400	1216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23417
2 DC NC	83219	24529	9491	4032	3627	5197	1138	3174	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	134411
3 MTG	45733	7751	29799	2056	1805	2514	361	2097	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92116
4 PG	51544	15853	6692	13164	3126	4776	974	1546	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97675
5 ARLCR	2225	189	95	18	202	420	73	288	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3510
6 ARNCR	21490	2127	1007	161	3573	4273	1515	5663	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	39812
7 ALX	11431	1269	468	102	1881	4618	3252	3465	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	26489
8 FFX	41298	4280	2137	261	5415	11326	4970	14278	23	85	0	0	0	0	0	0	0	0	0	0	0	0	0	84073
9 LDN	414	52	139	2	108	208	15	2217	323	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3478
10 PW	5205	242	117	15	591	1134	1359	4131	0	2693	0	0	0	0	0	0	0	0	0	0	0	0	0	15487
11 FRD	159	74	1279	4	17	15	3	0	0	0	262	0	0	0	0	0	0	0	0	0	0	0	0	1813
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	1522	493	0	107	75	113	24	18	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	2394
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	4243	1220	155	335	236	351	84	65	0	0	0	0	0	0	0	0	65	0	0	0	0	0	0	6754
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	99	14	5	3	41	91	105	220	0	7	0	0	0	0	0	0	0	0	10	0	4	0	0	599
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	282307	61861	52630	20730	21747	36578	14273	38378	347	2794	262	0	0	0	42	0	65	0	10	0	4	0	0	532028

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Auto Person

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	4992	3403	882	809	578	945	401	1623	58	23	0	0	0	0	0	0	5	5	0	0	0	0	0	13724
2 DC NC	52629	35356	16343	14899	4575	6983	2608	9788	218	69	37	0	0	0	19	3	82	3	2	1	2	0	0	143617
3 MTG	56755	30189	298600	27759	4586	7470	1831	22878	758	103	5982	0	0	0	11	0	31	3	0	200	2	0	0	457158
4 PG	67322	72652	37040	171454	6630	11675	6095	13730	126	55	72	0	0	0	832	365	4377	2	0	0	4	125	0	392556
5 ARLCR	1160	292	161	56	608	477	159	635	25	7	0	0	0	0	0	0	0	0	1	0	0	0	0	3581
6 ARNCR	20102	6122	3539	1074	6123	21306	5616	26469	722	236	15	0	0	0	0	0	6	17	9	0	7	0	0	91363
7 ALX	12146	3752	1419	1190	3363	9437	14016	22466	258	288	3	0	0	0	3	1	13	13	23	0	19	1	0	68411
8 FFX	62363	21894	15919	5406	14580	35824	32483	355481	26258	12177	128	0	0	0	6	3	73	1018	334	71	356	10	0	584384
9 LDN	1639	819	2785	121	793	1674	618	55635	46440	1290	2402	0	0	0	0	0	0	478	5	1643	1	0	0	116343
10 PW	7601	1044	824	406	1610	4196	6170	75847	4471	84605	28	0	0	0	0	0	2	3362	3681	54	3522	108	0	197531
11 FRD	361	584	23518	591	94	123	23	1158	3406	22	79768	0	0	0	0	0	0	6	0	2371	0	0	0	112025
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	1312	2140	344	7814	127	197	136	190	0	0	0	0	0	0	18887	9617	1658	0	0	0	2	125	0	42549
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	3908	5504	499	18706	386	681	627	851	1	6	0	0	0	0	1462	2596	32763	0	28	0	80	1951	0	70049
18 FAU	11	10	32	5	7	49	41	6979	1958	7009	18	0	0	0	0	0	0	14415	1187	159	1112	33	0	33025
19 STA	249	95	43	39	195	518	846	7020	52	10192	0	0	0	0	0	7	34	1619	20608	0	15048	850	0	57415
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	292550	183856	401948	250329	44255	101555	71670	600750	84751	116082	88453	0	0	0	21220	12592	39044	20941	25878	4499	20155	3203	0	2383731

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Auto Pax

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	666	416	129	120	76	133	57	241	18	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1863
2 DC NC	7287	3208	2032	1910	578	975	331	1361	52	9	7	0	0	0	0	0	17	1	1	0	1	0	0	17770
3 MTG	8661	3248	28005	2842	648	1135	242	2843	112	23	694	0	0	0	1	0	5	0	0	0	1	0	0	48460
4 PG	9725	7504	4415	14450	856	1679	684	1756	21	10	11	0	0	0	106	49	423	2	0	0	2	26	0	41719
5 ARLCR	161	29	21	0	30	59	18	75	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	399
6 ARNCR	2934	675	444	133	715	2445	571	2793	124	32	4	0	0	0	0	0	1	2	3	0	4	0	0	10880
7 ALX	2045	458	230	146	435	1171	1173	2419	45	42	0	0	0	0	0	1	0	2	4	0	1	0	0	8172
8 FFX	15199	3506	2269	769	2770	6290	3547	32922	2559	1178	21	0	0	0	0	0	10	115	46	15	57	5	0	71278
9 LDN	691	229	527	28	287	583	179	8086	3641	162	267	0	0	0	0	0	0	56	0	168	0	0	0	14904
10 PW	4136	428	252	125	732	1714	1453	10630	519	6226	7	0	0	0	0	0	-1	387	401	11	471	18	0	27509
11 FRD	105	111	3068	104	26	32	9	301	484	3	4712	0	0	0	0	0	0	3	0	305	0	0	0	9263
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	272	309	66	957	23	38	21	35	0	0	0	0	0	0	1067	997	222	0	0	0	0	29	0	4036
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	740	711	93	2100	60	124	85	120	0	2	0	0	0	0	165	311	1886	0	6	0	17	298	0	6718
18 FAU	5	6	7	2	1	17	11	1043	250	755	0	0	0	0	0	0	0	767	128	23	136	0	0	3151
19 STA	159	48	24	15	110	265	284	1541	9	1052	0	0	0	0	0	0	10	193	1024	0	1343	104	0	6181
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	52786	20886	41582	23701	7347	16660	8665	66166	7840	9501	5723	0	0	0	1339	1358	2573	1528	1613	522	2033	480	0	272303

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Person

DESTINATION

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	18717	7171	2128	1279	1628	2487	801	2839	58	26	0	0	0	0	0	0	5	5	0	0	0	0	0	37144
2 DC NC	135848	59885	25834	18931	8202	12180	3746	12962	218	73	37	0	0	0	19	3	82	3	2	1	2	0	0	278028
3 MTG	102488	37940	328399	29815	6391	9984	2192	24975	758	103	5982	0	0	0	11	0	31	3	0	200	2	0	0	549274
4 PG	118866	88505	43732	184618	9756	16451	7069	15276	126	55	72	0	0	0	832	365	4377	2	0	0	4	125	0	490231
5 ARLCR	3385	481	256	74	810	897	232	923	25	7	0	0	0	0	0	0	0	0	1	0	0	0	0	7091
6 ARNCR	41592	8249	4546	1235	9696	25579	7131	32132	723	238	15	0	0	0	0	0	6	17	9	0	7	0	0	131175
7 ALX	23577	5021	1887	1292	5244	14055	17268	25931	258	291	3	0	0	0	3	1	13	13	23	0	19	1	0	94900
8 FFX	103661	26174	18056	5667	19995	47150	37453	369759	26281	12262	128	0	0	0	6	3	73	1018	334	71	356	10	0	668457
9 LDN	2053	871	2924	123	901	1882	633	57852	46763	1290	2402	0	0	0	0	0	0	478	5	1643	1	0	0	119821
10 PW	12806	1286	941	421	2201	5330	7529	79978	4471	87298	28	0	0	0	0	0	2	3362	3681	54	3522	108	0	213018
11 FRD	520	658	24797	595	111	138	26	1160	3406	22	80030	0	0	0	0	0	0	6	0	2371	0	0	0	113840
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	2834	2633	407	7921	202	310	160	208	0	0	0	0	0	0	18929	9617	1658	0	0	0	2	125	0	45006
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	8151	6724	654	19041	622	1032	711	916	1	6	0	0	0	0	1462	2596	32828	0	28	0	80	1951	0	76803
18 FAU	11	10	32	5	7	49	41	6979	1958	7009	18	0	0	0	0	0	0	14415	1187	159	1112	33	0	33025
19 STA	348	109	48	42	236	609	951	7240	52	10199	0	0	0	0	0	7	34	1619	20618	0	15052	850	0	58014
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	574857	245717	454641	271059	66002	138133	85943	639130	85098	118879	88715	0	0	0	21262	12592	39109	20941	25888	4499	20159	3203	0	2915827

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Pct Transit

DESTINATION

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	73.3	52.5	58.6	36.7	64.5	62.0	49.9	42.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63.0
2 DC NC	61.3	41.0	36.7	21.3	44.2	42.7	30.4	24.5	0	5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	48.3
3 MTG	44.6	20.4	9.1	6.9	28.2	25.2	16.5	8.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.8
4 PG	43.4	17.9	15.3	7.1	32.0	29.0	13.8	10.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19.9
5 ARLCR	65.7	39.3	37.1	24.3	24.9	46.8	31.5	31.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.5
6 ARNCR	51.7	25.8	22.2	13.0	36.9	16.7	21.2	17.6	0.1	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	30.4
7 ALX	48.5	25.3	24.8	7.9	35.9	32.9	18.8	13.4	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	27.9
8 FFX	39.8	16.4	11.8	4.6	27.1	24.0	13.3	3.9	0.1	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	12.6
9 LDN	20.2	6.0	4.8	1.6	12.0	11.1	2.4	3.8	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9
10 PW	40.6	18.8	12.4	3.6	26.9	21.3	18.1	5.2	0	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	7.3
11 FRD	30.6	11.2	5.2	0.7	15.3	10.9	11.5	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	1.6
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	53.7	18.7	0	1.4	37.1	36.5	15.0	8.7	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	5.3
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	52.1	18.1	23.7	1.8	37.9	34.0	11.8	7.1	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	8.8
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	28.4	12.8	10.4	7.1	17.4	14.9	11.0	3.0	0	0.1	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0	1.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	49.1	25.2	11.6	7.6	32.9	26.5	16.6	6.0	0.4	2.4	0.3	0	0	0	0.2	0	0.2	0	0.0	0	0.0	0	0	18.2

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Estimated Car Occupancy

ORIGIN	DC CR	DC NCR	MTG	PG	ARLCR	ARLNCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	1.15	1.14	1.17	1.17	1.15	1.16	1.17	1.17	1.45	1.44	0	0	0	0	0	0	1.25	1.67	0	0	0	0	0	1.16
2 DC NC	1.16	1.10	1.14	1.15	1.14	1.16	1.15	1.16	1.31	1.15	1.23	0	0	0	1.27	1.00	1.26	1.50	2.00	1.00	2.00	0	0	1.14
3 MTG	1.18	1.12	1.10	1.11	1.16	1.18	1.15	1.14	1.17	1.29	1.13	0	0	0	1.10	0	1.19	1.00	0	1.20	2.00	0	0	1.12
4 PG	1.17	1.12	1.14	1.09	1.15	1.17	1.13	1.15	1.20	1.22	1.18	0	0	0	1.15	1.16	1.11	0	0	0	2.00	1.26	0	1.12
5 ARLCR	1.16	1.11	1.15	1.12	1.05	1.14	1.13	1.13	1.32	1.00	0	0	0	0	0	0	0	0	1.00	0	0	0	0	1.13
6 ARNCR	1.17	1.12	1.14	1.14	1.13	1.13	1.11	1.12	1.21	1.16	1.36	0	0	0	0	0	1.20	1.13	1.50	0	2.33	0	0	1.14
7 ALX	1.20	1.14	1.19	1.14	1.15	1.14	1.09	1.12	1.21	1.17	1.00	0	0	0	1.00	0	1.30	1.18	1.21	0	1.06	1.00	0	1.14
8 FFX	1.32	1.19	1.17	1.17	1.23	1.21	1.12	1.10	1.11	1.11	1.20	0	0	0	1.00	1.00	1.16	1.13	1.16	1.27	1.19	2.00	0	1.14
9 LDN	1.73	1.39	1.23	1.30	1.57	1.53	1.41	1.17	1.09	1.14	1.13	0	0	0	0	0	0	1.13	1.25	1.11	1.00	0	0	1.15
10 PW	2.19	1.69	1.44	1.44	1.83	1.69	1.31	1.16	1.13	1.08	1.33	0	0	0	0	0	0.67	1.13	1.12	1.26	1.15	1.20	0	1.16
11 FRD	1.41	1.23	1.15	1.21	1.38	1.35	1.64	1.35	1.17	1.16	1.06	0	0	0	0	0	0	2.00	0	1.15	0	0	0	1.09
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	1.26	1.17	1.24	1.14	1.22	1.24	1.18	1.23	0	0	0	0	0	0	1.06	1.12	1.15	0	0	0	2.00	1.30	0	1.10
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	1.23	1.15	1.23	1.13	1.18	1.22	1.16	1.16	1.00	1.50	0	0	0	0	1.13	1.14	1.06	0	1.27	0	1.27	1.18	0	1.11
18 FAU	1.83	2.50	1.28	1.67	1.17	1.53	1.37	1.18	1.15	1.12	1.20	0	0	0	0	0	0	1.06	1.12	1.17	1.14	1.14	0	1.11
19 STA	2.77	2.02	2.26	1.63	2.29	2.05	1.51	1.28	1.21	1.12	0	0	0	0	0	1.40	1.42	1.14	1.05	0	1.10	1.14	0	1.12
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.22	1.13	1.12	1.10	1.20	1.20	1.14	1.12	1.10	1.09	1.07	0	0	0	1.07	1.12	1.07	1.08	1.07	1.14	1.11	1.18	0	1.13

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Observed Auto Driver

ORIGIN	DC CR	DC NCR	MTG	PG	ARLCR	ARLNCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	3920	2597	1179	881	190	565	432	1667	127	37	0	0	0	0	0	0	14	13	5	0	0	0	0	11627
2 DC NC	44412	35299	13086	10708	2187	4640	2915	10056	586	393	122	0	0	0	51	85	236	43	34	14	81	20	0	124968
3 MTG	43610	33053	259040	30408	2991	6623	2982	27928	2135	859	4720	0	0	0	220	120	502	80	206	11	166	20	0	415674
4 PG	62232	48319	40876	150696	4633	10074	8232	21573	1088	822	401	0	0	0	722	395	4231	75	175	0	233	72	0	354849
5 ARLCR	790	206	300	82	617	504	227	1116	109	25	0	0	0	0	0	19	0	0	16	0	0	10	0	4021
6 ARNCR	17105	6046	4150	1822	4656	17042	4579	22011	1223	764	29	0	0	0	0	36	96	68	105	0	69	5	0	79806
7 ALX	13647	4618	2539	1950	2966	7214	14907	17028	778	667	18	0	0	0	20	55	120	27	113	3	76	6	0	66752
8 FFX	54062	20792	20385	11112	14901	34982	33120	327030	19576	11332	254	0	0	0	65	175	594	843	714	83	670	104	0	550794
9 LDN	4790	1342	3432	734	1014	1995	977	47229	40307	1495	526	0	0	0	4	16	37	368	60	174	49	5	0	104554
10 PW	9164	3513	2385	1910	3414	5927	7520	66609	5658	71136	63	0	0	0	24	99	103	1122	1967	53	1074	20	0	181761
11 FRD	1779	1016	26970	1390	122	436	189	2294	1427	167	65409	0	0	0	27	3	12	13	47	377	4	12	0	101694
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	2490	1561	1069	10125	266	509	413	1086	98	42	11	0	0	0	15734	4473	1415	27	15	0	5	14	0	39353
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	6785	4159	1536	16936	1023	1339	1370	3215	393	182	11	0	0	0	739	2620	27192	3	57	0	85	407	0	68052
18 FAU	911	274	338	162	238	500	334	7173	1929	5313	20	0	0	0	0	10	0	11634	376	31	211	13	0	29467
19 STA	1676	505	358	448	700	1243	1346	8839	432	9808	10	0	0	0	12	41	9	185	14091	0	8767	1225	0	49695
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	267373	163300	377643	239364	39918	93593	79543	564854	75866	103042	71594	0	0	0	17618	8147	34561	14501	17981	746	11490	1933	0	2183067

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Observed Transit

ORIGIN	DESTINATION DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	13950	3904	1978	523	833	1583	409	842	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	24040
2 DC NC	85492	25193	9359	3773	2490	4724	1444	2837	159	151	0	0	0	0	31	0	77	13	28	0	26	7	0	135804
3 MTG	54753	7383	29546	2096	1392	2572	545	827	22	81	56	0	0	0	0	0	24	0	9	0	7	0	0	99313
4 PG	42780	8478	7135	13296	2570	3417	1023	1656	24	54	0	0	0	0	7	24	93	21	22	0	0	0	0	80600
5 ARLCR	3142	466	96	27	367	338	112	327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4875
6 ARNCR	27073	2212	948	406	2457	4485	926	2414	46	20	0	0	0	0	0	0	22	0	8	0	73	0	0	41090
7 ALX	11371	932	473	132	1372	2140	3278	1602	0	12	0	0	0	0	0	0	0	0	27	0	22	0	0	21361
8 FFX	37807	3131	1035	349	4711	7654	2197	10654	277	78	0	0	0	0	0	32	15	0	0	0	91	0	0	68031
9 LDN	1158	173	28	7	205	295	22	69	178	0	7	0	0	0	0	0	0	0	12	0	0	0	0	2154
10 PW	4549	426	101	122	565	1277	396	469	14	852	0	0	0	0	0	0	0	0	0	0	28	0	0	8799
11 FRD	989	65	395	24	18	18	4	0	10	0	618	0	0	0	0	0	0	0	0	0	0	0	0	2141
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	669	37	0	12	13	9	9	35	0	0	0	0	0	0	78	14	0	0	0	0	0	0	0	876
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	1978	102	83	75	9	31	14	22	0	0	0	0	0	0	0	24	217	10	0	0	0	0	0	2565
18 FAU	145	64	0	0	16	46	64	0	0	19	0	0	0	0	0	0	0	64	0	0	0	0	0	418
19 STA	943	97	39	12	131	417	186	119	0	47	0	0	0	0	0	0	0	0	100	0	14	10	0	2115
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	286799	52663	51216	20854	17149	29006	10629	21873	730	1314	681	0	0	0	116	112	448	108	206	0	261	17	0	494182

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Observed Auto Person

ORIGIN	DESTINATION DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	4640	2992	1316	1015	210	654	454	1828	134	50	0	0	0	0	0	0	14	13	5	0	0	0	0	13325
2 DC NC	53432	41420	14484	12363	2498	5205	3228	11149	613	420	135	0	0	0	51	148	260	50	40	14	89	20	0	145619
3 MTG	50106	36160	278844	32679	3244	7198	3208	29359	2206	1018	5149	0	0	0	234	132	597	80	251	11	174	20	0	450670
4 PG	74525	54516	45290	167032	5214	11585	9003	23643	1246	954	462	0	0	0	826	467	4589	125	199	0	238	78	0	399992
5 ARLCR	950	235	332	82	709	568	256	1179	116	25	0	0	0	0	0	19	0	0	16	0	0	10	0	4497
6 ARNCR	20229	6562	4431	2028	5227	19006	4969	23510	1318	929	51	0	0	0	0	41	104	82	112	0	84	5	0	88688
7 ALX	15840	5127	2725	2150	3344	7952	16545	18281	825	808	18	0	0	0	20	67	120	38	117	7	82	6	0	74072
8 FFX	68266	23462	21525	12257	17674	39679	35478	347621	21120	12229	293	0	0	0	77	224	680	910	754	109	750	121	0	603229
9 LDN	5636	1443	3661	791	1116	2216	1034	49395	42802	1546	536	0	0	0	4	16	52	432	60	185	56	5	0	110986
10 PW	13920	4587	2697	2404	5192	8080	8677	72330	6169	78152	69	0	0	0	28	132	109	1205	2214	62	1176	26	0	207229
11 FRD	2275	1097	29813	1539	151	562	204	2497	1519	202	69662	0	0	0	27	3	16	19	52	400	4	12	0	110054
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	3121	1797	1158	10913	334	606	481	1195	117	62	11	0	0	0	17163	4895	1566	27	21	0	5	18	0	43490
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	8652	4618	1736	18191	1179	1601	1492	3493	442	199	11	0	0	0	835	2863	29378	9	76	0	87	431	0	75293
18 FAU	1048	321	356	177	287	574	360	7908	2065	5658	20	0	0	0	0	10	0	12455	409	39	219	13	0	31919
19 STA	2832	811	431	495	1209	1897	1643	9930	471	10536	10	0	0	0	21	41	13	191	15223	0	9194	1340	0	56288
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	325472	185148	408799	264116	47588	107383	87032	603318	81163	112788	76427	0	0	0	19286	9058	37498	15636	19549	827	12158	2105	0	2415351

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08 Purpose: HBW Table: Observed Auto Pax

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	720	395	137	134	20	89	22	161	7	13	0	0	0	0	0	0	0	0	0	0	0	0	0	1698
2 DC NC	9020	6121	1398	1655	311	565	313	1093	27	27	13	0	0	0	0	63	24	7	6	0	8	0	0	20651
3 MTG	6496	3107	19804	2271	253	575	226	1431	71	159	429	0	0	0	14	12	95	0	45	0	8	0	0	34996
4 PG	12293	6197	4414	16336	581	1511	771	2070	158	132	61	0	0	0	104	72	358	50	24	0	5	6	0	45143
5 ARLCR	160	29	32	0	92	64	29	63	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	476
6 ARNCR	3124	516	281	206	571	1964	390	1499	95	165	22	0	0	0	0	5	8	14	7	0	15	0	0	8882
7 ALX	2193	509	186	200	378	738	1638	1253	47	141	0	0	0	0	0	12	0	11	4	4	6	0	0	7320
8 FFX	14204	2670	1140	1145	2773	4697	2358	20591	1544	897	39	0	0	0	12	49	86	67	40	26	80	17	0	52435
9 LDN	846	101	229	57	102	221	57	2166	2495	51	10	0	0	0	0	0	15	64	0	11	7	0	0	6432
10 PW	4756	1074	312	494	1778	2153	1157	5721	511	7016	6	0	0	0	4	33	6	83	247	9	102	6	0	25468
11 FRD	496	81	2843	149	29	126	15	203	92	35	4253	0	0	0	0	0	4	6	5	23	0	0	0	8360
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	631	236	89	788	68	97	68	109	19	20	0	0	0	0	1429	422	151	0	6	0	0	4	0	4137
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	1867	459	200	1255	156	262	122	278	49	17	0	0	0	0	96	243	2186	6	19	0	2	24	0	7241
18 FAU	137	47	18	15	49	74	26	735	136	345	0	0	0	0	0	0	0	821	33	8	8	0	0	2452
19 STA	1156	306	73	47	509	654	297	1091	39	728	0	0	0	0	9	0	4	6	1132	0	427	115	0	6593
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	58099	21848	31156	24752	7670	13790	7489	38464	5297	9746	4833	0	0	0	1668	911	2937	1135	1568	81	668	172	0	232284

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08 Purpose: HBW Table: Observed Person

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	18590	6896	3294	1538	1043	2237	863	2670	134	50	0	0	0	0	0	18	14	13	5	0	0	0	0	37365
2 DC NC	138924	66613	23843	16136	4988	9929	4672	13986	772	571	135	0	0	0	82	148	337	63	68	14	115	27	0	281423
3 MTG	104859	43543	308390	34775	4636	9770	3753	30186	2228	1099	5205	0	0	0	234	132	621	80	260	11	181	20	0	549983
4 PG	117305	62994	52425	180328	7784	15002	10026	25299	1270	1008	462	0	0	0	833	491	4682	146	221	0	238	78	0	480592
5 ARLCR	4092	701	428	109	1076	906	368	1506	116	25	0	0	0	0	0	19	0	0	16	0	0	10	0	9372
6 ARNCR	47302	8774	5379	2434	7684	23491	5895	25924	1364	949	51	0	0	0	0	41	126	82	120	0	157	5	0	129778
7 ALX	27211	6059	3198	2282	4716	10092	19823	19883	825	820	18	0	0	0	20	67	120	38	144	7	104	6	0	95433
8 FFX	106073	26593	22560	12606	22385	47333	37675	358275	21397	12307	293	0	0	0	77	256	695	910	754	109	841	121	0	671260
9 LDN	6794	1616	3689	798	1321	2511	1056	49464	42980	1546	543	0	0	0	4	16	52	432	72	185	56	5	0	113140
10 PW	18469	5013	2798	2526	5757	9357	9073	72799	6183	79004	69	0	0	0	28	132	109	1205	2214	62	1204	26	0	216028
11 FRD	3264	1162	30208	1563	169	580	208	2497	1529	202	70280	0	0	0	27	3	16	19	52	400	4	12	0	112195
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	3790	1834	1158	10925	347	615	490	1230	117	62	11	0	0	0	17241	4909	1566	27	21	0	5	18	0	44366
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	10630	4720	1819	18266	1188	1632	1506	3515	442	199	11	0	0	0	835	2887	29595	19	76	0	87	431	0	77858
18 FAU	1193	385	356	177	303	620	424	7908	2065	5677	20	0	0	0	0	10	0	12519	409	39	219	13	0	32337
19 STA	3775	908	470	507	1340	2314	1829	10049	471	10583	10	0	0	0	21	41	13	191	15323	0	9208	1350	0	58403
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	612271	237811	460015	284970	64737	136389	97661	625191	81893	114102	77108	0	0	0	19402	9170	37946	15744	19755	827	12419	2122	0	2909533

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Observed Pct Transit

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	75.0	56.6	60.0	34.0	79.9	70.8	47.4	31.5	0	0	0	0	0	0	0	100.0	0	0	0	0	0	0	0	64.3
2 DC NC	61.5	37.8	39.3	23.4	49.9	47.6	30.9	20.3	20.6	26.4	0	0	0	0	37.8	0	22.8	20.6	41.2	0	22.6	25.9	0	48.3
3 MTG	52.2	17.0	9.6	6.0	30.0	26.3	14.5	2.7	1.0	7.4	1.1	0	0	0	0	0	3.9	0	3.5	0	3.9	0	0	18.1
4 PG	36.5	13.5	13.6	7.4	33.0	22.8	10.2	6.5	1.9	5.4	0	0	0	0	0.8	4.9	2.0	14.4	10.0	0	0	0	0	16.8
5 ARLCR	76.8	66.5	22.4	24.8	34.1	37.3	30.4	21.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52.0
6 ARNCR	57.2	25.2	17.6	16.7	32.0	19.1	15.7	9.3	3.4	2.1	0	0	0	0	0	0	17.5	0	6.7	0	46.5	0	0	31.7
7 ALX	41.8	15.4	14.8	5.8	29.1	21.2	16.5	8.1	0	1.5	0	0	0	0	0	0	0	0	18.8	0	21.2	0	0	22.4
8 FFX	35.6	11.8	4.6	2.8	21.0	16.2	5.8	3.0	1.3	0.6	0	0	0	0	0	12.5	2.2	0	0	0	10.8	0	0	10.1
9 LDN	17.0	10.7	0.8	0.9	15.5	11.7	2.1	0.1	0.4	0	1.3	0	0	0	0	0	0	0	16.7	0	0	0	0	1.9
10 PW	24.6	8.5	3.6	4.8	9.8	13.6	4.4	0.6	0.2	1.1	0	0	0	0	0	0	0	0	0	0	2.3	0	0	4.1
11 FRD	30.3	5.6	1.3	1.5	10.7	3.1	1.9	0	0.7	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	1.9
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	17.7	2.0	0	0.1	3.7	1.5	1.8	2.8	0	0	0	0	0	0	0.5	0.3	0	0	0	0	0	0	0	2.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	18.6	2.2	4.6	0.4	0.8	1.9	0.9	0.6	0	0	0	0	0	0	0	0.8	0.7	52.6	0	0	0	0	0	3.3
18 FAU	12.2	16.6	0	0	5.3	7.4	15.1	0	0	0.3	0	0	0	0	0	0	0	0.5	0	0	0	0	0	1.3
19 STA	25.0	10.7	8.3	2.4	9.8	18.0	10.2	1.2	0	0.4	0	0	0	0	0	0	0	0	0.7	0	0.2	0.7	0	3.6
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	46.8	22.1	11.1	7.3	26.5	21.3	10.9	3.5	0.9	1.2	0.9	0	0	0	0.6	1.2	1.2	0.7	1.0	0	2.1	0.8	0	17.0

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Observed Car Occupancy

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	1.18	1.15	1.12	1.15	1.11	1.16	1.05	1.10	1.06	1.35	0	0	0	0	0	0	1.00	1.00	1.00	0	0	0	0	1.15
2 DC NC	1.20	1.17	1.11	1.15	1.14	1.12	1.11	1.11	1.05	1.07	1.11	0	0	0	1.00	1.74	1.10	1.16	1.18	1.00	1.10	1.00	0	1.17
3 MTG	1.15	1.09	1.08	1.07	1.08	1.09	1.08	1.05	1.03	1.19	1.09	0	0	0	1.06	1.10	1.19	1.00	1.22	1.00	1.05	1.00	0	1.08
4 PG	1.20	1.13	1.11	1.11	1.13	1.15	1.09	1.10	1.15	1.16	1.15	0	0	0	1.14	1.18	1.08	1.67	1.14	0	1.02	1.08	0	1.13
5 ARLCR	1.20	1.14	1.11	1.00	1.15	1.13	1.13	1.06	1.06	1.00	0	0	0	0	0	1.00	0	0	1.00	0	0	1.00	0	1.12
6 ARNCR	1.18	1.09	1.07	1.11	1.12	1.12	1.09	1.07	1.08	1.22	1.76	0	0	0	0	1.14	1.08	1.21	1.07	0	1.22	1.00	0	1.11
7 ALX	1.16	1.11	1.07	1.10	1.13	1.10	1.11	1.07	1.06	1.21	1.00	0	0	0	1.00	1.22	1.00	1.41	1.04	2.33	1.08	1.00	0	1.11
8 FFX	1.26	1.13	1.06	1.10	1.19	1.13	1.07	1.06	1.08	1.08	1.15	0	0	0	1.18	1.28	1.14	1.08	1.06	1.31	1.12	1.16	0	1.10
9 LDN	1.18	1.08	1.07	1.08	1.10	1.11	1.06	1.05	1.06	1.03	1.02	0	0	0	1.00	1.00	1.41	1.17	1.00	1.06	1.14	1.00	0	1.06
10 PW	1.52	1.31	1.13	1.26	1.52	1.36	1.15	1.09	1.09	1.10	1.10	0	0	0	1.17	1.33	1.06	1.07	1.13	1.17	1.09	1.30	0	1.14
11 FRD	1.28	1.08	1.11	1.11	1.24	1.29	1.08	1.09	1.06	1.21	1.07	0	0	0	1.00	1.00	1.33	1.46	1.11	1.06	1.00	1.00	0	1.08
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	1.25	1.15	1.08	1.08	1.26	1.19	1.16	1.10	1.19	1.48	1.00	0	0	0	1.09	1.09	1.11	1.00	1.40	0	1.00	1.29	0	1.11
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	1.28	1.11	1.13	1.07	1.15	1.20	1.09	1.09	1.12	1.09	1.00	0	0	0	1.13	1.09	1.08	3.00	1.33	0	1.02	1.06	0	1.11
18 FAU	1.15	1.17	1.05	1.09	1.21	1.15	1.08	1.10	1.07	1.06	1.00	0	0	0	0	1.00	0	1.07	1.09	1.26	1.04	1.00	0	1.08
19 STA	1.69	1.61	1.20	1.10	1.73	1.53	1.22	1.12	1.09	1.07	1.00	0	0	0	1.75	1.00	1.44	1.03	1.08	0	1.05	1.09	0	1.13
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.22	1.13	1.08	1.10	1.19	1.15	1.09	1.07	1.07	1.09	1.07	0	0	0	1.09	1.11	1.08	1.08	1.09	1.11	1.06	1.09	0	1.11

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Difference (Est-Obs) Auto Driver

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	406	390	-426	-192	312	247	-88	-285	-87	-21	0	0	0	0	0	0	-10	-10	-5	0	0	0	0	231
2 DC NC	930	-3151	1225	2281	1810	1368	-638	-1629	-420	-333	-92	0	0	0	-36	-82	-171	-41	-33	-13	-80	-20	0	875
3 MTG	4484	-6112	11555	-5491	947	-288	-1393	-7893	-1489	-779	568	0	0	0	-210	-120	-476	-77	-206	156	-165	-20	0	-7009
4 PG	-4635	16829	-8251	6308	1141	-78	-2821	-9599	-983	-777	-340	0	0	0	4	-79	-277	-75	-175	0	-231	27	0	-4012
5 ARLCR	209	57	-160	-32	-39	-86	-86	-556	-90	-18	0	0	0	0	0	-19	0	0	-15	0	0	-10	0	-845
6 ARNCR	63	-599	-1055	-881	752	1819	466	1665	-625	-560	-18	0	0	0	0	-36	-91	-53	-99	0	-66	-5	0	677
7 ALX	-3546	-1324	-1350	-906	-38	1052	-2064	3019	-565	-421	-15	0	0	0	-17	-55	-110	-16	-94	-3	-58	-5	0	-6516
8 FFX	-6898	-2404	-6735	-6475	-3091	-5448	-4184	-4471	4123	-333	-147	0	0	0	-59	-172	-531	60	-426	-27	-371	-99	0	-37688
9 LDN	-3842	-752	-1174	-641	-508	-904	-538	320	2492	-367	1609	0	0	0	-4	-16	-37	54	-56	1301	-48	-5	0	-3116
10 PW	-5699	-2897	-1813	-1629	-2536	-3445	-2803	-1392	-1706	7243	-42	0	0	0	-24	-99	-100	1853	1313	-10	1977	70	0	-11739
11 FRD	-1523	-543	-6520	-903	-54	-345	-175	-1437	1495	-148	9647	0	0	0	-27	-3	-12	-10	-47	1689	-4	-12	0	1068
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	-1450	270	-791	-3268	-162	-350	-298	-931	-98	-42	-11	0	0	0	2086	4147	21	-27	-15	0	-4	82	0	-841
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	-3617	634	-1130	-330	-697	-782	-828	-2484	-392	-178	-11	0	0	0	558	-335	3685	-3	-35	0	-22	1246	0	-4721
18 FAU	-905	-270	-313	-159	-232	-468	-304	-1237	-221	941	-5	0	0	0	0	-10	0	2014	683	105	765	16	0	400
19 STA	-1586	-458	-339	-424	-615	-990	-784	-3360	-389	-668	-10	0	0	0	-12	-36	15	1241	5493	0	4938	-479	0	1537
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-27609	-330	-17277	-12742	-3010	-8698	-16538	-30270	1045	3539	11133	0	0	0	2259	3085	1906	4910	6283	3198	6631	786	0	-71699

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Difference (Est-Obs) Transit

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	-225	-136	-732	-53	217	-41	-9	374	0	0	0	0	0	0	0	-18	0	0	0	0	0	0	0	-623
2 DC NC	-2273	-664	132	259	1137	473	-306	337	-159	-147	0	0	0	0	-31	0	-77	-13	-28	0	-26	-7	0	-1393
3 MTG	-9020	368	253	-40	413	-58	-184	1270	-22	-81	-56	0	0	0	0	0	-24	0	-9	0	-7	0	0	-7197
4 PG	8764	7375	-443	-132	556	1359	-49	-110	-24	-54	0	0	0	0	-7	-24	-93	-21	-22	0	0	0	0	17075
5 ARLCR	-917	-277	-1	-9	-165	82	-39	-39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1365
6 ARNCR	-5583	-85	59	-245	1116	-212	589	3249	-45	-18	0	0	0	0	0	0	-22	0	-8	0	-73	0	0	-1278
7 ALX	60	337	-5	-30	509	2478	-26	1863	0	-9	0	0	0	0	0	0	0	0	-27	0	-22	0	0	5128
8 FFX	3491	1149	1102	-88	704	3672	2773	3624	-254	7	0	0	0	0	0	-32	-15	0	0	0	-91	0	0	16042
9 LDN	-744	-121	111	-5	-97	-87	-7	2148	145	0	-7	0	0	0	0	0	0	0	-12	0	0	0	0	1324
10 PW	656	-184	16	-107	26	-143	963	3662	-14	1841	0	0	0	0	0	0	0	0	0	0	-28	0	0	6688
11 FRD	-830	9	884	-20	-1	-3	-1	0	-10	0	-356	0	0	0	0	0	0	0	0	0	0	0	0	-328
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	853	456	0	95	62	104	15	-17	0	0	0	0	0	0	-36	-14	0	0	0	0	0	0	0	1518
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	2265	1118	72	260	227	320	70	43	0	0	0	0	0	0	0	-24	-152	-10	0	0	0	0	0	4189
18 FAU	-145	-64	0	0	-16	-46	-64	0	0	-19	0	0	0	0	0	0	0	-64	0	0	0	0	0	-418
19 STA	-844	-83	-34	-9	-90	-326	-81	101	0	-40	0	0	0	0	0	0	0	0	-90	0	-10	-10	0	-1516
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-4492	9198	1414	-124	4598	7572	3644	16505	-383	1480	-419	0	0	0	-74	-112	-383	-108	-196	0	-257	-17	0	37846

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Difference (Est-Obs) Auto Person

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	352	411	-434	-206	368	291	-53	-205	-76	-27	0	0	0	0	0	0	-9	-8	-5	0	0	0	0	399
2 DC NC	-803	-6064	1859	2536	2077	1778	-620	-1361	-395	-351	-98	0	0	0	-32	-145	-178	-47	-38	-13	-87	-20	0	-2002
3 MTG	6649	-5971	19756	-4920	1342	272	-1377	-6481	-1448	-915	833	0	0	0	-223	-132	-566	-77	-251	189	-172	-20	0	6488
4 PG	-7203	18136	-8250	4422	1416	90	-2908	-9913	-1120	-899	-390	0	0	0	6	-102	-212	-123	-199	0	-234	47	0	-7436
5 ARLCR	210	57	-171	-26	-101	-91	-97	-544	-91	-18	0	0	0	0	0	-19	0	0	-15	0	0	-10	0	-916
6 ARNCR	-127	-440	-892	-954	896	2300	647	2959	-596	-693	-36	0	0	0	0	-41	-98	-65	-103	0	-77	-5	0	2675
7 ALX	-3694	-1375	-1306	-960	19	1485	-2529	4185	-567	-520	-15	0	0	0	-17	-66	-107	-25	-94	-7	-63	-5	0	-5661
8 FFX	-5903	-1568	-5606	-6851	-3094	-3855	-2995	7860	5138	-52	-165	0	0	0	-71	-221	-607	108	-420	-38	-394	-111	0	-18845
9 LDN	-3997	-624	-876	-670	-323	-542	-416	6240	3638	-256	1866	0	0	0	-4	-16	-52	46	-55	1458	-55	-5	0	5357
10 PW	-6319	-3543	-1873	-1998	-3582	-3884	-2507	3517	-1698	6453	-41	0	0	0	-28	-132	-107	2157	1467	-8	2346	82	0	-9698
11 FRD	-1914	-513	-6295	-948	-57	-439	-181	-1339	1887	-180	10106	0	0	0	-27	-3	-16	-13	-52	1971	-4	-12	0	1971
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	-1809	343	-814	-3099	-207	-409	-345	-1005	-117	-62	-11	0	0	0	1724	4722	92	-27	-21	0	-3	107	0	-941
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	-4744	886	-1237	515	-793	-920	-865	-2642	-441	-193	-11	0	0	0	627	-267	3385	-9	-48	0	-7	1520	0	-5244
18 FAU	-1037	-311	-324	-172	-280	-525	-319	-929	-107	1351	-2	0	0	0	0	-10	0	1960	778	120	893	20	0	1106
19 STA	-2583	-716	-388	-456	-1014	-1379	-797	-2910	-419	-344	-10	0	0	0	-21	-34	21	1428	5385	0	5854	-490	0	1127
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-32922	-1292	-6851	-13787	-3333	-5828	-15362	-2568	3588	3294	12026	0	0	0	1934	3534	1546	5305	6329	3672	7997	1098	0	-31620

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Difference (Est-Obs) Auto Pax

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	-54	21	-8	-14	56	44	35	80	11	-6	0	0	0	0	0	0	0	0	0	0	0	0	0	165
2 DC NC	-1733	-2913	634	255	267	410	18	268	25	-18	-6	0	0	0	0	-63	-7	-6	-5	0	-7	0	0	-2881
3 MTG	2165	141	8201	571	395	560	16	1412	41	-136	265	0	0	0	-13	-12	-90	0	-45	0	-7	0	0	13464
4 PG	-2568	1307	1	-1886	275	168	-87	-314	-137	-122	-50	0	0	0	2	-23	65	-48	-24	0	-3	20	0	-3424
5 ARLCR	1	0	-11	0	-62	-5	-11	12	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-77
6 ARNCR	-190	159	163	-73	144	481	181	1294	29	-133	-18	0	0	0	0	-5	-7	-12	-4	0	-11	0	0	1998
7 ALX	-148	-51	44	-54	57	433	-465	1166	-2	-99	0	0	0	0	0	-11	0	-9	0	-4	-5	0	0	852
8 FFX	995	836	1129	-376	-3	1593	1189	12331	1015	281	-18	0	0	0	-12	-49	-76	48	6	-11	-23	-12	0	18843
9 LDN	-155	128	298	-29	185	362	122	5920	1146	111	257	0	0	0	0	0	-15	-8	0	157	-7	0	0	8472
10 PW	-620	-646	-60	-369	-1046	-439	296	4909	8	-790	1	0	0	0	-4	-33	-7	304	154	2	369	12	0	2041
11 FRD	-391	30	225	-45	-3	-94	-6	98	392	-32	459	0	0	0	0	0	-4	-3	-5	282	0	0	0	903
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	-359	73	-23	169	-45	-59	-47	-74	-19	-20	0	0	0	0	-362	575	71	0	-6	0	0	25	0	-101
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	-1127	252	-107	845	-96	-138	-37	-158	-49	-15	0	0	0	0	69	68	-300	-6	-13	0	15	274	0	-523
18 FAU	-132	-41	-11	-13	-48	-57	-15	308	114	410	0	0	0	0	0	0	0	-54	95	15	128	0	0	699
19 STA	-997	-258	-49	-32	-399	-389	-13	450	-30	324	0	0	0	0	-9	0	6	187	-108	0	916	-11	0	-412
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-5313	-962	10426	-1051	-323	2870	1176	27702	2543	-245	890	0	0	0	-329	447	-364	393	45	441	1365	308	0	40019

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08 Purpose: HBW Table: Difference (Est-Obs) Person

ORIGIN \ DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	127	275	-1166	-259	585	250	-62	169	-76	-24	0	0	0	0	0	-18	-9	-8	-5	0	0	0	0	-221
2 DC NC	-3076	-6728	1991	2795	3214	2251	-926	-1024	-554	-498	-98	0	0	0	-63	-145	-255	-60	-66	-13	-113	-27	0	-3395
3 MTG	-2371	-5603	20009	-4960	1755	214	-1561	-5211	-1470	-996	777	0	0	0	-223	-132	-590	-77	-260	189	-179	-20	0	-709
4 PG	1561	25511	-8693	4290	1972	1449	-2957	-10023	-1144	-953	-390	0	0	0	-1	-126	-305	-144	-221	0	-234	47	0	9639
5 ARLCR	-707	-220	-172	-35	-266	-9	-136	-583	-91	-18	0	0	0	0	0	-19	0	0	-15	0	0	-10	0	-2281
6 ARNCR	-5710	-525	-833	-1199	2012	2088	1236	6208	-641	-711	-36	0	0	0	0	-41	-120	-65	-111	0	-150	-5	0	1397
7 ALX	-3634	-1038	-1311	-990	528	3963	-2555	6048	-567	-529	-15	0	0	0	-17	-66	-107	-25	-121	-7	-85	-5	0	-533
8 FFX	-2412	-419	-4504	-6939	-2390	-183	-222	11484	4884	-45	-165	0	0	0	-71	-253	-622	108	-420	-38	-485	-111	0	-2803
9 LDN	-4741	-745	-765	-675	-420	-629	-423	8388	3783	-256	1859	0	0	0	-4	-16	-52	46	-67	1458	-55	-5	0	6681
10 PW	-5663	-3727	-1857	-2105	-3556	-4027	-1544	7179	-1712	8294	-41	0	0	0	-28	-132	-107	2157	1467	-8	2318	82	0	-3010
11 FRD	-2744	-504	-5411	-968	-58	-442	-182	-1337	1877	-180	9750	0	0	0	-27	-3	-16	-13	-52	1971	-4	-12	0	1645
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	-956	799	-751	-3004	-145	-305	-330	-1022	-117	-62	-11	0	0	0	1688	4708	92	-27	-21	0	-3	107	0	640
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	-2479	2004	-1165	775	-566	-600	-795	-2599	-441	-193	-11	0	0	0	627	-291	3233	-19	-48	0	-7	1520	0	-1055
18 FAU	-1182	-375	-324	-172	-296	-571	-383	-929	-107	1332	-2	0	0	0	0	-10	0	1896	778	120	893	20	0	688
19 STA	-3427	-799	-422	-465	-1104	-1705	-878	-2809	-419	-384	-10	0	0	0	-21	-34	21	1428	5295	0	5844	-500	0	-389
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-37414	7906	-5374	-13911	1265	1744	-11718	13939	3205	4777	11607	0	0	0	1860	3422	1163	5197	6133	3672	7740	1081	0	6294

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08 Purpose: HBW Table: Difference (Est-Obs) Pct Transit

ORIGIN \ DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	-1.7	-4.1	-1.5	2.7	-15.4	-8.8	2.5	11.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.3
2 DC NC	-0.3	3.1	-2.5	-2.1	-5.7	-4.9	-0.5	4.2	-20.6	-21.0	0	0	0	0	-37.8	0	-22.8	-20.6	-41.2	0	-22.6	0	0	0.1
3 MTG	-7.6	3.5	-0.5	0.9	-1.8	-1.1	1.9	5.7	-1.0	-7.4	-1.1	0	0	0	0	0	-3.9	0	0	0	-3.9	0	0	-1.3
4 PG	6.9	4.5	1.7	-0.2	-1.0	6.3	3.6	3.6	-1.9	-5.4	0	0	0	0	-0.8	-4.9	-2.0	-14.4	0	0	0	0	0	3.2
5 ARLCR	-11.1	-27.2	14.7	-0.4	-9.2	9.5	1.0	9.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2.5
6 ARNCR	-5.6	0.6	4.5	-3.6	4.9	-2.4	5.5	8.3	-3.2	-1.3	0	0	0	0	0	0	-17.5	0	-6.7	0	-46.5	0	0	-1.3
7 ALX	6.7	9.9	10.0	2.1	6.8	11.7	2.3	5.3	0	-0.4	0	0	0	0	0	0	0	0	-18.8	0	-21.2	0	0	5.5
8 FFX	4.2	4.6	7.2	1.8	6.0	7.9	7.4	0.9	-1.2	0.1	0	0	0	0	0	-12.5	-2.2	0	0	0	-10.8	0	0	2.4
9 LDN	3.1	-4.7	4.0	0.7	-3.5	-0.7	0.3	3.7	0.3	0	-1.3	0	0	0	0	0	0	0	-16.7	0	0	0	0	1.0
10 PW	16.0	10.3	8.8	-1.3	17.0	7.6	13.7	4.5	-0.2	2.0	0	0	0	0	0	0	0	0	0	0	-2.3	0	0	3.2
11 FRD	0.3	5.7	3.9	-0.9	4.7	7.8	9.6	0	-0.7	0	-0.6	0	0	0	0	0	0	0	0	0	0	0	0	-0.3
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	36.1	16.7	0	1.2	33.4	35.0	13.2	5.8	0	0	0	0	0	0	-0.2	-0.3	0	0	0	0	0	0	0	3.3
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	33.4	16.0	19.1	1.3	37.2	32.1	10.9	6.5	0	0	0	0	0	0	0	-0.8	-0.5	0	0	0	0	0	0	5.5
18 FAU	-12.2	-16.6	0	0	-5.3	-7.4	-15.1	0	0	-0.3	0	0	0	0	0	0	0	-0.5	0	0	0	0	0	-1.3
19 STA	3.5	2.2	2.1	4.8	7.6	-3.1	0.9	1.9	0	-0.4	0	0	0	0	0	0	0	0	-0.6	0	-0.1	-0.7	0	-2.6
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2.3	3.0	0.4	0.3	6.5	5.2	5.7	2.5	-0.5	1.2	-0.6	0	0	0	-0.4	-1.2	-1.0	-0.7	-1.0	0	-2.1	-0.8	0	1.3

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Difference (Est-Obs) Car Occupancy

DESTINATION

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	-0.03	-0.01	0.06	0.02	0.05	0.01	0.11	0.08	0.39	0.09	0	0	0	0	0	0	0.25	0.67	0	0	0	0	0	0.01
2 DC NC	-0.04	-0.07	0.04	-0.01	0.00	0.04	0.04	0.05	0.27	0.08	0.13	0	0	0	0.27	-0.74	0.16	0.34	0.82	0	0.90	0	0	-0.02
3 MTG	0.03	0.03	0.03	0.04	0.08	0.09	0.08	0.09	0.14	0.10	0.04	0	0	0	0.04	0	0.00	0	0	0.20	0.95	0	0	0.03
4 PG	-0.03	-0.01	0.03	-0.02	0.02	0.02	0.03	0.05	0.05	0.06	0.03	0	0	0	0.00	-0.03	0.02	0	0	0	0.98	0.18	0	-0.01
5 ARLCR	-0.04	-0.03	0.04	0.12	-0.10	0.01	-0.00	0.08	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01
6 ARNCR	-0.01	0.04	0.08	0.03	0.01	0.01	0.03	0.05	0.13	-0.06	-0.39	0	0	0	0	0	0.12	-0.07	0.43	0	1.12	0	0	0.02
7 ALX	0.04	0.03	0.12	0.04	0.02	0.04	-0.02	0.05	0.15	-0.04	0	0	0	0	0	0	0.30	-0.23	0.18	0	-0.02	0	0	0.03
8 FFX	0.06	0.06	0.11	0.06	0.05	0.08	0.05	0.04	0.03	0.03	0.04	0	0	0	-0.18	-0.28	0.01	0.05	0.10	-0.05	0.07	0.84	0	0.04
9 LDN	0.55	0.31	0.17	0.22	0.47	0.42	0.35	0.12	0.02	0.11	0.11	0	0	0	0	0	0	-0.04	0.25	0.05	-0.14	0	0	0.09
10 PW	0.67	0.39	0.31	0.19	0.31	0.33	0.15	0.08	0.04	-0.02	0.24	0	0	0	0	0	-0.39	0.06	-0.00	0.09	0.06	-0.10	0	0.02
11 FRD	0.13	0.15	0.04	0.11	0.14	0.06	0.56	0.26	0.10	-0.05	-0.00	0	0	0	0	0	0	0.54	0	0.09	0	0	0	0.01
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0.01	0.02	0.15	0.06	-0.03	0.05	0.02	0.13	0	0	0	0	0	0	-0.03	0.02	0.05	0	0	0	1.00	0.02	0	-0.00
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	-0.04	0.04	0.10	0.05	0.03	0.03	0.07	0.08	-0.12	0.41	0	0	0	0	-0.00	0.04	-0.02	0	-0.06	0	0.25	0.12	0	-0.00
18 FAU	0.68	1.33	0.23	0.57	-0.04	0.38	0.29	0.07	0.08	0.06	0.20	0	0	0	0	0	0	-0.01	0.03	-0.09	0.10	0.14	0	0.02
19 STA	1.08	0.42	1.06	0.52	0.57	0.52	0.28	0.16	0.12	0.04	0	0	0	0	0	0.40	-0.03	0.10	-0.03	0	0.05	0.05	0	-0.01
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.00	-0.01	0.03	0.00	0.01	0.05	0.04	0.06	0.03	-0.01	0.00	0	0	0	-0.03	0.01	-0.01	0.00	-0.02	0.03	0.05	0.09	0	0.02

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Ratio (Est-to-Obs) Auto Driver

DESTINATION

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	1.10	1.15	0.64	0.78	2.64	1.44	0.80	0.83	0.31	0.43	0	0	0	0	0	0	0.29	0.23	0	0	0	0	0	1.02
2 DC NC	1.02	0.91	1.09	1.21	1.83	1.29	0.78	0.84	0.28	0.15	0.25	0	0	0	0.29	0.04	0.28	0.05	0.03	0.07	0.01	0	0	1.01
3 MTG	1.10	0.82	1.04	0.82	1.32	0.96	0.53	0.72	0.30	0.09	1.12	0	0	0	0.05	0	0.05	0.04	0	15.18	0.01	0	0	0.98
4 PG	0.93	1.35	0.80	1.04	1.25	0.99	0.66	0.56	0.10	0.05	0.15	0	0	0	1.01	0.80	0.93	0	0	0	0.01	1.38	0	0.99
5 ARLCR	1.26	1.28	0.47	0.61	0.94	0.83	0.62	0.50	0.17	0.28	0	0	0	0	0	0	0	0	0.06	0	0	0	0	0.79
6 ARNCR	1.00	0.90	0.75	0.52	1.16	1.11	1.10	1.08	0.49	0.27	0.38	0	0	0	0	0	0.05	0.22	0.06	0	0.04	0	0	1.01
7 ALX	0.74	0.71	0.47	0.54	0.99	1.15	0.86	1.18	0.27	0.37	0.17	0	0	0	0.15	0	0.08	0.41	0.17	0	0.24	0.17	0	0.90
8 FFX	0.87	0.88	0.67	0.42	0.79	0.84	0.87	0.99	1.21	0.97	0.42	0	0	0	0.09	0.02	0.11	1.07	0.40	0.67	0.45	0.05	0	0.93
9 LDN	0.20	0.44	0.66	0.13	0.50	0.55	0.45	1.01	1.06	0.75	4.06	0	0	0	0	0	0	1.15	0.07	8.48	0.02	0	0	0.97
10 PW	0.38	0.18	0.24	0.15	0.26	0.42	0.63	0.98	0.70	1.10	0.33	0	0	0	0	0	0.03	2.65	1.67	0.81	2.84	4.50	0	0.94
11 FRD	0.14	0.47	0.76	0.35	0.56	0.21	0.07	0.37	2.05	0.11	1.15	0	0	0	0	0	0	0.23	0	5.48	0	0	0	1.01
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0.42	1.17	0.26	0.68	0.39	0.31	0.28	0.14	0	0	0	0	0	0	1.13	1.93	1.01	0	0	0	0.20	6.86	0	0.98
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0.47	1.15	0.26	0.98	0.32	0.42	0.40	0.23	0.00	0.02	0	0	0	0	1.76	0.87	1.14	0	0.39	0	0.74	4.06	0	0.93
18 FAU	0.01	0.01	0.07	0.02	0.03	0.06	0.09	0.83	0.89	1.18	0.75	0	0	0	0	0	0	1.17	2.82	4.39	4.63	2.23	0	1.01
19 STA	0.05	0.09	0.05	0.05	0.12	0.20	0.42	0.62	0.10	0.93	0	0	0	0	0	0.12	2.67	7.71	1.39	0	1.56	0.61	0	1.03
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.90	1.00	0.95	0.95	0.92	0.91	0.79	0.95	1.01	1.03	1.16	0	0	0	1.13	1.38	1.06	1.34	1.35	5.29	1.58	1.41	0	0.97

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08 Purpose: HBW Table: Ratio (Est-to-Obs) Transit

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	0.98	0.97	0.63	0.90	1.26	0.97	0.98	1.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.97
2 DC NC	0.97	0.97	1.01	1.07	1.46	1.10	0.79	1.12	0	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0.99
3 MTG	0.84	1.05	1.01	0.98	1.30	0.98	0.66	2.54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.93
4 PG	1.20	1.87	0.94	0.99	1.22	1.40	0.95	0.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.21
5 ARLCR	0.71	0.41	0.99	0.67	0.55	1.24	0.65	0.88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.72
6 ARNCR	0.79	0.96	1.06	0.40	1.45	0.95	1.64	2.35	0.02	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0.97
7 ALX	1.01	1.36	0.99	0.77	1.37	2.16	0.99	2.16	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	1.24
8 FFX	1.09	1.37	2.06	0.75	1.15	1.48	2.26	1.34	0.08	1.09	0	0	0	0	0	0	0	0	0	0	0	0	0	1.24
9 LDN	0.36	0.30	4.96	0.29	0.53	0.71	0.68	32.13	1.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.61
10 PW	1.14	0.57	1.16	0.12	1.05	0.89	3.43	8.81	0	3.16	0	0	0	0	0	0	0	0	0	0	0	0	0	1.76
11 FRD	0.16	1.14	3.24	0.17	0.94	0.83	0.75	0	0	0	0.42	0	0	0	0	0	0	0	0	0	0	0	0	0.85
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	2.28	13.32	0	8.92	5.77	12.56	2.67	0.51	0	0	0	0	0	0	0.54	0	0	0	0	0	0	0	0	2.73
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	2.15	11.96	1.87	4.47	26.22	11.32	6.00	2.95	0	0	0	0	0	0	0	0	0.30	0	0	0	0	0	0	2.63
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0.10	0.14	0.13	0.25	0.31	0.22	0.56	1.85	0	0.15	0	0	0	0	0	0	0	0	0.10	0	0.29	0	0	0.28
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.98	1.17	1.03	0.99	1.27	1.26	1.34	1.75	0.48	2.13	0.38	0	0	0	0.36	0	0.15	0	0.05	0	0.02	0	0	1.08

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08 Purpose: HBW Table: Ratio (Est-to-Obs) Auto Person

ORIGIN	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	1.08	1.14	0.67	0.80	2.75	1.44	0.88	0.89	0.43	0.46	0	0	0	0	0	0	0.36	0.38	0	0	0	0	0	1.03
2 DC NC	0.98	0.85	1.13	1.21	1.83	1.34	0.81	0.88	0.36	0.16	0.27	0	0	0	0.37	0.02	0.32	0.06	0.05	0.07	0.02	0	0	0.99
3 MTG	1.13	0.83	1.07	0.85	1.41	1.04	0.57	0.78	0.34	0.10	1.16	0	0	0	0.05	0	0.05	0.04	0	18.18	0.01	0	0	1.01
4 PG	0.90	1.33	0.82	1.03	1.27	1.01	0.68	0.58	0.10	0.06	0.16	0	0	0	1.01	0.78	0.95	0.02	0	0	0.02	1.60	0	0.98
5 ARLCR	1.22	1.24	0.48	0.68	0.86	0.84	0.62	0.54	0.22	0.28	0	0	0	0	0	0	0	0	0.06	0	0	0	0	0.80
6 ARNCR	0.99	0.93	0.80	0.53	1.17	1.12	1.13	1.13	0.55	0.25	0.29	0	0	0	0	0	0.06	0.21	0.08	0	0.08	0	0	1.03
7 ALX	0.77	0.73	0.52	0.55	1.01	1.19	0.85	1.23	0.31	0.36	0.17	0	0	0	0.15	0.01	0.11	0.34	0.20	0	0.23	0.17	0	0.92
8 FFX	0.91	0.93	0.74	0.44	0.82	0.90	0.92	1.02	1.24	1.00	0.44	0	0	0	0.08	0.01	0.11	1.12	0.44	0.65	0.47	0.08	0	0.97
9 LDN	0.29	0.57	0.76	0.15	0.71	0.76	0.60	1.13	1.08	0.83	4.48	0	0	0	0	0	0	1.11	0.08	8.88	0.02	0	0	1.05
10 PW	0.55	0.23	0.31	0.17	0.31	0.52	0.71	1.05	0.72	1.08	0.41	0	0	0	0	0	0.02	2.79	1.66	0.87	2.99	4.15	0	0.95
11 FRD	0.16	0.53	0.79	0.38	0.62	0.22	0.11	0.46	2.24	0.11	1.15	0	0	0	0	0	0	0.32	0	5.93	0	0	0	1.02
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0.42	1.19	0.30	0.72	0.38	0.33	0.28	0.16	0	0	0	0	0	0	1.10	1.96	1.06	0	0	0	0.40	6.94	0	0.98
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0.45	1.19	0.29	1.03	0.33	0.43	0.42	0.24	0.00	0.03	0	0	0	0	1.75	0.91	1.12	0	0.37	0	0.92	4.53	0	0.93
18 FAU	0.01	0.03	0.09	0.03	0.02	0.09	0.11	0.88	0.95	1.24	0.90	0	0	0	0	0	0	1.16	2.90	4.08	5.08	2.54	0	1.03
19 STA	0.09	0.12	0.10	0.08	0.16	0.27	0.51	0.71	0.11	0.97	0	0	0	0	0	0.17	2.62	8.48	1.35	0	1.64	0.63	0	1.02
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.90	0.99	0.98	0.95	0.93	0.95	0.82	1.00	1.04	1.03	1.16	0	0	0	1.10	1.39	1.04	1.34	1.32	5.44	1.66	1.52	0	0.99

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Ratio (Est-to-Obs) Auto Pax

ORIGIN \ DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	0.93	1.05	0.94	0.90	3.80	1.49	2.59	1.50	2.57	0.54	0	0	0	0	0	0	0	0	0	0	0	0	0	1.10
2 DC NC	0.81	0.52	1.45	1.15	1.86	1.73	1.06	1.25	1.93	0.33	0.54	0	0	0	0	0	0.71	0.14	0.17	0	0.13	0	0	0.86
3 MTG	1.33	1.05	1.41	1.25	2.56	1.97	1.07	1.99	1.58	0.14	1.62	0	0	0	0.07	0	0.05	0	0	0	0.13	0	0	1.38
4 PG	0.79	1.21	1.00	0.88	1.47	1.11	0.89	0.85	0.13	0.08	0.18	0	0	0	1.02	0.68	1.18	0.04	0	0	0.40	4.33	0	0.92
5 ARLCR	1.01	1.00	0.66	0	0.33	0.92	0.62	1.19	0.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.84
6 ARNCR	0.94	1.31	1.58	0.65	1.25	1.24	1.46	1.86	1.31	0.19	0.18	0	0	0	0	0	0.13	0.14	0.43	0	0.27	0	0	1.22
7 ALX	0.93	0.90	1.24	0.73	1.15	1.59	0.72	1.93	0.96	0.30	0	0	0	0	0	0.08	0	0.18	1.00	0	0.17	0	0	1.12
8 FFX	1.07	1.31	1.99	0.67	1.00	1.34	1.50	1.60	1.66	1.31	0.54	0	0	0	0	0	0.12	1.72	1.15	0.58	0.71	0.29	0	1.36
9 LDN	0.82	2.27	2.30	0.49	2.81	2.64	3.14	3.73	1.46	3.18	26.70	0	0	0	0	0	0	0.88	0	15.27	0	0	0	2.32
10 PW	0.87	0.40	0.81	0.25	0.41	0.80	1.26	1.86	1.02	0.89	1.17	0	0	0	0	0	-0.17	4.66	1.62	1.22	4.62	3.00	0	1.08
11 FRD	0.21	1.37	1.08	0.70	0.90	0.25	0.60	1.48	5.26	0.09	1.11	0	0	0	0	0	0	0.50	0	13.26	0	0	0	1.11
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0.43	1.31	0.74	1.21	0.34	0.39	0.31	0.32	0	0	0	0	0	0	0.75	2.36	1.47	0	0	0	0	7.25	0	0.98
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0.40	1.55	0.47	1.67	0.38	0.47	0.70	0.43	0	0.12	0	0	0	0	1.72	1.28	0.86	0	0.32	0	8.50	12.42	0	0.93
18 FAU	0.04	0.13	0.39	0.13	0.02	0.23	0.42	1.42	1.84	2.19	0	0	0	0	0	0	0	0.93	3.88	2.88	17.00	0	0	1.29
19 STA	0.14	0.16	0.33	0.32	0.22	0.41	0.96	1.41	0.23	1.45	0	0	0	0	0	0	2.50	32.17	0.90	0	3.15	0.90	0	0.94
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.91	0.96	1.33	0.96	0.96	1.21	1.16	1.72	1.48	0.97	1.18	0	0	0	0.80	1.49	0.88	1.35	1.03	6.44	3.04	2.79	0	1.17

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Ratio (Est-to-Obs) Person

ORIGIN \ DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	1.01	1.04	0.65	0.83	1.56	1.11	0.93	1.06	0.43	0.52	0	0	0	0	0	0	0.36	0.38	0	0	0	0	0	0.99
2 DC NC	0.98	0.90	1.08	1.17	1.64	1.23	0.80	0.93	0.28	0.13	0.27	0	0	0	0.23	0.02	0.24	0.05	0.03	0.07	0.02	0	0	0.99
3 MTG	0.98	0.87	1.06	0.86	1.38	1.02	0.58	0.83	0.34	0.09	1.15	0	0	0	0.05	0	0.05	0.04	0	18.18	0.01	0	0	1.00
4 PG	1.01	1.40	0.83	1.02	1.25	1.10	0.71	0.60	0.10	0.05	0.16	0	0	0	1.00	0.74	0.93	0.01	0	0	0.02	1.60	0	1.02
5 ARLCR	0.83	0.69	0.60	0.68	0.75	0.99	0.63	0.61	0.22	0.28	0	0	0	0	0	0	0	0	0.06	0	0	0	0	0.76
6 ARNCR	0.88	0.94	0.85	0.51	1.26	1.09	1.21	1.24	0.53	0.25	0.29	0	0	0	0	0	0.05	0.21	0.07	0	0.04	0	0	1.01
7 ALX	0.87	0.83	0.59	0.57	1.11	1.39	0.87	1.30	0.31	0.35	0.17	0	0	0	0.15	0.01	0.11	0.34	0.16	0	0.18	0.17	0	0.99
8 FFX	0.98	0.98	0.80	0.45	0.89	1.00	0.99	1.03	1.23	1.00	0.44	0	0	0	0.08	0.01	0.11	1.12	0.44	0.65	0.42	0.08	0	1.00
9 LDN	0.30	0.54	0.79	0.15	0.68	0.75	0.60	1.17	1.09	0.83	4.42	0	0	0	0	0	0	1.11	0.07	8.88	0.02	0	0	1.06
10 PW	0.69	0.26	0.34	0.17	0.38	0.57	0.83	1.10	0.72	1.10	0.41	0	0	0	0	0	0.02	2.79	1.66	0.87	2.93	4.15	0	0.99
11 FRD	0.16	0.57	0.82	0.38	0.66	0.24	0.13	0.46	2.23	0.11	1.14	0	0	0	0	0	0	0.32	0	5.93	0	0	0	1.01
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0.75	1.44	0.35	0.73	0.58	0.50	0.33	0.17	0	0	0	0	0	0	1.10	1.96	1.06	0	0	0	0.40	6.94	0	1.01
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0.77	1.42	0.36	1.04	0.52	0.63	0.47	0.26	0.00	0.03	0	0	0	0	1.75	0.90	1.11	0	0.37	0	0.92	4.53	0	0.99
18 FAU	0.01	0.03	0.09	0.03	0.02	0.08	0.10	0.88	0.95	1.23	0.90	0	0	0	0	0	0	1.15	2.90	4.08	5.08	2.54	0	1.02
19 STA	0.09	0.12	0.10	0.08	0.18	0.26	0.52	0.72	0.11	0.96	0	0	0	0	0	0.17	2.62	8.48	1.35	0	1.63	0.63	0	0.99
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.94	1.03	0.99	0.95	1.02	1.01	0.88	1.02	1.04	1.04	1.15	0	0	0	1.10	1.37	1.03	1.33	1.31	5.44	1.62	1.51	0	1.00

Appendix C Year 2000 mode choice, Comparison of estimated and observed (2000 CTPP)

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Ratio (Est-to-Obs) Pct Transit

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	0.98	0.93	0.98	1.08	0.81	0.88	1.05	1.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.98
2 DC NC	1.00	1.08	0.94	0.91	0.89	0.90	0.98	1.21	0	0.21	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00
3 MTG	0.85	1.20	0.95	1.14	0.94	0.96	1.13	3.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.93
4 PG	1.19	1.33	1.12	0.97	0.97	1.27	1.35	1.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.19
5 ARLCR	0.86	0.59	1.65	0.98	0.73	1.26	1.03	1.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.95
6 ARNCR	0.90	1.02	1.26	0.78	1.15	0.87	1.35	1.89	0.04	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0.96
7 ALX	1.16	1.64	1.68	1.36	1.23	1.55	1.14	1.66	0	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	1.25
8 FFX	1.12	1.39	2.58	1.66	1.29	1.49	2.28	1.30	0.07	1.09	0	0	0	0	0	0	0	0	0	0	0	0	0	1.24
9 LDN	1.18	0.56	6.26	1.85	0.77	0.94	1.14	27.47	1.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.52
10 PW	1.65	2.21	3.44	0.74	2.74	1.56	4.14	8.02	0	2.86	0	0	0	0	0	0	0	0	0	0	0	0	0	1.78
11 FRD	1.01	2.01	3.94	0.44	1.44	3.50	6.00	0	0	0	0.37	0	0	0	0	0	0	0	0	0	0	0	0	0.83
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	3.04	9.28	0	12.30	9.91	24.91	8.17	3.04	0	0	0	0	0	0	0.49	0	0	0	0	0	0	0	0	2.69
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	2.80	8.40	5.19	4.28	50.08	17.91	12.71	11.34	0	0	0	0	0	0	0	0	0.27	0	0	0	0	0	0	2.67
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	1.14	1.20	1.26	3.02	1.78	0.83	1.09	2.57	0	0.15	0	0	0	0	0	0	0	0	0.07	0	0.17	0	0	0.29
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.05	1.14	1.04	1.05	1.24	1.25	1.53	1.72	0.46	2.04	0.33	0	0	0	0.33	0	0.14	0	0.04	0	0.01	0	0	1.07

Yr 2000 Est/Obs Mode Choice Anaylsis - Version2.2_Jan08   Purpose: HBW   Table: Ratio (Est-to-Obs) Car Occupancy

ORIGIN | DESTINATION	DC CR	DC NCR	MTG	PG	ARL CR	ARL NCR	ALX	FFX	LDN	PW	FRD	CAR	HOW	AAR	CAL	STM	CHS	FAU	STA	CL/JF	SP/FB	KGEO	EXTL	TOTAL
1 DC CR	0.97	0.99	1.05	1.02	1.04	1.01	1.11	1.07	1.37	1.06	0	0	0	0	0	0	1.25	1.67	0	0	0	0	0	1.01
2 DC NC	0.96	0.94	1.03	0.99	1.00	1.04	1.03	1.05	1.26	1.08	1.11	0	0	0	1.27	0.57	1.15	1.29	1.70	1.00	1.82	0	0	0.98
3 MTG	1.03	1.02	1.03	1.04	1.07	1.08	1.07	1.09	1.14	1.09	1.04	0	0	0	1.03	0	1.00	1.00	0	1.20	1.91	0	0	1.03
4 PG	0.98	0.99	1.02	0.99	1.02	1.02	1.03	1.05	1.05	1.05	1.02	0	0	0	1.00	0.98	1.02	0	0	0	1.96	1.17	0	0.99
5 ARLCR	0.97	0.97	1.04	1.12	0.92	1.01	1.00	1.07	1.24	1.00	0	0	0	0	0	0	0	0	1.00	0	0	0	0	1.01
6 ARNCR	0.99	1.04	1.07	1.03	1.01	1.01	1.03	1.05	1.12	0.95	0.78	0	0	0	0	0	1.11	0.94	1.41	0	1.92	0	0	1.02
7 ALX	1.04	1.03	1.11	1.03	1.02	1.04	0.98	1.04	1.14	0.97	1.00	0	0	0	1.00	0	1.30	0.84	1.17	0	0.98	1.00	0	1.02
8 FFX	1.05	1.06	1.10	1.06	1.04	1.07	1.05	1.04	1.03	1.03	1.04	0	0	0	0.84	0.78	1.01	1.04	1.10	0.97	1.06	1.72	0	1.04
9 LDN	1.47	1.29	1.16	1.21	1.42	1.38	1.33	1.12	1.02	1.11	1.10	0	0	0	0	0	0	0.96	1.25	1.05	0.88	0	0	1.08
10 PW	1.44	1.30	1.27	1.15	1.21	1.24	1.13	1.07	1.04	0.98	1.22	0	0	0	0	0	0.63	1.05	1.00	1.07	1.05	0.92	0	1.02
11 FRD	1.10	1.14	1.04	1.10	1.12	1.05	1.52	1.24	1.10	0.96	1.00	0	0	0	0	0	0	1.37	0	1.08	0	0	0	1.01
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	1.01	1.02	1.14	1.06	0.97	1.04	1.02	1.11	0	0	0	0	0	0	0.97	1.02	1.04	0	0	0	2.00	1.01	0	1.00
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0.97	1.03	1.09	1.05	1.03	1.02	1.06	1.07	0.89	1.37	0	0	0	0	1.00	1.04	0.98	0	0.95	0	1.24	1.11	0	1.00
18 FAU	1.59	2.13	1.22	1.53	0.97	1.33	1.27	1.07	1.07	1.05	1.20	0	0	0	0	0	0	0.99	1.03	0.93	1.10	1.14	0	1.02
19 STA	1.64	1.26	1.88	1.47	1.33	1.34	1.23	1.14	1.11	1.04	0	0	0	0	0	1.40	0.98	1.10	0.97	0	1.05	1.04	0	0.99
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.00	1.00	1.03	1.00	1.01	1.04	1.04	1.05	1.03	1.00	1.00	0	0	0	0.98	1.01	0.99	1.00	0.98	1.03	1.05	1.08	0	1.02

Appendix D. Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Ref: i6_mc_consummary2030with2010constr.tab

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: LOV Auto Driver

DESTINATION

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
1 DC CR	4540	3311	773	918	422	803	365	1195	45	3	0	0	62	104	0	0	1	1	0	0	0	0	1647	14190
2 DC NC	45619	35116	14601	16004	3853	6897	2694	8008	199	28	23	0	885	1333	5	0	29	0	0	0	0	0	10229	145522
3 MTG	38401	24199	363021	38195	2851	5122	1318	16653	512	16	5499	109	12642	4287	0	0	1	0	0	24	0	0	32188	545038
4 PG	53264	72444	30974	230626	4609	9239	8308	12296	89	49	34	7	11260	29764	686	245	4320	0	0	0	0	43	24434	492691
5 ARLCR	735	250	126	47	1063	553	171	589	27	2	0	0	1	2	0	0	0	0	0	0	0	0	119	3685
6 ARNCR	12722	5763	2979	1015	5986	27642	6473	26357	842	94	6	0	15	16	0	0	1	1	0	0	2	0	1904	91818
7 ALX	7511	3630	999	1769	3071	9374	21004	22899	248	181	0	0	5	13	0	0	13	0	6	0	2	0	1043	71768
8 FFX	32815	18057	9653	6073	11702	31047	34536	449307	48191	12907	37	0	57	33	4	0	44	186	218	7	118	1	9118	664112
9 LDN	204	234	2630	51	183	552	222	73665	172515	3905	5851	11	86	1	0	0	0	757	6	2592	4	0	6492	269960
10 PW	4025	824	143	317	1536	3371	4918	84840	18689	152016	2	0	0	0	0	0	0	5028	4949	49	1947	17	4271	286942
11 FRD	54	137	20733	918	11	13	1	116	1233	1	148427	3300	10821	631	0	0	0	1	0	1080	0	0	16803	204281
12 CAR	0	17	3634	803	0	0	0	0	8	0	17331	77526	15673	992	0	0	0	0	0	25	0	0	21561	137570
13 HOW	993	1746	14852	14952	67	103	27	222	7	0	2184	321	91636	24417	0	0	0	0	0	9	0	0	37068	188604
14 AAR	2521	4628	2194	33146	164	306	142	204	1	0	7	3	9809	229755	694	20	75	0	0	0	0	0	45371	329040
15 CAL	470	1359	111	10117	39	82	87	108	0	0	0	0	22	4086	30711	9288	1477	0	0	0	0	43	214	58213
16 STM	79	222	17	2327	11	22	41	58	0	0	0	0	1	75	4026	63339	5667	0	2	0	5	957	138	76987
17 CHS	3031	7146	208	31736	205	434	1390	1412	2	1	0	0	7	522	2614	4372	57952	0	4	0	13	2012	408	113470
18 FAU	0	0	0	0	1	1	3	1347	2889	15482	5	0	0	0	0	0	0	42265	6790	314	1979	14	2799	73889
19 STA	179	95	10	32	240	465	623	6743	59	14725	0	0	0	0	0	2	7	884	56712	0	27830	1281	4556	114444
20 CL/JF	0	10	573	6	0	0	0	397	8014	49	4413	13	147	0	0	0	0	202	0	43962	0	0	10945	68731
21 SP/FB	6	3	1	2	11	19	35	527	4	2065	0	0	0	0	0	1	0	88	10692	0	93953	639	14313	122359
22 KGEO	0	0	0	15	0	0	0	2	0	67	0	0	0	0	6	59	253	4	770	0	1525	17125	578	20404
23 EXTL	5574	6254	23834	33543	972	1887	1229	10627	12351	14129	52479	33700	45398	93925	1421	486	1983	15976	5822	26778	22080	2060	0	412508
TOTAL	212742	185446	492066	422611	36996	97932	83587	717573	265926	215720	236298	114990	198527	389956	40167	77812	71823	65393	85971	74840	149458	24192	246199	4506226

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: LOV Auto Person

DESTINATION

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
1 DC CR	5329	3863	926	1104	522	965	433	1414	66	4	1	0	81	139	1	0	2	1	0	0	0	0	1892	16743
2 DC NC	54076	38880	16965	18523	4558	8172	3121	9139	247	34	27	0	1112	1693	5	1	38	0	0	0	0	0	11760	168350
3 MTG	45098	27035	401271	42436	3275	5788	1488	18184	548	17	6157	118	14167	4828	0	0	1	0	0	29	0	0	36999	607440
4 PG	62490	81250	35300	251091	5237	10470	9149	13463	108	49	42	8	12568	33217	779	278	4759	0	0	0	0	50	28074	548381
5 ARLCR	876	284	147	53	1117	643	195	679	34	2	0	0	3	2	0	0	0	0	0	0	0	0	138	4173
6 ARNCR	14068	6353	3353	1122	6864	31376	7284	29660	1009	107	7	0	17	18	0	0	2	2	0	0	2	0	2187	103432
7 ALX	8222	3983	1132	1942	3410	10506	23102	25356	263	206	0	0	8	16	1	0	14	0	6	0	3	0	1202	79373
8 FFX	36234	19877	10676	6608	12978	34376	37916	490324	53095	14275	37	0	58	46	2	0	49	213	246	8	138	2	10474	727633
9 LDN	229	260	2899	59	208	615	255	83065	187153	4336	6486	15	103	1	0	0	0	841	8	2877	4	0	7455	296868
10 PW	4552	955	178	349	1731	3854	5499	92242	20622	164203	2	0	1	0	0	0	0	5552	5549	61	2236	18	4919	312523
11 FRD	60	154	22671	1041	12	17	0	132	1405	1	156925	3698	12499	746	0	0	0	1	0	1217	0	0	19313	219893
12 CAR	0	20	4110	934	0	0	0	0	11	0	19626	80883	17730	1148	0	0	0	0	0	31	0	0	24781	149274
13 HOW	1236	2015	16830	16661	75	122	30	248	9	0	2481	358	97349	26906	0	0	0	0	0	11	0	0	42606	206937
14 AAR	2855	5130	2474	36401	188	352	163	230	0	0	10	3	10882	246095	775	22	87	0	0	0	0	0	52151	357817
15 CAL	573	1567	123	11372	45	95	98	121	0	0	0	0	24	4629	32520	10330	1683	0	0	0	0	54	247	63480
16 STM	101	267	22	2678	12	26	51	65	0	0	0	0	2	90	4518	67821	6352	0	2	0	6	1121	158	83293
17 CHS	3670	8230	245	35511	235	495	1536	1552	4	1	0	0	8	607	2939	4925	61565	0	9	0	15	2330	470	124346
18 FAU	0	0	0	1	0	1	3	1480	3206	16964	6	0	0	0	0	0	0	44361	7560	357	2239	16	3217	79411
19 STA	204	111	14	37	274	539	715	7446	69	16154	0	0	0	0	0	2	9	990	60050	0	30436	1435	5236	123721
20 CL/JF	0	15	645	8	0	0	0	524	9233	54	4992	16	186	0	0	0	0	232	0	46157	0	0	12581	74643
21 SP/FB	7	5	0	2	11	27	38	591	4	2325	0	0	0	0	0	1	0	101	11866	0	98531	735	16453	130697
22 KGEO	0	0	0	17	0	0	0	2	0	79	0	0	0	0	9	70	298	4	867	0	1720	17911	664	21641
23 EXTL	6404	7191	27391	38559	1119	2167	1415	12218	14194	16238	60321	38736	52180	107960	1632	559	2279	18364	6695	30778	25378	2369	0	474147
TOTAL	246285	207444	547372	466509	41873	110605	92491	788134	291280	235049	257120	123835	218978	428141	43181	84009	77138	70662	92858	81526	160708	26041	282977	4974216

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	22510	7926	2514	1319	2049	2848	836	2332	31	2	0	0	24	9	0	0	0	0	0	0	0	0	0	42400
2 DC NC	97577	34856	13950	6924	5365	5928	1577	3700	46	2	1	0	65	19	0	0	0	0	0	0	0	0	0	170010
3 MTG	53380	11523	62133	5685	2782	2690	466	3336	32	0	96	0	387	19	0	0	0	0	0	0	0	0	0	142529
4 PG	61306	27632	10528	25690	4533	5238	1681	1888	11	0	3	0	383	123	0	0	1	0	0	0	0	0	0	139017
5 ARLCR	2980	339	177	34	463	865	144	608	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5618
6 ARNCR	25622	2897	1340	227	6858	8616	3219	11502	119	3	0	0	1	0	0	0	0	0	0	0	0	0	0	60404
7 ALX	15408	1983	580	221	3363	7708	7606	6459	23	14	0	0	0	0	0	0	0	0	0	0	0	0	0	43364
8 FFX	43619	5330	2495	341	8336	16617	10194	27176	1911	199	0	0	0	0	0	0	0	0	0	0	1	0	0	116218
9 LDN	349	63	226	8	208	363	51	10846	12214	1	0	0	0	0	0	0	0	0	0	0	0	0	0	24328
10 PW	12973	661	83	28	1641	2575	2421	10520	32	9008	0	0	0	0	0	0	0	0	1	0	6	0	0	39949
11 FRD	110	77	4066	50	13	7	1	12	2	0	4265	0	16	0	0	0	0	0	0	0	0	0	0	8618
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	1220	468	1975	957	65	56	7	29	0	0	1	0	899	11	0	0	0	0	0	0	0	0	0	5687
14 AAR	4263	1613	514	1910	203	197	48	50	0	0	1	0	72	54	6	0	0	0	0	0	0	0	0	8931
15 CAL	1802	1158	104	1213	112	127	56	36	0	0	0	0	0	1	114	0	1	0	0	0	0	0	0	4723
16 STM	341	141	26	155	37	37	14	16	0	0	0	0	0	0	3	12	108	0	0	0	0	0	0	890
17 CHS	6199	2809	196	1231	355	386	266	154	0	0	0	0	0	0	2	0	1548	0	0	0	0	0	0	13145
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	907	112	12	4	406	486	406	1339	1	331	0	0	0	0	0	0	0	0	9	0	266	0	0	4279
20 CL/JF	1	4	89	1	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
21 SP/FB	46	8	1	0	23	39	35	179	0	95	0	0	0	0	0	0	0	0	25	0	1193	0	0	1643
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	350613	99599	101009	45996	36811	54783	29028	80181	14433	9655	4367	0	1847	236	125	12	1658	0	35	0	1466	0	0	831855

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
2 DC NC	0	0	22	0	0	15	119	662	41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	863
3 MTG	2022	653	8136	452	560	912	183	2861	160	2	0	0	5	6	0	0	0	0	0	0	0	0	0	15951
4 PG	1949	623	595	793	738	1511	1938	2581	42	13	1	1	3	1	0	0	0	0	0	0	0	0	0	10789
5 ARLCR	6	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
6 ARNCR	2066	417	216	79	293	422	34	233	26	3	0	0	2	3	0	0	0	0	0	0	0	0	0	3794
7 ALX	1900	442	233	143	449	575	97	1165	93	3	0	0	1	4	1	0	0	0	0	0	0	0	0	5107
8 FFX	22384	5164	3365	757	5269	8822	3333	17794	918	35	4	0	13	8	0	0	4	2	3	1	0	0	0	67874
9 LDN	520	244	916	51	412	657	221	8362	9	65	6	0	1	0	0	0	0	0	0	0	0	0	0	11464
10 PW	13397	1617	507	211	3119	5385	3358	19694	814	537	0	0	1	0	0	0	0	2	3	0	1	0	0	48645
11 FRD	170	221	6146	307	48	68	7	254	42	0	171	0	10	7	0	0	0	0	0	0	0	0	0	7451
12 CAR	0	2	258	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	265
13 HOW	13	11	142	0	11	16	5	55	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257
14 AAR	1027	852	346	2048	55	95	97	102	2	0	0	0	7	5	0	0	0	0	0	0	0	0	0	4636
15 CAL	39	31	29	161	18	33	48	50	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	411
16 STM	12	6	4	9	10	14	19	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97
17 CHS	229	26	52	38	95	190	384	352	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1370
18 FAU	0	0	0	0	2	7	8	588	171	769	0	0	0	0	0	0	0	0	0	0	0	0	0	1545
19 STA	1290	423	89	49	1019	1646	1019	4073	26	392	0	0	0	0	0	0	0	0	0	0	0	0	0	10026
20 CL/JF	1	34	514	10	0	1	0	62	0	7	46	0	0	0	0	0	0	0	0	0	0	0	0	675
21 SP/FB	60	23	1	3	67	118	87	422	4	109	0	0	0	0	0	0	0	0	0	0	0	0	0	894
22 KGEO	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	47087	10790	21572	5115	12164	20486	10958	59359	2355	1941	228	1	45	34	1	0	4	4	6	1	1	0	0	192152

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: HOV AUTO Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2 DC NC	0	0	1	0	0	9	31	191	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	245
3 MTG	552	192	2361	134	156	261	52	829	32	0	0	0	1	2	0	0	0	0	0	0	0	0	0	4573
4 PG	539	174	177	233	215	424	572	743	18	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3098
5 ARLCR	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6 ARNCR	591	124	59	25	86	121	9	66	7	1	0	0	0	2	0	0	0	0	0	0	0	0	0	1091
7 ALX	545	128	70	38	134	167	27	342	21	3	0	0	1	3	0	0	0	0	0	0	0	0	0	1479
8 FFX	6250	1491	965	220	1500	2540	963	5122	257	16	2	0	2	5	0	0	0	0	1	0	0	0	0	19335
9 LDN	130	64	254	12	107	175	59	2254	3	20	2	0	0	0	0	0	0	0	0	0	0	0	0	3081
10 PW	3718	468	142	66	885	1540	967	5685	239	158	0	0	0	0	0	0	0	0	0	0	1	0	0	13869
11 FRD	48	60	1775	88	14	18	3	69	12	0	50	0	3	1	0	0	0	0	0	0	0	0	0	2142
12 CAR	0	0	73	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75
13 HOW	3	4	38	0	4	6	2	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71
14 AAR	287	244	102	588	18	27	29	27	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1323
15 CAL	10	8	10	48	2	9	15	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115
16 STM	2	2	2	3	2	3	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
17 CHS	64	6	17	10	28	54	109	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	387
18 FAU	0	0	0	0	1	1	2	170	48	223	0	0	0	0	0	0	0	0	0	0	0	0	0	445
19 STA	351	120	26	15	282	464	287	1160	6	115	0	0	0	0	0	0	0	0	0	0	0	0	0	2827
20 CL/JF	0	9	146	2	0	0	0	18	0	3	14	0	0	0	0	0	0	0	0	0	0	0	0	192
21 SP/FB	16	6	0	1	19	32	24	119	1	33	0	0	0	0	0	0	0	0	0	0	0	0	0	252
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	13109	3101	6218	1485	3454	5851	3158	16926	655	577	68	0	11	13	0	0	0	0	1	0	1	0	0	54628

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Auto Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4540	3311	773	918	422	803	365	1197	45	3	0	0	62	104	0	0	1	1	0	0	0	0	1647	14192
2 DC NC	45619	35116	14602	16004	3853	6906	2725	8199	209	31	23	0	885	1333	5	0	29	0	0	0	0	0	10229	145767
3 MTG	38953	24391	365382	38329	3008	5383	1370	17482	544	16	5499	109	12643	4289	0	0	1	0	0	24	0	0	32188	549611
4 PG	53803	72618	31151	230859	4823	9662	8880	13039	108	51	34	7	11262	29764	686	245	4320	0	0	0	0	43	24434	495789
5 ARLCR	737	250	126	47	1063	553	171	589	27	2	0	0	1	2	0	0	0	0	0	0	0	0	119	3687
6 ARNCR	13313	5887	3038	1039	6072	27763	6482	26423	849	95	6	0	15	18	0	0	1	1	0	0	2	0	1904	92909
7 ALX	8056	3758	1069	1807	3206	9541	21031	23241	269	184	0	0	6	16	0	0	13	0	6	0	2	0	1043	73247
8 FFX	39065	19548	10619	6293	13203	33587	35499	454429	48448	12923	39	0	59	38	4	0	44	186	219	7	118	1	9118	683447
9 LDN	334	298	2884	63	290	727	281	75919	172518	3925	5853	11	86	1	0	0	0	757	6	2592	4	0	6492	273041
10 PW	7743	1292	285	382	2421	4911	5885	90525	18928	152174	2	0	0	0	0	0	0	5028	4949	49	1948	17	4271	300810
11 FRD	101	197	22508	1006	25	32	4	186	1245	1	148477	3300	10824	632	0	0	0	1	0	1080	0	0	16803	206422
12 CAR	0	17	3707	805	0	0	0	0	8	0	17331	77526	15673	992	0	0	0	0	0	25	0	0	21561	137645
13 HOW	996	1750	14890	14952	71	109	29	235	8	0	2184	321	91636	24417	0	0	0	0	0	9	0	0	37068	188675
14 AAR	2808	4872	2296	33734	182	333	170	231	1	0	7	3	9811	229755	694	20	75	0	0	0	0	0	45371	330363
15 CAL	480	1367	121	10165	41	91	102	120	0	0	0	0	22	4086	30711	9288	1477	0	0	0	0	43	214	58328
16 STM	82	224	19	2330	13	26	47	63	0	0	0	0	1	75	4026	63339	5667	0	2	0	5	957	138	77013
17 CHS	3095	7152	225	31746	233	488	1499	1512	2	1	0	0	7	522	2614	4372	57952	0	4	0	13	2012	408	113857
18 FAU	0	0	0	0	2	2	5	1517	2937	15705	5	0	0	0	0	0	0	42265	6790	314	1979	14	2799	74334
19 STA	531	215	36	47	522	929	910	7903	65	14840	0	0	0	0	0	2	7	884	56712	0	27830	1281	4556	117271
20 CL/JF	0	20	718	8	0	0	0	415	8014	52	4427	13	147	0	0	0	0	202	0	43962	0	0	10945	68923
21 SP/FB	22	9	1	3	30	51	59	646	5	2098	0	0	0	0	0	1	0	88	10692	0	93953	639	14313	122611
22 KGEO	0	0	0	15	0	0	0	2	0	67	0	0	0	0	6	59	253	4	770	0	1525	17125	578	20404
23 EXTL	5574	6254	23834	33543	972	1887	1229	10627	12351	14129	52479	33700	45398	93925	1421	486	1983	15976	5822	26778	22080	2060	0	412508
TOTAL	225852	188547	498284	424096	40450	103784	86744	734499	266582	216297	236366	114990	198538	389969	40167	77812	71823	65393	85972	74840	149459	24192	246199	4560854

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	5329	3863	926	1104	522	965	433	1438	66	4	1	0	81	139	1	0	2	1	0	0	0	0	1892	16767
2 DC NC	54076	38880	16987	18523	4558	8187	3239	9801	288	38	27	0	1112	1693	5	1	38	0	0	0	0	0	11760	169213
3 MTG	47120	27688	409407	42888	3835	6701	1671	21045	708	19	6157	118	14172	4834	0	0	1	0	0	29	0	0	36999	623391
4 PG	64439	81873	35895	251884	5975	11981	11087	16044	150	62	43	9	12571	33218	779	278	4759	0	0	0	0	50	28074	559171
5 ARLCR	882	286	147	53	1117	643	195	680	34	2	0	0	3	2	0	0	0	0	0	0	0	0	138	4182
6 ARNCR	16134	6770	3570	1201	7157	31798	7318	29893	1035	110	7	0	19	21	0	0	2	2	0	0	2	0	2187	107226
7 ALX	10123	4425	1365	2085	3860	11081	23199	26521	356	209	0	0	9	20	2	0	14	0	6	0	3	0	1202	84479
8 FFX	58617	25041	14041	7365	18247	43198	41249	508118	54013	14310	41	0	71	54	2	0	53	215	249	9	138	2	10474	795507
9 LDN	749	504	3815	110	620	1272	476	91427	187162	4401	6492	15	104	1	0	0	0	841	8	2877	4	0	7455	308333
10 PW	17949	2572	685	560	4849	9239	8857	111936	21436	164740	2	0	2	0	0	0	0	5554	5552	61	2237	18	4919	361169
11 FRD	231	375	28817	1348	60	85	7	385	1447	1	157096	3698	12509	753	0	0	0	1	0	1217	0	0	19313	227343
12 CAR	0	22	4368	939	0	0	0	0	11	0	19626	80883	17730	1148	0	0	0	0	0	31	0	0	24781	149539
13 HOW	1250	2026	16972	16661	86	138	35	303	12	0	2481	358	97349	26906	0	0	0	0	0	11	0	0	42606	207195
14 AAR	3882	5982	2820	38449	243	447	260	332	2	0	10	3	10889	246100	775	22	87	0	0	0	0	0	52151	362453
15 CAL	612	1598	152	11533	64	128	146	170	0	0	0	0	26	4629	32520	10330	1683	0	0	0	0	54	247	63892
16 STM	113	273	26	2687	22	40	71	88	0	0	0	0	2	90	4518	67821	6352	0	2	0	6	1121	158	83390
17 CHS	3899	8256	297	35549	330	684	1920	1904	8	1	0	0	8	607	2939	4925	61565	0	9	0	15	2330	470	125717
18 FAU	0	0	0	1	2	8	11	2068	3377	17733	6	0	0	0	0	0	0	44361	7560	357	2239	16	3217	80956
19 STA	1495	534	103	85	1293	2185	1734	11519	95	16546	0	0	0	0	0	2	9	990	60050	0	30436	1435	5236	133747
20 CL/JF	1	48	1159	18	0	1	0	586	9233	61	5038	16	186	0	0	0	0	232	0	46157	0	0	12581	75318
21 SP/FB	67	28	1	5	78	145	125	1013	8	2434	0	0	0	0	0	1	0	101	11866	0	98531	735	16453	131591
22 KGEO	0	0	0	17	0	0	0	3	0	81	0	0	0	0	9	70	298	4	867	0	1720	17911	664	21644
23 EXTL	6404	7191	27391	38559	1119	2167	1415	12218	14194	16238	60321	38736	52180	107960	1632	559	2279	18364	6695	30778	25378	2369	0	474147
TOTAL	293372	218234	568943	471624	54037	131092	103449	847492	293635	236990	257348	123836	219023	428175	43182	84009	77142	70666	92864	81527	160709	26041	282977	5166368

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Total Motorized Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	27839	11789	3440	2423	2571	3813	1269	3770	97	6	1	0	105	148	1	0	2	1	0	0	0	0	1892	59167
2 DC NC	151653	73736	30937	25447	9922	14115	4817	13501	334	40	28	0	1177	1712	5	1	38	0	0	0	0	0	11760	339224
3 MTG	100500	39211	471540	48573	6616	9391	2137	24381	740	19	6253	118	14559	4853	0	0	1	0	0	29	0	0	36999	765920
4 PG	125745	109505	46423	277574	10508	17219	12768	17931	161	62	46	9	12954	33341	779	278	4760	0	0	0	0	50	28074	698188
5 ARLCR	3862	625	324	87	1580	1508	339	1288	42	2	0	0	3	2	0	0	0	0	0	0	0	0	138	9800
6 ARNCR	41756	9667	4910	1428	14015	40414	10537	41395	1154	113	7	0	20	21	0	0	2	2	0	0	2	0	2187	167630
7 ALX	25531	6408	1944	2305	7222	18789	30805	32980	379	223	0	0	9	20	2	0	14	0	6	0	3	0	1202	127843
8 FFX	102236	30371	16536	7705	26583	59815	51443	535294	55924	14509	41	0	71	54	2	0	53	215	249	9	139	2	10474	911725
9 LDN	1097	567	4041	117	828	1635	527	102273	199376	4402	6492	15	104	1	0	0	0	841	8	2877	4	0	7455	332661
10 PW	30922	3232	768	588	6491	11814	11278	122456	21468	173748	2	0	2	0	0	0	0	5554	5553	61	2243	18	4919	401118
11 FRD	341	452	32883	1398	73	92	8	397	1449	1	161361	3698	12525	753	0	0	0	1	0	1217	0	0	19313	235962
12 CAR	0	22	4368	939	0	0	0	0	11	0	19626	80883	17730	1148	0	0	0	0	0	31	0	0	24781	149539
13 HOW	2470	2494	18947	17618	151	194	42	332	12	0	2482	358	98248	26917	0	0	0	0	0	11	0	0	42606	212882
14 AAR	8145	7595	3334	40359	446	644	308	382	2	0	11	3	10961	246154	781	22	87	0	0	0	0	0	52151	371385
15 CAL	2414	2756	256	12746	175	255	202	206	0	0	0	0	26	4630	32634	10330	1684	0	0	0	0	54	247	68615
16 STM	454	414	52	2842	59	77	85	104	0	0	0	0	2	90	4521	67833	6460	0	2	0	6	1121	158	84280
17 CHS	10098	11065	493	36780	685	1070	2186	2058	8	1	0	0	8	607	2941	4925	63113	0	9	0	15	2330	470	138861
18 FAU	0	0	0	1	2	8	11	2068	3377	17733	6	0	0	0	0	0	0	44361	7560	357	2239	16	3217	80956
19 STA	2401	646	115	89	1699	2671	2140	12858	96	16877	0	0	0	0	0	2	9	990	60059	0	30702	1435	5236	138026
20 CL/JF	2	52	1248	19	0	1	0	587	9237	61	5038	16	186	0	0	0	0	232	0	46157	0	0	12581	75417
21 SP/FB	113	35	2	5	101	184	160	1192	8	2529	0	0	0	0	0	1	0	101	11891	0	99724	735	16453	133234
22 KGEO	0	0	0	17	0	0	0	3	0	81	0	0	0	0	9	70	298	4	867	0	1720	17911	664	21644
23 EXTL	6404	7191	27391	38559	1119	2167	1415	12218	14194	16238	60321	38736	52180	107960	1632	559	2279	18364	6695	30778	25378	2369	0	474147
TOTAL	643985	317834	669952	517620	90848	185875	132477	927674	308069	246645	261715	123836	220870	428411	43307	84021	78800	70666	92899	81527	162175	26041	282977	5998222

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Transit Percentage

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	80.9	67.2	73.1	54.4	79.7	74.7	65.9	61.9	32.0	33.3	0	0	22.9	6.1	0	0	0	0	0	0	0	0	0	71.7
2 DC NC	64.3	47.3	45.1	27.2	54.1	42.0	32.7	27.4	13.7	6.2	3.6	0	5.5	1.1	0	0	0	0	0	0	0	0	0	50.1
3 MTG	53.1	29.4	13.2	11.7	42.0	28.6	21.8	13.7	4.4	0	1.5	0	2.7	0.4	0	0	0	0	0	0	0	0	0	18.6
4 PG	48.8	25.2	22.7	9.3	43.1	30.4	13.2	10.5	6.7	0	6.5	0	3.0	0.4	0	0	0.0	0	0	0	0	0	0	19.9
5 ARLCR	77.2	54.2	54.6	39.1	29.3	57.4	42.5	47.2	19.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57.3
6 ARNCR	61.4	30.0	27.3	15.9	48.9	21.3	30.5	27.8	10.3	2.7	0	0	3.8	0	0	0	0	0	0	0	0	0	0	36.0
7 ALX	60.4	30.9	29.8	9.6	46.6	41.0	24.7	19.6	6.1	6.3	0	0	0	0	0	0	0	0	0	0	0	0	0	33.9
8 FFX	42.7	17.5	15.1	4.4	31.4	27.8	19.8	5.1	3.4	1.4	0	0	0	0	0	0	0	0	0	0	0.7	0	0	12.7
9 LDN	31.8	11.1	5.6	6.4	25.1	22.2	9.7	10.6	6.1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.3
10 PW	42.0	20.4	10.8	4.7	25.3	21.8	21.5	8.6	0.1	5.2	0	0	0	0	0	0	0	0	0.0	0	0.3	0	0	10.0
11 FRD	32.3	17.0	12.4	3.6	18.2	7.2	10.4	2.9	0.1	0	2.6	0	0.1	0	0	0	0	0	0	0	0	0	0	3.7
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	49.4	18.8	10.4	5.4	42.9	28.7	15.8	8.8	0	0	0.0	0	0.9	0.0	0	0	0	0	0	0	0	0	0	2.7
14 AAR	52.3	21.2	15.4	4.7	45.5	30.6	15.7	13.0	0	0	9.1	0	0.7	0.0	0.8	0	0	0	0	0	0	0	0	2.4
15 CAL	74.6	42.0	40.6	9.5	63.7	49.9	27.6	17.3	0	0	0	0	0	0.0	0.3	0	0.1	0	0	0	0	0	0	6.9
16 STM	75.1	34.1	50.0	5.5	63.0	48.6	16.6	15.2	0	0	0	0	0	0	0.1	0.0	1.7	0	0	0	0	0	0	1.1
17 CHS	61.4	25.4	39.8	3.3	51.8	36.0	12.1	7.5	0	0	0	0	0	0	0.1	0	2.5	0	0	0	0	0	0	9.5
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	37.8	17.4	10.4	4.2	23.9	18.2	19.0	10.4	1.0	2.0	0	0	0	0	0	0	0	0	0.0	0	0.9	0	0	3.1
20 CL/JF	47.5	7.2	7.1	3.9	0	0	0	0.2	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
21 SP/FB	40.3	21.4	37.5	0	22.6	21.2	21.9	15.0	0	3.8	0	0	0	0	0	0	0	0	0.2	0	1.2	0	0	1.2
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	54.4	31.3	15.1	8.9	40.5	29.5	21.9	8.6	4.7	3.9	1.7	0	0.8	0.1	0.3	0.0	2.1	0	0.0	0	0.9	0	0	13.9

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Avg. Auto Occupancy

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.17	1.17	1.20	1.20	1.24	1.20	1.19	1.20	1.47	1.33	1.00	0	1.31	1.34	1.00	0	2.00	1.00	0	0	0	0	1.15	1.18
2 DC NC	1.19	1.11	1.16	1.16	1.18	1.19	1.19	1.20	1.38	1.20	1.17	0	1.26	1.27	1.00	1.00	1.31	0	0	0	0	0	1.15	1.16
3 MTG	1.21	1.14	1.12	1.12	1.27	1.24	1.22	1.20	1.30	1.19	1.12	1.08	1.12	1.13	0	0	1.00	0	0	1.21	0	0	1.15	1.13
4 PG	1.20	1.13	1.15	1.09	1.24	1.24	1.25	1.23	1.40	1.22	1.26	1.29	1.12	1.12	1.14	1.13	1.10	0	0	0	0	1.16	1.15	1.13
5 ARLCR	1.20	1.14	1.17	1.13	1.05	1.16	1.14	1.15	1.26	1.00	0	0	3.00	1.00	0	0	0	0	0	0	0	0	1.16	1.13
6 ARNCR	1.21	1.15	1.17	1.16	1.18	1.15	1.13	1.13	1.22	1.16	1.17	0	1.26	1.17	0	0	2.00	2.00	0	0	1.00	0	1.15	1.15
7 ALX	1.26	1.18	1.28	1.15	1.20	1.16	1.10	1.14	1.32	1.14	0	0	1.50	1.25	2.00	0	1.08	0	1.00	0	1.50	0	1.15	1.15
8 FFX	1.50	1.28	1.32	1.17	1.38	1.29	1.16	1.12	1.11	1.11	1.05	0	1.20	1.42	0.50	0	1.20	1.16	1.14	1.29	1.17	2.00	1.15	1.16
9 LDN	2.24	1.69	1.32	1.74	2.14	1.75	1.69	1.20	1.08	1.12	1.11	1.36	1.21	1.00	0	0	0	1.11	1.33	1.11	1.00	0	1.15	1.13
10 PW	2.32	1.99	2.41	1.47	2.00	1.88	1.51	1.24	1.13	1.08	1.00	0	2.00	0	0	0	0	1.10	1.12	1.24	1.15	1.06	1.15	1.20
11 FRD	2.28	1.90	1.28	1.34	2.37	2.71	1.77	2.07	1.16	1.00	1.06	1.12	1.16	1.19	0	0	0	1.00	0	1.13	0	0	1.15	1.10
12 CAR	0	1.29	1.18	1.17	0	0	0	0	1.38	0	1.13	1.04	1.13	1.16	0	0	0	0	0	1.24	0	0	1.15	1.09
13 HOW	1.25	1.16	1.14	1.11	1.22	1.27	1.22	1.29	1.50	0	1.14	1.12	1.06	1.10	0	0	0	0	0	1.22	0	0	1.15	1.10
14 AAR	1.38	1.23	1.23	1.14	1.34	1.34	1.52	1.44	2.00	0	1.43	1.00	1.11	1.07	1.12	1.10	1.16	0	0	0	0	0	1.15	1.10
15 CAL	1.28	1.17	1.26	1.13	1.55	1.40	1.43	1.41	0	0	0	0	1.18	1.13	1.06	1.11	1.14	0	0	0	0	1.26	1.15	1.10
16 STM	1.39	1.22	1.37	1.15	1.69	1.53	1.50	1.40	0	0	0	0	2.00	1.20	1.12	1.07	1.12	0	1.00	0	1.20	1.17	1.14	1.08
17 CHS	1.26	1.15	1.32	1.12	1.42	1.40	1.28	1.26	4.00	1.00	0	0	1.14	1.16	1.12	1.13	1.06	0	2.25	0	1.15	1.16	1.15	1.10
18 FAU	0	0	0	1.00	1.00	4.00	2.20	1.36	1.15	1.13	1.20	0	0	0	0	0	0	1.05	1.11	1.14	1.13	1.14	1.15	1.09
19 STA	2.81	2.48	2.83	1.82	2.48	2.35	1.91	1.46	1.46	1.11	0	0	0	0	0	1.00	1.29	1.12	1.06	0	1.09	1.12	1.15	1.14
20 CL/JF	21.00	2.47	1.61	2.22	0	1.00	0	1.41	1.15	1.17	1.14	1.23	1.27	0	0	0	0	1.15	0	1.05	0	0	1.15	1.09
21 SP/FB	3.02	2.99	1.17	1.67	2.57	2.84	2.12	1.57	1.60	1.16	0	0	0	0	0	1.00	0	1.15	1.11	0	1.05	1.15	1.15	1.07
22 KGEO	0	0	0	1.13	0	0	0	1.50	0	1.21	0	0	0	0	1.50	1.19	1.18	1.00	1.13	0	1.13	1.05	1.15	1.06
23 EXTL	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0	1.15
TOTAL	1.30	1.16	1.14	1.11	1.34	1.26	1.19	1.15	1.10	1.10	1.09	1.08	1.10	1.10	1.08	1.08	1.07	1.08	1.08	1.09	1.08	1.08	1.15	1.13

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: LOV Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4806	3543	395	1528	396	5977	439	403	34	47	24	2	25	149	12	75	47	11	115	24	434	0	9	18495
2 DC NC	6204	79778	16158	31513	1144	18444	1746	1482	156	123	65	10	125	675	46	321	217	41	615	104	1454	1	83	160505
3 MTG	394	11604	488286	46577	149	2904	264	2690	565	386	1095	31	3310	2446	73	225	265	83	841	182	2625	0	982	565978
4 PG	333	4966	7364	351779	52	1038	2432	1774	173	213	114	9	1661	14901	346	630	12721	51	882	88	2441	2	914	404885
5 ARLCR	52	58	20	20	2196	4267	150	246	3	2	4	1	1	7	0	5	3	1	7	1	24	0	2	7070
6 ARNCR	182	216	104	172	1204	87021	3940	7519	22	36	8	0	5	53	4	25	12	6	41	5	156	0	42	100774
7 ALX	136	178	78	1263	506	19948	55786	12593	39	96	11	0	14	101	8	60	34	4	135	16	315	0	43	91364
8 FFX	155	421	3219	5692	737	44815	16592	558263	30338	22507	441	30	302	2630	236	1251	902	269	2993	684	9152	5	301	701935
9 LDN	22	70	1220	1214	20	986	182	7180	159671	1203	1238	36	194	1670	40	34	224	228	2074	4078	4389	2	1156	187133
10 PW	15	38	612	683	15	564	148	5521	1408	238260	158	4	99	938	69	153	193	5139	6703	296	4076	3	276	265371
11 FRD	48	133	4757	2141	35	1579	329	1396	1196	401	114722	866	672	1509	31	0	97	108	287	967	151	0	6330	137755
12 CAR	50	136	1297	2338	29	1321	263	1152	921	92	857	52257	1506	1417	25	1	83	3	10	123	0	0	22793	86674
13 HOW	8	13	2617	9569	7	210	39	165	64	71	625	262	82974	11751	38	48	53	15	189	107	114	0	10516	119455
14 AAR	27	74	540	10050	19	653	137	600	203	162	92	5	2354	230178	728	215	170	11	251	41	513	2	9737	256762
15 CAL	9	22	174	964	1	211	47	195	60	65	16	1	46	429	37575	2194	98	5	219	0	490	0	16	42837
16 STM	27	56	200	1065	14	532	98	457	62	90	0	0	74	351	338	47221	889	1	910	0	983	0	13	53381
17 CHS	17	46	184	3738	9	296	64	302	181	94	6	1	51	241	1082	1012	80117	19	539	0	714	2	31	88746
18 FAU	13	30	306	494	9	319	73	351	453	1873	54	2	42	51	1	2	60	40079	6524	69	2371	1	1215	54392
19 STA	0	1	13	11	0	9	2	10	3	1258	0	0	0	7	0	7	5	12	72289	0	21728	0	165	95520
20 CL/JF	12	42	326	560	4	324	60	485	1294	190	78	4	117	384	0	0	2	58	610	36750	274	0	13758	55332
21 SP/FB	0	1	1	3	0	6	1	9	9	3	0	0	0	0	0	1	3	0	1159	0	78761	0	1218	81175
22 KGEO	18	42	57	665	10	413	116	370	27	199	0	0	12	245	41	122	186	47	1848	0	2995	4215	513	12141
23 EXTL	15	112	864	1897	8	212	86	608	289	631	4641	10118	7818	24951	45	55	104	2902	832	2792	10305	469	0	69754
TOTAL	12545	101580	528792	473937	6565	192050	82994	603771	197171	268002	124249	63639	101402	295084	40738	53657	96485	49093	100073	46327	144465	4702	70113	3657434

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: LOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	5429	4433	490	1991	466	7224	557	520	56	61	38	2	30	216	17	127	77	17	176	38	671	1	17	22654
2 DC NC	7943	94883	20431	43057	1431	23175	2289	1997	251	191	105	16	191	986	78	542	337	62	987	170	2344	2	131	201599
3 MTG	501	14728	586402	62255	193	3805	357	3604	862	573	1523	45	4558	3472	129	374	413	140	1386	297	4271	0	1589	691478
4 PG	433	6568	9769	432580	61	1396	3188	2420	307	308	208	18	2246	20551	503	1004	17446	96	1443	155	4071	3	1492	506266
5 ARLCR	64	72	25	28	2250	5068	185	309	4	3	4	1	2	10	0	7	3	1	8	2	36	0	5	8087
6 ARNCR	225	283	130	239	1458	98228	5004	9636	28	53	14	0	6	71	8	36	23	6	64	8	235	0	70	115825
7 ALX	182	231	99	1663	641	24898	63008	16135	56	134	21	2	20	144	11	95	53	6	196	31	477	0	64	108168
8 FFX	201	585	4439	7914	937	57988	21469	672438	40699	30436	691	52	476	4183	408	2144	1476	392	4662	1123	14383	10	489	867594
9 LDN	30	107	1858	2016	28	1475	278	9781	187267	1722	1762	61	326	2889	80	62	386	335	3468	5754	7353	2	1896	228936
10 PW	16	50	930	1069	23	765	210	7517	1950	285145	269	8	156	1578	114	266	321	7079	9465	496	6203	5	451	324086
11 FRD	73	206	6672	3470	51	2379	515	2190	1866	675	130379	1204	998	2472	61	0	170	182	507	1388	269	0	10382	166109
12 CAR	79	211	1939	3727	47	2053	433	1878	1544	159	1230	56129	2146	2243	48	1	144	8	15	205	0	0	37365	111604
13 HOW	10	19	3605	12875	7	297	64	241	111	117	887	364	93385	15999	64	84	89	28	336	179	196	0	17240	146197
14 AAR	37	113	807	13821	22	938	206	943	358	271	153	12	3221	260621	1012	360	274	23	432	78	892	2	15958	300555
15 CAL	13	35	271	1414	5	309	68	309	110	106	30	2	70	638	42716	3046	149	9	388	0	868	0	27	50583
16 STM	42	90	329	1732	22	816	150	745	105	151	0	0	127	591	479	53029	1248	1	1564	0	1655	2	24	62902
17 CHS	20	70	290	5251	13	415	91	458	317	154	9	1	87	382	1498	1406	90295	30	907	1	1188	3	55	102941
18 FAU	19	47	489	831	11	472	114	532	654	2642	89	3	72	90	4	3	109	44279	9284	110	3585	2	1990	65431
19 STA	0	1	19	16	0	15	3	14	6	1716	1	0	1	14	1	9	9	16	81581	0	29295	0	274	112991
20 CL/JF	20	70	518	974	9	526	101	794	1868	311	114	8	196	680	0	0	5	92	1064	39837	469	0	22554	70210
21 SP/FB	0	1	1	7	0	8	2	16	12	4	0	0	0	0	0	2	5	2	1581	0	85740	0	1998	89379
22 KGEO	29	68	98	1122	16	649	184	616	47	322	0	0	23	431	64	198	283	77	2699	0	4302	4427	840	16495
23 EXTL	25	183	1420	3096	12	350	143	991	478	1037	7617	16582	12822	40905	73	90	171	4756	1361	4576	16895	771	0	114354
TOTAL	15392	123055	641031	601149	7704	233249	98618	734084	238956	326291	145144	74510	121159	359166	47368	62885	113486	57637	123574	54448	185399	5230	114911	4484445

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	962	1060	155	375	196	2593	151	105	3	4	1	0	0	1	0	0	3	0	0	0	9	0	0	5618
2 DC NC	2098	8287	3716	4989	385	5163	353	231	9	3	0	0	3	1	1	0	2	0	0	0	12	0	0	25253
3 MTG	49	1012	18356	1274	30	344	25	114	7	5	0	0	9	1	0	0	0	0	0	0	11	0	0	21236
4 PG	40	400	457	5399	8	100	93	28	2	2	0	0	9	22	0	0	1	0	0	0	5	0	0	6565
5 ARLCR	12	7	5	2	56	747	22	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	874
6 ARNCR	10	17	4	2	68	4448	230	352	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5132
7 ALX	7	10	7	14	31	1859	1732	512	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4173
8 FFX	0	19	189	54	57	5052	924	8418	561	149	0	0	4	2	0	0	1	0	0	0	1	0	0	15432
9 LDN	0	1	50	12	4	119	6	106	1241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1539
10 PW	0	0	12	1	1	42	0	23	0	2024	0	0	0	0	0	0	0	0	0	0	2	0	0	2105
11 FRD	1	1	3	2	0	15	3	2	0	0	78	0	0	0	0	0	0	0	0	0	0	0	0	105
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	1	5	24	1	9	0	3	0	0	0	0	23	2	0	0	0	0	0	0	0	0	0	68
14 AAR	0	1	6	6	2	19	1	6	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	44
15 CAL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	267	0	0	0	0	0	0	267
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	19
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3179	10815	22966	12153	839	20510	3540	9922	1824	2188	79	0	50	30	1	1	276	0	0	0	60	0	0	88433

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: HOV AUTO Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	4806	3543	395	1528	396	5977	439	403	34	47	24	2	25	149	12	75	47	11	115	24	434	0	9	18495
2 DC NC	6204	79778	16158	31513	1144	18444	1746	1482	156	123	65	10	125	675	46	321	217	41	615	104	1454	1	83	160505
3 MTG	394	11604	488286	46577	149	2904	264	2690	565	386	1095	31	3310	2446	73	225	265	83	841	182	2625	0	982	565978
4 PG	333	4966	7364	351779	52	1038	2432	1774	173	213	114	9	1661	14901	346	630	12721	51	882	88	2441	2	914	404885
5 ARLCR	52	58	20	20	2196	4267	150	246	3	2	4	1	1	7	0	5	3	1	7	1	24	0	2	7070
6 ARNCR	182	216	104	172	1204	87021	3940	7519	22	36	8	0	5	53	4	25	12	6	41	5	156	0	42	100774
7 ALX	136	178	78	1263	506	19948	55786	12593	39	96	11	0	14	101	8	60	34	4	135	16	315	0	43	91364
8 FFX	155	421	3219	5692	737	44815	16592	558263	30338	22507	441	30	302	2630	236	1251	902	269	2993	684	9152	5	301	701935
9 LDN	22	70	1220	1214	20	986	182	7180	159671	1203	1238	36	194	1670	40	34	224	228	2074	4078	4389	2	1156	187133
10 PW	15	38	612	683	15	564	148	5521	1408	238260	158	4	99	938	69	153	193	5139	6703	296	4076	3	276	265371
11 FRD	48	133	4757	2141	35	1579	329	1396	1196	401	114722	866	672	1509	31	0	97	108	287	967	151	0	6330	137755
12 CAR	50	136	1297	2338	29	1321	263	1152	921	92	857	52257	1506	1417	25	1	83	3	10	123	0	0	22793	86674
13 HOW	8	13	2617	9569	7	210	39	165	64	71	625	262	82974	11751	38	48	53	15	189	107	114	0	10516	119455
14 AAR	27	74	540	10050	19	653	137	600	203	162	92	5	2354	230178	728	215	170	11	251	41	513	2	9737	256762
15 CAL	9	22	174	964	1	211	47	195	60	65	16	1	46	429	37575	2194	98	5	219	0	490	0	16	42837
16 STM	27	56	200	1065	14	532	98	457	62	90	0	0	74	351	338	47221	889	1	910	0	983	0	13	53381
17 CHS	17	46	184	3738	9	296	64	302	181	94	6	1	51	241	1082	1012	80117	19	539	0	714	2	31	88746
18 FAU	13	30	306	494	9	319	73	351	453	1873	54	2	42	51	1	2	60	40079	6524	69	2371	1	1215	54392
19 STA	0	1	13	11	0	9	2	10	3	1258	0	0	0	7	0	7	5	12	72289	0	21728	0	165	95520
20 CL/JF	12	42	326	560	4	324	60	485	1294	190	78	4	117	384	0	0	2	58	610	36750	274	0	13758	55332
21 SP/FB	0	1	1	3	0	6	1	9	9	3	0	0	0	0	0	1	3	0	1159	0	78761	0	1218	81175
22 KGEO	18	42	57	665	10	413	116	370	27	199	0	0	12	245	41	122	186	47	1848	0	2995	4215	513	12141
23 EXTL	15	112	864	1897	8	212	86	608	289	631	4641	10118	7818	24951	45	55	104	2902	832	2792	10305	469	0	69754
TOTAL	12545	101580	528792	473937	6565	192050	82994	603771	197171	268002	124249	63639	101402	295084	40738	53657	96485	49093	100073	46327	144465	4702	70113	3657434

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: Auto Person

DESTINATION

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
1 DC CR	5429	4433	490	1991	466	7224	557	520	56	61	38	2	30	216	17	127	77	17	176	38	671	1	17	22654
2 DC NC	7943	94883	20431	43057	1431	23175	2289	1997	251	191	105	16	191	986	78	542	337	62	987	170	2344	2	131	201599
3 MTG	501	14728	586402	62255	193	3805	357	3604	862	573	1523	45	4558	3472	129	374	413	140	1386	297	4271	0	1589	691478
4 PG	433	6568	9769	432580	61	1396	3188	2420	307	308	208	18	2246	20551	503	1004	17446	96	1443	155	4071	3	1492	506266
5 ARLCR	64	72	25	28	2250	5068	185	309	4	3	4	1	2	10	0	7	3	1	8	2	36	0	5	8087
6 ARNCR	225	283	130	239	1458	98228	5004	9636	28	53	14	0	6	71	8	36	23	6	64	8	235	0	70	115825
7 ALX	182	231	99	1663	641	24898	63008	16135	56	134	21	2	20	144	11	95	53	6	196	31	477	0	64	108168
8 FFX	201	585	4439	7914	937	57988	21469	672438	40699	30436	691	52	476	4183	408	2144	1476	392	4662	1123	14383	10	489	867594
9 LDN	30	107	1858	2016	28	1475	278	9781	187267	1722	1762	61	326	2889	80	62	386	335	3468	5754	7353	2	1896	228936
10 PW	16	50	930	1069	23	765	210	7517	1950	285145	269	8	156	1578	114	266	321	7079	9465	496	6203	5	451	324086
11 FRD	73	206	6672	3470	51	2379	515	2190	1866	675	130379	1204	998	2472	61	0	170	182	507	1388	269	0	10382	166109
12 CAR	79	211	1939	3727	47	2053	433	1878	1544	159	1230	56129	2146	2243	48	1	144	8	15	205	0	0	37365	111604
13 HOW	10	19	3605	12875	7	297	64	241	111	117	887	364	93385	15999	64	84	89	28	336	179	196	0	17240	146197
14 AAR	37	113	807	13821	22	938	206	943	358	271	153	12	3221	260621	1012	360	274	23	432	78	892	2	15958	300555
15 CAL	13	35	271	1414	5	309	68	309	110	106	30	2	70	638	42716	3046	149	9	388	0	868	0	27	50583
16 STM	42	90	329	1732	22	816	150	745	105	151	0	0	127	591	479	53029	1248	1	1564	0	1655	2	24	62902
17 CHS	20	70	290	5251	13	415	91	458	317	154	9	1	87	382	1498	1406	90295	30	907	1	1188	3	55	102941
18 FAU	19	47	489	831	11	472	114	532	654	2642	89	3	72	90	4	3	109	44279	9284	110	3585	2	1990	65431
19 STA	0	1	19	16	0	15	3	14	6	1716	1	0	1	14	1	9	9	16	81581	0	29295	0	274	112991
20 CL/JF	20	70	518	974	9	526	101	794	1868	311	114	8	196	680	0	0	5	92	1064	39837	469	0	22554	70210
21 SP/FB	0	1	1	7	0	8	2	16	12	4	0	0	0	0	0	2	5	2	1581	0	85740	0	1998	89379
22 KGEO	29	68	98	1122	16	649	184	616	47	322	0	0	23	431	64	198	283	77	2699	0	4302	4427	840	16495
23 EXTL	25	183	1420	3096	12	350	143	991	478	1037	7617	16582	12822	40905	73	90	171	4756	1361	4576	16895	771	0	114354
TOTAL	15392	123055	641031	601149	7704	233249	98618	734084	238956	326291	145144	74510	121159	359166	47368	62885	113486	57637	123574	54448	185399	5230	114911	4484445

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: Total Motorized Person

DESTINATION

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
1 DC CR	6391	5493	645	2366	662	9817	708	625	59	65	39	2	30	217	17	127	80	17	176	38	680	1	17	28272
2 DC NC	10042	103170	24147	48046	1817	28338	2642	2227	260	194	105	16	194	987	79	542	339	62	987	170	2356	2	131	226853
3 MTG	550	15740	604758	63529	223	4149	381	3718	869	578	1523	45	4567	3473	129	374	413	140	1386	297	4282	0	1589	712714
4 PG	473	6968	10226	437979	69	1496	3281	2447	309	310	208	18	2255	20573	503	1004	17447	96	1443	155	4076	3	1492	512831
5 ARLCR	76	79	30	30	2306	5815	207	332	4	3	4	1	2	10	0	7	3	1	8	2	36	0	5	8961
6 ARNCR	235	300	134	241	1526	102676	5234	9988	28	53	14	0	6	71	8	36	23	6	64	8	236	0	70	120957
7 ALX	189	241	106	1677	672	26757	64740	16647	57	135	21	2	20	144	11	95	53	6	196	31	477	0	64	112341
8 FFX	201	604	4628	7968	994	63040	22393	680856	41260	30585	691	52	480	4185	408	2144	1477	392	4662	1123	14384	10	489	883026
9 LDN	30	108	1908	2028	32	1594	284	9887	188508	1722	1762	61	326	2889	80	62	386	335	3468	5754	7353	2	1896	230475
10 PW	16	50	942	1070	24	807	210	7540	1950	287169	269	8	156	1578	114	266	321	7079	9465	496	6205	5	451	326191
11 FRD	74	207	6675	3472	51	2394	518	2192	1866	675	130457	1204	998	2472	61	0	170	182	507	1388	269	0	10382	166214
12 CAR	79	211	1939	3727	47	2053	433	1878	1544	159	1230	56129	2146	2243	48	1	144	8	15	205	0	0	37365	111604
13 HOW	10	20	3610	12899	8	306	64	244	111	117	887	364	93408	16001	64	84	89	28	336	179	196	0	17240	146265
14 AAR	37	114	813	13827	24	957	207	949	358	271	153	12	3223	260622	1012	360	274	23	432	78	892	2	15958	300598
15 CAL	13	35	272	1414	5	309	68	309	110	106	30	2	70	638	42716	3046	149	9	388	0	868	0	27	50584
16 STM	42	90	329	1732	22	816	150	745	105	151	0	0	127	591	479	53030	1250	1	1564	0	1655	2	24	62905
17 CHS	20	70	290	5251	13	415	91	458	317	154	9	1	87	382	1498	1406	90562	30	907	1	1188	3	55	103208
18 FAU	19	47	489	831	11	472	114	532	654	2642	89	3	72	90	4	3	109	44279	9284	110	3585	2	1990	65431
19 STA	0	1	19	16	0	15	3	14	6	1716	1	0	1	14	1	9	9	16	81581	0	29314	0	274	113010
20 CL/JF	20	70	518	974	9	526	101	794	1868	311	114	8	196	680	0	0	5	92	1064	39837	469	0	22554	70210
21 SP/FB	0	1	1	7	0	8	2	16	12	4	0	0	0	0	0	2	5	2	1581	0	85740	0	1998	89379
22 KGEO	29	68	98	1122	16	649	184	616	47	322	0	0	23	431	64	198	283	77	2699	0	4302	4427	840	16495
23 EXTL	25	183	1420	3096	12	350	143	991	478	1037	7617	16582	12822	40905	73	90	171	4756	1361	4576	16895	771	0	114354
TOTAL	18571	133870	663997	613302	8543	253759	102158	744006	240780	328479	145223	74510	121209	359196	47369	62886	113762	57637	123574	54448	185458	5230	114911	4572878

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: Transit Percentage

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	15.1	19.3	24.0	15.8	29.6	26.4	21.3	16.8	5.1	6.2	2.6	0	0	0.5	0	0	3.8	0	0	0	1.3	0	0	19.9
2 DC NC	20.9	8.0	15.4	10.4	21.2	18.2	13.4	10.4	3.4	1.5	0	0	1.5	0.1	1.3	0	0.6	0	0	0	0.5	0	0	11.1
3 MTG	8.8	6.4	3.0	2.0	13.3	8.3	6.5	3.1	0.8	0.9	0	0	0.2	0.0	0	0	0	0	0	0	0.3	0	0	3.0
4 PG	8.4	5.7	4.5	1.2	11.5	6.7	2.8	1.1	0.6	0.6	0	0	0.4	0.1	0	0	0.0	0	0	0	0.1	0	0	1.3
5 ARLCR	15.8	8.9	16.7	6.7	2.4	12.8	10.6	6.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.8
6 ARNCR	4.2	5.6	3.0	0.7	4.5	4.3	4.4	3.5	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	4.2
7 ALX	3.5	4.0	6.8	0.8	4.5	6.9	2.7	3.1	1.8	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	3.7
8 FFX	0.2	3.2	4.1	0.7	5.8	8.0	4.1	1.2	1.4	0.5	0	0	0.8	0.0	0	0	0.1	0	0	0	0.0	0	0	1.7
9 LDN	1.6	0.7	2.6	0.6	11.8	7.5	2.1	1.1	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7
10 PW	0	0	1.3	0.1	5.9	5.2	0	0.3	0	0.7	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.6
11 FRD	1.3	0.5	0.0	0.1	0	0.6	0.6	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	5.0	0.1	0.2	12.4	2.9	0	1.2	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0	0.9	0.7	0.0	8.3	2.0	0.5	0.6	0	0	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0	0	0	0	0	0	0.0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.3
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	17.1	8.1	3.5	2.0	9.8	8.1	3.5	1.3	0.8	0.7	0.1	0	0.0	0.0	0.0	0.0	0.2	0	0	0	0.0	0	0	1.9

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBS MODE: Avg. Auto Occupancy

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.13	1.25	1.24	1.30	1.18	1.21	1.27	1.29	1.65	1.30	1.58	1.00	1.20	1.45	1.42	1.69	1.64	1.55	1.53	1.58	1.55	1.00	1.89	1.22
2 DC NC	1.28	1.19	1.26	1.37	1.25	1.26	1.31	1.35	1.61	1.55	1.62	1.60	1.53	1.46	1.70	1.69	1.55	1.51	1.60	1.63	1.61	2.00	1.58	1.26
3 MTG	1.27	1.27	1.20	1.34	1.30	1.31	1.35	1.34	1.53	1.48	1.39	1.45	1.38	1.42	1.77	1.66	1.56	1.69	1.65	1.63	1.63	0	1.62	1.22
4 PG	1.30	1.32	1.33	1.23	1.17	1.34	1.31	1.36	1.77	1.45	1.82	2.00	1.35	1.38	1.45	1.59	1.37	1.88	1.64	1.76	1.67	1.50	1.63	1.25
5 ARLCR	1.23	1.24	1.25	1.40	1.02	1.19	1.23	1.26	1.33	1.50	1.00	1.00	2.00	1.43	0	1.40	1.00	1.00	1.14	2.00	1.50	0	2.50	1.14
6 ARNCR	1.23	1.31	1.25	1.39	1.21	1.13	1.27	1.28	1.27	1.47	1.75	0	1.20	1.34	2.00	1.44	1.92	1.00	1.56	1.60	1.51	0	1.67	1.15
7 ALX	1.34	1.30	1.27	1.32	1.27	1.25	1.13	1.28	1.44	1.40	1.91	2.00	1.43	1.43	1.38	1.58	1.56	1.50	1.45	1.94	1.51	0	1.49	1.18
8 FFX	1.29	1.39	1.38	1.39	1.27	1.29	1.29	1.20	1.34	1.35	1.57	1.73	1.58	1.59	1.73	1.71	1.64	1.46	1.56	1.64	1.57	2.00	1.62	1.24
9 LDN	1.32	1.53	1.52	1.66	1.38	1.50	1.53	1.36	1.17	1.43	1.42	1.69	1.68	1.73	2.00	1.82	1.72	1.47	1.67	1.41	1.68	1.00	1.64	1.22
10 PW	1.07	1.32	1.52	1.57	1.48	1.36	1.42	1.36	1.38	1.20	1.70	2.00	1.58	1.68	1.65	1.74	1.66	1.38	1.41	1.68	1.52	1.67	1.63	1.22
11 FRD	1.52	1.55	1.40	1.62	1.46	1.51	1.57	1.57	1.56	1.68	1.14	1.39	1.49	1.64	1.97	0	1.75	1.69	1.77	1.44	1.78	0	1.64	1.21
12 CAR	1.58	1.55	1.49	1.59	1.62	1.55	1.65	1.63	1.68	1.73	1.44	1.07	1.42	1.58	1.92	1.00	1.73	2.67	1.50	1.67	0	0	1.64	1.29
13 HOW	1.25	1.46	1.38	1.35	1.00	1.41	1.64	1.46	1.73	1.65	1.42	1.39	1.13	1.36	1.68	1.75	1.68	1.87	1.78	1.67	1.72	0	1.64	1.22
14 AAR	1.37	1.53	1.49	1.38	1.16	1.44	1.50	1.57	1.76	1.67	1.66	2.40	1.37	1.13	1.39	1.67	1.61	2.09	1.72	1.90	1.74	1.00	1.64	1.17
15 CAL	1.44	1.59	1.56	1.47	5.00	1.46	1.45	1.58	1.83	1.63	1.88	2.00	1.52	1.49	1.14	1.39	1.52	1.80	1.77	0	1.77	0	1.69	1.18
16 STM	1.56	1.61	1.65	1.63	1.57	1.53	1.53	1.63	1.69	1.68	0	0	1.72	1.68	1.42	1.12	1.40	1.00	1.72	0	1.68	2.00	1.85	1.18
17 CHS	1.18	1.52	1.58	1.40	1.44	1.40	1.42	1.52	1.75	1.64	1.50	1.00	1.71	1.59	1.38	1.39	1.13	1.58	1.68	1.00	1.66	1.50	1.77	1.16
18 FAU	1.46	1.57	1.60	1.68	1.22	1.48	1.56	1.52	1.44	1.41	1.65	1.50	1.71	1.76	4.00	1.50	1.82	1.10	1.42	1.59	1.51	2.00	1.64	1.20
19 STA	0	1.00	1.46	1.45	0	1.67	1.50	1.40	2.00	1.36	1.00	0	1.00	2.00	1.00	1.29	1.80	1.33	1.13	0	1.35	0	1.66	1.18
20 CL/JF	1.67	1.67	1.59	1.74	2.25	1.62	1.68	1.64	1.44	1.64	1.46	2.00	1.68	1.77	0	0	2.50	1.59	1.74	1.08	1.71	0	1.64	1.27
21 SP/FB	0	1.00	1.00	2.33	0	1.33	2.00	1.78	1.33	1.33	0	0	0	0	0	2.00	1.67	2.00	1.36	0	1.09	0	1.64	1.10
22 KGEO	1.61	1.62	1.72	1.69	1.60	1.57	1.59	1.66	1.74	1.62	0	0	1.92	1.76	1.56	1.62	1.52	1.64	1.46	0	1.44	1.05	1.64	1.36
23 EXTL	1.67	1.63	1.64	1.63	1.50	1.65	1.66	1.63	1.65	1.64	1.64	1.64	1.64	1.64	1.62	1.64	1.64	1.64	1.64	1.64	1.64	1.64	0	1.64
TOTAL	1.23	1.21	1.21	1.27	1.17	1.21	1.19	1.22	1.21	1.22	1.17	1.17	1.19	1.22	1.16	1.17	1.18	1.17	1.23	1.18	1.28	1.11	1.64	1.23

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: LOV Auto Driver

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	18606	10688	1109	1389	390	1884	353	829	18	3	3	1	7	28	0	2	3	1	1	1	4	1	820	36141
2 DC NC	68304	310997	57205	43866	3265	15076	4449	10777	335	72	14	7	473	756	24	10	144	28	22	19	25	8	10521	526396
3 MTG	12881	51981	1351581	56747	1398	7621	1452	27525	1710	186	8345	559	18274	3652	24	17	58	60	82	186	99	15	36850	1581302
4 PG	28922	88781	45240	834424	1273	5541	12855	12845	276	158	56	29	10460	30121	869	245	14898	47	82	40	87	26	23348	1110623
5 ARLCR	1058	996	275	101	6350	3909	536	1178	17	8	2	0	0	2	0	0	0	0	0	0	1	0	230	14663
6 ARNCR	14397	10741	3695	1682	8229	191038	20407	53362	739	224	9	5	14	39	4	6	19	8	11	13	16	3	4611	309272
7 ALX	6752	5205	967	2798	2406	22291	91029	33438	107	276	6	2	16	27	4	1	58	15	8	2	9	3	2299	167720
8 FFX	14375	11958	14109	8936	5137	61736	52587	1478963	76423	27310	59	22	132	295	23	34	216	591	472	120	162	28	25486	1779174
9 LDN	232	234	1225	199	54	635	173	36173	531290	3892	2557	27	91	126	3	4	41	817	36	6423	48	3	9371	593653
10 PW	1271	698	750	520	332	2881	3205	96711	25253	580847	57	5	119	319	24	17	46	3686	8098	181	1554	54	12490	739119
11 FRD	298	340	27752	537	50	288	176	960	3515	153	388121	6848	7150	616	8	0	28	96	17	5276	3	0	20878	463110
12 CAR	290	379	2725	499	54	316	165	629	242	30	7642	182978	7900	464	7	0	31	3	0	50	0	0	24822	229226
13 HOW	199	741	16926	12261	12	73	48	235	85	32	1883	1624	253671	20027	8	8	18	8	7	47	2	2	19981	327898
14 AAR	1227	3453	2905	38839	74	419	384	982	239	157	111	43	22844	609287	1652	87	316	8	43	40	15	14	45051	728191
15 CAL	312	710	420	5581	37	177	180	508	121	67	20	9	89	3861	121435	7556	1845	4	43	0	48	19	1145	144187
16 STM	259	316	353	936	39	272	83	495	52	55	0	0	82	252	2904	152023	5709	2	37	0	52	350	884	165155
17 CHS	1140	2254	390	20850	47	367	1296	1760	170	82	18	10	79	364	1539	4205	234484	61	57	5	91	1449	2466	273184
18 FAU	333	342	771	384	55	330	213	7427	4772	12893	59	1	84	72	2	5	78	106103	6723	593	1724	59	5682	148705
19 STA	74	56	114	80	16	91	85	859	73	5386	1	0	7	32	3	9	17	1218	185936	9	29635	222	6842	230765
20 CL/JF	295	454	874	365	58	297	168	774	8715	331	4738	28	154	144	0	0	2	913	32	108878	9	0	10700	137929
21 SP/FB	126	176	87	109	29	155	102	350	97	354	0	0	0	0	2	27	67	371	17850	2	196042	31	20974	236951
22 KGEO	321	441	148	452	59	315	176	551	37	311	0	0	7	78	23	154	960	497	1831	0	835	37038	1033	45267
23 EXTL	2443	6710	24152	15401	330	3036	1673	16671	7940	6692	14845	13714	17922	38131	591	525	1441	3020	4655	10144	16404	600	0	207040
TOTAL	174115	508651	1553773	1046957	29695	318747	191796	1784003	662226	639519	428546	205912	339575	708693	129149	164935	260479	117557	226043	132029	246865	39925	286484	10195673

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: LOV Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	22056	14525	1493	1922	509	2480	481	1149	24	5	3	1	12	46	0	3	4	2	2	1	4	2	1324	46048
2 DC NC	95980	407531	83026	66730	4543	21244	6479	16005	509	106	17	11	712	1170	34	14	227	44	31	28	34	14	16953	721441
3 MTG	18329	76205	1756397	85735	1982	11050	2155	41466	2633	266	12865	867	28094	5608	34	25	85	95	129	301	184	27	59409	2103942
4 PG	41442	133152	67730	1080022	1809	8005	19103	19544	426	241	90	46	15983	46357	1346	392	23097	76	134	66	133	43	37661	1496897
5 ARLCR	1409	1342	377	141	6628	5162	730	1619	24	10	2	0	0	3	0	1	0	1	0	0	3	0	368	17820
6 ARNCR	19951	15107	5292	2442	11226	233225	29363	78144	1092	329	10	8	20	62	6	9	25	11	16	20	22	4	7433	403816
7 ALX	9467	7470	1390	4120	3374	31627	111825	48755	154	407	9	3	18	41	5	3	87	18	13	6	18	3	3705	222518
8 FFX	20765	17718	21020	13611	7305	89860	77735	1939082	116640	41835	93	41	195	445	43	50	322	921	720	173	253	49	41123	2389999
9 LDN	345	362	1850	306	79	941	248	55030	657103	6000	3980	40	141	207	7	5	59	1268	66	10026	73	4	15109	753248
10 PW	1844	1054	1125	787	473	4200	4786	147778	38990	732758	84	14	193	508	31	25	79	5714	12501	284	2384	82	20142	975837
11 FRD	433	511	42681	830	70	413	261	1466	5446	241	489307	10659	11094	960	15	0	48	151	37	8196	8	0	33676	606503
12 CAR	423	571	4185	780	79	453	257	974	375	52	11868	239768	12246	722	13	0	51	4	1	80	0	0	40033	312935
13 HOW	289	1114	25963	18727	17	104	67	360	133	51	2925	2522	298248	30790	11	14	26	8	10	79	5	4	32229	413697
14 AAR	1769	5227	4405	59780	110	604	568	1496	371	253	171	71	35018	789737	2562	141	486	16	67	64	33	22	72664	975636
15 CAL	456	1077	635	8662	53	255	270	784	186	111	34	14	137	6006	138887	11728	2865	6	70	0	79	28	1848	174191
16 STM	376	483	560	1450	58	399	120	785	79	98	0	0	140	395	4507	178785	8885	2	60	0	88	540	1422	199232
17 CHS	1662	3410	591	32250	72	529	1939	2693	266	124	32	12	120	566	2400	6546	273220	98	89	11	143	2255	3977	333005
18 FAU	484	514	1161	600	78	478	320	11419	7406	19989	96	4	149	130	4	8	128	116664	10473	923	2668	89	9167	182952
19 STA	104	87	176	121	21	137	125	1322	116	8352	3	0	16	58	6	14	28	1899	229706	16	45835	344	11036	299522
20 CL/JF	435	685	1317	581	84	429	255	1176	13496	515	7332	42	237	232	0	0	3	1420	57	120227	14	0	17257	165794
21 SP/FB	184	264	138	169	41	222	153	529	155	543	0	0	0	0	3	40	107	568	27450	3	261681	49	33830	326129
22 KGEO	469	662	224	697	85	454	267	862	72	482	0	0	13	122	35	239	1493	773	2848	0	1293	40737	1665	53492
23 EXTL	3942	10820	38962	24834	532	4896	2697	26889	12803	10799	23945	22118	28907	61503	955	842	2326	4870	7515	16359	26457	966	0	333937
TOTAL	242613	699891	2060698	1405297	39227	417166	260204	2399327	858499	823567	552866	276241	431693	945668	150904	198884	313651	134629	291995	156863	341412	45262	462031	13508590

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Transit

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	14569	8353	1400	1324	789	2662	367	652	2	2	0	0	5	1	0	0	2	0	0	0	0	0	0	30128
2 DC NC	47162	37602	16169	9493	2195	6448	1392	2278	16	9	0	0	41	7	0	0	4	0	0	0	0	0	0	122817
3 MTG	7197	9805	49315	3913	535	1502	207	1354	14	4	0	0	96	7	1	0	1	0	0	0	0	0	0	73950
4 PG	9796	9007	4079	9497	375	886	515	333	1	0	0	0	64	30	0	0	1	0	0	0	0	0	0	34584
5 ARLCR	1516	508	160	43	452	1392	221	424	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4720
6 ARNCR	11905	2956	954	306	3695	16583	3300	7297	56	25	0	0	0	0	0	0	0	0	0	0	0	0	0	47076
7 ALX	3681	956	189	171	886	4096	3686	2709	2	12	0	0	1	0	0	0	0	0	0	0	1	0	0	16388
8 FFX	4552	1260	1027	192	1341	8304	3127	19097	767	89	0	0	0	0	0	0	0	0	0	0	0	0	0	39757
9 LDN	33	17	20	6	11	83	7	1050	2258	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3486
10 PW	93	12	8	2	24	78	55	117	1	2365	0	0	0	0	0	0	0	0	0	0	6	0	0	2760
11 FRD	8	2	14	0	0	1	0	0	0	0	673	0	0	0	0	0	0	0	0	0	0	0	0	698
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	19	19	124	52	1	4	2	0	0	0	0	0	48	5	0	0	0	0	0	0	0	0	0	273
14 AAR	58	25	22	51	6	9	3	3	0	0	0	0	9	4	1	0	0	0	0	0	0	0	0	190
15 CAL	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	0	7
17 CHS	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306	0	0	0	0	0	0	309
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	3
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	100592	70522	73481	25051	10309	42048	12882	35314	3120	2507	673	0	264	54	2	6	315	0	1	0	14	0	0	377154

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: HOV Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: HOV AUTO Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	18606	10688	1109	1389	390	1884	353	829	18	3	3	1	7	28	0	2	3	1	1	1	4	1	820	36141
2 DC NC	68304	310997	57205	43866	3265	15076	4449	10777	335	72	14	7	473	756	24	10	144	28	22	19	25	8	10521	526396
3 MTG	12881	519811	351581	56747	1398	7621	1452	27525	1710	186	8345	559	18274	3652	24	17	58	60	82	186	99	15	36850	1581302
4 PG	28922	88781	45240	834424	1273	5541	12855	12845	276	158	56	29	10460	30121	869	245	14898	47	82	40	87	26	23348	1110623
5 ARLCR	1058	996	275	101	6350	3909	536	1178	17	8	2	0	0	2	0	0	0	0	0	0	1	0	230	14663
6 ARNCR	14397	10741	3695	1682	8229	191038	20407	53362	739	224	9	5	14	39	4	6	19	8	11	13	16	3	4611	309272
7 ALX	6752	5205	967	2798	2406	22291	91029	33438	107	276	6	2	16	27	4	1	58	15	8	2	9	3	2299	167720
8 FFX	14375	11958	14109	8936	5137	61736	525871	478963	76423	27310	59	22	132	295	23	34	216	591	472	120	162	28	25486	1779174
9 LDN	232	234	1225	199	54	635	173	36173	531290	3892	2557	27	91	126	3	4	41	817	36	6423	48	3	9371	593653
10 PW	1271	698	750	520	332	2881	3205	96711	25253	580847	57	5	119	319	24	17	46	3686	8098	181	1554	54	12490	739119
11 FRD	298	340	27752	537	50	288	176	960	3515	153	388121	6848	7150	616	8	0	28	96	17	5276	3	0	20878	463110
12 CAR	290	379	2725	499	54	316	165	629	242	30	7642	182978	7900	464	7	0	31	3	0	50	0	0	24822	229226
13 HOW	199	741	16926	12261	12	73	48	235	85	32	1883	1624	253671	20027	8	8	18	8	7	47	2	2	19981	327898
14 AAR	1227	3453	2905	38839	74	419	384	982	239	157	111	43	22844	609287	1652	87	316	8	43	40	15	14	45051	728191
15 CAL	312	710	420	5581	37	177	180	508	121	67	20	9	89	3861	121435	7556	1845	4	43	0	48	19	1145	144187
16 STM	259	316	353	936	39	272	83	495	52	55	0	0	82	252	2904	152023	5709	2	37	0	52	350	884	165155
17 CHS	1140	2254	390	20850	47	367	1296	1760	170	82	18	10	79	364	1539	4205	234484	61	57	5	91	1449	2466	273184
18 FAU	333	342	771	384	55	330	213	7427	4772	12893	59	1	84	72	2	5	78	106103	6723	593	1724	59	5682	148705
19 STA	74	56	114	80	16	91	85	859	73	5386	1	0	7	32	3	9	17	1218	185936	9	29635	222	6842	230765
20 CL/JF	295	454	874	365	58	297	168	774	8715	331	4738	28	154	144	0	0	2	913	32	108878	9	0	10700	137929
21 SP/FB	126	176	87	109	29	155	102	350	97	354	0	0	0	0	2	27	67	371	17850	2	196042	31	20974	236951
22 KGEO	321	441	148	452	59	315	176	551	37	311	0	0	7	78	23	154	960	497	1831	0	835	37038	1033	45267
23 EXTL	2443	6710	24152	15401	330	3036	1673	16671	7940	6692	14845	13714	17922	38131	591	525	1441	3020	4655	10144	16404	600	0	207040
TOTAL	174115	508651	1553773	1046957	29695	318747	191796	1784003	662226	639519	428546	205912	339575	708693	129149	164935	260479	117557	226043	132029	246865	39925	286484	10195673

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	22056	14525	1493	1922	509	2480	481	1149	24	5	3	1	12	46	0	3	4	2	2	1	4	2	1324	46048
2 DC NC	95980	407531	83026	66730	4543	21244	6479	16005	509	106	17	11	712	1170	34	14	227	44	31	28	34	14	16953	721441
3 MTG	18329	76205	1756397	85735	1982	11050	2155	41466	2633	266	12865	867	28094	5608	34	25	85	95	129	301	184	27	59409	2103942
4 PG	41442	133152	67730	1080022	1809	8005	19103	19544	426	241	90	46	15983	46357	1346	392	23097	76	134	66	133	43	37661	1496897
5 ARLCR	1409	1342	377	141	6628	5162	730	1619	24	10	2	0	0	3	0	1	0	1	0	0	3	0	368	17820
6 ARNCR	19951	15107	5292	2442	11226	233225	29363	78144	1092	329	10	8	20	62	6	9	25	11	16	20	22	4	7433	403816
7 ALX	9467	7470	1390	4120	3374	31627	111825	48755	154	407	9	3	18	41	5	3	87	18	13	6	18	3	3705	222518
8 FFX	20765	17718	21020	13611	7305	89860	77735	1939082	116640	41835	93	41	195	445	43	50	322	921	720	173	253	49	41123	2389999
9 LDN	345	362	1850	306	79	941	248	55030	657103	6000	3980	40	141	207	7	5	59	1268	66	10026	73	4	15109	753248
10 PW	1844	1054	1125	787	473	4200	4786	147778	38990	732758	84	14	193	508	31	25	79	5714	12501	284	2384	82	20142	975837
11 FRD	433	511	42681	830	70	413	261	1466	5446	241	489307	10659	11094	960	15	0	48	151	37	8196	8	0	33676	606503
12 CAR	423	571	4185	780	79	453	257	974	375	52	11868	239768	12246	722	13	0	51	4	1	80	0	0	40033	312935
13 HOW	289	1114	25963	18727	17	104	67	360	133	51	2925	2522	298248	30790	11	14	26	8	10	79	5	4	32229	413697
14 AAR	1769	5227	4405	59780	110	604	568	1496	371	253	171	71	35018	789737	2562	141	486	16	67	64	33	22	72664	975636
15 CAL	456	1077	635	8662	53	255	270	784	186	111	34	14	137	6006	138887	11728	2865	6	70	0	79	28	1848	174191
16 STM	376	483	560	1450	58	399	120	785	79	98	0	0	140	395	4507	178785	8885	2	60	0	88	540	1422	199232
17 CHS	1662	3410	591	32250	72	529	1939	2693	266	124	32	12	120	566	2400	6546	273220	98	89	11	143	2255	3977	333005
18 FAU	484	514	1161	600	78	478	320	11419	7406	19989	96	4	149	130	4	8	128	116664	10473	923	2668	89	9167	182952
19 STA	104	87	176	121	21	137	125	1322	116	8352	3	0	16	58	6	14	28	1899	229706	16	45835	344	11036	299522
20 CL/JF	435	685	1317	581	84	429	255	1176	13496	515	7332	42	237	232	0	0	3	1420	57	120227	14	0	17257	165794
21 SP/FB	184	264	138	169	41	222	153	529	155	543	0	0	0	0	3	40	107	568	27450	3	261681	49	33830	326129
22 KGEO	469	662	224	697	85	454	267	862	72	482	0	0	13	122	35	239	1493	773	2848	0	1293	40737	1665	53492
23 EXTL	3942	10820	38962	24834	532	4896	2697	26889	12803	10799	23945	22118	28907	61503	955	842	2326	4870	7515	16359	26457	966	0	333937
TOTAL	242613	699891	2060698	1405297	39227	417166	260204	2399327	858499	823567	552866	276241	431693	945668	150904	198884	313651	134629	291995	156863	341412	45262	462031	13508590

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Total Motorized Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	36625	22878	2893	3246	1298	5142	848	1801	26	7	3	1	17	47	0	3	6	2	2	1	4	2	1324	76176
2 DC NC	143142	445133	99195	76223	6738	27692	7871	18283	525	115	17	11	753	1177	34	14	231	44	31	28	34	14	16953	844258
3 MTG	25526	86010	1805712	89648	2517	12552	2362	42820	2647	270	12865	867	28190	5615	35	25	86	95	129	301	184	27	59409	2177892
4 PG	51238	142159	71809	1089519	2183	8891	19618	19877	427	241	90	46	16047	46387	1346	392	23098	76	134	66	133	43	37661	1531481
5 ARLCR	2925	1850	537	184	7080	6554	951	2043	27	11	2	0	0	3	0	1	0	1	0	0	3	0	368	22540
6 ARNCR	31855	18063	6246	2748	14920	249808	32663	85441	1148	354	10	8	20	62	6	9	25	11	16	20	22	4	7433	450892
7 ALX	13147	8426	1579	4291	4259	35723	115511	51464	156	419	9	3	19	41	5	3	87	18	13	6	19	3	3705	238906
8 FFX	25317	18978	22048	13803	8646	98164	80862	1958179	117407	41924	93	41	195	445	43	50	322	921	720	173	253	49	41123	2429755
9 LDN	378	379	1870	312	90	1024	255	56080	659361	6000	3980	40	141	207	7	5	59	1268	66	10026	73	4	15109	756734
10 PW	1937	1066	1133	789	497	4278	4841	147895	38991	735123	84	14	193	508	31	25	79	5714	12501	284	2390	82	20142	978597
11 FRD	441	513	42695	830	70	414	261	1466	5446	241	489980	10659	11094	960	15	0	48	151	37	8196	8	0	33676	607201
12 CAR	423	571	4185	780	79	453	257	974	375	52	11868	239768	12246	722	13	0	51	4	1	80	0	0	40033	312935
13 HOW	308	1133	26087	18779	18	108	69	360	133	51	2925	2522	298296	30795	11	14	26	8	10	79	5	4	32229	413970
14 AAR	1827	5252	4427	59831	116	613	571	1499	371	253	171	71	35027	789741	2563	141	486	16	67	64	33	22	72664	975826
15 CAL	456	1077	635	8663	53	255	270	784	186	111	34	14	137	6006	138887	11728	2865	6	70	0	79	28	1848	174192
16 STM	376	483	560	1450	58	399	120	785	79	98	0	0	140	395	4507	178791	8886	2	60	0	88	540	1422	199239
17 CHS	1664	3411	591	32250	72	529	1939	2693	266	124	32	12	120	566	2400	6546	273526	98	89	11	143	2255	3977	333314
18 FAU	484	514	1161	600	78	478	320	11419	7406	19989	96	4	149	130	4	8	128	116664	10473	923	2668	89	9167	182952
19 STA	104	87	176	121	21	137	125	1322	116	8352	3	0	16	58	6	14	28	1899	229706	16	45841	344	11036	299528
20 CL/JF	435	685	1317	581	84	429	255	1176	13496	515	7332	42	237	232	0	0	3	1420	57	120227	14	0	17257	165794
21 SP/FB	185	264	138	169	41	222	153	529	155	543	0	0	0	0	3	40	107	568	27451	3	261682	49	33830	326132
22 KGEO	469	662	224	697	85	454	267	862	72	482	0	0	13	122	35	239	1493	773	2848	0	1293	40737	1665	53492
23 EXTL	3942	10820	38962	24834	532	4896	2697	26889	12803	10799	23945	22118	28907	61503	955	842	2326	4870	7515	16359	26457	966	0	333937
TOTAL	343205	770413	2134179	1430348	49536	459215	273086	2434641	861619	826074	553539	276241	431957	945722	150906	198890	313966	134629	291996	156863	341426	45262	462031	13885744

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Transit Percentage

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	39.8	36.5	48.4	40.8	60.8	51.8	43.3	36.2	7.7	28.6	0	0	29.4	2.1	0	0	33.3	0	0	0	0	0	0	39.6
2 DC NC	32.9	8.4	16.3	12.5	32.6	23.3	17.7	12.5	3.1	7.9	0	0	5.4	0.6	0	0	1.7	0	0	0	0	0	0	14.5
3 MTG	28.2	11.4	2.7	4.4	21.2	12.0	8.7	3.2	0.5	1.3	0	0	0.3	0.1	2.9	0	1.2	0	0	0	0	0	0	3.4
4 PG	19.1	6.3	5.7	0.9	17.2	10.0	2.6	1.7	0.2	0	0	0	0.4	0.1	0	0	0.0	0	0	0	0	0	0	2.3
5 ARLCR	51.8	27.5	29.8	23.4	6.4	21.2	23.2	20.8	11.1	9.1	0	0	0	0	0	0	0	0	0	0	0	0	0	20.9
6 ARNCR	37.4	16.4	15.3	11.1	24.8	6.6	10.1	8.5	4.9	7.1	0	0	0	0	0	0	0	0	0	0	0	0	0	10.4
7 ALX	28.0	11.3	12.0	4.0	20.8	11.5	3.2	5.3	1.3	2.9	0	0	4.5	0	0	0	0	0	0	0	5.3	0	0	6.9
8 FFX	18.0	6.6	4.7	1.4	15.5	8.5	3.9	1.0	0.7	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6
9 LDN	8.9	4.5	1.1	1.9	12.4	8.1	2.7	1.9	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5
10 PW	4.8	1.1	0.7	0.2	4.9	1.8	1.1	0.1	0.0	0.3	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.3
11 FRD	1.9	0.4	0.0	0	0	0.2	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	6.1	1.7	0.5	0.3	5.2	3.4	2.6	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.1
14 AAR	3.2	0.5	0.5	0.1	4.9	1.5	0.5	0.2	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0
17 CHS	0.1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0	0.0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	29.3	9.2	3.4	1.8	20.8	9.2	4.7	1.5	0.4	0.3	0.1	0	0.1	0.0	0.0	0.0	0.1	0	0.0	0	0.0	0	0	2.7

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Avg. Auto Occupancy

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.19	1.36	1.35	1.38	1.31	1.32	1.36	1.39	1.33	1.67	1.00	1.00	1.71	1.64	0	1.50	1.33	2.00	2.00	1.00	1.00	2.00	1.61	1.27
2 DC NC	1.41	1.31	1.45	1.52	1.39	1.41	1.46	1.49	1.52	1.48	1.21	1.57	1.51	1.55	1.42	1.40	1.58	1.57	1.41	1.47	1.36	1.75	1.61	1.37
3 MTG	1.42	1.47	1.30	1.51	1.42	1.45	1.48	1.51	1.54	1.43	1.54	1.55	1.54	1.54	1.42	1.47	1.47	1.58	1.57	1.62	1.86	1.80	1.61	1.33
4 PG	1.43	1.50	1.50	1.29	1.42	1.44	1.49	1.52	1.54	1.53	1.61	1.59	1.53	1.54	1.55	1.60	1.55	1.62	1.63	1.65	1.53	1.65	1.61	1.35
5 ARLCR	1.33	1.35	1.37	1.40	1.04	1.32	1.36	1.37	1.41	1.25	1.00	0	0	1.50	0	1.00	0	1.00	0	0	3.00	0	1.60	1.22
6 ARNCR	1.39	1.41	1.43	1.45	1.36	1.22	1.44	1.46	1.48	1.47	1.11	1.60	1.43	1.59	1.50	1.50	1.32	1.38	1.45	1.54	1.38	1.33	1.61	1.31
7 ALX	1.40	1.44	1.44	1.47	1.40	1.42	1.23	1.46	1.44	1.47	1.50	1.50	1.13	1.52	1.25	3.00	1.50	1.20	1.63	3.00	2.00	1.00	1.61	1.33
8 FFX	1.44	1.48	1.49	1.52	1.42	1.46	1.48	1.31	1.53	1.53	1.58	1.86	1.48	1.51	1.87	1.47	1.49	1.56	1.53	1.44	1.56	1.75	1.61	1.34
9 LDN	1.49	1.55	1.51	1.54	1.47	1.48	1.43	1.52	1.24	1.54	1.56	1.48	1.55	1.64	2.33	1.25	1.44	1.55	1.83	1.56	1.52	1.33	1.61	1.27
10 PW	1.45	1.51	1.50	1.51	1.42	1.46	1.49	1.53	1.54	1.26	1.47	2.80	1.62	1.59	1.29	1.47	1.72	1.55	1.54	1.57	1.53	1.52	1.61	1.32
11 FRD	1.45	1.50	1.54	1.55	1.40	1.43	1.48	1.53	1.55	1.58	1.26	1.56	1.55	1.56	1.88	0	1.71	1.57	2.18	1.55	2.67	0	1.61	1.31
12 CAR	1.46	1.51	1.54	1.56	1.46	1.43	1.56	1.55	1.55	1.73	1.55	1.31	1.55	1.56	1.86	0	1.65	1.33	1.00	1.60	0	0	1.61	1.37
13 HOW	1.45	1.50	1.53	1.53	1.42	1.42	1.40	1.53	1.56	1.59	1.55	1.55	1.18	1.54	1.38	1.75	1.44	1.00	1.43	1.68	2.50	2.00	1.61	1.26
14 AAR	1.44	1.51	1.52	1.54	1.48	1.44	1.48	1.52	1.55	1.61	1.54	1.65	1.53	1.30	1.55	1.62	1.54	2.00	1.56	1.60	2.20	1.57	1.61	1.34
15 CAL	1.46	1.52	1.51	1.55	1.43	1.44	1.50	1.54	1.54	1.66	1.70	1.56	1.54	1.56	1.14	1.55	1.55	1.50	1.63	0	1.65	1.47	1.61	1.21
16 STM	1.45	1.53	1.59	1.55	1.49	1.47	1.45	1.59	1.52	1.78	0	0	1.71	1.57	1.55	1.18	1.56	1.00	1.62	0	1.69	1.54	1.61	1.21
17 CHS	1.46	1.51	1.52	1.55	1.53	1.44	1.50	1.53	1.56	1.51	1.78	1.20	1.52	1.55	1.56	1.56	1.17	1.61	1.56	2.20	1.57	1.56	1.61	1.22
18 FAU	1.45	1.50	1.51	1.56	1.42	1.45	1.50	1.54	1.55	1.55	1.63	4.00	1.77	1.81	2.00	1.60	1.64	1.10	1.56	1.56	1.55	1.51	1.61	1.23
19 STA	1.41	1.55	1.54	1.51	1.31	1.51	1.47	1.54	1.59	1.55	3.00	0	2.29	1.81	2.00	1.56	1.65	1.56	1.24	1.78	1.55	1.55	1.61	1.30
20 CL/JF	1.47	1.51	1.51	1.59	1.45	1.44	1.52	1.52	1.55	1.56	1.55	1.50	1.54	1.61	0	0	1.50	1.56	1.78	1.10	1.56	0	1.61	1.20
21 SP/FB	1.46	1.50	1.59	1.55	1.41	1.43	1.50	1.51	1.60	1.53	0	0	0	0	1.50	1.48	1.60	1.53	1.54	1.50	1.33	1.58	1.61	1.38
22 KGEO	1.46	1.50	1.51	1.54	1.44	1.44	1.52	1.56	1.95	1.55	0	0	1.86	1.56	1.52	1.55	1.56	1.56	1.56	0	1.55	1.10	1.61	1.18
23 EXTL	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.62	1.60	1.61	1.61	1.61	1.61	1.61	1.61	0	1.61
TOTAL	1.39	1.38	1.33	1.34	1.32	1.31	1.36	1.34	1.30	1.29	1.29	1.34	1.27	1.33	1.17	1.21	1.20	1.15	1.29	1.19	1.38	1.13	1.61	1.32

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: LOV Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	46754	40460	9688	21629	2143	15779	7007	12045	149	176	9	5	237	707	46	2	350	1	1	2	4	4	1079	158277
2 DC NC	30205	85278	34100	50220	1929	12794	6425	12160	176	154	42	8	1080	2058	109	9	764	6	2	4	3	0	2101	239627
3 MTG	7834	35850	677850	54902	1010	7505	2126	24011	994	158	13507	1323	17868	4250	22	4	58	9	6	76	4	0	10447	859815
4 PG	18001	49373	54678	445871	912	6301	12990	16880	62	384	116	151	19230	38369	2415	284	13296	10	6	3	10	4	9817	689163
5 ARLCR	1923	2348	1076	1018	3400	6175	2176	4113	57	69	2	0	8	22	2	0	18	1	0	1	1	0	106	22516
6 ARNCR	12654	13968	7084	6508	5300	87330	20372	51509	841	825	16	3	49	120	12	2	129	6	0	1	5	1	919	207655
7 ALX	6984	7072	2147	10765	1986	19823	57895	45415	176	1479	9	1	19	129	34	3	598	4	11	2	1	0	612	155166
8 FFX	11240	12544	21330	16923	3748	51088	45904	751480	54307	49645	51	10	121	222	56	20	848	1082	448	43	56	3	4170	1025338
9 LDN	149	167	991	76	49	791	213	57197	251900	10571	2086	22	34	20	2	1	8	919	4	2589	5	0	1779	329573
10 PW	294	223	191	423	94	1120	1801	53047	10332	291484	7	2	10	16	3	3	20	6749	5768	30	954	4	1831	374406
11 FRD	11	63	18869	153	4	21	4	104	2378	14	203208	5401	4106	163	2	0	3	4	0	1831	0	0	4498	240837
12 CAR	7	10	1926	199	1	7	6	16	28	1	6102	111864	4647	277	1	0	1	1	0	11	0	0	3602	128707
13 HOW	275	1175	19737	20415	12	47	20	129	28	12	3640	3819	152723	30331	9	1	7	0	0	17	0	0	14807	247204
14 AAR	837	2224	4627	39223	24	124	183	221	19	19	177	280	31935	358585	1628	14	242	1	1	3	0	1	28927	469295
15 CAL	73	194	37	3755	5	19	64	71	2	8	1	3	13	2289	48583	4356	1989	0	1	0	1	3	185	61652
16 STM	8	19	11	619	1	7	16	34	1	5	0	0	4	32	5173	78215	4799	0	6	0	4	87	101	89142
17 CHS	500	1078	70	16987	19	202	965	1035	6	23	5	1	12	317	1496	2954	104474	3	3	0	3	252	410	130815
18 FAU	5	4	7	7	1	15	5	1378	976	7769	3	0	1	0	0	0	3	36718	1107	93	253	0	580	48925
19 STA	6	6	7	10	1	5	21	534	10	6758	0	0	0	4	1	0	6	1357	69433	0	15821	205	762	94947
20 CL/JF	2	4	168	7	0	6	5	75	3946	55	2520	23	32	5	0	0	0	150	2	56065	0	0	3050	66115
21 SP/FB	6	4	6	11	0	4	7	75	8	1252	0	0	0	1	1	2	6	281	16314	1	164426	281	3930	186616
22 KGEO	5	2	3	24	0	2	4	11	1	12	0	0	2	3	6	132	565	2	507	0	672	17516	251	19720
23 EXTL	1100	2094	9948	9526	107	849	569	4106	1843	1765	4725	3760	17325	26859	179	101	381	551	767	3012	4144	248	0	93959
TOTAL	138871	254161	864551	699271	20746	210015	158778	1035645	328240	372639	236226	126676	249456	464779	59780	86103	128565	47855	94387	63784	186367	18609	93964	5939469

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: LOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	57636	53544	12786	28913	2795	20658	9282	16098	202	236	15	6	312	951	63	5	466	1	2	3	4	4	1387	205369
2 DC NC	39963	108877	45362	68170	2535	16804	8544	16387	239	209	50	8	1468	2812	154	11	1022	8	2	6	3	0	2700	315333
3 MTG	10317	47574	859620	74294	1324	9895	2839	32327	1351	228	18535	1822	24427	5810	32	6	76	12	9	107	7	0	13391	1104002
4 PG	24093	67040	74146	564093	1198	8370	17519	23045	93	521	155	217	26356	52746	3319	396	18317	15	7	4	11	5	12592	894258
5 ARLCR	2491	3057	1402	1344	3563	7890	2845	5383	72	94	3	0	10	29	2	0	24	2	1	1	1	0	135	28349
6 ARNCR	16483	18237	9292	8612	6785	104689	26701	68083	1131	1092	19	4	64	160	14	4	170	8	5	2	6	1	1178	262741
7 ALX	9249	9416	2862	14478	2602	26054	70876	60816	237	1994	11	2	28	172	49	7	807	4	15	2	3	0	780	200465
8 FFX	15039	16884	28705	23124	4929	67808	61523	958165	74078	67912	73	14	157	299	77	23	1165	1496	596	60	81	3	5335	1327546
9 LDN	204	225	1357	101	59	1072	287	78068	309099	14526	2884	27	48	25	4	1	9	1276	8	3561	5	0	2286	415132
10 PW	396	306	253	583	122	1497	2430	72553	14199	362627	12	3	13	26	3	5	25	9299	7947	41	1313	4	2342	475999
11 FRD	16	82	25874	211	5	26	7	141	3278	21	245315	7452	5662	226	3	0	3	5	0	2524	0	0	5770	296621
12 CAR	7	17	2650	274	1	8	7	27	36	1	8423	123359	6408	383	2	0	1	1	0	18	0	0	4617	146240
13 HOW	369	1598	27012	27974	12	66	28	174	39	13	5021	5265	179176	41675	13	2	10	1	0	25	0	0	18983	307456
14 AAR	1123	3033	6320	53921	33	169	247	301	27	29	242	386	43885	422388	2249	18	337	2	1	5	0	1	37082	571799
15 CAL	96	267	52	5181	5	25	88	101	3	9	2	4	17	3160	56380	6011	2748	0	1	0	3	3	236	74392
16 STM	9	27	19	851	2	8	21	44	1	8	0	0	6	46	7139	93007	6629	0	6	0	5	121	133	108082
17 CHS	676	1468	97	23394	29	270	1302	1420	9	30	6	2	15	437	2067	4079	122945	3	6	0	7	348	520	159130
18 FAU	5	5	14	9	2	18	6	1894	1347	10699	3	0	1	1	0	0	4	40439	1532	129	346	1	747	57202
19 STA	6	7	13	15	1	8	29	734	14	9310	0	0	0	5	1	0	6	1871	79363	0	21768	287	980	114418
20 CL/JF	2	4	233	12	0	7	5	102	5445	77	3475	31	45	9	0	0	0	209	2	62965	0	0	3908	76531
21 SP/FB	6	8	8	15	0	7	8	102	13	1720	0	0	0	1	2	3	7	387	22444	1	183035	387	5039	213193
22 KGEO	6	4	4	33	0	3	4	16	1	17	0	0	2	5	7	183	781	3	701	0	925	19400	323	22418
23 EXTL	1410	2682	12760	12209	132	1092	726	5267	2359	2264	6055	4827	22209	34435	228	129	491	707	979	3861	5316	320	0	120458
TOTAL	179601	334362	1110841	907811	26134	266445	205323	1341247	413273	473637	290299	143429	310309	565801	71808	103890	156043	55749	113627	73315	212839	20885	120464	7497133

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: Transit

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	31322	6153	4864	2782	2345	7898	1898	2536	12	9	0	0	5	0	0	0	1	0	0	0	0	0	0	59825
2 DC NC	18327	3687	6615	2241	943	2874	767	946	6	4	0	0	5	0	0	0	0	0	0	0	0	0	0	36417
3 MTG	7200	4830	28265	1690	531	1726	351	1118	6	3	1	0	4	0	0	0	0	0	0	0	0	0	0	45726
4 PG	7779	2942	2992	1933	280	891	446	322	1	3	0	0	5	2	0	0	0	0	0	0	0	0	0	17596
5 ARLCR	2544	429	328	108	283	1079	347	485	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5606
6 ARNCR	12443	1858	1334	397	2108	5889	1661	3876	33	3	0	0	0	1	0	0	2	0	0	0	0	0	0	29604
7 ALX	4118	643	325	209	670	2613	1777	1281	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	11645
8 FFX	5110	911	1158	222	1074	6355	1906	9345	393	8	0	0	0	0	0	0	1	0	0	0	0	0	0	26482
9 LDN	37	9	19	1	14	121	12	1249	326	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1788
10 PW	10	2	1	0	3	11	17	10	0	185	0	0	0	0	0	0	0	0	0	0	0	0	0	239
11 FRD	0	0	0	0	0	0	0	0	0	0	131	0	0	0	0	0	0	0	0	0	0	0	0	131
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	18	8	49	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78
14 AAR	16	2	8	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	13
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	88926	21474	45957	9587	8253	29457	9183	21169	782	222	132	0	19	3	0	0	17	0	0	0	0	0	0	235179

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: HOV Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: HOV AUTO Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 MTG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 ARLCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 ARNCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ALX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 FFX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 LDN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 PW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 FRD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: Auto Driver

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	46754	40460	9688	21629	2143	15779	7007	12045	149	176	9	5	237	707	46	2	350	1	1	2	4	4	1079	158277
2 DC NC	30205	85278	34100	50220	1929	12794	6425	12160	176	154	42	8	1080	2058	109	9	764	6	2	4	3	0	2101	239627
3 MTG	7834	35850	677850	54902	1010	7505	2126	24011	994	158	13507	1323	17868	4250	22	4	58	9	6	76	4	0	10447	859815
4 PG	18001	49373	54678	445871	912	6301	12990	16880	62	384	116	151	19230	38369	2415	284	13296	10	6	3	10	4	9817	689163
5 ARLCR	1923	2348	1076	1018	3400	6175	2176	4113	57	69	2	0	8	22	2	0	18	1	0	1	1	0	106	22516
6 ARNCR	12654	13968	7084	6508	5300	87330	20372	51509	841	825	16	3	49	120	12	2	129	6	0	1	5	1	919	207655
7 ALX	6984	7072	2147	10765	1986	19823	57895	45415	176	1479	9	1	19	129	34	3	598	4	11	2	1	0	612	155166
8 FFX	11240	12544	21330	16923	3748	51088	45904	751480	54307	49645	51	10	121	222	56	20	848	1082	448	43	56	3	4170	1025338
9 LDN	149	167	991	76	49	791	213	57197	251900	10571	2086	22	34	20	2	1	8	919	4	2589	5	0	1779	329573
10 PW	294	223	191	423	94	1120	1801	53047	10332	291484	7	2	10	16	3	3	20	6749	5768	30	954	4	1831	374406
11 FRD	11	63	18869	153	4	21	4	104	2378	14	203208	5401	4106	163	2	0	3	4	0	1831	0	0	4498	240837
12 CAR	7	10	1926	199	1	7	6	16	28	1	6102	111864	4647	277	1	0	1	1	0	11	0	0	3602	128707
13 HOW	275	1175	19737	20415	12	47	20	129	28	12	3640	3819	152723	30331	9	1	7	0	0	17	0	0	14807	247204
14 AAR	837	2224	4627	39223	24	124	183	221	19	19	177	280	31935	358585	1628	14	242	1	1	3	0	1	28927	469295
15 CAL	73	194	37	3755	5	19	64	71	2	8	1	3	13	2289	48583	4356	1989	0	1	0	1	3	185	61652
16 STM	8	19	11	619	1	7	16	34	1	5	0	0	4	32	5173	78215	4799	0	6	0	4	87	101	89142
17 CHS	500	1078	70	16987	19	202	965	1035	6	23	5	1	12	317	1496	2954	104474	3	3	0	3	252	410	130815
18 FAU	5	4	7	7	1	15	5	1378	976	7769	3	0	1	0	0	0	3	36718	1107	93	253	0	580	48925
19 STA	6	6	7	10	1	5	21	534	10	6758	0	0	0	4	1	0	6	1357	69433	0	15821	205	762	94947
20 CL/JF	2	4	168	7	0	6	5	75	3946	55	2520	23	32	5	0	0	0	150	2	56065	0	0	3050	66115
21 SP/FB	6	4	6	11	0	4	7	75	8	1252	0	0	0	1	1	2	6	281	16314	1	164426	281	3930	186616
22 KGEO	5	2	3	24	0	2	4	11	1	12	0	0	2	3	6	132	565	2	507	0	672	17516	251	19720
23 EXTL	1100	2094	9948	9526	107	849	569	4106	1843	1765	4725	3760	17325	26859	179	101	381	551	767	3012	4144	248	0	93959
TOTAL	138871	254161	864551	699271	20746	210015	158778	1035645	328240	372639	236226	126676	249456	464779	59780	86103	128565	47855	94387	63784	186367	18609	93964	5939469

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB   MODE: Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	57636	53544	12786	28913	2795	20658	9282	16098	202	236	15	6	312	951	63	5	466	1	2	3	4	4	1387	205369
2 DC NC	39963	108877	45362	68170	2535	16804	8544	16387	239	209	50	8	1468	2812	154	11	1022	8	2	6	3	0	2700	315333
3 MTG	10317	47574	859620	74294	1324	9895	2839	32327	1351	228	18535	1822	24427	5810	32	6	76	12	9	107	7	0	13391	1104002
4 PG	24093	67040	74146	564093	1198	8370	17519	23045	93	521	155	217	26356	52746	3319	396	18317	15	7	4	11	5	12592	894258
5 ARLCR	2491	3057	1402	1344	3563	7890	2845	5383	72	94	3	0	10	29	2	0	24	2	1	1	1	0	135	28349
6 ARNCR	16483	18237	9292	8612	6785	104689	26701	68083	1131	1092	19	4	64	160	14	4	170	8	5	2	6	1	1178	262741
7 ALX	9249	9416	2862	14478	2602	26054	70876	60816	237	1994	11	2	28	172	49	7	807	4	15	2	3	0	780	200465
8 FFX	15039	16884	28705	23124	4929	67808	61523	958165	74078	67912	73	14	157	299	77	23	1165	1496	596	60	81	3	5335	1327546
9 LDN	204	225	1357	101	59	1072	287	78068	309099	14526	2884	27	48	25	4	1	9	1276	8	3561	5	0	2286	415132
10 PW	396	306	253	583	122	1497	2430	72553	14199	362627	12	3	13	26	3	5	25	9299	7947	41	1313	4	2342	475999
11 FRD	16	82	25874	211	5	26	7	141	3278	21	245315	7452	5662	226	3	0	3	5	0	2524	0	0	5770	296621
12 CAR	7	17	2650	274	1	8	7	27	36	1	8423	123359	6408	383	2	0	1	1	0	18	0	0	4617	146240
13 HOW	369	1598	27012	27974	12	66	28	174	39	13	5021	5265	179176	41675	13	2	10	1	0	25	0	0	18983	307456
14 AAR	1123	3033	6320	53921	33	169	247	301	27	29	242	386	43885	422388	2249	18	337	2	1	5	0	1	37082	571799
15 CAL	96	267	52	5181	5	25	88	101	3	9	2	4	17	3160	56380	6011	2748	0	1	0	3	3	236	74392
16 STM	9	27	19	851	2	8	21	44	1	8	0	0	6	46	7139	93007	6629	0	6	0	5	121	133	108082
17 CHS	676	1468	97	23394	29	270	1302	1420	9	30	6	2	15	437	2067	4079	122945	3	6	0	7	348	520	159130
18 FAU	5	5	14	9	2	18	6	1894	1347	10699	3	0	1	1	0	0	4	40439	1532	129	346	1	747	57202
19 STA	6	7	13	15	1	8	29	734	14	9310	0	0	0	5	1	0	6	1871	79363	0	21768	287	980	114418
20 CL/JF	2	4	233	12	0	7	5	102	5445	77	3475	31	45	9	0	0	0	209	2	62965	0	0	3908	76531
21 SP/FB	6	8	8	15	0	7	8	102	13	1720	0	0	0	1	2	3	7	387	22444	1	183035	387	5039	213193
22 KGEO	6	4	4	33	0	3	4	16	1	17	0	0	2	5	7	183	781	3	701	0	925	19400	323	22418
23 EXTL	1410	2682	12760	12209	132	1092	726	5267	2359	2264	6055	4827	22209	34435	228	129	491	707	979	3861	5316	320	0	120458
TOTAL	179601	334362	1110841	907811	26134	266445	205323	1341247	413273	473637	290299	143429	310309	565801	71808	103890	156043	55749	113627	73315	212839	20885	120464	7497133

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB   MODE: Total Motorized Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	88958	59697	17650	31695	5140	28556	11180	18634	214	245	15	6	317	951	63	5	467	1	2	3	4	4	1387	265194
2 DC NC	58290	112564	51977	70411	3478	19678	9311	17333	245	213	50	8	1473	2812	154	11	1022	8	2	6	3	0	2700	351750
3 MTG	17517	52404	887885	75984	1855	11621	3190	33445	1357	231	18536	1822	24431	5810	32	6	76	12	9	107	7	0	13391	1149728
4 PG	31872	69982	77138	566026	1478	9261	17965	23367	94	524	155	217	26361	52748	3319	396	18317	15	7	4	11	5	12592	911854
5 ARLCR	5035	3486	1730	1452	3846	8969	3192	5868	74	95	3	0	10	29	2	0	24	2	1	1	1	0	135	33955
6 ARNCR	28926	20095	10626	9009	8893	110578	28362	71959	1164	1095	19	4	64	161	14	4	172	8	5	2	6	1	1178	292345
7 ALX	13367	10059	3187	14687	3272	28667	72653	62097	240	2000	11	2	28	172	49	7	807	4	15	2	3	0	780	212109
8 FFX	20149	17795	29863	23346	6003	74163	63429	967510	74471	67920	73	14	157	299	77	23	1166	1496	596	60	81	3	5335	1354028
9 LDN	241	234	1375	102	73	1193	299	79317	309425	14526	2884	27	48	25	4	1	9	1276	8	3561	5	0	2286	416919
10 PW	406	308	254	583	125	1508	2447	72563	14199	362812	12	3	13	26	3	5	25	9299	7947	41	1313	4	2342	476238
11 FRD	16	82	25874	211	5	26	7	141	3278	21	245446	7452	5662	226	3	0	3	5	0	2524	0	0	5770	296752
12 CAR	7	17	2650	274	1	8	7	27	36	1	8423	123359	6408	383	2	0	1	1	0	18	0	0	4617	146240
13 HOW	387	1606	27061	27976	13	66	28	174	39	13	5021	5265	179176	41675	13	2	10	1	0	25	0	0	18983	307534
14 AAR	1139	3035	6328	53923	34	170	247	301	27	29	242	386	43885	422388	2249	18	337	2	1	5	0	1	37082	571829
15 CAL	96	267	52	5181	5	25	88	101	3	9	2	4	17	3160	56380	6011	2748	0	1	0	3	3	236	74392
16 STM	9	27	19	851	2	8	21	44	1	8	0	0	6	46	7139	93007	6629	0	6	0	5	121	133	108082
17 CHS	676	1468	97	23394	29	270	1302	1420	9	30	6	2	15	437	2067	4079	122958	3	6	0	7	348	520	159143
18 FAU	5	5	14	9	2	18	6	1894	1347	10699	3	0	1	1	0	0	4	40439	1532	129	346	1	747	57202
19 STA	6	7	13	15	1	8	29	734	14	9310	0	0	0	5	1	0	6	1871	79363	0	21768	287	980	114418
20 CL/JF	2	4	233	12	0	7	5	102	5445	77	3475	31	45	9	0	0	0	209	2	62965	0	0	3908	76531
21 SP/FB	6	8	8	15	0	7	8	102	13	1720	0	0	0	1	2	3	7	387	22444	1	183035	387	5039	213193
22 KGEO	6	4	4	33	0	3	4	16	1	17	0	0	2	5	7	183	781	3	701	0	925	19400	323	22418
23 EXTL	1410	2682	12760	12209	132	1092	726	5267	2359	2264	6055	4827	22209	34435	228	129	491	707	979	3861	5316	320	0	120458
TOTAL	268527	355836	1156798	917397	34387	295902	214506	1362416	414055	473859	290431	143429	310328	565804	71808	103890	156060	55749	113627	73315	212839	20885	120464	7732312

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: Transit Percentage

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	35.2	10.3	27.6	8.8	45.6	27.7	17.0	13.6	5.6	3.7	0	0	1.6	0	0	0	0.2	0	0	0	0	0	0	22.6
2 DC NC	31.4	3.3	12.7	3.2	27.1	14.6	8.2	5.5	2.5	2.1	0	0	0.3	0	0	0	0	0	0	0	0	0	0	10.4
3 MTG	41.1	9.2	3.2	2.2	28.6	14.8	11.0	3.3	0.5	1.1	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0	4.0
4 PG	24.4	4.2	3.9	0.3	19.0	9.6	2.5	1.4	0.9	0.5	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	1.9
5 ARLCR	50.5	12.3	19.0	7.4	7.4	12.0	10.9	8.3	2.7	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	16.5
6 ARNCR	43.0	9.2	12.6	4.4	23.7	5.3	5.9	5.4	2.8	0.3	0	0	0	0.5	0	0	1.0	0	0	0	0	0	0	10.1
7 ALX	30.8	6.4	10.2	1.4	20.5	9.1	2.4	2.1	1.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	5.5
8 FFX	25.4	5.1	3.9	1.0	17.9	8.6	3.0	1.0	0.5	0.0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	2.0
9 LDN	15.2	4.0	1.4	0.8	19.3	10.1	4.0	1.6	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
10 PW	2.5	0.6	0.3	0	2.3	0.7	0.7	0.0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
11 FRD	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.0
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	4.7	0.5	0.2	0.0	7.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	1.4	0.1	0.1	0.0	2.8	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0.0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	33.1	6.0	4.0	1.0	24.0	10.0	4.3	1.6	0.2	0.0	0.0	0	0.0	0.0	0	0	0.0	0	0	0	0	0	0	3.0

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: Avg. Auto Occupancy

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.23	1.32	1.32	1.34	1.30	1.31	1.32	1.34	1.36	1.34	1.67	1.20	1.32	1.35	1.37	2.50	1.33	1.00	2.00	1.50	1.00	1.00	1.29	1.30
2 DC NC	1.32	1.28	1.33	1.36	1.31	1.31	1.33	1.35	1.36	1.35	1.19	1.00	1.36	1.37	1.41	1.22	1.34	1.33	1.00	1.50	1.00	0	1.29	1.32
3 MTG	1.32	1.33	1.27	1.35	1.31	1.32	1.34	1.35	1.36	1.44	1.37	1.38	1.37	1.37	1.45	1.50	1.31	1.33	1.50	1.41	1.75	0	1.28	1.28
4 PG	1.34	1.36	1.36	1.27	1.31	1.33	1.35	1.37	1.50	1.36	1.34	1.44	1.37	1.37	1.37	1.39	1.38	1.50	1.17	1.33	1.10	1.25	1.28	1.30
5 ARLCR	1.30	1.30	1.30	1.32	1.05	1.28	1.31	1.31	1.26	1.36	1.50	0	1.25	1.32	1.00	0	1.33	2.00	1.00	1.00	1.00	0	1.27	1.26
6 ARNCR	1.30	1.31	1.31	1.32	1.28	1.20	1.31	1.32	1.34	1.32	1.19	1.33	1.31	1.33	1.17	2.00	1.32	1.33	5.00	2.00	1.20	1.00	1.28	1.27
7 ALX	1.32	1.33	1.33	1.34	1.31	1.31	1.22	1.34	1.35	1.35	1.22	2.00	1.47	1.33	1.44	2.33	1.35	1.00	1.36	1.00	3.00	0	1.27	1.29
8 FFX	1.34	1.35	1.35	1.37	1.32	1.33	1.34	1.28	1.36	1.37	1.43	1.40	1.30	1.35	1.38	1.15	1.37	1.38	1.33	1.40	1.45	1.00	1.28	1.29
9 LDN	1.37	1.34	1.37	1.33	1.21	1.36	1.35	1.36	1.23	1.37	1.38	1.23	1.41	1.25	2.00	1.00	1.13	1.39	2.00	1.38	1.00	0	1.28	1.26
10 PW	1.35	1.37	1.32	1.38	1.30	1.34	1.35	1.37	1.37	1.24	1.71	1.50	1.30	1.63	1.00	1.67	1.25	1.38	1.38	1.37	1.38	1.00	1.28	1.27
11 FRD	1.45	1.30	1.37	1.38	1.25	1.24	1.75	1.36	1.38	1.50	1.21	1.38	1.38	1.39	1.50	0	1.00	1.25	0	1.38	0	0	1.28	1.23
12 CAR	1.00	1.70	1.38	1.38	1.00	1.14	1.17	1.69	1.29	1.00	1.38	1.10	1.38	1.38	2.00	0	1.00	1.00	0	1.64	0	0	1.28	1.14
13 HOW	1.34	1.36	1.37	1.37	1.00	1.40	1.40	1.35	1.39	1.08	1.38	1.38	1.17	1.37	1.44	2.00	1.43	1.00	0	1.47	0	0	1.28	1.24
14 AAR	1.34	1.36	1.37	1.37	1.37	1.36	1.35	1.36	1.42	1.53	1.37	1.38	1.37	1.18	1.38	1.29	1.39	2.00	1.00	1.67	0	1.00	1.28	1.22
15 CAL	1.32	1.38	1.41	1.38	1.00	1.32	1.38	1.42	1.50	1.13	2.00	1.33	1.31	1.38	1.16	1.38	1.38	0	1.00	0	3.00	1.00	1.28	1.21
16 STM	1.13	1.42	1.73	1.37	2.00	1.14	1.31	1.29	1.00	1.60	0	0	1.50	1.44	1.38	1.19	1.38	0	1.00	0	1.25	1.39	1.32	1.21
17 CHS	1.35	1.36	1.39	1.38	1.53	1.34	1.35	1.37	1.50	1.30	1.20	2.00	1.25	1.38	1.38	1.38	1.18	1.00	2.00	0	2.33	1.38	1.27	1.22
18 FAU	1.00	1.25	2.00	1.29	2.00	1.20	1.20	1.37	1.38	1.38	1.00	0	1.00	1.00	0	0	1.33	1.10	1.38	1.39	1.37	1.00	1.29	1.17
19 STA	1.00	1.17	1.86	1.50	1.00	1.60	1.38	1.37	1.40	1.38	0	0	0	1.25	1.00	0	1.00	1.38	1.14	0	1.38	1.40	1.29	1.21
20 CL/JF	1.00	1.00	1.39	1.71	0	1.17	1.00	1.36	1.38	1.40	1.38	1.35	1.41	1.80	0	0	0	1.39	1.00	1.12	0	0	1.28	1.16
21 SP/FB	1.00	2.00	1.33	1.36	0	1.75	1.14	1.36	1.63	1.37	0	0	0	1.00	2.00	1.50	1.17	1.38	1.38	1.00	1.11	1.38	1.28	1.14
22 KGEO	1.20	2.00	1.33	1.38	0	1.50	1.00	1.45	1.00	1.42	0	0	1.00	1.67	1.17	1.39	1.38	1.50	1.38	0	1.38	1.11	1.29	1.14
23 EXTL	1.28	1.28	1.28	1.28	1.23	1.29	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.27	1.28	1.29	1.28	1.28	1.28	1.28	1.29	0	1.28
TOTAL	1.29	1.32	1.28	1.30	1.26	1.27	1.29	1.30	1.26	1.27	1.23	1.13	1.24	1.22	1.20	1.21	1.21	1.16	1.20	1.15	1.14	1.12	1.28	1.26

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: LOV Auto Driver

DESTINATION

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
1 DC CR	74706	58002	11965	25464	3351	24443	8164	14472	246	229	36	8	331	988	58	79	401	14	117	27	442	5	3555	227103
2 DC NC	150331	511169	122064	141603	10190	53212	15314	32427	866	377	144	25	2563	4822	184	340	1154	75	639	127	1482	9	22934	1072050
3 MTG	59511	123634	2880738	196421	5409	23152	5160	70878	3781	746	28446	2022	52094	14635	119	246	382	152	929	468	2728	15	80467	3552133
4 PG	100520	215564	138256	1862700	6846	22119	36585	43796	601	804	320	196	42611	113155	4316	1404	45235	108	970	131	2538	75	58513	2697363
5 ARLCR	3768	3652	1497	1186	13009	14904	3033	6126	104	81	8	1	10	33	2	5	21	2	7	2	26	0	457	47934
6 ARNCR	39955	30689	13862	9377	20719	393031	51192	138747	2444	1179	39	8	83	228	20	33	161	21	52	19	179	4	7476	709518
7 ALX	21383	16085	4192	16595	7970	71436	225714	114345	570	2032	26	3	54	270	46	64	703	23	160	20	327	3	3997	486018
8 FFX	58586	42980	48311	37625	21323	188686	149619	3238013	209259	112369	588	62	612	3180	319	1305	2010	2128	4131	854	9488	37	39075	4170560
9 LDN	607	705	6066	1540	305	2964	790	174215	1115376	19571	11732	96	405	1817	45	39	273	2721	2120	15682	4446	5	18798	1380319
10 PW	5605	1784	1696	1943	1978	7936	10072	240119	55682	1262607	224	11	228	1273	96	173	259	20602	25518	556	8531	78	18868	1665838
11 FRD	410	673	72111	3749	100	1902	510	2576	8322	569	854478	16415	22749	2919	41	0	128	209	304	9154	154	0	48509	1045983
12 CAR	347	542	9582	3839	84	1644	434	1797	1199	123	31932	424625	29726	3150	33	1	115	7	10	209	0	0	72778	582177
13 HOW	1475	3675	54132	57197	98	434	134	751	184	115	8332	6026	581004	86526	55	57	78	23	196	180	116	2	82372	883161
14 AAR	4612	10379	10266	121258	282	1502	846	2008	462	338	387	331	66942	1427805	4702	336	803	20	295	84	528	17	129086	1783288
15 CAL	864	2285	742	20417	82	489	378	882	183	140	37	13	170	10665	238304	23394	5409	9	263	0	539	65	1560	306889
16 STM	373	613	581	4947	65	833	238	1044	115	150	0	0	161	710	12441	340798	17064	3	955	0	1044	1394	1136	384665
17 CHS	4688	10524	852	73311	280	1299	3715	4509	359	200	29	12	149	1444	6731	12543	477027	83	603	5	821	3715	3315	606215
18 FAU	351	376	1084	885	66	665	294	10503	9090	38017	121	3	127	123	3	7	141	225165	21144	1069	6327	74	10276	325911
19 STA	259	158	144	133	257	570	731	8146	145	28127	1	0	7	43	4	18	35	3471	384370	9	95014	1708	12325	535676
20 CL/JF	309	510	1941	938	62	627	233	1731	21969	625	11749	68	450	533	0	0	4	1323	644	245655	283	0	38453	328107
21 SP/FB	138	184	95	125	40	184	145	961	118	3674	0	0	0	1	3	31	76	740	46015	3	533182	951	40435	627101
22 KGEO	344	485	208	1156	69	730	296	934	65	589	0	0	21	326	76	467	1964	550	4956	0	6027	75894	2375	97532
23 EXTL	9132	15170	58798	60367	1417	5984	3557	32012	22423	23217	76690	61292	88463	183866	2236	1167	3909	22449	12076	42726	52933	3377	0	783261
TOTAL	538273	1049838	3439182	2642776	94002	818745	517155	4140992	1453563	1495880	1025319	511217	888960	1858512	269834	382507	557352	279898	506474	316980	727155	87428	696760	24298802

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: LOV Auto Person

DESTINATION

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
1 DC CR	90450	76365	15695	33930	4292	31327	10753	19181	348	306	57	9	435	1352	81	135	549	21	180	42	679	7	4620	290814
2 DC NC	197963	650171	165784	196480	13067	69394	20432	43528	1246	539	199	35	3483	6661	271	568	1624	114	1020	204	2381	16	31544	1406723
3 MTG	74245	165542	3603690	264720	6774	30538	6839	95581	5394	1085	39080	2852	71246	19718	195	405	575	247	1524	734	4462	27	111388	4506862
4 PG	128458	288010	186945	2327786	8305	28241	48958	58472	934	1119	495	289	57153	152871	5947	2070	63619	187	1584	225	4215	101	79819	3445803
5 ARLCR	4840	4755	1951	1566	13558	18763	3955	7990	134	109	9	1	15	44	2	8	27	4	9	3	40	0	646	58429
6 ARNCR	50727	39980	18067	12415	26333	467518	68352	185523	3260	1581	50	12	107	311	28	49	220	27	85	30	265	5	10868	885814
7 ALX	27121	21100	5483	22204	10028	93085	268811	151062	710	2741	41	7	74	373	66	105	961	28	230	39	501	3	5751	610524
8 FFX	72238	55064	64841	51256	26149	250032	198643	4060009	284512	154458	894	107	886	4973	530	2217	3012	3022	6224	1364	14855	64	57421	5312772
9 LDN	807	954	7962	2482	374	4103	1068	225944	1340622	26584	15112	143	618	3122	91	68	454	3720	3550	22218	7435	6	26746	1694184
10 PW	6808	2365	2487	2789	2348	10316	12925	320090	75761	1544733	367	25	363	2112	148	296	425	27644	35462	882	12136	109	27854	2088445
11 FRD	582	953	97898	5552	138	2836	783	3929	11995	938	1021926	23013	30253	4404	79	0	221	339	544	13325	277	0	69141	1289126
12 CAR	509	819	12884	5715	127	2514	697	2879	1966	212	41147	500139	38530	4496	63	1	196	13	16	334	0	0	106796	720053
13 HOW	1904	4746	73410	76237	111	589	190	1023	292	181	11314	8509	668158	115370	88	100	125	37	346	294	201	4	111058	1074287
14 AAR	5783	13503	14006	163923	353	2063	1184	2970	756	553	576	472	93006	1718841	6598	541	1184	41	500	147	925	25	177855	2205806
15 CAL	1138	2946	1081	26629	108	684	524	1315	299	226	66	20	248	14433	270503	31115	7445	15	459	0	950	85	2358	362646
16 STM	528	867	930	6711	94	1249	342	1639	185	257	0	0	275	1122	16643	392642	23114	3	1632	0	1754	1784	1737	453509
17 CHS	6028	13178	1223	96406	349	1709	4868	6123	596	309	47	15	230	1992	8904	16956	548025	131	1011	12	1353	4936	5022	719422
18 FAU	508	566	1664	1441	91	969	443	15325	12613	50294	194	7	222	221	8	11	241	245743	28849	1519	8838	108	15121	384996
19 STA	314	206	222	189	296	699	872	9516	205	35532	4	0	17	77	8	25	52	4776	450700	16	127334	2066	17526	650652
20 CL/JF	457	774	2713	1575	93	962	361	2596	30042	957	15913	97	664	921	0	0	8	1953	1123	269186	483	0	56300	387178
21 SP/FB	197	278	147	193	52	264	201	1238	184	4592	0	0	0	1	5	46	119	1058	63341	4	628987	1171	57320	759398
22 KGEO	504	734	326	1869	101	1106	455	1496	120	900	0	0	38	558	115	690	2855	857	7115	0	8240	82475	3492	114046
23 EXTL	11781	20876	80533	78698	1795	8505	4981	45365	29834	30338	97938	82263	116118	244803	2888	1620	5267	28697	16550	55574	74046	4426	0	1042896
TOTAL	683891	1364752	4359942	3380766	114937	1027466	656638	5262792	1802008	1858544	1245429	618015	1082139	2298777	313261	449668	660319	318677	622054	366152	900358	97418	980383	30464384

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Transit

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	69363	23492	8933	5800	5379	16001	3252	5625	48	17	1	0	34	11	0	0	6	0	0	0	9	0	0	137971
2 DC NC	165165	84432	40450	23647	8889	20413	4090	7155	77	19	1	0	114	27	1	0	6	0	0	0	12	0	0	354498
3 MTG	67826	27170	158069	12562	3878	6262	1048	5922	59	11	97	0	496	27	1	0	1	0	0	0	11	0	0	283441
4 PG	78921	39981	18056	42519	5196	7115	2736	2570	15	5	3	0	461	177	0	0	3	0	0	0	5	0	0	197762
5 ARLCR	7052	1283	670	187	1254	4083	734	1540	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	16818
6 ARNCR	49979	7728	3632	932	12728	35536	8410	23027	208	31	0	0	1	1	0	0	2	0	0	0	1	0	0	142215
7 ALX	23213	3591	1101	614	4949	16276	14801	10961	29	33	0	0	1	0	0	0	0	0	0	0	1	0	0	75570
8 FFX	53282	7520	4869	809	10808	36328	16151	64036	3632	445	0	0	4	2	0	0	2	0	0	0	2	0	0	197889
9 LDN	419	90	315	26	237	686	76	13251	16039	1	0	0	0	0	0	0	0	0	0	0	0	0	0	31141
10 PW	13076	674	104	30	1670	2706	2493	10670	33	13582	0	0	0	0	0	0	0	0	1	0	14	0	0	45053
11 FRD	120	80	4083	52	13	22	4	14	2	0	5147	0	16	0	0	0	0	0	0	0	0	0	0	9552
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	1257	496	2153	1035	68	68	8	32	0	0	1	0	970	18	0	0	0	0	0	0	0	0	0	6106
14 AAR	4338	1641	550	1969	212	226	52	58	0	0	1	0	83	59	7	0	0	0	0	0	0	0	0	9196
15 CAL	1802	1158	105	1214	112	127	56	36	0	0	0	0	0	1	114	0	1	0	0	0	0	0	0	4725
16 STM	341	141	26	155	37	37	14	16	0	0	0	0	0	0	3	19	111	0	0	0	0	0	0	900
17 CHS	6201	2810	196	1231	355	386	266	154	0	0	0	0	0	0	2	0	2134	0	0	0	0	0	0	13733
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	907	112	12	4	406	486	406	1339	1	331	0	0	0	0	0	0	0	0	9	0	291	0	0	4304
20 CL/JF	1	4	89	1	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
21 SP/FB	47	8	1	0	23	39	35	179	0	95	0	0	0	0	0	0	0	0	26	0	1194	0	0	1646
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	543310	202411	243414	92787	56212	146798	54632	146586	20159	14572	5251	0	2180	322	128	19	2265	0	36	0	1540	0	0	1532621

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: HOV Auto Person

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
2 DC NC	0	0	22	0	0	15	119	662	41	4	0	0	0	0	0	0	0	0	0	0	0	0	0	863
3 MTG	2022	653	8136	452	560	912	183	2861	160	2	0	0	5	6	0	0	0	0	0	0	0	0	0	15951
4 PG	1949	623	595	793	738	1511	1938	2581	42	13	1	1	3	1	0	0	0	0	0	0	0	0	0	10789
5 ARLCR	6	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
6 ARNCR	2066	417	216	79	293	422	34	233	26	3	0	0	2	3	0	0	0	0	0	0	0	0	0	3794
7 ALX	1900	442	233	143	449	575	97	1165	93	3	0	0	1	4	1	0	0	0	0	0	0	0	0	5107
8 FFX	22384	5164	3365	757	5269	8822	3333	17794	918	35	4	0	13	8	0	0	4	2	3	1	0	0	0	67874
9 LDN	520	244	916	51	412	657	221	8362	9	65	6	0	1	0	0	0	0	0	0	0	0	0	0	11464
10 PW	13397	1617	507	211	3119	5385	3358	19694	814	537	0	0	1	0	0	0	0	2	3	0	1	0	0	48645
11 FRD	170	221	6146	307	48	68	7	254	42	0	171	0	10	7	0	0	0	0	0	0	0	0	0	7451
12 CAR	0	2	258	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	265
13 HOW	13	11	142	0	11	16	5	55	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257
14 AAR	1027	852	346	2048	55	95	97	102	2	0	0	0	7	5	0	0	0	0	0	0	0	0	0	4636
15 CAL	39	31	29	161	18	33	48	50	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	411
16 STM	12	6	4	9	10	14	19	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97
17 CHS	229	26	52	38	95	190	384	352	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1370
18 FAU	0	0	0	0	2	7	8	588	171	769	0	0	0	0	0	0	0	0	0	0	0	0	0	1545
19 STA	1290	423	89	49	1019	1646	1019	4073	26	392	0	0	0	0	0	0	0	0	0	0	0	0	0	10026
20 CL/JF	1	34	514	10	0	1	0	62	0	7	46	0	0	0	0	0	0	0	0	0	0	0	0	675
21 SP/FB	60	23	1	3	67	118	87	422	4	109	0	0	0	0	0	0	0	0	0	0	0	0	0	894
22 KGEO	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	47087	10790	21572	5115	12164	20486	10958	59359	2355	1941	228	1	45	34	1	0	4	4	6	1	1	0	0	192152

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: HOV AUTO Driver

DESTINATION

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
1 DC CR	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2 DC NC	0	0	1	0	0	9	31	191	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	245
3 MTG	552	192	2361	134	156	261	52	829	32	0	0	0	1	2	0	0	0	0	0	0	0	0	0	4573
4 PG	539	174	177	233	215	424	572	743	18	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3098
5 ARLCR	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6 ARNCR	591	124	59	25	86	121	9	66	7	1	0	0	0	2	0	0	0	0	0	0	0	0	0	1091
7 ALX	545	128	70	38	134	167	27	342	21	3	0	0	1	3	0	0	0	0	0	0	0	0	0	1479
8 FFX	6250	1491	965	220	1500	2540	963	5122	257	16	2	0	2	5	0	0	0	0	1	0	0	0	0	19335
9 LDN	130	64	254	12	107	175	59	2254	3	20	2	0	0	0	0	0	0	0	0	0	0	0	0	3081
10 PW	3718	468	142	66	885	1540	967	5685	239	158	0	0	0	0	0	0	0	0	0	0	1	0	0	13869
11 FRD	48	60	1775	88	14	18	3	69	12	0	50	0	3	1	0	0	0	0	0	0	0	0	0	2142
12 CAR	0	0	73	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75
13 HOW	3	4	38	0	4	6	2	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71
14 AAR	287	244	102	588	18	27	29	27	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1323
15 CAL	10	8	10	48	2	9	15	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115
16 STM	2	2	2	3	2	3	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
17 CHS	64	6	17	10	28	54	109	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	387
18 FAU	0	0	0	0	1	1	2	170	48	223	0	0	0	0	0	0	0	0	0	0	0	0	0	445
19 STA	351	120	26	15	282	464	287	1160	6	115	0	0	0	0	0	0	0	0	0	0	0	0	0	2827
20 CL/JF	0	9	146	2	0	0	0	18	0	3	14	0	0	0	0	0	0	0	0	0	0	0	0	192
21 SP/FB	16	6	0	1	19	32	24	119	1	33	0	0	0	0	0	0	0	0	0	0	0	0	0	252
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	13109	3101	6218	1485	3454	5851	3158	16926	655	577	68	0	11	13	0	0	0	0	1	0	1	0	0	54628

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Auto Driver

DESTINATION

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
1 DC CR	74706	58002	11965	25464	3351	24443	8164	14474	246	229	36	8	331	988	58	79	401	14	117	27	442	5	3555	227105
2 DC NC	150331	511169	122065	141603	10190	53220	15346	32617	876	380	144	25	2563	4822	184	340	1154	75	639	127	1482	9	22934	1072295
3 MTG	60063	123826	2883099	196555	5565	23413	5212	71707	3813	746	28446	2022	52095	14637	119	246	382	152	929	468	2728	15	80467	3556706
4 PG	101058	215738	138433	1862933	7061	22542	37157	44539	619	806	320	196	42613	113155	4316	1404	45235	108	970	131	2538	75	58513	2700460
5 ARLCR	3770	3652	1497	1186	13009	14904	3033	6126	104	81	8	1	10	33	2	5	21	2	7	2	26	0	457	47936
6 ARNCR	40546	30813	13921	9402	20805	393152	51201	138813	2451	1180	39	8	83	230	20	33	161	21	52	19	179	4	7476	710609
7 ALX	21928	16213	4261	16633	8105	71603	225741	114687	591	2035	26	3	55	273	46	64	703	23	160	20	327	3	3997	487497
8 FFX	64836	44470	49276	37845	22824	191226	150582	3243135	209516	112385	590	62	614	3185	319	1305	2010	2128	4132	854	9488	37	39075	4189894
9 LDN	737	769	6320	1552	413	3139	849	176469	1115379	19591	11734	96	405	1817	45	39	273	2721	2120	15682	4446	5	18798	1383400
10 PW	9323	2252	1837	2009	2863	9476	11039	245804	55921	1262765	224	11	228	1273	96	173	259	20602	25518	556	8532	78	18868	1679707
11 FRD	458	733	73886	3837	114	1920	513	2646	8334	569	854528	16415	22752	2920	41	0	128	209	304	9154	154	0	48509	1048124
12 CAR	347	542	9655	3841	84	1644	434	1797	1199	123	31932	424625	29726	3150	33	1	115	7	10	209	0	0	72778	582252
13 HOW	1478	3679	54170	57197	102	440	136	764	185	115	8332	6026	581004	86526	55	57	78	23	196	180	116	2	82372	883232
14 AAR	4899	10623	10368	121846	299	1529	875	2034	462	338	387	331	66944	1427805	4702	336	803	20	295	84	528	17	129086	1784611
15 CAL	874	2293	752	20465	84	498	393	894	183	140	37	13	170	10665	238304	23394	5409	9	263	0	539	65	1560	307004
16 STM	376	615	583	4950	67	837	244	1049	115	150	0	0	161	710	12441	340798	17064	3	955	0	1044	1394	1136	384691
17 CHS	4752	10530	869	73321	308	1353	3824	4609	359	200	29	12	149	1444	6731	12543	477027	83	603	5	821	3715	3315	606602
18 FAU	351	376	1084	885	67	666	296	10673	9138	38240	121	3	127	123	3	7	141	225165	21144	1069	6327	74	10276	326356
19 STA	611	278	170	148	539	1034	1018	9306	151	28242	1	0	7	43	4	18	35	3471	384370	9	95014	1708	12325	538503
20 CL/JF	309	520	2086	940	62	627	233	1749	21969	628	11763	68	450	533	0	0	4	1323	644	245655	283	0	38453	328299
21 SP/FB	154	190	95	126	59	216	169	1080	119	3707	0	0	0	1	3	31	76	740	46015	3	533182	951	40435	627353
22 KGEO	344	485	208	1156	69	730	296	934	65	589	0	0	21	326	76	467	1964	550	4956	0	6027	75894	2375	97532
23 EXTL	9132	15170	58798	60367	1417	5984	3557	32012	22423	23217	76690	61292	88463	183866	2236	1167	3909	22449	12076	42726	52933	3377	0	783261
TOTAL	551383	1052939	3445400	2644261	97456	824596	520312	4157918	1454218	1496457	1025387	511217	888971	1858525	269834	382507	557352	279898	506475	316980	727156	87428	696760	24353430

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Auto Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	90450	76365	15695	33930	4292	31327	10753	19205	348	306	57	9	435	1352	81	135	549	21	180	42	679	7	4620	290838
2 DC NC	197963	650171	165806	196480	13067	69409	20551	44190	1287	543	199	35	3483	6661	271	568	1624	114	1020	204	2381	16	31544	1407586
3 MTG	76267	166195	3611826	265172	7334	31450	7022	98442	5554	1087	39080	2852	71251	19724	195	405	575	247	1524	734	4462	27	111388	4522813
4 PG	130407	288633	187540	2328579	9043	29752	50897	61052	976	1132	496	290	57156	152872	5947	2070	63619	187	1584	225	4215	101	79819	3456592
5 ARLCR	4846	4757	1951	1566	13558	18763	3955	7991	134	109	9	1	15	44	2	8	27	4	9	3	40	0	646	58438
6 ARNCR	52793	40397	18284	12494	26627	467940	68386	185756	3286	1584	50	12	109	314	28	49	220	27	85	30	265	5	10868	889609
7 ALX	29021	21543	5716	22346	10477	93660	268908	152227	803	2744	41	7	75	377	67	105	961	28	230	39	501	3	5751	615630
8 FFX	94621	60227	68206	52013	31417	258854	201976	4077803	285430	154493	898	107	899	4981	530	2217	3016	3024	6227	1365	14855	64	57421	5380646
9 LDN	1327	1198	8879	2533	786	4760	1289	234306	1340631	26649	15118	143	619	3122	91	68	454	3720	3550	22218	7435	6	26746	1705648
10 PW	20205	3982	2993	3000	5467	15701	16283	339784	76575	1545270	367	25	364	2112	148	296	425	27646	35465	882	12137	109	27854	2137090
11 FRD	752	1174	104044	5859	186	2904	790	4182	12037	938	1022097	23013	30263	4411	79	0	221	339	544	13325	277	0	69141	1296576
12 CAR	509	821	13142	5720	127	2514	697	2879	1966	212	41147	500139	38530	4496	63	1	196	13	16	334	0	0	106796	720318
13 HOW	1918	4757	73552	76237	122	606	195	1078	295	181	11314	8509	668158	115370	88	100	125	37	346	294	201	4	111058	1074544
14 AAR	6810	14355	14352	165971	409	2158	1281	3072	758	553	576	472	93013	1718846	6598	541	1184	41	500	147	925	25	177855	2210442
15 CAL	1177	2977	1110	26790	127	717	572	1364	299	226	66	20	250	14433	270503	31115	7445	15	459	0	950	85	2358	363058
16 STM	540	873	934	6720	104	1263	362	1662	185	257	0	0	275	1122	16643	392642	23114	3	1632	0	1754	1784	1737	453606
17 CHS	6257	13204	1275	96444	444	1898	5252	6475	600	309	47	15	230	1992	8904	16956	548025	131	1011	12	1353	4936	5022	720793
18 FAU	508	566	1664	1441	93	976	451	15913	12784	51063	194	7	222	221	8	11	241	245743	28849	1519	8838	108	15121	386541
19 STA	1605	629	311	237	1315	2345	1891	13589	231	35924	4	0	17	77	8	25	52	4776	450700	16	127334	2066	17526	660678
20 CL/JF	458	807	3227	1585	93	963	361	2658	30042	964	15959	97	664	921	0	0	8	1953	1123	269186	483	0	56300	387853
21 SP/FB	257	301	148	196	119	382	288	1660	188	4701	0	0	0	1	5	46	119	1058	63341	4	628987	1171	57320	760292
22 KGEO	504	734	326	1869	101	1106	455	1497	120	902	0	0	38	558	115	690	2855	857	7115	0	8240	82475	3492	114049
23 EXTL	11781	20876	80533	78698	1795	8505	4981	45365	29834	30338	97938	82263	116118	244803	2888	1620	5267	28697	16550	55574	74046	4426	0	1042896
TOTAL	730977	1375542	4381513	3385880	127102	1047952	667595	5322151	1804364	1860485	1245657	618016	1082184	2298811	313262	449668	660323	318681	622060	366153	900359	97418	980383	30656536

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Total Motorized Person

ORIGIN \ DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	159813	99857	24628	39730	9671	47328	14005	24830	396	323	58	9	469	1363	81	135	555	21	180	42	688	7	4620	428809
2 DC NC	363128	734603	206256	220127	21955	89822	24641	51344	1364	562	200	35	3597	6688	272	568	1630	114	1020	204	2393	16	31544	1762084
3 MTG	144093	193365	3769895	277734	11212	37713	8071	104364	5613	1098	39177	2852	71747	19751	196	405	576	247	1524	734	4473	27	111388	4806254
4 PG	209328	328614	205596	2371098	14239	36867	53632	63623	991	1137	499	290	57617	153049	5947	2070	63622	187	1584	225	4220	101	79819	3654354
5 ARLCR	11898	6040	2621	1753	14812	22846	4689	9531	147	111	9	1	15	44	2	8	27	4	9	3	40	0	646	75256
6 ARNCR	102772	48125	21915	13426	39355	503476	76796	208783	3494	1615	50	12	110	315	28	49	222	27	85	30	266	5	10868	1031824
7 ALX	52234	25134	6817	22960	15426	109936	283709	163188	832	2777	41	7	76	377	67	105	961	28	230	39	502	3	5751	691200
8 FFX	147903	67747	73074	52822	42226	295182	218127	4141839	289062	154938	898	107	903	4983	530	2217	3018	3024	6227	1365	14857	64	57421	5578535
9 LDN	1746	1288	9194	2559	1023	5446	1365	247557	1356670	26650	15118	143	619	3122	91	68	454	3720	3550	22218	7435	6	26746	1736789
10 PW	33281	4656	3097	3030	7137	18407	18776	350454	76608	1558852	367	25	364	2112	148	296	425	27646	35466	882	12151	109	27854	2182144
11 FRD	872	1254	108127	5911	199	2926	794	4196	12039	938	1027244	23013	30279	4411	79	0	221	339	544	13325	277	0	69141	1306129
12 CAR	509	821	13142	5720	127	2514	697	2879	1966	212	41147	500139	38530	4496	63	1	196	13	16	334	0	0	106796	720318
13 HOW	3175	5253	75705	77272	190	674	203	1110	295	181	11315	8509	669128	115388	88	100	125	37	346	294	201	4	111058	1080651
14 AAR	11148	15996	14902	167940	620	2384	1333	3131	758	553	577	472	93096	1718905	6605	541	1184	41	500	147	925	25	177855	2219638
15 CAL	2979	4135	1215	28004	238	844	628	1400	299	226	66	20	250	14434	270617	31115	7446	15	459	0	950	85	2358	367783
16 STM	881	1014	960	6875	141	1300	376	1678	185	257	0	0	275	1122	16646	392661	23225	3	1632	0	1754	1784	1737	454506
17 CHS	12458	16014	1471	97675	799	2284	5518	6629	600	309	47	15	230	1992	8906	16956	550159	131	1011	12	1353	4936	5022	734526
18 FAU	508	566	1664	1441	93	976	451	15913	12784	51063	194	7	222	221	8	11	241	245743	28849	1519	8838	108	15121	386541
19 STA	2511	741	323	241	1721	2831	2297	14928	232	36255	4	0	17	77	8	25	52	4776	450709	16	127625	2066	17526	664982
20 CL/JF	459	811	3316	1586	93	963	361	2659	30046	964	15959	97	664	921	0	0	8	1953	1123	269186	483	0	56300	387952
21 SP/FB	304	308	149	196	142	421	323	1839	188	4796	0	0	0	1	5	46	119	1058	63367	4	630181	1171	57320	761938
22 KGEO	504	734	326	1869	101	1106	455	1497	120	902	0	0	38	558	115	690	2855	857	7115	0	8240	82475	3492	114049
23 EXTL	11781	20876	80533	78698	1795	8505	4981	45365	29834	30338	97938	82263	116118	244803	2888	1620	5267	28697	16550	55574	74046	4426	0	1042896
TOTAL	1274287	1577953	4624927	3478667	183314	1194751	722227	5468736	1824523	1875057	1250908	618016	1084364	2299133	313390	449687	662588	318681	622096	366153	901898	97418	980383	32189157

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Transit Percentage

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	43.4	23.5	36.3	14.6	55.6	33.8	23.2	22.7	12.1	5.3	1.7	0	7.2	0.8	0	0	1.1	0	0	0	1.3	0	0	32.2
2 DC NC	45.5	11.5	19.6	10.7	40.5	22.7	16.6	13.9	5.7	3.4	0.5	0	3.2	0.4	0.4	0	0.4	0	0	0	0.5	0	0	20.1
3 MTG	47.1	14.1	4.2	4.5	34.6	16.6	13.0	5.7	1.1	1.0	0.2	0	0.7	0.1	0.5	0	0.2	0	0	0	0.2	0	0	5.9
4 PG	37.7	12.2	8.8	1.8	36.5	19.3	5.1	4.0	1.5	0.4	0.6	0	0.8	0.1	0	0	0.0	0	0	0	0.1	0	0	5.4
5 ARLCR	59.3	21.2	25.6	10.7	8.5	17.9	15.7	16.2	8.8	1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	22.3
6 ARNCR	48.6	16.1	16.6	6.9	32.3	7.1	11.0	11.0	6.0	1.9	0	0	0.7	0.3	0	0	0.8	0	0	0	0.4	0	0	13.8
7 ALX	44.4	14.3	16.2	2.7	32.1	14.8	5.2	6.7	3.5	1.2	0	0	1.1	0	0	0	0	0	0	0	0.2	0	0	10.9
8 FFX	36.0	11.1	6.7	1.5	25.6	12.3	7.4	1.5	1.3	0.3	0	0	0.4	0.0	0	0	0.1	0	0	0	0.0	0	0	3.5
9 LDN	24.0	7.0	3.4	1.0	23.2	12.6	5.6	5.4	1.2	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8
10 PW	39.3	14.5	3.3	1.0	23.4	14.7	13.3	3.0	0.0	0.9	0	0	0	0	0	0	0	0	0.0	0	0.1	0	0	2.1
11 FRD	13.7	6.4	3.8	0.9	6.7	0.8	0.5	0.3	0.0	0	0.5	0	0.1	0	0	0	0	0	0	0	0	0	0	0.7
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	39.6	9.4	2.8	1.3	35.6	10.1	4.2	2.9	0	0	0.0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	0.6
14 AAR	38.9	10.3	3.7	1.2	34.1	9.5	3.9	1.9	0	0	0.2	0	0.1	0.0	0.1	0	0	0	0	0	0	0	0	0.4
15 CAL	60.5	28.0	8.6	4.3	46.9	15.1	8.9	2.6	0	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	0	1.3
16 STM	38.7	13.9	2.7	2.3	26.4	2.9	3.8	0.9	0	0	0	0	0	0	0.0	0.0	0.5	0	0	0	0	0	0	0.2
17 CHS	49.8	17.5	13.3	1.3	44.4	16.9	4.8	2.3	0	0	0	0	0	0	0.0	0	0.4	0	0	0	0	0	0	1.9
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	36.1	15.2	3.7	1.6	23.6	17.2	17.7	9.0	0.4	0.9	0	0	0	0	0	0	0	0	0.0	0	0.2	0	0	0.6
20 CL/JF	0.2	0.5	2.7	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
21 SP/FB	15.3	2.4	0.5	0	16.1	9.3	10.8	9.7	0	2.0	0	0	0	0	0	0	0	0	0.0	0	0.2	0	0	0.2
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	42.6	12.8	5.3	2.7	30.7	12.3	7.6	2.7	1.1	0.8	0.4	0	0.2	0.0	0.0	0.0	0.3	0	0.0	0	0.2	0	0	4.8

Simulation - Year: 2030 Alt: Version2.2_Jan08 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Avg. Auto Occupancy

ORIGIN | DESTINATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	TOTAL
1 DC CR	1.21	1.32	1.31	1.33	1.28	1.28	1.32	1.33	1.41	1.34	1.58	1.13	1.31	1.37	1.40	1.71	1.37	1.50	1.54	1.56	1.54	1.40	1.30	1.28
2 DC NC	1.32	1.27	1.36	1.39	1.28	1.30	1.34	1.35	1.47	1.43	1.38	1.40	1.36	1.38	1.47	1.67	1.41	1.52	1.60	1.61	1.61	1.78	1.38	1.31
3 MTG	1.27	1.34	1.25	1.35	1.32	1.34	1.35	1.37	1.46	1.46	1.37	1.41	1.37	1.35	1.64	1.65	1.51	1.63	1.64	1.57	1.64	1.80	1.38	1.27
4 PG	1.29	1.34	1.35	1.25	1.28	1.32	1.37	1.37	1.58	1.40	1.55	1.48	1.34	1.35	1.38	1.47	1.41	1.73	1.63	1.72	1.66	1.35	1.36	1.28
5 ARLCR	1.29	1.30	1.30	1.32	1.04	1.26	1.30	1.30	1.29	1.35	1.13	1.00	1.50	1.33	1.00	1.60	1.29	2.00	1.29	1.50	1.54	0	1.41	1.22
6 ARNCR	1.30	1.31	1.31	1.33	1.28	1.19	1.34	1.34	1.34	1.34	1.28	1.50	1.31	1.37	1.40	1.48	1.37	1.29	1.63	1.58	1.48	1.25	1.45	1.25
7 ALX	1.32	1.33	1.34	1.34	1.29	1.31	1.19	1.33	1.36	1.35	1.58	2.33	1.36	1.38	1.46	1.64	1.37	1.22	1.44	1.95	1.53	1.00	1.44	1.26
8 FFX	1.46	1.35	1.38	1.37	1.38	1.35	1.34	1.26	1.36	1.37	1.52	1.73	1.46	1.56	1.66	1.70	1.50	1.42	1.51	1.60	1.57	1.73	1.47	1.28
9 LDN	1.80	1.56	1.40	1.63	1.91	1.52	1.52	1.33	1.20	1.36	1.29	1.49	1.53	1.72	2.02	1.74	1.66	1.37	1.67	1.42	1.67	1.20	1.42	1.23
10 PW	2.17	1.77	1.63	1.49	1.91	1.66	1.48	1.38	1.37	1.22	1.64	2.27	1.60	1.66	1.54	1.71	1.64	1.34	1.39	1.59	1.42	1.40	1.48	1.27
11 FRD	1.64	1.60	1.41	1.53	1.63	1.51	1.54	1.58	1.44	1.65	1.20	1.40	1.33	1.51	1.93	0	1.73	1.62	1.79	1.46	1.80	0	1.43	1.24
12 CAR	1.47	1.51	1.36	1.49	1.51	1.53	1.61	1.60	1.64	1.72	1.29	1.18	1.30	1.43	1.91	1.00	1.70	1.86	1.60	1.60	0	0	1.47	1.24
13 HOW	1.30	1.29	1.36	1.33	1.20	1.38	1.43	1.41	1.59	1.57	1.36	1.41	1.15	1.33	1.60	1.75	1.60	1.61	1.77	1.63	1.73	2.00	1.35	1.22
14 AAR	1.39	1.35	1.38	1.36	1.37	1.41	1.46	1.51	1.64	1.64	1.49	1.43	1.39	1.20	1.40	1.61	1.47	2.05	1.69	1.75	1.75	1.47	1.38	1.24
15 CAL	1.35	1.30	1.48	1.31	1.51	1.44	1.46	1.53	1.63	1.61	1.78	1.54	1.47	1.35	1.14	1.33	1.38	1.67	1.75	0	1.76	1.31	1.51	1.18
16 STM	1.44	1.42	1.60	1.36	1.55	1.51	1.48	1.58	1.61	1.71	0	0	1.71	1.58	1.34	1.15	1.35	1.00	1.71	0	1.68	1.28	1.53	1.18
17 CHS	1.32	1.25	1.47	1.32	1.45	1.40	1.37	1.40	1.67	1.54	1.62	1.25	1.54	1.38	1.32	1.35	1.15	1.58	1.68	2.40	1.65	1.33	1.51	1.19
18 FAU	1.45	1.51	1.54	1.63	1.39	1.47	1.52	1.49	1.40	1.34	1.60	2.33	1.75	1.80	2.67	1.57	1.71	1.09	1.36	1.42	1.40	1.46	1.47	1.18
19 STA	2.63	2.26	1.83	1.61	2.44	2.27	1.86	1.46	1.53	1.27	4.00	0	2.43	1.79	2.00	1.39	1.49	1.38	1.17	1.78	1.34	1.21	1.42	1.23
20 CL/JF	1.48	1.55	1.55	1.69	1.50	1.54	1.55	1.52	1.37	1.54	1.36	1.43	1.48	1.73	0	0	2.00	1.48	1.74	1.10	1.71	0	1.46	1.18
21 SP/FB	1.67	1.58	1.56	1.56	2.01	1.77	1.70	1.54	1.58	1.27	0	0	0	1.00	1.67	1.48	1.57	1.43	1.38	1.33	1.18	1.23	1.42	1.21
22 KGEO	1.47	1.51	1.57	1.62	1.46	1.52	1.54	1.60	1.85	1.53	0	0	1.81	1.71	1.51	1.48	1.45	1.56	1.44	0	1.37	1.09	1.47	1.17
23 EXTL	1.29	1.38	1.37	1.30	1.27	1.42	1.40	1.42	1.33	1.31	1.28	1.34	1.31	1.33	1.29	1.39	1.35	1.28	1.37	1.30	1.40	1.31	0	1.33
TOTAL	1.33	1.31	1.27	1.28	1.30	1.27	1.28	1.28	1.24	1.24	1.21	1.21	1.22	1.24	1.16	1.18	1.18	1.14	1.23	1.16	1.24	1.11	1.41	1.26

Appendix D Year 2030 mode choice summary with 2010 transit constraint through the regional core (final, i6, iteration)

Appendix E. TP+ Scripts

1 Auto_Access.s

```
;----------------------------------------------------------------------
;Auto_Access.s
;MWCOG VERSION 2.2 MODEL
;
;
; Develop Auto Access Taz to PNR Links from the Prime Prime Auto Skims
;
; Environment variables:  _prev_  Previous iteration (PP,i1...i6)
;
;   Input files   -  SOVppam.skm (AM, SOV Skims from the Pump Prime Assignment)
;                    SOVppop.skm (AM, SOV Skims from the Pump Prime Assignment)
;                                   3 tables in each skim file:
;                                           1- time    (min)
;                                           2- distance(1/10ths of mi)
;                                           3- tolls   (1994 cents)
;                    tazpnr.lkp          (TAZ pnr equivalency file)
;   Output files  -  pnr_am.tb , pnr_op.tb (will overwrite the files from the
;                    earlier Pump_Prime_skims file.
;
;
LOOP PERIOD=1,2       ;  loop through two time periods-- AM, Off-Peak

 IF (PERIOD=1)
   PRD =  'AM'
   IDS =  'AM Final Auto Access Skims'
  ELSE
   PRD =  'OP'
   IDS =  'OP Final Auto Access Skims'
 ENDIF

;------------------------------------------------------------------------
;       Step 1: Park-&-Ride Access Data
;------------------------------------------------------------------------
;
;  Next write out TAZ-to-PNR links based on skim times/distances
;  for each time period
;
RUN PGM=MATRIX
 MATI[1]=SOV%_prev_%@PRD@.SKM

        LOOKUP NAME=TAZPNRLK,
               LOOKUP[1] = 1, RESULT=2,; pnr node 1
               LOOKUP[2] = 1, RESULT=3,; pnr node 2 (if any)
               LOOKUP[3] = 1, RESULT=4,; pnr node 3 (if any)
               LOOKUP[4] = 1, RESULT=5,; pnr node 4 (if any)
               INTERPOLATE=N, FAIL=0,0,0, FILE=TAZPNR.LKP

        ZDATI[1]=BASEZON.DAT,Z=1-5,XCRD = 7-14,YCRD= 15-22

        MW[1] = mi.1.1     ;       Time     (min)
        MW[2] = mi.1.2*10  ;       Distance (1/100ths mi)

;  calculate the i/j airline distance in miles MW[3]  and

        JLOOP
           IF (XCRD[I] = 0 || XCRD[J] = 0)
              MW[3] = 0
           ELSE
              XCHGFT =   XCRD[I] - XCRD[J]
              YCHGFT =   YCRD[I] - YCRD[J]
              MW[3]  =   (SQRT((XCHGFT**2) + (YCHGFT**2)))/ 5280.0
           ENDIF
         ENDJLOOP
;  Insert 50% of lowest time/distance value into intrazonal cells
        JLOOP
          IF (J == I)
              MW[1]=(0.50 * LOWEST(1,1,0.0001,99999.9))
              MW[2]=(0.50 * LOWEST(2,1,0.0001,99999.9))
              MW[3]=(0.50 * LOWEST(3,1,0.0001,99999.9))
          ENDIF
        ENDJLOOP




 JLOOP
    pnr = tazpnrlk(1,j)
        IF (pnr           > 0   &                ;---- Park-&-Ride Station ----
               ((i = 1   -1229 & j = 1   -1229)| ;---- DC/Maryland Internals ----
                (i = 1230-2141 & j = 1230-2141)| ;---- Virginia Internals ----
                (i = 1780-1919 & j = 1   -1229)| ;---- Loudoun to DC/Maryland ----
                (i = 2135-2141 & j = 1   -1229))) ;---- Jefferson to DC/Maryland ---
-


             ; set default airline distance tolenances here:

              dtol= 8.0 ; default distance limit to pnr stations is  9mi
                        ; limit is shorter for more developed juris.
              if (I=1-319,1230-1329,1330-1399)  dtol=4.00; 4mi/dc,arl/alx
              if (I=320-639,640-1029,1400-1779) dtol=5.00; 7mi/mtg,pg,ffx

              IF (MW[1]  > 0  & MW[3]  > 0.0001 &  MW[3] <= dtol) ;
                     _SPEED = ROUND (MW[2] / MW[1] * 0.60)
                     _dis00 =        MW[2]
                     PRINT LIST='SUPPORT N=',i(4),'-',pnr(5),
                     ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                      _SPEED(3),' ;  jtaz/pnr(1)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                     FILE=PNR_@PRD@.TB

                     if (tazpnrlk(2,j) > 0)
                        pnr2   = tazpnrlk(2,j)
                        PRINT LIST='SUPPORT N=',i(4),'-',pnr2(5),
                        ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                         _SPEED(3),' ;  jtaz/pnr(2)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                         FILE=PNR_@PRD@.TB
                     endif
                     if (tazpnrlk(3,j) > 0)
                        pnr3    = tazpnrlk(3,j)
                        PRINT LIST='SUPPORT N=',i(4),'-',pnr3(5),
                        ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                         _SPEED(3),' ;  jtaz/pnr(3)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                         FILE=PNR_@PRD@.TB
                     endif
                     if (tazpnrlk(4,j) > 0)
                        pnr4    = tazpnrlk(4,j)
                        PRINT LIST='SUPPORT N=',i(4),'-',pnr4(5),
                        ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                         _SPEED(3),' ;   jtaz/pnr(4)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                         FILE=PNR_@PRD@.TB
                     endif

                ENDIF
        ENDIF
```

```
 ENDJLOOP

ENDRUN
ENDLOOP   ;
```

2 CV_Time-of-Day.S

```
;-------------------------------------------------------------------------
; CV_Time-of-Day.S
;  Version 2.2 Model
;  MWCOG Light Commercial Vehicle Model
;   1/11/07
;   By Bill Allen, Modified by Milone for application in V2.2 model
;
;
;-------------------------------------------------------------------------
maxzones = 2191
intzones = 2144
fext     = intzones + 1
out_tab  = '%_iter_%tmcom.trp'
run pgm=matrix

  id = "Commercial time of day

  mati[1] =  com.trp
  mati[2] =  inputs\xxcv.vtt
  mati[3] = ..\support\CV_delta.trp
  mato    = @out_tab@, mo=5-7, name=AMCOM,PMCOM,OPCOM, dec = 3*S

; 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.COMII
  mw[2] = mi.1.COMEXT           ; P/A (outbound)
  mw[3] = mi.1.COMEXT.t         ; A/P (inbound)

; Also add in the X/X's.
  mw[4] = mi.2.1

; Read and transpose the external delta
  mw[11] = mi.3.1
  mw[12] = mi.3.2
  mw[13] = mi.3.2.t

; Add in the deltas.  First, for I/I and Ext (I/X).
  if (i = 1-@intzones@)
    jloop
      mw[21] = max(mw[1] + mw[11],0)
      mw[22] = max(mw[2] + mw[12],0)
    endjloop
  endif

  if (i > @intzones@)
; Now for Ext transposed (X/I).
    mw[23] = max(mw[3] + mw[13],0), include = 1-@intzones@

; Now for X/X.
    mw[24] = max(mw[4] + mw[12],0), include = @fext@-@maxzones@
  endif

; Use proposed new COM TOD factors
  mw[5] = 0.23 * (mw[21] + mw[24] + 0.7 * mw[23] + 0.3 * mw[22])  ; AM
  mw[6] = 0.27 * (mw[21] + mw[24] + 0.3 * mw[23] + 0.7 * mw[22])  ; PM
  mw[7] = 0.50 * (mw[21] + mw[24] + 0.5 * mw[23] + 0.5 * mw[22])  ; OP

endrun
```

3 CV_Trip_Distributions.S

```
;-------------------------------------------------------------------------
; CV_Trip_Distributions.S
;  Version 2.2 Model
;  MWCOG Light Commercial Vehicle Model
;   1/11/07
;   By Bill Allen, Modified by Milone for application in V2.2 model
;
;
;-------------------------------------------------------------------------

maxzones = 2191
intzones = 2144
fext     = intzones + 1

;-------------------------------------------------------------------
run pgm=tripdist

  id = "Commercial Trip Distribution

; Skims
  mati = SOVOPTT.SKF

; Trip ends
  zdati = comte.txt z=#1,p1=#2,a1=#3,p2=#4,a2=#5

; Output
  mato = com.trp, mo=1,2, name = COMII,COMEXT, dec=2*S

; Set maximum iterations, unless RMSE for all purposes is met.
  maxiters = 20, maxrmse = 10

; Set productions and attractions
  setpa p[1]=p1, a[1]=a1, p[2]=p2, a[2]=a2

; Get skims.
  mw[5] = mi.1.1

; Look up friction factors.  QRFM F's will be used for BOTH I/I & Extl trips
;                            per Allen/Milone discussion on 1/12/07
  lookup file=..\support\CV_Int_Ext.ffs, name=ff,
    lookup[1]=1, result=2,
    lookup[2]=1, result=2,
    interpolate=y,
    fail=1800,0,0

; Distribute trips on off-peak skim time.
  gravity purpose=1, los = mw[5], ffactors=ff
  gravity purpose=2, los = mw[5], ffactors=ff

; Trip end report
  report margins = 1,2

endrun
;-------------------------------------------------------------------
run pgm=matrix
```

```
  id = "Commercial TLFDs

;  Input files: trips, skims
  mati[1] = com.trp
  mati[2] = SOVOPTT.SKF

; Get trips.
  mw[1] = mi.1.1       ; COM I/I
  mw[2] = mi.1.2       ; COM Ext

; Time.
  mw[3] = mi.2.1

; TLF
  frequency basemw=3, valuemw=1, range=0-90-2,
  title='Est Commercial I/I Trips vs. Off-Peak Hwy Time'
  frequency basemw=3, valuemw=2, range=0-90-2,
  title='Est Commercial Ext Trips vs. Off-Peak Hwy Time'

endrun
```

4   CV_Trip_ Generation.S

```
;-----------------------------------------------------------------------
; CV_Trip_Generation.S
;  Version 2.2 Model
;  MWCOG Light Commercial Vehicle Model
;   1/11/07
;   By Bill Allen, Modified by Milone for application in V2.2 model
;
;-----------------------------------------------------------------------
;
maxzones = 2191
intzones = 2144
fext     = intzones + 1


run pgm=tripgen

  id = "Commercial Trip Generation

; Input Zonal Data and special generator factors

  zdati[1] = inputs\zone.asc, z=1-4, hh=10-15, hhpop=16-23, gqpop=24-31,
    totpop=32-39, totemp=40-47, indemp=48-55, retemp=56-63,
    offemp=64-71, othemp=72-79, jur=80-81, area=82-92, incrat=93-95,
    extdist=96-98

; COM external and X/X trip ends (forecasted with FCASTXX.S)
  zdati[2] = inputs\CV_ExtThru_Ends.asc, z = #1, extte = #2

; Zonal area type
  zdati[3] = atype.asc, z = #1, atype = #11

; Output P/A file: 1 = I/I, 2 = external
  pao = comte.txt form=8.0 list= z(5.0), p[1],a[1],p[2],a[2]  print=y

  zones = @maxzones@

; Look up area type factors
  lookup name=atcom, interpolate=n, fail=1.0,1.0,1.0,
    r = '1.05  1',
        '0.90  2',
        '1.20  6',
        '1.15  7'

; Apply equation to internal zones
  if (i <= @intzones@)

; AT-based adjustment factor.
    atfac = atcom(atype)

; Calculate commercial productions
; Incorporate adjustments from the delta trip end analysis
    cmp = (0.056 * indemp + 0.168 * offemp +
           0.494 * retemp + 0.082 * othemp + 0.130 * HH) * ATFAC
;  Apply external trip end share model.
;  External share is a declining function of the zone's distance to the
;   nearest cordon station (in miles).  This particular model is an
;   amalgam of the Berks Co, PA purpose-specific models, modified
;   to produce the correct number of external trips in 2000.
    extpct = 0.0
    if (extdist > 0) extpct = 1.73 * extdist^-1.2
    extpct = max(min(extpct,1.0),0)
    intpct = 1.0 - extpct

; Apply internal trip end shares; set A's equal to P's
    p[1] = cmp * intpct
    a[1] = p[1]

; Define all external trip ends as "Productions" at the internal
;  zones and "Attractions" at the external stations.  Calculate
;  these (initially) for internal zones as what's left over
;  after the above calculation.
    p[2] = cmp * extpct
  endif

; External trip ends.  These were calculated externally, in
;  COM Externals.xls  These are defined as
;  Attractions, at the external stations.
  if (i > @intzones@)
    p[1] = 0
    p[2] = 0
    a[1] = 0
    a[2] = extte
  endif

  phase = adjust

; Normalize external trips to the attractions (input at the external
;  stations).
    p[2] = p[2] * a[2][0]/p[2][0]

  endphase

endrun
```

5 Demo_Models.s

```
;=================================================================
;  Demo_Models.S
;
;   Version 2.2  Demographic Model
;
;   The models have been updated using the 2000 CTPP data.
;   Program to Allocate total zonal households among 64 classes:
;   4 HH Size groups by 4 Income Groups by 4 Veh. Avail. groups
;
;   Programmer: Milone
;   Date:      01/11/07
;   refinements to income curves on 11/09/06 rm/ms
;=================================================================
;
;
ZONESIZE    =  2191                  ;  No. of TAZs
LastIZn     =  2144                  ;  Last Internal TAZ no.

JURSIZE     =  24                    ;  Transformed JURIS. Code  ( 0-23 becomes 1-
24)
Areasize    =   7                    ;  No. of Area Types
SzCl        =   4                    ;  No. of HH Size   Classes
InCl        =   4                    ;  No. of Income    Classes
VaCl        =   4                    ;  No. of Veh Avail Classes

SICells     =   SzCl*10    + InCl    ;  No. of Size by Inc matrix cells
SIVCells    =   SICells*10 + VaCl    ;  No. of Size by Inc. by Veh Avail. matrix
cells
VSCells     =   VaCl*10    + SzCl    ;  No. of VA   by Size matrix cells
VICells     =   VaCl*10    + InCl    ;  No. of VA   by Inc. matrix cells

JSCells     =   JURSIZE*10 + SzCl    ;  No. of Juris by Size matrix cells
JICells     =   JURSIZE*10 + InCl    ;  No. of Juris by Inc. matrix cells
JVCells     =   JURSIZE*10 + VaCl    ;  No. of Juris by Va. matrix cells

ASCells     =   Areasize  *10 + SzCl ;  No. of Area Types  by Size matrix cells
AICells     =   Areasize  *10 + InCl ;  No. of Area Types  by Inc. matrix cells
AVCells     =   Areasize  *10 + VaCl ;  No. of Area Types  by Va. matrix cells

ZNFILE_IN1  = 'INPUTS\ZONE.ASC'      ;  Input  Zonal Land Use File

ZNFILE_IN2  = 'BASEZON.DAT'          ;  Input  Zonal Area Type File from network
building

Rept        = 'Demo_Models.txt'      ;  Summary Reports

ZNFILE_IN3  = 'JOBACC.ASC'           ;  Input  Zonal Transit Accessibility to Jobs

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

ZNFILE_OU5  = 'HH_Veh.Dat'           ;  Output zonal file for Mode Choice: HHs by
Veh. Av. groups (HHw/0, HHw/1, HHw/2+ Vehs)

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

```
RUN PGM=MATRIX
ZONES=@ZONESIZE@

;
; 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
      CSZA     = @SzCl@,           ;  Computed Marginal HH Totals by size levels
      CINA     = @InCl@,           ;  Computed Marginal HH Totals by income levels
      CSZAdjA  = @Incl@,           ;  Marginal HH  adjustment ftr by Income class
      CINAdjA  = @SzCl@,           ;  Marginal Inc adjustment ftr by HH size class
      CSZINA   = @SICells@,        ;  HH Size by Income level Matrix,
11,12,13,...,44
      P_VA     = @VaCl@,           ;  Veh Avail  probabilities
      CVAA     = @VaCl@,           ;  Veh Avail  Totals
      CSZINVAA = @SIVCells@,       ;  Veh Avail by HH Size by Inc Matrix,
111,112,113,...,444

      JurA    = @Jursize@,         ;  Juris. HH Totals  array
      JurSzA  = @JSCells@,         ;  Juris. HH by size array
      JurInA  = @JICells@,         ;  Juris. HH by Inc  array
      JurVaA  = @JVCells@,         ;  Juris. HH by VeAv array

      RegSzA  = @SzCl@,            ;  Regional HH by Size array
      RegInA  = @InCl@,            ;  Regional HH by Inc  array
      RegVaA  = @VaCl@,            ;  Regional HH by VeAv array

      RegSzInA   = @SIcells@,      ;  Regional Size by Inc  array
      RegSzInVaA = @SIVcells@,     ;  Regional Size by Inc  by vehav array

      RegVaSzA   = @VScells@,      ;  Regional V    by S    matrix
      RegVaInA   = @VScells@,      ;  Regional V1   by S2   matrix


      HH_ArS1A = @AreaSize@, HH_ArS2A= @AreaSize@, HH_ArS3A= @AreaSize@,
HH_ArS4A=@AreaSize@, HH_ArSTA=@AreaSize@,
      HH_ArI1A = @AreaSize@, HH_ArI2A= @AreaSize@, HH_ArI3A= @AreaSize@,
HH_ArI4A=@AreaSize@, HH_ArITA=@AreaSize@,
      HH_ArV1A = @AreaSize@, HH_ArV2A= @AreaSize@, HH_ArV3A= @AreaSize@,
HH_ArV4A=@AreaSize@, HH_ArVTA=@AreaSize@,
      HH_ArCoopT =  @AreaSize@

;=========================
; 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                 =
;==============================================================
;
      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,    100.0,     0.0,      0.0,     0.0",     ; 0.0  inc ratio
    "   1,     87.9,     7.2,      3.9,     1.0",     ; 0.1  inc ratio
    "   2,     79.4,    12.9,      5.2,     2.5",     ; 0.2  inc ratio
    "   3,     72.1,    17.7,      7.0,     3.2",     ; 0.3  inc ratio
    "   4,     63.3,    21.9,     10.5,     4.3",     ; 0.4  inc ratio
    "   5,     54.1,    25.3,     14.9,     5.7",     ; 0.5  inc ratio
    "   6,     45.2,    27.5,     19.5,     7.8",     ; 0.6  inc ratio
    "   7,     37.2,    28.7,     23.8,    10.3",     ; 0.7  inc ratio
    "   8,     30.2,    28.7,     27.4,    13.7",     ; 0.8  inc ratio
    "   9,     24.4,    27.7,     30.2,    17.7",     ; 0.9  inc ratio
    "  10,     19.9,    26.0,     32.1,    22.0",     ; 1.0  inc ratio
    "  11,     16.4,    23.8,     33.1,    26.7",     ; 1.1  inc ratio
    "  12,     13.8,    21.2,     33.2,    31.8",     ; 1.2  inc ratio
    "  13,     12.0,    18.6,     32.6,    36.8",     ; 1.3  inc ratio
    "  14,     10.7,    16.1,     31.3,    41.9",     ; 1.4  inc ratio
    "  15,      9.8,    13.8,     29.7,    46.7",     ; 1.5  inc ratio
    "  16,      9.1,    11.9,     27.7,    51.3",     ; 1.6  inc ratio
    "  17,      8.4,    10.4,     25.6,    55.6",     ; 1.7  inc ratio
    "  18,      7.7,     9.4,     23.5,    59.4",     ; 1.8  inc ratio
    "  19,      7.0,     8.7,     21.5,    62.8",     ; 1.9  inc ratio
    "  20,      6.4,     8.4,     19.7,    65.5",     ; 2.0  inc ratio
    "  21,      5.7,     8.2,     18.2,    67.9",     ; 2.1  inc ratio
    "  22,      5.2,     8.1,     16.8,    69.9",     ; 2.2  inc ratio
    "  23,      5.0,     8.0,     15.7,    71.3",     ; 2.3  inc ratio
    "  24,      4.7,     7.8,     15.1,    72.4",     ; 2.4  inc ratio
    "  25,      4.6,     7.6,     14.5,    73.3",     ; 2.5  inc ratio
    "  26,      4.5,     7.0,     14.3,    74.2",     ; 2.6  inc ratio
    "  27,      4.3,     6.8,     14.0,    74.9",     ; 2.7  inc ratio
```

```
    "  28,      4.3,     6.6,     13.3,    75.8",     ; 2.8  inc ratio
    "  29,      4.0,     6.0,     13.3,    76.7",     ; 2.9  inc ratio
    "  30,      3.6,     5.4,     13.4,    77.6",     ; 3.0  inc ratio
    "  31,      3.1,     4.9,     13.5,    78.5",     ; 3.1  inc ratio
    "  32,      3.1,     4.6,     12.9,    79.4",     ; 3.2  inc ratio
    "  33,      2.9,     4.3,     12.5,    80.3",     ; 3.3  inc ratio
    "  34,      2.7,     3.9,     12.2,    81.2",     ; 3.4  inc ratio
    "  35,      2.5,     3.5,     11.9,    82.1",     ; 3.5  inc ratio
    "  36,      2.2,     3.1,     11.7,    83.0",     ; 3.6  inc ratio
    "  37,      2.0,     2.7,     11.4,    83.9"      ; 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
;             -----   ----
          R="  11,    45.51 ",  ;  Pct of Size 1 HHs in Inc 1 Group
            "  12,    29.18 ",  ;             1            2
            "  13,    18.47 ",  ;             1            3
            "  14,     6.84 ",  ;             .            .
            "  21,    18.77 ",  ;             .            .
            "  22,    22.26 ",  ;        .    .            .
            "  23,    29.81 ",  ;
            "  24,    29.16 ",  ;
            "  31,    16.61 ",  ;      .
            "  32,    20.66 ",  ;
            "  33,    31.27 ",  ;
            "  34,    31.46 ",  ;
            "  41,    13.32 ",  ;      .
            "  42,    19.65 ",  ;             4            2
            "  43,    32.53 ",  ;             4            3
            "  44,    34.50 "   ;             4            4


;===============================================================
; Final Size and Income factors based on 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
=
;===================================================================================
==
; Original V2.1D#50 Alt-Specific Constants:
;v1_constant= 0.0  v2_constant= 1.598800000   v3_constant= -1.460800000
v4_constant= -4.302100000

; Final/adjusted Alt-Specific Constants (to match 2000 CTPP totals):
 v1_constant= 0.0  v2_constant= 1.013800000   v3_constant= -2.338100000
v4_constant= -5.171000000
 v1_idum1   = 0.0  v2_idum1   =  .000000000   v3_idum1   =   .000000000   v4_idum1
=   .000000000
 v1_idum2   = 0.0  v2_idum2   = 1.237600000   v3_idum2   =  1.789200000   v4_idum2
=  1.822100000
 v1_idum3   = 0.0  v2_idum3   = 1.328500000   v3_idum3   =  2.483100000   v4_idum3
=  2.739500000
 v1_idum4   = 0.0  v2_idum4   = 1.999100000   v3_idum4   =  3.737200000   v4_idum4
=  4.198700000
 v1_hh      = 0.0  v2_hh      =  .000000000   v3_hh      =   .870000000   v4_hh
=  1.302600000
 v1_TrnAcc  = 0.0  v2_TrnAcc  = -.000001095   v3_TrnAcc  =  -.000001815   v4_TrnAcc
=  -.000002053
 v1_Atype   = 0.0  v2_Atype   =  .066800000   v3_Atype   =   .278300000   v4_Atype
=   .409300000
 v1_DcDum   = 0.0  v2_DcDum   = -.924600000   v3_DcDum   = -1.075100000   v4_DcDum
= -1.633400000



;===================================================================================
==================
;
=
; End of LookUps  Now read the input files
=
;===================================================================================
==================


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

ZDATI[1] = @ZNFILE_IN1@,Z       =  1- 4,
                        HH      =  8-15,
                        HHPOP   = 16-23,
                        JURCODE = 80-81,
                        INCRAT  = 93-95

; Zonal Area Type File
ZDATI[2] = @ZNFILE_IN2@,Z       =  1- 5,
                        ATYPE   = 58-59
                        Atype   = zi.2.ATYPE[I]
; Zonal Transit Acces. File
ZDATI[3] = @ZNFILE_IN3@,Z        =  1- 5,
                        TrnAcc    = 32-40



;
; establish variables
;
                       HH      =  zi.1.HH[I]
                       HHPOP   =  zi.1.HHPOP[I]
                       IncRat  =  zi.1.INCRAT[I]
                       Atype   =  zi.2.ATYPE[I]
                       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@
          IDX = sz * 10.0 + in ; 2-digit index, 1st=HHsize& 2nd=Inc.level
          CSZINA[IDX] = 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=debug.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[IDX] = ISZA[sz] * (I_SPCTA(1,IDX)/100.00)  ; initial matrix cell
value
          CSZA[SZ]    = CSZA[sz] + CSZINA[IDX]    ; initial/'control' marginal size
total
          CINA[in]    = CINA[in] + CSZINA[IDX]    ; 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=debug.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@
                 IDX = sz * 10.0 + in
                 CSZINA[IDX] = CSZINA[IDX] * CINADJA[in]
                 CSZA[sz]    = CSZA[sz]    + CSZINA[IDX]    ; computed/current
marginal size total
                 CINA[in]    = CINA[in]    + CSZINA[IDX]    ; 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@
                 IDX = sz * 10.0 + in
                 CSZINA[IDX] = CSZINA[IDX] * CSZADJA[sz]
                 CSZA[sz]    = CSZA[sz]    + CSZINA[IDX]    ; computed/current
marginal size total
                 CINA[in]    = CINA[in]    + CSZINA[IDX]    ; 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@
                 si  = sz  * 10.0 + in
                 js  = jdx * 10.0 + sz
                 ji  = jdx * 10.0 + in
```

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

;
==================================================================================
========
; Summarize/Print HHs by size groups and HHs by Income groups for zonal checking
;
;
==================================================================================
========
        HH_Sz1   =  CSZINA[11] + CSZINA[12] + CSZINA[13] + CSZINA[14]
        HH_Sz2   =  CSZINA[21] + CSZINA[22] + CSZINA[23] + CSZINA[24]
        HH_Sz3   =  CSZINA[31] + CSZINA[32] + CSZINA[33] + CSZINA[34]
        HH_Sz4   =  CSZINA[41] + CSZINA[42] + CSZINA[43] + CSZINA[44]
;
        HH_In1   =  CSZINA[11] + CSZINA[21] + CSZINA[31] + CSZINA[41]
        HH_In2   =  CSZINA[12] + CSZINA[22] + CSZINA[32] + CSZINA[42]
        HH_In3   =  CSZINA[13] + CSZINA[23] + CSZINA[33] + CSZINA[43]
        HH_In4   =  CSZINA[14] + CSZINA[24] + CSZINA[34] + CSZINA[44]
;
;
    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@

                  SI=  Sz * 10.0 + In              ;Size/Income index 11...44

                  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

                   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


                    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))


                    SIV = SI*10.0                       + 1  ;  Create 3D index
SIV(Siz,Inc,Vav)
                    CSZINVAA[SIV]  =   CSZINA[SI]  *  P_VA[1] ;
from 111 to 444

                    SIV = SI*10.0                       + 2  ;
                    CSZINVAA[SIV]  =   CSZINA[SI]  *  P_VA[2] ;

                    SIV = SI*10.0                       + 3  ;
                    CSZINVAA[SIV]  =   CSZINA[SI]  *  P_VA[3] ;

                    SIV = SI*10.0                       + 4  ;
                    CSZINVAA[SIV]  =   CSZINA[SI]  *  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[111] +  CSZINVAA[121] +  CSZINVAA[131] +
CSZINVAA[141] +
                                CSZINVAA[211] +  CSZINVAA[221] +  CSZINVAA[231] +
CSZINVAA[241] +
                                CSZINVAA[311] +  CSZINVAA[321] +  CSZINVAA[331] +
CSZINVAA[341] +
                                CSZINVAA[411] +  CSZINVAA[421] +  CSZINVAA[431] +
CSZINVAA[441]


                    HHw1Vehs =  CSZINVAA[112] +  CSZINVAA[122] +  CSZINVAA[132] +
CSZINVAA[142] +
                                CSZINVAA[212] +  CSZINVAA[222] +  CSZINVAA[232] +
CSZINVAA[242] +
                                CSZINVAA[312] +  CSZINVAA[322] +  CSZINVAA[332] +
CSZINVAA[342] +
                                CSZINVAA[412] +  CSZINVAA[422] +  CSZINVAA[432] +
CSZINVAA[442]


                    HHw2Vehs =  CSZINVAA[113] +  CSZINVAA[123] +  CSZINVAA[133] +
CSZINVAA[143] +
                                CSZINVAA[213] +  CSZINVAA[223] +  CSZINVAA[233] +
CSZINVAA[243] +
                                CSZINVAA[313] +  CSZINVAA[323] +  CSZINVAA[333] +
CSZINVAA[343] +
                                CSZINVAA[413] +  CSZINVAA[423] +  CSZINVAA[433] +
CSZINVAA[443]


                    HHw3Vehs =  CSZINVAA[114] +  CSZINVAA[124] +  CSZINVAA[134] +
CSZINVAA[144] +
                                CSZINVAA[214] +  CSZINVAA[224] +  CSZINVAA[234] +
CSZINVAA[244] +
                                CSZINVAA[314] +  CSZINVAA[324] +  CSZINVAA[334] +
CSZINVAA[344] +
                                CSZINVAA[414] +  CSZINVAA[424] +  CSZINVAA[434] +
CSZINVAA[444]

                    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@
                    SIV = (SZ*10+IN)*10.0 + Va
                    VS  = Va*10 + sz
                    VI  = Va*10 + in
                    JV  = Jdx*10+ Va
                    RegSzInVaA[SIV] = RegSzInVaA[SIV] +  CSZINVAA[SIV]
                    JurVaA[JV]      = JurVaA[JV]      +  CSZINVAA[SIV]
                    RegVaA[VA]      = RegVaA[VA]      +  CSZINVAA[SIV]
                    RegVaSzA[vs]    = RegVaSzA[vs]    +  CSZINVAA[SIV]
                    RegVaInA[vi]    = RegVaInA[vi]    +  CSZINVAA[SIV]
                    SIVTotal        = SIVTotal        +  CSZINVAA[SIV]
     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 form TAZ, HH by size&VeAv s1v1,s1v2,...,s4v4
;==================================================================================
========

;Income 1 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[111]@ofmt@, CSZINVAA[112]@ofmt@, CSZINVAA[113]@ofmt@,
CSZINVAA[114]@ofmt@,
                 CSZINVAA[211]@ofmt@, CSZINVAA[212]@ofmt@, CSZINVAA[213]@ofmt@,
CSZINVAA[214]@ofmt@,
                 CSZINVAA[311]@ofmt@, CSZINVAA[312]@ofmt@, CSZINVAA[313]@ofmt@,
CSZINVAA[314]@ofmt@,
                 CSZINVAA[411]@ofmt@, CSZINVAA[412]@ofmt@, CSZINVAA[413]@ofmt@,
CSZINVAA[414]@ofmt@,file=@ZNFILE_OU1@

;Income 2 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[121]@ofmt@, CSZINVAA[122]@ofmt@, CSZINVAA[123]@ofmt@,
CSZINVAA[124]@ofmt@,
                 CSZINVAA[221]@ofmt@, CSZINVAA[222]@ofmt@, CSZINVAA[223]@ofmt@,
CSZINVAA[224]@ofmt@,
                 CSZINVAA[321]@ofmt@, CSZINVAA[322]@ofmt@, CSZINVAA[323]@ofmt@,
CSZINVAA[324]@ofmt@,
                 CSZINVAA[421]@ofmt@, CSZINVAA[422]@ofmt@, CSZINVAA[423]@ofmt@,
CSZINVAA[424]@ofmt@,file=@ZNFILE_OU2@

;Income 3 file with HHs by Size and VehAv:
    Print List=  I(4),
                 CSZINVAA[131]@ofmt@, CSZINVAA[132]@ofmt@, CSZINVAA[133]@ofmt@,
CSZINVAA[134]@ofmt@,
                 CSZINVAA[231]@ofmt@, CSZINVAA[232]@ofmt@, CSZINVAA[233]@ofmt@,
CSZINVAA[234]@ofmt@,
                 CSZINVAA[331]@ofmt@, CSZINVAA[332]@ofmt@, CSZINVAA[333]@ofmt@,
CSZINVAA[334]@ofmt@,
                 CSZINVAA[431]@ofmt@, CSZINVAA[432]@ofmt@, CSZINVAA[433]@ofmt@,
CSZINVAA[434]@ofmt@,file=@ZNFILE_OU3@

;Income 4 file with HHs by Size and VehAv:
    Print List=  I(4),
```

```
                 CSZINVAA[141]@ofmt@, CSZINVAA[142]@ofmt@, CSZINVAA[143]@ofmt@,
CSZINVAA[144]@ofmt@,
                 CSZINVAA[241]@ofmt@, CSZINVAA[242]@ofmt@, CSZINVAA[243]@ofmt@,
CSZINVAA[244]@ofmt@,
                 CSZINVAA[341]@ofmt@, CSZINVAA[342]@ofmt@, CSZINVAA[343]@ofmt@,
CSZINVAA[344]@ofmt@,
                 CSZINVAA[441]@ofmt@, CSZINVAA[442]@ofmt@, CSZINVAA[443]@ofmt@,
CSZINVAA[444]@ofmt@,file=@ZNFILE_OU4@


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


If (ATYPE >=1 && Atype<=7 &&  I <= @LastIZN@)

   HH_ArS1A[ATYPE] = HH_ArS1A[ATYPE] + CSZINA[11] + CSZINA[12] + CSZINA[13] +
CSZINA[14]
   HH_ArS2A[ATYPE] = HH_ArS2A[ATYPE] + CSZINA[21] + CSZINA[22] + CSZINA[23] +
CSZINA[24]
   HH_ArS3A[ATYPE] = HH_ArS3A[ATYPE] + CSZINA[31] + CSZINA[32] + CSZINA[33] +
CSZINA[34]
   HH_ArS4A[ATYPE] = HH_ArS4A[ATYPE] + CSZINA[41] + CSZINA[42] + CSZINA[43] +
CSZINA[44]
   HH_ArSTA[ATYPE] = HH_ArSTA[ATYPE] + CSZINA[11] + CSZINA[12] + CSZINA[13] +
CSZINA[14] +
                                       CSZINA[21] + CSZINA[22] + CSZINA[23] +
CSZINA[24] +
                                       CSZINA[31] + CSZINA[32] + CSZINA[33] +
CSZINA[34] +
                                       CSZINA[41] + CSZINA[42] + CSZINA[43] +
CSZINA[44]

   HH_ArI1A[ATYPE] = HH_ArI1A[ATYPE] + CSZINA[11] + CSZINA[21] + CSZINA[31] +
CSZINA[41]
   HH_ArI2A[ATYPE] = HH_ArI2A[ATYPE] + CSZINA[12] + CSZINA[22] + CSZINA[32] +
CSZINA[42]
   HH_ArI3A[ATYPE] = HH_ArI3A[ATYPE] + CSZINA[13] + CSZINA[23] + CSZINA[33] +
CSZINA[43]
   HH_ArI4A[ATYPE] = HH_ArI4A[ATYPE] + CSZINA[14] + CSZINA[24] + CSZINA[34] +
CSZINA[44]
   HH_ArITA[ATYPE] = HH_ArITA[ATYPE] + CSZINA[11] + CSZINA[21] + CSZINA[31] +
CSZINA[41] +
                                       CSZINA[12] + CSZINA[22] + CSZINA[32] +
CSZINA[42] +
                                       CSZINA[13] + CSZINA[23] + CSZINA[33] +
CSZINA[43] +
                                       CSZINA[14] + CSZINA[24] + CSZINA[34] +
CSZINA[44]

   HH_ArV1A[ATYPE] = HH_ArV1A[ATYPE] + HHw0Vehs
   HH_ArV2A[ATYPE] = HH_ArV2A[ATYPE] + HHw1Vehs
   HH_ArV3A[ATYPE] = HH_ArV3A[ATYPE] + HHw2Vehs
   HH_ArV4A[ATYPE] = HH_ArV4A[ATYPE] + HHw3Vehs
   HH_ArVTA[ATYPE] = HH_ArVTA[ATYPE] + HHw0Vehs + HHw1Vehs + HHw2Vehs + HHw3Vehs


   HH_S1  = HH_S1     + CSZINA[11] + CSZINA[12] + CSZINA[13] + CSZINA[14]
   HH_S2  = HH_S2     + CSZINA[21] + CSZINA[22] + CSZINA[23] + CSZINA[24]
   HH_S3  = HH_S3     + CSZINA[31] + CSZINA[32] + CSZINA[33] + CSZINA[34]
   HH_S4  = HH_S4     + CSZINA[41] + CSZINA[42] + CSZINA[43] + CSZINA[44]

   HH_I1  = HH_I1     + CSZINA[11] + CSZINA[21] + CSZINA[31] + CSZINA[41]
   HH_I2  = HH_I2     + CSZINA[12] + CSZINA[22] + CSZINA[32] + CSZINA[42]
   HH_I3  = HH_I3     + CSZINA[13] + CSZINA[23] + CSZINA[33] + CSZINA[43]
   HH_I4  = HH_I4     + CSZINA[14] + CSZINA[24] + CSZINA[34] + CSZINA[44]

   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[11] + CSZINA[12] + CSZINA[13] + CSZINA[14] +
                        CSZINA[21] + CSZINA[22] + CSZINA[23] + CSZINA[24] +
                        CSZINA[31] + CSZINA[32] + CSZINA[33] + CSZINA[34] +
                        CSZINA[41] + CSZINA[42] + CSZINA[43] + CSZINA[44]

   HH_I   = HH_I      + CSZINA[11] + CSZINA[21] + CSZINA[31] + CSZINA[41] +
                        CSZINA[12] + CSZINA[22] + CSZINA[32] + CSZINA[42] +
                        CSZINA[13] + CSZINA[23] + CSZINA[33] + CSZINA[43] +
                        CSZINA[14] + CSZINA[24] + CSZINA[34] + CSZINA[44]



   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[11],RegSzInA[12],RegSzInA[13],RegSzInA[14],RegSzA[1],file=@Rept@ ;
   Print form=12.csv LIST= '      2
',RegSzInA[21],RegSzInA[22],RegSzInA[23],RegSzInA[24],RegSzA[2],file=@Rept@ ;
   Print form=12.csv LIST= '      3
',RegSzInA[31],RegSzInA[32],RegSzInA[33],RegSzInA[34],RegSzA[3],file=@Rept@ ;
   Print form=12.csv LIST= '      4+
',RegSzInA[41],RegSzInA[42],RegSzInA[43],RegSzInA[44],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@

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

```
   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[011],JurSzA[012],JurSzA[013],JurSzA[014],JurA[01],file=@Rept@ ;
   Print form=12.csv LIST= '    1_Mtg
',JurSzA[021],JurSzA[022],JurSzA[023],JurSzA[024],JurA[02],file=@Rept@ ;
   Print form=12.csv LIST= '    2_PG
',JurSzA[031],JurSzA[032],JurSzA[033],JurSzA[034],JurA[03],file=@Rept@ ;
   Print form=12.csv LIST= '    3_Arl
',JurSzA[041],JurSzA[042],JurSzA[043],JurSzA[044],JurA[04],file=@Rept@ ;
   Print form=12.csv LIST= '    4_Alx
',JurSzA[051],JurSzA[052],JurSzA[053],JurSzA[054],JurA[05],file=@Rept@ ;
   Print form=12.csv LIST= '    5_Ffx
',JurSzA[061],JurSzA[062],JurSzA[063],JurSzA[064],JurA[06],file=@Rept@ ;
   Print form=12.csv LIST= '    6_Ldn
',JurSzA[071],JurSzA[072],JurSzA[073],JurSzA[074],JurA[07],file=@Rept@ ;
   Print form=12.csv LIST= '    7_PW
',JurSzA[081],JurSzA[082],JurSzA[083],JurSzA[084],JurA[08],file=@Rept@ ;
   Print form=12.csv LIST= '    8_ -
',JurSzA[091],JurSzA[092],JurSzA[093],JurSzA[094],JurA[09],file=@Rept@ ;
   Print form=12.csv LIST= '    9_Frd
',JurSzA[101],JurSzA[102],JurSzA[103],JurSzA[104],JurA[10],file=@Rept@ ;
   Print form=12.csv LIST= '   10_How
',JurSzA[111],JurSzA[112],JurSzA[113],JurSzA[114],JurA[11],file=@Rept@ ;
   Print form=12.csv LIST= '   11_AA
',JurSzA[121],JurSzA[122],JurSzA[123],JurSzA[124],JurA[12],file=@Rept@ ;
   Print form=12.csv LIST= '   12_Chs
',JurSzA[131],JurSzA[132],JurSzA[133],JurSzA[134],JurA[13],file=@Rept@ ;
   Print form=12.csv LIST= '   13_ -
',JurSzA[141],JurSzA[142],JurSzA[143],JurSzA[144],JurA[14],file=@Rept@ ;
   Print form=12.csv LIST= '   14_Car
',JurSzA[151],JurSzA[152],JurSzA[153],JurSzA[154],JurA[15],file=@Rept@ ;
   Print form=12.csv LIST= '   15_Cal
',JurSzA[161],JurSzA[162],JurSzA[163],JurSzA[164],JurA[16],file=@Rept@ ;
   Print form=12.csv LIST= '   16_SM
',JurSzA[171],JurSzA[172],JurSzA[173],JurSzA[174],JurA[17],file=@Rept@ ;
   Print form=12.csv LIST= '
17_KGeo',JurSzA[181],JurSzA[182],JurSzA[183],JurSzA[184],JurA[18],file=@Rept@ ;
   Print form=12.csv LIST= '   18_Fbg
',JurSzA[191],JurSzA[192],JurSzA[193],JurSzA[194],JurA[19],file=@Rept@ ;
   Print form=12.csv LIST= '   19_Sta
',JurSzA[201],JurSzA[202],JurSzA[203],JurSzA[204],JurA[20],file=@Rept@ ;
   Print form=12.csv LIST= '   20_Spt
',JurSzA[211],JurSzA[212],JurSzA[213],JurSzA[214],JurA[21],file=@Rept@ ;
   Print form=12.csv LIST= '   21_Fau
',JurSzA[221],JurSzA[222],JurSzA[223],JurSzA[224],JurA[22],file=@Rept@ ;
   Print form=12.csv LIST= '   22_Clk
',JurSzA[231],JurSzA[232],JurSzA[233],JurSzA[234],JurA[23],file=@Rept@ ;
   Print form=12.csv LIST= '   23_Jef
',JurSzA[241],JurSzA[242],JurSzA[243],JurSzA[244],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@
;=================================================================================
=======================

   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[011],JurInA[012],JurInA[013],JurInA[014],JurA[01],file=@Rept@ ;
   Print form=12.csv LIST= '    1_Mtg
',JurInA[021],JurInA[022],JurInA[023],JurInA[024],JurA[02],file=@Rept@ ;
   Print form=12.csv LIST= '    2_PG
',JurInA[031],JurInA[032],JurInA[033],JurInA[034],JurA[03],file=@Rept@ ;
   Print form=12.csv LIST= '    3_Arl
',JurInA[041],JurInA[042],JurInA[043],JurInA[044],JurA[04],file=@Rept@ ;
   Print form=12.csv LIST= '    4_Alx
',JurInA[051],JurInA[052],JurInA[053],JurInA[054],JurA[05],file=@Rept@ ;
   Print form=12.csv LIST= '    5_Ffx
',JurInA[061],JurInA[062],JurInA[063],JurInA[064],JurA[06],file=@Rept@ ;
   Print form=12.csv LIST= '    6_Ldn
',JurInA[071],JurInA[072],JurInA[073],JurInA[074],JurA[07],file=@Rept@ ;
   Print form=12.csv LIST= '    7_PW
',JurInA[081],JurInA[082],JurInA[083],JurInA[084],JurA[08],file=@Rept@ ;
   Print form=12.csv LIST= '    8_ -
',JurInA[091],JurInA[092],JurInA[093],JurInA[094],JurA[09],file=@Rept@ ;
   Print form=12.csv LIST= '    9_Frd
',JurInA[101],JurInA[102],JurInA[103],JurInA[104],JurA[10],file=@Rept@ ;
   Print form=12.csv LIST= '   10_How
',JurInA[111],JurInA[112],JurInA[113],JurInA[114],JurA[11],file=@Rept@ ;
   Print form=12.csv LIST= '   11_AA
',JurInA[121],JurInA[122],JurInA[123],JurInA[124],JurA[12],file=@Rept@ ;
   Print form=12.csv LIST= '   12_Chs
',JurInA[131],JurInA[132],JurInA[133],JurInA[134],JurA[13],file=@Rept@ ;
   Print form=12.csv LIST= '   13_ -
',JurInA[141],JurInA[142],JurInA[143],JurInA[144],JurA[14],file=@Rept@ ;
   Print form=12.csv LIST= '   14_Car
',JurInA[151],JurInA[152],JurInA[153],JurInA[154],JurA[15],file=@Rept@ ;
   Print form=12.csv LIST= '   15_Cal
',JurInA[161],JurInA[162],JurInA[163],JurInA[164],JurA[16],file=@Rept@ ;
   Print form=12.csv LIST= '   16_SM
',JurInA[171],JurInA[172],JurInA[173],JurInA[174],JurA[17],file=@Rept@ ;
   Print form=12.csv LIST= '
17_KGeo',JurInA[181],JurInA[182],JurInA[183],JurInA[184],JurA[18],file=@Rept@ ;
   Print form=12.csv LIST= '   18_Fbg
',JurInA[191],JurInA[192],JurInA[193],JurInA[194],JurA[19],file=@Rept@ ;
   Print form=12.csv LIST= '   19_Sta
',JurInA[201],JurInA[202],JurInA[203],JurInA[204],JurA[20],file=@Rept@ ;
   Print form=12.csv LIST= '   20_Spt
',JurInA[211],JurInA[212],JurInA[213],JurInA[214],JurA[21],file=@Rept@ ;
   Print form=12.csv LIST= '   21_Fau
',JurInA[221],JurInA[222],JurInA[223],JurInA[224],JurA[22],file=@Rept@ ;
   Print form=12.csv LIST= '   22_Clk
',JurInA[231],JurInA[232],JurInA[233],JurInA[234],JurA[23],file=@Rept@ ;
   Print form=12.csv LIST= '   23_Jef
',JurInA[241],JurInA[242],JurInA[243],JurInA[244],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[11],RegVaSzA[12],RegVaSzA[13],RegVaSzA[14],RegVaA[1],file=@Rept@ ;
   Print form=12.csv LIST= '      2
',RegVaSzA[21],RegVaSzA[22],RegVaSzA[23],RegVaSzA[24],RegVaA[2],file=@Rept@ ;
   Print form=12.csv LIST= '      3
',RegVaSzA[31],RegVaSzA[32],RegVaSzA[33],RegVaSzA[34],RegVaA[3],file=@Rept@ ;
   Print form=12.csv LIST= '      4+
',RegVaSzA[41],RegVaSzA[42],RegVaSzA[43],RegVaSzA[44],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@
;==================================================================================
========================

   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[11],RegVaInA[12],RegVaInA[13],RegVaInA[14],RegVaA[1],file=@Rept@ ;
   Print form=12.csv LIST= '      2
',RegVaInA[21],RegVaInA[22],RegVaInA[23],RegVaInA[24],RegVaA[2],file=@Rept@ ;
   Print form=12.csv LIST= '      3
',RegVaInA[31],RegVaInA[32],RegVaInA[33],RegVaInA[34],RegVaA[3],file=@Rept@ ;
   Print form=12.csv LIST= '      4+
',RegVaInA[41],RegVaInA[42],RegVaInA[43],RegVaInA[44],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@

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

   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[011],JurVaA[012],JurVaA[013],JurVaA[014],JurA[01],file=@Rept@ ;
   Print form=12.csv LIST= '    1_Mtg
',JurVaA[021],JurVaA[022],JurVaA[023],JurVaA[024],JurA[02],file=@Rept@ ;
   Print form=12.csv LIST= '    2_PG
',JurVaA[031],JurVaA[032],JurVaA[033],JurVaA[034],JurA[03],file=@Rept@ ;
   Print form=12.csv LIST= '    3_Arl
',JurVaA[041],JurVaA[042],JurVaA[043],JurVaA[044],JurA[04],file=@Rept@ ;
   Print form=12.csv LIST= '    4_Alx
',JurVaA[051],JurVaA[052],JurVaA[053],JurVaA[054],JurA[05],file=@Rept@ ;
   Print form=12.csv LIST= '    5_Ffx
',JurVaA[061],JurVaA[062],JurVaA[063],JurVaA[064],JurA[06],file=@Rept@ ;
   Print form=12.csv LIST= '    6_Ldn
',JurVaA[071],JurVaA[072],JurVaA[073],JurVaA[074],JurA[07],file=@Rept@ ;
   Print form=12.csv LIST= '    7_PW
',JurVaA[081],JurVaA[082],JurVaA[083],JurVaA[084],JurA[08],file=@Rept@ ;
   Print form=12.csv LIST= '    8_ -
',JurVaA[091],JurVaA[092],JurVaA[093],JurVaA[094],JurA[09],file=@Rept@ ;
   Print form=12.csv LIST= '    9_Frd
',JurVaA[101],JurVaA[102],JurVaA[103],JurVaA[104],JurA[10],file=@Rept@ ;
   Print form=12.csv LIST= '   10_How
',JurVaA[111],JurVaA[112],JurVaA[113],JurVaA[114],JurA[11],file=@Rept@ ;
   Print form=12.csv LIST= '   11_AA
',JurVaA[121],JurVaA[122],JurVaA[123],JurVaA[124],JurA[12],file=@Rept@ ;
   Print form=12.csv LIST= '   12_Chs
',JurVaA[131],JurVaA[132],JurVaA[133],JurVaA[134],JurA[13],file=@Rept@ ;
   Print form=12.csv LIST= '   13_ -
',JurVaA[141],JurVaA[142],JurVaA[143],JurVaA[144],JurA[14],file=@Rept@ ;
   Print form=12.csv LIST= '   14_Car
',JurVaA[151],JurVaA[152],JurVaA[153],JurVaA[154],JurA[15],file=@Rept@ ;
   Print form=12.csv LIST= '   15_Cal
',JurVaA[161],JurVaA[162],JurVaA[163],JurVaA[164],JurA[16],file=@Rept@ ;
   Print form=12.csv LIST= '   16_SM
',JurVaA[171],JurVaA[172],JurVaA[173],JurVaA[174],JurA[17],file=@Rept@ ;
   Print form=12.csv LIST= '
17_KGeo',JurVaA[181],JurVaA[182],JurVaA[183],JurVaA[184],JurA[18],file=@Rept@ ;
   Print form=12.csv LIST= '   18_Fbg
',JurVaA[191],JurVaA[192],JurVaA[193],JurVaA[194],JurA[19],file=@Rept@ ;
   Print form=12.csv LIST= '   19_Sta
',JurVaA[201],JurVaA[202],JurVaA[203],JurVaA[204],JurA[20],file=@Rept@ ;
   Print form=12.csv LIST= '   20_Spt
',JurVaA[211],JurVaA[212],JurVaA[213],JurVaA[214],JurA[21],file=@Rept@ ;
   Print form=12.csv LIST= '   21_Fau
',JurVaA[221],JurVaA[222],JurVaA[223],JurVaA[224],JurA[22],file=@Rept@ ;
   Print form=12.csv LIST= '   22_Clk
',JurVaA[231],JurVaA[232],JurVaA[233],JurVaA[234],JurA[23],file=@Rept@ ;
   Print form=12.csv LIST= '   23_Jef
',JurVaA[241],JurVaA[242],JurVaA[243],JurVaA[244],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   ',HH_ArS1A[1], HH_ArS2A[1] , HH_ArS3A[1],
HH_ArS4A[1] , HH_ArSTA[1],file =@Rept@ ;
   Print form=12.csv LIST= '      2   ',HH_ArS1A[2], HH_ArS2A[2] , HH_ArS3A[2],
HH_ArS4A[2] , HH_ArSTA[2],file =@Rept@ ;
   Print form=12.csv LIST= '      3   ',HH_ArS1A[3], HH_ArS2A[3] , HH_ArS3A[3],
HH_ArS4A[3] , HH_ArSTA[3],file =@Rept@ ;
   Print form=12.csv LIST= '      4   ',HH_ArS1A[4], HH_ArS2A[4] , HH_ArS3A[4],
HH_ArS4A[4] , HH_ArSTA[4],file =@Rept@ ;
   Print form=12.csv LIST= '      5   ',HH_ArS1A[5], HH_ArS2A[5] , HH_ArS3A[5],
HH_ArS4A[5] , HH_ArSTA[5],file =@Rept@ ;
   Print form=12.csv LIST= '      6   ',HH_ArS1A[6], HH_ArS2A[6] , HH_ArS3A[6],
HH_ArS4A[6] , HH_ArSTA[6],file =@Rept@ ;
   Print form=12.csv LIST= '      7   ',HH_ArS1A[7], HH_ArS2A[7] , HH_ArS3A[7],
HH_ArS4A[7] , HH_ArSTA[7],file =@Rept@ ;
```

```
   Print LIST= '    ',file=@Rept@
   Print form=12.csv LIST= '     Sum  ',HH_S1, HH_S2, HH_S3, HH_S4, HH_S,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   ',HH_ArI1A[1], HH_ArI2A[1] , HH_ArI3A[1],
HH_ArI4A[1] , HH_ArITA[1],file =@Rept@ ;
   Print form=12.csv LIST= '      2   ',HH_ArI1A[2], HH_ArI2A[2] , HH_ArI3A[2],
HH_ArI4A[2] , HH_ArITA[2],file =@Rept@ ;
   Print form=12.csv LIST= '      3   ',HH_ArI1A[3], HH_ArI2A[3] , HH_ArI3A[3],
HH_ArI4A[3] , HH_ArITA[3],file =@Rept@ ;
   Print form=12.csv LIST= '      4   ',HH_ArI1A[4], HH_ArI2A[4] , HH_ArI3A[4],
HH_ArI4A[4] , HH_ArITA[4],file =@Rept@ ;
   Print form=12.csv LIST= '      5   ',HH_ArI1A[5], HH_ArI2A[5] , HH_ArI3A[5],
HH_ArI4A[5] , HH_ArITA[5],file =@Rept@ ;
   Print form=12.csv LIST= '      6   ',HH_ArI1A[6], HH_ArI2A[6] , HH_ArI3A[6],
HH_ArI4A[6] , HH_ArITA[6],file =@Rept@ ;
   Print form=12.csv LIST= '      7   ',HH_ArI1A[7], HH_ArI2A[7] , HH_ArI3A[7],
HH_ArI4A[7] , HH_ArITA[7],file =@Rept@ ;
   Print LIST= '    ',file=@Rept@
   Print form=12.csv LIST= '     Sum  ',HH_I1, HH_I2, HH_I3, HH_I4, HH_I,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   ',HH_ArV1A[1], HH_ArV2A[1] , HH_ArV3A[1],
HH_ArV4A[1] , HH_ArVTA[1],file =@Rept@ ;
   Print form=12.csv LIST= '      2   ',HH_ArV1A[2], HH_ArV2A[2] , HH_ArV3A[2],
HH_ArV4A[2] , HH_ArVTA[2],file =@Rept@ ;
   Print form=12.csv LIST= '      3   ',HH_ArV1A[3], HH_ArV2A[3] , HH_ArV3A[3],
HH_ArV4A[3] , HH_ArVTA[3],file =@Rept@ ;
   Print form=12.csv LIST= '      4   ',HH_ArV1A[4], HH_ArV2A[4] , HH_ArV3A[4],
HH_ArV4A[4] , HH_ArVTA[4],file =@Rept@ ;
   Print form=12.csv LIST= '      5   ',HH_ArV1A[5], HH_ArV2A[5] , HH_ArV3A[5],
HH_ArV4A[5] , HH_ArVTA[5],file =@Rept@ ;
   Print form=12.csv LIST= '      6   ',HH_ArV1A[6], HH_ArV2A[6] , HH_ArV3A[6],
HH_ArV4A[6] , HH_ArVTA[6],file =@Rept@ ;
   Print form=12.csv LIST= '      7   ',HH_ArV1A[7], HH_ArV2A[7] , HH_ArV3A[7],
HH_ArV4A[7] , HH_ArVTA[7],file =@Rept@ ;
   Print LIST= '    ',file=@Rept@
   Print form=12.csv LIST= '     Sum  ',HH_V1, HH_V2, HH_V3, HH_V4, HH_V,file
=@Rept@ ;
   Print LIST= '   ','\n',file=@Rept@

ENDIF   ; -end of printing section


;
;
;
ENDRUN
```

6 Highway_Assignment.s

```
; ===================================================================
;
; Highway_Assignment.S  - Version 2.2
;  developed from the assignment process from 2.1D#50  with changes:
;  2/16/06  Formal Conical functions now called from an external file in the SUPPORT
;                  Subdir.  (filename: Conical_VDF_V22.txt)
;  3/ 8/06  reduced capacity and freeflow speed assumptions for ramps
;  4/14/06  Queuing time now added to freeways and ramps with high VCs
;           file in the \SUPPORT subdir. named 'QEUEING_Time.TXT' specifies
;            added times reflecting queuing. Times used in the speed flow
;            spec.in traffic assignment and in the volume averaging stage.
;   1/11/07  Now explicitly adding in Commercial Vehicle trips (<iter>tmcom.trp)
;            (NHB trip rates have been reduced)
;   6/14/07 > QEUEING_Time.TXT file in \Support renamed to QUEUING_Time.TXT
;           > New network link attribute named 'AllowQue' invoked in the queuing
;            delay calculation (0/disallow Que Delay, 1/Allow queuing delay
;           > corrected regional time of day vehicles (amvehs, pmvehs, opvehs)
;            calculation (Per JCP review)
;   7/26/07 > 20 iterations in equilib. assignment changed to 40 (RM for DV)
;   7/30/07 > 40 iterations changed to 60
;   10/1/07 > MISC??.TT updated to MISC??<iter>.TT  to reflect iterations for trucks
;   1/24/08 > AllowQue variable is replaced with time period specific variables:
;             AM_AllowQue, PM_Allow_Que, and OP_AllowQue; FTPlus1 var added to
exclude list
;-----------------------------------------------------------------------------
;
;   3 Steps:
;     Step 1 - Consolidate current modeled and nonmodeled trip tables //
;              for the highway assignment process.
;     Step 2 - Execute traffic assignment and compute speed averaging
;              for three time periods.
;     Step 3 - Summarize daily VMT.
;
;   Environment Variables:
;    _iter_  (Iteration indicator = 'pp','i1' - 'i6')
;
;
;---------------------------------------------------------------
;   Step 1 - Modeled & Non-Modeled Trip Table Consolidation
;            for the Highway Assignment
;            - 3 Trip files built for AM,PM,Off-Peak Time Periods
;            - Each file has 5 Trip tables:
;                1) 1-occ adrs including commercial vehicles
;                2) 2-occ adrs
;                3) 3+ occ adrs
;                4) Trucks (Medium and Heavy)
;                5) Airport Pax Adrs
;---------------------------------------------------------------
;                                                                   //
; I/P Auto Dr. Pct. tables:                                         //
ADRAM  = 'AM%_iter_%.ADR' ; AM     Modeled Total Auto Drivers       //
ADRPM  = 'PM%_iter_%.ADR' ; PM     Modeled Total Auto Drivers       //
ADROP  = 'OP%_iter_%.ADR' ; Off-Pk Modeled Total Auto Drivers       //
;                                                                   //
; I/P MISC Auto Dr.Tables:                                          //
MISCAM  = 'MISCAM%_iter_%.TT'     ; AM     Non-Modeled Trips        //
```

```
MISCPM  = 'MISCPM%_iter_%.TT'     ; PM     Non-Modeled Trips        //
MISCOP  = 'MISCOP%_iter_%.TT'     ; Off-Pk Non-Modeled Trips        //
;                                                                   //
;                                                                   //
CVtrips = '%_iter_%tmcom.trp'     ;  Comm. Veh. trips t1/AM, t2/PM, T3/OP   //
;                                                                   //
; O/P  Vehicle  Trips:                                              //
AM_VT   = '%_iter_%AM.VTT'    ; AM VEH TRIPS FOR ASSIGNMENT         //
PM_VT   = '%_iter_%PM.VTT'    ; PM VEH TRIPS FOR ASSIGNMENT         //
OP_VT   = '%_iter_%OP.VTT'    ; OP VEH TRIPS FOR ASSIGNMENT         //
;                          ;                                        //
;                          ; based on 1994 auto ext svy /           //
;                          ; avg xx auto occ. is 1.72 -basis for:   //
XXAD1OCC = 0.5021       ; ASSUMED SHARE OF THRU ADRS W/ 1-OCC     //
XXAD2OCC = 0.3426       ; ASSUMED SHARE OF THRU ADRS W/ 2-OCCS    //
XXAD3OCC = 0.1553       ; ASSUMED SHARE OF THRU ADRS W/ 3+OCCS    //
;/////////////////////////////////////////////////////////////////////


RUN PGM=MATRIX
    MATI[1]=@ADRAM@   ;
    MATI[2]=@ADRPM@   ;
    MATI[3]=@ADROP@   ;

    MATI[4]=@MISCAM@    ;
    MATI[5]=@MISCPM@    ;
    MATI[6]=@MISCOP@    ;
    MATI[7]=@CVTrips@   ;
;
 MW[1]= MI.1.1          ; AM 1-Occ adrs
 MW[2]= MI.1.2          ; AM 2-Occ adrs
 MW[3]= MI.1.3          ; AM 3+Occ adrs
;
 MW[4]= MI.2.1          ; PM 1-Occ adrs
 MW[5]= MI.2.2          ; PM 2-Occ adrs
 MW[6]= MI.2.3          ; PM 3+Occ adrs
;
 MW[7]= MI.3.1          ; OP 1-Occ adrs
 MW[8]= MI.3.2          ; OP 2-Occ adrs
 MW[9]= MI.3.3          ; OP 3+Occ adrs
;
; AM Peak Period MISC Trips
;
 MW[11] = MI.4.1            ; AM Thru     Truck
 MW[12] = MI.4.2*@XXAD1OCC@ ; AM Thru     Auto Driver-1 OCC
 MW[13] = MI.4.2*@XXAD2OCC@ ; AM Thru     Auto Driver-2 OCC
 MW[14] = MI.4.2*@XXAD3OCC@ ; AM Thru     Auto Driver-3+OCC
 MW[15] = MI.4.3            ; AM Taxi     Auto Driver
 MW[16] = MI.4.4            ; AM Visitor  Auto Driver
 MW[17] = MI.4.5            ; AM School   Auto Driver
 MW[18] = MI.4.6            ; AM I-I,I-E,E-I Medium Truck
 MW[19] = MI.4.7            ; AM I-I,I-E,E-I Heavy  Truck


; PM Peak Period MISC Trips
;
 MW[21] = MI.5.1            ; PM Thru     Truck
 MW[22] = MI.5.2*@XXAD1OCC@ ; PM Thru     Auto Driver-1 OCC
 MW[23] = MI.5.2*@XXAD2OCC@ ; PM Thru     Auto Driver-2 OCC
 MW[24] = MI.5.2*@XXAD3OCC@ ; PM Thru     Auto Driver-3+OCC
 MW[25] = MI.5.3            ; PM Taxi     Auto Driver
 MW[26] = MI.5.4            ; PM Visitor  Auto Driver
 MW[27] = MI.5.5            ; PM School   Auto Driver
 MW[28] = MI.5.6            ; PM I-I,I-E,E-I Medium Truck
 MW[29] = MI.5.7            ; PM I-I,I-E,E-I Heavy  Truck


; OFF PK Peak Period MISC Trips
```

```
;
 MW[31] = MI.6.1            ; OP Thru     Truck
 MW[32] = MI.6.2*@XXAD1OCC@ ; OP Thru     Auto Driver-1 OCC
 MW[33] = MI.6.2*@XXAD2OCC@ ; OP Thru     Auto Driver-2 OCC
 MW[34] = MI.6.2*@XXAD3OCC@ ; OP Thru     Auto Driver-3+OCC
 MW[35] = MI.6.3            ; OP Taxi     Auto Driver
 MW[36] = MI.6.4            ; OP Visitor  Auto Driver
 MW[37] = MI.6.5            ; OP School   Auto Driver
 MW[38] = MI.6.6            ; OP I-I,I-E,E-I Medium Truck
 MW[39] = MI.6.7            ; OP I-I,I-E,E-I Heavy  Truck

 MW[45] =  MI.7.1           ; AM Commercial Vehicles
 MW[55] =  MI.7.2           ; PM Commercial Vehicles
 MW[65] =  MI.7.3           ; OP Commercial Vehicles

;  Add up vehicle tables into the appropriate categories
;  AM
 MW[40] =  MW[1]  + MW[12] + MW[17] + MW[45]  ; AM SOV   Vehicle Trips w/CommVehs
 MW[41] =  MW[2]  + MW[13] + MW[15] + MW[16]  ; AM HOV2  Vehicle Trips
 MW[42] =  MW[3]  + MW[14]                    ; AM HOV3+ Vehicle Trips
 MW[43] =  MW[11] + MW[18] + MW[19]           ; AM Truck Trips
 MW[44] =  MI.4.8                             ; AM Airport Pax Adr Trips

;  PM
 MW[50] =  MW[4]  + MW[22] + MW[27] + MW[55]  ; PM SOV   Vehicle Trips w/CommVehs
 MW[51] =  MW[5]  + MW[23] + MW[25] + MW[26]  ; PM HOV2  Vehicle Trips
 MW[52] =  MW[6]  + MW[24]                    ; PM HOV3+ Vehicle Trips
 MW[53] =  MW[21] + MW[28] + MW[29]           ; PM Truck Trips
 MW[54] =  MI.5.8                             ; PM Airport Pax Adr Trips

;  Off-Peak
 MW[60] =  MW[7]  + MW[32] + MW[37] + MW[65]  ; OP SOV   Vehicle Trips w/CommVehs
 MW[61] =  MW[8]  + MW[33] + MW[35] + MW[36]  ; OP HOV2  Vehicle Trips
 MW[62] =  MW[9]  + MW[34]                    ; OP HOV3+ Vehicle Trips
 MW[63] =  MW[31] + MW[38] + MW[39]           ; OP Truck Trips
 MW[64] =  MI.6.8                             ; OP Airport Pax Adr Trips


;
;
; Now let's accumulate totals for neat regional summaries
jloop
     vehs =   vehs + (MW[40]+MW[41]+MW[42]+MW[43]+MW[44]) + ; daily vehs
                     (MW[50]+MW[51]+MW[52]+MW[53]+MW[54]) + ;
                     (MW[60]+MW[61]+MW[62]+MW[63]+MW[64])   ;

      comveh = comveh + mw[45] + mw[55] + mw[65]                  ; daily CVs


;AM group
   amvehs   = amvehs   + MW[40]+MW[41]+MW[42]+MW[43]+MW[44]  ; all am vehs
   am1occ   = am1occ   + MW[40]                        ; am 1-occveh's
   am2occ   = am2occ   + MW[41]                        ; am 2-occveh's
   am3occ   = am3occ   + MW[42]                        ; am 3-occveh's
   amtrks   = amtrks   + MW[43]                        ; am trucks
   amapax   = amapax   + MW[44]                        ; am airpax adrs
   am1occad = am1occad + MW[1]                         ; am 1occ adr
   am2occad = am2occad + MW[2]                         ; am 2occ adr
   am3occad = am3occad + MW[3]                         ; am 3+occ adr
   amadr    = amadr    + MW[1] + MW[2] + MW[3]         ; am total adr(modeled)
   amxxtrk  = amxxtrk  + MW[11]                        ; am Thru     Truck
   amxxad1  = amxxad1  + MW[12]                        ; am Thru 1occ Adr
   amxxad2  = amxxad2  + MW[13]                        ; am Thru 2occ Adr
   amxxad3  = amxxad3  + MW[14]                        ; am Thru 3+occAdr
   amxxadr  = amxxadr  + MW[12]+MW[13]+MW[14]          ; am total xx adr
   amtaxi   = amtaxi   + MI.4.3                        ; am Taxi     ADr
   amvisi   = amvisi   + MI.4.4                        ; am visitor  ADr
   amscho   = amscho   + MI.4.5                        ; am School   ADr
   ammtrk   = ammtrk   + MW[18]                        ; am int,ext MedTk
```

```
   amhtrk   = amhtrk   + MW[19]                        ; am int,ext HvyTk
   amcomveh = amcomveh + MW[45]                        ; am int,ext,xx ComVeh

;PM group
   pmvehs   = pmvehs   + MW[50]+MW[51]+MW[52]+MW[53]+MW[54] ; all pm vehs
   pm1occ   = pm1occ   + MW[50]                        ;  pm 1-occveh's
   pm2occ   = pm2occ   + MW[51]                        ;  pm 2-occveh's
   pm3occ   = pm3occ   + MW[52]                        ;  pm 3-occveh's
   pmtrks   = pmtrks   + MW[53]                        ;  pm trucks
   pmapax   = pmapax   + MW[54]                        ; pm airpax adrs
   pm1occad = pm1occad + MW[4]                         ; pm 1occ adr
   pm2occad = pm2occad + MW[5]                         ; pm 2occ adr
   pm3occad = pm3occad + MW[6]                         ; pm 3+occ adr
   pmadr    = pmadr    + MW[4] + MW[5] + MW[6]         ; pm total adr(modeled)
   pmxxtrk  = pmxxtrk  + MW[21]                        ; pm Thru     Truck
   pmxxad1  = pmxxad1  + MW[22]                        ; pm Thru 1occ Adr
   pmxxad2  = pmxxad2  + MW[23]                        ; pm Thru 2occ Adr
   pmxxad3  = pmxxad3  + MW[24]                        ; pm Thru 3+occAdr
   pmxxadr  = pmxxadr  + MW[22]+MW[23]+MW[24]          ; pm total xx adr
   pmtaxi   = pmtaxi   + MI.5.3                        ; pm Taxi     ADr
   pmvisi   = pmvisi   + MI.5.4                        ; pm visitor  ADr
   pmscho   = pmscho   + MI.5.5                        ; pm School   ADr
   pmmtrk   = pmmtrk   + MW[28]                        ; pm int,ext MedTk
   pmhtrk   = pmhtrk   + MW[29]                        ; pm int,ext HvyTk
   pmcomveh = pmcomveh + MW[55]                        ; pm int,ext,xx ComVeh

;Off-Peak group
   opvehs   = opvehs   + MW[60]+MW[61]+MW[62]+MW[63]+MW[64] ; all op vehs
   op1occ   = op1occ   + MW[60]                        ;  op 1-occveh's
   op2occ   = op2occ   + MW[61]                        ;  op 2-occveh's
   op3occ   = op3occ   + MW[62]                        ;  op 3-occveh's
   optrks   = optrks   + MW[63]                        ;  op trucks
   opapax   = opapax   + MW[64]                        ; op airpax adrs
   op1occad = op1occad + MW[7]                         ; op 1occ adr
   op2occad = op2occad + MW[8]                         ; op 2occ adr
   op3occad = op3occad + MW[9]                         ; op 3+occ adr
   opadr    = opadr    + MW[7] + MW[8] + MW[9]         ; op total adr(modeled)
   opxxtrk  = opxxtrk  + MW[31]                        ; op Thru     Truck
   opxxad1  = opxxad1  + MW[32]                        ; op Thru 1occ Adr
   opxxad2  = opxxad2  + MW[33]                        ; op Thru 2occ Adr
   opxxad3  = opxxad3  + MW[34]                        ; op Thru 3+occAdr
   opxxadr  = opxxadr  + MW[32]+MW[33]+MW[34]          ; op total xx adr
   optaxi   = optaxi   + MI.6.3                        ; op Taxi     ADr
   opvisi   = opvisi   + MI.6.4                        ; op visitor  ADr
   opscho   = opscho   + MI.6.5                        ; op School   ADr
   opmtrk   = opmtrk   + MW[38]                        ; op int,ext MedTk
   ophtrk   = ophtrk   + MW[39]                        ; op int,ext HvyTk
   opcomveh = opcomveh + MW[65]                        ; op int,ext,xx ComVeh
endjloop

if (i=zones)   ; print out results
list = '/bt      '
list = '%_iter_% Iter. Pre-Traffic Assignment Trip Table Preparation Report'
list = '  '
list = 'Total Vehs: ',vehs(9.0),'  AM,PM,OPk Vehs: ',
     amvehs(8.0),' ',pmvehs(8.0),' ',opvehs(8.0)
list = '  '
list = '               ',' AM 1,2,3+Occ Vehs, Trucks, Air Pax Adrs',
 am1occ(8.0),' ',am2occ(8.0),' ',am3occ(8.0),' ',amtrks(8.0),' ',amapax(8.0)
list = '               ',' PM 1,2,3+Occ Vehs, Trucks, Air Pax Adrs',
 pm1occ(8.0),' ',pm2occ(8.0),' ',pm3occ(8.0),' ',pmtrks(8.0),' ',pmapax(8.0)
list = '               ',' OP 1,2,3+Occ Vehs, Trucks, Air Pax Adrs',
 op1occ(8.0),' ',op2occ(8.0),' ',op3occ(8.0),' ',optrks(8.0),' ',opapax(8.0)
list = '      '
list = '                ',' AM,PM,OPk Auto Drivers (modeled) ',
     amadr(8.0),' ',pmadr(8.0),' ',opadr(8.0)
list = '                ',' AM  1,2,3+Occ Auto Drs ',
     am1occad(8.0),' ',am2occad(8.0),' ',am3occad(8.0)
list = '                ',' PM  1,2,3+Occ Auto Drs ',
     pm1occad(8.0),' ',pm2occad(8.0),' ',pm3occad(8.0)
list = '                ',' OP  1,2,3+Occ Auto Drs ',
     op1occad(8.0),' ',op2occad(8.0),' ',op3occad(8.0)
list = '         '
list = '                ',' AM Med, Hvy, XX Trk:   ',
     amxxtrk(8.0),' ',amhtrk(8.0),' ',amxxtrk(8.0)
list = '                ',' PM Med, Hvy, XX Trk:   ',
     pmxxtrk(8.0),' ',pmhtrk(8.0),' ',pmxxtrk(8.0)
list = '                ',' OP Med, Hvy, XX Trk:   ',
     opxxtrk(8.0),' ',ophtrk(8.0),' ',opxxtrk(8.0)
list = '         '
list = '                ',' AM 1,2,3+Occ,TotlXX Adr',
     amxxad1(8.0),' ',amxxad2(8.0),' ',amxxad3(8.0),' ',amxxadr(9.0)
list = '                ',' PM 1,2,3+Occ,TotlXX Adr',
     pmxxad1(8.0),' ',pmxxad2(8.0),' ',pmxxad3(8.0),' ',pmxxadr(9.0)
list = '                ',' OP 1,2,3+Occ,TotlXX Adr',
     opxxad1(8.0),' ',opxxad2(8.0),' ',opxxad3(8.0),' ',opxxadr(9.0)
list = '         '
list = '                ',' AM Taxi,Visitr,Schl Adr, Air Pax Adr',
     amtaxi(8.0),' ',amvisi(8.0),' ',amscho(8.0),' ',amapax(8.0)
list = '                ',' PM Taxi,Visitr,Schl Adr, Air Pax Adr',
     pmtaxi(8.0),' ',pmvisi(8.0),' ',pmscho(8.0),' ',pmapax(8.0)
list = '                ',' OP Taxi,Visitr,Schl Adr, Air Pax Adr',
     optaxi(8.0),' ',opvisi(8.0),' ',opscho(8.0),' ',opapax(8.0)
list = '                ',' AM     ,PM     ,OP , Total Commercial Vehs. ',
     amcomveh(8.0),' ',pmcomveh(8.0),' ',opcomveh(8.0),' ',comveh(8.0)
list = '/et      '

 endif



;  Write out the auto driver tables by time period
 MATO[1] = @AM_VT@,  MO=40-44 ; AM Veh Trips 1,2,3+occ,trucks,Air Pax Vehs
 MATO[2] = @PM_VT@,  MO=50-54 ; PM Veh Trips 1,2,3+occ,trucks,Air Pax Vehs
 MATO[3] = @OP_VT@,  MO=60-64 ; OP Veh Trips 1,2,3+occ,trucks,Air Pax Vehs

ENDRUN


;----------------------------------------------------------------
;   Step 2 - Highway Assignment
;
;
;
;----------------------------------------------------------------

itr = '%_iter_%'
; The Input Network Depends on the previous Iteration network

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

LOOP Period=1,3;  Three assignment loops: 1/AM, 2/PM, 3/Off-Pk

IF     (Period==1)         ; AM Peak Period
    PRD    =  'AM'         ;
    PCTADT =   40  ; %_AMPF_%  AM Pk Ftr (% of traffic occurring in pk hr)

ELSEIF (Period==2)         ; PM Peak Period
    PRD    =  'PM'         ;
    PCTADT =   37  ; %_PMPF_%  PM Pk Ftr (% of traffic occurring in pk hr)

ELSE                       ;  Off-Peak Period
```

```
    PRD    =  'OP'         ;
    PCTADT =   12  ; %_OPPF_%  OP Pk Ftr (% of traffic occurring in pk hr)
ENDIF

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


;$
in_tskm  = 'inputs\toll.skm'                   ; toll param file
VDF_File = '..\support\Conical_VDF_V22.txt'   ; Volume Delay Functions file
Que_File = '..\support\Queuing_Time.TXT'       ; Queing Time  specification
;$

RUN PGM=HWYLOAD
  NETI     = @INPNET@                          ; TP+ Network
  ;
  ;  The input trip table has 5 Vehicle Tables:
  ;     1 - 1-Occ Auto Drivers
  ;     2 - 2-Occ Auto Drivers
  ;     3 - 3+Occ Auto Drivers
  ;     4 - Trucks
  ;     5 - Airport Pass. Auto Driver Trips

  MATI=%_iter_%@prd@.VTT ;
  ;
  NETO=temp.net          ; Output loaded network of current iter/time prd.
  ;
  ;=================================================================
  ; CAP & SPEED CLASS 71 ADJUSTED FOR I-270 FROM I-370 & SPUR
  ; JCPARK 5/2/03
  ; CAP REVISED JCPARK 5/20/03 TO 1500
  ; CAPACITY & SPEED OF MAJOR & MINOR ARTERIAL REVISED
  ; SPEED OF COLLECTOR REVISED   JCPARK 6/17/03
  ; CAPACITY OF I-95 ADJUSTED: 1900 -> 1800 VPHPL
  ; I-270 & I-95 OVERRIDES REMOVED 6/23/03 JCPARK
  ; THE OVERRIDES ACTIVATED 6/25/03 JCPARK
  ; START ------>
  ;=================================================================
  ;*****************************************************************
  ;**  LOS'E' Capacities and Freeflow Speeds Assumptions:         **
  ;*****************************************************************
  ;
  ;            areatp > 1    2    3    4    5    6    7   fac type
  ;                    ---  ---  ---  ---  ---  ---  ---     V
  SPDCAP CAPACITY[01]=3150 3150 3150 3150 3150 3150 3150  ; cen
  SPDCAP CAPACITY[11]=1500 1600 1800 1800 2000 2000 2100  ; fwy REVISED 7/20/03
  SPDCAP CAPACITY[21]= 800  800  960  960 1260 1260 1260  ; maj REVISED 6/19/03
  SPDCAP CAPACITY[31]= 500  600  700  840 1000 1000 1000  ; min REVISED 6/30/03
  SPDCAP CAPACITY[41]= 300  400  500  700  700  700  800  ; col
  SPDCAP CAPACITY[51]= 900 1000 1000 1200 1500 1500 1500  ; xwy
  SPDCAP CAPACITY[61]=1000 1000 1000 1000 2000 2000 2000  ; rmp
  SPDCAP CAPACITY[71]=1600 1800 1800    ; JCPARK I-270 CAP 7/20/03 ICC CAP 11/18/03
  SPDCAP CAPACITY[91]=2400 2100         ; JCPARK 7/24/03 I-495 CAP
  ;
  ;  initial speed values :
  ;
  ;            areatp > 1    2    3    4    5    6    7   fac type
  ;                    ---  ---  ---  ---  ---  ---  ----    V
  SPDCAP    SPEED[01]= 15   15   20   25   30   30   35    ; cen
  SPDCAP    SPEED[11]= 55   55   60   60   67   67   67    ; fwy
  SPDCAP    SPEED[21]= 25   25   35   35   40   45   45    ; maj REVISED 6/18/03
  SPDCAP    SPEED[31]= 20   20   30   30   35   40   40    ; min REVISED 6/18/03
  SPDCAP    SPEED[41]= 15   15   20   20   25   30   30    ; col REVISED 6/18/03
  SPDCAP    SPEED[51]= 45   45   50   50   50   55   55    ; xwy
  SPDCAP    SPEED[61]= 20   20   30   30   35   40   50    ; rmp
  SPDCAP    SPEED[71]= 55   60   50 ; JCPARK I-270 SPD 7/20/03 ICC SPD 10/30/03

;$
```

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

;$  ;

  ;=================================================================
  ; CAP & SPEED CLASS 71 55mph ADJUSTED FOR I-270 FROM I-370 & SPUR
  ; JCPARK 5/5/03
  ; REMOVED 6/23/03 JCPARK
  ; ACTIVATED 6/25/03 JCPARK
  ; ALL THE OVERRIDES WERE REMOVED EXCEPT FOR I-495 7/20/03
  ; <------ END
  ;=================================================================
  ;
  ;-----------------------------------------------------$
  ;   Queuing Penalty Function (qtime = f(V/C))         $
  ;-----------------------------------------------------$
  ;   Time Penalty is a function of VC ratio
  ;
  LOOKUP NAME=QTIME,
         lookup[1] = 1,result = 2,  ;Centroids   Queuing Time (MIN)
         lookup[2] = 1,result = 3,  ;Fwys        Queuing Time (MIN)
         lookup[3] = 1,result = 4,  ;MajArts     Queuing Time (MIN)
         lookup[4] = 1,result = 5,  ;MinArts     Queuing Time (MIN)
         lookup[5] = 1,result = 6,  ;Colls       Queuing Time (MIN)
         lookup[6] = 1,result = 7,  ;Expways     Queuing Time (MIN)
         lookup[7] = 1,result = 8,  ;Ramps       Queuing Time (MIN)
         FAIL=0,0,0, INTERPOLATE=T, file= @Que_File@
  ;
  ;-----------------------------------------------------$
  ;    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) + (QTIME(1,VC) * LI.@Prd@_AllowQue)  ; TC(LINKCLASS) =
    TC[2]= T0*VCRV(2,VC) + (QTIME(2,VC) * LI.@Prd@_AllowQue)  ;   Uncongested
Time(T0) *
    TC[3]= T0*VCRV(3,VC) + (QTIME(3,VC) * LI.@Prd@_AllowQue)  ;   Volume Delay
Funtion(VDF)Value
    TC[4]= T0*VCRV(4,VC) + (QTIME(4,VC) * LI.@Prd@_AllowQue)  ;   VDF function is
based on VC
    TC[5]= T0*VCRV(5,VC) + (QTIME(5,VC) * LI.@Prd@_AllowQue)  ; Note: the LINKCLASS
is defined
    TC[6]= T0*VCRV(6,VC) + (QTIME(6,VC) * LI.@Prd@_AllowQue)  ; during the LINKREAD
phase below.
    TC[7]= T0*VCRV(7,VC) + (QTIME(7,VC) * LI.@Prd@_AllowQue)  ; during the LINKREAD
phase below.
  }
  ;
  ;
  ;
  CAPFAC=@CAPFAC@  ;
  ; 10 iterations changed to 20 (RM) 3/09/04 / GAP,AAD, RMSE,&RAAD params set to
zero
  ; 20 iterations changed to 40 (RM) 7/26/07
```

```
  ; 40 iterations changed to 60 (DV) 7/30/07
  ;  to ensure 'maxiters' iterations are completely executed (RM) 6/15/04 .
  MAXITERS=60      ;
  GAP  = 0.0      ; ** To ensure Max iterations are fully executed **
  AAD  = 0.0      ; ** To ensure Max iterations are fully executed **
  RMSE = 0.0      ; ** To ensure Max iterations are fully executed **
  RAAD = 0.0      ; ** To ensure Max iterations are fully executed **


PHASE=LINKREAD
      C     = CAPACITYFOR(LI.@PRD@LANE,LI.CAPCLASS) * @CAPFAC@
      SPEED = SPEEDFOR(LI.@PRD@LANE,LI.SPDCLASS)
      T0    = (LI.DISTANCE/SPEED)*60.0


   IF (ITERATION = 0)
     ; Define AM /OP link level tolls by vehicle type here:
        LW.SOV@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(1,LI.TOLLGRP) ; SOV       TOLLS
in 1994 cents
        LW.HV2@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(2,LI.TOLLGRP) ; HOV 2 occ TOLLS
in 1994 cents
        LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP) ; HOV 3+occ TOLLS
in 1994 cents
        LW.TRK@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(4,LI.TOLLGRP) ; Truck     TOLLS
in 1994 cents
        LW.APX@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(5,LI.TOLLGRP) ; AP Pax    TOLLS
in 1994 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.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
    ;     Limit Code  Definition
    ;     --------  ----------------------
    ;        1      All vehicles accepted
    ;        2      Only HOV2 (or greater) vehicles accepted only
    ;        3      Only HOV3 vehicles accepted only
    ;        4      Med,Hvy Trks not accepted, all other traffic is accepted
    ;        5      Airport Passenger Veh. Trips
    ;        6-8    (Unused)
    ;        9      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.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


    PATH=LW.SOV@PRD@IMP,
      EXCLUDEGRP=2,3,5,6,7,   ; prohibitions for free SOV veh
      VOL[1]=MI.1.1
    PATH=LW.HV2@PRD@IMP,
      EXCLUDEGRP=3,5,6,7,     ; prohibitions for HOV2 veh
      VOL[2]=MI.1.2
```

```
    PATH=LW.HV3@PRD@IMP,
      EXCLUDEGRP=5,6,7,       ; prohibitions for HOV3 veh
      VOL[3]=MI.1.3
    PATH=LW.TRK@PRD@IMP,
      EXCLUDEGRP=2,3,4,5,6,7, ; prohibitions for trucks
      VOL[4]=MI.1.4
    PATH=LW.APX@PRD@IMP,
      EXCLUDEGRP=6,7,         ; prohibitions for Airport pass.veh trips
      VOL[5]=MI.1.5

;$

ENDPHASE

PHASE = ADJUST

ENDPHASE

ENDRUN




;----------------------------------------------------------------------
;Step 3
;Calculate Restrained Speed/Perform MSA Volume/Speed Averaging
;
;----------------------------------------------------------------------
if      (itr = 'pp' )
            itrno  = 0
 elseif (itr = 'i1')
            itrno  = 1
 elseif (itr = 'i2')
            itrno  = 2
 elseif (itr = 'i3')
            itrno  = 3
 elseif (itr = 'i4')
            itrno  = 4
 elseif (itr = 'i5')
            itrno  = 5
 elseif (itr = 'i6')
            itrno  = 6
endif


RUN PGM=HWYNET
  NETI=temp.net             ; input network from highway assignment
  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,
                          VT_1,V1T_1,V2T_1,V3T_1,V4T_1,V5T_1,
       OLDSPD,NEWVOL,OLDVOL,FFSPD,HRLKCAP,HRLNCAP,DCD,NEWSPD,ATYPE,
       VMT,EVDF,WOSPD,WNSPD,WFSPD,SPDDIFF,COMP,%_iter_%@prd@VMT,
       cspd_1,vdt_1,vht_1,FTPlus1

  _CNT=1                      ; link counter      (temporary variable)

     OLDVOL  = V_1                                                    ;
     NEWVOL  = V_1                                                    ;
     OLDSPD  = 0                                                      ;
     %_iter_%@prd@VOL = NEWVOL                                        ;
IF   (DISTANCE > 0)                                                   ;
     OLDSPD=DISTANCE/@Prd@HTIME*60.0                                  ;
ENDIF                                                                 ;

IF        (@itrno@  = 2  )                                            ;
              OLDSPD        = %_prev_%@prd@spd                        ;
              OLDVOL        = %_prev_%@prd@VOL                        ;
              @itr@@prd@VOL = ROUND((OLDVOL*1/2)+(NEWVOL*1/2))        ;
```

```
   ELSEIF (@itrno@  = 3  )                                            ;
              OLDSPD        = %_prev_%@prd@spd                        ;
              OLDVOL        = %_prev_%@prd@VOL                        ;
              @itr@@prd@VOL = ROUND((OLDVOL*2/3)+(NEWVOL*1/3))        ;
   ELSEIF (@itrno@  = 4  )                                            ;
              OLDSPD        = %_prev_%@prd@spd                        ;
              OLDVOL        = %_prev_%@prd@VOL                        ;
              @itr@@prd@VOL = ROUND((OLDVOL*3/4)+(NEWVOL*1/4))        ;
   ELSEIF (@itrno@  = 5  )                                            ;
              OLDSPD        = %_prev_%@prd@spd                        ;
              OLDVOL        = %_prev_%@prd@VOL                        ;
              @itr@@prd@VOL = ROUND((OLDVOL*4/5)+(NEWVOL*1/5))        ;
   ELSEIF (@itrno@  = 6  )                                            ;
              OLDSPD        = %_prev_%@prd@spd                        ;
              OLDVOL        = %_prev_%@prd@VOL                        ;
              @itr@@prd@VOL = ROUND((OLDVOL*5/6)+(NEWVOL*1/6))        ;
ENDIF

  _VMT=0                      ;

  IF (FTYPE=1-6)
     _VMT=(V_1*DISTANCE)
  ENDIF


  FFSPD  =SPEEDFOR(@prd@LANE,SPDCLASS)     ; freeflow speed
  HRLKCAP=CAPACITYFOR(@prd@LANE,CAPCLASS)  ; hrly LINK capacity
  HRLNCAP=CAPACITYFOR(1,CAPCLASS)          ; hrly LANE capacity
  DCD=1

 IF (TIME_1 =  0)                          ; current (not averaged)
  NEWSPD    =  0                           ; assignment speed.  Should be
 ELSE                                      ; same as pp@prd@spd & bs@prd@spd
  NEWSPD=(DISTANCE*60)/TIME_1              ;
 ENDIF                                     ;

  ; Tabulate VMT, _CNT by FTYPE and JUR
  CROSSTAB VAR=_VMT, FORM=12cs, ROW=FTYPE, RANGE=0-6-1,0-6
  CROSSTAB VAR=_VMT, FORM=12cs, ROW=JUR,   RANGE=0-23-1,0-23
  CROSSTAB VAR=_CNT, FORM=12cs, ROW=FTYPE, RANGE=0-6-1,0-6
  CROSSTAB VAR=_CNT, FORM=12cs, ROW=JUR,   RANGE=0-23-1,0-23


  ;
  ;----------------------------------------------------$
  ;    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@


  ;----------------------------------------------------$
  ;   Queuing Penalty Function (qtime = f(V/C))         $
  ;----------------------------------------------------$
  ;   Time Penalty is a function of VC ratio
  ;
  ;
  LOOKUP NAME=QTIME,
         lookup[1] = 1,result = 2,  ;Centroids   Queuing Time (MIN)
```

```
        lookup[2] = 1,result = 3,  ;Fwys       Queuing Time (MIN)
        lookup[3] = 1,result = 4,  ;MajArts    Queuing Time (MIN)
        lookup[4] = 1,result = 5,  ;MinArts    Queuing Time (MIN)
        lookup[5] = 1,result = 6,  ;Colls      Queuing Time (MIN)
        lookup[6] = 1,result = 7,  ;Expways    Queuing Time (MIN)
        lookup[7] = 1,result = 8,  ;Ramps      Queuing Time (MIN)
        FAIL=0,0,0, INTERPOLATE=T, file= @Que_File@
  ;
  ; Obtain Area Type from 1st digit of SPDCLASS
  ATYPE=SPDCLASS%10


; Compute the Final VMT based on final volume
;      variable name: '<iteration><period>VMT')
;
;  %_iter_%@prd@VMT=ROUND(%_iter_%@prd@VOL*DISTANCE) ; Final VMT
   VMT=ROUND(%_iter_%@prd@VOL*DISTANCE) ; Final VMT

; Compute the Final VC ratio based on final volume
;      variable name: '<iteration><period>VC')
;
      %_iter_%@prd@VC=(%_iter_%@prd@VOL*(@pctadt@/100.0)/HRLKCAP)

; Compute the Final Volume Delay Function based on final volume
;      variable name: '<iteration><period>VDF')
;
       FTPlus1 = Ftype + 1
       %_iter_%@prd@VDF = VCRV(FTPlus1, %_iter_%@prd@VC)


; Compute the Final Volume Delay Function based on final volume
;      variable name: '<iteration><period>SPD')
;
   IF (DISTANCE = 0)
     %_iter_%@prd@SPD   = 0
    ELSE
     %_iter_%@prd@SPD = FFSPD / %_iter_%@prd@VDF
   ENDIF

; -------------------------------------------------
;  Consider Queuing Time  if Appropriate
; -------------------------------------------------

      _BaseSpeed                   =  %_iter_%@prd@SPD
      _BaseTime                    =  Distance / _Basespeed  * 60.0
      %_iter_%@prd@QTimePen        =  QTIME(FTPlus1, %_iter_%@prd@VC) *
@Prd@_AllowQue
      _FinalTime                   =  _BaseTime +  %_iter_%@prd@QTimePen
      _FinalSpeed                  =  Distance / _FinalTime * 60.0
      %_iter_%@prd@SPD             = _FinalSpeed

      IF (%_iter_%@prd@QTimePen > 0.0)
         Print list = a(6),b(6), Distance(5.2),' ',_BaseSpeed(6.2),' ',
_BaseTime(6.2),' ', %_iter_%@prd@VC(6.3),' ',
                      %_iter_%@prd@QTimePen(6.2), _FinalTime(6.2),' ',
_FinalSpeed(5.1),' ',%_iter_%@prd@SPD(5.1),
                     ' ',@Prd@_AllowQue(2),
                     ' <-- a,b, Dst, base speed,time, BaseVCRatio, TimePen, final
time,speed(2x) AllowQue',
                     file = %_iter_%@prd@QTimePen.txt
      ENDIF
; End Time Penalty section

; compute WEIGHTED OLD and Final SPEEDS for Aggregate summaries
      WOSPD=ROUND(VMT * OLDSPD)
      WNSPD=ROUND(VMT * %_iter_%@prd@SPD)
      WFSPD=ROUND(VMT * FFSPD)
```

```
; Compute current/previous Speed Differences at link level
;     ADIFF  = ROUND(ABS(%_iter_%@prd@SPD - OLDSPD))
      SPDDIFF= ROUND(%_iter_%@prd@SPD     - OLDSPD)


; Crosstab VMT,WOSPD,WNSPD, by FTYPE and JUR
    CROSSTAB VAR=VMT,WOSPD,WNSPD,_CNT,FORM=12cs,
     ROW=JUR,   RANGE=0-23-1,,0-23,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WOSPD/VMT, FORM=12.2cs,   ; AVG INITIAL SPD
     COMP=WNSPD/VMT, FORM=12.2cs,    ; AVG FINAL SPD
     COMP=((WNSPD/VMT)-(WOSPD/VMT)), FORM=12.2cs ; DIFF(NEW-OLD)

; Crosstab VMT,WOSPD,WNSPD,_CNT2 by ATYPE and FTYPE
    CROSSTAB VAR=VMT,WOSPD,WNSPD,_CNT, FORM=12cs,
     ROW=ATYPE, RANGE=1-7-1,,1-7,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WOSPD/VMT, FORM=12.2cs,   ; AVG INITIAL SPD
     COMP=WNSPD/VMT, FORM=12.2cs,    ; AVG FINAL SPD
     COMP=((WNSPD/VMT)-(WOSPD/VMT)), FORM=12.2cs ; DIFF(NEW-OLD)


; Crosstab VMT,WOSPD,WNSPD,WFSPD,_CNT2 by EVC and FTYPE
    CROSSTAB VAR=VMT,WOSPD,WNSPD,WFSPD,_CNT, FORM=12cs,
     ROW=%_iter_%@prd@VC, RANGE=0-2-0.1,,1-99,
     COL=FTYPE, RANGE=1-6-1,1-6,
     COMP=WOSPD/VMT, FORM=12.2cs,   ;  AVG INITIAL SPD
     COMP=WNSPD/VMT, FORM=12.2cs,    ; AVG FINAL SPD
     COMP=WFSPD/VMT, FORM=12.2cs,    ; Freeflow Speed
     COMP=((WFSPD/VMT)/(WOSPD/VMT)), FORM=12.2cs, ; AVG FINAL SPD
     COMP=((WFSPD/VMT)/(WNSPD/VMT)), FORM=12.2cs, ; AVG FINAL SPD
     COMP=((WNSPD/VMT)-(WOSPD/VMT)), FORM=12.2cs ; DIFF(NEW-OLD)

; Tabulate _CNT by SPEED DIFF GROUP
   CROSSTAB VAR=_CNT, FORM=12cs,
;       ROW=ADIFF, RANGE=0-2,3-5,6-8,9-11,12-14,15-17,18-100,0-100
        ROW=SPDDIFF,
        RANGE=-100--18,-17--15,-14--12,-11--9,-8--6,-5--3,-2-2,
                3-5,6-8,9-11,12-14,15-17,18-100,,-100-100

;     Tabulate _CNT2_PCT by SPEED DIFF GROUP
;    CROSSTAB VAR=_CNT_PCT, FORM=12.1cs,
;      ROW=ADIFF, RANGE=0-2,3-5,6-8,9-11,12-14,15-17,18-100,0-100

    ; PRINT TO check
    PRINT,
     LIST=A(5),' ',B(5),DISTANCE(7.2),' ',@PCTADT@(4.3),' ',@prd@LANE(2.0),' ',
     HRLKCAP(5.0),' ',HRLNCAP(5.0),' ',
     oldvol(8.2),' ',newvol(8.2),' ',%_iter_%@prd@VOL(8.2),' ',
     ffspd(5.1),' ',%_iter_%@prd@VC(6.4),' ',%_iter_%@prd@VDF(6.4),
     ' ',ftype(3.0),' ',ATYPE(3.0),
     ' ',vc_1(6.4),' ',NEWSPD(5.1),%_iter_%@prd@SPD(5.1),
;
;
            FILE=%_iter_%@prd@LLNK.ASC

ENDRUN
ENDLOOP
;-------------------------------------------------------------------
; Step 4
;   Summarize 24 hour VMT  of current AM, PM, & Off-Peak Assignments
;-------------------------------------------------------------------
;
;
RUN PGM=HWYNET
  NETI[1]=tempam.net
  NETI[2]=temppm.net
  NETI[3]=tempop.net
```

```
  NETO   =%_iter_%HWY.NET
 ;
 ;
  _VOLAM =  LI.1.%_iter_%amVOL
  _VOLPM =  LI.2.%_iter_%pmVOL
  _VOLOP =  LI.3.%_iter_%opVOL

; COMPUTE FINAL DAILY VOLUME  ON ALL LINKS
 %_iter_%24VOL =  _VOLAM + _VOLOP + _VOLPM  ; 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+_VOLPM+_VOLOP)/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 || OPLIMIT=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)
; --------------------------------------------------------------------
; --------------------------------------------------------------------
; 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
```

7 Highway_Build_Toll.s

```
;=================================================================
;  HIGHWAY_BUILD_TOLL.S
;
;  MWCOG Version 2.2 Model  - Highway Network Building Program
;
;  This program includes the functions of the closestp, atypetp,
;  and arealktp programs in Version 2.1/TP+ Release C.
;  NOTE: Step 1.4 (Highway network build) updated on 3/28/04
;        to ensure TOLLGRP is coded with a value of '1' for
;        the condition: TOLL > 0 and TOLLGRP = 0.
;
;
;  STEP 1.1 - 1.5 BUILD BASE HIGHWAY NETWORK
;         INPUT:  node.asc, link.asc, zone.asc, areaover.asc,
;                 amspd.lkp, opspd.lkp, tazamspd.lkp,tazopspd.lkp,
;                 atype.asc
;
;        OUTPUTS:  zonehwy.net  --BUILT HIGHWAY NETWORK(AM,PM,Off-Pk)
;                  wlknet.tb    --(Walk links, transit netwk)
;                  trn_fwyn.asc --highway links,freeway nodes)
;
;  STEP 2 - DEVELOP ZONAL HIGHWAY TERMINAL TIMES
;               INPUT:    ZONE.ASC      --Zonal land use file
;               OUTPUT:   ZTERMTM.ASC   --Zonal Highway Terminal Time file
;
;======================================================================
;; Updates:
; modified by DV to allow for tollgrp=10; 8/16/2005
; tollgrp now takes up fields 66-67, not just 67; 8/16/2005
;
;; V2.2 Updates:
;  11/7/06/RM  - Steps 1.1 and 1.2 changed to read and process RECI
;                file inputs.
;              - Toll Group code field expanded from  66-67 to
;                66-69 to accommodate HOT lane Work (now is 4 digits)
;              - Cnt_Type link attribute added to further clarify COUNT;
;                The codes will be: 0/ no count or unknown count type
;                                   1/ Permanent Count, full year operation
;                                   2/ Permanent Count, part year operation
;                                   6/ Program count collected during current yr
;                                   7/ Program count collected previous year,
;                                          but adjusted to current year
;                HWY_Deflator.txt is now used - as a default deflation factor
;
;  6/14/07/RM  - Added script section to create ALLOWQUE link attribute.
;                (=1/ to allow queuing delay; 0/to disallow queuing)
;                The new section begins at ';; AllowQue Begin ;; '
;                and ends at:              ';; AllowQue End ;;  '
;
;                AREA TYPE OVERRIDE LOOKUP in the TOLL.ESC File (TG_ATOVR)
;                is now used to aover ride area types for any tolled facility.
;  1/24/08       Section added to develop AM_AllowQue, PM_AllowQue, &OP_AllowQue
;                variables.  Note: inactive HOV facilities in the Link.asc file
;                should have limit codes of '9' on mainline AND ramps!!
;  1/25/08       Toll.esc should have added lookup table named 'TOLLTYPE'
;                New variables are added: AMToll_VP,PMToll_VP,OPToll_VP,
;                which reflect Tolls on variabley priced/managed type facilities
;                ONLY.  These will be used to develop special highway time
;                 toll skims used in the mode choice model
```

```
;
;=======================================================================
;
; PARAMETERS / Files DEFINED in TP MAIN:
;


  ZONESIZE  =  2191                 ; Max. TAZ No.            (Param)
  LSTITAZ   =  2144                 ; Last Internal Zone No.  (Param)

  NODEFILE  = 'INPUTS\NODE.ASC'     ; Node X/Y File           (I/P file)
  LINKFILE  = 'INPUTS\LINK.ASC'     ; Node X/Y File           (I/P file)
  ZONEFILE  = 'INPUTS\ZONE.ASC'     ; Zonal Land Use File     (I/P file)

  AT_OVR    = 'INPUTS\AREAOVER.ASC' ; Area Type Override file (I/P file)

  AMSPD     = 'inputs\AMSPD.LKP'    ; AM Speed lookup ATxFT   (I/P file)
  OPSPD     = 'inputs\OPSPD.LKP'    ; OP Speed lookup ATxFT   (I/P file)
  AMSPDTF   = 'inputs\TAZAMSPD.LKP' ; AM Speed lookup TAZxFT  (I/P file)
  OPSPDTF   = 'inputs\TAZOPSPD.LKP' ; OP Speed lookup TAZxFT  (I/P file)

  IN_TESC   = 'INPUTS\TOLL.ESC'     ; INPUT Toll Escalation Param file
  HWY_Defl  = 'HWY_Deflator.txt'    ; INPUT Default Highway Deflator not defined in
toll.esc file

  TCRDFILE  = 'TAZCRD.ASC'          ; TAZ X/Y File            Temp. File
  ATYPFILE  = 'ATYPE.ASC'           ; Zonal Area Type file    (O/P file)
  OU_BSNET  = 'ZONEHWY.NET'         ; OUTPUT BUILT network FILE

;--------------------------------------------------------------------
; STEP 1.1: Create TAZ Coordinate File from 'full' Network Node
;           Coordinate File.  Put results in TAZCRD.ASC file
;--------------------------------------------------------------------


RUN PGM=MATRIX

RECI=@NODEFILE@, Fields= 1-6, 7-14, 15-22  ; node/xCRD/yCRD
;
; If current node is within the TAZ number range, print out XY Coords.
;
   IF (RECI.NFIELD[1]  <=  @ZONESIZE@)

      PRINT
LIST=reci.nfield[1](5),reci.nfield[2](10),reci.nfield[3](10),FILE=TAZCRD.ASC

   ENDIF

ENDRUN


;--------------------------------------------------------------------
; STEP 1.2:  Find the Closest TAZ to each Highway node in the system.
;            Put results in NODCRDZN.ASC file
;--------------------------------------------------------------------

RUN PGM=MATRIX
RECI=@NODEFILE@, Fields= 1-6, 7-14, 15-22  ; node/xCRD/yCRD
;
; Read in TAZ XY file as a lookup...
;
LOOKUP NAME=TAZCRD,
       LOOKUP[1] = 1, RESULT=2,     ; X Crd of (TAZ)
       LOOKUP[2] = 1, RESULT=3,     ; Y Crd of (TAZ)
       INTERPOLATE=N, FAIL= 0,0,0, FILE=TAZCRD.ASC

;
; If current node is a TAZ and XYs are non-zero then
; the closest TAZ is itself.  Write it out.
;
;

IF     (reci.nfield[1] <= @ZONESIZE@ )
             NODE_TAZ = reci.nfield[1]
             NODEXCRD = reci.nfield[2]
             NODEYCRD = reci.nfield[3]
             MINDIST  = 0

          PRINT LIST=reci.nfield[1](6),reci.nfield[2](8) ,reci.nfield[3](8),
                     NODE_TAZ(8),MINDIST(8.2),FILE=NODCRDZN.ASC

;
; Else if current node is a non-TAZ and XYs are non-zero then
; loop through each TAZ, compute the node-TAZ distance and
; determine which TAZ is closest. Write it out.
;

ELSE

    MiNDIST =9999999.      ; initialize minimum distance to large no.

     LOOP IDX=1,@ZONESIZE@
                CURDIST=  SQRT((reci.nfield[2] - TAZCRD(1,IDX))**2 +
                               (reci.nfield[3] - TAZCRD(2,IDX))**2)/5280.

                IF (CURDIST    < MiNDIST)
                    NODEXCRD    = reci.nfield[2]
                    NODEYCRD    = reci.nfield[3]
                    MINDIST     = CURDIST
                    NODE_TAZ    = IDX

                ENDIF

     ENDLOOP

      PRINT LIST=reci.nfield[1](6),reci.nfield[2](8) ,reci.nfield[3](8),
                     NODE_TAZ(8),MINDIST(8.2),FILE=NODCRDZN.ASC
ENDIF



ENDRUN

;--------------------------------------------------------------------
; STEP 1.3:  Determine the Area Type of each TAZ based on the 1-mile
;      'floating' pop and emp density.  Put results in AREATP.ASC file.
;--------------------------------------------------------------------

RUN PGM=MATRIX
ZONES=@ZONESIZE@

; Keep zone arrays for the 'floating' pop, emp, area, pop. density,
; emp. density, pop den class, emp den class, 'standard' area type,
; & 'final' (override) areatype

ARRAY CUMPOP  = @ZONESIZE@, CUMEMP = @ZONESIZE@, CUMAREA  = @ZONESIZE@,
      POPDEN  = @ZONESIZE@, EMPDEN = @ZONESIZE@, POPDCL   = @ZONESIZE@,
      EMPDCL  = @ZONESIZE@, AREATP = @ZONESIZE@, F_AREATP = @ZONESIZE@

;
; read land use file into lookup table
;

ZDATI[1] = @ZONEFILE@ ,Z       =  1- 4,
                       HH      =  8-15,
```

```
                       HHPOP   = 16-23,
                       GQPOP   = 24-31,
                       TOTPOP  = 32-39,
                       TOTEMP  = 40-47,
                       INDEMP  = 48-55,
                       RETEMP  = 56-63,
                       OFFEMP  = 64-71,
                       OTHEMP  = 72-79,
                       JURCODE = 80-81,
                       AREA    = 83-92
;
; read TAZ XY file into lookup table
;

ZDATI[2] = @TCRDFILE@ ,Z       =  1- 5,
                       X       =  6-15,
                       Y       = 16-25



;
; Define Area Type codes based on pop/emp classes in lookup table
;

LOOKUP NAME=ATL,
       LOOKUP[1] = 1, RESULT=2,
       LOOKUP[2] = 1, RESULT=3,
       LOOKUP[3] = 1, RESULT=4,
       LOOKUP[4] = 1, RESULT=5,
       LOOKUP[5] = 1, RESULT=6,
       LOOKUP[6] = 1, RESULT=7,
       LOOKUP[7] = 1, RESULT=8,
       INTERPOLATE=N, FAIL= 0,0,0,
;
;    POP    Emp    Emp    Emp    Emp    Emp    Emp    Emp
;  Density  Den.   Den.   Den.   Den.   Den.   Den.   Den.
;   Class   Class1 Class2 Class3 Class4 Class5 Class6 Class7
;  ------   ------ ------ ------ ------ ------ ------ ------
     R=" 1,   7,     7,     5,     5,     2,     2,     2   ",
       " 2,   7,     5,     5,     5,     2,     2,     2   ",
       " 3,   6,     6,     5,     5,     2,     2,     2   ",
       " 4,   6,     6,     4,     3,     2,     2,     2   ",
       " 5,   4,     4,     3,     3,     2,     2,     1   ",
       " 6,   4,     3,     3,     3,     2,     2,     1   ",
       " 7,   3,     3,     3,     2,     2,     2,     1   "


;
; Zonal Area Type Overrides
;

LOOKUP NAME=ATOVR,
       LOOKUP[1] = 1, RESULT=2,    ;  AREA TYPE (1-7) Override
       INTERPOLATE=N, FAIL= 0,0,0,  FILE=@AT_OVR@
;
;

;
; Accumulate 1-mi 'floating' pop & emp & area here, for each TAZ
;
;
 LOOP IDX=1,@ZONESIZE@
  CURDIST=
   SQRT((X[I] - X[IDX])**2 + (Y[I]-Y[IDX])**2)/ 5280.


  IF (CURDIST < 1.00 && X[I] > 0 && X[IDX] > 0)
      CUMPOP[I]  = CUMPOP[I]  + TOTPOP[IDX]
      CUMEMP[I]  = CUMEMP[I]  + TOTEMP[IDX]
      CUMAREA[I] = CUMAREA[I] + AREA[IDX]
  ENDIF
 ENDLOOP

;
; Now that we have the floating pop & emp & area, compute the
; floating population / employment density
;

IF (CUMAREA[I]   = 0)
       POPDEN[I]    =  0
       EMPDEN[I]    =  0
ELSE
       POPDEN[I] =  CUMPOP[I] / CUMAREA[I]
       EMPDEN[I] =  CUMEMP[I] / CUMAREA[I]
ENDIF

;
; Use the floating pop & emp density to determine the
; population density class, employment density class
-
;


IF     (POPDEN[I]  <     100. )
        POPDCL[I]  =       1
ELSEIF (POPDEN[I]  <     350. )
        POPDCL[I]  =       2
ELSEIF (POPDEN[I]  <    1500. )
        POPDCL[I]  =       3
ELSEIF (POPDEN[I]  <    3500. )
        POPDCL[I]  =       4
ELSEIF (POPDEN[I]  <    6500. )
        POPDCL[I]  =       5
ELSEIF (POPDEN[I]  <   10000. )
        POPDCL[I]  =       6
ELSE
        POPDCL[I]  =       7
ENDIF



IF     (EMPDEN[I]  <     100. )
        EMPDCL[I]  =       1
ELSEIF (EMPDEN[I]  <     500. )
        EMPDCL[I]  =       2
ELSEIF (EMPDEN[I]  <    1500. )
        EMPDCL[I]  =       3
ELSEIF (EMPDEN[I]  <    5000. )
        EMPDCL[I]  =       4
ELSEIF (EMPDEN[I]  <   15000. )
        EMPDCL[I]  =       5
ELSEIF (EMPDEN[I]  <   35000. )
        EMPDCL[I]  =       6
ELSE
        EMPDCL[I]  =       7
ENDIF

;
; The pop den class, emp den class are then used to determine
; the area type
;

AREATP[I] = ATL(EMPDCL[I],POPDCL[I])

;
; Impose null overrides for external zones
```

```
;

IF    (I > @LSTITAZ@ )
      CUMPOP[I]  =  0
      CUMEMP[I]  =  0
      CUMAREA[I] =  0
      POPDEN[I]  =  0
      EMPDEN[I]  =  0
      POPDCL[I]  =  1
      EMPDCL[I]  =  1
      AREATP[I]  =  7
ENDIF



;
; The Final area-type equals standard area type...
;
        F_AREATP[I]   = AREATP[I]    ;  Final Area Type = 'Standard' AT

;
; ...unless a non-zero area-type override code exists
;
      IF (ATOVR(1,I)  >  0)          ;
        F_AREATP[I]   = ATOVR(1,I)
      ENDIF

; all done
; -------------------------------------------------------------------
; -------------------------------------------------------------------
;  If at the last zone, print out results and compute basic stats
;

LOOP IDX=1,@ZONESIZE@
  IF (I =  @ZONESIZE@)
;
;  Accumulate Final Area Type Frequencies for listing
;
   IF (F_AREATP[IDX] = 1)
    AT1_CNT = AT1_CNT + 1
    TPOP1=TPOP1+TOTPOP[IDX]
    TEMP1=TEMP1+TOTEMP[IDX]
   ENDIF
   IF (F_AREATP[IDX] = 2)
    AT2_CNT = AT2_CNT + 1
    TPOP2=TPOP2+TOTPOP[IDX]
    TEMP2=TEMP2+TOTEMP[IDX]
   ENDIF
   IF (F_AREATP[IDX] = 3)
    AT3_CNT = AT3_CNT + 1
    TPOP3=TPOP3+TOTPOP[IDX]
    TEMP3=TEMP3+TOTEMP[IDX]
   ENDIF
   IF (F_AREATP[IDX] = 4)
    AT4_CNT = AT4_CNT + 1
    TPOP4=TPOP4+TOTPOP[IDX]
    TEMP4=TEMP4+TOTEMP[IDX]
   ENDIF
   IF (F_AREATP[IDX] = 5)
    AT5_CNT = AT5_CNT + 1
    TPOP5=TPOP5+TOTPOP[IDX]
    TEMP5=TEMP5+TOTEMP[IDX]
   ENDIF
   IF (F_AREATP[IDX] = 6)
    AT6_CNT = AT6_CNT + 1
    TPOP6=TPOP6+TOTPOP[IDX]
    TEMP6=TEMP6+TOTEMP[IDX]
   ENDIF
   IF (F_AREATP[IDX] = 7)
    AT7_CNT = AT7_CNT + 1
    TPOP7=TPOP7+TOTPOP[IDX]
    TEMP7=TEMP7+TOTEMP[IDX]
   ENDIF

   IF (F_AREATP[IDX] < 1)   ERR_CNT = ERR_CNT+1
   IF (F_AREATP[IDX] > 7)   ERR_CNT = ERR_CNT+1

   TOT_CNT = TOT_CNT+1 TPOP =TPOP +TOTPOP[IDX]  TEMP =TEMP +TOTEMP[IDX]

   IF (ATOVR(1,IDX)  > 0 )
    PRINT LIST= IDX(5),TOTPOP[IDX](8),TOTEMP[IDX](8),AREA[IDX](8.2),
          CUMPOP[IDX](8),CUMEMP[IDX](8),CUMAREA[IDX](8.2),
          POPDCL[IDX](4),EMPDCL[IDX](4),AREATP[IDX](4),
          F_AREATP[IDX](4),'   ; * (Override) ',
          FILE=ATYPE.ASC
    ELSE
    PRINT LIST= IDX(5),TOTPOP[IDX](8),TOTEMP[IDX](8),AREA[IDX](8.2),
          CUMPOP[IDX](8),CUMEMP[IDX](8),CUMAREA[IDX](8.2),
          POPDCL[IDX](4),EMPDCL[IDX](4),AREATP[IDX](4),
          F_AREATP[IDX](4),'   ;             ',
          FILE=ATYPE.ASC
   ENDIF

;  PRINT VARIANT ZONAL FILE FOR PUMP_PRIME_SKIMS.S AND TRIP GEN PROGRAM
    PRINT LIST= IDX(5),' ',X[IDX](8),Y[IDX](8),
          TOTPOP[IDX](5),' ',TOTEMP[IDX](5),' ',AREA[IDX](8.4),
          CUMPOP[IDX](6),' ',CUMEMP[IDX](6),'   ',
          F_AREATP[IDX](1),
          FILE = BASEZON.DAT



  ENDIF




ENDLOOP

;
;  Compute Final Area Type Percentages for listing
;


 IF (I = @ZONESIZE@)
  AT1_PCT= AT1_CNT / TOT_CNT * 100.
  AT2_PCT= AT2_CNT / TOT_CNT * 100.
  AT3_PCT= AT3_CNT / TOT_CNT * 100.
  AT4_PCT= AT4_CNT / TOT_CNT * 100.
  AT5_PCT= AT5_CNT / TOT_CNT * 100.
  AT6_PCT= AT6_CNT / TOT_CNT * 100.
  AT7_PCT= AT7_CNT / TOT_CNT * 100.
  TOT_PCT= TOT_CNT / TOT_CNT * 100.
  ERR_PCT= ERR_CNT / TOT_CNT * 100.

  TPOP1PT= TPOP1 / TPOP * 100.
  TPOP2PT= TPOP2 / TPOP * 100.
  TPOP3PT= TPOP3 / TPOP * 100.
  TPOP4PT= TPOP4 / TPOP * 100.
  TPOP5PT= TPOP5 / TPOP * 100.
  TPOP6PT= TPOP6 / TPOP * 100.
  TPOP7PT= TPOP7 / TPOP * 100.
  TPOP_PT= TPOP  / TPOP * 100.

  TEMP1PT= TEMP1 / TEMP * 100.
  TEMP2PT= TEMP2 / TEMP * 100.
```

```
  TEMP3PT= TEMP3 / TEMP * 100.
  TEMP4PT= TEMP4 / TEMP * 100.
  TEMP5PT= TEMP5 / TEMP * 100.
  TEMP6PT= TEMP6 / TEMP * 100.
  TEMP7PT= TEMP7 / TEMP * 100.
  TEMP_PT= TEMP  / TEMP * 100.


    PRINT LIST= ' Area Type Statistics '
    PRINT LIST= '----------------------'
    PRINT LIST= '                '
    PRINT LIST= '               TAZ Count '  ,'    ',' TAZ Pct.   ','    ','
POPULATION ','    ',' POP Pct.   ','    ',' EMPLOYMENT ','    ',' EMP Pct.   '
    PRINT LIST= '              -----------'  ,'    ','------------','    ','---------
---','    ','------------','    ','------------','    ','------------'
    PRINT LIST= 'Area Type 1: ', AT1_CNT(11),'    ',AT1_PCT(11.2) ,'    ',
TPOP1(11)   ,'    ',TPOP1PT(11.2) ,'    ',  TEMP1(11)   ,'    ',TEMP1PT(11.2)
    PRINT LIST= 'Area Type 2: ', AT2_CNT(11),'    ',AT2_PCT(11.2) ,'    ',
TPOP2(11)   ,'    ',TPOP2PT(11.2) ,'    ',  TEMP2(11)   ,'    ',TEMP2PT(11.2)
    PRINT LIST= 'Area Type 3: ', AT3_CNT(11),'    ',AT3_PCT(11.2) ,'    ',
TPOP3(11)   ,'    ',TPOP3PT(11.2) ,'    ',  TEMP3(11)   ,'    ',TEMP3PT(11.2)
    PRINT LIST= 'Area Type 4: ', AT4_CNT(11),'    ',AT4_PCT(11.2) ,'    ',
TPOP4(11)   ,'    ',TPOP4PT(11.2) ,'    ',  TEMP4(11)   ,'    ',TEMP4PT(11.2)
    PRINT LIST= 'Area Type 5: ', AT5_CNT(11),'    ',AT5_PCT(11.2) ,'    ',
TPOP5(11)   ,'    ',TPOP5PT(11.2) ,'    ',  TEMP5(11)   ,'    ',TEMP5PT(11.2)
    PRINT LIST= 'Area Type 6: ', AT6_CNT(11),'    ',AT6_PCT(11.2) ,'    ',
TPOP6(11)   ,'    ',TPOP6PT(11.2) ,'    ',  TEMP6(11)   ,'    ',TEMP6PT(11.2)
    PRINT LIST= 'Area Type 7: ', AT7_CNT(11),'    ',AT7_PCT(11.2) ,'    ',
TPOP7(11)   ,'    ',TPOP7PT(11.2) ,'    ',  TEMP7(11)   ,'    ',TEMP7PT(11.2)
    PRINT LIST= '  '
    PRINT LIST= '- Total ---- ', TOT_CNT(11),'    ',TOT_PCT(11.2) ,'    ',
TPOP(11)   ,'    ',TPOP_PT(11.2) ,'    ',   TEMP(11)   ,'    ',TEMP_PT(11.2)
    PRINT LIST= '  '
    PRINT LIST= '  '
    PRINT LIST= '  '
    PRINT LIST= 'Error Count  ', Err_CNT(11),'    ',Err_PCT(11.2)
  ENDIF

ENDRUN


;==================================================================
;  Step 1.4.
;  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=NODCRDZN.ASC,
        VAR=N,01-06,   ; Node
        VAR=X,07-14,   ; X Crd
        VAR=Y,15-22,   ; Y Crd
        VAR=TZ,27-30,  ; Nearest TAZ associated with node
        VAR=DS,33-38   ; Distance from node to nearest taz

; Highway Links
FILEI LINKI=@LINKFILE@,
        VAR=A,01-05,         ; A-Node Number
        VAR=B,06-10,         ; B-Node Number
        VAR=DISTANCE,13-17,  ; Distance in whole miles (xx.xx)
        VAR=SPDCLASS,23-24,  ; Speed Class(optional)
        VAR=CAPCLASS,26-27,  ; Capacity Class(optional)
        VAR=COUNT,30-33,     ; Observed AAWDT in 1000's
        VAR=CNT_TYPE,35-36,  ; Count Type 0,1,2,6,7
        VAR=JUR,39-40,       ; Jurisdiction Code (0-23)
        VAR=SCREEN,51-52,    ; Screenline Code   (1-36)
        VAR=FTYPE,54-55,     ; Facility Type Code (0-6)
        VAR=TOLL,61-64,      ; Current year Toll Value in cents
        VAR=TOLLGRP,66-69,   ; Toll Group code (1-10)
        VAR=AMLANE,81-82,    ; AM Peak Prd. No. of Lanes
        VAR=AMLIMIT,84-85,   ; AM Peak Period Operation Code (0-9)
        VAR=PMLANE,87-88,    ; PM Peak Prd. No. of Lanes
        VAR=PMLIMIT,90-91,   ; PM Peak Period Operation Code (0-9)
        VAR=OPLANE,93-94,    ; Off-Peak Prd. No. of Lanes
        VAR=OPLIMIT,96-97,   ; Off-Peak Period Operation Code (0-9)
        VAR=PROJ_ID,TYP=A,BEG=107,LEN=10; Project ID String

;   Note:
;   The Standard SPDCLASS(1-67), CAPCLASS(1-67),& TAZ defined below
;

; WRITE TEMPORARY NETWORK TO BE PASSED ONTO NEXT STEP
NETO=TEMP.NET


;--------------------------------------------------------------
; Develop Link Area type/ Spdclass/ Capclass Attributes      -
;--------------------------------------------------------------

;
; Zonal Area Type Lookup (produced above)
;

LOOKUP NAME=ZNAT,
       LOOKUP[1] = 1, RESULT=11,   ; ZONAL AREA TYPE (1-7)
       INTERPOLATE=N, FAIL= 0,0,0, LIST=N, FILE=@ATYPFILE@


;
; The TAZ designated for the link is that with the minimum distance
; to either the A-node or the B-node
;

            TAZ=A.TZ
            IF (B.DS < A.DS)
               TAZ=B.TZ
            ENDIF
           AREATP   =  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 =    AREATP

           IF (_TG_ATMin > 0 && _DefaultAT < _TG_ATMin) AREATP = _TG_ATMin
           IF (_TG_ATMax > 0 && _DefaultAT > _TG_ATMax) AREATP = _TG_ATMax


           IF (AREATP < 1 || AREATP > 7)  ABORT
;
;
; With the TAZ designated, now the speed/capacity class is defined as
```

```
; a two-digit code-- facility type & areatype
;
           SPDCLASS =  FTYPE*10 + AREATP      ;  Speed Class
           CAPCLASS =  FTYPE*10 + AREATP      ;  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
;
ENDRUN


;=================================================================
; Step 1.5:
;  Highway Building  - Part 2, compute initial highway speed,
;                              write out support files
;=================================================================
;
;

RUN PGM = HWYNET

ZONES=@ZONESIZE@

NETI=TEMP.NET
; output network in TP+ format
NETO=ZONEHWY.tem

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...
;
; Two sets of initial AM/Opk speeds are used, one by TAZ and Fac. Type,
;     and one by Facility type and Area type.  The more detailed TAZ
;     fac. type table will be used unless it returns a value of zero.
;     In that case, the less detailed atype/ftype value will be used.
;
lookup name = tazamspd,         ; AM Initial Speeds TAZ x Fac.Type
       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=@AMSPDTF@

lookup name = tazopspd,         ; Off-pk Initial Speeds TAZ x Fac.Type
       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=@OPSPDTF@

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=@OPSPD@

_IDX    =  FTYPE + 1
PPAMSPD =  TAZAMSPD(_IDX,TAZ)
```

```
PPOPSPD =  TAZOPSPD(_IDX,TAZ)

IF (PPAMSPD = 0)
        PPAMSPD= AMSPD(_IDX,AREATP)
ENDIF
IF (PPOPSPD = 0)
        PPOPSPD= OPSPD(_IDX,AREATP)
ENDIF

;
; ESTABLISH  AM/PM/OFF-PEAK 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
  PMHTIME    =  0
ENDIF

IF (PPOPSPD != 0 )
  OPHTIME    =  (DISTANCE/PPOPSPD)*60.00
 ELSE
  OPHTIME    =  0
ENDIF

;-------------------------------------------------------------
;  ICC freeflow speed/capacity override 11/21/07 jcpark
;  1800 vphpl and 50 mph code=73
;  (Not good form but preserved for now), RM
;-------------------------------------------------------------

IF(TOLLGRP=2 && FTYPE=1) SPDCLASS=73 CAPCLASS=73


;-------------------------------------------------------------
; Generate list of walk links for transit path building    -
;-------------------------------------------------------------
;  Critrerea for a Walk Link:
; 1)The links are non-centroids and non-freeways (spdclass > 19)
; 2)The X coordinate range OR Y coordinate range of the A/B nodes are within
;   the following pre-designated 'downtown-like' areas as defined by
;   XY coordinate ranges:
;   X range: 1304529- 1313238 Y range: 442628- 450578  DC Downtown Area 1
;   X range: 1294904- 1306426 Y range: 443406- 453764  DC Downtown Area 2
;   X range: 1301347- 1304777 Y range: 481102- 484409  Silver Spring
;   X range: 1297245- 1297442 Y range: 437527- 437730  Pentagon
;

if (spdclass>19)           ; if link is non-centroid & non-freeway type

if      (((a.x= 1304529- 1313238 || b.x= 1304529- 1313238 ) &&
          (a.y=  442628-  450578 || b.y=  442628-  450578 )))
           _walkflg =1
elseif  (((a.x= 1294904- 1306426 || b.x= 1294904- 1306426 ) &&
          (a.y=  443406-  453764 || b.y=  443406-  453764 )))
           _walkflg =2
elseif  (((a.x= 1301347- 1304777 || b.x= 1301347- 1304777 ) &&
          (a.y=  481102-  484409 || b.y=  481102-  484409 )))
           _walkflg =3
elseif  (((a.x= 1297245- 1297442 || b.x= 1297245- 1297442 ) &&
          (a.y=  437527-  437730 || b.y=  437527-  437730  )))
           _walkflg=4
else
           _walkflg=0
endif
if (_walkflg > 0)   ; if anode or bnode of link is within predefined areas
  print list='SUPPORT N=',a(5),'-',b(5),' MODES=13 SPEED=3 ONEWAY=Y',
              '   ;',_walkflg(3),file=wlknet.tb
endif
endif

;
;-------------------------------------------------------------
; Generate list of Freeway Nodes for cntconn2 program        -
;-------------------------------------------------------------
;
;print list=a(5),b(5),'                                            ',FTYPE(2),
;file=LINKBSE.DAT
;----------------------------------------
if (spdclass==10-19)
print list=a(6),file=trn_fwyn.asc
endif


;  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


;; AllowQue Begin ;;


;;-;;*del   ZONEHWY.tem
;;-;;*copy  ZONEHWY.upt  ZONEHWY.tem
;;-;;
;;-;;OU_BSNET  = 'ZONEHWY.NET'         ; OUTPUT BUILT network FILE

;; Beginning of AllowQue (AQ) section
; ---------------------------------------------------------------------------
;  Script section identifies links to be excluded from queuing delay.
;  The defines/adds 3 new variables to the highway network:
;    1)  AM_AllowQue
;    2)  PM_AllowQue
;    3)  OP_AllowQue
;  The variable values are binary -  1/Allows 0/disallows queuing delay time.
;  Links disallowed from queing are one-way links that don't connect with
;  intersections.  They are directional links with one adjacent one-way link
;  entering the Anode and one adjacent one-way link leaving the Bnode.
;  Additionally, the laneage of the link both adjacent links must be uniform.
;
; ---------------------------------------------------------------------------

FstHwyNode = 3000
;-------------------------------------------------------
; Step 1 - write out node list and AB list from network
;-------------------------------------------------------
LOOP PRD = 1,3              ; Begin Period (PRD) LOOP
     IF        (PRD= 1)
           PER     = 'AM'
       ELSEIF (PRD = 2)
           PER     = 'PM'
       ELSEIF (PRD = 3)
```

```
          PER     = 'OP'
     ENDIF

RUN PGM=HWYNET
  NETI  = zonehwy.tem           ;  input network from previous step
  NETO  = zonehwy@per@.tem      ;  period network with 'active' links
  IF (@PER@Limit = 9 ) delete   ;  delete unused links from the
ENDRUN


RUN PGM=HWYNET
  NETI  = zonehwy@per@.tem           ;  output network from previous step

  NODEO = @PER@NODE.txt, FORMAT=TXT,
                    varform=n(8.0),
                    include = n
  LINKO = @PER@LINK.txt, FORMAT=TXT,
                    varform =a(8.0),b(8.0),@PER@lane(8.0),
                    include=a,b, @PER@lane
ENDRUN


;-------------------------------------------------------
; Step 2 - write out indexed highway node list
;-------------------------------------------------------
RUN PGM=MATRIX
    RECI=@PER@NODE.TXT, Fields= 1-8  ; List of Nodes

       IF (RECI.NFIELD[1] >= @FstHwyNode@)
         _NDX= _NDX + 1
         Print LIST=_ndx(8.0),           ; Seq. no.
                 RECI.NFIELD[1](8.0),  ; hwy node
                 file=@PER@NodeIDX.txt

    ENDIF
    LOG PREFIX=MATRIX, VAR= _NDX  ;  save max hwy node seq. no. for reference later
ENDRUN


;-------------------------------------------------------
; Step 3 - write out indexed (total) link list
;-------------------------------------------------------
RUN PGM=MATRIX
    RECI=@PER@LINK.TXT, Fields= 1-8,9-16,17-24,25-32,33-40 ; a,b,ln

      _LDX= _LDX + 1
      Print LIST=_LDX(8.0),           ; Seq. No.
                 RECI.NFIELD[1](8.0),  ; Anode
                 RECI.NFIELD[2](8.0),  ; Bnode
                 RECI.NFIELD[3](8.0),  ; lanes for current time period
                 file=@PER@LinkIDX.txt

    LOG PREFIX=MATRIX, VAR= _LDX   ;  save max hwy link no. for reference later
ENDRUN

    MAXNODE=MATRIX._NDX  ;  define max node no. from hwy node list (used in loops
later)
    MAXLINK=MATRIX._LDX  ;  define max link no. from hwy link list (used in loops
later)

;-------------------------------------------------------
; Step 4 - evaluate each highway node against the hwy link list
;  accum. the no. of times each node appears as an anode (forematch) & save the
;  last bnode (forenode)  accum. the no. of times each node appears as a  bnode
;  (backmatch) & save the last anode (backnode) write out the node list with its
;  foremath, forenode, backmatch, backnode for all nodes with forematch
;  values of 1 or backmatch values of 1 (BNF.txt).  This is a list of nodes having
;  either 1 directional entry link and/or 1 directional exit link.
```

```
;  We don't care about nodes with multiple entry and exit links.
;-----------------------------------------------------
;
 run pgm=MATRIX

 lookup name=NodeList,
 lookup[1] = 1, result = 2, ; Node No.
 interpolate=N, Fail=0,0,0, File= @PER@NodeIDX.txt

 lookup name=LinkList,
 lookup[1] = 1, result = 2, ; A_Node
 lookup[2] = 1, result = 3, ; B_Node
 lookup[3] = 1, result = 4, ; Lane of current time period
 interpolate=N, Fail=0,0,0, File= @PER@LinkIDX.txt

  zones=1


  loop  NDX=@FstHwyNode@,@MAXNODE@   ; evaluate each and every node

    BACKMATCH = 0  BACKNODE = 0 BACKLN  = 0
    FOREMATCH = 0  FORENODE = 0 FORELN  = 0

    CURR_NODE = NodeList(1,NDX)


        loop LDX=1,@MAXLINK@

            IF (FOREMATCH > 1 && BACKMATCH > 1)  goto NextLink

             CURR_A = LinkList(1,LDX)
             CURR_B = LinkList(2,LDX)
             CURR_LN= LinkList(3,LDX)



             IF (CURR_A = Curr_Node)
                    FOREMATCH =  FOREMATCH + 1
                    FORENODE  =  CURR_B
                    FORELN    =  CURR_LN
             ENDIF

             IF (CURR_B = Curr_Node)
                    BACKMATCH =  BACKMATCH + 1
                    BACKNODE  =  CURR_A
                    BACKLN    =  CURR_LN
             ENDIF

        :NextLink
        endloop

      ; At the end of current node- write out all nodes that have a single
      ; entry (back-) node connecion OR a single exit (fore-) node connection
      ; A unique link list will be established from this list in the following
      ; program

      IF ((FOREMATCH = 1 ||  BACKMATCH = 1) && (BACKNODE != FORENODE))
          _Seq = _Seq + 1   ;     sequence no.
          print form =8.0
               list  =  _Seq, BACKMATCH, BACKNODE, BACKLN,
                              CURR_Node,
                              FOREMATCH, FORENODE, FORELN,
                              file =  @PER@BNF.txt
      ENDIF


  endloop   ; end of NODE loop
```

```
    LOG PREFIX=MATRIX, VAR= _Seq
 endrun
;
    MAXBNF = MATRIX._SEQ



;-------------------------------------------------------
;  Step 5. Evalute each hwy link list against the BNF.txt list.
;    If the current Anode (Cur_A) has a single entry and a single exit node AND
;    the Current Bnode (Cur_B) has a single entry and a single exit node THEN
;    the link is considered to be exempt from queuing, and is printed out to a file
;    to be later merged back to the network (NoQLink.txt)
;-------------------------------------------------------
RUN PGM=MATRIX
ZONES = 1
LOOKUP NAME= BNFList, ; List of all nodes with 1 entry link (where
                      ; BackMatch=1) OR with 1 exit link (where ForeMatch=1)
       LOOKUP[01] = 1, Result = 2,    ; BackMatch 1,2
       LOOKUP[02] = 1, Result = 3,    ; BackNode
       LOOKUP[03] = 1, Result = 4,    ; BackLN
       LOOKUP[04] = 1, Result = 5,    ; Reference Node
       LOOKUP[05] = 1, Result = 6,    ; ForeMatch
       LOOKUP[06] = 1, Result = 7,    ; Forenode
       LOOKUP[07] = 1, Result = 8,    ; ForeAMLN
       Interpolate = N, Fail= 0,0,0, File=@PER@BNF.txt

LOOKUP NAME= LinkList,  ; List of all non-centroid links
       LOOKUP[1] = 1, Result = 2, ; Anode
       LOOKUP[2] = 1, Result = 3, ; Bnode
       Interpolate = N, Fail= 0,0,0, File=@PER@LINKIDX.Txt


LOOP LDX=1,@MaxLink@

     Cur_A        = LinkList(1,LDX)
     Cur_B        = LinkList(2,LDX)
     AQtest       = 0
     BQtest       = 0
     @PER@_XQflag = 0


     LOOP NDX = 1, @MAXBNF@
          BackMatch = BNFList(1,NDX)
          BackNode  = BNFList(2,NDX)
          BackLN    = BNFList(3,NDX)
          Node      = BNFList(4,NDX)
          ForeMatch = BNFList(5,NDX)
          ForeNode  = BNFList(6,NDX)
          ForeLN    = BNFList(7,NDX)

          IF (Cur_A  = Node && BackMatch = 1 && ForeMatch = 1  &&  BACKLN = ForeLN)
                 AQtest = 1
          ENDIF

          IF (Cur_B  = Node && BackMatch = 1 && ForeMatch = 1  &&  BACKLN = ForeLN)
                 BQtest = 1
          ENDIF

          ; If BOTH the Anode and Bnode of the current link have:
          ;  1) ONE directional entry link
          ;  2) ONE directional exit  link
          ;  3) No capacity differential between adjacent links
          ;     for all time periods
          ;  Then queuing delay is disallowed

          IF (AQtest = 1 && BQtest = 1)
              @PER@_XQflag = 1
              Print form= 8.0 List= Cur_A Cur_B @PER@_XQFlag, File =
@PER@_NoQLink.txt
              goto NextLink     ; current link passes test, go on to next link
          ENDIF

     ENDLOOP

    :NextLink

 ENDLOOP
 ENDRUN

ENDLOOP  ;; -  END OF Period (PRD) LOOP
;-------------------------------------------------------
;  Step 6. Merge 'No queuing' link list to network and define
;  AllowQue variable
;  (=1/allow queuing, =0/disallow queuing)
;-------------------------------------------------------
 RUN PGM=HWYNET
 ZONES = 2191
 NETI[1]  = zonehwy.tem
 LINKI[2] = AM_NoQLink.txt,var  = A, 1-8, var = B, 9-16, var  = AM_XQFLAG,17-24
 LINKI[3] = PM_NoQLink.txt,var  = A, 1-8, var = B, 9-16, var  = PM_XQFLAG,17-24
 LINKI[4] = OP_NoQLink.txt,var  = A, 1-8, var = B, 9-16, var  = OP_XQFLAG,17-24
 merge record = T
 NETO     = @OU_BSNET@, EXCLUDE = AM_XQFLAG, PM_XQFLAG, OP_XQFLAG, AllowQue

;; Default- Allow queuing to occur on all links           (??_AllowQue = 1)
  AM_AllowQue = 1
  PM_AllowQue = 1
  OP_AllowQue = 1

;; If exclude queuing flags are '1', then disallow queuing (??_AllowQue = 0)
  IF (AM_XQFlag= 1 )  AM_AllowQue = 0
  IF (PM_XQFlag= 1 )  PM_AllowQue = 0
  IF (OP_XQFlag= 1 )  OP_AllowQue = 0

ENDRUN

*del zonehwy.tem

;; END of AllowQue (AQ) section




;---------------------------------------------------------------------
; STEP 2:
; HIGHWAY TERMINAL TIME DEVELOPMENT
; Input File:  ZONE.ASC (Standard Land Use File)
;
; Output File: ZTERMTM.ASC   ZONAL TERMINAL TIME FILE
;
;
;------------------------------------------------------------------

RUN PGM=MATRIX
zones=@ZONESIZE@
;  READ ZONAL EMPLOYMENT AND AREA FROM 'STANDARD' V2 LAND USE FILE

ZDATI[1]= @ZONEFILE@, Z=1-4,EMP=40-47,SQMI=83-92


; CREATE ZONAL ARRAY FOR EMPLOYMENT DENSITY

  ARRAY,                    ;  CREATE ZONAL ARRAYS
        EDENSITY = @ZONESIZE@, ;  ARRAY FOR EMPLOYMENT DENSITY
```

```
       TERMTM   = @ZONESIZE@  ;  ARRAY FOR TERMINAL TIME


IF (I=1)                     ;  COMPUTE EMPLOYMENT DENSITY --
      LOOP INDEX=1,@ZONESIZE@  ;     ONCE AT THE 1ST I ZONE 'PASS'
        IF (SQMI[INDEX]    = 0)
           EDENSITY[INDEX] = 0
        ELSE
           EDENSITY[INDEX]=EMP[INDEX]/SQMI[INDEX]
        ENDIF

           IF (INDEX>@LSTITAZ@)
                      TERMTM[INDEX]  = 0.0
              ELSEIF (EDENSITY[INDEX] <   4618)
                      TERMTM[INDEX]  = 1.0
              ELSEIF (EDENSITY[INDEX] <   6632)
                      TERMTM[INDEX]  = 2.0
              ELSEIF (EDENSITY[INDEX] <  11563)
                      TERMTM[INDEX]  = 4.0
              ELSEIF (EDENSITY[INDEX] <  32986)
                      TERMTM[INDEX]  = 6.0
              ELSE
                      TERMTM[INDEX]  = 8.0
           ENDIF

        TOTEMP = TOTEMP+ EMP[INDEX] ; ACCUMULATE TOTAL EMP. FOR CHECKING
        TOTSQM = TOTSQM+SQMI[INDEX] ; ACCUMULATE TOTAL SQMI.FOR CHECKING

;  WRITE OUT  ZONAL TERMINAL TIME FILE

        LIST = INDEX(4),' ',EMP[INDEX](6),' ',SQMI[INDEX](10.2),' ',
             TERMTM[INDEX](5),' ; <-- TAZ, Empl, SqMi, HwyTermTime (min)',
             FILE=ZTERMTM.ASC

      ENDLOOP
ENDIF

;  NOW PRINT OUT THE REGIONAL EMPLOYMENT, SQ MILEAGE TOTALS FOR CHECKING

IF (I=@ZONESIZE@)
   LIST =' ** THE TOTAL EMPLOYMENT INPUT IS: ',TOTEMP(12.0C)
   LIST =' ** THE TOTAL SQ MILEAGE INPUT IS: ',TOTSQM(12.2C)
ENDIF


ENDRUN
```

8 Highway_Skims.s

```
;/////////////////////////////////////////////////////////////;
;  Highway_Skims.S                                          //;
;  MWCOG Version 2.2 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.//;
;  Each file will contain 3 Tables (in MINUTP format)       //;
;          1) Time      (whole minutes)                     //;
;          2) Distance (implied tenths of mi.)              //;
;          3) Toll      (in 1994 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, ;
;///////////////////////////////////////////////////////////;
;
;
;   Environment Variables:
;     _iter_  (Iteration indicator = 'pp','i1'-'i6')
;
;

NETIN    = '%_iter_%hwy.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\toll.skm'  ; 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'
  ELSE                  ; OP Highway Skim tokens
    PRD       = 'OP'
    MATOUT1   = 'sov%_iter_%op.skm '
    MATOUT2   = 'hov2%_iter_%op.skm'
    MATOUT3   = 'hov3%_iter_%op.skm'

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

    MYID    = '%_iter_% OP skims'
  ENDIF

RUN PGM=HWYLOAD
;
;
  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
  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 /OP link level TOTAL tolls by vehicle type here:
      LW.SOV@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(1,LI.TOLLGRP)           ;
SOV       TOTAL TOLLS in 1994 cents
      LW.HV2@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(2,LI.TOLLGRP)           ;
HOV 2 occ TOTAL TOLLS in 1994 cents
      LW.HV3@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(3,LI.TOLLGRP)           ;
HOV 3+occ TOTAL TOLLS in 1994 cents
      LW.TRK@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(4,LI.TOLLGRP)           ;
Truck     TOTAL TOLLS in 1994 cents
      LW.APX@PRD@TOLL    = LI.@PRD@TOLL    * @PRD@_TFAC(5,LI.TOLLGRP)           ;
AP Pax    TOTAL TOLLS in 1994 cents

      LW.SOV@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(1,LI.TOLLGRP)           ;
SOV       VarPr TOLLS in 1994 cents
      LW.HV2@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(2,LI.TOLLGRP)           ;
HOV 2 occ VarPr TOLLS in 1994 cents
      LW.HV3@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(3,LI.TOLLGRP)           ;
HOV 3+occ VarPr TOLLS in 1994 cents
      LW.TRK@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(4,LI.TOLLGRP)           ;
Truck     VarPr TOLLS in 1994 cents
      LW.APX@PRD@TOLL_VP = LI.@PRD@TOLL_VP * @PRD@_TFAC(5,LI.TOLLGRP)           ;
AP Pax    VarPr TOLLS in 1994 cents

   ; Define AM /OP 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
;
; 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  ;

;-----------------------------------------------------------------------
; 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 Total TOLL
     mw[6] = ROUND(MW[6])                      ; SKIMS TO 1994
     mw[9] = ROUND(MW[9])                      ; WHOLE CENTS

     mw[13] = ROUND(MW[13])                    ; ROUND Variable priced TOLL
     mw[16] = ROUND(MW[16])                    ; SKIMS TO 1994
     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=1-2191       ;  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
;-----------------------------------------------------------------------

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)

                                                     ; -- 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

ENDLOOP
```

9 MC_Auto_Drivers.s

```
; ====================================================================
;  MC_Auto_Drivers.s
;  This program used to develop 1-occ, 2-occ, and 3+occ auto driver
;  trip tables directly from a the Mode Choice Model Output file.
;
;  'off-the-shelf' disaggregation curves to arrive at auto driver
;  trips in occupant categories.
;    The program is applied in four 'loops'
;  -- one for each purpose (HBW, HBS, HBO, and NHB)
; ====================================================================
;
;
;////////////////////////////////////////////////////////////////////
;
; First, establish Input/Output filenames:
LOOP PURP=1,4  ;  We'll Loop 4 times, for each purpose
                ;  Note default auto driver shares and occupant
                ;  shares to be used in case no seed shares exist

IF (PURP=1)    ; HBW Loop
 MCFILE   = 'mc_hbw%_iter_%.fin'   ; HBW Mode Choice file                (Input)
 MC123OCC = 'HBW%_iter_%.ADR'    ; HBW auto driver trips- 1,2,3+ Occ.  (Output)
 PURPOSE  = 'HBW'          ;

ELSEIF (PURP=2) ; HBS Loop
 MCFILE   = 'mc_hbs%_iter_%.fin'   ; HBS Mode Choice file               (Input)
 MC123OCC = 'HBS%_iter_%.ADR'    ; HBS auto driver trips- 1,2,3+ Occ. (Output)
 PURPOSE  = 'HBS'          ;

ELSEIF (PURP=3) ; HBO Loop
 MCFILE   = 'mc_hbo%_iter_%.fin'   ; HBO Mode Choice file               (Input)
 MC123OCC = 'HBO%_iter_%.ADR'    ; HBO auto driver trips- 1,2,3+ Occ. (Output)
 PURPOSE  = 'HBO'          ;

ELSEIF (PURP=4) ; NHB Loop
 MCFILE   = 'mc_nhb%_iter_%.fin'   ; NHB Mode Choice file               (Input)
 MC123OCC = 'NHB%_iter_%.ADR'    ; NHB auto driver trips- 1,2,3+ Occ. (Output)
 PURPOSE  = 'NHB'          ;

ENDIF
;
;////////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
    MATI[1]=@MCFILE@           ;  MC model ouput


; Put Mode Choice Mats 1-7, respectively, The tables are:
; 1/LOVADRs 2/LOVAPSNs 3/Trn_Wk 4/Trn_Dr 5/HOV2ADRs 6/HOVPSNs 7/HOV3+ADRs
; HOV trips refer to carpool trips on special priority facilities.
; Carpools not on special facilities are subsumed in the LOV group.

FILLMW MW[1]  = MI.1.1,2,3,4,5,6,7
MW[8] = MW[1] + MW[5] + MW[7]     ; Total input ADR in work mat 8

JLOOP
   IF (MW[1]  = 0)            ; COMPUTE AVG LOV Auto Occupancy
       MW[10] = 0             ; in Work Mat 10
   ELSE                       ;
       MW[10] = MW[2]/MW[1]   ;
   ENDIF
; Determine LOV Vehicles in 1,2,3&4+ occupant groups using model
; COG's disaggrgegation model.

        IF     (MW[10]  < 1.0050) ;  Make sure the computed Car Occ.
                MW[10]  = 1.0050  ;  is between 1.005 and 2.500
        ELSEIF (MW[10]  > 2.5000) ;  -- if not establish boundary
                MW[10]  = 2.5000  ;     conditions
        ENDIF
;
; Apply Car Occ. Pct Model-Computes Pct Vehs.in Occ groups as function
; of avg auto occ.

IF     (MW[10] = 1.0050 - 1.1199999)
 MW[21] =  2.00264 - (0.9989 * MW[10]) ; Shr of 1-Occ Vehs
 MW[22] = -1.00050 + (0.9952 * MW[10]) ; Shr of 2-Occ Vehs
 MW[23] = -0.00158 + (0.0029 * MW[10]) ; Shr of 3-Occ Vehs
 MW[24] = -0.00056 + (0.0008 * MW[10]) ; Shr of 4-Occ Vehs
ELSEIF (MW[10] = 1.1200 - 2.5000)
```

```
 MW[21] =  1.59600 - (0.6357 * MW[10]) ; Shr of 1-Occ Vehs
 MW[22] = -0.31143 + (0.3800 * MW[10]) ; Shr of 2-Occ Vehs
 MW[23] = -0.17082 + (0.1540 * MW[10]) ; Shr of 3-Occ Vehs
 MW[24] = -0.11375 + (0.1017 * MW[10]) ; Shr of 4-Occ Vehs
ENDIF

;
;  if we're working with an intrazonal
;  situation, make all auto drivers are SOV.
;  Override modeled shares here
IF (i=j)  ;
 MW[21] =  1.00    ; Pct of 1-Occ Vehs
 MW[22] =  0.00    ; Pct of 2-Occ Vehs
 MW[23] =  0.00    ; Pct of 3-Occ Vehs
 MW[24] =  0.00    ; Pct of 4-Occ Vehs
ENDIF

;   Apply Modeled Shares to the Auto Drivers

 MW[31] =(MW[21] * MW[1]) ; Estimated LOV 1 occ vehicles
 MW[32] =(MW[22] * MW[1]) ; Estimated LOV 2 occ vehicles
 MW[33] =(MW[23] * MW[1]) ; Estimated LOV 3 occ vehicles
 MW[34] =(MW[24] * MW[1]) ; Estimated LOV 4+occ vehicles


; compute add HOV2 & HOV3 trips from MC file to LOV dissagg. trips,
; also combine 3 & 4+ occ. auto driver trips into one group.

 MW[41] = MW[31]                          ;   Total 1-Occ Auto Drivers
 MW[42] = MW[32] + MW[5]                  ;         2-occ(lov+carpool)
 MW[43] = MW[33] + MW[34] + MW[7]         ;         3-occ(lov+carpool)


;
endjloop


MW[44] = MW[41] + MW[42] + MW[43] ; total output auto drivers

JLOOP

; Lets sum up the above to get neat total summaries

   INPLADR  = INPLADR  + MW[1]   ;  Input LOV Auto Driver Accumulation
   INPHAADR = INPHAADR + MW[5]   ;  Input HOV/2 CP ADR    Accumulation
   INPHBADR = INPHBADR + MW[7]   ;  Input HOV/3 CP ADR    Accumulation
   INPADR   = INPADR   + MW[8]   ;  Input Auto Driver     Accumulation
   OUT1ADR  = OUT1ADR  + MW[41]  ;  Output 1 occ Auto Dr  Accumulation
   OUT2ADR  = OUT2ADR  + MW[42]  ;  Output 2 occ Auto Dr  Accumulation
   OUT3ADR  = OUT3ADR  + MW[43]  ;  Output 3 occ Auto Dr  Accumulation
   OUTADR   = OUTADR   + MW[44]  ;  Output 4 occ Auto Dr  Accumulation

endjloop

IF (I == ZONES)
;
; Compute Regional Occ. distributions
;
 IF (OUTADR   = 0)
    OUTAD1SH = 0
    OUTAD2SH = 0
    OUTAD3SH = 0
 ELSE
    OUTAD1SH = OUT1ADR/OUTADR *100   ; 1-occ adr SHARE
    OUTAD2SH = OUT2ADR/OUTADR *100   ; 2-occ adr SHARE
    OUTAD3SH = OUT3ADR/OUTADR *100   ; 3+occ adr SHARE
    OUTADSH  = OUTADR /OUTADR *100   ; TOTAL     SHARE /1.000
 ENDIF

 LIST='/bt     '
 LIST='Summary of ','@PURPOSE@',' BASE-ITERATION AUTO Dr Trip Results'
 LIST='   '
 LIST='   '
 List='       Summary of Input/Output Shares'
 List='Input  Auto LOV     Auto Drivers: ', inpladr(8)
 List='Input  Auto HOV2 CP Auto Drivers: ', inphaadr(8)
 List='Input  Auto HOV3 CP Auto Drivers: ', inphbadr(8)
 List='---------------------------------------------'
 List='Input Total Auto Drivers:         ', inpadr(8)
 LIST='   '
 List='Output 1-Occ Auto Drivers:        ', out1adr(8),outad1sh(6.1),'%'
 List='Output 2-Occ Auto Drivers:        ', out2adr(8),outad2sh(6.1),'%'
 List='Output 3+Occ Auto Drivers:        ', out3adr(8),outad3sh(6.1),'%'
 List='---------------------------------------------'
 List='Output Total Auto Drivers:        ', outadr(8),outadsh(6.1),'%'
 LIST='/et     '
ENDIF

MATO=@MC123OCC@,MO=41,42,43 ; output file designation

ENDRUN
ENDLOOP
```

10 MC_Constraint.s

```
;//////////////////////////////////////////////////////////////////////
; Updated 8/14/2006 RM bucket rounding of constrained mode choice file
;    is removed
; ====================================================================
; Transit Constraint Process -Applied to modeled mode choice output
;         file for forecast years beyond the year 2010.
;         The process constrains Peak Period Transit trips heading
;         TO or THROUGH the regional core to be constrained to
;         2010 levels and adjusts auto person/driver trips accordingly.
;
; The process consists of 3 Steps:
; Step 1. 2010 & future year peak/off-peak transit trips are calculated
;         for each purpose using 1994 HTS time period factors.
;         (2 Loops for constr./unconstr. mode choice output files)
;
; Step 2.  2010 & Future year peak & total transit trips are squeezed to
;          a 3x3 (core/va/dc,md).  Factors for scaling unconstrained
;          transit trips to constrained transit trips are computed, on
;          an i/j basis.  A 'lookup' of constraint factors is produced.
;
; Step 3.  Future year constrained zonal trips are computed by applying
;          the constraint factors to the zonal trip tables.
;          constrained transit trips are produced (i.e., residual auto
;          persons are generated. and LOV,HOV auto person/driver trips
;          are computed using existing distributions on a cell by cell
;          basis.
;         (4 Loops for each Purpose)
;
;-----------------------------------------------------------------------
; Step 1.
;         2010 & future year peak/off-peak transit trips are calculated
;         for each purpose using 1994 HTS time period factors.
;-----------------------------------------------------------------------
LOOP Time  = 1, 2            ; Time '1' = 2010/ Time '2' = Future year

 IF (Time = 1)
```

```
  PATHSPECHBW = '%_path10HBW_%'    ; path specification of 2010 HBW transit trips
  PATHSPECHBS = '%_path10HBS_%'    ; path specification of 2010 HBS transit trips
  PATHSPECHBO = '%_path10HBO_%'    ; path specification of 2010 HBO transit trips
  PATHSPECNHB = '%_path10NHB_%'    ; path specification of 2010 NHB transit trips
  YR       = 'con'           ; constraint indicator    (for file naming)
  title    = ' 2010 Constrained Transit Summary by Time Period '

 ELSE
  PATHSPECHBW = 'mc_HBW%_iter_%.FIN'   ; forecast year should be in current subdir
  PATHSPECHBS = 'mc_HBS%_iter_%.FIN'   ; forecast year should be in current subdir
  PATHSPECHBO = 'mc_HBO%_iter_%.FIN'   ; forecast year should be in current subdir
  PATHSPECNHB = 'mc_NHB%_iter_%.FIN'   ; forecast year should be in current subdir
  YR       = 'ucn'           ; unconstrained indicator (for file naming)
  title    = ' Future Year (Post 2010) UnConstrained Transit Summary by Time Period
'

 ENDIF
;
;  Factors for distributing Daily Transit Trips
;  (HBW,HBS,HBO,NHB) Among 3 Time Periods:
;
;             -  AM peak  (6:00 - 9:00 AM)
;             -  PM peak  (4:00 - 7:00 PM)
;             -  Off-peak (All Other hrs )
;
; ===================================================================
;
;  Transit Time-of-Day Factors (Pcts) Follow:
;
;                    Period       Purpose   Mode        Direction
;                   --------      -------   ----        ---------
; Start of HBW
AMWTRHNP =  70.00     ; AM  Pk Prd    HBW     Transit  H -> NH
PMWTRHNP =   5.00     ; PM  Pk Prd    HBW     Transit  H -> NH
OPWTRHNP =  25.00     ; NON Pk Prd    HBW     Transit  H -> NH

AMWTRNHP =   1.00     ; AM  Pk Prd    HBW     Transit  NH -> H
PMWTRNHP =  72.00     ; PM  Pk Prd    HBW     Transit  NH -> H
OPWTRNHP =  27.00     ; NON Pk Prd    HBW     Transit  NH -> H
;
; End of HBW
;
; Start of HBS
AMSTRHNP =  24.00     ; AM  Pk Prd    HBS     Transit  H -> NH
PMSTRHNP =  15.00     ; PM  Pk Prd    HBS     Transit  H -> NH
OPSTRHNP =  61.00     ; NON Pk Prd    HBS     Transit  H -> NH

AMSTRNHP =   2.00     ; AM  Pk Prd    HBS     Transit  NH -> H
PMSTRNHP =  35.00     ; PM  Pk Prd    HBS     Transit  NH -> H
OPSTRNHP =  63.00     ; NON Pk Prd    HBS     Transit  NH -> H
;
; End of HBS
;
; Start of HBO
AMOTRHNP =  38.00     ; AM  Pk Prd    HBO     Transit  H -> NH
PMOTRHNP =  13.00     ; PM  Pk Prd    HBO     Transit  H -> NH
OPOTRHNP =  49.00     ; NON Pk Prd    HBO     Transit  H -> NH

AMOTRNHP =   2.00     ; AM  Pk Prd    HBO     Transit  NH -> H
PMOTRNHP =  35.00     ; PM  Pk Prd    HBO     Transit  NH -> H
OPOTRNHP =  63.00     ; NON Pk Prd    HBO     Transit  NH -> H
;
; End of HBO
;
; Start of NHB
AMNTRHNP =  14.00     ; AM  Pk Prd    NHB     Transit  H -> NH
PMNTRHNP =  31.00     ; PM  Pk Prd    NHB     Transit  H -> NH
OPNTRHNP =  55.00     ; NON Pk Prd    NHB     Transit  H -> NH

AMNTRNHP =  14.00     ; AM  Pk Prd    NHB     Transit  NH -> H
PMNTRNHP =  31.00     ; PM  Pk Prd    NHB     Transit  NH -> H
OPNTRNHP =  55.00     ; NON Pk Prd    NHB     Transit  NH -> H
;
; End of NHB

;////////////////////////////////////////////////////////////////////
;
; Begin Step 1 TP+ WORK
;
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

RUN PGM=MATRIX
; Read input Mode Choice Model Output (Transit in tabs 3,4)
    MATI[1] = @PATHSPECHBW@ ; HBW Wk,Dr Access Trn Trips (T3-4)
    MATI[2] = @PATHSPECHBS@ ; HBS Wk,Dr Access Trn Trips (T3-4)
    MATI[3] = @PATHSPECHBO@ ; HBO Wk,Dr Access Trn Trips (T3-4)
    MATI[4] = @PATHSPECNHB@ ; NHB Wk,Dr Access Trn Trips (T3-4)

;  Specify output Pk, Offpk transit Total Transit trips (t1-3) by purpose
;                Peak trips consist of AM & PM Trips
   MATO[1] = TRNWPKOP.@yr@, MO=51,41,1 ;HBW Pk,Off-Pk,total Transit Trips
   MATO[2] = TRNSPKOP.@yr@, MO=52,42,2 ;HBS Pk,Off-Pk,total Transit Trips
   MATO[3] = TRNOPKOP.@yr@, MO=53,43,3 ;HBO Pk,Off-Pk,total Transit Trips
   MATO[4] = TRNNPKOP.@yr@, MO=54,44,4 ;NHB Pk,Off-Pk,total Transit Trips


;
; Put HBW  Total (Walk, Drive Access) Transit Trips in MW  1
; Put HBS  Total (Walk, Drive Access) Transit Trips in MW  2
; Put HBO  Total (Walk, Drive Access) Transit Trips in MW  3
; Put NHB  Total (Walk, Drive Access) Transit Trips in MW  4

;  These are in P/A format and represent the Home-to-NonHome direction

      MW[01]  = MI.1.3 + MI.1.4   ; Work  transit P/A fmt
      MW[02]  = MI.2.3 + MI.2.4   ; Shop  transit P/A fmt
      MW[03]  = MI.3.3 + MI.3.4   ; Othr  transit P/A fmt
      MW[04]  = MI.4.3 + MI.4.4   ; NHB   transit P/A fmt

; Put Transpose of the above
; HBW, HBS, HBO, and NHB trip tables in Work Mats 5 -8
; The transpose represents the NonHome-to-Home direction

     MW[11]=MI.1.3.T, MW[12]=MI.1.4.T   ; Work wk,dr transit A/P fmt
     MW[13]=MI.2.3.T, MW[14]=MI.2.4.T   ; Shop wk,dr transit A/P fmt
     MW[15]=MI.3.3.T, MW[16]=MI.3.4.T   ; Othr wk,dr transit A/P fmt
     MW[17]=MI.4.3.T, MW[18]=MI.4.4.T   ; NHB  wk,dr transit A/P fmt

     MW[05]=MW[11] + MW[12]             ; Work total transit A/P fmt
     MW[06]=MW[13] + MW[14]             ; Shop total transit A/P fmt
     MW[07]=MW[15] + MW[16]             ; Othe total transit A/P fmt
     MW[08]=MW[17] + MW[18]             ; NonH total transit A/P fmt
; Now we're ready to apply apply TOD factors
;
;
 JLOOP

;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
;//////////////// AM Trip Calculations          ////////////////////
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

; AM Peak Period Transit Trips (MWs 21-24)
;    HBW Transit Trips:
MW[21]=(( MW[1]*(@AMWTRHNP@/100.0))+(MW[05]*(@AMWTRNHP@/100.0)))/2.0;
;    HBS Transit Trips:
MW[22]=(( MW[2]*(@AMSTRHNP@/100.0))+(MW[06]*(@AMSTRNHP@/100.0)))/2.0;
;    HBO Transit Trips:
```

```
MW[23]=(( MW[3]*(@AMOTRHNP@/100.0))+(MW[07]*(@AMOTRNHP@/100.0)))/2.0;
;    NHB Transit Trips:
MW[24]=(( MW[4]*(@AMNTRHNP@/100.0))+(MW[08]*(@AMNTRNHP@/100.0)))/2.0;
;

;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
;//////////////// PM Trip Calculations          ////////////////////
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

; PM Peak Period Transit Trips (MWs 31-34)
;    HBW Transit Trips:
MW[31]=(( MW[1]*(@PMWTRHNP@/100.0))+(MW[05]*(@PMWTRNHP@/100.0)))/2.0;
;    HBS Transit Trips:
MW[32]=(( MW[2]*(@PMSTRHNP@/100.0))+(MW[06]*(@PMSTRNHP@/100.0)))/2.0;
;    HBO Transit Trips:
MW[33]=(( MW[3]*(@PMOTRHNP@/100.0))+(MW[07]*(@PMOTRNHP@/100.0)))/2.0;
;    NHB Transit Trips:
MW[34]=(( MW[4]*(@PMNTRHNP@/100.0))+(MW[08]*(@PMNTRNHP@/100.0)))/2.0;
;
;

;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
;//////////////// Off-Pk Trip Calculations      ////////////////////
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

; Off-Peak Period Transit Trips (MWs 41-44)
;    HBW Transit Trips:
MW[41]=(( MW[1]*(@OPWTRHNP@/100.0))+(MW[05]*(@OPWTRNHP@/100.0)))/2.0;
;    HBS Transit Trips:
MW[42]=(( MW[2]*(@OPSTRHNP@/100.0))+(MW[06]*(@OPSTRNHP@/100.0)))/2.0;
;    HBO Transit Trips:
MW[43]=(( MW[3]*(@OPOTRHNP@/100.0))+(MW[07]*(@OPOTRNHP@/100.0)))/2.0;
;    NHB Transit Trips:
MW[44]=(( MW[4]*(@OPNTRHNP@/100.0))+(MW[08]*(@OPNTRNHP@/100.0)))/2.0;
;
;
ENDJLOOP


;-----------------------------------------------------------------------
; Summarize Output / Allocated Transit Trips by purpose for checking;
; Total HBW:
 MW[101] = MW[21] + MW[31] + MW[41]
; Total HBS:
 MW[102] = MW[22] + MW[32] + MW[42]
; Total HBO:
 MW[103] = MW[23] + MW[33] + MW[43]
; Total NHB:
 MW[104] = MW[24] + MW[34] + MW[44]
;
;-----------------------------------------------------------------------
; Summarize by purpose & Pk time periods(AM+PM) - put in MWs 51-54

; HBW PK(AM&PM):
 MW[51]= MW[21]+MW[31] ; Peak (AM+PM) HBW Transit Trips
 MW[52]= MW[22]+MW[32] ; Peak (AM+PM) HBS Transit Trips
 MW[53]= MW[23]+MW[33] ; Peak (AM+PM) HBO Transit Trips
 MW[54]= MW[24]+MW[34] ; Peak (AM+PM) NHB Transit Trips

;
;
; Now get regional totals to summarize neatly
Jloop
; accumulate trips by period(a,p,o), purpose(w,s,o,n)
; e.g. 'aw' refers to period 'a',  and purp 'w'


aw=aw+mw[21] as=as+mw[22] ao=ao+mw[23] an=an+mw[24]
pw=pw+mw[31] ps=ps+mw[32] po=po+mw[33] pn=pn+mw[34]
ow=ow+mw[41] os=os+mw[42] oo=oo+mw[43] on=on+mw[44]


; accumulate total output trips by time period
 oam =oam     + MW[21] + MW[22] + MW[23] + MW[24]

 opm =opm     + MW[31] + MW[32] + MW[33] + MW[34]

 oop =oop     + MW[41] + MW[42] + MW[43] + MW[44]

; accumulate total input trips by purpose, total
 ihbw=ihbw + MW[1]                    ; Total Input HBW Transit Trips
 ihbs=ihbs + MW[2]                    ; Total Input HBS Transit Trips
 ihbo=ihbo + MW[3]                    ; Total Input HBO Transit Trips
 inhb=inhb + MW[4]                    ; Total Input NHB Transit Trips
 itot=itot + MW[1]+MW[2]+MW[3]+MW[4]  ; Total Input     Transit Trips


; accumulate total output trips by purpose, total
 ohbw=ohbw + MW[101]
 ohbs=ohbs + MW[102]
 ohbo=ohbo + MW[103]
 onhb=onhb + MW[104]
 otot=otot + MW[101] + MW[102] + MW[103] + MW[104]

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;
dfnhb = onhb - inhb;
dftot = otot - itot;

LIST = '/bt     '
LIST = '@title@','\n'
LIST = '     '
list = 'TIME PERIOD  HBW     HBS     HBO     NHB     Sum '
list = '-----------  ---     ---     ---     ---     --- '
list = 'AM       ',aw(8.0),  as(8.0),  ao(8.0),  an(8.0),  oam(8.0)
list = 'PM       ',pw(8.0),  ps(8.0),  po(8.0),  pn(8.0),  opm(8.0)
list = 'OP       ',ow(8.0),  os(8.0),  oo(8.0),  on(8.0),  oop(8.0)
list = '  '
list = 'Total    ',ohbw(8.0),ohbs(8.0),ohbo(8.0),onhb(8.0),otot(8.0)
list = '  '
list = '  '
list = 'I/P Totls',ihbw(8.0),ihbs(8.0),ihbo(8.0),inhb(8.0),itot(8.0)
list = '  '
list = 'Diff.    ',dfhbw(8.0),dfhbs(8.0),dfhbo(8.0),dfnhb(8.0),dftot(8.0)

list = '/et       '
endif

;
;---------------------------------------------------------------
;---  END of TRANSIT Time-of-Day Process             ----------
;---                                                 ----------
;---------------------------------------------------------------
ENDRUN
ENDLOOP ; End  of time-of -day loop

;//////////////////////////////////////////////////////////////////
;
;   Step 2
```

```
;         2010 & Future year peak & total transit trips are squeezed to
;          a 3x3 (core/va/dc,md).  Factors for scaling unconstrained
;          transit trips to constrained transit trips are computed, on
;          an i/j basis FOR ijS TO AND THROUGH the regional core.
;
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
; create zone, state equiv table (Note: Internal TAZs ONLY)
COPY FILE = three.eqv
; Beginning of 3x3 Equivalency Table
D 1=1239-2144       ;  VA    - Non-Regional Core
D 2=1-88,1230-1238  ;  DC&VA -     Regional Core
D 3=89-1229         ;  DC&MD - Non-Regional Core
;       End of 3x3 Equivalency Table
ENDCOPY

RUN PGM=MATRIX
; Read input Files

 ; Input Year 2010 / Constraining Transit Trips:
  MATI[01] = TRNWPKOP.con             ; HBW Pk,OffPk, Total Transit
  MATI[02] = TRNSPKOP.con             ; HBS Pk,OffPk, Total Transit
  MATI[03] = TRNOPKOP.con             ; HBO Pk,OffPk, Total Transit
  MATI[04] = TRNNPKOP.con             ; NHB Pk,OffPk, Total Transit

 ; Input Forecast Year /Unconstrained Transit Trips:
  MATI[05] = TRNWPKOP.ucn             ; HBW Pk,OffPk, Total Transit
  MATI[06] = TRNSPKOP.ucn             ; HBS Pk,OffPk, Total Transit
  MATI[07] = TRNOPKOP.ucn             ; HBO Pk,OffPk, Total Transit
  MATI[08] = TRNNPKOP.ucn             ; NHB Pk,OffPk, Total Transit

 ; Output 3x3 tables
   FILEO MATO[1] = tempsqz.dat, MO=1-8,11-18
         ;  sequence of squeezed (3x3) output trip tables
         ;  1- 4 ->> 2010     Peak  HBW,HBS,HBO,NHB Transit trips
         ;  5- 8 ->> 2010     Daily HBW,HBS,HBO,NHB Transit trips
         ; 11-14 ->> Forecast Peak  HBW,HBS,HBO,NHB Transit trips
         ; 15-18 ->> Forecast Daily HBW,HBS,HBO,NHB Transit trips


  ; Read in Constraining Transit Trips for each purpose (mw 1-8)
  MW[1] = MI.1.1       MW[5]=MI.1.3  ; HBW Pk,Total Trn Trips (MW1,5)
  MW[2] = MI.2.1       MW[6]=MI.2.3  ; HBS Pk,Total Trn Trips (MW2,6)
  MW[3] = MI.3.1       MW[7]=MI.3.3  ; HBO Pk,Total Trn Trips (MW3,7)
  MW[4] = MI.4.1       MW[8]=MI.4.3  ; NHB Pk,Total Trn Trips (MW4,8)

  ; Read in Forecasted Transit Trips for each purpose  (mw 11-18)
  MW[11] = MI.5.1      MW[15]=MI.5.3  ; HBW Pk,Total Trn Trips (MW11,15)
  MW[12] = MI.6.1      MW[16]=MI.6.3  ; HBS Pk,Total Trn Trips (MW12,16)
  MW[13] = MI.7.1      MW[17]=MI.7.3  ; HBO Pk,Total Trn Trips (MW13,17)
  MW[14] = MI.8.1      MW[18]=MI.8.3  ; NHB Pk,Total Trn Trips (MW14,18)

 RENUMBER FILE=three.eqv, MISSINGZI=M, MISSINGZO=W
ENDRUN

RUN PGM=MATRIX
; Read input Squeezed
ZONES=3
    MATI[1] = tempsqz.dat
  ; Read in Constraining Transit Trips for each purpose (mw 1-8)
  MW[1] = MI.1.1       MW[5]=MI.1.5  ; HBW Pk,Total Trn Trips (MW1,5)
  MW[2] = MI.1.2       MW[6]=MI.1.6  ; HBS Pk,Total Trn Trips (MW2,6)
  MW[3] = MI.1.3       MW[7]=MI.1.7  ; HBO Pk,Total Trn Trips (MW3,7)
  MW[4] = MI.1.4       MW[8]=MI.1.8  ; NHB Pk,Total Trn Trips (MW4,8)

  ; Read in Forecasted Transit Trips for each purpose  (mw 11-18)
  MW[11] = MI.1.9      MW[15]=MI.1.13 ; HBW Pk,Total Trn Trips (MW11,15)
  MW[12] = MI.1.10     MW[16]=MI.1.14 ; HBS Pk,Total Trn Trips (MW12,16)
  MW[13] = MI.1.11     MW[17]=MI.1.15 ; HBO Pk,Total Trn Trips (MW13,17)
  MW[14] = MI.1.12     MW[18]=MI.1.16 ; NHB Pk,Total Trn Trips (MW14,18)

;      Now calculate constrained factors on an ij basis
 JLOOP              ; Initialize transit constraint factors
   WConFtr = 1.000  ; HBW ftr
   SConFtr = 1.000  ; HBS Ftr
   OConFtr = 1.000  ; HBO Ftr
   NConFtr = 1.000  ; NHB Ftr
    IF ((I = 1 && J = 2) || ; IF from VA nonCore   to Regional Core
        (I = 1 && J = 3) || ; or from VA nonCore   to DC/MD Non Reg Core
        (I = 3 && J = 1) || ; or from MD/DCnonCore to VA    Non Reg Core
        (I = 3 && J = 2))   ; or from MD/DCnonCore to Regional Core
        ; THEN calculate peak constraint factor, by purpose
        ; Constrained Transit trips =
        ; UnCon. Daily trips - UnCon. Pk Trips + Constrained Pk Trips
         MW[21] = (MW[15]-MW[11])+MW[1] ; Constrained HBW Daily Trn Trips
         MW[22] = (MW[16]-MW[12])+MW[2] ; Constrained HBS Daily Trn Trips
         MW[23] = (MW[17]-MW[13])+MW[3] ; Constrained HBO Daily Trn Trips
         MW[24] = (MW[18]-MW[14])+MW[4] ; Constrained NHB Daily Trn Trips

          IF (MW[15]=0)
              WConFtr = 0   ;
            ELSE
              WConFtr = MW[21] / MW[15]  ;
          ENDIF

          IF (MW[16]=0)
              SConFtr = 0   ;
            ELSE
              SConFtr = MW[22] / MW[16]  ;
          ENDIF

          IF (MW[17]=0)
              OConFtr = 0   ;
            ELSE
              OConFtr = MW[23] / MW[17]  ;
          ENDIF

          IF (MW[18]=0)
              NConFtr = 0   ;
            ELSE
              NConFtr = MW[24] / MW[18]  ;
          ENDIF
                    ; Accumulate Final Costrained Transit
         HBW_FCT  = HBW_FCT + ((MW[15]-MW[11])+MW[1]) ; Constrained HBW Daily Trn
Trips
       HBS_FCT  = HBS_FCT + ((MW[16]-MW[12])+MW[2]) ; Constrained HBS Daily Trn
Trips
       HBO_FCT  = HBO_FCT + ((MW[17]-MW[13])+MW[3]) ; Constrained HBO Daily Trn
Trips
       NHB_FCT  = NHB_FCT + ((MW[18]-MW[14])+MW[4]) ; Constrained NHB Daily Trn
Trips

     ELSE

         HBW_FCT  = HBW_FCT + MW[15] ;                 Constrained HBW Daily Trn
Trips
       HBS_FCT  = HBS_FCT + MW[16] ;                 Constrained HBS Daily Trn
Trips
       HBO_FCT  = HBO_FCT + MW[17] ;                 Constrained HBO Daily Trn
Trips
       NHB_FCT  = NHB_FCT + MW[18] ;                 Constrained NHB Daily Trn
Trips

     ENDIF
```

```
     IJ = I*10+j         ; create two digit no where 1st digit=i,2nd=j

; print ij, const pk&total,unconstr pk/total, final total trn trips,ftr
;  --one file for each purpose

  Print LIST = ij(4),MW[1](8),MW[5](8),MW[11](8),MW[15](8),MW[21](8),
               WConFtr(6.3),File=tconftr.HBW
  Print LIST = ij(4),MW[2](8),MW[6](8),MW[12](8),MW[16](8),MW[22](8),
               SConFtr(6.3),File=tconftr.HBS
  Print LIST = ij(4),MW[3](8),MW[7](8),MW[13](8),MW[17](8),MW[23](8),
               OConFtr(6.3),File=tconftr.HBO
  Print LIST = ij(4),MW[4](8),MW[8](8),MW[14](8),MW[18](8),MW[24](8),
               NConFtr(6.3),File=tconftr.NHB
 ENDJLOOP


IF (I=ZONES)
  Print LIST = ' Control Total HBW Constrained Transit Trips: ',HBW_FCT(10)
  Print LIST = ' Control Total HBS Constrained Transit Trips: ',HBS_FCT(10)
  Print LIST = ' Control Total HBO Constrained Transit Trips: ',HBO_FCT(10)
  Print LIST = ' Control Total NHB Constrained Transit Trips: ',NHB_FCT(10)
endif
; Now, Let's carry the control totals with us so we can compare with the
; zonal totals, top be computed in the next step
LOG PREFIX = MATRIX, VAR = HBW_FCT, HBS_FCT, HBO_FCT, NHB_FCT
;
;
ENDRUN

;////////////////////////////////////////////////////////////////////
;
; Begin Step 3
;          future year constrained trips are computed by applying
;          the constraint factors to the zonal trip tables.
;          constrained transit trips are produced (i.e., residual auto
;          persons are generated. and LOV,HOV auto person/driver trips
;          are computed using existing distributions on a cell by cell
;          basis.
;
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
LOOP TIME = 1,4    ; Loop through for each purpose
   IF     (TIME=1)
      PRP     = 'HBW'                             ; Purpose code
      INTAB   = 'FILLMW MW[1]=MI.1.1,2,3,4,5,6,7' ; Input table spec
      DADRPCT =  0.9009                           ; LOV Default Adr %
      HADRPCT =  0.2857                           ; HOV Default Adr %
      Control = MATRIX.HBW_FCT    ; Transit Control Total
   ELSEIF (TIME=2)
      PRP   = 'HBS'                               ; Purpose Code
      INTAB = 'FILLMW MW[1]=MI.1.1,2,3,4'         ; Input table spec
      DADRPCT =  0.8130                           ; Default Adr %
      HADRPCT =  0.2857                           ; HOV Default Adr %
      Control = MATRIX.HBS_FCT     ; Transit Control Total
   ELSEIF (TIME=3)
      PRP   = 'HBO'      ; Purpose code
      INTAB = 'FILLMW MW[1]=MI.1.1,2,3,4'   ; Input table spec
      DADRPCT =  0.6897                           ; Default Adr %
      HADRPCT =  0.2857                           ; HOV Default Adr %
      Control = MATRIX.HBO_FCT     ; Transit Control Total
   ELSEIF (TIME=4)
      PRP   = 'NHB'      ; Purpose code
      INTAB = 'FILLMW MW[1]=MI.1.1,2,3,4'   ; Input table spec
      DADRPCT =  0.8000                           ; Default Adr %
      HADRPCT =  0.2857                           ; HOV Default Adr %
      Control = MATRIX.NHB_FCT     ; Transit Control Total
   ENDIF

RUN PGM=MATRIX
```

```
ZONES = 2191
; DEFINE INPUT/OUTPUT  FILES HERE:
  MATI[1] = MC_@prp@%_iter_%.FIN                         ; UNCONST. MODE CH TRIPS
  MATO[1] = MC_@prp@%_iter_%.CON,MO=17,15,10,11,5,14,18  ; CONSTR.  MODE CH TRIPS
  MW[5]  = 0              ; initialize HOV tabs (5-7) to 0
  MW[6]  = 0              ; they exist for HBW purpose but do not exist
  MW[7]  = 0              ; for non-work purposes
  @INTAB@                 ; Read in 'Final' Mode Choice Model tables
   ;  Trip tables read in are:
   ; 1/SOVadr, 2/SOVapn, 3/WlkTrn, 4/DrvTrn, 5/Hv2adr, 6/Hvapn, 7/Hv3adr

  LOOKUP NAME=TCONFTR,
  LOOKUP[1]=1,RESULT=7,INTERPOLATE=N,LIST=T,FAIL=0,0,0,FILE=TCONFTR.@prp@

  IF (I = 1239-2144)      MW[30] =  11, INCLUDE=1239-2144
  IF (I = 1239-2144)      MW[30] =  12, INCLUDE=1-88,1230-1238
  IF (I = 1239-2144)      MW[30] =  13, INCLUDE=89-1229

  IF (I = 1-88,1230-1238) MW[30] =  21, INCLUDE=1239-2144
  IF (I = 1-88,1230-1238) MW[30] =  22, INCLUDE=1-88,1230-1238
  IF (I = 1-88,1230-1238) MW[30] =  23, INCLUDE=89-1229

  IF (I = 89-1229)        MW[30] =  31, INCLUDE=1239-2144
  IF (I = 89-1229)        MW[30] =  32, INCLUDE=1-88,1230-1238
  IF (I = 89-1229)        MW[30] =  33, INCLUDE=89-1229
;
; Now Factor transit tables
;
 JLOOP
    MW[8] = MW[3] + MW[4]                  ; Initial/Unconstr. Total Trn
    MW[9] = MW[2] + MW[3] + MW[4] + MW[6]  ; Initial Total Person

    MW[10] = MW[3] * tconftr(1,MW[30])    ; Constrained Walk  transit
    MW[11] = MW[4] * tconftr(1,MW[30])    ; Constrained Drive transit
    MW[12] = MW[10] + MW[11]              ; Constrained Total transit

    MW[13] = MW[8] - MW[12]               ; Transit 'Residual'
      IF (MW[13] < 0)                     ; - Make sure the residual is
          MW[13] = 0                      ;   NOT negative
      ENDIF                               ;

  IF (MW[6]= 0)
    MW[14] = MW[6]
   ELSE
    MW[14] = MW[6] + (MW[13] * (MW[6]/(MW[2]+MW[6]))) ; Updated HOV Psn
  ENDIF

  MW[15] = MW[9] - (MW[14] + MW[12])                ; Updated LOV Psn
                                                    ; Updated LOV Adr:
 IF (MW[2] = 0 && MW[6] =0)
    MW[17] = MW[1]+(@DADRPCT@ * MW[13])
   ELSEIF (MW[2] > 0)
    MW[17] = MW[1]+((MW[1]/MW[2]) * (MW[13]-(MW[13]*(MW[6]/(MW[2]+MW[6])))))
   ELSE
    MW[17] = MW[1]+ (@DADRPCT@ * (MW[13]-(MW[13]*(MW[6]/(MW[2]+MW[6])))))
 ENDIF

 IF (MW[14] = 0)
   MW[18] = MW[7]
  ELSE
   MW[18] = MW[7]+((@HADRPCT@) * (MW[13]*(MW[6]/(MW[2]+MW[6]))))
 ENDIF
ENDJLOOP
;


;
;
; Override the bucket-rounded trips
```

```
; to make sure the unconstrained trips are unaffected!
; rm 8/11/06
JLOOP
 TFTR = tconftr(1,MW[30])
 IF (TFTR = 1.00)
      MW[17] = MW[1]     ; UnConstrained SOV Auto Drivers
      MW[15] = MW[2]     ; UnConstrained SOV Auto Persons

      MW[10] = MW[3]     ; UnConstrained Walk  transit
      MW[11] = MW[4]     ; UnConstrained Drive transit

      MW[14] = MW[6]     ; UnConstrained HOV Auto Persons
      MW[18] = MW[7]     ; UnConstrained HOV3 Auto Drivers
 ENDIF
ENDJLOOP
;
;
JLOOP
;
; Now Accumulate Initial and Updated Totals /RATES Here:       ; OLD|NEW
;                                                              ; -------
 INISOVAD = INISOVAD + MW[01]    UPDSOVAD = UPDSOVAD + MW[17]  ; SOV ADRs
 INISOVAP = INISOVAP + MW[02]    UPDSOVAP = UPDSOVAP + MW[15]  ; SOV APns
 INITRNWK = INITRNWK + MW[03]    UPDTRNWK = UPDTRNWK + MW[10]  ; Trn Wk
 INITRNDR = INITRNDR + MW[04]    UPDTRNDR = UPDTRNDR + MW[11]  ; Trn Dr
 INIHV2AD = INIHV2AD + MW[05]    UPDHV2AD = UPDHV2AD + MW[05]  ; HV2 Adrs
 INIHOVAP = INIHOVAP + MW[06]    UPDHOVAP = UPDHOVAP + MW[14]  ; HOV APns
 INIHV3AD = INIHV3AD + MW[07]    UPDHV3AD = UPDHV3AD + MW[18]  ; HV3 Adrs

 INI_PSN  = INI_PSN  + MW[02] + MW[03] + MW[04] + MW[06]       ; OLD Psns
 UPD_PSN  = UPD_PSN  + MW[15] + MW[10] + MW[11] + MW[14]       ; NEW Psns

 INI_TRN  = INI_TRN  + MW[03] + MW[04]                         ; OLD TRN
 UPD_TRN  = UPD_TRN  + MW[10] + MW[11]                         ; NEW TRN

 INI_APN  = INI_APN  + MW[02] + MW[06]                         ; OLD APSN
 UPD_APN  = UPD_APN  + MW[15] + MW[14]                         ; NEW APSN

 INI_ADR  = INI_ADR  + MW[01] + MW[05] + MW[07]                ; OLD APSN
 UPD_ADR  = UPD_ADR  + MW[17] + MW[05] + MW[18]                ; NEW APSN


ENDJLOOP


; If at end,  Get Global Mode differences and regional rates

if (i=zones)

; get differences by purpose (output - Input)

 DIFSOVAD =    UPDSOVAD - INISOVAD
 DIFSOVAP =    UPDSOVAP - INISOVAP
 DIFTRNWK =    UPDTRNWK - INITRNWK
 DIFTRNDR =    UPDTRNDR - INITRNDR
 DIFHV2AD =    UPDHV2AD - INIHV2AD
 DIFHOVAP =    UPDHOVAP - INIHOVAP
 DIFHV3AD =    UPDHV3AD - INIHV3AD
 DIF_PSN  =    UPD_PSN  - INI_PSN
 DIF_TRN  =    UPD_TRN  - INI_TRN
 DIF_APN  =    UPD_APN  - INI_APN

; Calculate final car occupancy and transit percentage

IF (INI_ADR = 0)
  INI_OCC  =   0                                               ; OLD OCC
 ELSE
  INI_OCC  = INI_APN/INI_ADR                                   ; OLD OCC
ENDIF

IF (UPD_ADR = 0)
  UPD_OCC   = 0                                                ; NEW OCC
 ELSE
  UPD_OCC  = UPD_APN/UPD_ADR                                   ; NEW OCC
ENDIF

IF (INI_PSN = 0)
 INI_TPCT   = 0                                                ; OLD %TRN
  ELSE
 INI_TPCT = INI_TRN/INI_PSN * 100.00                           ; OLD %TRN
ENDIF

IF (UPD_PSN = 0)
 UPD_TPCT   = 0                                                ; NEW %tRN
  ELSE
 UPD_TPCT = UPD_TRN/UPD_PSN * 100.00                           ; NEW %tRN
ENDIF

 DIF_OCC  =    UPD_OCC  - INI_OCC
 DIF_TPCT =    UPD_TPCT - INI_TPCT


 CONTOTAL  = @control@ ; control total from previous step
LIST = '/bt     '
LIST = ' @prp@ TRANSIT CONSTRAINT RESULTS- Zonal Totals by Mode'
LIST = '       Initial and Final Totals by Mode','\n'
LIST = '     '
list = 'MODE         ','  INITIAL ','  UPDATED ','DIFFERENCE'
list = '------------ ','  ------- ','  ------- ',' -------- '
LIST='  '
LIST = 'SOV_AD:      ',   INISOVAD(10),   UPDSOVAD(10),  DIFSOVAD(10)
LIST = 'SOV_AP:      ',   INISOVAP(10),   UPDSOVAP(10),  DIFSOVAP(10)
LIST = 'TRN_WK:      ',   INITRNWK(10),   UPDTRNWK(10),  DIFTRNWK(10)
LIST = 'TRN_DR:      ',   INITRNDR(10),   UPDTRNDR(10),  DIFTRNDR(10)
LIST = 'HV2_AD:      ',   INIHV2AD(10),   UPDHV2AD(10),  DIFHV2AD(10)
LIST = 'HOV_AP:      ',   INIHOVAP(10),   UPDHOVAP(10),  DIFHOVAP(10)
LIST = 'HV3_AD:      ',   INIHV3AD(10),   UPDHV3AD(10),  DIFHV3AD(10)
LIST='  '
LIST = 'TOTAL PERSON:',    INI_PSN(10),    UPD_PSN(10),  DIF_PSN(10)
LIST='  '
LIST = 'TRANSIT:     ',    INI_TRN(10),    UPD_TRN(10),  DIF_TRN(10)
LIST = 'TRANSIT Control Total  ', CONTOTAL(10),'            <-- Based on Squeezed
3x3 Trips'
LIST='  '
LIST = 'AUTO PSN:    ',    INI_APN(10),    UPD_APN(10),  DIF_APN(10)
LIST='  '
LIST = 'Transit %:   ',    INI_TPCT(10.3), UPD_TPCT(10.3), DIF_TPCT(10.3)
LIST = 'AUTO OCCUP.: ',    INI_OCC(10.3),  UPD_OCC(10.3),  DIF_OCC(10.3)
list = '/et       '
endif

ENDRUN
ENDLOOP
```

11 MC_Consummary.s

```
; -----------------------------------------------------------------
; MC_ConSummary.s - Juris. Summary of constrained transit trips
;              by Purpose and Mode
;
;
; Now summarize total purpose trip tables, by mode
; Update 8/10/2006 - Jurisdiction-TAZ equivalenced changed in Jur Summary
```

```
; (for Mtg and PG) to be consistent with jurisdiction change in land use file
; --------------------------------------------------------------

RUN PGM=MATRIX
  ZONES=2191
  MATI[1]= MC_HBW%_iter_%.FIN
  MATI[2]= MC_HBS%_iter_%.FIN
  MATI[3]= MC_HBO%_iter_%.FIN
  MATI[4]= MC_NHB%_iter_%.FIN
  FILLMW MW[01]=MI.1.1,2,3,4,5,6,7
  FILLMW MW[11]=MI.2.1,2,3,4,5,6,7
  FILLMW MW[21]=MI.3.1,2,3,4,5,6,7
  FILLMW MW[31]=MI.4.1,2,3,4,5,6,7

  MW[51] = MW[01] + MW[11] + MW[21] + MW[31]  ; Total LOV Auto Drv
  MW[52] = MW[02] + MW[12] + MW[22] + MW[32]  ; Total LOV Auto Psn
  MW[53] = MW[03] + MW[13] + MW[23] + MW[33]  ; Total Walk  Acc Transit
  MW[54] = MW[04] + MW[14] + MW[24] + MW[34]  ; Total Drive Acc Transit
  MW[55] = MW[05] + MW[15] + MW[25] + MW[35]  ; Total HOV-2occ Auto Drv
  MW[56] = MW[06] + MW[16] + MW[26] + MW[36]  ; Total HOV(2/3+) Auto Psn
  MW[57] = MW[07] + MW[17] + MW[27] + MW[37]  ; Total HOV-3+occ Auto Drv

 MATO[1] = MC_ALL%_iter_%.FIN, MO=51-57  ; Total Purpose Mode Choice Trips
ENDRUN


;--------------------------------------------------------------
; Summarize the Mode Choice Model Output to Juris. Level
;--------------------------------------------------------------
DESCRIPT='Simulation - Year: %_year_% Alt: %_alt_%  Iter. %_iter_% *
W/Tran.Constraint *'
LOOP PURP=1,5  ; Outer Loop for Each Purpose (HBW,HBS,HBO,NHB,Total)
IF (PURP=1)
    MCOUTTAB='mc_HBW%_iter_%.FIN'
    PURPOSE ='HBW '
ELSEIF (PURP=2)
    MCOUTTAB='mc_HBS%_iter_%.FIN'
    PURPOSE ='HBS'
ELSEIF (PURP=3)
    MCOUTTAB='mc_HBO%_iter_%.FIN'
    PURPOSE ='HBO'
ELSEIF (PURP=4)
    MCOUTTAB='mc_NHB%_iter_%.FIN'
    PURPOSE ='NHB'
ELSEIF (PURP=5)
    MCOUTTAB='mc_ALL%_iter_%.FIN'
    PURPOSE ='ALL'
ENDIF

;
COPY FILE=DJ.EQV
;   -- Start of Jurisiction-to-TAZ equivalency --
D 1=1-88                         ; DC cr
D 2=89-319                       ; DC ncr
D 3=320-639,648,650              ; MTG MD
D 4=640-647,649,651-1029         ; PG  MD
D 5=1230-1238                    ; ARL core
D 6=1239-1329                    ; ARLcnore
D 7=1330-1399                    ; ALX VA
D 8=1400-1779                    ; FFX VA
D 9=1780-1919                    ; LDN VA
D 10=1920-2069                   ; PW  VA
D 11=1030-1059                   ; FRD MD
D 12=1060-1079                   ; CAR MD
D 13=1080-1109                   ; HOW MD
D 14=1110-1149                   ; AAR MD
D 15=1150-1169                   ; CAL
D 16=1170-1199                   ; STM
D 17=1200-1229                   ; CHS MD
D 18=2115-2129                   ; FAU VA
D 19=2080-2099                   ; STA VA
D 20=2130-2134,2135-2144         ; CLK/JEF
D 21=2100-2104,2105-2114         ; FBG/SPTS
D 22=2070-2079                   ; KGEOVA
D 23=2145-2191                   ; EXTRNLS
;   -- end of Jurisiction-to-TAZ equivalency --
ENDCOPY

RUN PGM=MATRIX
  ZONES=2191
  MATI[1]= @MCOUTTAB@
  MW[1]=MI.1.1                        ;  SOV ADR
  MW[2]=MI.1.2                        ;  SOV APSN
  MW[3]=MI.1.3+MI.1.4                 ;  Transit
  MW[4]=MI.1.6                        ;  HOV APSN
  MW[5]=MI.1.5+MI.1.7                 ;  HOV ADR
  MW[6]=MI.1.1+MI.1.5+MI.1.7          ;  Auto Driver
  MW[7]=MI.1.2+MI.1.6                 ;  Auto Psn
  MW[8]=MI.1.2+MI.1.3+MI.1.4+MI.1.6   ;  Person
  MW[10]=0                            ;  dummy/placemarker table
  FILEO MATO[1]  = TEMP.sad MO=1,10
        MATO[2]  = TEMP.sap MO=2,10
        MATO[3]  = TEMP.trn MO=3,10
        MATO[4]  = TEMP.hap MO=4,10
        MATO[5]  = TEMP.had MO=5,10
        MATO[6]  = TEMP.adr MO=6,10
        MATO[7]  = TEMP.apn MO=7,10
        MATO[8]  = TEMP.psn MO=8,10
        MATO[9]  = TEMP.trp MO=3,8
        MATO[10] = TEMP.occ MO=7,6

  ; renumber OUT.MAT according to DJ.EQV
  RENUMBER FILE=DJ.EQV, MISSINGZI=M, MISSINGZO=W
ENDRUN

;
LOOP INDEX2=1,10  ; 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.sad'         ; Token name of squeezed modal trip table(s)
  MODE ='LOV Auto Driver'    ; Token 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.sap'         ;
  MODE ='LOV Auto Person'
  DCML=0
  TABTYPE=1
  SCALE=1                    ;
  OPER='+'                   ;
ELSEIF (INDEX2=3)
  SQFNAME='temp.trn'         ;
  MODE ='Transit   '
  DCML=0
  TABTYPE=1
  SCALE=1                    ;
  OPER='+'                   ;
ELSEIF (INDEX2=4)
  SQFNAME='temp.hap'         ;
  MODE ='HOV Auto Person'
  DCML=0
  TABTYPE=1
```

```
  SCALE=1                 ;
  OPER='+'                ;
ELSEIF (INDEX2=5)
  SQFNAME='temp.had'      ;
  MODE ='HOV AUTO Driver'
  DCML=0
  TABTYPE=1
  SCALE=1                 ;
  OPER='+'                ;
ELSEIF (INDEX2=6)
  SQFNAME='temp.adr'      ;
  MODE ='Auto Driver'
  DCML=0
  TABTYPE=1
  SCALE=1                 ;
  OPER='+'                ;
ELSEIF (INDEX2=7)
  SQFNAME='temp.apn'      ;
  MODE ='Auto Person  '
  DCML=0
  TABTYPE=1
  SCALE=1                 ;
  OPER='+'                ;
ELSEIF (INDEX2=8)
  SQFNAME='temp.psn'      ;
  MODE ='Total Motorized Person'
  DCML=0
  TABTYPE=1
  SCALE=1                 ;
  OPER='+'                ;
ELSEIF (INDEX2=9)
  SQFNAME='temp.trp'      ;
  MODE ='Transit Percentage'
  DCML=1
  TABTYPE=2
  SCALE=100               ;
  OPER='/'
ELSEIF (INDEX2=10)
  SQFNAME='temp.occ'      ;
  MODE ='Avg. Auto Occupancy '
  DCML=2
  TABTYPE=2
  SCALE=1                 ;
  OPER='/'
ENDIF
;
RUN PGM=MATRIX
  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 'Inner' Loop
ENDLOOP ; End 'Outer' Loop
```

12 MC_Summary.s

```
;-------------------------------------------------------------------
; Program Name: MC_Summary.s
; MWCOG Version 2 Model
;
; 1) Update interchanges where person trips exceed
; 32367, by purpose.
; 2) Summarize final table by purpose
;
; Environment Variables Used:
;             %_iter_%
;             %_year_%
;             %_alt_%
;
; Updated 12/12/02 to generate model trip summaries for ALL purposes,
;                   in addition to individual purposes (rm)
; Update 8/10/2006 - Jurisdiction-TAZ equivalenced changed in Jur Summary
; (for Mtg and PG) to be consistent with jurisdiction change in land use file
;-------------------------------------------------------------------
LOOP PURP=1,4
 IF (PURP = 1)
  PURPOSE = 'HBW'
  VEH_OCC = 1.11
  INPTRIPS= 'FILLMW MW[1]=MI.2.1,2,3,4,5,6,7'
 ELSEIF (PURP = 2)
  PURPOSE = 'HBS'
  VEH_OCC = 1.23
  INPTRIPS= 'FILLMW MW[1]=MI.2.1,2,3,4'
 ELSEIF (PURP = 3)
  PURPOSE = 'HBO'
  VEH_OCC = 1.45
  INPTRIPS= 'FILLMW MW[1]=MI.2.1,2,3,4'
 ELSE
  PURPOSE = 'NHB'
  VEH_OCC = 1.25
  INPTRIPS= 'FILLMW MW[1]=MI.2.1,2,3,4'
 ENDIF
;
;--------------------------------------------------------------------------
;
;--------------------------------------------------------------------------
;
RUN PGM=MATRIX
```

```
 MATI[1] = %_iter_%_@purpose@mu.ptt ; PP Iteration Person Trips
 MATI[2] = mc_@PURPOSE@.trp         ; COGMC Model Output Trip Table
 MATO[1] = mc_@PURPOSE@%_iter_%.FIN, MO=1-7  ; Updated/Final Mode Choice Trips

 MW[5] = 0
 MW[6] = 0
 MW[7] = 0

 @INPTRIPS@

 ;---- Update the Mode Choice Output ----

 JLOOP
  IF (MI.1.1 > 32367)                             ;
    MW[2] = MI.1.1                                ;
    MW[1] = ROUND (MI.1.1 / @VEH_OCC@)            ;
  ENDIF                                           ;

  _PERSON = MW[2] + MW[3] + MW[4] + MW[6]

ENDJLOOP
ENDRUN
ENDLOOP

; ---------------------------------------------------------------
; Now summarize total purpose trip tables, by mode
; ---------------------------------------------------------------

RUN PGM=MATRIX
  ZONES=2191
  MATI[1]= MC_HBW%_iter_%.FIN
  MATI[2]= MC_HBS%_iter_%.FIN
  MATI[3]= MC_HBO%_iter_%.FIN
  MATI[4]= MC_NHB%_iter_%.FIN
  FILLMW MW[01]=MI.1.1,2,3,4,5,6,7
  FILLMW MW[11]=MI.2.1,2,3,4,5,6,7
  FILLMW MW[21]=MI.3.1,2,3,4,5,6,7
  FILLMW MW[31]=MI.4.1,2,3,4,5,6,7

  MW[51] = MW[01] + MW[11] + MW[21] + MW[31]  ; Total LOV Auto Drv
  MW[52] = MW[02] + MW[12] + MW[22] + MW[32]  ; Total LOV Auto Psn
  MW[53] = MW[03] + MW[13] + MW[23] + MW[33]  ; Total Walk  Acc Transit
  MW[54] = MW[04] + MW[14] + MW[24] + MW[34]  ; Total Drive Acc Transit
  MW[55] = MW[05] + MW[15] + MW[25] + MW[35]  ; Total HOV-2occ Auto Drv
  MW[56] = MW[06] + MW[16] + MW[26] + MW[36]  ; Total HOV(2/3+) Auto Psn
  MW[57] = MW[07] + MW[17] + MW[27] + MW[37]  ; Total HOV-3+occ Auto Drv

 MATO[1] = MC_ALL%_iter_%.FIN, MO=51-57  ; 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=1,5  ; Outer Loop for Each Purpose (HBW,HBS,HBO,NHB,Total)
IF (PURP=1)
    MCOUTTAB='mc_HBW%_iter_%.FIN'
    PURPOSE ='HBW'
ELSEIF (PURP=2)
    MCOUTTAB='mc_HBS%_iter_%.FIN'
    PURPOSE ='HBS'
ELSEIF (PURP=3)
    MCOUTTAB='mc_HBO%_iter_%.FIN'
    PURPOSE ='HBO'
ELSEIF (PURP=4)
    MCOUTTAB='mc_NHB%_iter_%.FIN'
    PURPOSE ='NHB'
ELSEIF (PURP=5)
    MCOUTTAB='mc_ALL%_iter_%.FIN'
    PURPOSE ='ALL'
ENDIF

;
COPY FILE=DJ.EQV
;   -- Start of Jurisiction-to-TAZ equivalency --
D 1=1-88                         ; DC cr
D 2=89-319                       ; DC ncr
D 3=320-639,648,650              ; MTG MD
D 4=640-647,649,651-1029         ; PG  MD
D 5=1230-1238                    ; ARL core
D 6=1239-1329                    ; ARLcnore
D 7=1330-1399                    ; ALX VA
D 8=1400-1779                    ; FFX VA
D 9=1780-1919                    ; LDN VA
D 10=1920-2069                   ; PW  VA
D 11=1030-1059                   ; FRD MD
D 12=1060-1079                   ; CAR MD
D 13=1080-1109                   ; HOW MD
D 14=1110-1149                   ; AAR MD
D 15=1150-1169                   ; CAL
D 16=1170-1199                   ; STM
D 17=1200-1229                   ; CHS MD
D 18=2115-2129                   ; FAU VA
D 19=2080-2099                   ; STA VA
D 20=2130-2134,2135-2144         ; CLK/JEF
D 21=2100-2104,2105-2114         ; FBG/SPTS
D 22=2070-2079                   ; KGEOVA
D 23=2145-2191                   ; EXTRNLS
;   -- end of Jurisiction-to-TAZ equivalency --
ENDCOPY

RUN PGM=MATRIX
  ZONES=2191
  MATI[1]= @MCOUTTAB@
  MW[1]=MI.1.1                       ;  SOV ADR
  MW[2]=MI.1.2                       ;  SOV APSN
  MW[3]=MI.1.3+MI.1.4                ;  Transit
  MW[4]=MI.1.6                       ;  HOV APSN
  MW[5]=MI.1.5+MI.1.7                ;  HOV ADR
  MW[6]=MI.1.1+MI.1.5+MI.1.7         ;  Auto Driver
  MW[7]=MI.1.2+MI.1.6                ;  Auto Psn
  MW[8]=MI.1.2+MI.1.3+MI.1.4+MI.1.6  ;  Person
  MW[10]=0                           ;  dummy/placemarker table
  FILEO MATO[1]  = TEMP.sad MO=1,10
        MATO[2]  = TEMP.sap MO=2,10
        MATO[3]  = TEMP.trn MO=3,10
        MATO[4]  = TEMP.hap MO=4,10
        MATO[5]  = TEMP.had MO=5,10
        MATO[6]  = TEMP.adr MO=6,10
        MATO[7]  = TEMP.apn MO=7,10
        MATO[8]  = TEMP.psn MO=8,10
        MATO[9]  = TEMP.trp MO=3,8
        MATO[10] = TEMP.occ MO=7,6

  ; renumber OUT.MAT according to DJ.EQV
  RENUMBER FILE=DJ.EQV, MISSINGZI=M, MISSINGZO=W
ENDRUN

;
LOOP INDEX2=1,10  ; 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.sad'        ; Token name of squeezed modal trip table(s)
```

```
  MODE ='LOV Auto Driver'   ; Token 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.sap'        ;
  MODE ='LOV Auto Person'
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=3)
  SQFNAME='temp.trn'        ;
  MODE ='Transit   '
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=4)
  SQFNAME='temp.hap'        ;
  MODE ='HOV Auto Person'
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=5)
  SQFNAME='temp.had'        ;
  MODE ='HOV AUTO Driver'
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=6)
  SQFNAME='temp.adr'        ;
  MODE ='Auto Driver'
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=7)
  SQFNAME='temp.apn'        ;
  MODE ='Auto Person  '
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=8)
  SQFNAME='temp.psn'        ;
  MODE ='Total Motorized Person'
  DCML=0
  TABTYPE=1
  SCALE=1                   ;
  OPER='+'                  ;
ELSEIF (INDEX2=9)
  SQFNAME='temp.trp'        ;
  MODE ='Transit Percentage'
  DCML=1
  TABTYPE=2
  SCALE=100                 ;
  OPER='/'
ELSEIF (INDEX2=10)
  SQFNAME='temp.occ'        ;
  MODE ='Avg. Auto Occupancy '
  DCML=2
  TABTYPE=2
  SCALE=1                   ;
  OPER='/'
```

```
ENDIF
;
RUN PGM=MATRIX
  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 'Inner' Loop
ENDLOOP ; End 'Outer' Loop
```

13 Metrorail_skims.s

```
;==================================================================
;  Metrorail_skims.S
;  MWCOG Version 2.2 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
;==================================================================
; max 'zones' (stations changed from 116 to 150)

;  Global variables:

NZONES = 150          ; Max. no. of Stations

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=HWYNET
;
ZONES=@NZONES@

; Node Coordinate File
; XY Units are NAD83 (in whole feet)
FILEI NODEI=@NODIN@,
        VAR=N,09-13,
        VAR=X,19-26,
        VAR=Y,32-39

; Metrorail Links
FILEI LINKI=@LNKIN@,
        VAR=A,12-16,         ; A-Node Number
        VAR=B,18-22,         ; B-Node Number
        VAR=REV,30-30,       ; Reverse Code
        VAR=DISTANCE,37-41,  ; Distance in 1/100ths of Miles
        VAR=SPEED,58-62      ; Speed Value (mph)

; output network in TP+ format
NETO=metrail.TPN
;

;=================================================================
; Step 2: Build Station Level Distance Skims
;=================================================================

RUN PGM=HWYLOAD
  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
```

14 MFARE1.S

```
;=================================================================
;  MFARE1.S
;   V2.2 Model
;   TP+ 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 Station-to-Station
Fares -text file
OP_Sta_Fares    = 'OP_Metrorail_Fares.TXT'      ;  Output OP Station-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
```

15 MFARE2.S

```
;=================================================================
;  MFARE2.S
;   Version 2.2 Model
;   TP+ Script Version of MFARE2 Program
;   Walk and Drive Access Zonal Fares Developed for AM Peak and Off-Peak Periods
;
;   Programmer: Milone
;   Date:      1/11/07
;=================================================================
;
ZONESIZE        =  2191              ;  No. of TAZs
LastIZn         =  2144              ;  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 = 1,4
    IF (PRDACC = 1)                                     ;  ------ AM Walk Access cycle:
------
       USTOSFile       = '%_iter_%_AM_WK.STA '          ;   Input:  Walk Acc. Station
to Station Matrix (Brd Sta/T1, Ali Stat/T2)
       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.FAR '          ;   Output: Total Fare Matrix
       OutputMatrix5   = '%_iter_%_AM_WK.FR5 '          ;           Fare Matrix (T1-5
Total,bus onlr, rail, acc, egr fare file)
       OutputText      = '%_iter_%_AM_WK.TXT '          ;           Fare text file for
checking fare components / selected ijs
    ELSEIF (PRDACC = 2)                                 ;  ------ AM Drive Access
cycle: ------
       USTOSFile       = '%_iter_%_AM_DR.STA '          ;   Input:  Walk Acc. Station
to Station Matrix (Brd Sta/T1, Ali Stat/T2)
       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_DR.FAR '          ;   Output: Total Fare Matrix
       OutputMatrix5   = '%_iter_%_AM_DR.FR5 '          ;           Fare Matrix (T1-5
Total,bus onlr, rail, acc, egr fare file)
       OutputText      = '%_iter_%_AM_DR.TXT '          ;           Fare text file for
checking fare components / selected ijs
    ELSEIF (PRDACC = 3)                                 ;  ------ Off-Pk Walk  Access
cycle: ------
       USTOSFile       = '%_iter_%_OP_WK.STA '          ;   Input:  Walk Acc. Station
to Station Matrix (Brd Sta/T1, Ali Stat/T2)
       MR_FareFile     = 'OP_Metrorail_Fares.TXT '      ;           Metrorail Fares in
Current Year Cents
       BusFareMTX      = 'INPUTS\BUSFAROP.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_%_OP_WK.FAR '          ;   Output: Total Fare Matrix
       OutputMatrix5   = '%_iter_%_OP_WK.FR5 '          ;           Fare Matrix (T1-5
Total,bus onlr, rail, acc, egr fare file)
       OutputText      = '%_iter_%_OP_WK.TXT '          ;           Fare text file for
checking fare components / selected ijs
    ELSEIF (PRDACC = 4)                                 ;  ------ Off-Pk Walk  Access
cycle: ------
       USTOSFile       = '%_iter_%_OP_DR.STA '          ;   Input:  Walk Acc. Station
to Station Matrix (Brd Sta/T1, Ali Stat/T2)
       MR_FareFile     = 'OP_Metrorail_Fares.TXT '      ;           Metrorail Fares in
Current Year Cents
       BusFareMTX      = 'INPUTS\BUSFAROP.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_%_OP_DR.FAR '          ;   Output: Total Fare Matrix
       OutputMatrix5   = '%_iter_%_OP_DR.FR5 '          ;           Fare Matrix (T1-5
Total,bus onlr, rail, acc, egr fare file)
       OutputText      = '%_iter_%_OP_DR.TXT '          ;           Fare text file for
checking fare components / selected ijs
    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[1] = @USTOSFile@
             MW[11] = MI.1.1    ;  On-Station
             MW[12] = MI.1.2    ;  Off-Station

             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
    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 rail stations used, compute Bus fare (BUSFARE)
   ;---------------------------------------------------------------------

   IF (MW[11][j] = 0  && MW[12][j] = 0)  ;
         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

        TotalFare      =  BusFare + RailFare + RailAccFare + RailEgrFare ;
undeflated transit fare, Metrorail-Related paths

    ; 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
```

16 Misc_Time-of-Day.s

```
; ====================================================================
;  Misc_Time-of-Day.s
;  MWCOG Version 2.2 Model
;
;             Distribute Truck and
;             miscellaneous (non-modeled) trips among
;              among three time periods:
;              -  AM peak  (6:00 - 9:00 AM)
;              -  PM peak  (4:00 - 7:00 PM)
;              -  Off-peak (All Other Hrs)
;           The Time-of-Day factors are taken from a card image
;           file named: 'V2TODTPP.PAR'.
; Bucket rounding is removed per version 2.2
; Sept. 2007: Iteration spec. now used for internal trucks
; ====================================================================
;
; Environment Variable:
;               _iter_  (Iteration indicator = 'pp','i1'-'i6'
;
;/////////////////////////////////////////////////////////////////////
;                                                                  //
; Input/Output filenames:                                          //
;                                                                  //
READ FILE=..\support\V2TODTPP.PAR  ; Time of Day Factor File       //
;                                                                  //
; I/P Truck & Exogenous trip Tables:                               //
XXTRUCK  = 'inputs\xxtrk.vtt'          ;  TRUCK   XX Trips (t1)    //
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       //
;
MTKTDOUT = 'MTKEST%_iter_%.VTT'        ;  Medium Truck Trips       //
HTKTDOUT = 'HTKEST%_iter_%.VTT'        ;  Heavy  Truck Trips       //
;
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  //
MISCPM  = 'MISCPM%_iter_%.TT'          ; PM     Non-Modeled Trips  //
MISCOP  = 'MISCOP%_iter_%.TT'          ; Off-Pk Non-Modeled Trips  //
;
; Each output file contains 8 tables -                             //
; 1/xx truck,2/xx autodr,3/taxi adr,4/visitor adr,5/school adr,
; 6/med. truck, 7/hvy truck, 8/air passenger adr
;/////////////////////////////////////////////////////////////////////

RUN PGM=MATRIX                  ; Read in Daily Miscellaneous Trips
    MATI[1]=@XXTRUCK@           ; Thru Truck                  Trips
    MATI[2]=@XXAUTDR@           ; Thru            Auto Driver Trips
    MATI[3]=@TAXIADR@           ; Taxi            Auto Driver Trips
    MATI[4]=@VISIADR@           ; Visitor/Tourist Auto Driver Trips
    MATI[5]=@SCHLADR@           ; School          Auto Driver Trips
    MATI[6]=@MTKTDOUT@          ; Medium Truck (I-I,I-X,X-I)  Trips
    MATI[7]=@HTKTDOUT@          ; Heavy  Truck (I-I,I-X,X-I)  Trips
    MATI[8]=@APXADR@            ; Air Passenger auto driver   Trips

; Put Misc Trips in Work Mats     1-8, respectively
  MW[1]  = MI.1.1
  MW[2]  = MI.2.1
  MW[3]  = MI.3.1
  MW[4]  = MI.4.1
  MW[5]  = MI.5.1
  MW[6]  = MI.6.3
  MW[7]  = MI.7.3
  MW[8]  = MI.8.1


; Apply TOD Factors
; put AM       trips in work mats 11-17
; put PM       trips in work mats 21-27
; put Off-Peak trips in work mats 31-37
;
 JLOOP
   ; AM Peak Period Trips
    MW[11] = @AMXXTRKP@ * MW[1] / 100.0 ; AM Thru     Truck
    MW[12] = @AMXXADRP@ * MW[2] / 100.0 ; AM Thru     Auto Driver
    MW[13] = @AMTAXISP@ * MW[3] / 100.0 ; AM Taxi     Auto Driver
    MW[14] = @AMVISITP@ * MW[4] / 100.0 ; AM Visitor  Auto Driver
    MW[15] = @AMSCHOOP@ * MW[5] / 100.0 ; AM School   Auto Driver
    MW[16] = @AMIIMTKP@ * MW[6] / 100.0 ; AM I-I,I-E,E-I Medium Truck
    MW[17] = @AMIIHTKP@ * MW[7] / 100.0 ; AM I-I,I-E,E-I Heavy  Truck
    MW[18] = @AMAIRPXP@ * MW[8] / 100.0 ; AM Air Pax  Auto Driver

   ; PM Peak Period Trips
    MW[21] = @PMXXTRKP@ * MW[1] / 100.0 ; PM Thru     Truck
    MW[22] = @PMXXADRP@ * MW[2] / 100.0 ; PM Thru     Auto Driver
    MW[23] = @PMTAXISP@ * MW[3] / 100.0 ; PM Taxi     Auto Driver
    MW[24] = @PMVISITP@ * MW[4] / 100.0 ; PM Visitor  Auto Driver
    MW[25] = @PMSCHOOP@ * MW[5] / 100.0 ; PM School   Auto Driver
    MW[26] = @PMIIMTKP@ * MW[6] / 100.0 ; PM I-I,I-E,E-I Medium Truck
    MW[27] = @PMIIHTKP@ * MW[7] / 100.0 ; PM I-I,I-E,E-I Heavy  Truck
```

```
    MW[28] = @PMAIRPXP@ * MW[8] / 100.0 ; PM Air Pax  Auto Driver

   ; Off-Peak Period Trips
    MW[31] = MW[1] - (MW[11] + MW[21])  ; Off-Pk Thru     Truck
    MW[32] = MW[2] - (MW[12] + MW[22])  ; Off-Pk Thru     Auto Driver
    MW[33] = MW[3] - (MW[13] + MW[23])  ; Off-Pk Taxi     Auto Driver
    MW[34] = MW[4] - (MW[14] + MW[24])  ; Off-Pk Visitor  Auto Driver
    MW[35] = MW[5] - (MW[15] + MW[25])  ; Off-Pk School   Auto Driver
    MW[36] = MW[6] - (MW[16] + MW[26])  ; Off-Pk I-I,I-E,E-I Medium Truck
    MW[37] = MW[7] - (MW[17] + MW[27])  ; Off-Pk I-I,I-E,E-I Heavy  Truck
    MW[38] = MW[8] - (MW[18] + MW[28])  ; Off-Pk Air Pax  Auto Driver
 ENDJLOOP

; Now bucket round all tables

; LETS SUMMARIZE NEATLY
 jloop
    DAYXXTK = DAYXXTK + MW[1]   ; ACCUMULATE TOTAL DAILY THRU TRUCKS
    DAYXXAD = DAYXXAD + MW[2]   ; ACCUMULATE TOTAL DAILY THRU AUTO DRV
    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[6]   ; ACCUMULATE TOTAL DAILY MED. TRUCK TRIPS
    DAYHTRK = DAYHTRK + MW[7]   ; ACCUMULATE TOTAL DAILY HVY. TRUCK TRIPS
    DAYAPAX = DAYAPAX + MW[8]   ; ACCUMULATE TOTAL DAILY AIR PAX ADR TRIPS

    AMXXTK  = AMXXTK  + MW[11]  ; ACCUMULATE TOTAL AM XX    TRUCKS
    AMXXAD  = AMXXAD  + MW[12]  ; ACCUMULATE TOTAL AM XX    ADR 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 SCHOO ADR TRIPS
    AMMTRK  = AMMTRK  + MW[16]  ; ACCUMULATE TOTAL AM MED TRUCK TRIPS
    AMHTRK  = AMHTRK  + MW[17]  ; ACCUMULATE TOTAL AM HVY TRUCK TRIPS
    AMAPAX  = AMAPAX  + MW[18]  ; ACCUMULATE TOTAL AIR PAX ADR  TRIPS

    PMXXTK  = PMXXTK  + MW[21]  ; ACCUMULATE TOTAL PM XX    TRUCKS
    PMXXAD  = PMXXAD  + MW[22]  ; ACCUMULATE TOTAL PM XX    ADR 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 SCHOO ADR TRIPS
    PMMTRK  = PMMTRK  + MW[26]  ; ACCUMULATE TOTAL PM MED TRUCK TRIPS
    PMHTRK  = PMHTRK  + MW[27]  ; ACCUMULATE TOTAL PM HVY TRUCK TRIPS
    PMAPAX  = PMAPAX  + MW[28]  ; ACCUMULATE TOTAL AIR PAX ADR  TRIPS

    OPXXTK  = OPXXTK  + MW[31]  ; ACCUMULATE TOTAL OP XX    TRUCKS
    OPXXAD  = OPXXAD  + MW[32]  ; ACCUMULATE TOTAL OP XX    ADR 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 SCHOO ADR TRIPS
    OPMTRK  = OPMTRK  + MW[36]  ; ACCUMULATE TOTAL OP MED TRUCK TRIPS
    OPHTRK  = OPHTRK  + MW[37]  ; ACCUMULATE TOTAL OP HVY TRUCK TRIPS
    OPAPAX  = OPAPAX  + MW[38]  ; ACCUMULATE TOTAL AIR PAX ADR  TRIPS


; total input misc trips
  ipmisc  = ipmisc + MW[1]+MW[2]+MW[3]+MW[4]+MW[5]+MW[6]+MW[7]+MW[8]

; total output misc trips
  opmisc  = opmisc +
  MW[11]+MW[12]+MW[13]+MW[14]+MW[15]+MW[16]+MW[17]+MW[18]+
  MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26]+MW[27]+MW[28]+
  MW[31]+MW[32]+MW[33]+MW[34]+MW[35]+MW[36]+MW[37]+MW[38]

 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(8.0)
list = 'Output Misc/Truck Total: ',opmisc(8.0)
list = 'Diff.  (Output-Input):   ',diff(8.0)
list = ' '

LIST = 'DAILY XX TRUCKS:',dayxxtk(8.0),' AM,PM, Off-Pk totals:',
          AMXXTK(8.0),',',PMXXTK(8.0),',',OPXXTK(8.0)
LIST = 'DAILY XX ADRS:  ',dayxxAD(8.0),' AM,PM, Off-Pk totals: ',
          AMXXAD(8.0),',',PMXXAD(8.0),',',OPXXAD(8.0)
LIST = 'DAILY TAXI ADRS:',dayTxAD(8.0),' AM,PM, Off-Pk totals: ',
          AMTXAD(8.0),',',PMTXAD(8.0),',',OPTXAD(8.0)
LIST = 'DAILY VISI ADRS:',dayVSAD(8.0),' AM,PM, Off-Pk totals: ',
          AMVSAD(8.0),',',PMVSAD(8.0),',',OPVSAD(8.0)
LIST = 'DAILY SCHO ADRS:',daySCAD(8.0),' AM,PM, Off-Pk totals: ',
          AMSCAD(8.0),',',PMSCAD(8.0),',',OPSCAD(8.0)
LIST = 'DAILY MED TRKS: ',dayMTRK(8.0),' AM,PM, Off-Pk totals: ',
          AMMTRK(8.0),',',PMMTRK(8.0),',',OPMTRK(8.0)
LIST = 'DAILY HVY TRKS: ',dayHTRK(8.0),' AM,PM, Off-Pk totals: ',
          AMHTRK(8.0),',',PMHTRK(8.0),',',OPHTRK(8.0)
LIST = 'DAILY APX ADRS: ',dayAPAX(8.0),' AM,PM, Off-Pk totals: ',
          AMAPAX(8.0),',',PMAPAX(8.0),',',OPAPAX(8.0)

LIST = '/et          '
endif
;  Write out the Miscellaneous Trips in time period-specific files

   MATO[1] = @MISCAM@, MO=11-18  ; AM MISC Trips
   MATO[2] = @MISCPM@, MO=21-28  ; PM MISC Trips
   MATO[3] = @MISCOP@, MO=31-38  ; OP MISC Trips
ENDRUN
;
```

17 PP_Auto_Drivers.s

```
; ===================================================================
;  PP_Auto_Drivers.s
;  MWCOG Version 2.2  Model
;        Note: Bucket Rounding is now removed
;
;  This program is used to develop 1-occ, 2-occ, and 3+occ auto driver
;  trip tables directly from a pump-prime total person trip table.
;  The trips are developed using auto driver percentages
;  from a pre-existing (or seed) mode choice output file
;  and 'off-the-shelf' disaggregation curves to arrive at auto driver
;  trips in occupant categories.
; ===================================================================
;
;
;//////////////////////////////////////////////////////////////////
;
; First, establish Input/Output filenames:
LOOP PURP=1,4  ;  We'll Loop 4 times, for each purpose
               ;  Note default auto driver shares and occupant
               ;  shares to be used in case no seed shares exist

IF (PURP=1)     ; HBW Loop
 PPPERSON = 'HBWESTPP.PTT'; HBW Pump Prime Person Trips          (Input)
 PPPTABNO =  7            ; Table no. for total trips PP Person trip file
 SEED_MCH = 'INPUTS\HBWMC.OLD'   ; HBW Mode Choice file          (Input)
```

```
 PP123OCC = 'HBWPP.ADR'   ; HBW auto driver trips- 1,2,3+ Occc.   (Output)
 DADRSHAR =  0.7546       ; DFLT HBW Auto Driver Share
 DOCC1PCT =  0.8840       ; DFLT Share of HBW Adrs that are 1  occ Adrs
 DOCC2PCT =  0.1142       ; DFLT Share of HBW Adrs that are 2  occ Adrs
 DOCC3PCT =  0.0018       ; DFLT Share of HBW Adrs that are 3+ occ Adrs
 PURPOSE  = 'HBW'         ;

ELSEIF (PURP=2) ; HBS Loop

 PPPERSON = 'HBSESTPP.PTT'; HBS Pump Prime Person Trips       (Input)
 PPPTABNO =  7            ; Table no. for total trips PP Person trip file
 SEED_MCH = 'INPUTS\HBSMC.OLD'   ; HBS Mode Choice file       (Input)
 PP123OCC = 'HBSPP.ADR' ; HBS auto driver trips- 1,2,3+ Occc.   (Output)
 DADRSHAR =  0.7966       ; DFLT HBS Auto Driver Share
 DOCC1PCT =  0.8141       ; DFLT Share of HBS Adrs that are 1  occ Adrs
 DOCC2PCT =  0.1560       ; DFLT Share of HBS Adrs that are 2  occ Adrs
 DOCC3PCT =  0.0299       ; DFLT Share of HBS Adrs that are 3+ occ Adrs
 PURPOSE  = 'HBS'         ;

ELSEIF (PURP=3) ; HBO Loop

 PPPERSON = 'HBOESTPP.PTT'; HBO Pump Prime Person Trips       (Input)
 PPPTABNO =  7            ; Table no. for total trips PP Person trip file
 SEED_MCH = 'INPUTS\HBOMC.OLD'   ; HBO Mode Choice file       (Input)
 PP123OCC = 'HBOPP.ADR' ; HBO auto driver trips- 1,2,3+ Occc.  (Output)
 DADRSHAR =  0.6722       ; DFLT HBO Transit Share
 DOCC1PCT =  0.6806       ; DFLT Share of HBO Adrs that are 1  occ Adrs
 DOCC2PCT =  0.2358       ; DFLT Share of HBO Adrs that are 2  occ Adrs
 DOCC3PCT =  0.0836       ; DFLT Share of HBO Adrs that are 3+ occ Adrs
 PURPOSE  = 'HBO'         ;

ELSEIF (PURP=4) ; NHB Loop

 PPPERSON = 'NHBESTPP.PTT'; NHB Pump Prime Person Trips       (Input)
 PPPTABNO =  4            ; Table no. for total trips PP Person trip file
 SEED_MCH = 'INPUTS\NHBMC.OLD'   ; NHB Mode Choice file       (Input)
 PP123OCC = 'NHBPP.ADR' ; NHB auto driver trips- 1,2,3+ Occc.   (Output)
 DTRNSHAR =  0.7608       ; DFLT NHB Auto Driver Share
 DOCC1PCT =  0.8014       ; DFLT Share of NHB Adrs that are 1  occ Adrs
 DOCC2PCT =  0.1636       ; DFLT Share of NHB Adrs that are 2  occ Adrs
 DOCC3PCT =  0.0350       ; DFLT Share of NHB Adrs that are 3+ occ Adrs
 PURPOSE  = 'NHB'         ;

ENDIF
;
;//////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
    MATI[1]=@SEED_MCH@           ;  MC model ouput
    MATI[2]=@PPPERSON@           ;  PP Person trips

 ;
 ; First, put 'pump prime' person trips in mtx 10 and 'seed' person
 ; trips in mtx 44. If pp persons exist but no 'seed' persons exist
 ; then apply default transit shares and adr. occ shares.  Otherwise,
 ; compute auto auto driver/occ shares directly, i.e.,
 ; 1-occ adrs/persons, 2-occ adrs/persons, and 3+occ adrs/persons)
 ;

 MW[10] = MI.2.@PPPTABNO@     ; Pump Prime Person trips


; Put Mode Choice Mats 1-7, respectively, The tables are:
; 1/LOVADRs 2/LOVAPSNs 3/Trn_Wk 4/Trn_Dr 5/HOV2ADRs 6/HOVPSNs 7/HOV3+ADRs
; HOV trips refer to carpool trips on special prioity facilities.
; Carpools not on special facilities are subsumed in the LOV group.

FILLMW MW[1] = MI.1.1,2,3,4,5,6,7

       MW[8] = MW[1] + MW[5] + MW[7] ;  'seed' auto driver total (LOV&HOV)

;  If the PP person trip table has trips but the seed person trips
;  does not let's put default values just in case..

JLOOP
  MW[44] =  MW[2] +  MW[3] + MW[4] + MW[6] ;    Total MC Model Person

  ;  If pump prime person trips exist but 'seed' person trips do not
  ;  Then apply default auto driver/occupant level share defaults

  IF (MW[10] > 0 & MW[44] = 0) ;
     MW[60] = 1.0   ; counter for the no. of cases (i/js)

     MW[50]  = MW[10] * (@DADRSHAR@) * @DOCC1PCT@   ; Apply default
     MW[51]  = MW[10] * (@DADRSHAR@) * @DOCC2PCT@   ; auto drv / occupant
     MW[52]  = MW[10] * (@DADRSHAR@) * @DOCC3PCT@   ; shares

     IF (MW[50] > MW[10])
         MW[50] = MW[10]
         MW[51] = 0
         MW[52] = 0
     ENDIF
  ;

  ; Otherwise estimate auto driver/occupant level shares from mode
  ; choice output

  ELSEIF ((MW[10] > 0 & MW[44] > 0) || (MW[10] = 0 & MW[44] > 0))

  ; Compute LOV Car Occs --put in mtx 20
  ; Note: LOV contains SOV's and background HOVs (Those not on priority
  ; facilities)
      IF (MW[1]  = 0)
         MW[20] = 0
       ELSE
         MW[20] = MW[2]/MW[1]    ; the LOV Avg Auto Occupancy
      ENDIF

  ; Determine LOV Vehicles in 1,2,3&4+ occupant groups using model
  ; COG's disaggrgegation model.

       IF       (MW[20]  < 1.0050) ;  Make sure the computed Car Occ.
                 MW[20]  = 1.0050  ;  is between 1.005 and 2.500
         ELSEIF (MW[20]  > 2.5000) ;  -- if not establish boundary
                 MW[20]  = 2.5000  ;     conditions
       ENDIF
  ;
  ; Apply Car Occ. Pct Model-Computes Pct Vehs.in Occ groups as function
  ; of avg auto occ.

      IF     (MW[20] = 1.0050 - 1.1199999)
         MW[21] =  2.00264 - (0.9989 * MW[20]) ; Pct of 1-Occ Vehs
         MW[22] = -1.00050 + (0.9952 * MW[20]) ; Pct of 2-Occ Vehs
         MW[23] = -0.00158 + (0.0029 * MW[20]) ; Pct of 3-Occ Vehs
         MW[24] = -0.00056 + (0.0008 * MW[20]) ; Pct of 4-Occ Vehs
       ELSEIF (MW[20] = 1.1200 - 2.5000)
         MW[21] =  1.59600 - (0.6357 * MW[20]) ; Pct of 1-Occ Vehs
         MW[22] = -0.31143 + (0.3800 * MW[20]) ; Pct of 2-Occ Vehs
         MW[23] = -0.17082 + (0.1540 * MW[20]) ; Pct of 3-Occ Vehs
         MW[24] = -0.11375 + (0.1017 * MW[20]) ; Pct of 4-Occ Vehs
      ENDIF


  ;
  ;  if we're working with an intrazonal
  ;  situation, make all auto drivers SOV.
  ;  Override modeled shares here
      IF (i=j)  ;
```

```
       MW[21] =  1.00    ; Pct of 1-Occ Vehs
       MW[22] =  0.00    ; Pct of 2-Occ Vehs
       MW[23] =  0.00    ; Pct of 3-Occ Vehs
       MW[24] =  0.00    ; Pct of 4-Occ Vehs
     ENDIF

  ;   Apply Modeled Pcts to the Auto Drivers

   MW[31] =(MW[21] * MW[1]) ; Estimated LOV 1 occ vehicles
   MW[32] =(MW[22] * MW[1]) ; Estimated LOV 2 occ vehicles
   MW[33] =(MW[23] * MW[1]) ; Estimated LOV 3 occ vehicles
   MW[34] =(MW[24] * MW[1]) ; Estimated LOV 4+occ vehicles


  ; compute add HOV2 & HOV3 trips from MC file to LOV dissagg. trips,
  ; also combine 3 & 4+ occ. auto driver trips into one group.

   MW[41] = MW[31]                          ;Total seed 1-Occ Auto Drivers
   MW[42] = MW[32] +  MW[5]                 ;           2-occ(lov+carpool)
   MW[43] = MW[33] + MW[34] + MW[7]         ;           3-occ(lov+carpool)
   MW[46] = MW[41] + MW[42] + MW[43]        ;      Total seed auto drivers

  ;  Now distribute pump prime person trips based on the above
  ;
     IF (MW[46] = 0)   ;  if total seed auto drivers are zero
         MW[50] = 0    ;  then auto occ. sub groupings are zero too.
         MW[51] = 0    ;
         MW[52] = 0    ;

     ELSE              ; otherwise compute pp auto drivers with freeze-dried
                       ; auto driver/occupant level shares...
        MW[50]  = MW[10] * (MW[46]/MW[44]) * (MW[41]/(MW[46]))   ;
        MW[51]  = MW[10] * (MW[46]/MW[44]) * (MW[42]/(MW[46]))   ;
        MW[52]  = MW[10] * (MW[46]/MW[44]) * (MW[43]/(MW[46]))   ;
           IF (MW[50] > MW[10])
               MW[50] = MW[10]
               MW[51] = 0
               MW[52] = 0
           ENDIF


     ENDIF

  ENDIF               ;
ENDJLOOP            ;


 MW[53] = MW[50] + MW[51] + MW[52] ; total output auto drivers

JLOOP

  ; Lets sum up the above to get neat total summaries

   seedpsn  = seedpsn  + MW[44]  ;  Mode choice(seed) person trips
   seedadri = seedadri + MW[8]   ;  Mode choice(seed) auto dr trips
   seedadr1 = seedadr1 + MW[41]  ;  Estim. seed 1-occ auto dr trips
   seedadr2 = seedadr2 + MW[42]  ;  Estim. seed 2-occ auto dr trips
   seedadr3 = seedadr3 + MW[43]  ;  Estim. seed 3+occ auto dr trips
   seedadro = seedadro + MW[46]  ;  Sum of seed 1,2,3+ Occ auto dr trips
   pppsn    = pppsn    + MW[10]  ;  Pump Prime person trips
   ppadr1   = ppadr1   + MW[50]  ;  Est. Pump Prime 1-occ auto dr trips
   ppadr2   = ppadr2   + MW[51]  ;  Est. Pump Prime 2-occ auto dr trips
   ppadr3   = ppadr3   + MW[52]  ;  Est. Pump Prime 3+occ auto dr trips
   ppadr    = ppadr    + MW[53]  ;  Est. Pump Prime total auto dr trips

ENDJLOOP

 IF (I == ZONES)
```

```
;
; Compute Regional Seed/Pump Prime Auto Dr Shares/Occ. distributions
;
   IF (seedpsn = 0)
        sadrpct = 0
     ELSE
        sadrpct = seedadri/seedpsn  ; seed auto driver pct
   ENDIF

   IF (seedadro = 0)
       s1adpt   = 0
       s2adpt   = 0
       s3adpt   = 0
   ELSE
       s1adpt  = seedadr1/seedadro ; seed 1-occ adr pct
       s2adpt  = seedadr2/seedadro ; seed 2-occ adr pct
       s3adpt  = seedadr3/seedadro ; seed 3+occ adr pct
   ENDIF

   IF (pppsn    = 0)
       padrpct  = 0
   ELSE
       padrpct = ppadr/pppsn       ; Pump Prime auto driver pct
   ENDIF

   IF (ppadr    = 0)
       p1adpt   = 0
       p2adpt   = 0
       p3adpt   = 0
   ELSE
       p1adpt  = ppadr1/ppadr      ; Pump Prime 1-occ adr pct
       p2adpt  = ppadr2/ppadr      ; Pump Prime 2-occ adr pct
       p3adpt  = ppadr3/ppadr      ; Pump Prime 3+occ adr pct
   ENDIF


   LIST='/bt   '
   LIST='Summary of ','@PURPOSE@',' Pump-Prime Auto Driver Trip Results'
   LIST='   '
   LIST='Total Mode Choice Model (seed) Person Trips: ', seedpsn(10)
   LIST='Total Mode CHoice Model (seed) AutoDr Trips: ', seedadri(10)
   LIST='Total seed 1-Occ Auto Dr. Trips:             ', seedadr1(10)
   LIST='Total seed 2-Occ Auto Dr. Trips:             ', seedadr2(10)
   LIST='Total seed 3+Occ Auto Dr. Trips:             ', seedadr3(10)
   LIST='Sum of seed 1,2,3+ Auto Dr. Trips:           ', seedadro(10)
   LIST='Total Pump Prime Person Trips:               ', pppsn(10)
   LIST='Total PP 1-Occ. Auto Driver Trips:           ', ppadr1(10)
   LIST='Total PP 2-Occ. Auto Driver Trips:           ', ppadr2(10)
   LIST='Total PP 3+Occ. Auto Driver Trips:           ', ppadr3(10)
   LIST='Sum of PP 1,2,3+ Auto Driver Trips:          ', ppadr(10)
   LIST='   '
   List=' Summary of Input/Output Shares'
   List='Input AutoDr Share: ', sadrpct(6.2),
   '    1,2,3+Occ.AutoDr.Shares: ',s1adpt(6.2),s2adpt(6.2),s3adpt(6.2)
   List='Output AutoDr.Share:', padrpct(6.2),
   '    1,2,3+Occ.AutoDr.Shares: ',p1adpt(6.2),p2adpt(6.2),p3adpt(6.2)
   LIST='/et   '
 ENDIF

MATO=@PP123OCC@,MO=50,51,52 ; output file designation

ENDRUN
ENDLOOP
;
```

18 PREFARTP.S

```
;=================================================================
;  PREFARETP.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)
;
;   Programmer: Milone
;   Date:        11/08/06
;
;    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

;
ZONESIZE        =  2144                 ; internal zones
Fin_Area_File   = 'SHLGAM.FIN'          ; from output SD
GIS_Area_File   = 'INPUTS\GISWKAAM.ASC' ; from \INPUTS SD
Fare_Zone_File  = 'INPUTS\tazfrzn.asc'  ; from \INPUTS SD

out_file        = 'fare_a2.asc'

RUN PGM=MATRIX
ZONES=@ZONESIZE@


; Initialize current metrorail walk pct and final pct walk
metwkpct     =  0
finwkpct     =  0

ZDATI[1] = @Fin_Area_File@, Z        =  1- 5,
                            swpct    =  6-10, ; short walk area pct of TAZ
                            lwpct    = 11-15  ; long  walk area pct of TAZ

           finwkpct = zi.1.swpct + zi.1.lwpct
;; print list = I(5), ' ',swpct(10.7),' ',lwpct(10.7),' ',finwkpct(10.7)


ZDATI[2] = @GIS_Area_File@,  Z        =   4- 8,
                             larea    =   9-17,
                             swrarea  =  24-30,
                             lwrarea  =  36-42,
                             smetdst  =  85-91,
                             lmetdst  = 95-101

;
;  compute the total walk area (short and long) to metrorail station
;  we'll add the total 'rail' areas. If the sh/lg distance to metrorail
;  is nonzero, we'll assume 'rail' area pertains to metrorail.
;  5/23/02 change - also if wlklnktp-based final walk pct is zero
;  then metro walk pct will be zero

     if (((zi.2.smetdst = 0) && (zi.2.lmetdst = 0)) || (finwkpct = 0))
           metwkpct  =  0

       else
           metwkpct  =
           round( ((zi.2.swrarea + zi.2.lwrarea)/(zi.2.larea)) * 1000.0)
     endif

;  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
;-------------------------------------------------------------------------------
; 1/31/08 rm - add checking routine to make sure the BUS fare zone coding is OK
;-------------------------------------------------------------------------------
;  Let's double check that the 'A1' deck read into MFARE2 is intact
;  We'll read
;        1) the active Metrorail list (Met_Node.TB) from Staprotp
;        2) the land use file (ZONE.ASC) to determine active TAZ (Area > 0)
;        3) The Mfare2 A1 deck which has BF zone eqvs with TAZs and Stations
;  We'll abort miserably if:
;        1) A TAZ's BFZ is not within max/mins for an Active TAZ
;        2) A MetroStation's BFZ is not within max/mins for an active station
;        3) If no BFZ eqv. exists for an active station
;
;
;------------------------------------------------------------------

MinBFZ   =   1
MaxBFZ   =  21
MinStaNo =   1
MaxStaNo = 150
NZNS     =2191
;
; Read in the 'active' Metrorail Nodes (73??) normally produced by StaproTP
```

```
; write out the list with an sequence no. 1 - ?)
;
RUN PGM=MATRIX
ZONES= 1
    RECI=MET_NODE.TB, Fields= 10-13  ; read list of Metrorail Nodes (cols 10-13)
         _IDX= _IDX + 1                      ; add sequence variable
         Print LIST=_Idx(8.0),               ; write this back out
                 RECI.NFIELD[1](8.0),        ;
                 file=MET_NODE_LKP.txt


    LOG PREFIX=MATRIX, VAR= _IDX            ; save last (max) seq no. for later
ENDRUN

Max_MN_No  = MATRIX._IDX

;-------------------------------------------------------------------------
;  Read in land use and zonal bus fare zone file
;-------------------------------------------------------------------------

RUN PGM=MATRIX
ZONES= @NZNS@

 array nodematch= @Max_MN_No@,
       MBF1     = @Max_MN_No@,
       MBF2     = @Max_MN_No@


 ZDATI[1] = inputs\zone.asc,    Z= 1-4, Area=83-92

 ZDATI[2] = inputs\tazfrzn.asc, Z= 1-8, TazBF1=  9-16,  ;BF1 zone eqv w/ Taz
                                        TazBF2= 17-24,  ;BF2 zone eqv w/ Taz
                                        MetBF1= 41-48,  ;BF1 zone eqv w/ MetSta
                                        MetBF2= 49-56   ;BF2 zone eqv w/ Metsta



;-------------------------------------------------------------------------
;  Abort if zonal bus fare zonea look funny, else print out zonal data
;-------------------------------------------------------------------------
 if (zi.1.area > 0 && (zi.2.TazBF1 < @MinBFZ@ || zi.2.TAZBF1 > @MaxBFZ@))
        List=' Active TAZ: ',I(8),'  has invalid bus fare zone: ',zi.2.TazBF1(8),
             '  -- Fix TAZFRZN.asc file in inthe INPUTS subdir.'
        ABORT
 endif

 if (zi.1.area > 0 )
      Print list =  'TAZ: ',I(8),' Bus Fare Zone Eqvs: ', TazBF1(8), TazBF2(8),
                    '  Area: ',zi.1.area(10.2), file = MfareTAZCheck.txt
 endif


;-------------------------------------------------------------------------
;  read in Metro node list lookup with seq. no here
;-------------------------------------------------------------------------
;
 lookup name = MetNodeList,
 lookup[1]   = 1, result = 2, ; Metro Node
 interpolate =N, Fail=0,0,0, File= Met_Node_LKP.txt


;-------------------------------------------------------------------------
; If at the first 150 records, check Metrorail station bus fare zones
;-------------------------------------------------------------------------
IF (I<=@MaxStaNo@)

   loop idx = 1,@Max_MN_No@
        CurrNode = MetNodeList(1,idx) - 7300. ; convert 7301,7302,.. to 1,2,3...
        if (CurrNode = i )

                nodematch[idx] = 1
                MBF1[idx]      = zi.2.MetBF1
                MBF2[idx]      = zi.2.MetBF2

                if (zi.2.MetBF1 < @MinBFZ@ || zi.2.MetBF1 > @MaxBFZ@)
                    LIST= '  Invalid Bus fare zone equivalent: ', zi.2.MetBF1(8),
                          ' for Metro station', CurrNode(8),
             ' -- Fix TAZFRZN.asc file in inthe INPUTS subdir.'
                    ABORT
                endif
        endif

   endloop
ENDIF

;-------------------------------------------------------------------------
; If Station bus fare zones check out ok, print out the data
;-------------------------------------------------------------------------
IF (I= 151)

        loop idx = 1, @Max_MN_No@
               MetNode = MetNodeList(1,idx)


               print list = 'MetroNode: ',MetNode(8),' Bus Fare Zn 1/2: ',
                             MBF1[idx](8), MBF2[idx](8), File = MfareSTACheck.txt

               if ( nodematch[idx] = 0)
                    LIST= '  Bus fare zone equivalent for Metro Station: 'idx(8),
                          '  is missing in the A1 deck ',
             ' -- Fix TAZFRZN.asc file in inthe INPUTS subdir.'

                    ABORT
               endif
       endloop
endif

;-------------------------------------------------------------------------
; END
;-------------------------------------------------------------------------

ENDRUN
```

19 PUMP_PRIME_SKIMS.S

```
;--------------------------------------------------------------------------
;PUMP_PRIME_SKIMS.S
;MWCOG VERSION 2.2 Model
;
; 6/30/03 MODIFICATIONS FOR IMPROVED TOLL MODELING MADE  rjm
; BUILDING PEAK PUMP PRIME HWY SKIMS & PNR Links
;
; Input  files   -  ZONEHWY.NET          (Zonal highway network,all periods)
; Output files   -  PP_am.skm,pp_op.skm  (AM, Off-peak SOV Skims)
;                                         3 tables in skims files:
;                                           1- time    (min),
;                                           2- distance(whole   mi)
;                                           3- tolls   (1994 cents)
```

```
;
;
;
;   Input files   -  PP_am.skm,pp_op.skm (AM, Off-peak SOV Skims)
;                    tazpnr.eqv          (TAZ pnr equivalency file)
;   Output files  -  pnr_am.tb , pnr_op.tb
;
;
;
;
;
;
; First, convert TAZ/PNR list to a lookup table that
; relates each TAZ to 1 or multiple PNR lots (if multiple lots exist).
; the lookup file name is tazpnr.lkp
; NOTE: The current script assumes that the maximum PNR lots for a
;       given TAZ is 4.
;
run pgm=matrix
  reci=tazpnr.asc, taz=2, pnr=3

  array v_taz=1000, v_pnr=1000

  _cnt=_cnt+1
  v_taz[_cnt]=ri.taz ; read data into arrays
  v_pnr[_cnt]=ri.pnr

  if (i==0) ; last record
    sort array=-v_taz, v_pnr
    _curtaz=v_taz[1] ; starting taz
    print form=10, list=v_taz[1], v_pnr[1], file=tazpnr.lkp
    loop ind=2,_cnt
      if (v_taz[ind]==_curtaz)
        print form=10, list='\\', v_pnr[ind], file=tazpnr.lkp
      else
        _curtaz=v_taz[ind] ; reset taz
        print form=10, list=v_taz[ind], v_pnr[ind], file=tazpnr.lkp
      endif
    endloop
  endif
endrun
;
*copy tazpnr.lkp tazpnr.zfl
;
LOOP PERIOD=1,2       ;  loop through two time periods-- AM, Off-Peak
;-
;
in_tskm = 'inputs\toll.skm'  ; read in toll param file



 IF (PERIOD=1)
    PRD =  'AM'
    IDS =  'AM Pump  Prime Skims'
  ELSE
    PRD =  'OP'
    IDS =  'Off-Peak Pump Prime Skims'
 ENDIF

RUN PGM = HWYLOAD

;
  NETI    = ZONEHWY.NET
  MATO[1] = PP_@PRD@.skm, MO=1-3, FORMAT=MINUTP ; SOV   skims
  ID      = @IDS@

  PHASE=LINKREAD
;-
```

```
  READ FILE = @in_tskm@

   ; Define AM /OP link level tolls by vehicle type here:
       LW.SOV@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(1,LI.TOLLGRP)           ;  SOV
TOLLS in 1994 cents
       LW.HV2@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(2,LI.TOLLGRP)           ;  HOV 2
occ TOLLS in 1994 cents
       LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP)           ;  HOV
3+occ TOLLS in 1994 cents
       LW.TRK@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(4,LI.TOLLGRP)           ;  Truck
TOLLS in 1994 cents
       LW.APX@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(5,LI.TOLLGRP)           ;  AP Pax
TOLLS in 1994 cents

   ; Define AM /OP Equivalent 'toll minutes' by vehicle type here:
       LW.SOV@PRD@_tm = (LW.SOV@PRD@TOLL / 100.0) *    SV@PRD@EQM  ;  SOV
Time(min) equiv. of toll value in 1994$
       LW.HV2@PRD@_tm = (LW.HV2@PRD@TOLL / 100.0) *    H2@PRD@EQM  ;  HOV 2 occ
Time(min) equiv. of toll value in 1994$
       LW.HV3@PRD@_tm = (LW.HV3@PRD@TOLL / 100.0) *    H3@PRD@EQM  ;  HOV 3+occ
Time(min) equiv. of toll value in 1994$
       LW.TRK@PRD@_tm = (LW.TRK@PRD@TOLL / 100.0) *    TK@PRD@EQM  ;  Truck
Time(min) equiv. of toll value in 1994$
       LW.APX@PRD@_tm = (LW.APX@PRD@TOLL / 100.0) *    AP@PRD@EQM  ;  APAX
Time(min) equiv. of toll value in 1994$

   ; Define AM /OP IMPEDANCE (HIGHWAY TIME + EQV.TIME) by vehicle type here:
       LW.SOV@PRD@IMP  = LW.SOV@PRD@_tm + LI.@PRD@HTIME            ; SOV  IMPEDANCE
       LW.HV2@PRD@IMP  = LW.HV2@PRD@_tm + LI.@PRD@HTIME            ; HOV 2
IMPEDANCE
       LW.HV3@PRD@IMP  = LW.HV3@PRD@_tm + LI.@PRD@HTIME            ; HOV 3+
IMPEDANCE
       LW.TRK@PRD@IMP  = LW.TRK@PRD@_tm + LI.@PRD@HTIME            ; TRUCK
IMPEDANCE
       LW.APX@PRD@IMP  = LW.APX@PRD@_tm + LI.@PRD@HTIME            ; APPAX
IMPEDANCE


; Limit Codes:
;  0/1 = No prohibitions
;  2   = prohibit 1/occ autos,trucks
;  3   = prohibit 1&2occ autos,trucks
;  4   = prohibit trucks
;  5   = prohibit non-airport trips (year 2000 and beyond)
;  6-8 = Ununsed
;  9   = prohibit all traffic use
;
;
;  Define the three path types here:
;
    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
;
; Specify path skimming  Time, distance, & toll skims over minimum time paths
; Note that override values of 0 will be inserted for disconnected ijs
;
  PHASE=ILOOP
    PATHLOAD PATH=LW.SOV@PRD@IMP, EXCLUDEGRP=1,              ; SOV   paths
             MW[1]=PATHTRACE(LI.@PRD@HTIME), NOACCESS=0, ; -excluding links
             MW[2]=PATHTRACE(LI.DISTANCE),NOACCESS=0,    ;  w/ LIMIT=2,3,5-9
             MW[3]=PATHTRACE(LI.@PRD@TOLL),    NOACCESS=0     ;

;----------------------------------------------------------------------
; scaling, rounding of skim tables
;----------------------------------------------------------------------
```

```
     mw[1] = ROUND(MW[1])                    ; round time skims to whole min

     mw[2] = Round(MW[2]*100)                ; round  distance skims to
                                             ; 100ths of mi

     mw[3] = ROUND(MW[3])                    ; round tolls to whole
                                             ; 1994 cents
;----------------------------------------------------------------------
; I will print selected rows of skim files
;----------------------------------------------------------------------


     IF (i = 920)                        ;  for select rows (Is)
;         printrow MW=1-3, j=1-2191       ;  print work matrices 1-3
          printrow MW=2  , j=741          ;  print work matrices 1-3
     ENDIF                               ;  row value to all Js.
  ENDPHASE
ENDRUN



;---------------------------------------------------------------------------
;       Step 2: Park-&-Ride Access Data
;---------------------------------------------------------------------------
;
;  Next write out TAZ-to-PNR links based on skim times/distances
;  for each time period
;
RUN PGM=MATRIX
 MATI[1]=PP_@PRD@.SKM


        LOOKUP NAME=TAZPNRLK,
               LOOKUP[1] = 1, RESULT=2,; pnr node 1
               LOOKUP[2] = 1, RESULT=3,; pnr node 2 (if any)
               LOOKUP[3] = 1, RESULT=4,; pnr node 3 (if any)
               LOOKUP[4] = 1, RESULT=5,; pnr node 4 (if any)
               INTERPOLATE=N, FAIL=0,0,0, FILE=TAZPNR.LKP

        ZDATI[1]=BASEZON.DAT, Z=1-5,XCRD = 7-14, YCRD = 15-22

        MW[1] = mi.1.1  ;       Time     (min)
        MW[2] = mi.1.2  ;       Distance (1/100ths mi)

;  calculate the i/j airline distance in miles MW[3]  and

        JLOOP
           IF (XCRD[I] = 0 || XCRD[J] = 0)
              MW[3] = 0
           ELSE
              XCHGFT =   XCRD[I] - XCRD[J]
              YCHGFT =   YCRD[I] - YCRD[J]
              MW[3]  =   (SQRT((XCHGFT**2) + (YCHGFT**2)))/ 5280.0
           ENDIF
         ENDJLOOP
;  Insert 50% of lowest time/distance value into intrazonal cells
        JLOOP
          IF (J == I)
              MW[1]=(0.50 * LOWEST(1,1,0.0001,99999.9))
              MW[2]=(0.50 * LOWEST(2,1,0.0001,99999.9))
              MW[3]=(0.50 * LOWEST(3,1,0.0001,99999.9))
          ENDIF
        ENDJLOOP
```

```
 JLOOP
    pnr = tazpnrlk(1,j)
        IF (pnr          > 0   &               ;---- Park-&-Ride Station ----
               ((i = 1   -1229 & j = 1   -1229)| ;---- DC/Maryland Internals ----
                (i = 1230-2141 & j = 1230-2141)| ;---- Virginia Internals ----
                (i = 1780-1919 & j = 1   -1229)| ;---- Loudoun to DC/Maryland ----
                (i = 2135-2141 & j = 1   -1229))) ;---- Jefferson to DC/Maryland ---
-


             ; set default airline distance tolenances here:

              dtol= 8.0 ; default distance limit to pnr stations is  9mi
                        ; limit is shorter for more developed juris.
              if (I=1-319,1230-1329,1330-1399)  dtol=4.00; 4mi/dc,arl/alx
              if (I=320-639,640-1029,1400-1779) dtol=5.00; 7mi/mtg,pg,ffx

              IF (MW[1]  > 0  & MW[3]  > 0.0001 &  MW[3] <= dtol) ;
                     _SPEED = ROUND (MW[2] / MW[1] * 0.60)
                     _dis00 =        MW[2]
                     PRINT LIST='SUPPORT N=',i(4),'-',pnr(5),
                     ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                      _SPEED(3),' ;  jtaz/pnr(1)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                     FILE=PNR_@PRD@.TB

                     if (tazpnrlk(2,j) > 0)
                        pnr2   = tazpnrlk(2,j)
                        PRINT LIST='SUPPORT N=',i(4),'-',pnr2(5),
                        ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                         _SPEED(3),' ;  jtaz/pnr(2)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                         FILE=PNR_@PRD@.TB
                     endif
                     if (tazpnrlk(3,j) > 0)
                        pnr3    = tazpnrlk(3,j)
                        PRINT LIST='SUPPORT N=',i(4),'-',pnr3(5),
                        ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                         _SPEED(3),' ;  jtaz/pnr(3)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                         FILE=PNR_@PRD@.TB
                     endif
                     if (tazpnrlk(4,j) > 0)
                        pnr4    = tazpnrlk(4,j)
                        PRINT LIST='SUPPORT N=',i(4),'-',pnr4(5),
                        ' DIST=',_dis00(5),' ONEWAY=Y MODES=11 SPEED=',
                         _SPEED(3),' ;   jtaz/pnr(4)=  ',j(5),
                      ' Airln Dist(mi): ',MW[3],
                         FILE=PNR_@PRD@.TB
                     endif

                ENDIF
        ENDIF

 ENDJLOOP

ENDRUN
ENDLOOP   ;
```

20 set_CPI.s

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

```
; SET_CPI.S   Version 2.2 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_????.bat file)
;---------------------------------------------------------------------

CPI_Rept        = 'MFARE2_CPI.TXT'                ; Output Reporting file

;
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 between base and current 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                ; Modeled year greater than current CPI year
                             ;  Use current CPI year for computing the deflation
factor
           _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                                 =
;===============================================================
```

21 set_factors.s

```
;-------------------------------------------------------------------
; SET_FACTORS.S   Version 2.2 Model
;-------------------------------------------------------------------

; MWCOG Version 2.2  Model
;  Set up time penalty & K-factor files used in Trip Distribution
; Income-based Time Penalty Files & Superzone-to-TAZ Equivalency File
;  have now been removed.  Null placemarker files are now used.
;
; K-Factors for HBW purpose have been modifed
;    HBS, HBO, NHB Ks are now removed
;
; Input Files:
;
;  HBWPEN.03=      HBW TIME PENALITES (Inc 1-4)  12x12 (ASCII)
;  HBSPEN.03=      HBS TIME PENALITES (Inc 1-4)  12x12 (ASCII)
;  HBOPEN.03=      HBO TIME PENALITES (Inc 1-4)  12x12 (ASCII)
;  NHBPEN.03=      NHB TIME PENALITES            12x12 (ASCII)
;
;  PENEXPND =      JURISV21.EQV'  TIME PENALTY ZONE-TO-TAZ
```

```
;                                  EQUIVALENCE FILE
; Output Files:
;  HBWPEN.DAT=     HBW Time Penalties at 2191 zone level (Inc 1-4)
;  HBSPEN.DAT=     HBS Time Penalties at 2191 zone level (Inc 1-4)
;  HBOPEN.DAT=     HBO Time Penalties at 2191 zone level (Inc 1-4)
;  NHBPEN.DAT=     NHB Time Penalties at 2191 zone level
;
;  HBWK.DAT  =     HBW          K-Factor Matrix 2191 zone level
;  HBSK.DAT  =     HBS          K-Factor Matrix 2191 zone leve
;  HBOK.DAT  =     HBO          K-Factor Matrix 2191 zone leve
;  NHBK.DAT  =     NHB          K-Factor Matrix 2191 zone leve
;  MTKK.DAT  =     Medium Truck K-Factor Matrix 2191 zone leve
;  HTKK.DAT  =     Heavy  Truck K-Factor Matrix 2191 zone leve
;
;-------------------------------------------------------------------

; -------------------------------------------------------------------
; Time Penalty Files & Superzone-to-TAZ Equivalency File
;   Non-work penalties were updated by JC
;
  HBWPEN   = '..\support\HBWPEN.03'    ;  HBW TIME PENALITES (Inc 1-4)
  HBSPEN   = '..\support\HBSPEN.03'    ;  HBS TIME PENALITES (Inc 1-4)
  HBOPEN   = '..\support\HBOPEN.03'    ;  HBO TIME PENALITES (Inc 1-4)
  NHBPEN   = '..\support\NHBPEN.03'    ;  NHB TIME PENALITES

  PENEXPND = '..\support\JURISV21.EQV' ;  TIME PENALTY ZONE-TO-TAZ
;                                          ;  EQUIVALENCE FILE
;

RUN PGM=MATRIX
ZONES=12

;  Build Income stratified time penalties (min)
;  at 12x12 superdistrict level.

MATI[1] = @HBWPEN@, PATTERN=IJM:V, FIELDS=1-5,6-10,0,11-15-4
MATI[2] = @HBSPEN@, PATTERN=IJM:V, FIELDS=1-5,6-10,0,11-15-4
MATI[3] = @HBOPEN@, PATTERN=IJM:V, FIELDS=1-5,6-10,0,11-15-4
MATI[4] = @NHBPEN@, PATTERN=IJM:V, FIELDS=1-5,6-10,0,11-15-1

; ESTABLISH WORK FILES FOR TIME PENALTIES
; HBW/INC 1-4      HBS/INC 1-4      HBO/INC 1-4       NHB
; --------------   ---------------  ----------------  ----------------
 MW[1]  = MI.1.1,  MW[5]  = MI.2.1,  MW[9]  = MI.3.1,  MW[13] = MI.4.1
 MW[2]  = MI.1.2,  MW[6]  = MI.2.2,  MW[10] = MI.3.2
 MW[3]  = MI.1.3,  MW[7]  = MI.2.3,  MW[11] = MI.3.3
 MW[4]  = MI.1.4,  MW[8]  = MI.2.4,  MW[12] = MI.3.4

; NOW, WRITE OUT THE 12X12 TIME PENATLY MATRICES

MATO[1] = PENALTY.TEM, MO= 1- 13;
ENDRUN

; -------------------------------------------------------------------
; NEXT, EXPAND TIME PENALTY MATRICES AT SUPERZONE LEVEL TO 2191 TAZ LEVEL

RUN PGM=MATRIX
ZONES=12
MATI[1] = PENALTY.TEM

; ESTABLISH WORK FILES FOR TIME PENALTIES
;    HBW/INC 1-4      HBS/INC 1-4      HBO/INC 1-4         NHB
; --------------   ---------------  ----------------  ----------------
 MW[1] = MI.1.1,  MW[5] = MI.1.5,  MW[9]  = MI.1.9,  MW[13] = MI.1.13
 MW[2] = MI.1.2,  MW[6] = MI.1.6,  MW[10] = MI.1.10
 MW[3] = MI.1.3,  MW[7] = MI.1.7,  MW[11] = MI.1.11
 MW[4] = MI.1.4,  MW[8] = MI.1.8,  MW[12] = MI.1.12
```

```
RENUMBER FILE=@PENEXPND@, ZONES=2191, MISSINGZI=M, MISSINGZO=M

MATO[1] = HBWPEN.DAT, MO= 1- 4 ;
MATO[2] = HBSPEN.DAT, MO= 5- 8 ;
MATO[3] = HBOPEN.DAT, MO= 9-12 ;
MATO[4] = NHBPEN.DAT, MO=   13 ;

;
; ///////////////////////////////////////////////////////////////////////
; \\\\\\\\\    5) Begin K-Factor building, by trip purpose.          \\
; \\\\\\\\\       K-Factors values below are scaled by 1000.         \\
; \\\\\\\\\       (i.e., a value of 1000 below means K-Ftr of 1)     \\
; \\\\\\\\\       The will be applied across income strata in trip   \\
; \\\\\\\\\       distribution.                                      \\
; ///////////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
ZONES=2191
; Now Begin the K-Factor Establishment
; Initialize K-factor matrices for each purpose:

MW[1] = 1000.0 ;  HBW       K-factor matrix
MW[2] = 1000.0 ;  HBS       K-factor matrix
MW[3] = 1000.0 ;  HBO       K-factor matrix
MW[4] = 1000.0 ;  NHB       K-factor matrix
MW[5] = 1000.0 ;  Med Truck K-factor matrix
MW[6] = 1000.0 ;  Hvy Truck K-factor matrix

; Establish Output Files for each purpose:

MATO[1] = HBWK.DAT ,MO=1
MATO[2] = HBSK.DAT ,MO=2
MATO[3] = HBOK.DAT ,MO=3
MATO[4] = NHBK.DAT ,MO=4
MATO[5] = MTKK.DAT ,MO=5
MATO[6] = HTKK.DAT ,MO=6

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

; |-------------------------------------------------------------------|
; |------ Start of K-Factor Specifications for All Purposes  -----|
; |-------------------------------------------------------------------|
;; Note updated TAZ ranges for mtg/pg (Sept 2006)
;;   MTG MD    320-639,648,650
;;   PG  MD    640-647,649,651-1029

;; K-Factors per Ver 2.2I
IF      (I =   89-  319)
       MW[1] = 1700,  INCLUDE=             1-   88 ; dcncr - dc cr
  ELSEIF (I =    320-639,648,650)
       MW[1] = 1600,  INCLUDE=     320-639,648,650 ; Mtg - Mtg
       MW[1] = 2000,  INCLUDE=             1-   88 ; Mtg - Dc core

  ELSEIF (I = 1920- 2069)
       MW[1] = 3200,  INCLUDE=             1-   88 ; pw - dccr

  ELSEIF (I  = 1230- 1238)
       MW[1] = 2500,  INCLUDE=             1-   88 ; arl core - dccr

  ELSEIF (I  = 1239- 1329)
       MW[1] = 1700,  INCLUDE=             1-   88 ; arl non core - dccr

 ELSEIF  (I = 1330- 1399)
       MW[1] = 1600,  INCLUDE=             1-   88 ; alx   - dc cr

  ELSEIF (I = 1400- 1779)
       MW[1] = 2000,  INCLUDE=             1-   88 ; ffx- dccr
       MW[1] = 1400,  INCLUDE=            89-  319 ; ffx- dcncr
```

```
      MW[1] =  800,  INCLUDE=         1400- 1779 ; ffx- ffx

  ELSEIF  (I = 1030- 1059)
      MW[1] =  900,  INCLUDE=  1030- 1059 ; frd- frd

ENDIF



; Specify Medium Truck K-Factors / MW[5] here:

IF (I =0320- 0505,0510-0582,0585-0593) MW[5] =01300, INCLUDE= 0320-0505
IF (I =0320- 0505,0510-0582,0585-0593) MW[5] =01300, INCLUDE= 0510-0582
IF (I =0320- 0505,0510-0582,0585-0593) MW[5] =01300, INCLUDE= 0585-0593
IF (I =  0640- 0996)                   MW[5] =02200, INCLUDE= 0640-0996
IF (I =  1230- 1311)                   MW[5] =01800, INCLUDE= 1230-1311
IF (I =  1330- 1389)                   MW[5] =02400, INCLUDE= 1330-1389
IF (I =  1400- 1755)                   MW[5] =01900, INCLUDE= 1400-1755
IF (I =1780- 1780,1781-1905)  MW[5] =01600, INCLUDE= 1780,1781-1905
IF (I =  1920- 2061)                   MW[5] =01800, INCLUDE= 1920-2061
IF (I =  0001- 0088)                   MW[5] =02600, INCLUDE= 0001-0088
IF (I =  0089- 0319)                   MW[5] =02100, INCLUDE= 0089-0319
IF (I =1825- 1898,1900-1905)  MW[5] =02000, INCLUDE= 1825-1898,1900-1905
IF (I =  0089- 0101)                   MW[5] =01900, INCLUDE= 0089-0101
IF (I =  0102- 0113)                   MW[5] =01900, INCLUDE= 0102-0113
IF (I =  0114- 0122)                   MW[5] =01900, INCLUDE= 0114-0122
IF (I =  0123- 0132)                   MW[5] =01900, INCLUDE= 0123-0132
IF (I =  0133- 0142)                   MW[5] =01900, INCLUDE= 0133-0142
IF (I =  0143- 0148)                   MW[5] =01900, INCLUDE= 0143-0148
IF (I =  0149- 0161)                   MW[5] =01900, INCLUDE= 0149-0161
IF (I =  0162- 0171)                   MW[5] =01900, INCLUDE= 0162-0171
IF (I =  0172- 0182)                   MW[5] =01900, INCLUDE= 0172-0182
IF (I =  0183- 0193)                   MW[5] =01900, INCLUDE= 0183-0193
IF (I =  0194- 0202)                   MW[5] =03500, INCLUDE= 0194-0202
IF (I =  0203- 0207)                   MW[5] =03500, INCLUDE= 0203-0207
IF (I =  0208- 0224)                   MW[5] =03500, INCLUDE= 0208-0224
IF (I =  0225- 0245)                   MW[5] =03500, INCLUDE= 0225-0245
IF (I =  0246- 0262)                   MW[5] =03500, INCLUDE= 0246-0262
IF (I =  0263- 0269)                   MW[5] =03500, INCLUDE= 0263-0269
IF (I =  0270- 0281)                   MW[5] =03500, INCLUDE= 0270-0281
IF (I =  0282- 0291)                   MW[5] =03500, INCLUDE= 0282-0291
IF (I =  0292- 0299)                   MW[5] =03500, INCLUDE= 0292-0299
IF (I =  0300- 0312)                   MW[5] =03500, INCLUDE= 0300-0312
IF (I =  0313- 0319)                   MW[5] =03500, INCLUDE= 0313-0319
IF (I =  0001- 0006)                   MW[5] =03500, INCLUDE= 0001-0006
IF (I =  0007- 0012)                   MW[5] =03500, INCLUDE= 0007-0012
IF (I =  0013- 0018)                   MW[5] =03500, INCLUDE= 0013-0018
IF (I =  0019- 0023)                   MW[5] =03500, INCLUDE= 0019-0023
IF (I =  0024- 0029)                   MW[5] =03500, INCLUDE= 0024-0029
IF (I =  0030- 0035)                   MW[5] =03500, INCLUDE= 0030-0035
IF (I =  0036- 0045)                   MW[5] =03500, INCLUDE= 0036-0045
IF (I =  0046- 0049)                   MW[5] =03500, INCLUDE= 0046-0049
IF (I =  0050- 0054)                   MW[5] =03500, INCLUDE= 0050-0054
IF (I =  0055- 0058)                   MW[5] =03500, INCLUDE= 0055-0058
IF (I =  0059- 0067)                   MW[5] =03500, INCLUDE= 0059-0067
IF (I =  0068- 0071)                   MW[5] =03500, INCLUDE= 0068-0071
IF (I =  0072- 0081)                   MW[5] =03500, INCLUDE= 0072-0081
IF (I =  0082- 0088)                   MW[5] =03500, INCLUDE= 0082-0088
IF (I =1230- 1311,1330-1389,1400-1755) MW[5] =00400, INCLUDE= 0001-0319
IF (I =1780- 1905,1920-2061)           MW[5] =00400, INCLUDE= 0001-0319
IF (I =  0089- 0319)                   MW[5] =01900, INCLUDE= 0001-0088
IF (I =  1030- 1053)                   MW[5] =06600, INCLUDE= 1030-1053
IF (I =  1200- 1223)                   MW[5] =05000, INCLUDE= 1200-1223
IF (I =  1110- 1142)                   MW[5] =05700, INCLUDE= 1110-1142
IF (I =  1780- 1780)                   MW[5] =00001, INCLUDE= 1780
IF (I =  0828- 0833)                   MW[5] =00001, INCLUDE= 0828-0833
IF (I =  1080- 1099)                   MW[5] =02900, INCLUDE= 1080-1099
IF (I = 1030- 1053)  MW[5] =00200, INCLUDE=0320-0505,0510-0582,0585-0593
IF (I = 1030- 1053)  MW[5] =00200, INCLUDE=0594-0627,0583-0584,0506-0509
IF (I =0320- 0505,0510-0582,0585-0593) MW[5] =00300, INCLUDE= 1030-1053
IF (I =0594- 0627,0583-0584,0506-0509) MW[5] =00300, INCLUDE= 1030-1053
IF (I = 1080- 1099) MW[5] =02500, INCLUDE=1230-1311,1330-1389
IF (I = 1080- 1099) MW[5] =02500, INCLUDE=1400-1755,1780-1905,1920-2061
IF (I =1230- 1311,1330-1389)           MW[5] =02000, INCLUDE= 1080-1099
IF (I =1400- 1755,1780-1905,1920-2061) MW[5] =02000, INCLUDE= 1080-1099
IF (I = 1110- 1142)                    MW[5] =00500, INCLUDE=0001-0319
IF (I =  0001- 0319)                   MW[5] =00500, INCLUDE= 1110-1142
IF (I =  1200- 1223)                   MW[5] =02100, INCLUDE= 0001-0319
IF (I = 1200- 1223) MW[5] =02200, INCLUDE=1230-1311,1330-1389
IF (I = 1200- 1223) MW[5] =02200, INCLUDE=1400-1755,1780-1905,1920-2061
IF (I =  1080- 1099)                   MW[5] =01700, INCLUDE= 0001-0319
IF (I =  0640- 0996)                   MW[5] =00700, INCLUDE= 1200-1223
IF (I =0320- 0505,0510-0582,0585-0593) MW[5] =02500, INCLUDE= 1200-1223
IF (I =0594- 0627,0583-0584,0506-0509) MW[5] =02500, INCLUDE= 1200-1223
IF (I =0320- 0505,0510-0582,0585-0593) MW[5] =01500, INCLUDE= 1110-1142
IF (I =0594- 0627,0583-0584,0506-0509) MW[5] =01500, INCLUDE= 1110-1142
IF (I = 1110- 1142) MW[5] =01400, INCLUDE=0320-0505,0510-0582,0585-0593
IF (I = 1110- 1142) MW[5] =01400, INCLUDE=0594-0627,0583-0584,0506-0509

; Specify Heavy Truck K-Factors / MW[6] here:

IF (I =0320- 0505,0510-0582,0585-0593) MW[6] =02000, INCLUDE= 0320-0505
IF (I =0320- 0505,0510-0582,0585-0593) MW[6] =02000, INCLUDE= 0510-0582
IF (I =0320- 0505,0510-0582,0585-0593) MW[6] =02000, INCLUDE= 0585-0593
IF (I = 0640- 0996)                    MW[6] =01500, INCLUDE= 0640-0996
IF (I = 1230- 1311)                    MW[6] =01600, INCLUDE= 1230-1311
IF (I =1306- 1311,1330-1389) MW[6] =01300, INCLUDE= 1306-1311,1330-1389
IF (I = 1400- 1755)                    MW[6] =01600, INCLUDE= 1400-1755
IF (I =1780- 1780,1781-1905) MW[6] =02000, INCLUDE= 1780,1781-1905
IF (I = 1920- 2061)                    MW[6] =01300, INCLUDE= 1920-2061
IF (I = 0001- 0088)                    MW[6] =01500, INCLUDE= 0001-0088
IF (I = 0089- 0319)                    MW[6] =02300, INCLUDE= 0089-0319
IF (I = 0828- 0833)                    MW[6] =00001, INCLUDE= 0828-0833
IF (I =1230- 1311,1330-1389)           MW[6] =00400, INCLUDE= 0001-0319
IF (I =1400- 1755,1780-1905,1920-2061) MW[6] =00400, INCLUDE= 0001-0319
IF (I = 0089- 0319)                    MW[6] =01900, INCLUDE= 0001-0088
IF (I =1825- 1898,1900-1905) MW[6] =01000, INCLUDE= 1035,1045
IF (I =1825- 1898,1900-1905) MW[6] =01000, INCLUDE= 1047
IF (I = 1780- 1780)                    MW[6] =00001, INCLUDE= 1780
IF (I =1825- 1898,1900-1905)  MW[6] =02000, INCLUDE= 1825-1898,1900-1905
IF (I = 1030- 1053)                    MW[6] =03800, INCLUDE= 1030-1053
IF (I = 1200- 1223)                    MW[6] =01200, INCLUDE= 1200-1223
IF (I = 1110- 1142)                    MW[6] =02500, INCLUDE= 1110-1142
IF (I = 1080- 1099)                    MW[6] =01300, INCLUDE= 1080-1099
IF (I =1080- 1099,0997-1007) MW[6] =02500, INCLUDE= 1230-1311,1330-1389
IF (I =1080- 1099,0997-1007) MW[6] =02500, INCLUDE= 1400-1755,1780-1905
IF (I =1080- 1099,0997-1007) MW[6] =02500, INCLUDE= 1920-2061
IF (I =1230- 1311,1330-1389)           MW[6] =02000, INCLUDE= 1080-1099
IF (I =1400- 1755,1780-1905,1920-2061) MW[6] =02000, INCLUDE= 1080-1099
IF (I = 1200- 1223)                    MW[6] =01200, INCLUDE= 0001-0319
IF (I = 1200- 1223)          MW[6] =01200, INCLUDE= 1230-1311,1330-1389
IF (I = 1200- 1223) MW[6] =01200, INCLUDE= 1400-1755,1780-1905,1920-2061
IF (I =0640- 0996,1230-1230)           MW[6] =00700, INCLUDE= 1200-1223
IF (I =0320- 0505,0510-0582,0585-0593) MW[6] =07000, INCLUDE= 1200-1223
IF (I =0594- 0627,0583-0584,0506-0509) MW[6] =05000, INCLUDE= 1200-1223
IF (I = 1200- 1223)                    MW[6] =01500, INCLUDE= 0640-0996
IF (I =1230- 1311,1330-1389)           MW[6] =02000, INCLUDE= 1200-1223
IF (I =1400- 1755,1780-1905,1920-2061) MW[6] =02000, INCLUDE= 1200-1223



; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////   End of K-Factor Specifications for All Purposes  /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

endrun
```

22 Time-of-Day.s

```
; ===================================================================
; Time-of-Day.s
; MWCOG Version 2.2 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  (6:00 - 9:00 AM)
;              -  PM peak  (4:00 - 7:00 PM)
;              -  Off-peak (All Other hrs )
;              A card image file named: 'V2TODTPP.PAR' is used.
;              It contains trip percentages
;              for each time period by purpose, mode, and direction.
;
;   Note: Bucket Rounding is now removed per V 2.2 (1/11/07)
;
;
;
;
;   Environment Variable:
;               _iter_  (Iteration indicator = 'pp','i1'-'i6'
; ===================================================================
;
;
;///////////////////////////////////////////////////////////////////
;                                                                //
; Input/Output filenames:                                        //
;                                                                //
READ FILE=..\support\V2TODTPP.PAR  ; Time of Day Factor File  //
;                                                                //
; 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)  //
 NHBADR = 'NHB%_iter_%.ADR' ; NHB  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 //
 ADROP  = 'OP%_iter_%.ADR'  ; Off-Pk Modeled Total Auto Drivers //
;                                                                //
;///////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
    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]=@NHBADR@    ; NHB 1,2,3+-Occ. Auto Drv. Trips(T1-3)


; Put HBW 1-Occ,2-Occ, 3+ Occ Adrs in tabs  1- 3, respectively
; Put HBS 1-Occ,2-Occ, 3+ Occ Adrs in tabs  4- 6, respectively
; Put HBO 1-Occ,2-Occ, 3+ Occ Adrs in tabs  7- 9, respectively
; Put NHB 1-Occ,2-Occ, 3+ Occ Adrs in tabs 10-12, respectively
;  These are in P/A format and represent the Home-to-NonHome direction

    FILLMW  MW[1]  = MI.1.1,  MI.1.2,  MI.1.3 ; Work 1,2,3+ Occ Adrs P/A
    FILLMW  MW[4]  = MI.2.1,  MI.2.2,  MI.2.3 ; Shop 1,2,3+ Occ Adrs P/A
    FILLMW  MW[7]  = MI.3.1,  MI.3.2,  MI.3.3 ; Othr 1,2,3+ Occ Adrs P/A
    FILLMW MW[10]  = MI.4.1,  MI.4.2,  MI.4.3 ; NHB  1,2,3+ Occ Adrs P/A
```

```
; Put Transpose of the above
; HBW, HBS, HBO, and NHB trip tables in Work Mats 21-32
; The transpose represents the NonHome-to-Home direction

MW[21]=MI.1.1.T, MW[22]=MI.1.2.T, MW[23]=MI.1.3.T; HBW 1,2,3+ Occ Adrs A/P
MW[24]=MI.2.1.T, MW[25]=MI.2.2.T, MW[26]=MI.2.3.T; HBS 1,2,3+ Occ Adrs A/P
MW[27]=MI.3.1.T, MW[28]=MI.3.2.T, MW[29]=MI.3.3.T; HBO 1,2,3+ Occ Adrs A/P
MW[30]=MI.4.1.T, MW[31]=MI.4.2.T, MW[32]=MI.4.3.T; NHB 1,2,3+ Occ Adrs A/P

; Now we're ready to apply apply TOD factors
;
;
 JLOOP

;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
;//////////////// AM Trip Calculations          ////////////////////
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

; AM Peak Period Auto Driver Trips
;    HBW:
MW[40]=(( MW[1]*(@AMWDAHNP@/100.0))+(MW[21]*(@AMWDANHP@/100.0)))/2.0;1occ
MW[41]=(( MW[2]*(@AMWCPHNP@/100.0))+(MW[22]*(@AMWCPNHP@/100.0)))/2.0;2occ
MW[42]=(( MW[3]*(@AMWCPHNP@/100.0))+(MW[23]*(@AMWCPNHP@/100.0)))/2.0;3+oc
;    HBS:
MW[45]=(( MW[4]*(@AMSDAHNP@/100.0))+(MW[24]*(@AMSDANHP@/100.0)))/2.0;1occ
MW[46]=(( MW[5]*(@AMSCPHNP@/100.0))+(MW[25]*(@AMSCPNHP@/100.0)))/2.0;2occ
MW[47]=(( MW[6]*(@AMSCPHNP@/100.0))+(MW[26]*(@AMSCPNHP@/100.0)))/2.0;3+oc
;    HBO:
MW[50]=(( MW[7]*(@AMODAHNP@/100.0))+(MW[27]*(@AMODANHP@/100.0)))/2.0;1occ
MW[51]=(( MW[8]*(@AMOCPHNP@/100.0))+(MW[28]*(@AMOCPNHP@/100.0)))/2.0;2occ
MW[52]=(( MW[9]*(@AMOCPHNP@/100.0))+(MW[29]*(@AMOCPNHP@/100.0)))/2.0;3+oc
;    NHB:
MW[55]=((MW[10]*(@AMNDAHNP@/100.0))+(MW[30]*(@AMNDANHP@/100.0)))/2.0;1occ
MW[56]=((MW[11]*(@AMNCPHNP@/100.0))+(MW[31]*(@AMNCPNHP@/100.0)))/2.0;2occ
MW[57]=((MW[12]*(@AMNCPHNP@/100.0))+(MW[32]*(@AMNCPNHP@/100.0)))/2.0;3+oc
;

;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
;//////////////// PM Trip Calculations          ////////////////////
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

; PM Peak Period Auto Driver Trips
;    HBW:
MW[60]=(( MW[1]*(@PMWDAHNP@/100.0))+(MW[21]*(@PMWDANHP@/100.0)))/2.0;1occ
MW[61]=(( MW[2]*(@PMWCPHNP@/100.0))+(MW[22]*(@PMWCPNHP@/100.0)))/2.0;2occ
MW[62]=(( MW[3]*(@PMWCPHNP@/100.0))+(MW[23]*(@PMWCPNHP@/100.0)))/2.0;3+oc
;    HBS:
MW[65]=(( MW[4]*(@PMSDAHNP@/100.0))+(MW[24]*(@PMSDANHP@/100.0)))/2.0;1occ
MW[66]=(( MW[5]*(@PMSCPHNP@/100.0))+(MW[25]*(@PMSCPNHP@/100.0)))/2.0;2occ
MW[67]=(( MW[6]*(@PMSCPHNP@/100.0))+(MW[26]*(@PMSCPNHP@/100.0)))/2.0;3+oc
;    HBO:
MW[70]=(( MW[7]*(@PMODAHNP@/100.0))+(MW[27]*(@PMODANHP@/100.0)))/2.0;1occ
MW[71]=(( MW[8]*(@PMOCPHNP@/100.0))+(MW[28]*(@PMOCPNHP@/100.0)))/2.0;2occ
MW[72]=(( MW[9]*(@PMOCPHNP@/100.0))+(MW[29]*(@PMOCPNHP@/100.0)))/2.0;3+oc
;    NHB:
MW[75]=((MW[10]*(@PMNDAHNP@/100.0))+(MW[30]*(@PMNDANHP@/100.0)))/2.0;1occ
MW[76]=((MW[11]*(@PMNCPHNP@/100.0))+(MW[31]*(@PMNCPNHP@/100.0)))/2.0;2occ
MW[77]=((MW[12]*(@PMNCPHNP@/100.0))+(MW[32]*(@PMNCPNHP@/100.0)))/2.0;3+oc
;

;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
;//////////////// Off-Pk Trip Calculations      ////////////////////
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

; Off-Peak Period Auto Driver Trips
;    HBW:
MW[80]=(( MW[1]*(@OPWDAHNP@/100.0))+(MW[21]*(@OPWDANHP@/100.0)))/2.0;1occ
MW[81]=(( MW[2]*(@OPWCPHNP@/100.0))+(MW[22]*(@OPWCPNHP@/100.0)))/2.0;2occ
```

```
MW[82]=(( MW[3]*(@OPWCPHNP@/100.0))+(MW[23]*(@OPWCPNHP@/100.0)))/2.0;3+oc
;    HBS:
MW[85]=(( MW[4]*(@OPSDAHNP@/100.0))+(MW[24]*(@OPSDANHP@/100.0)))/2.0;1occ
MW[86]=(( MW[5]*(@OPSCPHNP@/100.0))+(MW[25]*(@OPSCPNHP@/100.0)))/2.0;2occ
MW[87]=(( MW[6]*(@OPSCPHNP@/100.0))+(MW[26]*(@OPSCPNHP@/100.0)))/2.0;3+oc
;    HBO:
MW[90]=(( MW[7]*(@OPODAHNP@/100.0))+(MW[27]*(@OPODANHP@/100.0)))/2.0;1occ
MW[91]=(( MW[8]*(@OPOCPHNP@/100.0))+(MW[28]*(@OPOCPNHP@/100.0)))/2.0;2occ
MW[92]=(( MW[9]*(@OPOCPHNP@/100.0))+(MW[29]*(@OPOCPNHP@/100.0)))/2.0;3+oc
;    NHB:
MW[95]=((MW[10]*(@OPNDAHNP@/100.0))+(MW[30]*(@OPNDANHP@/100.0)))/2.0;1occ
MW[96]=((MW[11]*(@OPNCPHNP@/100.0))+(MW[31]*(@OPNCPNHP@/100.0)))/2.0;2occ
MW[97]=((MW[12]*(@OPNCPHNP@/100.0))+(MW[32]*(@OPNCPNHP@/100.0)))/2.0;3+oc
;
ENDJLOOP

;----------------------------------------------------------------------
; Summarize by purpose for checking;
; Total HBW:
 MW[100]= MW[40]+MW[41]+MW[42]+MW[60]+MW[61]+MW[62]+MW[80]+MW[81]+MW[82]
; Total HBS:
 MW[101]= MW[45]+MW[46]+MW[47]+MW[65]+MW[66]+MW[67]+MW[85]+MW[86]+MW[87]
; Total HBW:
 MW[102]= MW[50]+MW[51]+MW[52]+MW[70]+MW[71]+MW[72]+MW[90]+MW[91]+MW[92]
; Total HBS:
 MW[103]= MW[55]+MW[56]+MW[57]+MW[75]+MW[76]+MW[77]+MW[95]+MW[96]+MW[97]

;----------------------------------------------------------------------
; Summarize by Time period, Occ Group for Assignment
;
 MW[110]= MW[40]+MW[45]+MW[50]+MW[55] ; AM 1-Occ adrs
 MW[111]= MW[41]+MW[46]+MW[51]+MW[56] ; AM 2-Occ adrs
 MW[112]= MW[42]+MW[47]+MW[52]+MW[57] ; AM 3+Occ adrs
;
 MW[113]= MW[60]+MW[65]+MW[70]+MW[75] ; PM 1-Occ adrs
 MW[114]= MW[61]+MW[66]+MW[71]+MW[76] ; PM 2-Occ adrs
 MW[115]= MW[62]+MW[67]+MW[72]+MW[77] ; PM 3+Occ adrs
;
 MW[116]= MW[80]+MW[85]+MW[90]+MW[95] ; OP 1-Occ adrs
 MW[117]= MW[81]+MW[86]+MW[91]+MW[96] ; OP 2-Occ adrs
 MW[118]= MW[82]+MW[87]+MW[92]+MW[97] ; OP 3+Occ adrs

; Now summarize regional totals to summarize neatly
Jloop
; am hbw, hbs, hbo, nhb by occupant totals:
amhbw1=amhbw1+MW[40], amhbw2=amhbw2+MW[41], amhbw3=amhbw3+MW[42]
amhbs1=amhbs1+MW[45], amhbs2=amhbs2+MW[46], amhbs3=amhbs3+MW[47]
amhbo1=amhbo1+MW[50], amhbo2=amhbo2+MW[51], amhbo3=amhbo3+MW[52]
amnhb1=amnhb1+MW[55], amnhb2=amnhb2+MW[56], amnhb3=amnhb3+MW[57]
; am hbw, hbs, hbo, nhb totals:
amhbw =amhbw + MW[40] + MW[41] + MW[42]
amhbs =amhbs + MW[45] + MW[46] + MW[47]
amhbo =amhbo + MW[50] + MW[51] + MW[52]
amnhb =amnhb + MW[55] + MW[56] + MW[57]
; am occupant level totals:
am1   =am1   +MW[110],am2   =am2   +MW[111],am3   =am3   +MW[112]
; am totals:
am    =am    +MW[110]              +MW[111]              +MW[112]

; pm hbw, hbs, hbo, nhb by occupant totals:
pmhbw1=pmhbw1+MW[60], pmhbw2=pmhbw2+MW[61], pmhbw3=pmhbw3+MW[62]
pmhbs1=pmhbs1+MW[65], pmhbs2=pmhbs2+MW[66], pmhbs3=pmhbs3+MW[67]
pmhbo1=pmhbo1+MW[70], pmhbo2=pmhbo2+MW[71], pmhbo3=pmhbo3+MW[72]
pmnhb1=pmnhb1+MW[75], pmnhb2=pmnhb2+MW[76], pmnhb3=pmnhb3+MW[77]
; pm hbw, hbs, hbo, nhb totals:
pmhbw =pmhbw + MW[60] + MW[61] + MW[62]
pmhbs =pmhbs + MW[65] + MW[66] + MW[67]
pmhbo =pmhbo + MW[70] + MW[71] + MW[72]
pmnhb =pmnhb + MW[75] + MW[76] + MW[77]
; pm occupant level totals:
pm1   =pm1   +MW[113],pm2   =pm2   +MW[114],pm3   =pm3   +MW[115]
; pm totals:
pm    =pm    +MW[113]              +MW[114]              +MW[115]

; op hbw, hbs, hbo, nhb by occupant totals:
ophbw1=ophbw1+MW[80], ophbw2=ophbw2+MW[81], ophbw3=ophbw3+MW[82]
ophbs1=ophbs1+MW[85], ophbs2=ophbs2+MW[86], ophbs3=ophbs3+MW[87]
ophbo1=ophbo1+MW[90], ophbo2=ophbo2+MW[91], ophbo3=ophbo3+MW[92]
opnhb1=opnhb1+MW[95], opnhb2=opnhb2+MW[96], opnhb3=opnhb3+MW[97]
; op hbw, hbs, hbo, nhb totals:
ophbw =ophbw + MW[80]  + MW[81] + MW[82]
ophbs =ophbs + MW[85]  + MW[86] + MW[87]
ophbo =ophbo + MW[90]  + MW[91] + MW[92]
opnhb =opnhb + MW[95]  + MW[96] + MW[97]
; op occupant level totals:
op1   =op1   +MW[116],op2   =op2   +MW[117],op3   =op3   +MW[118]
; op totals:
op    =op    +MW[116]              +MW[117]              +MW[118]

; total output trips by purpose--output total:
 ohbw=ohbw+MW[100], ohbs=ohbs+MW[101], ohbo=ohbo+MW[102], onhb=onhb+MW[103]

; total grand Total of output auto driver trips:
 adr = adr + MW[100] + MW[101] + MW[102] + MW[103]

; total input trips by purpose
 ihbw=ihbw + MW[1]  + MW[2]  + MW[3]
 ihbs=ihbs + MW[4]  + MW[5]  + MW[6]
 ihbo=ihbo + MW[7]  + MW[8]  + MW[9]
 inhb=inhb + MW[10] + MW[11] + MW[12]

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;
dfnhb = onhb - inhb;

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 = 'NHB       ',amnhb1(8.0),amnhb2(8.0),amnhb3(8.0),'    ',amnhb(8.0)
list = '----------------------------------------------'
list = 'Subtotal: ',am1(8.0),am2(8.0),am3(8.0),'    ',am(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 = 'NHB       ',pmnhb1(8.0),pmnhb2(8.0),pmnhb3(8.0),'    ',pmnhb(8.0)
list = '----------------------------------------------'
list = 'Subtotal: ',pm1(8.0),pm2(8.0),pm3(8.0),'    ',pm(8.0)
list = '  '
list = '  '
list = 'Off-Peak:   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 = 'NHB       ',opnhb1(8.0),opnhb2(8.0),opnhb3(8.0),'    ',opnhb(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 = 'NHB  ',inhb(8.0),'  ',onhb(8.0),'  ',dfnhb(8.0)
list = '  '
list = 'Total Auto Drv:',adr(8.0)

list = '/et       '
endif


;  Write out the auto driver tables by time period

   MATO[1] = @ADRAM@, MO=110-112 ; AM Auto Drv Trips 1,2,3+occ tabs 1-3
   MATO[2] = @ADRPM@, MO=113-115 ; PM Auto Drv Trips 1,2,3+occ tabs 1-3
   MATO[3] = @ADROP@, MO=116-118 ; OP Auto Drv Trips 1,2,3+occ tabs 1-3
ENDRUN
;
```

23 Transit_Skims.s

```
;---------------------------------------------------------------------------
;Transit_Skims.s
;MWCOG Version 2.1D Model
;    2005-02-16 Added pageheight=32767 to preclude insertion of page headers
;            - Metrorail station references changed from 116 to 150 2.14.05
;            - PATHSTYLE changed from 1 to 0 on 3.9.04 (RM)
;            - iteration (_iter_) global variables used
;            - 7/13/04
;              Non-Metrorail output time matrix is now altered
;              to reflect the fact that degrading Hwy arterial speeds over time
;              will also affect local bus speeds.  A time factor file
;              in the \INPUTS subdirectory named: LBus_TimFTRS.ASC
;              will be read in.
;              The time factors are applied to the local bus IVT's.
;              The Non-Metrorail IVT matrix was stored in MW[5].  It is now
;              developed as three matrices for Modes 1,6/'inner' Local bus;
;                                                Mode    8/outer local bus;
;                                                Modes 2,4,5,7,9/X bus & commuter
rail.
;              The Three Matrices are collapsed into one matrix in the following
MATRIX
;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
 maxnode = 30000

 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, support nodes, and transit links
fileo supporto = supl@access_mode@@time_period@.asc modes=11-16 oneway=t fixed=y
fileo nodeo    = supn@access_mode@@time_period@.dbf
fileo linko    = trnl@access_mode@@time_period@.dbf  ;can be used to create transit
shape files

;


;---- specify output skims ----

MATRICES NAME = WLKT, DACCT, INIT, XFERT, IVTIL, IVTOL, IVTNL, IVMT, TOTT, ISTOS,
JSTOS, ZWLK,
 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(1,6)*0.01,                     ;---- ivt-nonmetrorail/'Inner' Juris
Local Bus Modes (min)
 MW[6] = TIME(8)*0.01,                       ;---- ivt-nonmetrorail/'Outer' Juris
Local Bus Modes (min)
 MW[7] = TIME(2,4,5,7,9,10)*0.01,            ;---- ivt-nonmetrorail/Non-Local Bus
Modes (min)

 MW[8] = TIME(3)*0.01,                        ;---- ivt-metrorail    (min)
 MW[9] = (IWAIT + TIME (0) + XWAIT (0))*0.01, ;---- total time       (min)
 MW[10] = NODE0(3) - 7300.0,                  ;---- metro board  sta (1-150)
 MW[11] = NODEL(3) - 7300.0,                  ;---- metro alight sta (1-150)
 MW[12] = TIME(16)*0.01                       ; Zonal Acces/Egress Time

;---- 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

trace = (i = 8, 64, 331, 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, 1539)
REPORT LINES = NAME, MODE  ; added by rm 4/09/04 to ensure line listings
                           ; with or without 'RT=' commands in transit line files
ENDRUN

;---------------------------------------------------------------------------
;Steps 2, 4, and 6: Split Skims into Multiple Files
;---------------------------------------------------------------------------

RUN PGM=MATRIX
 MATI[1]=TRANSIT.SKM
 MATO[1]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@.SKM, MO = 1-4,20,8,
  FORMAT = MINUTP
; NAME = WLKT, DACCT, INIT, XFERT, IVNMT, IVMT
 MATO[2]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@.STA, MO = 10-11,
  FORMAT = MINUTP,
 NAME = ISTOS, JSTOS
 MATO[3]=%_iter_%_@TIME_PERIOD@_@ACCESS_MODE@.TTT, MO = 30,
 ;FORMAT = MINUTP
  NAME = TOTT

 ;
 ;  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

 MW[1] = MI.1.1   ;   xfer walk time   (min)
 MW[2] = MI.1.2   ;   drv acc time     (min)
 MW[3] = MI.1.3   ;   ini.wait time    (min)
 MW[4] = MI.1.4   ;   xfr wait time    (min)

 MW[5] = MI.1.5  ;   ivt-nonmetrorail (min) Modes 1,6
 MW[6] = MI.1.6  ;   ivt-nonmetrorail (min) Modes 8
 MW[7] = MI.1.7  ;   ivt-nonmetrorail (min) Modes 2,4,5,7,9,10

 MW[8] = MI.1.8   ;   ivt-metrorail    (min)
 MW[9] = MI.1.9   ;   total time       (min)

 MW[10] = MI.1.10   ;   metro board  sta (1-150)
 MW[11] = MI.1.11   ;   metro alight sta (1-150)

 MW[12] = MI.1.12   ;   Walk Acc/Egr time (min)

 ; Factor The Local Bus Time Here
 MW[20] = (MW[5] * @TIME_PERIOD@IBFTR) + (MW[6] * @TIME_PERIOD@OBFTR) + MW[7]

 ; Recompute total transit time, given the local bus adjustment
 MW[30] = MW[1] + MW[2] +MW[3] +MW[4] + MW[20] + MW[8] + MW[12]

  JLOOP
  IF (MW[10] < 0 || MW[10] > 150 ) MW[10] = 0
  IF (MW[11] < 0 || MW[11] > 150 ) MW[11] = 0
  ENDJLOOP

 ENDRUN


 ENDLOOP ;---- ACCESS ----
 ENDLOOP ;---- PERIOD ----
 ;
 ;-------------------------------------------------------------------------
 ;         Step 7: Sum the Jobs by Transit Travel Time
 ;-------------------------------------------------------------------------
 ;
 RUN PGM=MATRIX
  MATI[1] = %_iter_%_AM_WK.TTT
  MATI[2] = %_iter_%_AM_DR.TTT
  ZDATI[1] = INPUTS\ZONE.ASC, Z=1-4, EMP=40-47

  _ACCESS = 0

 JLOOP
  IF (MI.1.1 = 0)
  IF (MI.2.1 > 0)
     MW[1] = MI.2.1
    ELSE
     MW[1] = 0
    ENDIF
   ELSEIF (MI.2.1 = 0)
    MW[1] = MI.1.1
   ELSE
    MW[1] = MIN (MI.1.1, MI.2.1)
   ENDIF
```

```
  _ACCESS = _ACCESS + MW[1]
 ENDJLOOP

 IF (_ACCESS > 0)
  MW[1][I] = 1
 ENDIF

 _EMP30  = 0
 _EMP40  = 0
 _EMP50  = 0
 _EMP60  = 0
 _EMPTOT = 0

JLOOP
  IF (MW[1] = 1-30)
   _EMP30 = _EMP30  + ZI.1.EMP[J]
  ENDIF
  IF (MW[1] = 1-40)
   _EMP40 = _EMP40  + ZI.1.EMP[J]
  ENDIF
  IF (MW[1] = 1-50)
   _EMP50 = _EMP50  + ZI.1.EMP[J]
  ENDIF
  IF (MW[1] = 1-60)
   _EMP60 = _EMP60  + ZI.1.EMP[J]
  ENDIF
  _EMPTOT = _EMPTOT + ZI.1.EMP[J]

ENDJLOOP

PRINT FILE=JOBACC.ASC FORM=10, LIST=I(5), '               ', _EMP30, _EMP40, _EMP50,
_EMP60, _EMPTOT

ENDRUN
```

24 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
;-----------------------------------------------------------------------------

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
```

25 Trip_Distribution.s

```
;-------------------------------------------------------------------
; TRIP_DISTRIBUTION.S
;
; Version 2.2  Model
;  Note: Bucket rounding is maintained as MC model (COGMC) works with integer
;        trips.  Bucket rounding in the future (when a new MC model is used)
;$
; Trip_Distribution.s - V2.1C Model with ICC changes (JPark) and
;    improved toll modeling changes (RMilone) - Toll changes in ';$' Blocks
;$
; MWCOG  Version 2 Trip Distribution
; Update 8/28/02 rjm
; Note:  Corrected misspecified MAXITERS (was MAXITRS) key word  11/05/02
;        9/8/04 Updated Post-Distribution External adjustments for all purposes
;        to handle 6-figure external Ps/As. rm
;$ 12/23/05 Updated input Z-filenames to read TRIP_GENERATIONR.S outputs
;           (which are now decimal).  Bucket rounding of Trip Dist. output tabs.
;                                        maintained.
;$ 11/07/06 Jurisdiction-to TAZ equivalency file updated to reflect
;  change in Montgomery / prince Georges zone ranges (2-zone annexation)
;-------------------------------------------------------------------
;
;
;
;Environment Variables:
;            %_iter_%  ;---- Run Interation (pp, bs, i1, i2)
;            %_year_%  ;
;            %_alt_%   ;
;
;Global Variables:
;
; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\    INPUT/OUTPUT FILENAMES HERE:                  \\\\\\\\\\
; \\\\\\\\\    In TP Main                                    \\\\\\\\\\
; //////////////////////////////////////////////////////////////////////
;
;
; ==================================================================
; == The Output Trip Distribution Filenames of this Program are:   ==
; ==================================================================
;
HBWTDOUT = 'hbwest%_iter_%.ptt'  ; HBW Person   Trips
HBSTDOUT = 'hbsest%_iter_%.ptt'  ; HBS Person   Trips
HBOTDOUT = 'hboest%_iter_%.ptt'  ; HBO Person   Trips
NHBTDOUT = 'nhbest%_iter_%.ptt'  ; NHB Person   Trips
MTKTDOUT = 'mtkest%_iter_%.vtt'  ; Medium Truck Trips
HTKTDOUT = 'htkest%_iter_%.vtt'  ; Heavy Truck  Trips
;
; ==================================================================
; == The Input Filenames of this Program are:                     ==
; ==================================================================
; ------------------------------------------------------------------
; Land Use and Network Files:
;
itr = '%_iter_%'
LUFILE  = 'inputs\zone.asc'                        ;  LAND USE FILE
HWYTERM = 'ztermtm.asc'                            ;  Zonal HWY TERMINAL TIME

if (ITR='pp')
 AMSOVSKM = '%_iter_%_am.skm'                       ;  AM  HWY TIME SKIMS
 OPSOVSKM = '%_iter_%_op.skm'                       ;  OP  HWY TIME SKIMS
 AWTRNSKM = '%_iter_%_am_wk.ttt'                    ;  AM WK ACC TRN TIME SKIMS
 ADTRNSKM = '%_iter_%_am_dr.ttt'                    ;  AM DR ACC TRN TIME SKIMS
 OWTRNSKM = '%_iter_%_op_wk.ttt'                    ;  OP WK ACC TRN TIME SKIMS
 ODTRNSKM = '%_iter_%_op_dr.ttt'                    ;  OP DR ACC TRN TIME SKIMS
 else
 AMSOVSKM = 'SOV%_prev_%am.skm'                     ;  AM  HWY TIME SKIMS
 OPSOVSKM = 'SOV%_prev_%op.skm'                     ;  OP  HWY TIME SKIMS
 AWTRNSKM = '%_prev_%_am_wk.ttt'                    ;  AM WK ACC TRN TIME SKIMS
 ADTRNSKM = '%_prev_%_am_dr.ttt'                    ;  AM DR ACC TRN TIME SKIMS
 OWTRNSKM = '%_prev_%_op_wk.ttt'                    ;  OP WK ACC TRN TIME SKIMS
 ODTRNSKM = '%_prev_%_op_dr.ttt'                    ;  OP DR ACC TRN TIME SKIMS
ENDIF ;
; ------------------------------------------------------------------
; Trip-End (P/A) Input Files:
;
HBWPROINC= 'hbwpros_inc.txt'; HBW Productions - for four income levels (Intl only)
HBWPROALL= 'hbwpros_all.txt'; HBW Productions - Total/NonStratified    (Intl&Extl)

HBWATTINC= 'hbwattrs_inc.txt'; HBW Attractions - for four income levels (Intl only)
HBWATTALL= 'hbwattrs_all.txt'; HBW Attractions - Total/NonStratified    (Intl&Extl)

HBSPROINC= 'hbspros_inc.txt'; HBS Productions - for four income levels (Intl only)
HBSPROALL= 'hbspros_all.txt'; HBS Productions - Total/NonStratified    (Intl&Extl)

HBSATTINC= 'hbsattrs_inc.txt'; HBS Attractions - for four income levels (Intl only)
HBSATTALL= 'hbsattrs_all.txt'; HBS Attractions - Total/NonStratified    (Intl&Extl)

HBOPROINC= 'hbopros_inc.txt'; HBO Productions - for four income levels (Intl only)
HBOPROALL= 'hbopros_all.txt'; HBO Productions - Total/NonStratified    (Intl&Extl)

HBOATTINC= 'hboattrs_inc.txt'; HBO Attractions - for four income levels (Intl only)
HBOATTALL= 'hboattrs_all.txt'; HBO Attractions - Total/NonStratified    (Intl&Extl)

NHBPROINT= 'nhbattrs_int.txt'; NHB Productions (Same as final/scaled attractions)
- (Intl only)
NHBPROALL= 'nhbattrs_all.txt'; NHB Productions (Same as final/scaled attractions)
- (Intl&Extl)
```

```
NHBATTINT= 'nhbattrs_int.txt'; NHB Attractions     - (Intl only)
NHBATTALL= 'nhbattrs_all.txt'; NHB Attractions     - (Intl&Extl)

MTKPROINT= 'mtkpros_int.txt'; Med Trk Productions - (Intl only)
MTKPROALL= 'mtkpros_all.txt'; Med Trk Productions - (Intl&Extl)

MTKATTINT= 'mtkattrs_int.txt'; Med Trk Attractions - (Intl only)
MTKATTALL= 'mtkattrs_all.txt'; Med Trk Attractions - (Intl&Extl)

HTKPROINT= 'htkpros_int.txt'; Hvy Trk Productions - (Intl only)
HTKPROALL= 'htkpros_all.txt'; Hvy Trk Productions - (Intl&Extl)

HTKATTINT= 'htkattrs_int.txt'; Hvy Trk Attractions - (Intl only)
HTKATTALL= 'htkattrs_all.txt'; Hvy Trk Attractions - (Intl&Extl)

;$
; ------------------------------------------------------------------
; Equivalent minutes (min/'94$) by income level (for toll modeling)
;
toll_inc   = 'inputs\toll.inc'    ;
;
; ------------------------------------------------------------------
;$
; ------------------------------------------------------------------
; Zonal-to-Zone Time Penalty Tables
;
HBWPEN   = '..\support\hbwpen.dat'    ;  HBW TIME PENALITES
HBSPEN   = '..\support\hbspen.dat'    ;  HBS TIME PENALITES
HBOPEN   = '..\support\hbopen.dat'    ;  HBO TIME PENALITES
NHBPEN   = '..\support\nhbpen.dat'    ;  NHB TIME PENALITES

; ------------------------------------------------------------------
; Zonal K-factor Files
;
HBWK     = '..\support\hbwk.dat'    ;
HBSK     = '..\support\hbsk.dat'    ;
HBOK     = '..\support\hbok.dat'    ;
NHBK     = '..\support\nhbk.dat'    ;
NHBK     = '..\support\nhbk.dat'    ;
MTKK     = '..\support\mtkk.dat'    ;
HTKK     = '..\support\htkk.dat'    ;

; ------------------------------------------------------------------
; Friction Factor Files:
;
IHBWFFS   = '..\support\HBWV2.FFS' ; HBW       6 Curves
IHBSFFS   = '..\support\HBSV2.FFS' ; HBS       6 Curves
IHBOFFS   = '..\support\HBOV2.FFS' ; HBO       6 Curves
IN_TFFS   = '..\support\N_TV2.FFS' ; NHB/Truck 7 Curves
;
; Note:  Sequence of F-Factor Curves:
;           | File:
;           | IHBWFFS       IHBSFFS        IHBOFFS       IN_TFFS
;  Curve #  | (work)        (shop)         (other)       (NHB, Truck)
; --------- |------------------------------------------------------
;    1      | intl/inc 1    intl/inc 1    intl/inc 1    intl NHB
;    2      | intl/inc 2    intl/inc 2    intl/inc 2    intl Med.trk
;    3      | intl/inc 3    intl/inc 3    intl/inc 3    intl Hvy.truck
;    4      | intl/inc 4    intl/inc 4    intl/inc 4    extl/interst/NHB
;    5      | extl/interst. extl/interst. extl/interst. extl/arter./NHB
;    6      | extl/arter.   extl/arter.   extl/arter.   extl./Med Truck
;    7      |    --            --            --         extl./Hvy Truck

; ------------------------------------------------------------------
; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\   End of Input/Output File Section                   \\\\\\
; //////////////////////////////////////////////////////////////////////
```

```
;
;
; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\    BEGIN TP+                                         \\\\\\
; //////////////////////////////////////////////////////////////////////
;
; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\    1) Add Highway Terminal Times to AM, Off-peak     \\\\\\
; \\\\\\\\\       SOV Skims                                      \\\\\\
; //////////////////////////////////////////////////////////////////////

RUN PGM=MATRIX
zones=2191
;  READ ZONAL EMPLOYMENT AND AREA FROM 'STANDARD' V2 LAND USE FILE

ZDATI[1]= @hwyterm@, Z=1-4,hterm=27-28

;  READ AM PEAK & OFF-PEAK SOV TIME SKIM FILE (IN WHOLE MIN)

  MATI[1] = @AMSOVSKM@   ;  INPUT AM PK  SKIM FILE
  MATI[2] = @OPSOVSKM@   ;  INPUT OFF-PK SKIM FILE

  MW[1]   = MI.1.1       ;  INPUT AM PK  SKIM FILE
  MW[2]   = MI.2.1       ;  INPUT OFF-PK SKIM FILE


;
; Now add the terminal times to the AM/OP 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 50% of single lowest nonzero interzonal value
; IMPOSE MAX INTRAZONAL TRAVEL TIME JCPARK 6/18/03
; NO INTRAZONAL TT OVERRIDES FOR RUN 12B2 JCPARK 6/24/03

JLOOP
 IF (I=J)
      MW[3]=ROUND(0.50 * LOWEST(3,1,0.0001,99999.9))
      MW[4]=ROUND(0.50 * 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] = SOVOPTT.SKF, MO=4; output op sov time(min) w/ o&d term&intra times

; print row 1 of I/O matrices for checking

   IF  (I =92)
     PRINTROW MW=1-10
   ENDIF
```

```
ENDRUN

; ///////////////////////////////////////////////////////////////////////
; \\\\\\\\\    2) Compute Composite Impedances to by used in        \\\
; \\\\\\\\\       Trip Distribution for HBW, HBS, HBO, NHB Purposes \\\
; ///////////////////////////////////////////////////////////////////////


RUN PGM=MATRIX
ZONES=2191

; 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] = SOVOPTT.SKF  ;  OFF-PK HWY TIME FILE W/ TERM&INTRAZNL VALUES

MATI[3] = @AWTRNSKM@   ;  AM  PK WALK ACC TRN SKIM FILE
MATI[4] = @ADTRNSKM@   ;  AM  PK AUTO ACC TRN SKIM FILE
MATI[5] = @OWTRNSKM@   ;  OFF-PK WALK ACC TRN SKIM FILE
MATI[6] = @ODTRNSKM@   ;  OFF-PK AUTO ACC TRN SKIM FILE

;$
MATI[7] = @AMSOVSKM@   ;  INPUT AM PK  tolls in 80 cents (on table 3)
MATI[8] = @OPSOVSKM@   ;  INPUT OFF-PK tolls in 80 cents (on table 3)
;
 READ FILE =@TOLL_INC@  ;  READ in equivalent min/80$ 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                   ; have a minimum of 1 minute
  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) * i1OPEQM)) ;i1 OP hwy time w/eqv
      MW[72] = Round(MW[2] + ((MI.8.3/100.0) * i2OPEQM)) ;i2 OP hwy time w/eqv
      MW[73] = Round(MW[2] + ((MI.8.3/100.0) * i3OPEQM)) ;i3 OP hwy time w/eqv
      MW[74] = Round(MW[2] + ((MI.8.3/100.0) * i4OPEQM)) ;i4 OP hwy time w/eqv
;
;
;
;
;
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] = ROUND (1.0/((1.0/MW[61])+(0.2572/MW[11]))) ; HBW -INC 1 CI MTX
   MW[16] = ROUND (1.0/((1.0/MW[62])+(0.1484/MW[11]))) ; HBW -INC 2 CI MTX
   MW[17] = ROUND (1.0/((1.0/MW[63])+(0.1365/MW[11]))) ; HBW -INC 3 CI MTX
   MW[18] = ROUND (1.0/((1.0/MW[64])+(0.1402/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[30] =  MW[72]
 ELSE
   MW[20] = ROUND (1.0/((1.0/MW[71])+(0.0518/MW[12]))) ; HBS -INC 1 CI MTX
   MW[21] = ROUND (1.0/((1.0/MW[72])+(0.0235/MW[12]))) ; HBS -INC 2 CI MTX
   MW[22] = ROUND (1.0/((1.0/MW[73])+(0.0093/MW[12]))) ; HBS -INC 3 CI MTX
   MW[23] = ROUND (1.0/((1.0/MW[74])+(0.0075/MW[12]))) ; HBS -INC 4 CI MTX

   MW[25] = ROUND (1.0/((1.0/MW[71])+(0.0755/MW[12]))) ; HBO -INC 1 CI MTX
   MW[26] = ROUND (1.0/((1.0/MW[72])+(0.0311/MW[12]))) ; HBO -INC 2 CI MTX
   MW[27] = ROUND (1.0/((1.0/MW[73])+(0.0186/MW[12]))) ; HBO -INC 3 CI MTX
   MW[28] = ROUND (1.0/((1.0/MW[74])+(0.0244/MW[12]))) ; HBO -INC 4 CI MTX

   MW[30] = ROUND (1.0/((1.0/MW[72])+(0.0483/MW[12]))) ; NHB
 ENDIF

ENDJLOOP

MATO[1] = HBWTDIMP.MAT, MO=15,16,17,18 ;HBW COMP.IMPEDANCES-INC.LEVELS 1-4
MATO[2] = HBSTDIMP.MAT, MO=20,21,22,23 ;HBS COMP.IMPEDANCES-INC.LEVELS 1-4
MATO[3] = HBOTDIMP.MAT, MO=25,26,27,28 ;HBO COMP.IMPEDANCES-INC.LEVELS 1-4
```

```
MATO[4] = NHBTDIMP.MAT, MO=30          ;NHB COMP.IMPEDANCE
;
;$
;
; 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.chk
  PRINT LIST = I(4),' ',J(4),' ',mw[20](5),mw[21](5),mw[22](5),mw[23](5),
        FILE =ci_hbs.chk
  PRINT LIST = I(4),' ',J(4),' ',mw[25](5),mw[26](5),mw[27](5),mw[28](5),
        FILE =ci_hbo.chk
  PRINT LIST = I(4),' ',J(4),' ',mw[30](5),
        FILE =ci_nhb.chk
ENDJLOOP
ENDRUN

; ////////////////////////////////////////////////////////////////////////
; \\\\\\\\\    3) Compute Impedance files to be used in the External \\
; \\\\\\\\\       Trip Distribution processing                       \\
; ////////////////////////////////////////////////////////////////////////


RUN PGM=MATRIX
;ZONES =2191
MATI[1] = SOVAMTT.SKF  ;  AM  PK HWY TIME FILE W/ TERM&INTRAZNL VALUES
MATI[2] = SOVOPTT.SKF  ;  OFF-PK 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           ;  OFF-PK HWY TIME FILE W/ TERM&INTRAZNL VALUES

;  Development of Peak, Off-Peak 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] - OffPeak 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]    ; Off-Pk

; next, put very large time value into all
; i-i and x-x ijs

 IF  (I =    1-2144)
    MW[11] =   200, INCLUDE=    1-2144 ; i-i ijs
    MW[12] =   200, INCLUDE=    1-2144 ; i-i ijs
 ELSE
    MW[11] =   200, INCLUDE= 2145-2191 ; x-x ijs
    MW[12] =   200, INCLUDE= 2145-2191 ; 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] = SOVOPTTE.skf, MO=12 ;  Off-PK Time skims for Extl trip dist.
ENDRUN
;
; ////////////////////////////////////////////////////////////////////////
; \\\\\\\\\    4) Add time penalty files to composite impedance      \\
; \\\\\\\\\       skims.                                             \\
; ////////////////////////////////////////////////////////////////////////


RUN PGM=MATRIX
; ADD TIME PENALTIES TO COMPOSITE TIME MATRICES
;  READ AM PEAK & OFF-PEAK SOV TIME SKIM FILE (IN WHOLE MIN)
ZONES=2191
MATI[1] = @HBWPEN@       ;  2191 TAZ LEVEL HBW TIME PENS. INC 1-4
MATI[2] = @HBSPEN@       ;                 HBS TIME PENS. INC 1-4
MATI[3] = @HBOPEN@       ;                 HBO TIME PENS. INC 1-4
MATI[4] = @NHBPEN@       ;                 NHB TIME PENS.

MATI[11] = HBWTDIMP.MAT ; HBW COMP.IMPEDANCES - INC.LEVELS 1-4
MATI[12] = HBSTDIMP.MAT ; HBS COMP.IMPEDANCES - INC.LEVELS 1-4
MATI[13] = HBOTDIMP.MAT ; HBO COMP.IMPEDANCES - INC.LEVELS 1-4
MATI[14] = NHBTDIMP.MAT ; NHB COMP.IMPEDANCE


; ESTABLISH WORK FILES FOR TIME PENALTIES
;    HBW/INC 1-4      HBS/INC 1-4      HBO/INC 1-4         NHB
; -------------   --------------   ---------------  ---------------
MW[1] = MI.1.1, MW[5] = MI.2.1, MW[9]  = MI.3.1,  MW[13] = MI.4.1
MW[2] = MI.1.2, MW[6] = MI.2.2, MW[10] = MI.3.2
MW[3] = MI.1.3, MW[7] = MI.2.3, MW[11] = MI.3.3
MW[4] = MI.1.4, MW[8] = MI.2.4, MW[12] = MI.3.4


; ESTABLISH WORK FILES FOR COMPOSITE TIMES
;    HBW/INC 1-4      HBS/INC 1-4      HBO/INC 1-4         NHB
; -------------   ---------------  ----------------  ---------------
MW[21] = MI.11.1, MW[25] = MI.12.1, MW[29] = MI.13.1, MW[33] = MI.14.1
MW[22] = MI.11.2, MW[26] = MI.12.2, MW[30] = MI.13.2
MW[23] = MI.11.3, MW[27] = MI.12.3, MW[31] = MI.13.3
MW[24] = MI.11.4, MW[28] = MI.12.4, MW[32] = MI.13.4

;
; NOW, MERGE THE TIME PENALTIES IN WITH THE COMPOSITE TIMES
;
MW[40] = MW[1]  +  MW[21] ; FINAL HBW INC 1 COMPOSITE TIMES
MW[41] = MW[2]  +  MW[22] ; FINAL HBW INC 2 COMPOSITE TIMES
MW[42] = MW[3]  +  MW[23] ; FINAL HBW INC 3 COMPOSITE TIMES
MW[43] = MW[4]  +  MW[24] ; FINAL HBW INC 4 COMPOSITE TIMES

MW[44] = MW[5]  +  MW[25] ; FINAL HBS INC 1 COMPOSITE TIMES
MW[45] = MW[6]  +  MW[26] ; FINAL HBS INC 2 COMPOSITE TIMES
MW[46] = MW[7]  +  MW[27] ; FINAL HBS INC 3 COMPOSITE TIMES
MW[47] = MW[8]  +  MW[28] ; FINAL HBS INC 4 COMPOSITE TIMES

MW[48] = MW[9]  +  MW[29] ; FINAL HBO INC 1 COMPOSITE TIMES
MW[49] = MW[10] +  MW[30] ; FINAL HBO INC 2 COMPOSITE TIMES
MW[50] = MW[11] +  MW[31] ; FINAL HBO INC 3 COMPOSITE TIMES
MW[51] = MW[12] +  MW[32] ; FINAL HBO INC 4 COMPOSITE TIMES

MW[52] = MW[13] +  MW[33] ; FINAL NHB       COMPOSITE TIME
;
; Write out composite Impedance Tables
; The files are purpose-specific, HB purpose files have 4 tables
;   corresponding to income levels

MATO[1] = HBWCI1_4.DAT, MO=40-43 ;  HBW Composite Impedances/Incomes 1-4
MATO[2] = HBSCI1_4.DAT, MO=44-47 ;  HBS Composite Impedances/Incomes 1-4
MATO[3] = HBOCI1_4.DAT, MO=48-51 ;  HBO Composite Impedances/Incomes 1-4
MATO[4] = NHBCI.DAT   , MO=52    ;  NHB Composite Impedance

; End of Composite Impedance Development
ENDRUN
;---------------------------------------------------------------------


; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////   5) Start HBW Trip Distribution Here:             /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
```

```
RUN PGM=TRIPDIST
  MATI= HBWCI1_4.DAT,   ; Composite Time Impedances HBW Inc.Levels 1-4
        SOVAMTTE.skf,   ; AM Travel Time Imped. for Extl/Int. Trip Dist.
        @HBWK@          ; HBW Kfactors (Scaled by 1000.0)

; Put impedance matrices in work tables 11-16
; tabs 11-14 are comp.time for inc.levels 1,2,3,4, tabs 15,16 are
; both AM pk SOV time. All impedance and time values are in whole minutes.

  FILLMW MW[11]  = MI.1.1,2,3,4,MI.2.1,MI.2.1

; Put K-factor matrix in work table 20
; The k-factor values are scaled by 1000s (eg, a mtx value of '1000'=1.0)
; the K-factors are appiled across all HBW distributions

  FILLMW MW[20] = MI.3.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units

ZDATI[1]  = @HBWPROINC@, Z=#1,P1=#2,    ; HBW Inc. 1    productions
                              P2=#3,    ; HBW Inc. 2    productions
                              P3=#4,    ; HBW Inc. 3    productions
                              P4=#5     ; HBW Inc. 4    productions
ZDATI[2]  = @HBWPROALL@, Z=#1,P5=#2     ; HBW Totl      productions

ZDATI[3]  = @HBWATTINC@, Z=#1,A1=#2,    ; HBW Inc. 1    attractions
                              A2=#3,    ; HBW Inc. 2    attractions
                              A3=#4,    ; HBW Inc. 3    attractions
                              A4=#5     ; HBW Inc. 4    attractions
ZDATI[4]  = @HBWATTALL@, Z=#1,A5=#2     ; HBW Totl      attractions

LOOKUP FILE = @IHBWFFS@,INTERPOLATE=N,SETUPPER=T,FAIL=,0,,NAME = FF,
       LOOKUP[1] = 1, RESULT = 2,  ; HBW INC 1           F-FACTORS
       LOOKUP[2] = 1, RESULT = 3,  ; HBW INC 2           F-FACTORS
       LOOKUP[3] = 1, RESULT = 4,  ; HBW INC 3           F-FACTORS
       LOOKUP[4] = 1, RESULT = 5,  ; HBW INC 4           F-FACTORS
       LOOKUP[5] = 1, RESULT = 6,  ; HBW Extl-Interstate F-FACTORS
       LOOKUP[6] = 1, RESULT = 7   ; HBW Extl-Arterial   F-FACTORS

;  Establish production and attraction vectors here:

SETPA P[1] = P1, P[2] = P2, P[3] = P3, P[4] = P4, P[5] = P5, P[6] = P5
SETPA A[1] = A1, A[2] = A2, A[3] = A3, A[4] = A4, A[5] = A5, A[6] = A5

MAXITERS = 7    ; specify GM iterations to be 7


;  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[15], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 6, LOS=MW[16], FFACTORS= FF, KFACTORS = MW[20]

; Write out trips as integers to be consistent with MINUTP

DUMMY = ROWFIX(1)
DUMMY = ROWFIX(2)
DUMMY = ROWFIX(3)
DUMMY = ROWFIX(4)
DUMMY = ROWFIX(5)
DUMMY = ROWFIX(6)

MATO = EST.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 - HBW ALL (Extl/Interst. FFs)
                         ;       T6 - HBW ALL (Extle/Arter.  FFs)
; Note: The External Interstate and Arterial trips (t5 & t6) will be
; refined in the next two matrix runs

ENDRUN
;
;
;-------------------------------------------------------------------
; Refinement of External Trip Distribution Trip Tables
; (External Interstate and External Arterial Trips)
; There are two MATRIX steps
;    1) This program reads the external interstate and external arterial
;    tables produced from the external trip dist. process above. The
;    program wipes out trips in internal or through trip interchanges
;    if any exist (there may be a small chance that some trips exist).
;    It also makes sure that no extl/art. trips exist in the
;    extl/interstate interchanges and vise-versa. Finally it writes out
;    an array containing the column totals of the total external trips.
;    to be used in the following program.
;
;    2) This program is used to make sure the row & column totals
;    of the external trip files match those of P/A files produced in
;    the trip generation process. the adjustment will affect the As
;    much more than the P's.
;-------------------------------------------------------------------


RUN PGM=MATRIX
  MATI= EST.TEM       ; read in initial ext trips from trip dist.
  ARRAY COLTOTX=2191  ; set up an array for init.col totals for ext trips

  MW[5]  = MI.1.5 ; Get Initial Extl Interstate table
  MW[6]  = MI.1.6 ; Get Initial Extl Arterial   table

  MW[15] = MW[5]  ; Store HBW trips with Extl/Interst.  FFs in MW15
  MW[16] = MW[6]  ; Store HBW trips with Extl/Arterial  FFs in MW16
;
; Now, strip away or zero out unwanted interchanges
; interstate-type external stations  MW[15]
;-
IF  (I =    1-2144)
  MW[15] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[15] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2145,2147-2148,2150-2153,2155,2157-2165,
              2167-2170,2172-2179,2181,2185-2186,2188-2190)
  MW[15] =     0 ; ext art. ijs
ENDIF

MW[15] =     0, INCLUDE=2145,2147-2148,2150-2153,2155,2157-2165,
              2167-2170,2172-2179,2181,2185-2186,2188-2190 ; ext art. ijs

;
; Now, strip away or zero out unwanted interchanges
; arterial-type external stations  MW[16]
;
IF  (I =    1-2144)
  MW[16] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[16] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2146,2149,2154,2156,2166,2171,2180,
              2182,2183,2184,2187,2191)
```

```
  MW[16] =     0 ; ext int.ijs
ENDIF

MW[16] =     0, INCLUDE=2146,2149,2154,2156,2166,2171,2180,
             2182,2183,2184,2187,2191 ; ext int.ijs
;
; -------------------------------------------------------------------
;  ACCUMULATE COLUMN TOTALS of ALL INITIAL EXTERNAL TRIPS
JLOOP
  COLTOTX[J]=COLTOTX[J] + MW[15][J] + MW[16][J]
ENDJLOOP

;
; NOW, WRITE OUT THE INITIAL COLUMN TOTALS FOR Later Use
IF (I=2191)
   LOOP K=2145,2191
         PRINT FORM=8,LIST=K, COLTOTX[K], FILE=IXCOLTOT.DAT
   ENDLOOP
ENDIF
MATO = EXT.TEM,MO=15,16 ;   Final HBW  trip table(s)

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

RUN PGM=MATRIX
  MATI[1]= EXT.TEM
  MATI[2]= EST.TEM
  ZDATI[1]=@HBWPROALL@, Z=#1,RCNTL=#2     ; total trip gen. prod.totals
  ZDATI[2]=@HBWATTALL@, Z=#1,CCNTL=#2     ; total trip gen. attr.totals
  ZDATI[3]=IXCOLTOT.DAT, Z=#1,ICOLTOT=2

  FILLMW MW[1]  = MI.2.1,2,3,4
  FILLMW MW[5]  = MI.1.1,2

  ARRAY IROWTOTA= 2191

  ARRAY FROWTOT = 2191
  ARRAY FCOLTOT = 2191

  ARRAY ROWADJ  = 2191
  ARRAY COLADJ  = 2191

  MW[15] = MW[5]  ; Store HBW trips with Extl/Interst.  FFs in MW15
  MW[16] = MW[6]  ; Store HBW trips with Extl/Arterial  FFs in MW16

; --------------
IF (i=1-2144)
 JLOOP
    IF  (ICOLTOT[j]   = 0)
         COLADJ[J]    = 1.0
    ELSE
         COLADJ[J]    = CCNTL[j]/ICOLTOT[j]
    ENDIF
      MW[25] = ROUND (MW[15][J]*COLADJ[J])
      MW[26] = ROUND (MW[16][J]*COLADJ[J])
      FCOLTOT[J] = FCOLTOT[J]+ MW[25][J] + MW[26][J]
 endjloop
ELSE
 irowtota[i] = ROWSUM(15) + rowsum(16)

 JLOOP
    IF  (IrowTOTa[i]   = 0)
         rowADJ[i]    = 1.0
    ELSE
         rowADJ[i]    = RCNTL[i]/IROWTOTa[i]
    ENDIF
    MW[25] =  ROUND (MW[15][J]*ROWADJ[i])
    MW[26] =  ROUND (MW[16][J]*ROWADJ[i])
    FROWTOT[i]  = FROWTOT[i]  + MW[25][j] + MW[26][j]
 endjloop
endif

 ;
 ; Now replace full external trip tables with 'trimmed' tables
 ; and compute Final Total Trip Table


 MW[5] = MW[25]
 MW[6] = MW[26]
 DUMMY=ROWADD(7,1,2,3,4,5,6)


MATO = @HBWTDOUT@,MO=1-7 ;   Final HBW  trip table(s)

IF (I=2191) ; if at the last zone
   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xcolHBW.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',ICOLTOT[INDEX](8),' ',CCNTL[INDEX](8),
                            FCOLTOT[INDEX](8),' ',coladj[INDEX](8.3),
             FILE=xcolHBW.asc
   ENDLOOP



   LIST = ' TAZ   inital  contrl   final  adjftr ',FILE=xrowHBW.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',IROWTOTA[INDEX](8),RCNTL[INDEX](8),
                            FROWTOT[INDEX](8),rowadj[INDEX](8.3),
             FILE=xROWHBW.asc
   ENDLOOP
ENDIF
;-------------------------------------------------------------------
; END of HBW Trip Distribution
;-------------------------------------------------------------------


; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////   6) Start HBS Trip Distribution Here:            /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

RUN PGM=TRIPDIST
  MATI= HBSCI1_4.DAT,   ; Composite Time Impedances HBS Inc.Levels 1-4
        SOVOPTTE.skf,   ; Off Pk    Time Imped. for Extl/Int. Trip Dist.
        @HBSK@          ; HBW Kfactors (Scaled by 1000.0)

; Put impedance matrices in work tables 11-16
; tabs 11-14 are comp.time for inc.levels 1,2,3,4, tabs 15,16 are
; both Offpk SOV time. All impedance and time values are in whole minutes.

  FILLMW MW[11]  = MI.1.1,2,3,4,MI.2.1,MI.2.1

; Put K-factor matrix in work table 20
; The k-factor values are scaled by 1000s (eg, a mtx value of '1000'=1.0)
; the K-factors are appiled across all HBS distributions

  FILLMW MW[20] = MI.3.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units


ZDATI[1]  = @HBSPROINC@, Z=#1,P1=#2,    ; HBS Inc. 1    productions
                              P2=#3,    ; HBS Inc. 2    productions
                              P3=#4,    ; HBS Inc. 3    productions
                              P4=#5     ; HBS Inc. 4    productions
ZDATI[2]  = @HBSPROALL@, Z=#1,P5=#2     ; HBS Totl      productions

ZDATI[3]  = @HBSATTINC@, Z=#1,A1=#2,    ; HBS Inc. 1    attractions
                              A2=#3,    ; HBS Inc. 2    attractions
```

```
                              A3=#4,    ; HBS Inc. 3    attractions
                              A4=#5     ; HBS Inc. 4    attractions
ZDATI[4]  = @HBSATTALL@, Z=#1,A5=#2     ; HBS Totl      attractions


LOOKUP FILE = @IHBSFFS@,INTERPOLATE=N,SETUPPER=T,FAIL=,0,,NAME = FF,
       LOOKUP[1] = 1, RESULT = 2,  ; HBS INC 1           F-FACTORS
       LOOKUP[2] = 1, RESULT = 3,  ; HBS INC 2           F-FACTORS
       LOOKUP[3] = 1, RESULT = 4,  ; HBS INC 3           F-FACTORS
       LOOKUP[4] = 1, RESULT = 5,  ; HBS INC 4           F-FACTORS
       LOOKUP[5] = 1, RESULT = 6,  ; HBS Extl-Interstate F-FACTORS
       LOOKUP[6] = 1, RESULT = 7   ; HBS Extl-Arterial   F-FACTORS

;  Establish production and attraction vectors here:

SETPA P[1] = P1, P[2] = P2, P[3] = P3, P[4] = P4, P[5] = P5, P[6] = P5
SETPA A[1] = A1, A[2] = A2, A[3] = A3, A[4] = A4, A[5] = A5, A[6] = A5

MAXITERS = 7    ; specify GM iterations to be 7


;  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[15], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 6, LOS=MW[16], FFACTORS= FF, KFACTORS = MW[20]

; Write out trips as integers to be consistent with MINUTP

DUMMY = ROWFIX(1)
DUMMY = ROWFIX(2)
DUMMY = ROWFIX(3)
DUMMY = ROWFIX(4)
DUMMY = ROWFIX(5)
DUMMY = ROWFIX(6)

MATO = EST.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 - HBS ALL (Extl/Interst. FFs)
                         ;       T6 - HBS ALL (Extle/Arter.  FFs)
; Note: The External Interstate and Arterial trips (t5 & t6) will be
; refined in the next two matrix runs

ENDRUN
;
;
;--------------------------------------------------------------------
; Refinement of External Trip Distribution Trip Tables
; (External Interstate and External Arterial Trips)
; There are two MATRIX steps
;    1) This program reads the external interstate and external arterial
;    tables produced from the external trip dist. process above. The
;    program wipes out trips in internal or through trip interchanges
;    if any exist (there may be a small chance that some trips exist).
;    It also makes sure that no extl/art. trips exist in the
;    extl/interstate interchanges and vise-versa. Finally it writes out
;    an array containing the column totals of the total external trips.
;    to be used in the following program.
;
;    2) This program is used to make sure the row & column totals
;    of the external trip files match those of P/A files produced in
;    the trip generation process. the adjustment will affect the As
;    much more than the P's.
```

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


RUN PGM=MATRIX
  MATI= EST.TEM       ; read in initial ext trips from trip dist.
  ARRAY COLTOTX=2191  ; set up an array for init.col totals for ext trips

  MW[5]  = MI.1.5 ; Get Initial Extl Interstate table
  MW[6]  = MI.1.6 ; Get Initial Extl Arterial   table

  MW[15] = MW[5]  ; Store HBS trips with Extl/Interst.  FFs in MW15
  MW[16] = MW[6]  ; Store HBS trips with Extl/Arterial  FFs in MW16
;
; Now, strip away or zero out unwanted interchanges
; interstate-type external stations  MW[15]
;-
IF  (I =    1-2144)
  MW[15] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[15] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2145,2147-2148,2150-2153,2155,2157-2165,2167-2170,
              2172-2179,2181,2185-2186,2188-2190)  MW[15] =     0 ; ext art. ijs

MW[15] =     0, INCLUDE=2145,2147-2148,2150-2153,2155,2157-2165,2167-2170,
                        2172-2179,2181,2185-2186,2188-2190 ; ext art. ijs

;
; Now, strip away or zero out unwanted interchanges
; arterial-type external stations  MW[16]
;
IF  (I =    1-2144)
  MW[16] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[16] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2146,2149,2154,2156,2166,2171,2180,2182,2183,2184,
              2187,2191)  MW[16] =     0 ; ext int.ijs

MW[16] =     0, INCLUDE=2146,2149,2154,2156,2166,2171,2180,2182,2183,2184,
                        2187,2191 ; ext int.ijs
;
; -----------------------------------------------------------------
;  ACCUMULATE COLUMN TOTALS of ALL INITIAL EXTERNAL TRIPS
JLOOP
  COLTOTX[J]=COLTOTX[J] + MW[15][J] + MW[16][J]
ENDJLOOP

;
; NOW, WRITE OUT THE INITIAL COLUMN TOTALS FOR Later Use
IF (I=2191)
   LOOP K=2145,2191
        PRINT FORM=8,LIST=K, COLTOTX[K], FILE=IXCOLTOT.DAT
   ENDLOOP
ENDIF
MATO = EXT.TEM,MO=15,16 ;   Final HBS  trip table(s)

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

RUN PGM=MATRIX
  MATI[1]= EXT.TEM
  MATI[2]= EST.TEM
  ZDATI[1]=@HBSPROALL@, Z=#1,RCNTL=#2       ; total trip gen. prod.totals
  ZDATI[2]=@HBSATTALL@, Z=#1,CCNTL=#2       ; total trip gen. attr.totals
  ZDATI[3]=IXCOLTOT.DAT, Z=#1,ICOLTOT=2
```

```
  FILLMW MW[1]  = MI.2.1,2,3,4
  FILLMW MW[5]  = MI.1.1,2

  ARRAY IROWTOTA= 2191

  ARRAY FROWTOT = 2191
  ARRAY FCOLTOT = 2191

  ARRAY ROWADJ  = 2191
  ARRAY COLADJ  = 2191

  MW[15] = MW[5]  ; Store HBS trips with Extl/Interst.  FFs in MW15
  MW[16] = MW[6]  ; Store HBS trips with Extl/Arterial  FFs in MW16

; --------------
IF (i=1-2144)
 JLOOP
    IF  (ICOLTOT[j]   = 0)
         COLADJ[J]    = 1.0
    ELSE
         COLADJ[J]    = CCNTL[j]/ICOLTOT[j]
    ENDIF
      MW[25] = ROUND (MW[15][J]*COLADJ[J])
      MW[26] = ROUND (MW[16][J]*COLADJ[J])
      FCOLTOT[J] = FCOLTOT[J]+ MW[25][J] + MW[26][J]
 endjloop
ELSE
    irowtota[i] = ROWSUM(15) + rowsum(16)


 JLOOP
    IF  (IrowTOTa[i]   = 0)
         rowADJ[i]    = 1.0
    ELSE
         rowADJ[i]    = RCNTL[i]/IROWTOTa[i]
    ENDIF
    MW[25] =  ROUND (MW[15][J]*ROWADJ[i])
    MW[26] =  ROUND (MW[16][J]*ROWADJ[i])
    FROWTOT[i]  = FROWTOT[i]  + MW[25][j] + MW[26][j]
 endjloop
endif

 ;
 ; Now replace full external trip tables with 'trimmed' tables
 ; and compute Final Total Trip Table

 MW[5] = MW[25]
 MW[6] = MW[26]
 DUMMY=ROWADD(7,1,2,3,4,5,6)


MATO = @HBSTDOUT@,MO=1-7 ;   Final HBS  trip table(s)

IF (I=2191) ; if at the last zone
   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xcolHBS.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',ICOLTOT[INDEX](8),' ',CCNTL[INDEX](8),
                            FCOLTOT[INDEX](8),' ',coladj[INDEX](8.3),
             FILE=xcolHBS.asc
   ENDLOOP



   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xrowHBS.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',IROWTOTA[INDEX](8),RCNTL[INDEX](8),
                            FROWTOT[INDEX](8),rowadj[INDEX](8.3),
             FILE=xROWHBS.asc
```

```
   ENDLOOP
ENDIF
;-------------------------------------------------------------------
; END of HBS Trip Distribution
;-------------------------------------------------------------------


; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////   7) Start HBO Trip Distribution Here:              /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

RUN PGM=TRIPDIST
  MATI= HBOCI1_4.DAT,   ; Composite Time Impedances HBO Inc.Levels 1-4
        SOVOPTTE.skf,   ; Off Pk    Time Imped. for Extl/Int. Trip Dist.
        @HBOK@          ; HBW Kfactors (Scaled by 1000.0)

; Put impedance matrices in work tables 11-16
; tabs 11-14 are comp.time for inc.levels 1,2,3,4, tabs 15,16 are
; both Offpk SOV time. All impedance and time values are in whole minutes.

  FILLMW MW[11]  = MI.1.1,2,3,4,MI.2.1,MI.2.1

; Put K-factor matrix in work table 20
; The k-factor values are scaled by 1000s (eg, a mtx value of '1000'=1.0)
; the K-factors are appiled across all HBO distributions

  FILLMW MW[20] = MI.3.1
  DUMMY = ROWFAC(20,0.001) ; scale k-factor's to 'true' units


ZDATI[1]  = @HBOPROINC@, Z=#1,P1=#2,    ; HBO Inc. 1    productions
                              P2=#3,    ; HBO Inc. 2    productions
                              P3=#4,    ; HBO Inc. 3    productions
                              P4=#5     ; HBO Inc. 4    productions
ZDATI[2]  = @HBOPROALL@, Z=#1,P5=#2     ; HBO Totl      productions

ZDATI[3]  = @HBOATTINC@, Z=#1,A1=#2,    ; HBO Inc. 1    attractions
                              A2=#3,    ; HBO Inc. 2    attractions
                              A3=#4,    ; HBO Inc. 3    attractions
                              A4=#5     ; HBO Inc. 4    attractions
ZDATI[4]  = @HBOATTALL@, Z=#1,A5=#2     ; HBO Totl      attractions


LOOKUP FILE = @IHBOFFS@,INTERPOLATE=N,SETUPPER=T,FAIL=,0,,NAME = FF,
       LOOKUP[1] = 1, RESULT = 2,  ; HBO INC 1           F-FACTORS
       LOOKUP[2] = 1, RESULT = 3,  ; HBO INC 2           F-FACTORS
       LOOKUP[3] = 1, RESULT = 4,  ; HBO INC 3           F-FACTORS
       LOOKUP[4] = 1, RESULT = 5,  ; HBO INC 4           F-FACTORS
       LOOKUP[5] = 1, RESULT = 6,  ; HBO Extl-Interstate F-FACTORS
       LOOKUP[6] = 1, RESULT = 7   ; HBO Extl-Arterial   F-FACTORS

;  Establish production and attraction vectors here:

SETPA P[1] = P1, P[2] = P2, P[3] = P3, P[4] = P4, P[5] = P5, P[6] = P5
SETPA A[1] = A1, A[2] = A2, A[3] = A3, A[4] = A4, A[5] = A5, A[6] = A5

MAXITERS = 7    ; specify GM iterations to be 7


;  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[15], FFACTORS= FF, KFACTORS = MW[20]
GRAVITY  PURPOSE  = 6, LOS=MW[16], FFACTORS= FF, KFACTORS = MW[20]

 ; Write out trips as integers to be consistent with MINUTP
```

```
DUMMY = ROWFIX(1)
DUMMY = ROWFIX(2)
DUMMY = ROWFIX(3)
DUMMY = ROWFIX(4)
DUMMY = ROWFIX(5)
DUMMY = ROWFIX(6)

MATO = EST.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 - HBO ALL (Extl/Interst. FFs)
                         ;       T6 - HBO ALL (Extle/Arter.  FFs)
; Note: The External Interstate and Arterial trips (t5 & t6) will be
; refined in the next two matrix runs

ENDRUN
;
;
;-------------------------------------------------------------------
; Refinement of External Trip Distribution Trip Tables
; (External Interstate and External Arterial Trips)
; There are two MATRIX steps
;    1) This program reads the external interstate and external arterial
;    tables produced from the external trip dist. process above. The
;    program wipes out trips in internal or through trip interchanges
;    if any exist (there may be a small chance that some trips exist).
;    It also makes sure that no extl/art. trips exist in the
;    extl/interstate interchanges and vise-versa. Finally it writes out
;    an array containing the column totals of the total external trips.
;    to be used in the following program.
;
;    2) This program is used to make sure the row & column totals
;    of the external trip files match those of P/A files produced in
;    the trip generation process. the adjustment will affect the As
;    much more than the P's.
;-------------------------------------------------------------------


RUN PGM=MATRIX
  MATI= EST.TEM       ; read in initial ext trips from trip dist.
  ARRAY COLTOTX=2191  ; set up an array for init.col totals for ext trips

  MW[5]  = MI.1.5 ; Get Initial Extl Interstate table
  MW[6]  = MI.1.6 ; Get Initial Extl Arterial   table

  MW[15] = MW[5]  ; Store HBO trips with Extl/Interst.  FFs in MW15
  MW[16] = MW[6]  ; Store HBO trips with Extl/Arterial  FFs in MW16
;
; Now, strip away or zero out unwanted interchanges
; interstate-type external stations  MW[15]
;-
IF  (I =    1-2144)
  MW[15] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[15] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2145,2147-2148,2150-2153,2155,2157-2165,2167-2170,
              2172-2179,2181,2185-2186,2188-2190)  MW[15] =     0 ; ext art. ijs

MW[15] =     0, INCLUDE=2145,2147-2148,2150-2153,2155,2157-2165,2167-2170,
                        2172-2179,2181,2185-2186,2188-2190; ext art. ijs

;
; Now, strip away or zero out unwanted interchanges
; arterial-type external stations  MW[16]
;
IF  (I =    1-2144)
  MW[16] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[16] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2146,2149,2154,2156,2166,2171,2180,2182,2183,
              2184,2187,2191)  MW[16] =     0 ; ext int.ijs

MW[16] =     0, INCLUDE=2146,2149,2154,2156,2166,2171,2180,2182,2183,
                        2184,2187,2191 ; ext int.ijs
;
; ------------------------------------------------------------------
;  ACCUMULATE COLUMN TOTALS of ALL INITIAL EXTERNAL TRIPS
JLOOP
  COLTOTX[J]=COLTOTX[J] + MW[15][J] + MW[16][J]
ENDJLOOP

;
; NOW, WRITE OUT THE INITIAL COLUMN TOTALS FOR Later Use
IF (I=2191)
   LOOP K=2145,2191
        PRINT FORM=8,LIST=K, COLTOTX[K], FILE=IXCOLTOT.DAT
   ENDLOOP
ENDIF
MATO = EXT.TEM,MO=15,16 ;   Final HBO  trip table(s)

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

RUN PGM=MATRIX
  MATI[1]= EXT.TEM
  MATI[2]= EST.TEM
  ZDATI[1]=@HBOPROALL@, Z=#1,RCNTL=#2       ; total trip gen. prod.totals
  ZDATI[2]=@HBOATTALL@, Z=#1,CCNTL=#2       ; total trip gen. attr.totals
  ZDATI[3]=IXCOLTOT.DAT, Z=#1,ICOLTOT=2

  FILLMW MW[1]  = MI.2.1,2,3,4
  FILLMW MW[5]  = MI.1.1,2

  ARRAY IROWTOTA= 2191

  ARRAY FROWTOT = 2191
  ARRAY FCOLTOT = 2191

  ARRAY ROWADJ  = 2191
  ARRAY COLADJ  = 2191

  MW[15] = MW[5]  ; Store HBO trips with Extl/Interst.  FFs in MW15
  MW[16] = MW[6]  ; Store HBO trips with Extl/Arterial  FFs in MW16

; -------------
IF (i=1-2144)
 JLOOP
    IF  (ICOLTOT[j]   = 0)
         COLADJ[J]    = 1.0
    ELSE
         COLADJ[J]    = CCNTL[j]/ICOLTOT[j]
    ENDIF
      MW[25] = ROUND (MW[15][J]*COLADJ[J])
      MW[26] = ROUND (MW[16][J]*COLADJ[J])
      FCOLTOT[J] = FCOLTOT[J]+ MW[25][J] + MW[26][J]
 endjloop
ELSE
    irowtota[i] = ROWSUM(15) + rowsum(16)
```

```
 JLOOP
    IF  (IrowTOTa[i]   = 0)
         rowADJ[i]    = 1.0
    ELSE
         rowADJ[i]    = RCNTL[i]/IROWTOTa[i]
    ENDIF
    MW[25] =  ROUND (MW[15][J]*ROWADJ[i])
    MW[26] =  ROUND (MW[16][J]*ROWADJ[i])
    FROWTOT[i]  = FROWTOT[i]  + MW[25][j] + MW[26][j]
 endjloop
endif

 ;
 ; Now replace full external trip tables with 'trimmed' tables
 ; and compute Final Total Trip Table


 MW[5] = MW[25]
 MW[6] = MW[26]
 DUMMY=ROWADD(7,1,2,3,4,5,6)


MATO = @HBOTDOUT@,MO=1-7 ;   Final HBO  trip table(s)

IF (I=2191) ; if at the last zone
   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xcolHBO.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',ICOLTOT[INDEX](8),' ',CCNTL[INDEX](8),
                            FCOLTOT[INDEX](8),' ',coladj[INDEX](8.3),
             FILE=xcolHBO.asc
   ENDLOOP



   LIST = ' TAZ inital contrl  final adjftr ',FILE=xrowHBO.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',IROWTOTA[INDEX](8),RCNTL[INDEX](8),
                            FROWTOT[INDEX](8),rowadj[INDEX](8.3),
             FILE=xROWHBO.asc
   ENDLOOP
ENDIF
;-------------------------------------------------------------------
; END of HBO Trip Distribution
;-------------------------------------------------------------------



; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|
; |//////   8) Start NHB, Med Trk, Hvy Trk Trip Distribution Here: /////|
; |\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\|

RUN PGM=TRIPDIST
  MATI= NHBCI.DAT,      ; Composite Time Impedances NHB Inc.Levels 1-4
        SOVOPTT.SKF,    ; Off-Pk    Time Imped. for Intl      Trip Dist.
        SOVOPTTE.SKF,   ; Off Pk    Time Imped. for Extl/Int. Trip Dist.
        @NHBK@,         ; NHB       Kfactors (Scaled by 1000.0)
        @MTKK@,         ; Med Truck  Kfactors (Scaled by 1000.0)
        @HTKK@          ; Hvy Truck  Kfactors (Scaled by 1000.0)

; Put impedance matrices in work tables 11-13
; tab  11 is comp.time for Intl NHB Trips                  Purp 1
; tab  12 is SOV Off Pk time for Intl Mtk, HTK Trips       Purp 2,3
; tab  13 is SOV Off Pk time for Extl NHB, Mtk, HTK Trips   Purp 4-7
; Offpk SOV time. All impedance and time values are in whole minutes.

  FILLMW MW[11]  = MI.1.1,MI.2.1,MI.3.1

; Put K-factor matrices in work tables 20-22
```

```
; The k-factor values are scaled by 1000s (eg, a mtx value of '1000'=1.0)
; the NHB K-factors are appiled across all Intl&Extl distributions

         MW[20] = MI.4.1   ; NHB Kfactors
         MW[21] = MI.5.1   ; MTK Intl K-Factors
         MW[22] = MI.6.1   ; HTK Intl K-Factors
  DUMMY = ROWFAC(20,0.001) ; scale NHB k-factor's to 'true' units
  DUMMY = ROWFAC(21,0.001) ; scale MTK k-factor's to 'true' units
  DUMMY = ROWFAC(22,0.001) ; scale HTK k-factor's to 'true' units

ZDATI[1]  = @NHBPROINT@, Z=#1,P1=#2  ; Intl NHB      productions
ZDATI[2]  = @MTKPROINT@, Z=#1,P2=#2  ; Intl Med Trk  productions
ZDATI[3]  = @HTKPROINT@, Z=#1,P3=#2  ; Intl Hvy Trk  productions
ZDATI[4]  = @NHBPROALL@, Z=#1,P4=#2  ; Intl/Extl NHB productions
ZDATI[5]  = @MTKPROALL@, Z=#1,P5=#2  ; Intl/Extl MTK productions
ZDATI[6]  = @HTKPROALL@, Z=#1,P6=#2  ; Intl/Extl HTK productions


LOOKUP FILE = @IN_TFFS@,INTERPOLATE=N,SETUPPER=T,FAIL=,0,,NAME = FF,
       LOOKUP[1] = 1, RESULT = 2,  ; NHB Internal        F-FACTORS
       LOOKUP[2] = 1, RESULT = 3,  ; MTK Internal        F-FACTORS
       LOOKUP[3] = 1, RESULT = 4,  ; HTK Internal        F-FACTORS
       LOOKUP[4] = 1, RESULT = 5,  ; NHB Extl/Interst    F-FACTORS
       LOOKUP[5] = 1, RESULT = 6,  ; NHB Extl/Arterial   F-FACTORS
       LOOKUP[6] = 1, RESULT = 7,  ; MTK External        F-FACTORS
       LOOKUP[7] = 1, RESULT = 8   ; HTK External        F-FACTORS

;  Establish production and attraction vectors here:
;  Note here that I am reading in production z-files for BOTH
;  Production and Attraction Vectors.
;
;
;
;
SETPA P[1]=P1,P[2]=P2,P[3]=P3,P[4]=P4,P[5]=P4,P[6]=P5,P[7]=P6
SETPA A[1]=P1,A[2]=P2,A[3]=P3,A[4]=P4,A[5]=P4,A[6]=P5,A[7]=P6

MAXITERS = 7    ; specify GM iterations to be 7


;  Establish gravity model run files & parameters
GRAVITY  PURPOSE  = 1, LOS=MW[11], FFACTORS= FF, KFACTORS = MW[20] ;nhbin
GRAVITY  PURPOSE  = 2, LOS=MW[12], FFACTORS= FF, KFACTORS = MW[21] ;mtkin
GRAVITY  PURPOSE  = 3, LOS=MW[12], FFACTORS= FF, KFACTORS = MW[22] ;htkin
GRAVITY  PURPOSE  = 4, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[20] ;nhbxi
GRAVITY  PURPOSE  = 5, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[20] ;nhbxa
GRAVITY  PURPOSE  = 6, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[21] ;mtkex
GRAVITY  PURPOSE  = 7, LOS=MW[13], FFACTORS= FF, KFACTORS = MW[22] ;htkex

; Write out trips as integers to be consistent with MINUTP

DUMMY = ROWFIX(1)
DUMMY = ROWFIX(2)
DUMMY = ROWFIX(3)
DUMMY = ROWFIX(4)
DUMMY = ROWFIX(5)
DUMMY = ROWFIX(6)
DUMMY = ROWFIX(7)

MATO = EST.TEM,MO=1-7    ;   Final NHB Truck  trip tables:
                         ;       T1 - NHB (i-i)
                         ;       T2 - MTK (i-i)
                         ;       T3 - HTK (i-i)
                         ;       T4 - NHB (Extl/Interst)
                         ;       T5 - NHB (Extl/Arterial)
                         ;       T6 - MTK (Extl)
                         ;       T7 - HTK (Extl)
; Note: The External Interstate and Arterial trips (t4 - t7) will be
```

```
; refined in the next two matrix runs

ENDRUN
;
;
;-------------------------------------------------------------------
; Refinement of External Trip Distribution Trip Tables
; (External Interstate and External Arterial Trips)
; There are two MATRIX steps
;    1) This program reads the external interstate and external arterial
;    tables produced from the external trip dist. process above. The
;    program wipes out trips in internal or through trip interchanges
;    if any exist (there may be a small chance that some trips exist).
;    It also makes sure that no extl/art. trips exist in the
;    extl/interstate interchanges and vise-versa. Finally it writes out
;    an array containing the column totals of the total external trips.
;
;-------------------------------------------------------------------


RUN PGM=MATRIX
  MATI= EST.TEM       ; read in initial ext trips from trip dist.
  ARRAY COLTOTN=2191  ; set up array for init.col totals for NHB ext
  ARRAY COLTOTM=2191  ; set up array for init.col totals for MTK ext trips
  ARRAY COLTOTH=2191  ; set up array for init.col totals for HTK ext trips

  MW[5]  = MI.1.4 ; Get Initial NHB Extl Interstate table
  MW[6]  = MI.1.5 ; Get Initial NHB Extl Arterial   table
  MW[7]  = MI.1.6 ; Get Initial MTK Extl            table
  MW[8]  = MI.1.7 ; Get Initial HTK Extl            table

  MW[15] = MW[5]  ; Store NHB Extl/Interst. Trips  in MW15
  MW[16] = MW[6]  ; Store NHB Extl/Arterial Trips  in MW16
  MW[17] = MW[7]  ; Store MTK External      Trips  in MW17
  MW[18] = MW[8]  ; Store HTK External      Trips  in MW18
;
; Now, strip away or zero out unwanted interchanges
; interstate-type external stations  MW[15]
;-
IF  (I =    1-2144)
  MW[15] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[15] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2145,2147-2148,2150-2153,2155,2157-2165,2167-2170,
              2172-2179,2181,2185-2186,2188-2190)  MW[15] =     0 ; ext art. ijs

MW[15] =     0, INCLUDE=2145,2147-2148,2150-2153,2155,2157-2165,2167-2170,
              2172-2179,2181,2185-2186,2188-2190; ext art. ijs

;
; Now, strip away or zero out unwanted interchanges
; arterial-type external stations  MW[16]
;
IF  (I =    1-2144)
  MW[16] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[16] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

IF  (I =      2146,2149,2154,2156,2166,2171,2180,2182,2183,
              2184,2187,2191)  MW[16] =     0 ; ext int.ijs

MW[16] =     0, INCLUDE=2146,2149,2154,2156,2166,2171,2180,2182,2183,
                        2184,2187,2191 ; ext int.ijs
;
;
```

```
; Now, strip away or zero out unwanted interchanges
; for Medium Trucks                  MW[17]
;-
IF  (I =    1-2144)
  MW[17] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[17] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

;
; Now, strip away or zero out unwanted interchanges
; for Heavy Trucks                   MW[18]
;
IF  (I =    1-2144)
  MW[18] =     0, INCLUDE=    1-2144 ; i-i ijs
ELSE
  MW[18] =     0, INCLUDE= 2145-2191 ; x-x ijs
ENDIF

;
; -----------------------------------------------------------------
;  ACCUMULATE COLUMN TOTALS of ALL INITIAL EXTERNAL TRIPS
JLOOP
  COLTOTN[J]=COLTOTN[J] + MW[15][J] + MW[16][J]  ;Col. Total NHB Extl
  COLTOTM[J]=COLTOTM[J] + MW[17][J]              ;Col. Total MTK Extl
  COLTOTH[J]=COLTOTH[J] + MW[18][J]              ;Col. Total HTK Extl
ENDJLOOP

;
; NOW, WRITE OUT THE INITIAL COLUMN TOTALS FOR Later Use
IF (I=2191)
   LOOP K=2145,2191
        PRINT FORM=8,LIST=K, COLTOTN[K], COLTOTM[K], COLTOTH[K],
                             FILE=IXCOLTOT.DAT
   ENDLOOP
ENDIF
MATO = EXT.TEM,MO=15,16,17,18 ; Final Extl NHB, Mtk, HTK  trip table(s)

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

RUN PGM=MATRIX    ; Adjust NHB Externals
  MATI[1]= EXT.TEM
  MATI[2]= EST.TEM
  ZDATI[1] = @NHBPROALL@, Z=#1,RCNTL=#2    ; NHB Trip Production Controls
  ZDATI[2] = @NHBATTALL@, Z=#1,CCNTL=#2    ; NHB Trip Attraction Controls
  ZDATI[3] = IXCOLTOT.DAT, Z=#1,ICOLTOT=2

  FILLMW MW[1]  = MI.2.1       ; mw 1   i-i nhb
  FILLMW MW[4]  = MI.1.1,2     ; mw 4-5 ext nhb(intst,art)

  ARRAY IROWTOTA = 2191
  ARRAY FROWTOT  = 2191
  ARRAY FCOLTOT  = 2191
  ARRAY ROWADJ   = 2191
  ARRAY COLADJ   = 2191

  MW[14] = MW[4]  ; Extr/Int. trips to be adj. --Start w/ initial trips
  MW[15] = MW[5]  ; Extr/Art. trips to be adj. --Start w/ initial trips

 IF (I=1-2144)
    JLOOP
     IF (ICOLTOT[J] = 0)
        COLADJ[J] = 1.0
     ELSE
        COLADJ[J] = CCNTL[J] / ICOLTOT[J]
     ENDIF

     MW[24] = ROUND (MW[14] * COLADJ[J])
```

```
     MW[25] = ROUND (MW[15] * COLADJ[J])
     FCOLTOT[J] = FCOLTOT[J] + MW[24] + MW[25]
    ENDJLOOP
ELSE
   IROWTOTA[I] = ROWSUM(14) + ROWSUM(15)

    JLOOP
     IF (IROWTOTA[I] = 0)
        ROWADJ[I] = 1.0
     ELSE
        ROWADJ[I] = RCNTL[I] / IROWTOTA[I]
     ENDIF

     MW[24] = ROUND (MW[14][J] * ROWADJ[I])
     MW[25] = ROUND (MW[15][J] * ROWADJ[I])
     FROWTOT[I] = FROWTOT[I] + MW[24][J] + MW[25][J]
    ENDJLOOP
ENDIF



  MW[4] = MW[24]  ;  Replace initial nhb ext/int trips w/ adj trips
  MW[5] = MW[25]  ;  Replace initial nhb ext/art trips w/ adj trips

  DUMMY=ROWADD(10,1,4,5)  ; total NHB trips

MATO[1] = @NHBTDOUT@,MO=1,4,5,10 ;   Final NHB  trip table(s)  1-4
                                 ;   intl,ext/int,ext/art,total


IF (I=2191) ; if at the last zone
   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xcolNHB.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',ICOLTOT[INDEX](8),' ',CCNTL[INDEX](8),
                            FCOLTOT[INDEX](8),' ',coladj[INDEX](8.3),
             FILE=xcolNHB.asc
   ENDLOOP



   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xrowNHB.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',IROWTOTA[INDEX](8),RCNTL[INDEX](8),
                            FROWTOT[INDEX](8),rowadj[INDEX](8.3),
             FILE=xROWNHB.asc
   ENDLOOP
ENDIF
;------------------------------------------------------------------
RUN PGM=MATRIX    ; Adjust Medium Truck Externals
  MATI[1]= EXT.TEM
  MATI[2]= EST.TEM
  ZDATI[1] = @MTKPROALL@, Z=#1,RCNTL=#2    ; MTK Trip Production Controls
  ZDATI[2] = @MTKATTALL@, Z=#1,CCNTL=#2    ; MTK Trip Attraction Controls
  ZDATI[3] = IXCOLTOT.DAT, Z=#1,ICOLTOT=3

  FILLMW MW[1]  = MI.2.2       ;  i-i mtk
  FILLMW MW[4]  = MI.1.3       ;  ext mtk

  ARRAY IROWTOTA = 2191
  ARRAY FROWTOT  = 2191
  ARRAY FCOLTOT  = 2191
  ARRAY ROWADJ   = 2191
  ARRAY COLADJ   = 2191

  MW[14] = MW[4]  ; Extr/Int. trips to be adj. --Start w/ initial trips

 IF (I=1-2144)
    JLOOP
     IF (ICOLTOT[J] = 0)
        COLADJ[J] = 1.0
     ELSE
        COLADJ[J] = CCNTL[J] / ICOLTOT[J]
     ENDIF

     MW[24] = ROUND (MW[14] * COLADJ[J])
     FCOLTOT[J] = FCOLTOT[J] + MW[24]
    ENDJLOOP
ELSE
   IROWTOTA[I] = ROWSUM(14)

    JLOOP
     IF (IROWTOTA[I] = 0)
        ROWADJ[I] = 1.0
     ELSE
        ROWADJ[I] = RCNTL[I] / IROWTOTA[I]
     ENDIF

     MW[24] = ROUND (MW[14][J] * ROWADJ[I])
     FROWTOT[I] = FROWTOT[I] + MW[24][J]
    ENDJLOOP
ENDIF



  MW[4] = MW[24]  ;  Replace initial MTK ext trips w/ adj trips

  DUMMY=ROWADD(10,1,4)       ; total MTK trips

MATO[1] = @MTKTDOUT@,MO=1,4,10   ;   Final MTK  trip table(s)  1-3
                                 ;   intl,ext,total


IF (I=2191) ; if at the last zone
   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xcolMTK.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',ICOLTOT[INDEX](8),' ',CCNTL[INDEX](8),
                            FCOLTOT[INDEX](8),' ',coladj[INDEX](8.3),
             FILE=xcolMTK.asc
   ENDLOOP



   LIST = ' TAZ inital contrl  final adjftr ',FILE=xrowMTK.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',IROWTOTA[INDEX](8),RCNTL[INDEX](8),
                            FROWTOT[INDEX](8),rowadj[INDEX](8.3),
             FILE=xrowMTK.asc
   ENDLOOP
ENDIF


;------------------------------------------------------------------
RUN PGM=MATRIX    ; Adjust Heavy Truck Externals
  MATI[1]= EXT.TEM
  MATI[2]= EST.TEM
  ZDATI[1] = @HTKPROALL@, Z=#1,RCNTL=#2    ; HTK Trip Production Controls
  ZDATI[2] = @HTKATTALL@, Z=#1,CCNTL=#2    ; HTK Trip Attraction Controls
  ZDATI[3] = IXCOLTOT.DAT, Z=#1,ICOLTOT=4

  FILLMW MW[1]  = MI.2.3       ;  i-i htk
  FILLMW MW[4]  = MI.1.4       ;  ext htk

  ARRAY IROWTOTA = 2191
  ARRAY FROWTOT  = 2191
  ARRAY FCOLTOT  = 2191
```

```
  ARRAY ROWADJ   = 2191
  ARRAY COLADJ   = 2191

  MW[14] = MW[4]  ; Extr/Int. trips to be adj. --Start w/ initial trips

 IF (I=1-2144)
    JLOOP
     IF (ICOLTOT[J] = 0)
        COLADJ[J] = 1.0
     ELSE
        COLADJ[J] = CCNTL[J] / ICOLTOT[J]
     ENDIF

     MW[24] = ROUND (MW[14] * COLADJ[J])
     FCOLTOT[J] = FCOLTOT[J] + MW[24]
    ENDJLOOP
 ELSE
   IROWTOTA[I] = ROWSUM(14)

    JLOOP
     IF (IROWTOTA[I] = 0)
        ROWADJ[I] = 1.0
     ELSE
        ROWADJ[I] = RCNTL[I] / IROWTOTA[I]
     ENDIF

     MW[24] = ROUND (MW[14][J] * ROWADJ[I])
     FROWTOT[I] = FROWTOT[I] + MW[24][J]
    ENDJLOOP
 ENDIF


 MW[4] = MW[24]  ;  Replace initial HTK ext trips w/ adj trips

  DUMMY=ROWADD(10,1,4)         ; total HTK trips

MATO[1] = @HTKTDOUT@,MO=1,4,10   ;   Final HTK  trip table(s)  1-3
                                 ;   intl,ext,total


IF (I=2191) ; if at the last zone
   LIST = ' TAZ inital contrl  final adjftr ',FILE=xcolHTK.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',ICOLTOT[INDEX](8),' ',CCNTL[INDEX](8),
                            FCOLTOT[INDEX](8),' ',coladj[INDEX](8.3),
             FILE=xcolHTK.asc
   ENDLOOP



   LIST = ' TAZ  inital  contrl   final  adjftr ',FILE=xrowHTK.asc
   LOOP INDEX = 2145,2191
        LIST = INDEX(4),' ',IROWTOTA[INDEX](8),RCNTL[INDEX](8),
                            FROWTOT[INDEX](8),rowadj[INDEX](8.3),
             FILE=xrowHTK.asc
   ENDLOOP
ENDIF

;-------------------------------------------------------------------
; END of NHB & Medium, Heavy Truck Trip Distribution
;-------------------------------------------------------------------

;
; //////////////////////////////////////////////////////////////////////
; \\\\\\\\\    9) Get final trip distribution totals                \\\
; \\\\\\\\\       and prepare input trips for the mode choice model \\\
; //////////////////////////////////////////////////////////////////////
```

```
RUN PGM=MATRIX
ZONES = 2191

  MATI[1]=   @HBWTDOUT@
  MATI[2]=   @HBSTDOUT@
  MATI[3]=   @HBOTDOUT@
  MATI[4]=   @NHBTDOUT@
  MATI[5]=   @MTKTDOUT@
  MATI[6]=   @HTKTDOUT@

  MW[1]  = MI.1.7       ; Total HBW Trips
  MW[2]  = MI.2.7       ; Total HBS Trips
  MW[3]  = MI.3.7       ; Total HBO Trips
  MW[4]  = MI.4.4       ; Total NHB Trips
  MW[5]  = MI.5.3       ; Total MTK Trips
  MW[6]  = MI.6.3       ; Total HTK Trips

  MATO[1]= %_iter_%_hbwmu.ptt,MO=1,FORMAT=MINUTP
  MATO[2]= %_iter_%_hbsmu.ptt,MO=2,FORMAT=MINUTP
  MATO[3]= %_iter_%_hbomu.ptt,MO=3,FORMAT=MINUTP
  MATO[4]= %_iter_%_nhbmu.ptt,MO=4,FORMAT=MINUTP
ENDRUN
;
;===================================================================
;
;----------------------------------------------------------
; Step 10.
; Standard 23x23 Summaries
; Trip Distribution (HBW,HBS,HBO,NHB,MTK,HTK) and formats
; them in neat jurisdictional summaries (23x23)
;
;
;----------------------------------------------------------

COPY FILE=DJ.EQV
;   -- Start of Jurisiction-to-TAZ equivalency --
; Updated RM/MS 8/10/2006 (Mtg and PG Zones)
D 1=1-88                         ; DC cr
D 2=89-319                       ; DC ncr
D 3=320-639,648,650              ; MTG MD
D 4=640-647,649,651-1029         ; PG  MD
D 5=1230-1238                    ; ARL core
D 6=1239-1329                    ; ARLcnore
D 7=1330-1399                    ; ALX VA
D 8=1400-1779                   ; FFX VA
D 9=1780-1919                   ; LDN VA
D 10=1920-2069                   ; PW  VA
D 11=1030-1059                    ; FRD MD
D 12=1060-1079                   ; CAR MD
D 13=1080-1109                    ; HOW MD
D 14=1110-1149                    ; AAR MD
D 15=1150-1169                   ; CAL
D 16=1170-1199                   ; STM
D 17=1200-1229                    ; CHS MD
D 18=2115-2129                   ; FAU VA
D 19=2080-2099                   ; STA VA
D 20=2130-2134,2135-2144         ; CLK/JEF
D 21=2100-2104,2105-2114         ; FBG/SPTS
D 22=2070-2079                   ; KGEOVA
D 23=2145-2191                   ; EXTRNLS
;   -- end of Jurisiction-to-TAZ equivalency --
ENDCOPY

RUN PGM=MATRIX
  ZONES=2191
  MATI[1]= @HBWTDOUT@
  MATI[2]= @HBSTDOUT@
  MATI[3]= @HBOTDOUT@
```

```
  MATI[4]= @NHBTDOUT@
  MATI[5]= @MTKTDOUT@
  MATI[6]= @HTKTDOUT@

  MW[1] = MI.1.7; HBW TRIP TABLE/TAZ-LEVEL
  MW[2] = MI.2.7; HBS TRIP TABLE/TAZ-LEVEL
  MW[3] = MI.3.7; HBO TRIP TABLE/TAZ-LEVEL
  MW[4] = MI.4.4; NHB TRIP TABLE/TAZ-LEVEL
  MW[5] = MI.5.3; MTK TRIP TABLE/TAZ-LEVEL
  MW[6] = MI.6.3; HTK TRIP TABLE/TAZ-LEVEL

 ; -- PLACEMARKER TABLES - FUTURE WORK
  MW[11] = 0 ;MI.11.@TABNO1@   HBW TRIP TABLE/TAZ-LEVEL
  MW[12] = 0 ;MI.12.@TABNO2@   HBS TRIP TABLE/TAZ-LEVEL
  MW[13] = 0 ;MI.13.@TABNO3@   HBO TRIP TABLE/TAZ-LEVEL
  MW[14] = 0 ;MI.14.@TABNO4@   NHB TRIP TABLE/TAZ-LEVEL
  MW[15] = 0 ;MI.15.@TABNO5@   MTK TRIP TABLE/TAZ-LEVEL
  MW[16] = 0 ;MI.16.@TABNO6@   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]  = NHB.SQZ MO=4,14 ; OUTPUT NHB TABLE(S), SQUEEZED
        MATO[5]  = MTK.SQZ MO=5,15 ; OUTPUT MTK TABLE(S), SQUEEZED
        MATO[6]  = HTK.SQZ MO=6,16 ; OUTPUT HTK TABLE(S), SQUEEZED

  ; renumber OUT.MAT according to DJ.EQV
  RENUMBER FILE=DJ.EQV, MISSINGZI=M, MISSINGZO=W
ENDRUN

;
LOOP PURP=1,6 ; 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     = 'NHB.SQZ'
  PURPOSE     = 'NHB'
  MODE        = 'MOTORIZED PERSON'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=5)
  SQFNAME     = 'MTK.SQZ'
  PURPOSE     = 'MTK'
  MODE        = 'TRUCKS'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ELSEIF (PURP=6)
  SQFNAME     = 'HTK.SQZ'
  PURPOSE     = 'HTK'
  MODE        = 'TRUCKS'
  DCML        = 0
  TABTYPE     = 1
  SCALE       = 1
  OPER        = '+'
ENDIF
;
RUN PGM=MATRIX
  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
```

26 Trip_Generation.s

```
*del tppl*.prn
;=================================================================
;  Trip_Generation.s
;
;   Version 2.2  Trip Generation Script
;
;     Note: NHB trips do not include Commercial Vehicle - they are modeled
;           separately.
;
;   Programmer: Milone
;   Date:       1/11/07
;   6/15/07 The NHB P/A mod file has been updated (..\support\adjzpaf7.upn)
;           The factor columns normally used as pmods by income level
;           are set to '1.00' (they are now unused) and amods updated.
;           The fifth column will be used to modify the final zonal
;           NHB P's and A's.   NHB trip production equation is updated
;          (P-Mod term is removed)
;=================================================================
;
;=================================================================
; Set Parameters:
;=================================================================

ZONESIZE    =       2191                 ;  No. of TAZs
LastIZN     =       2144                 ;  Last Internal TAZ no.

HBW_GlobalAdj  = 1.00                    ;  Global Trips Production Adjustments
HBS_GlobalAdj  = 1.50                    ;  by Purpose
HBO_GlobalAdj  = 1.50                    ;
NHB_GlobalAdj  = 1.16806  ;was 1.17      ;  Reduction from 1.5    **CV mod**
MTK_GlobalAdj  = 1.00                    ;  counting of CV trips
HTK_GlobalAdj  = 1.00                    ;

DCCoreRng   = '     1-88'                ;  TAZ Range/DC Core
DCNCorRng   = '   89-319'                ;  TAZ Range/DC NonCore
VACoreRng   = '1230-1238'                ;  TAZ Range/VA NonCore
VA10MSRng   = '1239-1360'                ;  TAZ Range/VA 10miSq

JURSIZE     =  24                  ;  No. of Juris. Codes
SzCl        =   4                  ;  No. of HH Size   Classes
InCl        =   4                  ;  No. of Income    Classes
VaCl        =   4                  ;  No. of Veh Avail Classes

ISCells     =   InCl*10    + SzCl  ;  No. of Size by Inc matrix cells
ISVCells    =   ISCells*10 + VaCl  ;  No. of Size by Inc. by Veh Avail. matrix
cells
JSCells     =   JURSIZE*10 + SzCl  ;  No. of Juris by Inc. matrix cells
JICells     =   JURSIZE*10 + InCl  ;  No. of Juris by Inc. matrix cells
JVCells     =   JURSIZE*10 + VaCl  ;  No. of Juris by Va. matrix cells

Ofmt        = '(12.2)'             ;  Format of Output P/A files data

Rept         = 'Trip_Generation.txt' ;  Summary Reports

;=================================================================
; Set Input Files:
;=================================================================

ZNFILE_LU    = 'inputs\zone.asc'     ;  Input  Zonal Land Use File
ZNFILE_AT    = 'BASEZON.DAT'         ;  Input  Zonal Area Type File from network
building
ZNFILE_PEX   = 'inputs\pext.asc'     ;  Input ExtStation Trip-Productions, by
Purpose
ZNFILE_AEX   = 'inputs\aext.asc'     ;  Input ExtStation Trip-Attractions, by
Purpose

ZNFILE_I1SV  = 'HHI1_SV.ASC'         ;  Input  Zonal Income 1 HH by Size& VehAv
Classes: i1s1v1,i1s1v2,...,i1s4v4
ZNFILE_I2SV  = 'HHI2_SV.ASC'         ;  Input  Zonal Income 2 HH by Size& VehAv
Classes: i2s1v1,i2s1v2,...,i2s4v4
ZNFILE_I3SV  = 'HHI3_SV.ASC'         ;  Input  Zonal Income 3 HH by Size& VehAv
Classes: i3s1v1,i3s1v2,...,i3s4v4
ZNFILE_I4SV  = 'HHI4_SV.ASC'         ;  Input  Zonal Income 4 HH by Size& VehAv
Classes: i4s1v1,i4s1v2,...,i4s4v4

ZNFILE_ZModW = '..\support\adjzpaf7.upw'
ZNFILE_ZModS = '..\support\adjzpaf7.ups'
ZNFILE_ZModO = '..\support\adjzpaf7.upo'
ZNFILE_ZModN = '..\support\adjzpaf7.upn'
ZNFILE_ZModM = '..\support\adjznpaf.mtk'
ZNFILE_ZModH = '..\support\adjznpaf.htk'

;=================================================================
; Set Output Files:
;=================================================================

 hbwnmpa    = 'hbw_NM_PsAs.ASC'

 hbwps_all  ='hbwpros_all.txt'    hbwas_all  ='hbwattrs_all.txt'
 hbwps_inc  ='hbwpros_inc.txt'    hbwas_inc  ='hbwattrs_inc.txt'

 hbsps_all  ='hbspros_all.txt'    hbsas_all  ='hbsattrs_all.txt'
 hbsps_inc  ='hbspros_inc.txt'    hbsas_inc  ='hbsattrs_inc.txt'

 hbops_all  ='hbopros_all.txt'    hboas_all  ='hboattrs_all.txt'
 hbops_inc  ='hbopros_inc.txt'    hboas_inc  ='hboattrs_inc.txt'

 nhbps_int  ='nhbpros_int.txt'    nhbas_int  ='nhbattrs_int.txt'
 nhbps_all  ='nhbpros_all.txt'    nhbas_all  ='nhbattrs_all.txt'

 mtkps_int  ='mtkpros_int.txt'    mtkas_int  ='mtkattrs_int.txt'
 mtkps_all  ='mtkpros_all.txt'    mtkas_all  ='mtkattrs_all.txt'

 htkps_int  ='htkpros_int.txt'    htkas_int  ='htkattrs_int.txt'
 htkps_all  ='htkpros_all.txt'    htkas_all  ='htkattrs_all.txt'


;==================================================================
;//////////////////////////////////////////////////////////////////=
;==================================================================
;          Begin TP+ Matrix Routine :                             =
;==================================================================
;\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\=
;==================================================================

RUN PGM=MATRIX
ZONES=@ZONESIZE@

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

ARRAY CHHA   = @ISVCells@,         ;  HH ARRAY at Inc/Size/VehAv Crossclass

 ; Current Trip P's/A's by isv Cells

      Prodw= @ISVCells@, Prods= @ISVCells@, Prodo= @ISVCells@, Prodn=
@ISVCells@,ProdwNM=@ISVCells@,
```

```
      Attrw= @ISVCells@, Attrs= @ISVCells@, Attro= @ISVCells@, Attrn=
@ISVCells@,AttrwNM=@ISVCells@,


 ;  ZONAL Trip Arrays

      ZoneJurA  =@LastIZN@,; Zonal Jurisdiction Array

      PHBW_NMTZA=@ZoneSize@,
      PHBWTZA = @ZoneSize@, PHBW1ZA = @ZoneSize@, PHBW2ZA = @ZoneSize@, PHBW3ZA =
@ZoneSize@, PHBW4ZA = @ZoneSize@,
      PHBSTZA = @ZoneSize@, PHBS1ZA = @ZoneSize@, PHBS2ZA = @ZoneSize@, PHBS3ZA =
@ZoneSize@, PHBS4ZA = @ZoneSize@,
      PHBOTZA = @ZoneSize@, PHBO1ZA = @ZoneSize@, PHBO2ZA = @ZoneSize@, PHBO3ZA =
@ZoneSize@, PHBO4ZA = @ZoneSize@,
      PNHBTZA = @ZoneSize@, PNHB1ZA = @ZoneSize@, PNHB2ZA = @ZoneSize@, PNHB3ZA =
@ZoneSize@, PNHB4ZA = @ZoneSize@,
      PMTKTZA = @ZoneSize@,
      PHTKTZA = @ZoneSize@,

      AHBW_NMTZA=@ZoneSize@,
      AHBWTZA = @ZoneSize@, AHBW1ZA = @ZoneSize@, AHBW2ZA = @ZoneSize@, AHBW3ZA =
@ZoneSize@, AHBW4ZA = @ZoneSize@,
   adjAHBWTZA = @ZoneSize@,
   adjAHBW1ZA = @ZoneSize@,
   adjAHBW2ZA = @ZoneSize@,
   adjAHBW3ZA = @ZoneSize@,
   adjAHBW4ZA = @ZoneSize@,
      AHBSTZA = @ZoneSize@, AHBS1ZA = @ZoneSize@, AHBS2ZA = @ZoneSize@, AHBS3ZA =
@ZoneSize@, AHBS4ZA = @ZoneSize@,
      AHBOTZA = @ZoneSize@, AHBO1ZA = @ZoneSize@, AHBO2ZA = @ZoneSize@, AHBO3ZA =
@ZoneSize@, AHBO4ZA = @ZoneSize@,
      ANHBTZA = @ZoneSize@,
      AMTKTZA = @ZoneSize@,
      AHTKTZA = @ZoneSize@,

     FAHBWTZA = @ZoneSize@,FAHBW1ZA = @ZoneSize@,FAHBW2ZA = @ZoneSize@,FAHBW3ZA =
@ZoneSize@,FAHBW4ZA = @ZoneSize@,
     FAHBSTZA = @ZoneSize@,FAHBS1ZA = @ZoneSize@,FAHBS2ZA = @ZoneSize@,FAHBS3ZA =
@ZoneSize@,FAHBS4ZA = @ZoneSize@,
     FAHBOTZA = @ZoneSize@,FAHBO1ZA = @ZoneSize@,FAHBO2ZA = @ZoneSize@,FAHBO3ZA =
@ZoneSize@,FAHBO4ZA = @ZoneSize@,
     FANHBTZA = @ZoneSize@,
     FAMTKTZA = @ZoneSize@,
     FAHTKTZA = @ZoneSize@,


      JurHHA     = @Jursize@,      ; Juris. HH  Trips array
      JurHBWA    = @Jursize@, JurHBWrA    = @Jursize@,     ;  Juris. HBW Trips &
Rates array
      JurHBSA    = @Jursize@, JurHBSrA    = @Jursize@,     ;  Juris. HBS Trips &
Rates array
      JurHBOA    = @Jursize@, JurHBOrA    = @Jursize@,     ;  Juris. HBO Trips &
Rates array
      JurNHBA    = @Jursize@, JurNHBrA    = @Jursize@,     ;  Juris. NHB Trips &
Rates array
      JurMTKA    = @Jursize@, JurMTKrA    = @Jursize@,     ;  Juris. MTK Trips &
Rates array
      JurHTKA    = @Jursize@, JurHTKrA    = @Jursize@,     ;  Juris. HTK Trips &
Rates array

      RegHHSzA   = @SzCl@,          ;  Regional HH by Size array
      RegHBWSzA  = @SzCl@, RegHBWrSzA   = @SzCl@,     ;  Regional HBW Trips & Rates
by Size array
      RegHBSSzA  = @SzCl@, RegHBSrSzA   = @SzCl@,     ;  Regional HBS Trips & Rates
by Size array
      RegHBOSzA  = @SzCl@, RegHBOrSzA   = @SzCl@,     ;  Regional HBO Trips & Rates
by Size array
      RegNHBSzA  = @SzCl@, RegNHBrSzA   = @SzCl@,     ;  Regional NHB Trips & Rates
by Size array

      RegHHInA   = @InCl@,          ;  Regional HH by Inc array
      RegHBWInA  = @InCl@, RegHBWrInA   = @InCl@,     ;  Regional HBW Trips & Rates
by Inc. array
      RegHBSInA  = @InCl@, RegHBSrInA   = @InCl@,     ;  Regional HBS Trips & Rates
by Inc. array
      RegHBOInA  = @InCl@, RegHBOrInA   = @InCl@,     ;  Regional HBO Trips & Rates
by Inc. array
      RegNHBInA  = @InCl@, RegNHBrInA   = @InCl@,     ;  Regional NHB Trips & Rates
by Inc. array


      RegHHVaA   = @VaCl@,          ;  Regional HH by VeAv array
      RegHBWVaA  = @VaCl@, RegHBWrVaA   = @VaCl@,     ;  Regional HBW Trips & Rates
by Vehs Av. array
      RegHBSVaA  = @VaCl@, RegHBSrVaA   = @VaCl@,     ;  Regional HBS Trips & Rates
by Vehs Av. array
      RegHBOVaA  = @VaCl@, RegHBOrVaA   = @VaCl@,     ;  Regional HBO Trips & Rates
by Vehs Av. array
      RegNHBVaA  = @VaCl@, RegNHBrVaA   = @VaCl@,     ;  Regional NHB Trips & Rates
by Vehs Av. array

      JurInHHA     = @JICells@,      ; Juris. HH  Trips array
      JurInHBWA    = @JICells@, JurInHBWrA    = @JICells@,     ;  Juris. HBW Trips &
Rates array
      JurInHBSA    = @JICells@, JurInHBSrA    = @JICells@,     ;  Juris. HBS Trips &
Rates array
      JurInHBOA    = @JICells@, JurInHBOrA    = @JICells@,     ;  Juris. HBO Trips &
Rates array
      JurInNHBA    = @JICells@, JurInNHBrA    = @JICells@      ;  Juris. NHB Trips &
Rates array

;=========================
; Define Loop-up Tables  =
;=========================
;
;=================================================================
; Trip Production Rates, based on Inc/Size/VeAv Index 111 to 444 =
;=================================================================
;
      LOOKUP Name=PRATE,
             LOOKUP[1]   = 1,Result = 2,  ; HBW rate
             LOOKUP[2]   = 1,Result = 3,  ; HBS rate
             LOOKUP[3]   = 1,Result = 4,  ; HBO rate
             LOOKUP[4]   = 1,Result = 5,  ; NHB rate
             Interpolate = N, FAIL=0,0,0,
; Trip production rates: isv
;      isv     HBW    HBS    HBO    NHB
;     -----   -----  -----  -----  -----
  R="  111,   0.686, 0.215, 0.415, 0.200",
    "  112,   0.851, 0.599, 1.121, 1.258",
    "  113,   0.750, 0.599, 1.435, 1.258",
    "  114,   0.957, 0.631, 1.435, 1.258",
    "  121,   1.082, 0.215, 0.540, 0.300",
    "  122,   1.082, 0.680, 1.700, 1.258",
    "  123,   1.412, 0.680, 1.770, 1.430",
    "  124,   1.412, 0.680, 1.800, 1.430",
    "  131,   1.096, 0.215, 1.284, 0.400",
    "  132,   1.517, 0.680, 2.400, 1.430",
    "  133,   1.936, 0.838, 2.614, 1.430",
    "  134,   1.936, 0.838, 2.391, 1.430",
    "  141,   1.664, 0.215, 1.364, 0.500",
    "  142,   1.664, 0.680, 2.900, 1.500",
    "  143,   1.936, 0.960, 4.266, 1.600",
    "  144,   1.936, 1.000, 3.819, 1.700",
    "  211,   1.017, 0.215, 0.685, 0.300",
```

```
    "  212,   1.182, 0.599, 1.158, 1.258",
    "  213,   1.301, 0.599, 1.474, 1.400",
    "  214,   1.527, 0.631, 1.474, 1.490",
    "  221,   1.352, 0.294, 0.889, 0.400",
    "  222,   1.352, 0.680, 1.892, 1.258",
    "  223,   1.531, 0.680, 1.968, 2.197",
    "  224,   2.122, 0.840, 2.041, 2.197",
    "  231,   1.662, 0.400, 1.349, 0.500",
    "  232,   1.662, 0.965, 2.500, 1.762",
    "  233,   1.790, 0.965, 3.190, 2.600",
    "  234,   2.122, 1.043, 3.472, 2.800",
    "  241,   1.849, 0.450, 0.750, 0.600",
    "  242,   1.849, 0.965, 3.486, 1.983",
    "  243,   2.049, 1.000, 4.266, 2.800",
    "  244,   2.426, 1.100, 5.674, 2.967",
    "  311,   1.017, 0.294, 0.708, 0.400",
    "  312,   1.223, 0.666, 1.035, 1.524",
    "  313,   1.223, 0.666, 1.474, 1.565",
    "  314,   1.223, 0.666, 1.474, 1.565",
    "  321,   1.464, 0.429, 0.889, 0.500",
    "  322,   1.464, 0.680, 2.161, 1.625",
    "  323,   1.841, 0.900, 2.460, 2.330",
    "  324,   2.152, 0.965, 2.659, 2.536",
    "  331,   1.662, 0.500, 1.548, 0.600",
    "  332,   1.662, 0.965, 2.843, 2.479",
    "  333,   2.016, 1.000, 3.190, 2.892",
    "  334,   3.024, 1.141, 3.559, 2.891",
    "  341,   2.295, 0.600, 3.446, 0.609",
    "  342,   2.295, 0.956, 4.653, 2.188",
    "  343,   2.295, 1.141, 5.395, 2.925",
    "  344,   3.076, 1.400, 6.501, 4.202",
    "  411,   1.335, 0.429, 0.708, 0.600",
    "  412,   1.335, 0.860, 1.087  1.760",
    "  413,   1.335, 0.860, 1.083, 1.760",
    "  414,   2.000, 0.860, 2.000, 2.405",
    "  421,   1.451, 0.886, 1.567, 0.700",
    "  422,   1.451, 0.886, 1.810, 1.760",
    "  423,   1.841, 0.965, 2.460, 2.405",
    "  424,   2.152, 0.980, 2.460, 2.691",
    "  431,   1.672, 0.900, 3.446, 0.800",
    "  432,   1.672, 1.039, 3.446, 2.720",
    "  433,   2.017, 1.150, 3.937, 2.812",
    "  434,   3.024, 1.200, 3.940, 3.100",
    "  441,   3.333, 1.092, 4.146, 0.900",
    "  442,   3.333, 1.278, 4.839, 1.536",
    "  443,   3.333, 1.333, 5.921, 3.348",
    "  444,   3.365  1.659  6.738  4.376"


;==============================================================
;    Attraction Rate Lookups  :                              =
;==============================================================
;================================================
;  HBW Trip Attraction Rates by Area Type       .
;================================================
      LOOKUP Name=HBWARate,
             LOOKUP[1]   = 1,Result = 2, ;  hh
             LOOKUP[2]   = 1,Result = 3, ;  hhpop
             LOOKUP[3]   = 1,Result = 4, ;  totemp
             LOOKUP[4]   = 1,Result = 5, ;  indemp
             LOOKUP[5]   = 1,Result = 6, ;  retemp
             LOOKUP[6]   = 1,Result = 7, ;  offemp
             LOOKUP[7]   = 1,Result = 8, ;  othemp
             LOOKUP[8]   = 1,Result = 9, ;  nonretailemp
             Interpolate = N, FAIL=0,0,0,
;                HH    Tot Ind  Ret  Off  Oth NonRet
; AType     HHs  Pop   Emp Emp  Emp  Emp  Emp  Emp
R="1        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00",
  "2        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00",
  "3        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00",
  "4        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00",
  "5        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00",
  "6        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00",
  "7        0.00,0.00,1.11,0.00,0.00,0.00,0.00,0.00"

;================================================
;  HBS Trip Attraction Rates by Area Type       .
;================================================
      LOOKUP Name=HBSARate,
             LOOKUP[1]   = 1,Result = 2, ;  hh
             LOOKUP[2]   = 1,Result = 3, ;  hhpop
             LOOKUP[3]   = 1,Result = 4, ;  totemp
             LOOKUP[4]   = 1,Result = 5, ;  indemp
             LOOKUP[5]   = 1,Result = 6, ;  retemp
             LOOKUP[6]   = 1,Result = 7, ;  offemp
             LOOKUP[7]   = 1,Result = 8, ;  othemp
             LOOKUP[8]   = 1,Result = 9, ;  nonretailemp
             Interpolate = N, FAIL=0,0,0,
;                HH    Tot Ind  Ret  Off  Oth NonRet
; AType     HHs  Pop   Emp Emp  Emp  Emp  Emp  Emp
R="1        0.00,0.00,0.00,0.00,0.29,0.00,0.00,0.00",
  "2        0.00,0.00,0.00,0.00,2.44,0.00,0.00,0.00",
  "3        0.00,0.00,0.00,0.00,3.35,0.00,0.00,0.00",
  "4        0.00,0.00,0.00,0.00,3.35,0.00,0.00,0.00",
  "5        0.00,0.00,0.00,0.00,3.35,0.00,0.00,0.00",
  "6        0.00,0.00,0.00,0.00,3.35,0.00,0.00,0.00",
  "7        0.00,0.00,0.00,0.00,3.35,0.00,0.00,0.00"

;================================================
;  HBO Trip Attraction Rates by Area Type       .
;================================================
      LOOKUP Name=HBOARate,
             LOOKUP[1]   = 1,Result = 2, ;  hh
             LOOKUP[2]   = 1,Result = 3, ;  hhpop
             LOOKUP[3]   = 1,Result = 4, ;  totemp
             LOOKUP[4]   = 1,Result = 5, ;  indemp
             LOOKUP[5]   = 1,Result = 6, ;  retemp
             LOOKUP[6]   = 1,Result = 7, ;  offemp
             LOOKUP[7]   = 1,Result = 8, ;  othemp
             LOOKUP[8]   = 1,Result = 9, ;  nonretailemp
             Interpolate = N, FAIL=0,0,0,
;                HH    Tot Ind  Ret  Off  Oth NonRet
; AType     HHs  Pop   Emp Emp  Emp  Emp  Emp  Emp
R="1        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30",
  "2        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30",
  "3        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30",
  "4        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30",
  "5        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30",
  "6        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30",
  "7        0.00,0.77,0.00,0.00,1.30,0.00,0.00,0.30"


;================================================
;  NHB Trip Attraction Rates by Area Type       .
;================================================
      LOOKUP Name=NHBARate,
             LOOKUP[1]   = 1,Result = 2, ;  hh
             LOOKUP[2]   = 1,Result = 3, ;  hhpop
             LOOKUP[3]   = 1,Result = 4, ;  totemp
             LOOKUP[4]   = 1,Result = 5, ;  indemp
             LOOKUP[5]   = 1,Result = 6, ;  retemp
             LOOKUP[6]   = 1,Result = 7, ;  offemp
             LOOKUP[7]   = 1,Result = 8, ;  othemp
             LOOKUP[8]   = 1,Result = 9, ;  nonretailemp
             Interpolate = N, FAIL=0,0,0,
;                HH    Tot Ind  Ret  Off  Oth NonRet
```

```
; AType     HHs  Pop   Emp Emp  Emp  Emp  Emp  Emp
R="1        0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.42",
  "2        0.00,0.28,0.00,0.00,2.77,0.00,0.00,0.49",
  "3        0.00,0.28,0.00,0.00,2.77,0.00,0.00,0.49",
  "4        0.00,0.28,0.00,0.00,2.77,0.00,0.00,0.49",
  "5        0.00,0.28,0.00,0.00,2.77,0.00,0.00,0.49",
  "6        0.00,0.28,0.00,0.00,2.77,0.00,0.00,0.49",
  "7        0.00,0.28,0.00,0.00,2.77,0.00,0.00,0.49"

;====================================================================
;  Medium Truck Trip Rates by Location 1-4
;  Locations are: 1)Reg Core, 2)DC NonCore, 3)VA 10 Mi Sq, 4)Other
;====================================================================
      LOOKUP Name=MTKARate,
             LOOKUP[1]   = 1,Result = 2, ;  IndEmp
             LOOKUP[2]   = 1,Result = 3, ;  RetEmp
             LOOKUP[3]   = 1,Result = 4, ;  OffEmp
             LOOKUP[4]   = 1,Result = 5, ;  OthEmp
             LOOKUP[5]   = 1,Result = 6, ;  HH
             Interpolate = N, FAIL=0,0,0,
;          Ind   Ret  Off  Oth
;LocaCode  Emp   Emp  EMP  EMP  HH
R="1        0.09,0.17,0.01,0.04,0.04",
  "2        0.19,0.17,0.01,0.04,0.04",
  "3        0.14,0.17,0.01,0.04,0.04",
  "4        0.11,0.17,0.01,0.04,0.04"

;====================================================================
;  Heavy Truck Trip Rates by Location 1-4
;  Locations are: 1)Reg Core, 2)DC NonCore, 3)VA 10 Mi Sq, 4)Other
;====================================================================
      LOOKUP Name=HTKARate,
             LOOKUP[1]   = 1,Result = 2, ;  IndEmp
             LOOKUP[2]   = 1,Result = 3, ;  RetEmp
             LOOKUP[3]   = 1,Result = 4, ;  OffEmp
             LOOKUP[4]   = 1,Result = 5, ;  OthEmp
             LOOKUP[5]   = 1,Result = 6, ;  HH
             Interpolate = N, FAIL=0,0,0,
;          Ind   Ret  Off  Oth
;LocaCode  Emp   Emp  EMP  EMP  HH
R="1        0.03,0.04,0.00,0.03,0.00",
  "2        0.13,0.04,0.00,0.03,0.00",
  "3        0.04,0.04,0.00,0.03,0.00",
  "4        0.11,0.04,0.00,0.03,0.00"

;==========================================
;  Production Adjustment Rates by Purpose
;==========================================
      LOOKUP Name=JurPmod,
             LOOKUP[1]   = 1,Result = 2, ;  HBW
             LOOKUP[2]   = 1,Result = 3, ;  HBS
             LOOKUP[3]   = 1,Result = 4, ;  HBO
             LOOKUP[4]   = 1,Result = 5, ;  NHB
             LOOKUP[5]   = 1,Result = 6, ;  Mtk
             LOOKUP[6]   = 1,Result = 7, ;  Htk
             Interpolate = N, FAIL=0,0,0,List=Y,
; Jur   HBW   HBS   HBO   NHB   Mtk   Htk
R=" 0  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; dc  1
  " 1  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; mtg 2
  " 2  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; pg  3
  " 3  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; arl 4
  " 4  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; alx 5
  " 5  0.90, 1.00, 1.00, 1.00, 1.00, 1.00", ; ffx 6  HBW changed from 1.0>0.90
  " 6  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; ldn 7              v2.2D
  " 7  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; pw  8
  " 8  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; -   9
  " 9  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; frd 10
  "10  0.75, 0.75, 0.70, 1.00, 1.00, 1.00", ; how 11
  "11  0.85, 1.00, 1.00, 1.00, 1.00, 1.00", ; aa  12
  "12  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; chs 13
  "13  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; -   14
  "14  0.85, 0.68, 0.75, 1.00, 1.00, 1.00", ; car 15
  "15  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; cal 16
  "16  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; stm 17
  "17  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; kge 18
  "18  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; fbg 19
  "19  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; stf 20
  "20  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; spt 21
  "21  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; fau 22
  "22  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; clk 23
  "23  1.00, 1.00, 1.00, 1.00, 1.00, 1.00"  ; jef 24


;==========================================
;  Attraction Adjustment Rates by Purpose
;==========================================
      LOOKUP Name=JurAmod,
             LOOKUP[1]   = 1,Result = 2, ;  HBW
             LOOKUP[2]   = 1,Result = 3, ;  HBS
             LOOKUP[3]   = 1,Result = 4, ;  HBO
             LOOKUP[4]   = 1,Result = 5, ;  NHB
             LOOKUP[5]   = 1,Result = 6, ;  Mtk
             LOOKUP[6]   = 1,Result = 7, ;  Htk
             Interpolate = N, FAIL=0,0,0,List=Y,
; Jur   HBW   HBS   HBO   NHB   Mtk   Htk
R=" 0  1.07, 1.00, 1.00, 1.00, 1.00, 1.00", ; dc  1
  " 1  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; mtg 2
  " 2  1.10, 1.00, 1.00, 1.00, 1.00, 1.00", ; pg  3
  " 3  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; arl 4
  " 4  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; alx 5
  " 5  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; ffx 6
  " 6  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; ldn 7
  " 7  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; pw  8
  " 8  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; -   9
  " 9  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; frd 10
  "10  0.75  0.80, 0.80, 1.00, 1.00, 1.00", ; how 11
  "11  0.85, 1.03, 1.00, 1.00, 1.00, 1.00", ; aa  12
  "12  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; chs 13
  "13  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; -   14
  "14  0.85, 0.70, 0.75, 1.00, 1.00, 1.00", ; car 15
  "15  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; cal 16
  "16  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; stm 17
  "17  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; kge 18
  "18  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; fbg 19
  "19  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; stf 20
  "20  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; spt 21
  "21  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; fau 22
  "22  1.00, 1.00, 1.00, 1.00, 1.00, 1.00", ; clk 23
  "23  1.00, 1.00, 1.00, 1.00, 1.00, 1.00"  ; jef 24

;==========================================================
;  HBW Zonal Production / Attraction Modifcation Factors  =
;==========================================================
      LOOKUP Name=HBWZmod,
             LOOKUP[1]   = 1,Result = 2, ;  Prod Factor/Inc. 1
             LOOKUP[2]   = 1,Result = 3, ;             /Inc. 2
             LOOKUP[3]   = 1,Result = 4, ;             /Inc. 3
             LOOKUP[4]   = 1,Result = 5, ;             /Inc. 4
             LOOKUP[5]   = 1,Result = 6, ;  Attr Factor/Inc. 1
             LOOKUP[6]   = 1,Result = 7, ;             /Inc. 2
             LOOKUP[7]   = 1,Result = 8, ;             /Inc. 3
             LOOKUP[8]   = 1,Result = 9, ;             /Inc. 4
             Interpolate = N, FAIL=0,0,0,File=@ZNFILE_ZModW@


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

```
;  HBS Zonal Production / Attraction Modifcation Factors  =
;==========================================================
      LOOKUP Name=HBSZmod,
             LOOKUP[1]   = 1,Result = 2, ;  Prod Factor/Inc. 1
             LOOKUP[2]   = 1,Result = 3, ;             /Inc. 2
             LOOKUP[3]   = 1,Result = 4, ;             /Inc. 3
             LOOKUP[4]   = 1,Result = 5, ;             /Inc. 4
             LOOKUP[5]   = 1,Result = 6, ;  Attr Factor/Inc. 1
             LOOKUP[6]   = 1,Result = 7, ;             /Inc. 2
             LOOKUP[7]   = 1,Result = 8, ;             /Inc. 3
             LOOKUP[8]   = 1,Result = 9, ;             /Inc. 4
             Interpolate = N, FAIL=0,0,0,File=@ZNFILE_ZModS@
;==========================================================
;  HBO Zonal Production / Attraction Modifcation Factors  =
;==========================================================
      LOOKUP Name=HBOZmod,
             LOOKUP[1]   = 1,Result = 2, ;  Prod Factor/Inc. 1
             LOOKUP[2]   = 1,Result = 3, ;             /Inc. 2
             LOOKUP[3]   = 1,Result = 4, ;             /Inc. 3
             LOOKUP[4]   = 1,Result = 5, ;             /Inc. 4
             LOOKUP[5]   = 1,Result = 6, ;  Attr Factor/Inc. 1
             LOOKUP[6]   = 1,Result = 7, ;             /Inc. 2
             LOOKUP[7]   = 1,Result = 8, ;             /Inc. 3
             LOOKUP[8]   = 1,Result = 9, ;             /Inc. 4
             Interpolate = N, FAIL=0,0,0,File=@ZNFILE_ZModO@
;

;==========================================================
;  NHB Zonal Production / Attraction Modifcation Factors  =
;==========================================================
      LOOKUP Name=NHBZmod,
             LOOKUP[1]   = 1,Result = 2, ;  Prod Factor/Inc. 1
             LOOKUP[2]   = 1,Result = 3, ;             /Inc. 2
             LOOKUP[3]   = 1,Result = 4, ;             /Inc. 3
             LOOKUP[4]   = 1,Result = 5, ;             /Inc. 4
             LOOKUP[5]   = 1,Result = 6, ;  Attr Factor/Inc. 1
             LOOKUP[6]   = 1,Result = 7, ;             /Inc. 2
             LOOKUP[7]   = 1,Result = 8, ;             /Inc. 3
             LOOKUP[8]   = 1,Result = 9, ;             /Inc. 4
             Interpolate = N, FAIL=0,0,0,File=@ZNFILE_ZModN@
;================================================================
;  Med.Truck Zonal Production / Attraction Modifcation Factors  =
;================================================================
      LOOKUP Name=MTKZmod,
             LOOKUP[1]   = 1,Result = 2, ;  Prod Factor/Inc. 1
             LOOKUP[2]   = 1,Result = 3, ;             /Inc. 2
             LOOKUP[3]   = 1,Result = 4, ;             /Inc. 3
             LOOKUP[4]   = 1,Result = 5, ;             /Inc. 4
             LOOKUP[5]   = 1,Result = 6, ;  Attr Factor/Inc. 1
             LOOKUP[6]   = 1,Result = 7, ;             /Inc. 2
             LOOKUP[7]   = 1,Result = 8, ;             /Inc. 3
             LOOKUP[8]   = 1,Result = 9, ;             /Inc. 4
             Interpolate = N, FAIL=0,0,0,File=@ZNFILE_ZModM@


;==================================================================
;  Heavy Truck Zonal Production / Attraction Modifcation Factors  =
;==================================================================
      LOOKUP Name=HTKZmod,
             LOOKUP[1]   = 1,Result = 2, ;  Prod Factor/Inc. 1
             LOOKUP[2]   = 1,Result = 3, ;             /Inc. 2
             LOOKUP[3]   = 1,Result = 4, ;             /Inc. 3
             LOOKUP[4]   = 1,Result = 5, ;             /Inc. 4
             LOOKUP[5]   = 1,Result = 6, ;  Attr Factor/Inc. 1
             LOOKUP[6]   = 1,Result = 7, ;             /Inc. 2
             LOOKUP[7]   = 1,Result = 8, ;             /Inc. 3
             LOOKUP[8]   = 1,Result = 9, ;             /Inc. 4
             Interpolate = N, FAIL=0,0,0,File=@ZNFILE_ZModH@
```

```
;==================================================================================
==================
;
=
; End of LookUps  Now read the input files
=
;==================================================================================
==================

;
; read Zonal land use files  into Z-File
ZDATI[1] = @ZNFILE_LU@,Z       =  1- 4,
                       HH      =  8-15,
                       HHPOP   = 16-23,
                       GQPOP   = 24-31,
                       TOTPOP  = 32-39,
                       TOTEMP  = 40-47,
                       INDEMP  = 48-55,
                       RETEMP  = 56-63,
                       OFFEMP  = 64-71,
                       OTHEMP  = 72-79,
                       JURCODE = 80-81,
                       DistnEX = 96-98

    ; Current Zonal Totals:
                 HH      = zi.1.HH[I]
                 HHPOP   = zi.1.HHPOP[I]
                 TOTPOP  = zi.1.TOTPOP[I]
                 TOTEMP  = zi.1.TOTEMP[I]
                 INDEMP  = zi.1.INDEMP[I]
                 RETEMP  = zi.1.RETEMP[I]
                 OFFEMP  = zi.1.OFFEMP[I]
                 OTHEMP  = zi.1.OTHEMP[I]
                 NRETEMP = zi.1.OTHEMP[I] + zi.1.OFFEMP[I] + zi.1.INDEMP[I]
                 JURCODE = zi.1.JURCODE[I]
                 DistnEX = zi.1.DistnEX[I]

      ; Accumulate Regional Totals:
                 HH_Tot       = HH_Tot      +  zi.1.HH[I]
                 HHPOP_Tot    = HHPOP_Tot   +  zi.1.HHPOP[I]
                 TOTPOP_Tot   = TOTPOP_Tot  +  zi.1.TOTPOP[I]
                 TOTEMP_Tot   = TOTEMP_Tot  +  zi.1.TOTEMP[I]
                 INDEMP_Tot   = INDEMP_Tot  +  zi.1.INDEMP[I]
                 RETEMP_Tot   = RETEMP_Tot  +  zi.1.RETEMP[I]
                 OFFEMP_Tot   = OFFEMP_Tot  +  zi.1.OFFEMP[I]
                 OTHEMP_Tot   = OTHEMP_Tot  +  zi.1.OTHEMP[I]
                 NRETEMP_Tot  = NRETEMP_Tot +  zi.1.OTHEMP[I] + zi.1.OFFEMP[I] +
zi.1.INDEMP[I]

                  IF  (I <= @LASTIZN@)
                       ZoneJURA[I]  = JurCode + 1
                  ENDIF
;
;  Define location variables for truck models
                   Loc  = 4                                        ; default
                   IF (I=@DCCoreRng@ || I=@VACoreRNG@)  Loc = 1  ; regional core
                   IF (I=@DCNCorRng@                 )  Loc = 2  ; DC non-Core
                   IF (I=@VA10MSRng@                 )  Loc = 3  ; VA 10miSquare

; Zonal Area Type File
ZDATI[2] = @ZNFILE_AT@, Z       =  1- 5,
                        ATYPE   = 58-59
                        ATYPE   = zi.2.Atype[I]

ZDATI[3] = @ZNFILE_PEX@ , Z= 1 - 4, hbwxp=5-12,hbsxp=13-20,hboxp=21-28,nhbxp=29-
36,mtkxp=37-44,htkxp=45-52
```

```
ZDATI[4] = @ZNFILE_AEX@ , Z= 1 - 4, hbwxa=5-12,hbsxa=13-20,hboxa=21-28,nhbxa=29-
36,mtkxa=37-44,htkxa=45-52

; read HH files by ISV
ZDATI[5]  = @ZNFILE_I1SV@, Z= #1, hh111=#2 , hh112=#3 , hh113=#4 , hh114=#5 ,
                                  hh121=#6 , hh122=#7 , hh123=#8 , hh124=#9 ,
                                  hh131=#10, hh132=#11, hh133=#12, hh134=#13,
                                  hh141=#14, hh142=#15, hh143=#16, hh144=#17

ZDATI[6]  = @ZNFILE_I2SV@, Z= #1, hh211=#2 , hh212=#3 , hh213=#4 , hh214=#5 ,
                                  hh221=#6 , hh222=#7 , hh223=#8 , hh224=#9 ,
                                  hh231=#10, hh232=#11, hh233=#12, hh234=#13,
                                  hh241=#14, hh242=#15, hh243=#16, hh244=#17

ZDATI[7]  = @ZNFILE_I3SV@, Z= #1, hh311=#2 , hh312=#3 , hh313=#4 , hh314=#5 ,
                                  hh321=#6 , hh322=#7 , hh323=#8 , hh324=#9 ,
                                  hh331=#10, hh332=#11, hh333=#12, hh334=#13,
                                  hh341=#14, hh342=#15, hh343=#16, hh344=#17

ZDATI[8]  = @ZNFILE_I4SV@, Z= #1, hh411=#2 , hh412=#3 , hh413=#4 , hh414=#5 ,
                                  hh421=#6 , hh422=#7 , hh423=#8 , hh424=#9 ,
                                  hh431=#10, hh432=#11, hh433=#12, hh434=#13,
                                  hh441=#14, hh442=#15, hh443=#16, hh444=#17

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



; Put HH variables into arrays
  CHHA[111]=zi.5.hh111[I]  CHHA[112]=zi.5.hh112[I]  CHHA[113]=zi.5.hh113[I]
CHHA[114]=zi.5.hh114[I]
  CHHA[121]=zi.5.hh121[I]  CHHA[122]=zi.5.hh122[I]  CHHA[123]=zi.5.hh123[I]
CHHA[124]=zi.5.hh124[I]
  CHHA[131]=zi.5.hh131[I]  CHHA[132]=zi.5.hh132[I]  CHHA[133]=zi.5.hh133[I]
CHHA[134]=zi.5.hh134[I]
  CHHA[141]=zi.5.hh141[I]  CHHA[142]=zi.5.hh142[I]  CHHA[143]=zi.5.hh143[I]
CHHA[144]=zi.5.hh144[I]

  CHHA[211]=zi.6.hh211[I]  CHHA[212]=zi.6.hh212[I]  CHHA[213]=zi.6.hh213[I]
CHHA[214]=zi.6.hh214[I]
  CHHA[221]=zi.6.hh221[I]  CHHA[222]=zi.6.hh222[I]  CHHA[223]=zi.6.hh223[I]
CHHA[224]=zi.6.hh224[I]
  CHHA[231]=zi.6.hh231[I]  CHHA[232]=zi.6.hh232[I]  CHHA[233]=zi.6.hh233[I]
CHHA[234]=zi.6.hh234[I]
  CHHA[241]=zi.6.hh241[I]  CHHA[242]=zi.6.hh242[I]  CHHA[243]=zi.6.hh243[I]
CHHA[244]=zi.6.hh244[I]

  CHHA[311]=zi.7.hh311[I]  CHHA[312]=zi.7.hh312[I]  CHHA[313]=zi.7.hh313[I]
CHHA[314]=zi.7.hh314[I]
  CHHA[321]=zi.7.hh321[I]  CHHA[322]=zi.7.hh322[I]  CHHA[323]=zi.7.hh323[I]
CHHA[324]=zi.7.hh324[I]
  CHHA[331]=zi.7.hh331[I]  CHHA[332]=zi.7.hh332[I]  CHHA[333]=zi.7.hh333[I]
CHHA[334]=zi.7.hh334[I]
  CHHA[341]=zi.7.hh341[I]  CHHA[342]=zi.7.hh342[I]  CHHA[343]=zi.7.hh343[I]
CHHA[344]=zi.7.hh344[I]

  CHHA[411]=zi.8.hh411[I]  CHHA[412]=zi.8.hh412[I]  CHHA[413]=zi.8.hh413[I]
CHHA[414]=zi.8.hh414[I]
  CHHA[421]=zi.8.hh421[I]  CHHA[422]=zi.8.hh422[I]  CHHA[423]=zi.8.hh423[I]
CHHA[424]=zi.8.hh424[I]
  CHHA[431]=zi.8.hh431[I]  CHHA[432]=zi.8.hh432[I]  CHHA[433]=zi.8.hh433[I]
CHHA[434]=zi.8.hh434[I]
  CHHA[441]=zi.8.hh441[I]  CHHA[442]=zi.8.hh442[I]  CHHA[443]=zi.8.hh443[I]
CHHA[444]=zi.8.hh444[I]

;
```

```
;===================================================================================
==============
; Compute Current Internal trip productions of current TAZ (I) for HBW, HBS, HBO,&
NHB purposes  =
;===================================================================================
==============

    EXTsh     = 0.0791 * EXP(-0.0882 * DISTnEX)     ; share of hb/nhb trips that are
External
    nonEXTsh  = 1.00 - EXTsh                        ; share of hb/nhb trips that are
Internal

    IF (Atype = 1)  HBWNMPsh = 0.40334
    IF (Atype = 2)  HBWNMPsh = 0.11155
    IF (Atype = 3)  HBWNMPsh = 0.03201
    IF (Atype >=4)  HBWNMPsh = 0.02346              ; with fix

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

            isv =  in*100.0 + sz*10.0 + va    ; 3-digit index, Income/Size/Va
            extsh    = 0.0791 * EXP(-0.0882 * DISTnEX)     ; share of hb/nhb trips
to externals
            nonextsh = 1.00 - extsh                        ; share of hb/nhb trips
to externals
      ; Compute rates by purpose:
      ; HBW Motorized& NonMotorized INTERNAL Trips:
         tem_M_N_II   = CHHA[isv] * Prate(1,isv) * HBWZmod(in,I) *
JurPmod(1,JurCode) * @HBW_GlobalAdj@ * nonExtSH
      ; HBW Motorized/NonMotorized INTERNAL to EXTERNAL Trips:
         tem_M_N_IX   = CHHA[isv] * Prate(1,isv) * HBWZmod(in,I) *
JurPmod(1,JurCode) * @HBW_GlobalAdj@ * ExtSH
      ; HBW Non-Motorized Trips:
         tem_NMtr_II  = tem_M_N_II * HBWNMPsh    ; nonmotorised trips
      ; HBW Motorized INTERNAL to INTERNAL Trips:
         tem_Mtr_II   = tem_M_N_II * (1.00 - HBWNMPsh)

         ; compute non-motorized HBW Trips, store in isv array
         prodwNM[isv] = tem_NMtr_II

         ; compute internal motorized trips here, store in zonal arrays:
         prodw[isv]   = tem_Mtr_II
         prods[isv]   = CHHA[isv] * Prate(2,isv) * HBSZmod(in,I) *
JurPmod(2,JurCode) * @HBS_GlobalAdj@ * nonExtSH
         prodo[isv]   = CHHA[isv] * Prate(3,isv) * HBOZmod(in,I) *
JurPmod(3,JurCode) * @HBO_GlobalAdj@ * nonExtSH
         prodn[isv]   = CHHA[isv] * Prate(4,isv) *
JurPmod(4,JurCode) * @NHB_GlobalAdj@ * nonExtSH

;        #Note:#        Zonal production factor for NHB productions is removed
;                       A-mod factors is NHBZmod(5,I) used as a NHB special
generator adjustment

      ; Accumulate Trips by purpose at the TAZ level
         PHBW_NMTZA[I]= PHBW_NMTZA[I] + prodwNM[isv]
         PHBWTZA[I]   = PHBWTZA[I]    + prodw[isv]
         PHBSTZA[I]   = PHBSTZA[I]    + prods[isv]
         PHBOTZA[I]   = PHBOTZA[I]    + prodo[isv]
         PNHBTZA[I]   = PNHBTZA[I]    + prodn[isv]

      ; Accumulate Trips by purpose and Income at the TAZ level
             if (in=1)
                         PHBW1ZA[I]   = PHBW1ZA[I] + prodw[isv]
                         PHBS1ZA[I]   = PHBS1ZA[I] + prods[isv]
                         PHBO1ZA[I]   = PHBO1ZA[I] + prodo[isv]
                         PNHB1ZA[I]   = PNHB1ZA[I] + prodn[isv]
              endif
```

```
          if (in=2)
                   PHBW2ZA[I]   = PHBW2ZA[I] + prodw[isv]
                   PHBS2ZA[I]   = PHBS2ZA[I] + prods[isv]
                   PHBO2ZA[I]   = PHBO2ZA[I] + prodo[isv]
                   PNHB2ZA[I]   = PNHB2ZA[I] + prodn[isv]
          endif
          if (in=3)
                   PHBW3ZA[I]   = PHBW3ZA[I] + prodw[isv]
                   PHBS3ZA[I]   = PHBS3ZA[I] + prods[isv]
                   PHBO3ZA[I]   = PHBO3ZA[I] + prodo[isv]
                   PNHB3ZA[I]   = PNHB3ZA[I] + prodn[isv]
          endif
          if (in=4)
                   PHBW4ZA[I]   = PHBW4ZA[I] + prodw[isv]
                   PHBS4ZA[I]   = PHBS4ZA[I] + prods[isv]
                   PHBO4ZA[I]   = PHBO4ZA[I] + prodo[isv]
                   PNHB4ZA[I]   = PNHB4ZA[I] + prodn[isv]
          endif


      ; Accumulate Internal HHs, Trip Productions by purpose by Size  Levels

           RegHHSzA[sz]   =  RegHHSzA[sz]  + CHHA[isv]
          RegHBWSzA[sz]   = RegHBWSzA[sz]  + prodw[isv]
          RegHBSSzA[sz]   = RegHBSSzA[sz]  + prods[isv]
          RegHBOSzA[sz]   = RegHBOSzA[sz]  + prodo[isv]
          RegNHBSzA[sz]   = RegNHBSzA[sz]  + prodn[isv]

      ; Accumulate Internal HHs, Trip Productions by purpose by Income Levels
           RegHHInA[in]   =  RegHHInA[in]  + CHHA[isv]
          RegHBWInA[in]   = RegHBWInA[in]  + prodw[isv]
          RegHBSInA[in]   = RegHBSInA[in]  + prods[isv]
          RegHBOInA[in]   = RegHBOInA[in]  + prodo[isv]
          RegNHBInA[in]   = RegNHBInA[in]  + prodn[isv]


      ; Accumulate Internal HHs, Trip Productions by purpose by Veh. Av. Levels
           RegHHVaA[va]   =  RegHHVaA[va]  + CHHA[isv]
          RegHBWVaA[va]   = RegHBWVaA[va]  + prodw[isv]
          RegHBSVaA[va]   = RegHBSVaA[va]  + prods[isv]
          RegHBOVaA[va]   = RegHBOVaA[va]  + prodo[isv]
          RegNHBVaA[va]   = RegNHBVaA[va]  + prodn[isv]

      ; Accumulate Internal HHs, Trip Productions by purpose at Juris Level
          If (I<= @LastIZN@)
             Jr = ZoneJURA[I]
             JurHHA[Jr]  = JurHHA[Jr]  + CHHA[isv]
             JurHBWA[Jr] = JurHBWA[Jr] + prodw[isv]
             JurHBSA[Jr] = JurHBSA[Jr] + prods[isv]
             JurHBOA[Jr] = JurHBOA[Jr] + prodo[isv]


             JI = Jr*10 + in
                   JurInHHA[JI]   =   JurInHHA[JI] + CHHA[isv]    ; Juris. HHs/
Inc1
                   JurInHBWA[JI]  =  JurInHBWA[JI] + prodw[isv]
                   JurInHBSA[JI]  =  JurInHBSA[JI] + prods[isv]
                   JurInHBOA[JI]  =  JurInHBOA[JI] + prodo[isv]
                   JurInNHBA[JI]  =  JurInNHBA[JI] + prodn[isv]

          ENDIF

      ; Accumulate Internal Trip Productions by purpose for the system
            HH_TotSIV    = HH_TotSIV    + CHHA[isv]
            IntlNMHBWPs  = IntlNMHBWPs  + prodwNM[isv]

            IntlHBWPs    = IntlHBWPs    + prodw[isv]
            IntlHBSPs    = IntlHBSPs    + prods[isv]
            IntlHBOPs    = IntlHBOPs    + prodo[isv]
            IntlNHBPs    = IntlNHBPs    + prodn[isv]
      EndLoop
   EndLoop
EndLoop
;
;================================================================================
===========
; Read in External trip prods of current TAZ (I) for HBW, HBS, HBO, NHB, Mtk, Htk
purposes    =
;================================================================================
===========
;
IF (I > @LastIZN@)
            PHBWTZA[I]   = zi.3.hbwxp[I]
            PHBSTZA[I]   = zi.3.hbsxp[I]
            PHBOTZA[I]   = zi.3.hboxp[I]
            PNHBTZA[I]   = zi.3.nhbxp[I]

      ; Accumulate External Trip Productions by purpose for the system
            ExtlHBWPs    = ExtlHBWPs  +  zi.3.hbwxp[I]
            ExtlHBSPs    = ExtlHBSPs  +  zi.3.hbsxp[I]
            ExtlHBOPs    = ExtlHBOPs  +  zi.3.hboxp[I]
            ExtlNHBPs    = ExtlNHBPs  +  zi.3.nhbxp[I]
            ExtlMTKPs    = ExtlMTKPs  +  zi.3.mtkxp[I]
            ExtlHTKPs    = ExtlHTKPs  +  zi.3.htkxp[I]
ENDIF

;
;================================================================================
===========
; Compute Internal trip Attractions  for HBW, HBS, HBO, NHB, Mtk, Htk purposes
=
;================================================================================
===========
; calculate totals to allocated among income groups

            AHBWtem      = HBWArate(1,Atype) * HH      +
                           HBWArate(2,Atype) * HHpop   +
                           HBWArate(3,Atype) * TOTEMP  +
                           HBWArate(4,Atype) * INDEMP  +
                           HBWArate(5,Atype) * RETEMP  +
                           HBWArate(6,Atype) * OFFEMP  +
                           HBWArate(7,Atype) * OTHEMP  +
                           HBWArate(8,Atype) * NRETEMP

            AHBStem      = HBSArate(1,Atype) * HH      +
                           HBSArate(2,Atype) * HHpop   +
                           HBSArate(3,Atype) * TOTEMP  +
                           HBSArate(4,Atype) * INDEMP  +
                           HBSArate(5,Atype) * RETEMP  +
                           HBSArate(6,Atype) * OFFEMP  +
                           HBSArate(7,Atype) * OTHEMP  +
                           HBSArate(8,Atype) * NRETEMP

            AHBOtem      = HBOArate(1,Atype) * HH      +
                           HBOArate(2,Atype) * HHpop   +
                           HBOArate(3,Atype) * TOTEMP  +
                           HBOArate(4,Atype) * INDEMP  +
                           HBOArate(5,Atype) * RETEMP  +
                           HBOArate(6,Atype) * OFFEMP  +
                           HBOArate(7,Atype) * OTHEMP  +
                           HBOArate(8,Atype) * NRETEMP

            ANHBtem      = NHBArate(1,Atype) * HH      +
                           NHBArate(2,Atype) * HHpop   +
                           NHBArate(3,Atype) * TOTEMP  +
                           NHBArate(4,Atype) * INDEMP  +
```

```
                           NHBArate(5,Atype) * RETEMP  +
                           NHBArate(6,Atype) * OFFEMP  +
                           NHBArate(7,Atype) * OTHEMP  +
                           NHBArate(8,Atype) * NRETEMP

            AMTKtem      = MTKARATE(1,LOC) * INDEMP  +
                           MTKARATE(2,LOC) * RETEMP  +
                           MTKARATE(3,LOC) * OFFEMP  +
                           MTKARATE(4,LOC) * OTHEMP  +
                           MTKARATE(5,LOC) * HH

            AHTKtem      = HTKARATE(1,LOC) * INDEMP  +
                           HTKARATE(2,LOC) * RETEMP  +
                           HTKARATE(3,LOC) * OFFEMP  +
                           HTKARATE(4,LOC) * OTHEMP  +
                           HTKARATE(5,LOC) * HH

; Allocate HB-Attractions among income groups:
; HBW
          IF (ATYPE = 1)
              AHBW1ZA[I] = AHBWtem * 0.1220 * JurAmod(1,JurCode) * HBWZmod(5,I)
              AHBW2ZA[I] = AHBWtem * 0.1782 * JurAmod(1,JurCode) * HBWZmod(6,I)
              AHBW3ZA[I] = AHBWtem * 0.2897 * JurAmod(1,JurCode) * HBWZmod(7,I)
              AHBW4ZA[I] = AHBWtem * 0.4101 * JurAmod(1,JurCode) * HBWZmod(8,I)
           ENDIF
          IF (ATYPE = 2)
              AHBW1ZA[I] = AHBWtem * 0.1559 * JurAmod(1,JurCode) * HBWZmod(5,I)
              AHBW2ZA[I] = AHBWtem * 0.1714 * JurAmod(1,JurCode) * HBWZmod(6,I)
              AHBW3ZA[I] = AHBWtem * 0.3006 * JurAmod(1,JurCode) * HBWZmod(7,I)
              AHBW4ZA[I] = AHBWtem * 0.3721 * JurAmod(1,JurCode) * HBWZmod(8,I)
           ENDIF
          IF (ATYPE = 3)
              AHBW1ZA[I] = AHBWtem * 0.1523 * JurAmod(1,JurCode) * HBWZmod(5,I)
              AHBW2ZA[I] = AHBWtem * 0.2153 * JurAmod(1,JurCode) * HBWZmod(6,I)
              AHBW3ZA[I] = AHBWtem * 0.3330 * JurAmod(1,JurCode) * HBWZmod(7,I)
              AHBW4ZA[I] = AHBWtem * 0.2994 * JurAmod(1,JurCode) * HBWZmod(8,I)
           ENDIF
          IF (ATYPE > 3)
              AHBW1ZA[I] = AHBWtem * 0.2062 * JurAmod(1,JurCode) * HBWZmod(5,I)
              AHBW2ZA[I] = AHBWtem * 0.2501 * JurAmod(1,JurCode) * HBWZmod(6,I)
              AHBW3ZA[I] = AHBWtem * 0.3236 * JurAmod(1,JurCode) * HBWZmod(7,I)
              AHBW4ZA[I] = AHBWtem * 0.2201 * JurAmod(1,JurCode) * HBWZmod(8,I)
           ENDIF

       AHBWTZA[I]  = AHBW1ZA[I] + AHBW2ZA[I] + AHBW3ZA[I] + AHBW4ZA[I]


; HBS
          IF (ATYPE < 3)
              AHBS1ZA[I] = AHBStem * 0.1765 * JurAmod(2,JurCode) * HBSZmod(5,I)
              AHBS2ZA[I] = AHBStem * 0.1790 * JurAmod(2,JurCode) * HBSZmod(6,I)
              AHBS3ZA[I] = AHBStem * 0.3066 * JurAmod(2,JurCode) * HBSZmod(7,I)
              AHBS4ZA[I] = AHBStem * 0.3379 * JurAmod(2,JurCode) * HBSZmod(8,I)
           ENDIF
          IF (ATYPE = 3)
              AHBS1ZA[I] = AHBStem * 0.1501 * JurAmod(2,JurCode) * HBSZmod(5,I)
              AHBS2ZA[I] = AHBStem * 0.2010 * JurAmod(2,JurCode) * HBSZmod(6,I)
              AHBS3ZA[I] = AHBStem * 0.3732 * JurAmod(2,JurCode) * HBSZmod(7,I)
              AHBS4ZA[I] = AHBStem * 0.2757 * JurAmod(2,JurCode) * HBSZmod(8,I)
           ENDIF
          IF (ATYPE > 3)
              AHBS1ZA[I] = AHBStem * 0.1446 * JurAmod(2,JurCode) * HBSZmod(5,I)
              AHBS2ZA[I] = AHBStem * 0.2055 * JurAmod(2,JurCode) * HBSZmod(6,I)
              AHBS3ZA[I] = AHBStem * 0.3051 * JurAmod(2,JurCode) * HBSZmod(7,I)
              AHBS4ZA[I] = AHBStem * 0.3448 * JurAmod(2,JurCode) * HBSZmod(8,I)
           ENDIF

       AHBSTZA[I]  = AHBS1ZA[I] + AHBS2ZA[I] + AHBS3ZA[I] + AHBS4ZA[I]
```

```
; HBO
          IF (ATYPE < 3)
              AHBO1ZA[I] = AHBOtem * 0.1588 * JurAmod(3,JurCode) * HBOZmod(5,I)
              AHBO2ZA[I] = AHBOtem * 0.1665 * JurAmod(3,JurCode) * HBOZmod(6,I)
              AHBO3ZA[I] = AHBOtem * 0.3039 * JurAmod(3,JurCode) * HBOZmod(7,I)
              AHBO4ZA[I] = AHBOtem * 0.3708 * JurAmod(3,JurCode) * HBOZmod(8,I)
           ENDIF
          IF (ATYPE = 3)
              AHBO1ZA[I] = AHBOtem * 0.0971 * JurAmod(3,JurCode) * HBOZmod(5,I)
              AHBO2ZA[I] = AHBOtem * 0.1626 * JurAmod(3,JurCode) * HBOZmod(6,I)
              AHBO3ZA[I] = AHBOtem * 0.3842 * JurAmod(3,JurCode) * HBOZmod(7,I)
              AHBO4ZA[I] = AHBOtem * 0.3561 * JurAmod(3,JurCode) * HBOZmod(8,I)
           ENDIF
          IF (ATYPE > 3)
              AHBO1ZA[I] = AHBOtem * 0.1309 * JurAmod(3,JurCode) * HBOZmod(5,I)
              AHBO2ZA[I] = AHBOtem * 0.2119 * JurAmod(3,JurCode) * HBOZmod(6,I)
              AHBO3ZA[I] = AHBOtem * 0.3456 * JurAmod(3,JurCode) * HBOZmod(7,I)
              AHBO4ZA[I] = AHBOtem * 0.3116 * JurAmod(3,JurCode) * HBOZmod(8,I)
           ENDIF


       AHBOTZA[I]  = AHBO1ZA[I] + AHBO2ZA[I] + AHBO3ZA[I] + AHBO4ZA[I]

; NHB
       ANHBTZA[I]  = ANHBtem          * JurAmod(4,JurCode) * NHBZmod(5,I) ;  see
#Note# above

; MTK
       AMTKTZA[I]  = AMTKtem          * JurAmod(5,JurCode) * MTKZmod(5,I) *
@MTK_GlobalAdj@
       PMTKTZA[I]  = AMTKtem          * JurAmod(5,JurCode) * MTKZmod(1,I) *
@MTK_GlobalAdj@

; HTK
       AHTKTZA[I]  = AHTKtem          * JurAmod(6,JurCode) * HTKZmod(5,I) *
@HTK_GlobalAdj@
       PHTKTZA[I]  = AHTKtem          * JurAmod(6,JurCode) * HTKZmod(1,I) *
@HTK_GlobalAdj@



 ; Accumulate Internal Trip Attractions by purpose for the system
  IF (I <=  @LastIZN@)
            IntlHBWAs    = IntlHBWAs  + AHBWTZA[I]
            IntlHBSAs    = IntlHBSAs  + AHBSTZA[I]
            IntlHBOAs    = IntlHBOAs  + AHBOTZA[I]
            IntlNHBAs    = IntlNHBAs  + ANHBTZA[I]
            IntlMTKAs    = IntlMTKAs  + AMTKTZA[I]  IntlMTKPs    = IntlMTKPs  +
PMTKTZA[I]
            IntlHTKAs    = IntlHTKAs  + AHTKTZA[I]  IntlHTKPs    = IntlHTKPs  +
PHTKTZA[I]
  ENDIF

 IF(I > @LastIZN@)
            AHBWTZA[I]   = zi.4.hbwxa[I]
            AHBSTZA[I]   = zi.4.hbsxa[I]
            AHBOTZA[I]   = zi.4.hboxa[I]
            ANHBTZA[I]   = zi.4.nhbxa[I]
            AMTKTZA[I]   = zi.4.mtkxa[I]
            AHTKTZA[I]   = zi.4.htkxa[I]
            PMTKTZA[I]   = zi.3.mtkxp[I]
            PHTKTZA[I]   = zi.3.htkxp[I]

      ; Accumulate External Trip Attractions by purpose for the system
            ExtlHBWAs    = ExtlHBWAs  +  zi.4.hbwxa[I]
            ExtlHBSAs    = ExtlHBSAs  +  zi.4.hbsxa[I]
```

```
            ExtlHBOAs    = ExtlHBOAs  +  zi.4.hboxa[I]
            ExtlNHBAs    = ExtlNHBAs  +  zi.4.nhbxa[I]
            ExtlMTKAs    = ExtlMTKAs  +  zi.4.mtkxa[I]
            ExtlHTKAs    = ExtlHTKAs  +  zi.4.htkxa[I]
ENDIF


;===================================================================================
======
;  Scale Attractions to Productions
;===================================================================================
======


IF (I = @ZONESIZE@)
;#######################################################################

  ;  Before scaling, compute HBW nonMotorized attractions as per CGTGV2TP.FOR
     LOOP IDX=1,@LastIZN@

         AHBW_NMTZA[IDX]  =  PHBW_NMTZA[IDX] * 0.8982

              IF (AHBW_NMTZA[IDX]    >   AHBWTZA[IDX] )
                     AHBW_NMTZA[IDX]  =  AHBWTZA[IDX] * 0.1870
              ENDIF

               IntlHBWNMAs  = IntlHBWNMAs  +  AHBW_NMTZA[IDX]

     ENDLOOP

     NMScale     = IntlNMHBWPs /IntlHBWNMAs

 ;
 ;  Now, allocate HBW attractions among motorized/non-motorized groups
 ;



     LOOP IDX=1,@ZONESIZE@
          TEM            =  AHBW_NMTZA[IDX]
          AHBW_NMTZA[IDX]=  TEM   * NMScale              ;<-- Final Scaled HBW
Non_Motorized Attractions

          AdjAHBWTZA[IDX]   =  AHBWTZA[IDX] -  AHBW_NMTZA[IDX]      ; <-- Final HBW
Mototized Attractions
             IF  (AdjAHBWTZA[IDX] <=  0.0)
                  AdjAHBWTZA[IDX]  =  0.0
                  AdjAHBW1ZA[IDX]  =  0.0
                  AdjAHBW2ZA[IDX]  =  0.0
                  AdjAHBW3ZA[IDX]  =  0.0
                  AdjAHBW4ZA[IDX]  =  0.0
               ELSE
               AdjAHBW1ZA[IDX] = AdjAHBWTZA[IDX] *  AHBW1ZA[IDX]/AHBWTZA[IDX]
               AdjAHBW2ZA[IDX] = AdjAHBWTZA[IDX] *  AHBW2ZA[IDX]/AHBWTZA[IDX]
               AdjAHBW3ZA[IDX] = AdjAHBWTZA[IDX] *  AHBW3ZA[IDX]/AHBWTZA[IDX]
               AdjAHBW4ZA[IDX] = AdjAHBWTZA[IDX] *  AHBW4ZA[IDX]/AHBWTZA[IDX]
             ENDIF

      IF(IDX <= @LastIZN@)
              IntlADJHBWAs   = IntlADJHBWAs  +  AdjAHBWTZA[IDX]
              IntlNMHBWAs   = IntlNMHBWAs    +  AHBW_NMTZA[IDX]
      ENDIF

      IF(IDX > @LastIZN@)
          ADJAHBWTZA[I]   = zi.4.hbwxa[I]
          ADJAHBW1ZA[I]   = 0
          ADJAHBW2ZA[I]   = 0
          ADJAHBW3ZA[I]   = 0
          ADJAHBW4ZA[I]   = 0

      ENDIF

     ENDLOOP

  ;---------------------------------------------------------
  ;  Now compute Gloval Scaling Factors by Purpose here:
  ;---------------------------------------------------------

    IF (IntlAdjHBWAs == 0)
        SF_HBW =  0
      ELSE
        SF_HBW =  ((IntlHBWPs  + ExtlHBWPs) - ExtlHBWAs) / IntlAdjHBWAs
    ENDIF

    IF (IntlHBSAs == 0)
        SF_HBS =  0
      ELSE
        SF_HBS =  ((IntlHBSPs  + ExtlHBSPs) - ExtlHBSAs) / IntlHBSAs
    ENDIF

    IF (IntlHBOAs == 0)
        SF_HBO =  0
      ELSE
        SF_HBO =  ((IntlHBOPs  + ExtlHBOPs) - ExtlHBOAs) / IntlHBOAs
    ENDIF

    IF (IntlNHBAs == 0)
        SF_NHB =  0
      ELSE
        SF_NHB =  ((IntlNHBPs  + ExtlNHBPs) - ExtlNHBAs) / IntlNHBAs
    ENDIF

    IF (IntlMTKAs == 0)
        SF_MTK =  0
      ELSE
        SF_MTK =  ((IntlMTKPs  + ExtlMTKPs) - ExtlMTKAs) / IntlMTKAs
    ENDIF

    IF (IntlHTKAs == 0)
        SF_HTK =  0
      ELSE
        SF_HTK =  ((IntlHTKPs  + ExtlHTKPs) - ExtlHTKAs) / IntlHTKAs
    ENDIF

  ;-------------------------------------------------------
  ; Now apply attraction scaling factors to Internal TAZs Only
  ;-------------------------------------------------------

LOOP IDX = 1,@LastIZN@

      FAHBW1ZA[IDX] = AdjAHBW1ZA[IDX] * SF_HBW       FAHBW2ZA[IDX] = AdjAHBW2ZA[IDX]
* SF_HBW
      FAHBW3ZA[IDX] = AdjAHBW3ZA[IDX] * SF_HBW       FAHBW4ZA[IDX] = AdjAHBW4ZA[IDX]
* SF_HBW
      FAHBWTZA[IDX] = AdjAHBWTZA[IDX] * SF_HBW

      FAHBS1ZA[IDX] = AHBS1ZA[IDX]    * SF_HBS       FAHBS2ZA[IDX] = AHBS2ZA[IDX]
* SF_HBS
      FAHBS3ZA[IDX] = AHBS3ZA[IDX]    * SF_HBS       FAHBS4ZA[IDX] = AHBS4ZA[IDX]
* SF_HBS
      FAHBSTZA[IDX] = AHBSTZA[IDX]    * SF_HBS

      FAHBO1ZA[IDX] = AHBO1ZA[IDX]    * SF_HBO       FAHBO2ZA[IDX] = AHBO2ZA[IDX]
* SF_HBO
```

```
      FAHBO3ZA[IDX] = AHBO3ZA[IDX]    * SF_HBO       FAHBO4ZA[IDX] = AHBO4ZA[IDX]
* SF_HBO
      FAHBOTZA[IDX] = AHBOTZA[IDX]    * SF_HBO

      FANHBTZA[IDX] = ANHBTZA[IDX]    * SF_NHB   ; Final NHB A's  (Also used as
final P's too)

      FAMTKTZA[IDX] = AMTKTZA[IDX]    * SF_MTK   ; Final MTK A's  (Also used as
final P's too)

      FAHTKTZA[IDX] = AHTKTZA[IDX]    * SF_HTK   ; Final HTK A's  (Also used as
final P's too)

;
; Accumulate the Total Internal Final/Scaled Attractions Here:
;
          IntlFinHBWAs   = IntlFinHBWAs  +  FAHBWTZA[IDX]
          IntlFinHBSAs   = IntlFinHBSAs  +  FAHBSTZA[IDX]
          IntlFinHBOAs   = IntlFinHBOAs  +  FAHBOTZA[IDX]
          IntlFinNHBAs   = IntlFinNHBAs  +  FANHBTZA[IDX]
          IntlFinMTKAs   = IntlFinMTKAs  +  FAMTKTZA[IDX]
          IntlFinHTKAs   = IntlFinHTKAs  +  FAHTKTZA[IDX]
;
; Accumulate Internal NHB, Mtk, Htk final/scaled trip attractions at Juris Level
;
      IF(IDX <= @LastIZN@)
      Jr  = ZoneJURA[IDX]
              JurNHBA[jr] = JurNHBA[jr]  + FANHBTZA[IDX]
              JurMTKA[jr] = JurMTKA[jr]  + FAMTKTZA[IDX]
              JurHTKA[jr] = JurHTKA[jr]  + FAHTKTZA[IDX]
      EndIF

ENDLOOP


;
; Now just set final/scaled attractions equal to initial attractions which are
; really just the input external attractions.  These are maintained as is
;

FrstExZN = @LastIZN@ + 1
LOOP  IDX= FrstExZN,@ZONESIZE@

          FAHBWTZA[IDX] = AHBWTZA[IDX]              ; Final HBW As
          FAHBSTZA[IDX] = AHBSTZA[IDX]              ; Final HBS As
          FAHBOTZA[IDX] = AHBOTZA[IDX]              ; Final HBO A's
          FANHBTZA[IDX] = ANHBTZA[IDX]              ; Final NHB A's
          FAMTKTZA[IDX] = AMTKTZA[IDX]              ; Final MTK A's
          FAHTKTZA[IDX] = AHTKTZA[IDX]              ; Final HTK A's

 ENDLOOP

;
;==================================================================================
========
;  Now Write the Zonal P/A Files for Trip Distribution
;==================================================================================
========
;

 LOOP Idx= 1,@ZoneSize@
   Print Form=@Ofmt@ List =IDX(5),PHBW_NMTZA[IDX],AHBW_NMTZA[IDX],
file=@hbwnmpa@

   Print Form=@Ofmt@ List =IDX(5),PHBWTZA[IDX],
file=@hbwps_all@
   Print Form=@Ofmt@ List =IDX(5),PHBSTZA[IDX],
file=@hbsps_all@
   Print Form=@Ofmt@ List =IDX(5),PHBOTZA[IDX],
file=@hbops_all@
   Print Form=@Ofmt@ List =IDX(5),PNHBTZA[IDX],
file=@nhbps_all@
   Print Form=@Ofmt@ List =IDX(5),PMTKTZA[IDX],
file=@mtkps_all@
   Print Form=@Ofmt@ List =IDX(5),PHTKTZA[IDX],
file=@htkps_all@

   Print Form=@Ofmt@ List
=IDX(5),PHBW1ZA[IDX],PHBW2ZA[IDX],PHBW3ZA[IDX],PHBW4ZA[IDX], file=@hbwps_inc@
   Print Form=@Ofmt@ List
=IDX(5),PHBS1ZA[IDX],PHBS2ZA[IDX],PHBS3ZA[IDX],PHBS4ZA[IDX], file=@hbsps_inc@
   Print Form=@Ofmt@ List
=IDX(5),PHBO1ZA[IDX],PHBO2ZA[IDX],PHBO3ZA[IDX],PHBO4ZA[IDX], file=@hbops_inc@

   Print Form=@Ofmt@ List =IDX(5),FAHBWTZA[IDX],
file=@hbwas_all@
   Print Form=@Ofmt@ List =IDX(5),FAHBSTZA[IDX],
file=@hbsas_all@
   Print Form=@Ofmt@ List =IDX(5),FAHBOTZA[IDX],
file=@hboas_all@
   Print Form=@Ofmt@ List =IDX(5),FANHBTZA[IDX],
file=@nhbas_all@
   Print Form=@Ofmt@ List =IDX(5),FAMTKTZA[IDX],
file=@mtkas_all@
   Print Form=@Ofmt@ List =IDX(5),FAHTKTZA[IDX],
file=@htkas_all@

   Print Form=@Ofmt@ List
=IDX(5),FAHBW1ZA[IDX],FAHBW2ZA[IDX],FAHBW3ZA[IDX],FAHBW4ZA[IDX], file=@hbwas_inc@
   Print Form=@Ofmt@ List
=IDX(5),FAHBS1ZA[IDX],FAHBS2ZA[IDX],FAHBS3ZA[IDX],FAHBS4ZA[IDX], file=@hbsas_inc@
   Print Form=@Ofmt@ List
=IDX(5),FAHBO1ZA[IDX],FAHBO2ZA[IDX],FAHBO3ZA[IDX],FAHBO4ZA[IDX], file=@hboas_inc@

  IF (IDX  <= @LastIZN@) ; Internal Med/Hvy Truck and NHB Trips Only

     Print Form=@Ofmt@ List =IDX(5),PNHBTZA[IDX],
file=@nhbps_int@
     Print Form=@Ofmt@ List =IDX(5),PMTKTZA[IDX],
file=@mtkps_int@
     Print Form=@Ofmt@ List =IDX(5),PHTKTZA[IDX],
file=@htkps_int@

     Print Form=@Ofmt@ List =IDX(5),FANHBTZA[IDX],
file=@nhbas_int@
     Print Form=@Ofmt@ List =IDX(5),FAMTKTZA[IDX],
file=@mtkas_int@
     Print Form=@Ofmt@ List =IDX(5),FAHTKTZA[IDX],
file=@htkas_int@

    ELSE

     Print Form=@Ofmt@ List =IDX(5),'       0.00',
file=@nhbps_int@
     Print Form=@Ofmt@ List =IDX(5),'       0.00',
file=@mtkps_int@
     Print Form=@Ofmt@ List =IDX(5),'       0.00',
file=@htkps_int@

     Print Form=@Ofmt@ List =IDX(5),'       0.00',
file=@nhbas_int@
     Print Form=@Ofmt@ List =IDX(5),'       0.00',
file=@mtkas_int@
     Print Form=@Ofmt@ List =IDX(5),'       0.00',
file=@htkas_int@
```

```
  ENDIF


ENDLOOP

;
;==================================================================================
========
;  Write the Report Files
;==================================================================================
========
;
; compute total motorized Ps/As for summary:
  TOTHBWPs = IntlHBWPs       + ExtlHBWPs
  TOTHBWAs = IntlAdjHBWAs    + ExtlHBWAs
  DiffHBW  =  TOTHBWAs - TOTHBWPs
  PctDHBW  =  DiffHBW/TOTHBWPs * 100.00

  TOTHBSPs = IntlHBSPs   + ExtlHBSPs
  TOTHBSAs = IntlHBSAs   + ExtlHBSAs
  DiffHBS  =  TOTHBSAs - TOTHBSPs
  PctDHBS  =  DiffHBS/TOTHBSPs * 100.00

  TOTHBOPs = IntlHBOPs    + ExtlHBOPs
  TOTHBOAs = IntlHBOAs + ExtlHBOAs
  DiffHBO  =  TOTHBOAs - TOTHBOPs
  PctDHBO  =  DiffHBO/TOTHBOPs * 100.00

  TOTNHBPs = IntlNHBPs    + ExtlNHBPs
  TOTNHBAs = IntlNHBAs + ExtlNHBAs
  DiffNHB  =  TOTNHBAs - TOTNHBPs
  PctDNHB  =  DiffNHB/TOTNHBPs * 100.00

  TOTMTKPs = IntlMTKPs + ExtlMTKPs
  TOTMTKAs = IntlMTKAs + ExtlMTKAs
  DiffMTK  =  TOTMTKAs - TOTMTKPs
  PctDMTK  =  DiffMTK/TOTMTKPs * 100.00

  TOTHTKPs = IntlHTKPs + ExtlHTKPs
  TOTHTKAs = IntlHTKAs + ExtlHTKAs
  DiffHTK  = TOTHTKAs - TOTHTKPs
  PctDHTK  = DiffHTK/TOTHTKPs * 100.00

;
; Calculate 'person' subtotals for summary:
  IntlPSNPs = IntlHBWPs    + IntlHBSPs + IntlHBOPs + IntlNHBPs
  IntlPSNAs = IntlAdjHBWAs + IntlHBSAs + IntlHBOAs + IntlNHBAs
  ExtlPSNPs = ExtlHBWPs    + ExtlHBSPs + ExtlHBOPs + ExtlNHBPs
  ExtlPSNAs = ExtlHBWAs    + ExtlHBSAs + ExtlHBOAs + ExtlNHBAs
  TOTPSNPs  = IntlPSNPs    + ExtlPSNPs
  TOTPSNAs  = IntlPSNAs    + ExtlPSNAs
  DiffPSN   =  TOTPSNAs - TOTPSNPs
  PctDPSN   =  DiffPSN/TOTPSNPs * 100.00
  IntlFinPSNAs = IntlFinHBWAs + IntlFinHBSAs + IntlFinHBOAs + IntlFinNHBAs

;
; Calculate 'truck ' subtotals for summary:
  IntlTrkPs = IntlMTKPs  + IntlHTKPs
  IntlTrkAs = IntlMTKAs  + IntlHTKAs
  ExtlTrkPs = ExtlMtkPs  + ExtlHtkPs
  ExtlTrkAs = ExtlMtkAs  + ExtlHtkAs
  TOTTrkPs  = IntlTrkPs  + ExtlTrkPs
  TOTTrkAs  = IntlTrkAs  + ExtlTrkAs
  DiffTrk   =  TOTTrkAs - TOTTrkPs
  PctDTrk   =  DiffTrk/TOTTrkPs * 100.00
  IntlFinTrkAs = IntlFinMTKAs + IntlFinHTKAs
```

```
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '    TRIP_GENERATION.S  -  P r o g r a m   O u t p u t   S u m m a r y
- ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '                                   Initial
Final/Scaled  Scaling    '
 Print LIST= ' Trip       Internal   External   Internal   External   Total
Total      Diff.      % Diff.    Internal    Factor     ' ,file=@Rept@
 Print LIST= ' Purpose      Prods.     Prods.     Attrs.     Attrs.    Prods.
Attrs.    (As - Ps)              Attrs.               ' ,file=@Rept@
 Print LIST= '----------- ---------- ---------- ---------- ---------- ---------- ---
------- ---------- ---------- ----------  ----------  ' ,file=@Rept@
 Print form=11csv list='HB Work    ',IntlHBWPs,ExtlHBWPs,IntlHBWAs,
ExtlHBWAs,TOTHBWPs,TOTHBWAs,DiffHBW,PctDHBW(11.2),IntlFinHBWAs, SF_HBW(11.3)
,file=@Rept@
 Print form=11csv list='HB Shop    ',IntlHBSPs,ExtlHBSPs,IntlHBSAs,
ExtlHBSAs,TOTHBSPs,TOTHBSAs,DiffHBS,PctDHBS(11.2),IntlFinHBSAs, SF_HBS(11.3)
,file=@Rept@
 Print form=11csv list='HB Other   ',IntlHBOPs,ExtlHBOPs,IntlHBOAs,
ExtlHBOAs,TOTHBOPs,TOTHBOAs,DiffHBO,PctDHBO(11.2),IntlFinHBOAs, SF_HBO(11.3)
,file=@Rept@
 Print form=11csv list='NonHB      ',IntlNHBPs,ExtlNHBPs,IntlNHBAs,
ExtlNHBAs,TOTNHBPs,TOTNHBAs,DiffNHB,PctDNHB(11.2),IntlFinNHBAs, SF_NHB(11.3)
,file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print form=11csv list='Persn Total',IntlPsnPs,ExtlPsnPs,IntlPsnAs,
ExtlPsnAs,TOTPsnPs,TOTPsnAs,DiffPsn,PctDPsn(11.2),IntlFinPsnAs,'          -'
,file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print form=11csv list='Med. Truck ',IntlMTKPs,ExtlMTKPs,IntlMTKAs,
ExtlMTKAs,TOTMTKPs,TOTMTKAs,DiffMTK,PctDMTK(11.2),IntlFinMTKAs, SF_MTK(11.3)
,file=@Rept@
 Print form=11csv list='Hvy. Truck ',IntlHTKPs,ExtlHTKPs,IntlHTKAs,
ExtlHTKAs,TOTHTKPs,TOTHTKAs,DiffHTK,PctDHTK(11.2),IntlFinHTKAs, SF_HTK(11.3)
,file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print form=11csv list='TruckTotal ',IntlTrkPs,ExtlTrkPs,IntlTrkAs,
ExtlTrkAs,TOTTrkPs,TOTTrkAs,DiffTrk,PctDTrk(11.2),IntlFinTrkAs,'          -'
,file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@


 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
   Print Form=12.csv  List='Non-Motorized HBW Production  Total: ', IntlNMHBWPs,
file=@rept@
   Print Form=12.csv  List='Non-Motorized HBW Attractions Total: ', IntlNMHBWAs,
file=@rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
;
; Compute Trip Rate Totals, marginals for reporting
;
  IntlHBWPr  = IntlHBWPs/HH_TotSIV, IntlHBSPr  = IntlHBSPs/HH_TotSIV, IntlHBOPr  =
IntlHBOPs/HH_TotSIV
  IntlNHBPr  = IntlNHBPs/HH_TotSIV, IntlMTKPr  = IntlMTKPs/HH_TotSIV, IntlHTKPr  =
IntlHTKPs/HH_TotSIV
  DFIOHH     = HH_TotSIV - HH_Tot

 Loop IDX=1,@SzCL@
```

```
  RegHBWrSzA[IDX] = RegHBWSzA[IDX]/RegHHSzA[IDX]
  RegHBSrSzA[IDX] = RegHBSSzA[IDX]/RegHHSzA[IDX]
  RegHBOrSzA[IDX] = RegHBOSzA[IDX]/RegHHSzA[IDX]
  RegNHBrSzA[IDX] = RegNHBSzA[IDX]/RegHHSzA[IDX]
 ENDLOOP

 Loop IDX=1,@InCL@
  RegHBWrInA[IDX] = RegHBWInA[IDX]/RegHHInA[IDX]
  RegHBSrInA[IDX] = RegHBSInA[IDX]/RegHHInA[IDX]
  RegHBOrInA[IDX] = RegHBOInA[IDX]/RegHHInA[IDX]
  RegNHBrInA[IDX] = RegNHBInA[IDX]/RegHHInA[IDX]
 ENDLOOP

 Loop IDX=1,@VaCL@
  RegHBWrVaA[IDX] = RegHBWVaA[IDX]/RegHHVaA[IDX]
  RegHBSrVaA[IDX] = RegHBSVaA[IDX]/RegHHVaA[IDX]
  RegHBOrVaA[IDX] = RegHBOVaA[IDX]/RegHHVaA[IDX]
  RegNHBrVaA[IDX] = RegNHBVaA[IDX]/RegHHVaA[IDX]
 ENDLOOP
;
 Loop IDX=1,@JurSize@
  IF (  JurHHa[IDX]  = 0)
      JurHBWrA[IDX] = 0
      JurHBSrA[IDX] = 0
      JurHBOrA[IDX] = 0
      JurNHBrA[IDX] = 0
      JurMTKrA[IDX] = 0
      JurHTKrA[IDX] = 0
   ELSE
      JurHBWrA[IDX] = JurHBWA[IDX]/JurHHa[IDX]
      JurHBSrA[IDX] = JurHBSA[IDX]/JurHHa[IDX]
      JurHBOrA[IDX] = JurHBOA[IDX]/JurHHa[IDX]
      JurNHBrA[IDX] = JurNHBA[IDX]/JurHHa[IDX]
      JurMTKrA[IDX] = JurMTKA[IDX]/JurHHa[IDX]
      JurHTKrA[IDX] = JurHTKA[IDX]/JurHHa[IDX]
  ENDIF


 ENDLOOP
;
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 PRINT LIST =' Regional Households and Motorized Person Trips By Size Level
',file=@Rept@
 PRINT LIST =           '                          HBW        HBW        HBS
HBS        HBO         HBO          NHB        NHB          ',file=@Rept@
 PRINT LIST =           '   Size        HHs         Trips        Rate       Trips
Rate       Trips        Rate        Trips       Rate         ',file=@Rept@
 PRINT LIST =           '           ----------- ----------- ---------- ----------
- ----------- ----------- ----------- ------------ -----------    ',file=@Rept@
 Print form=12.csv LIST= '      1
',RegHHSzA[1],RegHBWSzA[1],RegHBWrSzA[1](12.3),RegHBSSzA[1],RegHBSrSzA[1](12.3),RegH
BOSzA[1],RegHBOrSzA[1](12.3),RegNHBSzA[1],RegNHBrSzA[1](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      2
',RegHHSzA[2],RegHBWSzA[2],RegHBWrSzA[2](12.3),RegHBSSzA[2],RegHBSrSzA[2](12.3),RegH
BOSzA[2],RegHBOrSzA[2](12.3),RegNHBSzA[2],RegNHBrSzA[2](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      3
',RegHHSzA[3],RegHBWSzA[3],RegHBWrSzA[3](12.3),RegHBSSzA[3],RegHBSrSzA[3](12.3),RegH
BOSzA[3],RegHBOrSzA[3](12.3),RegNHBSzA[3],RegNHBrSzA[3](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      4+
',RegHHSzA[4],RegHBWSzA[4],RegHBWrSzA[4](12.3),RegHBSSzA[4],RegHBSrSzA[4](12.3),RegH
BOSzA[4],RegHBOrSzA[4](12.3),RegNHBSzA[4],RegNHBrSzA[4](12.3),file=@Rept@ ;
 Print LIST= '    ',file=@Rept@
 Print form=12.csv LIST= ' Total    ',HH_TotSIV,
IntlHBWPs,IntlHBWPr(12.3),IntlHBSPs, IntlHBSPr(12.3), IntlHBOPs,IntlHBOPr(12.3),
IntlNHBPs,IntlNHBPr(12.3),  ,file=@Rept@ ;
 Print LIST= '   ',file=@Rept@
```

```
 Print LIST= '   ',file=@Rept@
 Print form=12.csv LIST= 'I/P HHs:  ',HH_Tot, ' (Regional HH Total from ZONE.ASC
file) '     ,file=@Rept@ ;
 Print form=12.csv LIST= 'HH Diff.  ',DFIOHH,
,file=@Rept@ ;

 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 PRINT LIST =' Regional Households and Motorized Person Trips By Income Level
',file=@Rept@
 PRINT LIST =           '                          HBW        HBW        HBS
HBS        HBO         HBO          NHB        NHB          ',file=@Rept@
 PRINT LIST =           'Inc.Level      HHs        Trips        Rate       Trips
Rate       Trips        Rate        Trips       Rate         ',file=@Rept@
 PRINT LIST =           '           ----------- ----------- ---------- ----------
- ----------- ----------- ----------- ------------ -----------    ',file=@Rept@
 Print form=12.csv LIST= '      1
',RegHHInA[1],RegHBWInA[1],RegHBWrInA[1](12.3),RegHBSInA[1],RegHBSrInA[1](12.3),RegH
BOInA[1],RegHBOrInA[1](12.3),RegNHBInA[1],RegNHBrInA[1](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      2
',RegHHInA[2],RegHBWInA[2],RegHBWrInA[2](12.3),RegHBSInA[2],RegHBSrInA[2](12.3),RegH
BOInA[2],RegHBOrInA[2](12.3),RegNHBInA[2],RegNHBrInA[2](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      3
',RegHHInA[3],RegHBWInA[3],RegHBWrInA[3](12.3),RegHBSInA[3],RegHBSrInA[3](12.3),RegH
BOInA[3],RegHBOrInA[3](12.3),RegNHBInA[3],RegNHBrInA[3](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      4
',RegHHInA[4],RegHBWInA[4],RegHBWrInA[4](12.3),RegHBSInA[4],RegHBSrInA[4](12.3),RegH
BOInA[4],RegHBOrInA[4](12.3),RegNHBInA[4],RegNHBrInA[4](12.3),file=@Rept@ ;
 Print LIST= '    ',file=@Rept@
 Print form=12.csv LIST= ' Total    ',HH_TotSIV,
IntlHBWPs,IntlHBWPr(12.3),IntlHBSPs, IntlHBSPr(12.3), IntlHBOPs,IntlHBOPr(12.3),
IntlNHBPs,IntlNHBPr(12.3),  ,file=@Rept@ ;
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
;
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 PRINT LIST =' Regional Households and Motorized Person Trips By Vehicle Availablity
Level     ',file=@Rept@
 PRINT LIST =           '                          HBW        HBW        HBS
HBS        HBO         HBO          NHB        NHB          ',file=@Rept@
 PRINT LIST =           'Vehs.Avail.    HHs        Trips        Rate       Trips
Rate       Trips        Rate        Trips       Rate         ',file=@Rept@
 PRINT LIST =           '           ----------- ----------- ---------- ----------
- ----------- ----------- ----------- ------------ -----------    ',file=@Rept@
 Print form=12.csv LIST= '      0
',RegHHVaA[1],RegHBWVaA[1],RegHBWrVaA[1](12.3),RegHBSVaA[1],RegHBSrVaA[1](12.3),RegH
BOVaA[1],RegHBOrVaA[1](12.3),RegNHBVaA[1],RegNHBrVaA[1](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      1
',RegHHVaA[2],RegHBWVaA[2],RegHBWrVaA[2](12.3),RegHBSVaA[2],RegHBSrVaA[2](12.3),RegH
BOVaA[2],RegHBOrVaA[2](12.3),RegNHBVaA[2],RegNHBrVaA[2](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      2
',RegHHVaA[3],RegHBWVaA[3],RegHBWrVaA[3](12.3),RegHBSVaA[3],RegHBSrVaA[3](12.3),RegH
BOVaA[3],RegHBOrVaA[3](12.3),RegNHBVaA[3],RegNHBrVaA[3](12.3),file=@Rept@ ;
 Print form=12.csv LIST= '      3+
',RegHHVaA[4],RegHBWVaA[4],RegHBWrVaA[4](12.3),RegHBSVaA[4],RegHBSrVaA[4](12.3),RegH
BOVaA[4],RegHBOrVaA[4](12.3),RegNHBVaA[4],RegNHBrVaA[4](12.3),file=@Rept@ ;
 Print LIST= '    ',file=@Rept@
 Print form=12.csv LIST= ' Total    ',HH_TotSIV,
IntlHBWPs,IntlHBWPr(12.3),IntlHBSPs, IntlHBSPr(12.3), IntlHBOPs,IntlHBOPr(12.3),
IntlNHBPs,IntlNHBPr(12.3),  ,file=@Rept@ ;
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@
```

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

  PRINT LIST =           ' Jurisdictional Households and Motorized Person Trips by
Purpose ',file=@Rept@
 PRINT LIST =           '                            HBW         HBW         HBS
HBS         HBO         HBO          NHB        NHB          ',file=@Rept@
 PRINT LIST =           '  Juris.       HHs        Trips        Rate       Trips
Rate       Trips        Rate        Trips       Rate         ',file=@Rept@
 PRINT LIST =           '           ----------- ------------ ----------- ----------
- ----------- ----------- ----------- ------------ -----------    ',file=@Rept@

  Print form=12.csv LIST= '    0_DC
',JurHHA[01],JurHBWA[01],JurHBWrA[01](12.3),JurHBSA[01],JurHBSrA[01](12.3),JurHBOA[0
1],JurHBOrA[01](12.3),JurNHBA[01],JurNHBrA[01](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    1_Mtg
',JurHHA[02],JurHBWA[02],JurHBWrA[02](12.3),JurHBSA[02],JurHBSrA[02](12.3),JurHBOA[0
2],JurHBOrA[02](12.3),JurNHBA[02],JurNHBrA[02](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    2_PG
',JurHHA[03],JurHBWA[03],JurHBWrA[03](12.3),JurHBSA[03],JurHBSrA[03](12.3),JurHBOA[0
3],JurHBOrA[03](12.3),JurNHBA[03],JurNHBrA[03](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    3_Arl
',JurHHA[04],JurHBWA[04],JurHBWrA[04](12.3),JurHBSA[04],JurHBSrA[04](12.3),JurHBOA[0
4],JurHBOrA[04](12.3),JurNHBA[04],JurNHBrA[04](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    4_Alx
',JurHHA[05],JurHBWA[05],JurHBWrA[05](12.3),JurHBSA[05],JurHBSrA[05](12.3),JurHBOA[0
5],JurHBOrA[05](12.3),JurNHBA[05],JurNHBrA[05](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    5_Ffx
',JurHHA[06],JurHBWA[06],JurHBWrA[06](12.3),JurHBSA[06],JurHBSrA[06](12.3),JurHBOA[0
6],JurHBOrA[06](12.3),JurNHBA[06],JurNHBrA[06](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    6_Ldn
',JurHHA[07],JurHBWA[07],JurHBWrA[07](12.3),JurHBSA[07],JurHBSrA[07](12.3),JurHBOA[0
7],JurHBOrA[07](12.3),JurNHBA[07],JurNHBrA[07](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    7_PW
',JurHHA[08],JurHBWA[08],JurHBWrA[08](12.3),JurHBSA[08],JurHBSrA[08](12.3),JurHBOA[0
8],JurHBOrA[08](12.3),JurNHBA[08],JurNHBrA[08](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    8_ -
',JurHHA[09],JurHBWA[09],JurHBWrA[09](12.3),JurHBSA[09],JurHBSrA[09](12.3),JurHBOA[0
9],JurHBOrA[09](12.3),JurNHBA[09],JurNHBrA[09](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '    9_Frd
',JurHHA[10],JurHBWA[10],JurHBWrA[10](12.3),JurHBSA[10],JurHBSrA[10](12.3),JurHBOA[1
0],JurHBOrA[10](12.3),JurNHBA[10],JurNHBrA[10](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   10_How
',JurHHA[11],JurHBWA[11],JurHBWrA[11](12.3),JurHBSA[11],JurHBSrA[11](12.3),JurHBOA[1
1],JurHBOrA[11](12.3),JurNHBA[11],JurNHBrA[11](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   11_AA
',JurHHA[12],JurHBWA[12],JurHBWrA[12](12.3),JurHBSA[12],JurHBSrA[12](12.3),JurHBOA[1
2],JurHBOrA[12](12.3),JurNHBA[12],JurNHBrA[12](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   12_Chs
',JurHHA[13],JurHBWA[13],JurHBWrA[13](12.3),JurHBSA[13],JurHBSrA[13](12.3),JurHBOA[1
3],JurHBOrA[13](12.3),JurNHBA[13],JurNHBrA[13](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   13_ -
',JurHHA[14],JurHBWA[14],JurHBWrA[14](12.3),JurHBSA[14],JurHBSrA[14](12.3),JurHBOA[1
4],JurHBOrA[14](12.3),JurNHBA[14],JurNHBrA[14](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   14_Car
',JurHHA[15],JurHBWA[15],JurHBWrA[15](12.3),JurHBSA[15],JurHBSrA[15](12.3),JurHBOA[1
5],JurHBOrA[15](12.3),JurNHBA[15],JurNHBrA[15](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   15_Cal
',JurHHA[16],JurHBWA[16],JurHBWrA[16](12.3),JurHBSA[16],JurHBSrA[16](12.3),JurHBOA[1
6],JurHBOrA[16](12.3),JurNHBA[16],JurNHBrA[16](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   16_SM
',JurHHA[17],JurHBWA[17],JurHBWrA[17](12.3),JurHBSA[17],JurHBSrA[17](12.3),JurHBOA[1
7],JurHBOrA[17](12.3),JurNHBA[17],JurNHBrA[17](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '
17_KGeo',JurHHA[18],JurHBWA[18],JurHBWrA[18](12.3),JurHBSA[18],JurHBSrA[18](12.3),Ju
rHBOA[18],JurHBOrA[18](12.3),JurNHBA[18],JurNHBrA[18](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   18_Fbg
',JurHHA[19],JurHBWA[19],JurHBWrA[19](12.3),JurHBSA[19],JurHBSrA[19](12.3),JurHBOA[1
9],JurHBOrA[19](12.3),JurNHBA[19],JurNHBrA[19](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   19_Sta
',JurHHA[20],JurHBWA[20],JurHBWrA[20](12.3),JurHBSA[20],JurHBSrA[20](12.3),JurHBOA[2
0],JurHBOrA[20](12.3),JurNHBA[20],JurNHBrA[20](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   20_Spt
',JurHHA[21],JurHBWA[21],JurHBWrA[21](12.3),JurHBSA[21],JurHBSrA[21](12.3),JurHBOA[2
1],JurHBOrA[21](12.3),JurNHBA[21],JurNHBrA[21](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   21_Fau
',JurHHA[22],JurHBWA[22],JurHBWrA[22](12.3),JurHBSA[22],JurHBSrA[22](12.3),JurHBOA[2
2],JurHBOrA[22](12.3),JurNHBA[22],JurNHBrA[22](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   22_Clk
',JurHHA[23],JurHBWA[23],JurHBWrA[23](12.3),JurHBSA[23],JurHBSrA[23](12.3),JurHBOA[2
3],JurHBOrA[23](12.3),JurNHBA[23],JurNHBrA[23](12.3),file=@Rept@ ;
  Print form=12.csv LIST= '   23_Jef
',JurHHA[24],JurHBWA[24],JurHBWrA[24](12.3),JurHBSA[24],JurHBSrA[24](12.3),JurHBOA[2
4],JurHBOrA[24](12.3),JurNHBA[24],JurNHBrA[24](12.3),file=@Rept@ ;

  Print LIST= '           ',file=@Rept@
 Print form=12.csv LIST=  ' Total    ',HH_TotSIV,
IntlHBWPs,IntlHBWPr(12.3),IntlHBSPs, IntlHBSPr(12.3), IntlHBOPs,IntlHBOPr(12.3),
IntlNHBPs,IntlNHBPr(12.3),  ,file=@Rept@ ;
 Print LIST= '   ',file=@Rept@
 Print LIST= '   ',file=@Rept@

  PRINT LIST =           ' Jurisdictional Households and Truck Trips by Vehicle
Type  ',file=@Rept@
 PRINT LIST =           '                        Medium_Truck Medium_Truck
Heavy_Truck Heavy_Truck ',file=@Rept@
 PRINT LIST =           '  Juris.       HHs        Trips        Rate        Trips
Rate     ',file=@Rept@
 PRINT LIST =           '           ----------- ------------ ----------- ----------
- -----------  ',file=@Rept@

  Print form=12.csv LIST= '    0_DC
',JurHHA[01],JurMTKA[01],JurMTKrA[01](12.3),JurHTKA[01],JurHTKrA[01](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    1_Mtg
',JurHHA[02],JurMTKA[02],JurMTKrA[02](12.3),JurHTKA[02],JurHTKrA[02](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    2_PG
',JurHHA[03],JurMTKA[03],JurMTKrA[03](12.3),JurHTKA[03],JurHTKrA[03](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    3_Arl
',JurHHA[04],JurMTKA[04],JurMTKrA[04](12.3),JurHTKA[04],JurHTKrA[04](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    4_Alx
',JurHHA[05],JurMTKA[05],JurMTKrA[05](12.3),JurHTKA[05],JurHTKrA[05](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    5_Ffx
',JurHHA[06],JurMTKA[06],JurMTKrA[06](12.3),JurHTKA[06],JurHTKrA[06](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    6_Ldn
',JurHHA[07],JurMTKA[07],JurMTKrA[07](12.3),JurHTKA[07],JurHTKrA[07](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    7_PW
',JurHHA[08],JurMTKA[08],JurMTKrA[08](12.3),JurHTKA[08],JurHTKrA[08](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    8_ -
',JurHHA[09],JurMTKA[09],JurMTKrA[09](12.3),JurHTKA[09],JurHTKrA[09](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '    9_Frd
',JurHHA[10],JurMTKA[10],JurMTKrA[10](12.3),JurHTKA[10],JurHTKrA[10](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   10_How
',JurHHA[11],JurMTKA[11],JurMTKrA[11](12.3),JurHTKA[11],JurHTKrA[11](12.3),file=@Rep
t@ ;
```

```
  Print form=12.csv LIST= '   11_AA
',JurHHA[12],JurMTKA[12],JurMTKrA[12](12.3),JurHTKA[12],JurHTKrA[12](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   12_Chs
',JurHHA[13],JurMTKA[13],JurMTKrA[13](12.3),JurHTKA[13],JurHTKrA[13](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   13_ -
',JurHHA[14],JurMTKA[14],JurMTKrA[14](12.3),JurHTKA[14],JurHTKrA[14](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   14_Car
',JurHHA[15],JurMTKA[15],JurMTKrA[15](12.3),JurHTKA[15],JurHTKrA[15](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   15_Cal
',JurHHA[16],JurMTKA[16],JurMTKrA[16](12.3),JurHTKA[16],JurHTKrA[16](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   16_SM
',JurHHA[17],JurMTKA[17],JurMTKrA[17](12.3),JurHTKA[17],JurHTKrA[17](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '
17_KGeo',JurHHA[18],JurMTKA[18],JurMTKrA[18](12.3),JurHTKA[18],JurHTKrA[18](12.3),fi
le=@Rept@ ;
  Print form=12.csv LIST= '   18_Fbg
',JurHHA[19],JurMTKA[19],JurMTKrA[19](12.3),JurHTKA[19],JurHTKrA[19](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   19_Sta
',JurHHA[20],JurMTKA[20],JurMTKrA[20](12.3),JurHTKA[20],JurHTKrA[20](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   20_Spt
',JurHHA[21],JurMTKA[21],JurMTKrA[21](12.3),JurHTKA[21],JurHTKrA[21](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   21_Fau
',JurHHA[22],JurMTKA[22],JurMTKrA[22](12.3),JurHTKA[22],JurHTKrA[22](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   22_Clk
',JurHHA[23],JurMTKA[23],JurMTKrA[23](12.3),JurHTKA[23],JurHTKrA[23](12.3),file=@Rep
t@ ;
  Print form=12.csv LIST= '   23_Jef
',JurHHA[24],JurMTKA[24],JurMTKrA[24](12.3),JurHTKA[24],JurHTKrA[24](12.3),file=@Rep
t@ ;

  Print LIST= '           ',file=@Rept@
 Print form=12.csv LIST=  ' Total    ',HH_TotSIV,
IntlMTKPs,IntlMTKPr(12.3),IntlHTKPs, IntlHTKPr(12.3),file=@Rept@ ;
;==================================================================================
========================

  ENDIF   ;
##################################################################################
##################


ENDRUN

*copy TPPL*.prn Trip_Generation.RPT
```

27 Update_wklinks.s

```
;---------------------------------------------------------------------------;
; Update_WkLinks.S                                                          ;
; Program updates AM/Off-Pk walk access links sets to reflect a merging of  ;
; a current year and previous year walk access link set.  The updated/merged;
; file will ensure that walk access consistency is met between both years.  ;
; The files each contain three variables:                                   ;
; Anode, Bnode, and Distance in 100ths of mi. If a given link exists        ;
; in both sets with different distances- the MINIMUM distance is used.      ;
;---------------------------------------------------------------------------;
; 2005-02-25 Remove exclusion of Metrorail/commRail walk-acc links in the
;               old file, but not the new
LOOP PERIOD =1,2
     IF (PERIOD=1)
        PRD='AM'
     ENDIF
     IF (PERIOD=2)
        PRD='OP'
     ENDIF

run pgm=hwynet   ; 'network 1' is previous walk link set
                 ; 'network 2' is current  walk link set
  linki[1]=inputs\walk_@PRD@.old,  ; <<-- 'previous year' walk acc set
          var=a,11-15,var=b,17-21,var=dist00,28-32
  linki[2]=walk_@PRD@.tb,            ; <<-- 'current' walk access set
          var=a,11-15,var=b,17-21,var=dist00,28-32


;  linko=combo.txt,  ; write out a combined file
;    format=txt,form=6.0 include=a,b

  zones=2191         ;

  compare record=1-2

  if (_compare=    0)  ;
      _tempstr= 'Case 1/link in old(1)/new(2) walk link set ';
      findist = li.1.dist00

  endif
  if (_compare>    0)  ;
      _tempstr= 'Case 2/link in old(1)/new (2) walk link set but DIST.DIFFERENT'
      distdiff=li.1.dist00 - li.2.dist00
      findist =MIN(li.1.dist00,li.2.dist00)
  endif

  if (_compare=   -1)
      _tempstr='Case 3/link not in old(1) but in new(2) walk link set'
      findist = li.2.dist00

  endif
  if (_compare=   -2)
      _tempstr='Case 4/link in old(1) but not in new(2) walk link set'
      findist = li.1.dist00
  endif

;
; write out 'merged walk link file unless walk link exist
;
;  if (!(_compare= -2 & b = 7301-7450,7600-7802))
    list='SUPPORT N=',a(5),'-',b(5),' DIST=',findist(5),
```

```
        ' ONEWAY=N MODES= 16 SPEED= 3 ; ',_tempstr, file =walk_@PRD@.upd
;  endif
ENDRUN
ENDLOOP
```

28 unbuild_net.s

```
*del tppl*.prn
;------------------------------------------------------------------------------
; unbuild_net.s
;   Unbuilds a highway network (converts from TP+ binary to text format)
;   Output files are in the format needed for the Version 2.2 travel model
;------------------------------------------------------------------------------
pageheight=32767  ; Set the page height to a large value to minimize page breaks


basepath  = 'c:\user\Summary'
inhwy     = 'zonehwy.NET'
out_link  = 'link.asc'
out_node  = 'node.asc'


run pgm = hwynet

neti = @basepath@\@inhwy@

/* Write out link file */

print file=@basepath@\@out_link@,
      list=a(5),b(5),distance(7.2),spdclass(7),capclass(3),count(6),cnt_type(3),
           jur(4),screen(12),ftype(3),toll(9),tollgrp(5),
           amlane(13),amlimit(3),pmlane(3),pmlimit(3),oplane(3),oplimit(3),
           '         ',proj_id(10)

/* Write out node file */

nodeo= @basepath@\@out_node@,
  format=txt,
  include=n(6),x(8),y(8)

endrun

*copy tppl*.prn unbuild_net.rpt
```

Appendix F. Batch files

Ref:

1 Runall

1.1 runall_2000.bat

```
:: runall_2000.bat

:: TPB Travel Model, Version 2.2

set _year_=2000
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw00.ctl    goto error
if not exist          controls\mc_hbs00.ctl    goto error
if not exist          controls\mc_hbo00.ctl    goto error
if not exist          controls\mc_nhb00.ctl    goto error
copy controls\mc_hbw00.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs00.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo00.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb00.ctl  %1\mcnhb.ctl  /y


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.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 4 ===================================================
```

```
set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

call Transit_Skim.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.2 runall2000_ModDev.bat

```
:: runall2000.bat, 2008-01-04
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2000_ModDev
set runbat=runall_2000.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.3 runall_2002.bat

```
:: runall_2002.bat

:: TPB Travel Model, Version2.2

set _year_=2002
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw02.ctl    goto error
if not exist          controls\mc_hbs02.ctl    goto error
if not exist          controls\mc_hbo02.ctl    goto error
if not exist          controls\mc_nhb02.ctl    goto error
copy controls\mc_hbw02.ctl  %1\mchbw.ctl  /y
```

```
copy controls\mc_hbs02.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo02.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb02.ctl  %1\mcnhb.ctl  /y

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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

call Transit_Skim.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.4 runall2002_Conf.bat

```
:: runall2002_Conf.bat, 2008-01-04
:: Source:  M:\ateam\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2002_Conf
set runbat=runall_2002.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.5 runall_2005.bat

```
:: runall_2005.bat

:: TPB Travel Model, Version 2.2
set _year_=2005
set _alt_=Version2.2
:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw05.ctl    goto error
if not exist          controls\mc_hbs05.ctl    goto error
if not exist          controls\mc_hbo05.ctl    goto error
if not exist          controls\mc_nhb05.ctl    goto error
copy controls\mc_hbw05.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs05.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo05.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb05.ctl  %1\mcnhb.ctl  /y


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

call Transit_Skim.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.6 runall2005_ModDev.bat

```
:: runall2005_ModDev.bat, 2008-01-03
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2005_ModDev
set runbat=runall_2005.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.7 runall_2008.bat

```
:: runall_2008.bat

:: TPB Travel Model, Version2.2

set _year_=2008
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw10.ctl    goto error
if not exist          controls\mc_hbs10.ctl    goto error
if not exist          controls\mc_hbo10.ctl    goto error
if not exist          controls\mc_nhb10.ctl    goto error
copy controls\mc_hbw10.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs10.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo10.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb10.ctl  %1\mcnhb.ctl  /y


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

:: Transit_Prep.bat    This has already been run in the PP iteration

call Transit_Skim.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.8 runall2008_Conf.bat

```
:: runall2008_Conf.bat, 2008-01-04
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2008_Conf
set runbat=runall_2008.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.9 runall_2009.bat

```
:: runall_2009.bat

:: TPB Travel Model, Version2.2

set _year_=2009
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw10.ctl    goto error
if not exist          controls\mc_hbs10.ctl    goto error
if not exist          controls\mc_hbo10.ctl    goto error
if not exist          controls\mc_nhb10.ctl    goto error
copy controls\mc_hbw10.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs10.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo10.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb10.ctl  %1\mcnhb.ctl  /y

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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.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 5 ===================================================
set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

:: Transit_Prep.bat    This has already been run in the PP iteration

call Transit_Skim.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.10 runall2009_Conf.bat

```
:: runall2009_Conf.bat, 2008-01-04
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2009_Conf
set runbat=runall_2009.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.11 runall_2010.bat

```
:: runall_2009.bat

:: TPB Travel Model, Version2.2

set _year_=2010
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw10.ctl    goto error
if not exist          controls\mc_hbs10.ctl    goto error
if not exist          controls\mc_hbo10.ctl    goto error
if not exist          controls\mc_nhb10.ctl    goto error
copy controls\mc_hbw10.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs10.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo10.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb10.ctl  %1\mcnhb.ctl  /y


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR10_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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR10_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 3 ==================================================

set _iter_=i3
```

```
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR10_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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR10_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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

:: Transit_Prep.bat    This has already been run in the PP iteration

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR10_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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR10_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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.12 runall_2010_Base.bat

```
:: runall_2010_Base.bat

:: TPB Travel Model, Version2.2

set _year_=2010
set _alt_=Version2.2_Jan08_Xmittal

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SD.
if not exist          controls\mc_hbw10.ctl    goto error
if not exist          controls\mc_hbs10.ctl    goto error
if not exist          controls\mc_hbo10.ctl    goto error
if not exist          controls\mc_nhb10.ctl    goto error
copy controls\mc_hbw10.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs10.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo10.ctl  %1\mchbo.ctl  /y
```

```
copy controls\mc_nhb10.ctl  %1\mcnhb.ctl  /y

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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.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 5 ===================================================
```

```
set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

:: Transit_Prep.bat    This has already been run in the PP iteration

call Transit_Skim.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.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 ====== End of batch file =============================================

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.13 runall2010_Base.bat

```
:: runall2010_Base.bat, 2008-02-20
:: Source:  M:\model_dev\Version2.2_Jan08_Xmittal


set root=E:\model_dev\Version2.2_Jan08_Xmittal
set scenar=2010_Base
set runbat=runall_2010_Base.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.14 runall2010_Conf.bat

```
:: runall2010_Conf.bat, 2008-01-04
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2010_Conf
set runbat=runall_2010.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.15 runall_2020.bat

```
:: runall_2020.bat

:: TPB Travel Model, Version2.2

set _year_=2020
```

```
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SubDir.
if not exist          controls\mc_hbw20.ctl    goto error
if not exist          controls\mc_hbs20.ctl    goto error
if not exist          controls\mc_hbo20.ctl    goto error
if not exist          controls\mc_nhb20.ctl    goto error
copy controls\mc_hbw20.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs20.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo20.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb20.ctl  %1\mcnhb.ctl  /y

::  Enter the name of the path and file of pre-existing 2010 MC run

cd %1
set _path10_=..\2010_Conf
if not exist    %_path10_%\mc_hbwi6.fin goto error
cd..

set _path10hbw_=%_path10_%\mc_hbwi6.fin
set _path10hbs_=%_path10_%\mc_hbsi6.fin
set _path10hbo_=%_path10_%\mc_hboi6.fin
set _path10nhb_=%_path10_%\mc_nhbi6.fin


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR20_Mode_Choice_TC10.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR20_Mode_Choice_TC10.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR20_Mode_Choice_TC10.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 4 ===================================================

set _iter_=i4
set _prev_=i3
```

```
call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR20_Mode_Choice_TC10.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

:: Transit_Prep.bat    This has already been run in the PP iteration

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR20_Mode_Choice_TC10.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR20_Mode_Choice_TC10.bat %1

call Auto_Driver.bat %1

call Time-of-Day.bat %1

call Highway_Assignment.bat %1

call Highway_Skims.bat %1

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

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.16 runall_2020_Base.bat

```
:: runall_2020_Base.bat

:: TPB Travel Model, Version2.2

set _year_=2020
set _alt_=Version2.2_Jan08_Xmittal

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SubDir.
if not exist          controls\mc_hbw20.ctl    goto error
if not exist          controls\mc_hbs20.ctl    goto error
if not exist          controls\mc_hbo20.ctl    goto error
if not exist          controls\mc_nhb20.ctl    goto error
copy controls\mc_hbw20.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs20.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo20.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb20.ctl  %1\mcnhb.ctl  /y

::  Enter the name of the path and file of pre-existing 2010 MC run

cd %1
set _path10_=..\2010_Conf
if not exist    %_path10_%\mc_hbwi6.fin goto error
cd..

set _path10hbw_=%_path10_%\mc_hbwi6.fin
set _path10hbs_=%_path10_%\mc_hbsi6.fin
set _path10hbo_=%_path10_%\mc_hboi6.fin
set _path10nhb_=%_path10_%\mc_nhbi6.fin


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1
```

```
call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

:: Transit_Prep.bat    This has already been run in the PP iteration

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.bat %1

call Auto_Driver.bat %1

call Time-of-Day.bat %1

call Highway_Assignment.bat %1

call Highway_Skims.bat %1

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

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.17 runall2020_Base.bat

```
:: runall2020_Conf.bat, 2008-01-25
:: Source:  M:\model_dev\Version2.2_Jan08


set root=F:\model_dev\Version2.2_Jan08
set scenar=2020_Base
set runbat=runall_2020_Base.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.18 runall2020_Conf.bat

```
:: runall2020_Conf.bat, 2008-01-07
:: Source:  M:\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2020_Conf
set runbat=runall_2020.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.19 runall_2030.bat

```
:: runall_2030.bat

:: TPB Travel Model, Version2.2

set _year_=2030
set _alt_=Version2.2

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SubDir.
if not exist          controls\mc_hbw30.ctl    goto error
if not exist          controls\mc_hbs30.ctl    goto error
if not exist          controls\mc_hbo30.ctl    goto error
if not exist          controls\mc_nhb30.ctl    goto error
copy controls\mc_hbw30.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs30.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo30.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb30.ctl  %1\mcnhb.ctl  /y

::  Enter the name of the path and file of pre-existing 2010 MC run

cd %1
set _path10_=..\2010_Conf
if not exist    %_path10_%\mc_hbwi6.fin goto error
cd..

set _path10hbw_=%_path10_%\mc_hbwi6.fin
set _path10hbs_=%_path10_%\mc_hbsi6.fin
set _path10hbo_=%_path10_%\mc_hboi6.fin
set _path10nhb_=%_path10_%\mc_nhbi6.fin
```

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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR30_Mode_Choice_TC10.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR30_Mode_Choice_TC10.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR30_Mode_Choice_TC10.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR30_Mode_Choice_TC10.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 5 ===================================================

set _iter_=i5
set _prev_=i4
```

```
call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR30_Mode_Choice_TC10.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call HSR30_Mode_Choice_TC10.bat %1

call Auto_Driver.bat %1

call Time-of-Day.bat %1

call Highway_Assignment.bat %1

call Highway_Skims.bat %1

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

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.20 runall_2030_Base.bat

```
:: runall_2030_Base.bat

:: TPB Travel Model, Version2.2

set _year_=2030
set _alt_=Version2.2_Jan08_Xmittal

:: Make sure appropriate MC control files exist in \controls SD
:: and copy to generic names in the output SubDir.
if not exist          controls\mc_hbw30.ctl    goto error
if not exist          controls\mc_hbs30.ctl    goto error
if not exist          controls\mc_hbo30.ctl    goto error
if not exist          controls\mc_nhb30.ctl    goto error
copy controls\mc_hbw30.ctl  %1\mchbw.ctl  /y
copy controls\mc_hbs30.ctl  %1\mchbs.ctl  /y
copy controls\mc_hbo30.ctl  %1\mchbo.ctl  /y
copy controls\mc_nhb30.ctl  %1\mcnhb.ctl  /y

::  Enter the name of the path and file of pre-existing 2010 MC run

cd %1
set _path10_=..\2010_Conf
if not exist    %_path10_%\mc_hbwi6.fin goto error
cd..

set _path10hbw_=%_path10_%\mc_hbwi6.fin
set _path10hbs_=%_path10_%\mc_hbsi6.fin
set _path10hbo_=%_path10_%\mc_hboi6.fin
set _path10nhb_=%_path10_%\mc_nhbi6.fin


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

set _iter_=pp
set _prev_=pp

call Set_Factors.bat %1

call Set_CPI.bat %1

call PP_Highway_Build.bat %1

call PP_Highway_PNR.bat %1

call PP_Transit_Prep.bat %1

call Transit_Skim.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1
```

```
call Trip_Distribution.bat %1

call Mode_Choice_TC.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 Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 3 ===================================================

set _iter_=i3
set _prev_=i2

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 4 ===================================================

set _iter_=i4
set _prev_=i3

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 5 ===================================================

set _iter_=i5
set _prev_=i4

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.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 6 ===================================================

set _iter_=i6
set _prev_=i5

call Highway_PNR.bat %1

call Transit_Skim.bat %1

call Transit_Fare.bat %1

call Trip_Generation.bat %1

call Trip_Distribution.bat %1

call Mode_Choice_TC.bat %1

call Auto_Driver.bat %1

call Time-of-Day.bat %1

call Highway_Assignment.bat %1
```

```
call Highway_Skims.bat %1

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

goto end
:error
REM  Processing Error or File Missing ....
PAUSE
:end

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

2.21 runall2030_Base.bat

```
:: runall2030_Base.bat, 2008-01-25
:: Source:  M:\ateam\model_dev\Version2.2_Jan08


set root=F:\model_dev\Version2.2_Jan08
set scenar=2030_Base
set runbat=runall_2030_Base.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2.22 runall2030_Conf.bat

```
:: runall2030_Conf.bat, 2008-01-07
:: Source:  M:\ateam\model_dev\Version2.2


set root=F:\model_dev\Version2.2
set scenar=2030_Conf
set runbat=runall_2030.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
start %fullpth%\%scenar%_errs.txt
start %fullpth%\%scenar%_output.txt

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

2 ‘Pump-Prime’ Iterations

2.1 SetFactors.bat

```
cd support

del tppl*.*
del set_factors.rpt

start /w TPPLUS.EXE ..\scripts\Set_Factors.s /start -Ptppl -S..\support
if errorlevel 1 goto error
        copy tppl*.prn set_factors.rpt
        copy TRN_deflator.txt ..\%1
        copy Hwy_Deflator.txt ..\%1
        copy MFARE2_CPI.TXT   ..\%1
        del  TRN_deflator.txt
        del  Hwy_Deflator.txt
        del  MFARE2_CPI.TXT

goto end
:error
REM Processing Error
PAUSE
:end
cd..
.0
```

2.2 set_CPI.bat

```
cd %1

REM  CPI Establishment

del tppl*.*
        del set_CPI.rpt
start /w TPPLUS.EXE  ..\scripts\set_CPI.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
        copy tppl*.prn set_CPI.rpt
goto end

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

2.3 PP_Highway_Build.bat

```
cd %1

REM  Highway Network Building


..\software\STAPROTP  ..\controls\staprotp.ctl
if errorlevel 1 goto error
 del temp.dat
        del staprotp.tem

        del trn_node.asc
copy inputs\node.asc + stapnr.xys  TRN_NODE.ASC


del tppl*.*
        del highway_build.rpt
start /w TPPLUS.EXE  ..\scripts\highway_build_toll.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
        copy tppl*.prn %_iter_%_highway_build.rpt
goto end

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

2.4 PP_Highway_PNR.bat

```
CD %1
REM  Highway Skimming and PNR development

del tppl*.*
del pump_prime_skims.rpt
start /w TPPLUS.EXE  ..\scripts\pump_prime_skims.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn  %_iter_%_pump_prime_skims.rpt
goto end

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

2.5 PP_Transit_Prep.bat

```
CD %1


copy inputs\MODE*.TB


..\software\NODESTB  ..\controls\nt_am.ctl
        if errorlevel 1 goto error
..\software\SORTLINE nt_am.asc

copy nt_am.rpt %_iter_%_nt_am.rpt
del  nt_am.rpt

..\software\NODESTB  ..\controls\nt_op.ctl
        if errorlevel 1 goto error
..\software\SORTLINE nt_op.asc

copy nt_op.rpt %_iter_%_nt_op.rpt
del  nt_op.rpt

del nodestb.tem

..\software\CNTCONN2  ..\controls\ct2_am.ctl
        if errorlevel 1 goto error

copy ct2_am.rpt %_iter_%_ct2_am.rpt
del  ct2_am.rpt

..\software\CNTCONN2  ..\controls\ct2_op.ctl
        if errorlevel 1 goto error

copy ct2_op.rpt %_iter_%_ct2_op.rpt
del  ct2_op.rpt

..\software\GIS_PROC  ..\controls\gis.ctl
if errorlevel 1 goto error
del gis_proc.tem

copy gis_proc.rpt %_iter_%_gis_proc.rpt
del  gis_proc.rpt

del  wlklnktp.rpt
del  walk_am.rpt
..\software\WLKLNKTP  ..\controls\walk_am.ctl
        if errorlevel 1 goto error
copy wlklnktp.rpt %_iter_%_walk_am.rpt
del  wlklnktp.rpt

del  wlklnktp.rpt
del  walk_op.rpt
..\software\WLKLNKTP  ..\controls\walk_op.ctl
        if errorlevel 1 goto error
copy wlklnktp.rpt %_iter_%_walk_op.rpt
del  wlklnktp.rpt

rem \\\\\\\\\\\\\\\ START walk link update section \\\\\\\\\\\\\\\\\
if not exist inputs\walk_am.old goto SKPWKUP
if not exist inputs\walk_op.old goto SKPWKUP

del tppl*.*
        del Update_WkLinks.rpt
start /w TPPLUS.EXE  ..\scripts\Update_WkLinks.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
        copy tppl*.prn Update_Wklinks.rpt
```

```
del  walk_??.tb
copy walk_??.upd walk_??.tb

rem \\\\\\\\\\\\\\\ END walk link update section \\\\\\\\\\\\\\\\\\\
:SKPWKUP

del tppl*.*
        del prefartp.rpt
start /w TPPLUS.EXE  ..\scripts\prefartp.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
        copy tppl*.prn prefartp.rpt



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

2.6 PP_Auto_Drivers.bat

```
CD %1

REM  Pump Prime Auto Driver Trips

del tppl*.*
del            %_iter_%_Auto_Drivers.rpt
start /w TPPLUS.EXE  ..\scripts\PP_Auto_Drivers.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn %_iter_%_Auto_Drivers.rpt
copy           %_iter_%_Auto_Drivers.rpt temp.dat
..\software\extrtab    temp.dat
copy extrtab.out       %_iter_%_Auto_Drivers.tab
del  extrtab.out
del  temp.out

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

3 'Standard' Iterations (1-6)

3.1 Highway_PNR.bat

```
CD %1
REM  Auto Access PNR Link Updating (Based on previous iter Assignment)


del tppl*.*
del             %_iter_%_Auto_Access.rpt
start /w TPPLUS.EXE  ..\scripts\Auto_Access.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn  %_iter_%_Auto_Access.rpt
goto end

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

3.2 Transit_Skim.bat

```
CD %1

REM  Transit Network Building (Final)

del tppl*.*
del transit_skims.rpt
start /w TPPLUS.EXE  ..\scripts\transit_skims.s /start -Ptppl -S..\%1
if errorlevel 2 goto error
copy tppl*.prn  %_iter_%_TRANSIT_SKIMS.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end
CD..
```

3.3 Transit_Fare.bat

```
CD %1

REM  Transit Fares

del tppl*.*
del metrorail_skims.rpt
start /w TPPLUS.EXE  ..\scripts\metrorail_skims.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn    %_iter_%_metrorail_skims.rpt
```

```
del tppl*.*
del %_iter_%_mfare1.rpt
start /w TPPLUS.EXE  ..\scripts\mfare1.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn    %_iter_%_mfare1.rpt


del tppl*.*
del %_iter_%_mfare2.rpt
start /w TPPLUS.EXE  ..\scripts\mfare2.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn    %_iter_%_mfare2.rpt



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

3.4 Trip_Generation.bat

```
CD %1


REM  Trip Generation
del tppl*.*
del                 %_iter_%_Demo_Models.rpt
start /w TPPLUS.EXE  ..\scripts\Demo_Models.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn        %_iter_%_Demo_Models.rpt
copy Demo_Models.txt  %_iter_%_Demo_Models.txt


copy HHI1_SV.ASC    %_iter_%HHI1_SV.ASC
copy HHI2_SV.ASC    %_iter_%HHI2_SV.ASC
copy HHI3_SV.ASC    %_iter_%HHI3_SV.ASC
copy HHI4_SV.ASC    %_iter_%HHI4_SV.ASC

copy HH_Veh.dat     %_iter_%HH_Veh.dat

del tppl*.*
del                 %_iter_%_Trip_Generation.rpt
start /w TPPLUS.EXE  ..\scripts\trip_generation.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_Trip_Generation.rpt
copy trip_Generation.txt   %_iter_%_Trip_Generation.txt

del tppl*.*
del                 %_iter_%_CV_Trip_Generation.rpt
start /w TPPLUS.EXE  ..\scripts\CV_trip_generation.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_CV_Trip_Generation.rpt

..\software\COGMCA1  ..\controls\COGMCA1.CTL
if errorlevel 1 goto error

copy cogmca1.rpt  %_iter_%_cogmca1.rpt
del  cogmca1.rpt
goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.5 Trip_Distribution.bat

```
REM Trip Distribution

CD %1


del tppl*.*
del                 %_iter_%_TrpDst.rpt
start /w TPPLUS.EXE  ..\scripts\trip_distribution.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_TrpDst.rpt
copy                %_iter_%_TrpDst.rpt temp.rpt
..\software\extrtab                     temp.rpt
copy extrtab.out    %_iter_%_TrpDst.tab
del  extrtab.out
del  temp.rpt


del tppl*.*
del                 %_iter_%_CV_TrpDst.rpt
start /w TPPLUS.EXE  ..\scripts\CV_trip_distribution.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_CV_TrpDst.rpt

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

3.6 Mode_Choice.bat

```
::  Standard Mode Choice Model Application / No Constraint

CD %1

copy %_iter_%_hbwmu.ptt hbwmu.ptt
copy %_iter_%_hbsmu.ptt hbsmu.ptt
copy %_iter_%_hbomu.ptt hbomu.ptt
copy %_iter_%_nhbmu.ptt nhbmu.ptt

copy %_iter_%_am_wk.skm am_wk.skm
copy %_iter_%_am_dr.skm am_dr.skm
copy %_iter_%_op_wk.skm op_wk.skm
copy %_iter_%_op_dr.skm op_dr.skm

copy %_iter_%_am_wk.far mf_am_wk.far
```

```
copy %_iter_%_am_dr.far mf_am_dr.far
copy %_iter_%_op_wk.far mf_op_wk.far
copy %_iter_%_op_dr.far mf_op_dr.far

copy sov%_prev_%am_mc.skm  sovam.skm
copy hov2%_prev_%am_mc.skm hov2am.skm
copy hov3%_prev_%am_mc.skm hov3am.skm

copy sov%_prev_%op_mc.skm  sovop.skm
copy hov2%_prev_%op_mc.skm hov2op.skm
copy hov3%_prev_%op_mc.skm hov3op.skm


del mc_hbw.*
..\software\COGMC  mchbw.ctl
if errorlevel 1 goto error

del mc_hbs.*
..\software\COGMC  mchbs.ctl
if errorlevel 1 goto error

del mc_hbo.*
..\software\COGMC  mchbo.ctl
if errorlevel 1 goto error

del mc_nhb.*
..\software\COGMC  mcnhb.ctl
if errorlevel 1 goto error

del tppl*.prn
del mc_summary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_summary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_summary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_summary.tab
del  extrtab.out
del  temp.rpt
goto end

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

3.7 Mode_Choice_tc.bat

```
::   Mode Choice Model Application w/ Transit Constraint
::   This Batch file REPLACES Mode_Choice.bat if the transit
::   constraint process is utilized


CD %1


copy %_iter_%_hbwmu.ptt hbwmu.ptt
copy %_iter_%_hbsmu.ptt hbsmu.ptt
copy %_iter_%_hbomu.ptt hbomu.ptt
copy %_iter_%_nhbmu.ptt nhbmu.ptt

copy %_iter_%_am_wk.skm am_wk.skm
copy %_iter_%_am_dr.skm am_dr.skm
copy %_iter_%_op_wk.skm op_wk.skm
copy %_iter_%_op_dr.skm op_dr.skm

copy %_iter_%_am_wk.far mf_am_wk.far
copy %_iter_%_am_dr.far mf_am_dr.far
copy %_iter_%_op_wk.far mf_op_wk.far
copy %_iter_%_op_dr.far mf_op_dr.far

copy sov%_prev_%am_mc.skm  sovam.skm
copy hov2%_prev_%am_mc.skm hov2am.skm
copy hov3%_prev_%am_mc.skm hov3am.skm

copy sov%_prev_%op_mc.skm  sovop.skm
copy hov2%_prev_%op_mc.skm hov2op.skm
copy hov3%_prev_%op_mc.skm hov3op.skm

::   GET MODE CHOICE INPUT FILES FROM 2010
::   Check that the 2010 mode ch. model output files are correctly spec'd
if not exist %_path10hbw_% goto error
if not exist %_path10hbs_% goto error
if not exist %_path10hbo_% goto error
if not exist %_path10nhb_% goto error

REM Run Mode Choice Model to get unconstrained transit trips
del mc_hbw.*
..\software\COGMC  mchbw.ctl
if errorlevel 1 goto error

del mc_hbs.*
..\software\COGMC  mchbs.ctl
if errorlevel 1 goto error

del mc_hbo.*
..\software\COGMC  mchbo.ctl
if errorlevel 1 goto error

del mc_nhb.*
..\software\COGMC  mcnhb.ctl
if errorlevel 1 goto error

del tppl*.prn
del %_iter_%mc_summary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_summary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_summary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_summary.tab
del  extrtab.out
del  temp.rpt

REM End of Mode Choice Model
REM Execute Transit Constraint process
del tppl*.prn
del %_iter_%mc_constraint.rpt
start /w TPPLUS.EXE  ..\scripts\mc_constraint.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_constraint.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_constraint.tab
del  extrtab.out
del  temp.rpt

REM Save unconstrained Mode Choice Output files to
REM  off-line files used for checking (*.ucn)
REM Then remove constrained files and
```

```
REM replace them with constrained versions, and summarize


copy  mc_hbw%_iter_%.fin  mc_hbw%_iter_%.ucn
copy  mc_hbs%_iter_%.fin  mc_hbs%_iter_%.ucn
copy  mc_hbo%_iter_%.fin  mc_hbo%_iter_%.ucn
copy  mc_nhb%_iter_%.fin  mc_nhb%_iter_%.ucn

del   mc_hbw%_iter_%.fin
del   mc_hbs%_iter_%.fin
del   mc_hbo%_iter_%.fin
del   mc_nhb%_iter_%.fin

copy  mc_hbw%_iter_%.con  mc_hbw%_iter_%.fin
copy  mc_hbs%_iter_%.con  mc_hbs%_iter_%.fin
copy  mc_hbo%_iter_%.con  mc_hbo%_iter_%.fin
copy  mc_nhb%_iter_%.con  mc_nhb%_iter_%.fin

REM Execute Summary of Constrained Transit Trips
del tppl*.prn
del %_iter_%mc_consummary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_consummary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_consummary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_consummary.tab
del  extrtab.out
del  temp.rpt


goto end

:error
REM  Processing Error or Misspecified 2010 transit file path....
PAUSE
:end
CD..
```

3.8 HSR10_Mode_Choice.bat

```
::  Standard Mode Choice Model Application / No Constraint

CD %1

copy %_iter_%_hbwmu.ptt hbwmu.ptt
copy %_iter_%_hbsmu.ptt hbsmu.ptt
copy %_iter_%_hbomu.ptt hbomu.ptt
copy %_iter_%_nhbmu.ptt nhbmu.ptt

copy %_iter_%_am_wk.skm am_wk.skm
copy %_iter_%_am_dr.skm am_dr.skm
copy %_iter_%_op_wk.skm op_wk.skm
copy %_iter_%_op_dr.skm op_dr.skm

copy %_iter_%_am_wk.far mf_am_wk.far
copy %_iter_%_am_dr.far mf_am_dr.far
copy %_iter_%_op_wk.far mf_op_wk.far
copy %_iter_%_op_dr.far mf_op_dr.far

:
: HOT Lane Study for 2030
: reading HOV3+ skims from 2030 2008 AQC
: jcpark 09/28/2007
:

copy sov%_prev_%am_mc.skm  sovam.skm
copy hov2%_prev_%am_mc.skm hov2am.skm
copy ..\2010_Base\hov3%_prev_%am_mc.skm hov3am.skm

copy sov%_prev_%op_mc.skm  sovop.skm
copy hov2%_prev_%op_mc.skm hov2op.skm
copy ..\2010_Base\hov3%_prev_%op_mc.skm hov3op.skm



del mc_hbw.*
..\software\COGMC  mchbw.ctl
if errorlevel 1 goto error

del mc_hbs.*
..\software\COGMC  mchbs.ctl
if errorlevel 1 goto error

del mc_hbo.*
..\software\COGMC  mchbo.ctl
if errorlevel 1 goto error

del mc_nhb.*
..\software\COGMC  mcnhb.ctl
if errorlevel 1 goto error

del tppl*.prn
del mc_summary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_summary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_summary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_summary.tab
del  extrtab.out
del  temp.rpt
goto end

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

3.9 HSR20_Mode_Choice_TC10.bat

```
::   Mode Choice Model Application w/ Transit Constraint
::   This Batch file REPLACES Mode_Choice.bat if the transit
::   constraint process is utilized


CD %1


copy %_iter_%_hbwmu.ptt hbwmu.ptt
copy %_iter_%_hbsmu.ptt hbsmu.ptt
copy %_iter_%_hbomu.ptt hbomu.ptt
copy %_iter_%_nhbmu.ptt nhbmu.ptt
```

```
copy %_iter_%_am_wk.skm am_wk.skm
copy %_iter_%_am_dr.skm am_dr.skm
copy %_iter_%_op_wk.skm op_wk.skm
copy %_iter_%_op_dr.skm op_dr.skm

copy %_iter_%_am_wk.far mf_am_wk.far
copy %_iter_%_am_dr.far mf_am_dr.far
copy %_iter_%_op_wk.far mf_op_wk.far
copy %_iter_%_op_dr.far mf_op_dr.far

:
: HOT Lane Study for 2030
: reading HOV3+ skims from 2030 2005 CLRP
: jcpark 09/29/2007
:

copy sov%_prev_%am_mc.skm  sovam.skm
copy hov2%_prev_%am_mc.skm hov2am.skm
copy ..\2020_BASE\hov3%_prev_%am_mc.skm hov3am.skm

copy sov%_prev_%op_mc.skm  sovop.skm
copy hov2%_prev_%op_mc.skm hov2op.skm
copy ..\2020_BASE\hov3%_prev_%op_mc.skm hov3op.skm

REM Run Mode Choice Model to get unconstrained transit trips
del mc_hbw.*
..\software\COGMC  mchbw.ctl
if errorlevel 1 goto error

del mc_hbs.*
..\software\COGMC  mchbs.ctl
if errorlevel 1 goto error

del mc_hbo.*
..\software\COGMC  mchbo.ctl
if errorlevel 1 goto error

del mc_nhb.*
..\software\COGMC  mcnhb.ctl
if errorlevel 1 goto error

del tppl*.prn
del %_iter_%mc_summary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_summary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_summary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_summary.tab
del  extrtab.out
del  temp.rpt

REM End of Mode Choice Model
REM Execute Transit Constraint process
del tppl*.prn
del %_iter_%mc_constraint.rpt
start /w TPPLUS.EXE  ..\scripts\mc_constraint.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_constraint.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_constraint.tab
del  extrtab.out
del  temp.rpt

REM Save unconstrained Mode Choice Output files to
REM  off-line files used for checking (*.ucn)
REM Then remove constrained files and
REM replace them with constrained versions, and summarize


copy  mc_hbw%_iter_%.fin  mc_hbw%_iter_%.ucn
copy  mc_hbs%_iter_%.fin  mc_hbs%_iter_%.ucn
copy  mc_hbo%_iter_%.fin  mc_hbo%_iter_%.ucn
copy  mc_nhb%_iter_%.fin  mc_nhb%_iter_%.ucn

del   mc_hbw%_iter_%.fin
del   mc_hbs%_iter_%.fin
del   mc_hbo%_iter_%.fin
del   mc_nhb%_iter_%.fin

copy  mc_hbw%_iter_%.con  mc_hbw%_iter_%.fin
copy  mc_hbs%_iter_%.con  mc_hbs%_iter_%.fin
copy  mc_hbo%_iter_%.con  mc_hbo%_iter_%.fin
copy  mc_nhb%_iter_%.con  mc_nhb%_iter_%.fin

REM Execute Summary of Constrained Transit Trips
del tppl*.prn
del %_iter_%mc_consummary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_consummary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_consummary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_consummary.tab
del  extrtab.out
del  temp.rpt


goto end

:error
REM  Processing Error or Misspecified 2010 transit file path....
PAUSE
:end
CD..
```

3.10 HSR30_Mode_Choice_TC10.bat

```
::   Mode Choice Model Application w/ Transit Constraint
::   This Batch file REPLACES Mode_Choice.bat if the transit
::   constraint process is utilized


CD %1


copy %_iter_%_hbwmu.ptt hbwmu.ptt
copy %_iter_%_hbsmu.ptt hbsmu.ptt
copy %_iter_%_hbomu.ptt hbomu.ptt
copy %_iter_%_nhbmu.ptt nhbmu.ptt

copy %_iter_%_am_wk.skm am_wk.skm
copy %_iter_%_am_dr.skm am_dr.skm
copy %_iter_%_op_wk.skm op_wk.skm
copy %_iter_%_op_dr.skm op_dr.skm

copy %_iter_%_am_wk.far mf_am_wk.far
copy %_iter_%_am_dr.far mf_am_dr.far
copy %_iter_%_op_wk.far mf_op_wk.far
```

```
copy %_iter_%_op_dr.far mf_op_dr.far

:
: HOT Lane Study for 2030
: reading HOV3+ skims from 2030 2005 CLRP
: jcpark 09/29/2007
:

copy sov%_prev_%am_mc.skm  sovam.skm
copy hov2%_prev_%am_mc.skm hov2am.skm
copy ..\2030_BASE\hov3%_prev_%am_mc.skm hov3am.skm

copy sov%_prev_%op_mc.skm  sovop.skm
copy hov2%_prev_%op_mc.skm hov2op.skm
copy ..\2030_BASE\hov3%_prev_%op_mc.skm hov3op.skm

REM Run Mode Choice Model to get unconstrained transit trips
del mc_hbw.*
..\software\COGMC  mchbw.ctl
if errorlevel 1 goto error

del mc_hbs.*
..\software\COGMC  mchbs.ctl
if errorlevel 1 goto error

del mc_hbo.*
..\software\COGMC  mchbo.ctl
if errorlevel 1 goto error

del mc_nhb.*
..\software\COGMC  mcnhb.ctl
if errorlevel 1 goto error

del tppl*.prn
del %_iter_%mc_summary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_summary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_summary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_summary.tab
del  extrtab.out
del  temp.rpt

REM End of Mode Choice Model
REM Execute Transit Constraint process
del tppl*.prn
del %_iter_%mc_constraint.rpt
start /w TPPLUS.EXE  ..\scripts\mc_constraint.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_constraint.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_constraint.tab
del  extrtab.out
del  temp.rpt

REM Save unconstrained Mode Choice Output files to
REM  off-line files used for checking (*.ucn)
REM Then remove constrained files and
REM replace them with constrained versions, and summarize


copy  mc_hbw%_iter_%.fin  mc_hbw%_iter_%.ucn
copy  mc_hbs%_iter_%.fin  mc_hbs%_iter_%.ucn
copy  mc_hbo%_iter_%.fin  mc_hbo%_iter_%.ucn
copy  mc_nhb%_iter_%.fin  mc_nhb%_iter_%.ucn
del   mc_hbw%_iter_%.fin
del   mc_hbs%_iter_%.fin
del   mc_hbo%_iter_%.fin
del   mc_nhb%_iter_%.fin

copy  mc_hbw%_iter_%.con  mc_hbw%_iter_%.fin
copy  mc_hbs%_iter_%.con  mc_hbs%_iter_%.fin
copy  mc_hbo%_iter_%.con  mc_hbo%_iter_%.fin
copy  mc_nhb%_iter_%.con  mc_nhb%_iter_%.fin

REM Execute Summary of Constrained Transit Trips
del tppl*.prn
del %_iter_%mc_consummary.rpt
start /w TPPLUS.EXE  ..\scripts\mc_consummary.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn      %_iter_%_mc_consummary.rpt
copy tppl*.prn      temp.rpt
..\software\extrtab temp.rpt
copy extrtab.out    %_iter_%_mc_consummary.tab
del  extrtab.out
del  temp.rpt


goto end

:error
REM  Processing Error or Misspecified 2010 transit file path....
PAUSE
:end
CD..
```

3.11 Auto_Driver.bat

```
CD %1

REM  Auto Driver Trips

del tppl*.*
        del            %_iter_%_mc_Auto_Drivers.rpt
start /w TPPLUS.EXE  ..\scripts\mc_Auto_Drivers.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
        copy tppl*.prn %_iter_%_mc_Auto_Drivers.rpt
copy                   %_iter_%_mc_Auto_Drivers.rpt temp.dat
..\software\extrtab    temp.dat
copy extrtab.out       %_iter_%_mc_Auto_Drivers.tab
del  extrtab.out
del  temp.out

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

3.12 Time-of-Day.bat

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

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

del tppl*.*
del                     %_iter_%_Time-of-Day.rpt
start /w TPPLUS.EXE  ..\scripts\Time-of-Day.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.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  Commercial Vehicle Time-of-Day Trips
REM ----------------------------------------

del tppl*.*
del                     %_iter_%_CV_Time-of-Day.rpt
start /w TPPLUS.EXE  ..\scripts\CV_Time-of-Day.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn          %_iter_%_CV_Time-of-Day.rpt

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

del tppl*.*
del                       %_iter_%_Misc_Time-of-Day.rpt
start /w TPPLUS.EXE  ..\scripts\Misc_Time-of-Day.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.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

goto end

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

3.13 Highway_Assignment.bat

```
CD %1

REM  Highway Assignment

del tppl*.*
del            %_iter_%_Highway_Assignment.rpt
start /w TPPLUS.EXE  ..\scripts\Highway_Assignment.s /start -Ptppl -S..\%1
if errorlevel 1 goto error

copy tppl*.prn       %_iter_%_Highway_Assignment.rpt
copy                 %_iter_%_Highway_Assignment.rpt  temp.dat
..\software\extrtab  temp.dat
copy    extrtab.out  %_iter_%_Highway_Assignment.tab
goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.14 Highway_Skims.bat

```
CD %1

REM  Highway Skims

del tppl*.*
del            %_iter_%_Highway_Skims.rpt
start /w TPPLUS.EXE  ..\scripts\Highway_Skims.s /start -Ptppl -S..\%1
if errorlevel 1 goto error
copy tppl*.prn %_iter_%_Highway_Skims.rpt
goto end
:error
REM  Processing Error....
PAUSE
:end
CD..
```

3.15 Transit_Skim_Select_Paths.bat

```
CD %1

REM  Transit Network Building (Final)
REM    -- for Selected Paths Only --
del tppl*.*
del transit_skims.rpt
start /w TPPLUS.EXE  ..\scripts\transit_skims_Select_Paths.s /start -Ptppl -S..\%1
if errorlevel 2 goto error
copy tppl*.prn  %_iter_%_TRANSIT_SKIMS_Select_Paths.RPT
goto end
:error
REM  Processing Error......
PAUSE
:end
CD..
```

Appendix G. Flowcharts

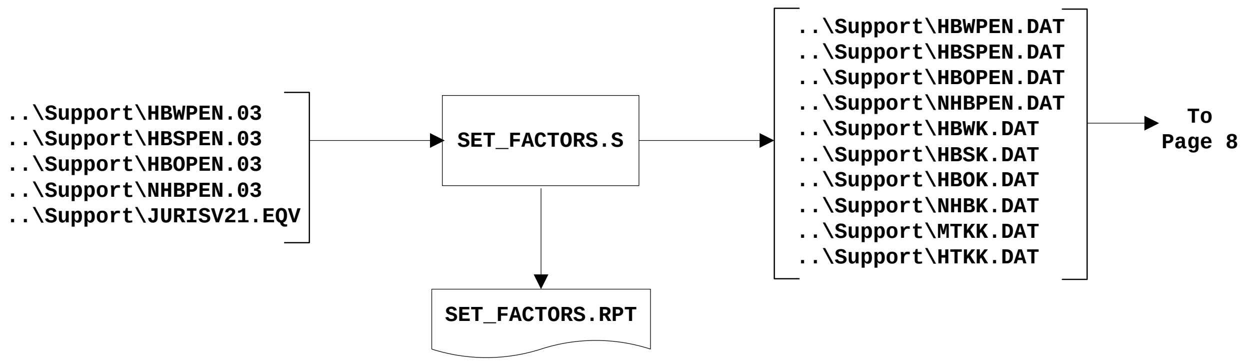
Ref: v2.2_MODAPP_Final.vsd

Flowchart Numbers associated with Flowchart Steps

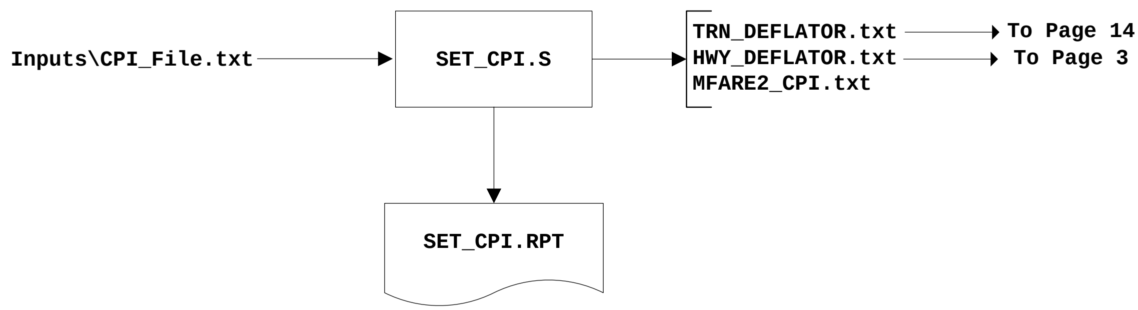
This Appendix contains detailed data processing flow charts showing the relationship of input and output files to the processing steps comprising the Version 2.2 travel model. The flowcharts are arranged on the basis of the 17 batch files used in the model application. Many of the batch files are reused 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 (1-17), shown in the table below.

	Initial (Pump Prime) Iteration	Standard Iterations →					
Batch File	PP	1	2	3	4	5	6
Set_Factors.bat	1						
Set_CPI.bat	2						
PP_Highway_Build.bat	3						
PP_Highway_PNR.bat	4						
Highway_PNR.bat				13			
PP_Transit_Prep.bat	5						
Transit_Skim.bat				6			
Transit_Fare.bat				14			
Trip_Generation.bat				7			
Trip_Distribution.bat				8			
Mode_Choice.bat or Mode_Choice_TC.bat				15			
PP_Auto_Drivers.bat	9						
Auto_Driver.bat				16			
Time-of-Day.bat				10			
Highway_Assignment.bat				11			
Highway_Skims.bat				12			

Set_Factors.bat

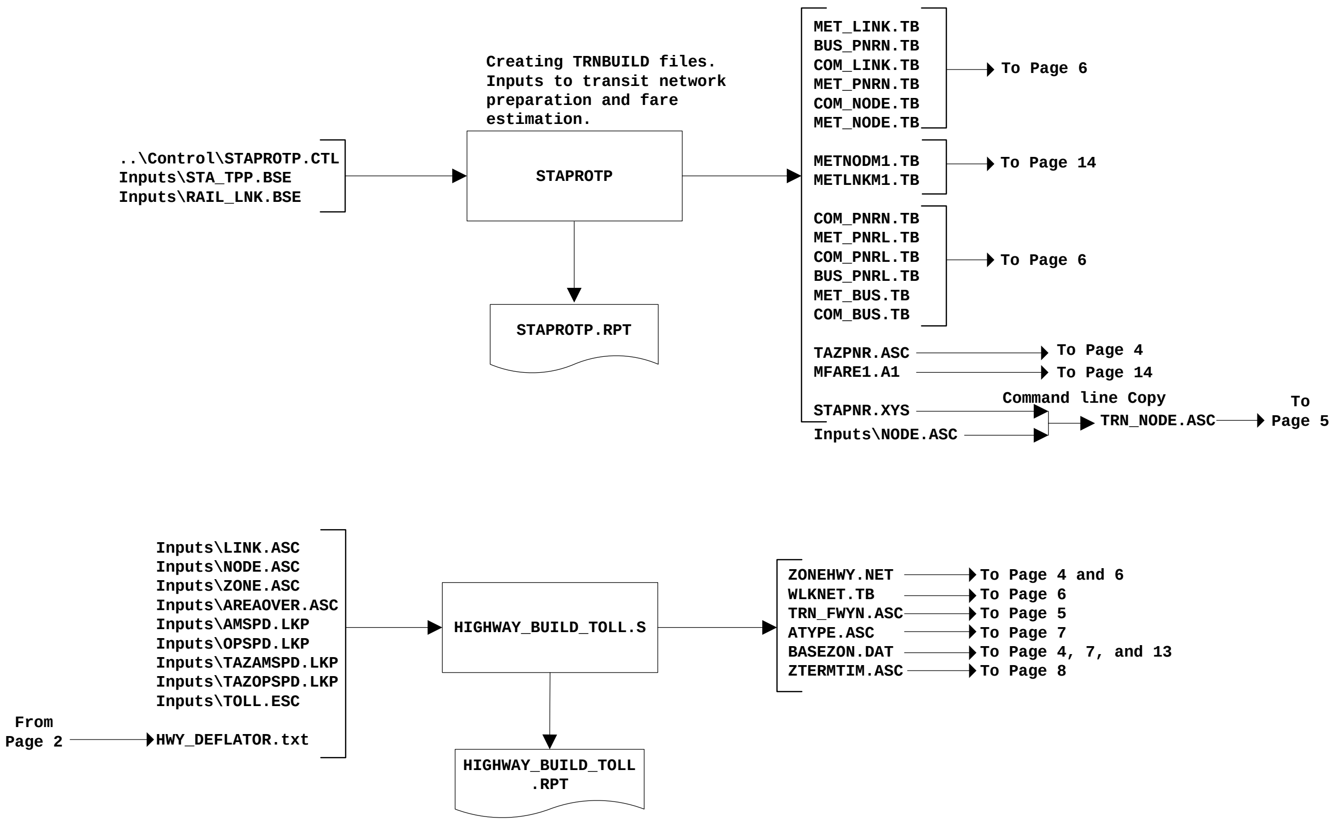


Set_CPI.bat

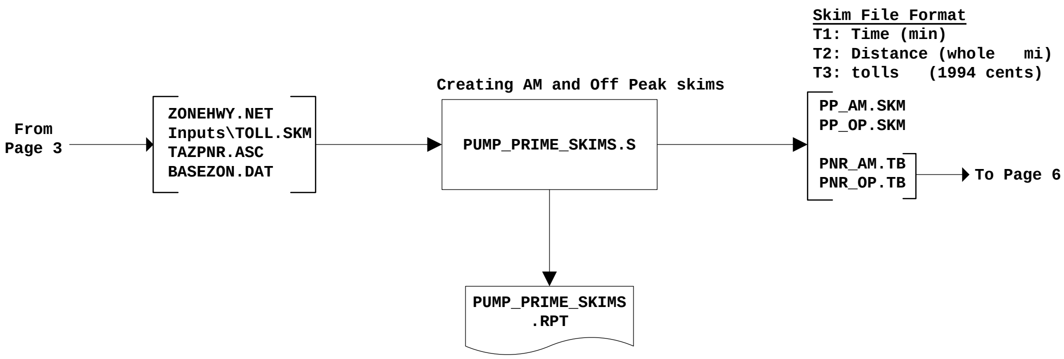

Inputs\CPI_File.txt
SET_CPI.S
TRN_DEFLATOR.txt
HWY_DEFLATOR.txt
MFARE2_CPI.txt
To Page 14
To Page 3
SET_CPI.RPT

TITLE:	**Version 2.2 Model Application**
COMPANY: COG/TPB	**CREATOR:** RM/MS
DATE: March, 2008	PG: 3 OF 16
FILENAME: V2.2_MODAPP_Final.VSD	

PP_Highway_Build.bat: Highway Network Preparation



PP_Highway_PNR.bat: Highway Path Building



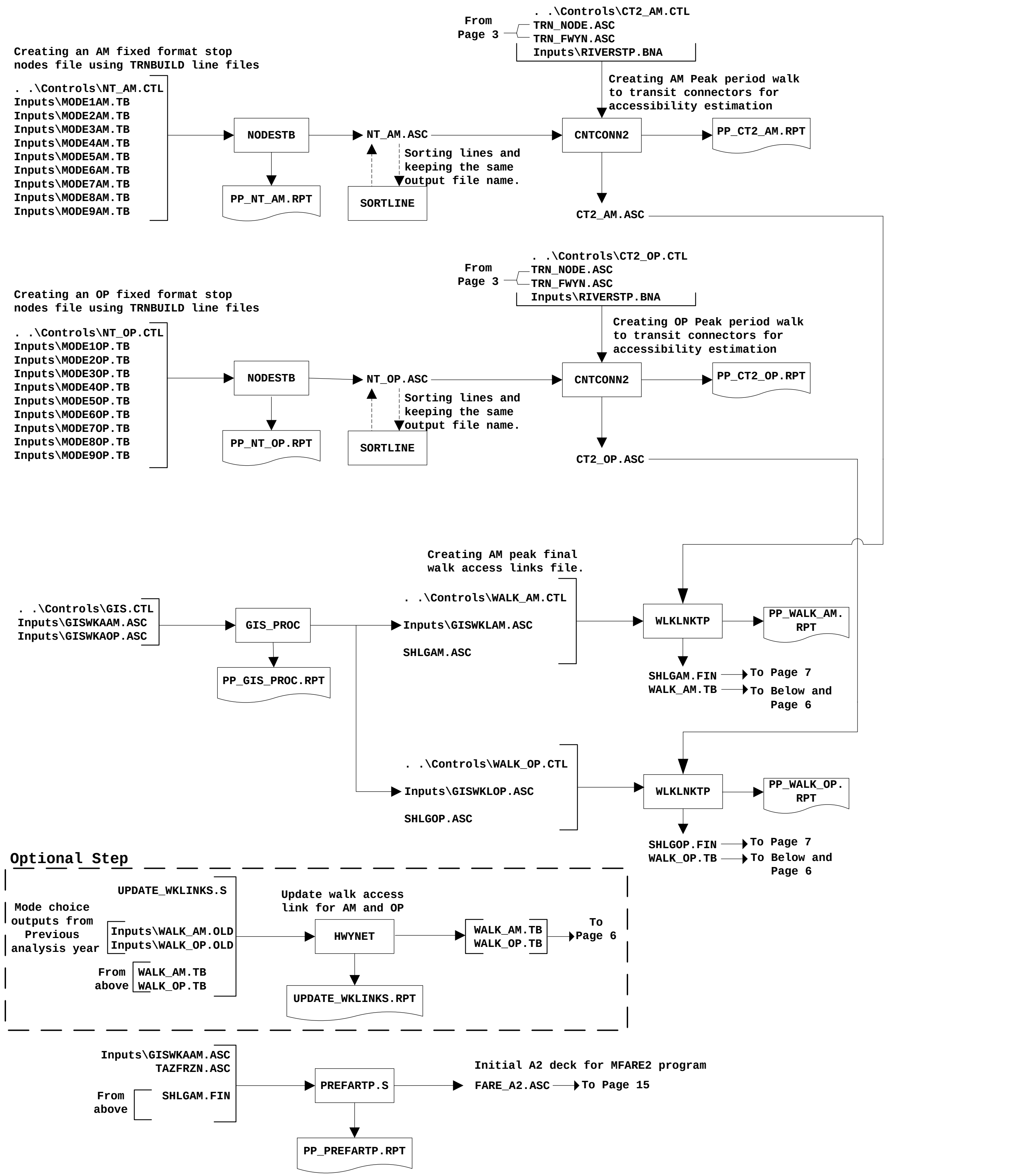
TITLE: Version 2.2 Model Application

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

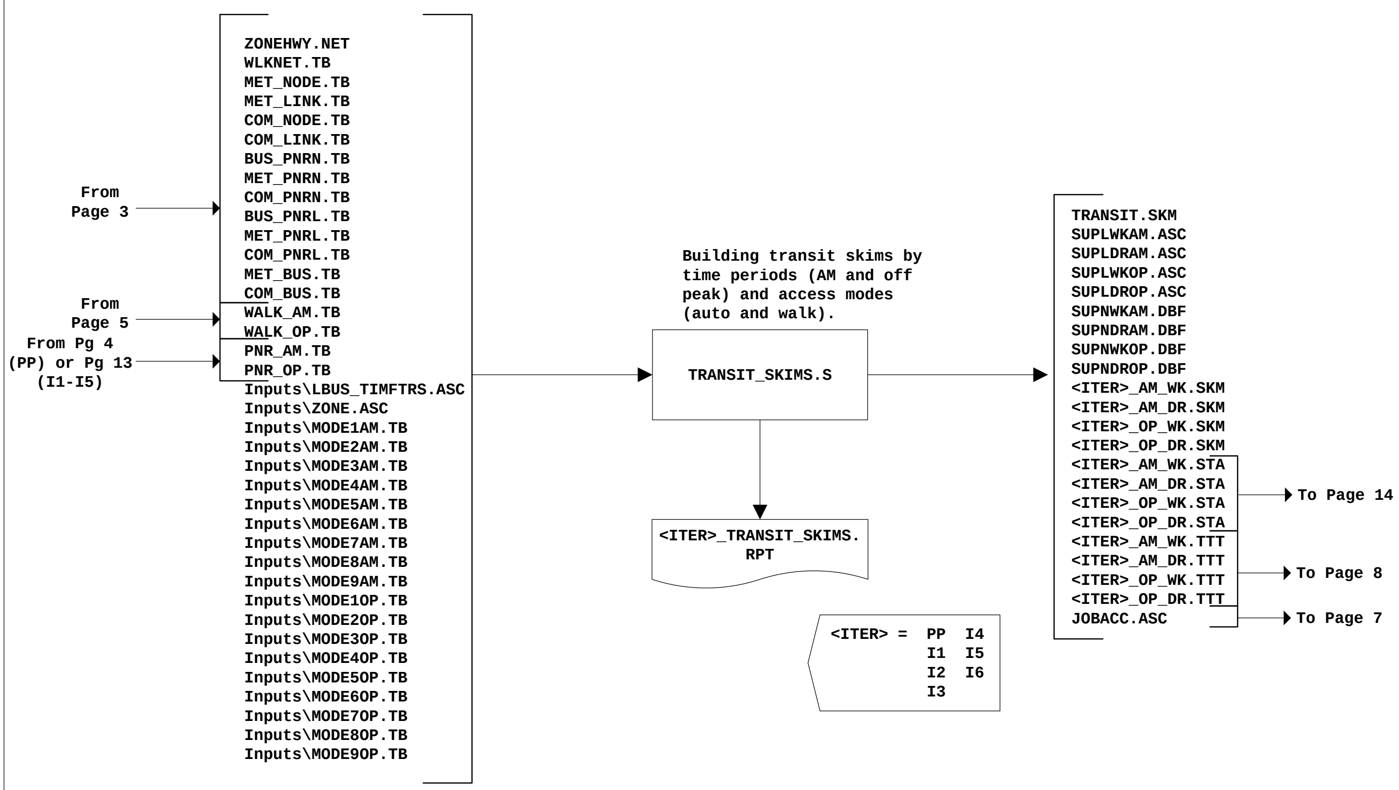
DATE: March, 2008 PG: 5 OF 16

FILENAME: V2.2_MODAPP_Final.VSD

PP_Transit_Prep.bat



Transit_Skim.bat: Transit Path Building



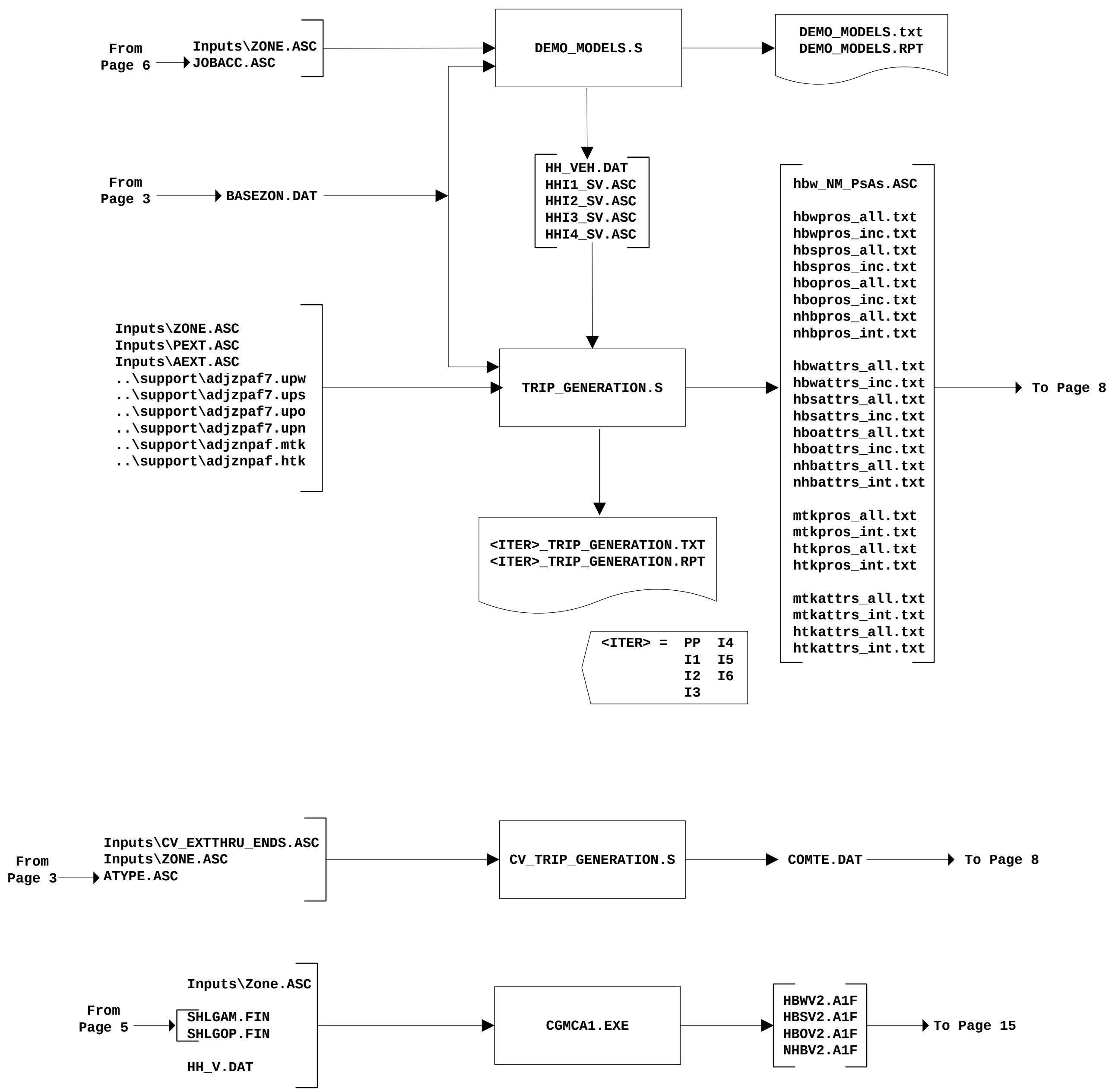
TITLE: Version 2.2 Model Application

COMPANY: COG/TPB CREATOR: RM/MS

DATE: March, 2008

FILENAME: V2.2_MODAPP_Final.VSD

Trip_Generation.bat: Trip Generation



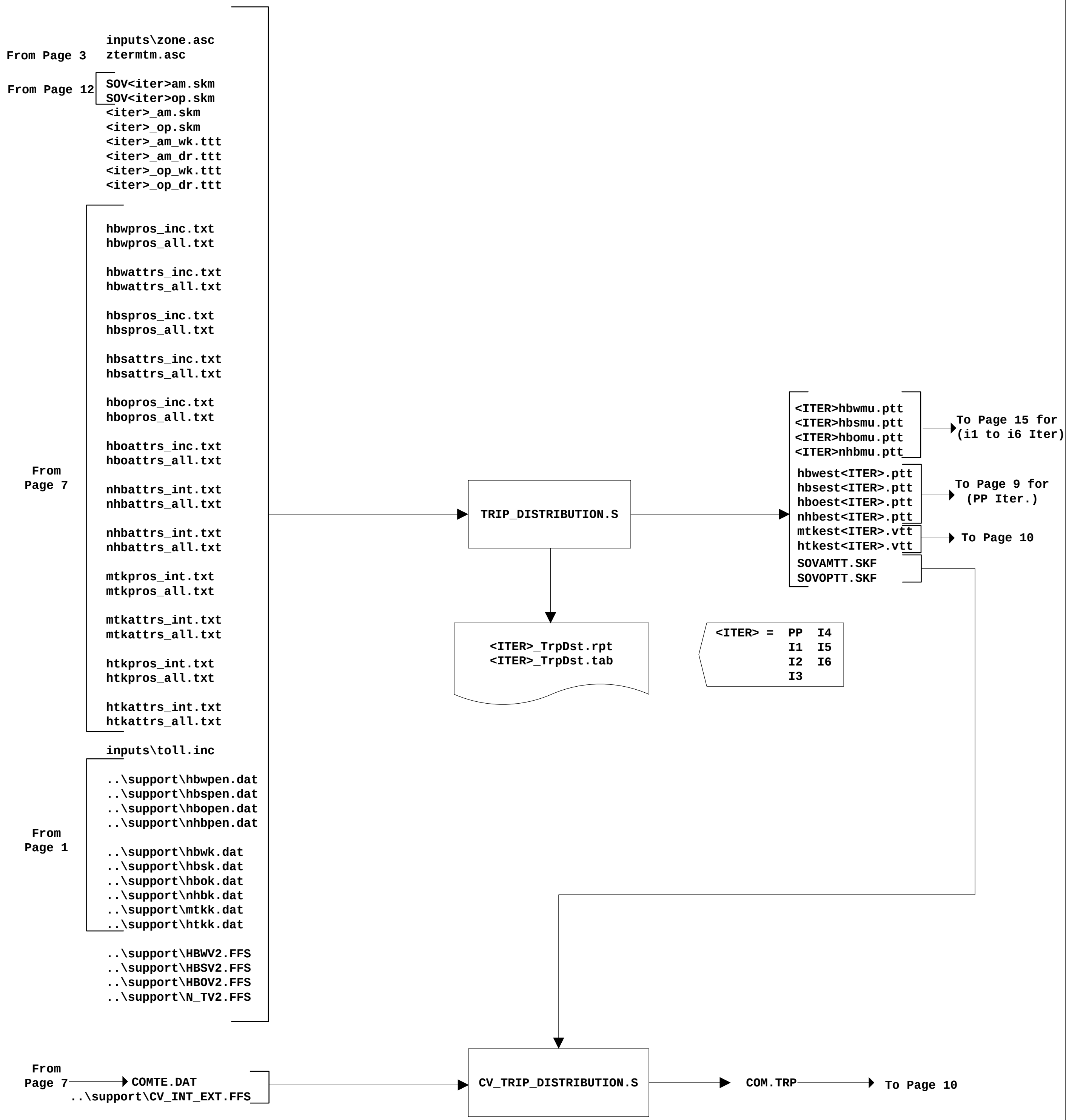
TITLE: Version 2.2 Model Application

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

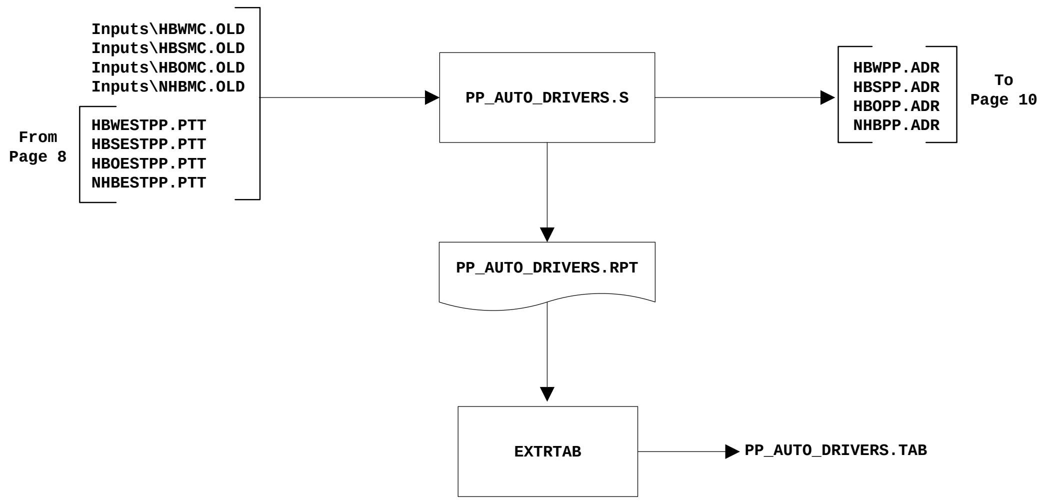
DATE: March, 2008

FILENAME: V2.2_MODAPP_Final.VSD

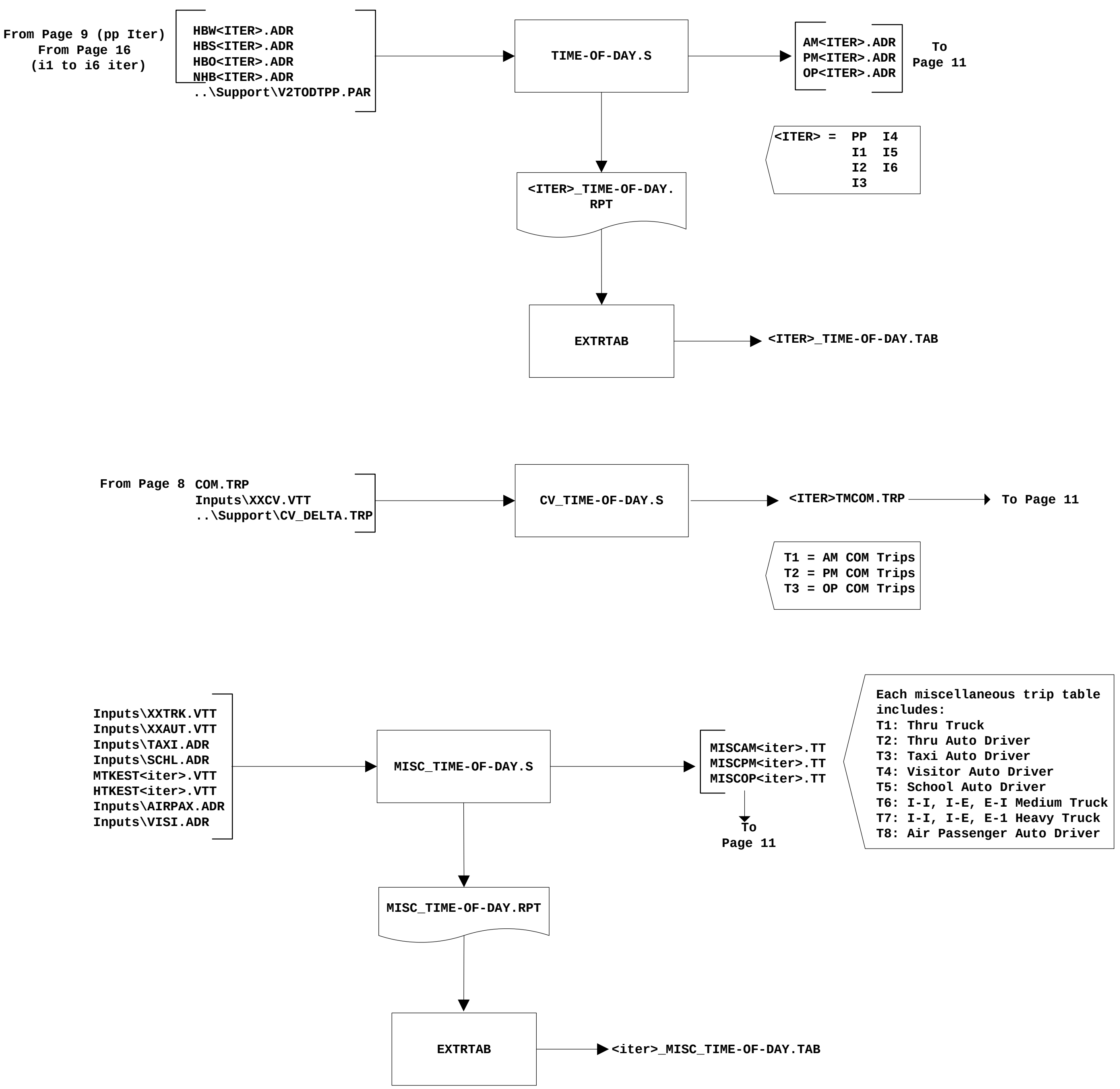
Trip Distribution.bat: Trip Distribution



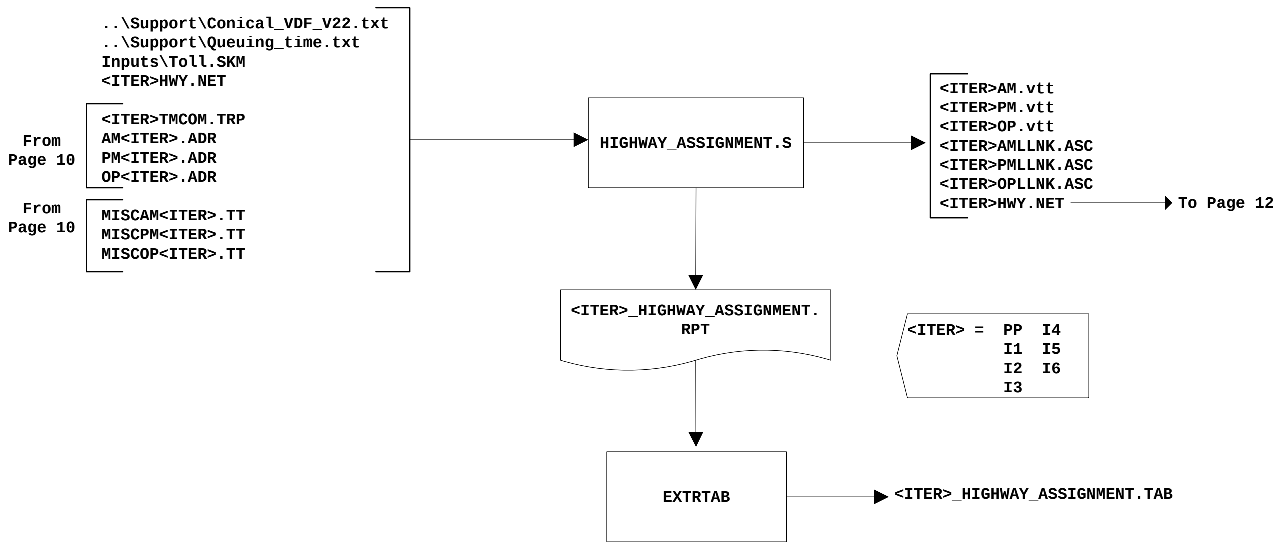
PP_Auto_Drivers.bat: Pump Prime Auto Driver Trips



Time-of-Day.bat

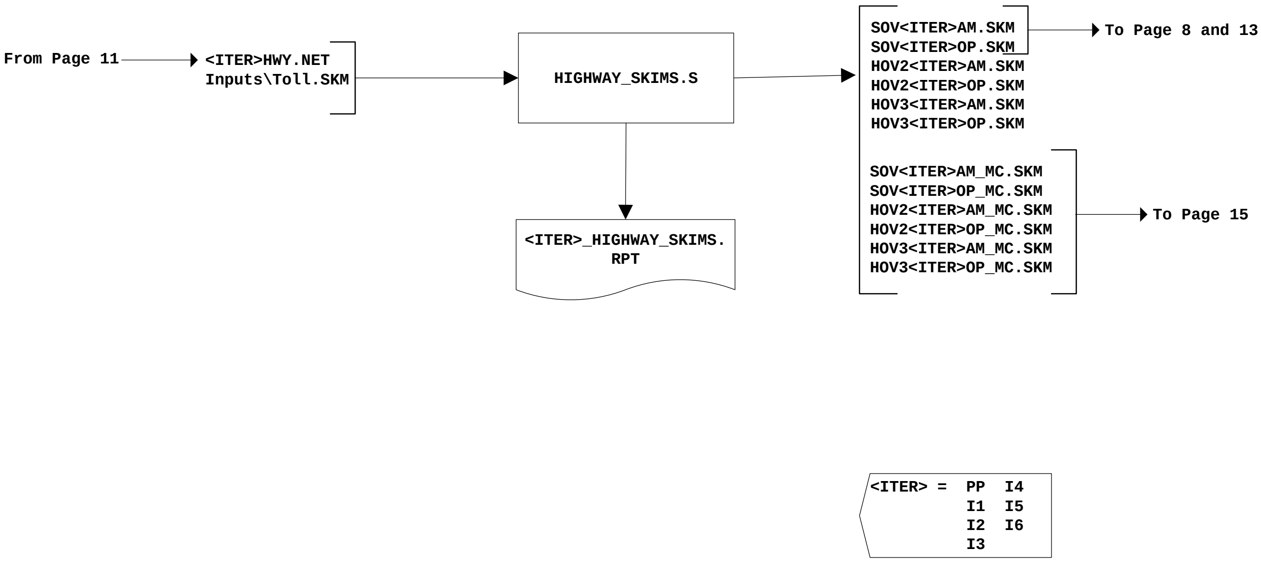


Highway_Assignment.bat

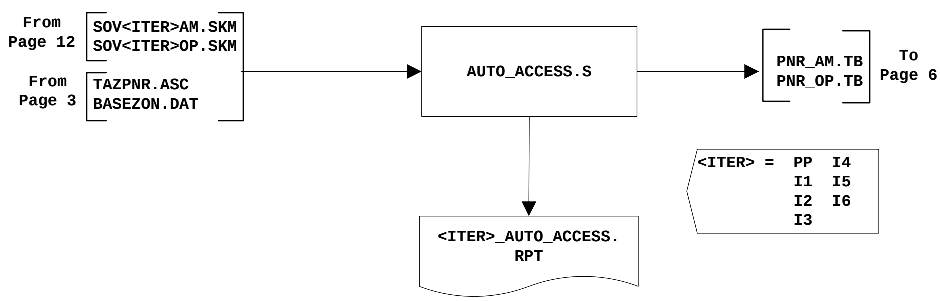


TITLE:	**Version 2.2 Model Application**
COMPANY: COG/TPB	**CREATOR:** RM/MS
DATE: March, 2008	PG: 12 OF 16
FILENAME: V2.2_MODAPP_Final.VSD	

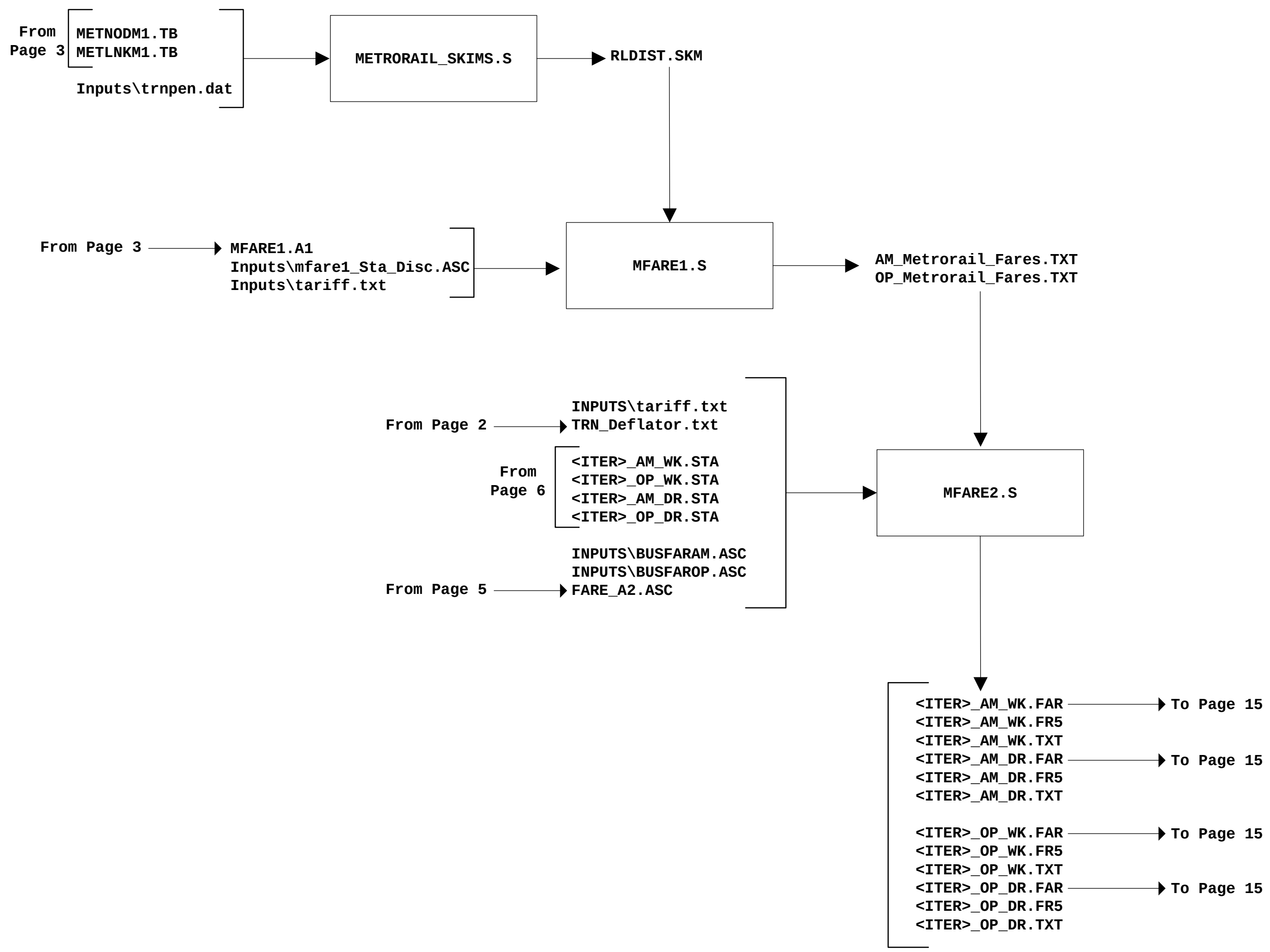
Highway_Skims.bat



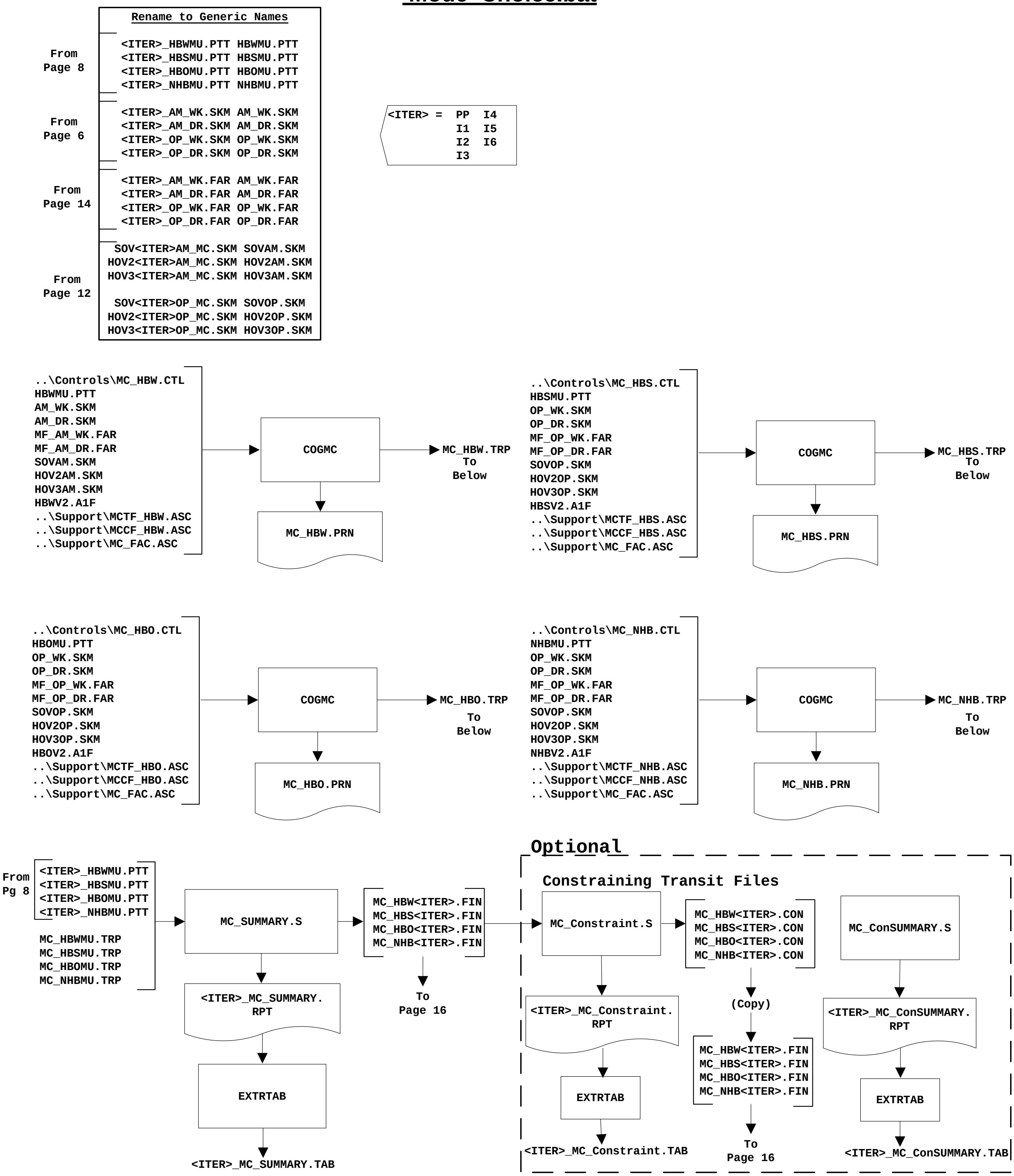
Highway_PNR.bat: Base Highway Path Building



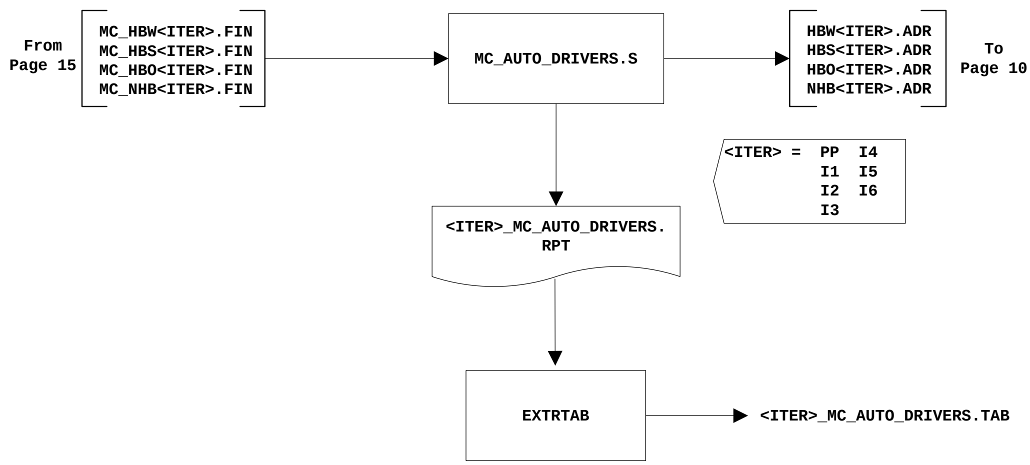
Transit_Fare.bat



Mode Choice.bat



Auto_Driver.bat



Appendix H. Fortran and other control files

Ref:

1 cogmca1.ctl

```
  COGMCA1.CTL
  Control File for COGMCA1.EXE Program -- Version 2, TP+ application

  The 4 INPUT files are:
       landusef - the standard v2. zonal land use file
       amshlgf  - AM pk zonal walk pct/walk time file (WLKLNKTP-based)
       opshlgf  - Offpk zonal walk pct/walk time file (WLKLNKTP-based)
       carownf  - file containing HH by vehicle own.(0,1,2+)

  The 4 OUTPUT files are:
       hbwa1v2  - Version 2 HBW zonal A1 deck
       hbsa1v2  - Version 2 HBS zonal A1 deck
       hboa1v2  - Version 2 HBO zonal A1 deck
       nhba1v2  - Version 2 NHB zonal A1 deck

Note: hh_veh.dat (zonal HH by Vehs avail) is output of vehav model

&files
   landusef = 'inputs\zone.asc'
   amshlgf  = 'shlgam.fin'
   opshlgf  = 'shlgop.fin'
   carownf  = 'hh_veh.dat'
   hbwa1v2  = 'hbwv2.a1f'
   hbsa1v2  = 'hbsv2.a1f'
   hboa1v2  = 'hbov2.a1f'
   nhba1v2  = 'nhbv2.a1f'
  /
```

2 ct2_am.ctl

```
  CT2_AM.CTL
 Pk Period Walk to Transit Connectors for Accessibility Estimation
 Note: some params set to accomodate current model convention
 Maximum walk access threshhold (max_walk) set to 1.00 mile
 2005-02-24 Max node number increased from 16600 to 25000
 &files
 node_file = 'trn_node.asc'
 lnk_file  = 'nt_am.asc'
 xnod_file = 'trn_fwyn.asc'
 scr_file  = 'inputs\riverstp.bna'
 out_file  = 'ct2_am.asc'
 rpt_file  = 'ct2_am.rpt'
 /
 &specs
 miles     = 5280.
 max_zone  = 2191
 max_node  = 25000
 max_walk  = 1.00
 dev_fac   = 3.00
 max_conn  = 8
 mod_type  = 1
 nodesfmt  = T
 modes     = 16
 tmespd    = 'SPEED=3'
 dumdist   = F
 trnpth    = T
 trnbld    = T
 /
```

3 ct2_op.ctl

```
 CT2_OP.CTL
 Off Pk Prd Walk to Transit Connectors for Accessibility Estimation
 Note: some params set to accomodate current model convention
 Maximum walk access threshhold (max_walk) set to 1.00 mile
 2005-02-24 Max node number increased from 16600 to 25000
 &files
 node_file = 'trn_node.asc'
 lnk_file  = 'nt_op.asc'
 xnod_file = 'trn_fwyn.asc'
 scr_file  = 'inputs\riverstp.bna'
 out_file  = 'CT2_op.asc'
 rpt_file  = 'CT2_op.RPT'
 /
 &specs
 miles     = 5280.0
 max_zone  = 2191
 max_node  = 25000
 max_walk  = 1.00
 dev_fac   = 3.00
 max_conn  = 8
 mod_type  = 1
 nodesfmt  = T
 modes     = 16
 tmespd    = 'SPEED=3'
 dumdist   = F
 trnpth    = T
 trnbld    = T
 /
```

4 GIS.ctl

```
  GIS.CTL
  Control File for GIS_PROC.EXE Program

  The 2 INPUT files are:
  unit  7  gispkwk  - the 'raw' GIS-produced short/long walk area file
  unit  8  gisopwk  - the 'raw' GIS-produced short/long walk area file

  The 2 OUTPUT filea are:

  unit 11  finpkwk - final am peak short/long walk file
  unit 12  finopwk - final off-pk  short/long walk file


&files

   gispkwk = 'inputs\giswkaam.asc'
   gisopwk = 'inputs\giswkaop.asc'

   finpkwk = 'shlgam.asc'
   finopwk = 'shlgop.asc'
   /
 nowlk section indicates where all walking pcts will be set to zero.
 These are zones that have a physical barrier between nearest rail
 stop  (the GIS process did not account for this).
&nowlk
  stopwlk    =    0,    0,    0,    0,    0,    0,    0,
                  0,    0,    0,    0,    0,    0,    0,
                  0,    0,    0,    0,    0,    0
   /
&param
```

```
  maxzn = 2191
   /
```

5 MC_HBO00.ctl

```
mc_hbo.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   HBO    Year: 1994
               Auto Operating Cost (UPARM(12)): 8.5 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year        Auto
        operating
           cost
           1994
        cents/mile

year      aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/03/04 msm db  uparms 43-45         iter 0,1,2,3,4,5 stop
   06/03/04 msm mb  uparms 53-55,63-65   iter 0 (no new run)
   06/03/04 msm mb  uparms 53-55,63-65   iter 1,2,3 stop

Set file names:

&FILES
 J1=  'hbomu.ptt',
 J3=  'op_wk.skm',
 J4=  'mf_op_wk.far',
 J5=  'op_dr.skm',
 J6=  'mf_op_dr.far',
 J7=  'sovop .skm',
 HOVA='hov2op .skm',
 HOVB='hov3op .skm',
 A1=  'hbov2.a1f',
 D1=  '..\support\mctf_hbo.asc',
 D2=  '..\support\mccf_hbo.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_hbo.trp',      LIST='mc_hbo.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run
&PARAM
 zones      = 2191
 uparms(1)  = 0
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.620
 uparms(6)  = 0
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 8.5
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 0.75
 uparms(23) = 1.81
 uparms(24) = 3.71
 uparms(26) = 2.845
 uparms(27) = 3.703
 uparms(28) = 4.732
 uparms(30) = 1

 uparms(15) = 4.36
 uparms(31) = 0.04991
 uparms(32) = 0.04991
 uparms(33) = 0.04991
 uparms(34) = 0.01902
 uparms(35) = 0.01902
 uparms(36) = -2.585e-5
 uparms(37) = -2.171e-5
 uparms(38) = 0.0
 uparms(39) = 0.0
 uparms(40) = 0.0
 uparms(41) = 0.0
 uparms(42) = 0.01902
 uparms(43) = 2.9
 uparms(44) = 1.1
 uparms(45) = 0.65
 uparms(46) = -5.194e-5
 uparms(47) = 0.01902
 uparms(48) = 0.01902
 uparms(49) = 0.0
 uparms(50) = 0.0
 uparms(51) = 0.0
 uparms(52) = 0.0
 uparms(53) = 4.3573
 uparms(54) = -0.0047
 uparms(55) = -0.3111
 uparms(56) = -2.307e-5
 uparms(57) = 0.01902
 uparms(58) = 0.01902
 uparms(59) = 0.0
 uparms(60) = 0.0
 uparms(61) = 0.0
 uparms(62) = 0.0
 uparms(63) = 3.1938
 uparms(64) = 0.5041
 uparms(65) = -0.0499
 uparms(66) = 0.78384
```

```
 uparms(67) = 0.68530
 uparms(68) = 0.68530
 uparms(69) = 0.0
 uparms(70) = 0.0
 uparms(71) = 0.0
 uparms(72) = 0.0
 uparms(73) = 0.68530
 uparms(74) = 0.68530
 uparms(75) = 0.0
 uparms(76) = 0.0
 uparms(77) = 0.0
 uparms(78) = 0.0
 uparms(79) = 0.0
 uparms(80) = 0.31756
 uparms(81) = 0.15151
 uparms(82) = 0.78384
 uparms(83) = 0.68530
 uparms(84) = 0.68530
 uparms(85) = 0.0
 uparms(86) = 0.0
 uparms(87) = 0.0
 uparms(88) = 0.0
 uparms(89) = 0.0
 uparms(90) = 0.0
 uparms(91) = -0.21854
 uparms(92) = -0.41346
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 3
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = 0.0
 uparms(99) = -0.69708
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                   / dc core
 &ADJDST ADST=2,AZNE=89,-319                 / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650        / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238              / arl core
 &ADJDST ADST=6,AZNE=1239,-1329              / arl noncore
 &ADJDST ADST=7,AZNE=1330,-1399              / alx
 &ADJDST ADST=8,AZNE=1400,-1779              / ffx
 &ADJDST ADST=9,AZNE=1780,-1919              / ldn
 &ADJDST ADST=10,AZNE=1920,-2069             / pw
 &ADJDST ADST=11,AZNE=1030,-1059             / frd
 &ADJDST ADST=12,AZNE=1080,-1109             / how
 &ADJDST ADST=13,AZNE=1110,-1149             / aa
 &ADJDST ADST=14,AZNE=1200,-1229             / chs
 &ADJDST ADST=15,AZNE=1060,-1079             / car
 &ADJDST ADST=16,AZNE=1150,-1199             / cal,stm
 &ADJDST ADST=17,AZNE=2070,-2114             / stf,kg,spts,fbrg
 &ADJDST ADST=18,AZNE=2115,-2129             / fau
 &ADJDST ADST=19,AZNE=2130,-2144             / clk,jef
 &ADJDST ADST=20,AZNE=2145,-2191             / externals

        Non-Work/NHB Transit: (These are not used)
 &NWKDST NDST=1,NZNE=1,-88                   / dc core
 &NWKDST NDST=2,NZNE=89,-319                 / dc noncore
 &NWKDST NDST=3,NZNE=320,-639,648,650        / mtg
 &NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
 &NWKDST NDST=5,NZNE=1230,-1238              / arl core
 &NWKDST NDST=6,NZNE=1239,-1329              / arl noncore
 &NWKDST NDST=7,NZNE=1330,-1399              / alx
 &NWKDST NDST=8,NZNE=1400,-1779              / ffx
 &NWKDST NDST=9,NZNE=1780,-1919              / ldn
 &NWKDST NDST=10,NZNE=1920,-2069             / pw
 &NWKDST NDST=11,NZNE=1030,-1059             / frd
 &NWKDST NDST=12,NZNE=1080,-1109             / how
 &NWKDST NDST=13,NZNE=1110,-1149             / aa
 &NWKDST NDST=14,NZNE=1200,-1229             / chs
 &NWKDST NDST=15,NZNE=1060,-1079             / car
 &NWKDST NDST=16,NZNE=1150,-1199             / cal,stm
 &NWKDST NDST=17,NZNE=2070,-2114             / stf,kg,spts,fbrg
 &NWKDST NDST=18,NZNE=2115,-2129             / fau
 &NWKDST NDST=19,NZNE=2130,-2144             / clk,jef
 &NWKDST NDST=20,NZNE=2145,-2191             / externals

        Car Occupancy:
 &CARDST CDST=1,CZNE=1,-88                   / dc core
 &CARDST CDST=2,CZNE=89,-319                 / dc noncore
 &CARDST CDST=3,CZNE=320,-639,648,650        / mtg
 &CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
 &CARDST CDST=5,CZNE=1230,-1238              / arl core
 &CARDST CDST=6,CZNE=1239,-1329              / arl noncore
 &CARDST CDST=7,CZNE=1330,-1399              / alx
 &CARDST CDST=8,CZNE=1400,-1779              / ffx
 &CARDST CDST=9,CZNE=1780,-1919              / ldn
 &CARDST CDST=10,CZNE=1920,-2069             / pw
 &CARDST CDST=11,CZNE=1030,-1059             / frd
 &CARDST CDST=12,CZNE=1080,-1109             / how
 &CARDST CDST=13,CZNE=1110,-1149             / aa
 &CARDST CDST=14,CZNE=1200,-1229             / chs
 &CARDST CDST=15,CZNE=1060,-1079             / car
 &CARDST CDST=16,CZNE=1150,-1199             / cal,stm
 &CARDST CDST=17,CZNE=2070,-2114             / stf,kg,spts,fbrg
 &CARDST CDST=18,CZNE=2115,-2129             / fau
 &CARDST CDST=19,CZNE=2130,-2144             / clk,jef
 &CARDST CDST=20,CZNE=2145,-2191             / externals


        External Stations:
 &XTERN EDST = 1, EZNE = 2145         /
 &XTERN EDST = 2, EZNE = 2146         /
 &XTERN EDST = 3, EZNE = 2147,-2191   /
```

6 MC_HBO30.ctl

```
mc_hbo.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   HBO    Year: 1994
               Auto Operating Cost (UPARM(12)): 7.8 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year       Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
```

```
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/03/04 msm db  uparms 43-45         iter 0,1,2,3,4,5 stop
   06/03/04 msm mb  uparms 53-55,63-65   iter 0 (no new run)
   06/03/04 msm mb  uparms 53-55,63-65   iter 1,2,3 stop

Set file names:

&FILES
 J1=  'hbomu.ptt',
 J3=  'op_wk.skm',
 J4=  'mf_op_wk.far',
 J5=  'op_dr.skm',
 J6=  'mf_op_dr.far',
 J7=  'sovop .skm',
 HOVA='hov2op .skm',
 HOVB='hov3op .skm',
 A1=  'hbov2.a1f',
 D1=  '..\support\mctf_hbo.asc',
 D2=  '..\support\mccf_hbo.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_hbo.trp',      LIST='mc_hbo.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run
&PARAM
 zones      = 2191
 uparms(1)  = 0
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.620
 uparms(6)  = 0
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 7.8
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 0.75
 uparms(23) = 1.81
 uparms(24) = 3.71
 uparms(26) = 2.845
 uparms(27) = 3.703
 uparms(28) = 4.732
 uparms(30) = 1

 uparms(15) = 4.36
 uparms(31) = 0.04991
 uparms(32) = 0.04991
 uparms(33) = 0.04991
 uparms(34) = 0.01902
 uparms(35) = 0.01902
 uparms(36) = -2.585e-5
 uparms(37) = -2.171e-5
 uparms(38) = 0.0
 uparms(39) = 0.0
 uparms(40) = 0.0
 uparms(41) = 0.0
 uparms(42) = 0.01902
 uparms(43) = 2.9
 uparms(44) = 1.1
 uparms(45) = 0.65
 uparms(46) = -5.194e-5
 uparms(47) = 0.01902
 uparms(48) = 0.01902
 uparms(49) = 0.0
 uparms(50) = 0.0
 uparms(51) = 0.0
 uparms(52) = 0.0
 uparms(53) = 4.3573
 uparms(54) = -0.0047
 uparms(55) = -0.3111
 uparms(56) = -2.307e-5
 uparms(57) = 0.01902
 uparms(58) = 0.01902
 uparms(59) = 0.0
 uparms(60) = 0.0
 uparms(61) = 0.0
 uparms(62) = 0.0
 uparms(63) = 3.1938
 uparms(64) = 0.5041
 uparms(65) = -0.0499
 uparms(66) = 0.78384
 uparms(67) = 0.68530
 uparms(68) = 0.68530
 uparms(69) = 0.0
 uparms(70) = 0.0
 uparms(71) = 0.0
 uparms(72) = 0.0
 uparms(73) = 0.68530
 uparms(74) = 0.68530
 uparms(75) = 0.0
 uparms(76) = 0.0
 uparms(77) = 0.0
 uparms(78) = 0.0
 uparms(79) = 0.0
 uparms(80) = 0.31756
 uparms(81) = 0.15151
 uparms(82) = 0.78384
 uparms(83) = 0.68530
 uparms(84) = 0.68530
 uparms(85) = 0.0
 uparms(86) = 0.0
 uparms(87) = 0.0
 uparms(88) = 0.0
 uparms(89) = 0.0
 uparms(90) = 0.0
 uparms(91) = -0.21854
```

```
 uparms(92) = -0.41346
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 3
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = 0.0
 uparms(99) = -0.69708
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                    / dc core
 &ADJDST ADST=2,AZNE=89,-319                  / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650         / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238               / arl core
 &ADJDST ADST=6,AZNE=1239,-1329               / arl noncore
 &ADJDST ADST=7,AZNE=1330,-1399               / alx
 &ADJDST ADST=8,AZNE=1400,-1779               / ffx
 &ADJDST ADST=9,AZNE=1780,-1919               / ldn
 &ADJDST ADST=10,AZNE=1920,-2069              / pw
 &ADJDST ADST=11,AZNE=1030,-1059              / frd
 &ADJDST ADST=12,AZNE=1080,-1109              / how
 &ADJDST ADST=13,AZNE=1110,-1149              / aa
 &ADJDST ADST=14,AZNE=1200,-1229              / chs
 &ADJDST ADST=15,AZNE=1060,-1079              / car
 &ADJDST ADST=16,AZNE=1150,-1199              / cal,stm
 &ADJDST ADST=17,AZNE=2070,-2114              / stf,kg,spts,fbrg
 &ADJDST ADST=18,AZNE=2115,-2129              / fau
 &ADJDST ADST=19,AZNE=2130,-2144              / clk,jef
 &ADJDST ADST=20,AZNE=2145,-2191              / externals

        Non-Work/NHB Transit: (These are not used)
 &NWKDST NDST=1,NZNE=1,-88                    / dc core
 &NWKDST NDST=2,NZNE=89,-319                  / dc noncore
 &NWKDST NDST=3,NZNE=320,-639,648,650         / mtg
 &NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
 &NWKDST NDST=5,NZNE=1230,-1238               / arl core
 &NWKDST NDST=6,NZNE=1239,-1329               / arl noncore
 &NWKDST NDST=7,NZNE=1330,-1399               / alx
 &NWKDST NDST=8,NZNE=1400,-1779               / ffx
 &NWKDST NDST=9,NZNE=1780,-1919               / ldn
 &NWKDST NDST=10,NZNE=1920,-2069              / pw
 &NWKDST NDST=11,NZNE=1030,-1059              / frd
 &NWKDST NDST=12,NZNE=1080,-1109              / how
 &NWKDST NDST=13,NZNE=1110,-1149              / aa
 &NWKDST NDST=14,NZNE=1200,-1229              / chs
 &NWKDST NDST=15,NZNE=1060,-1079              / car
 &NWKDST NDST=16,NZNE=1150,-1199              / cal,stm
 &NWKDST NDST=17,NZNE=2070,-2114              / stf,kg,spts,fbrg
 &NWKDST NDST=18,NZNE=2115,-2129              / fau
 &NWKDST NDST=19,NZNE=2130,-2144              / clk,jef
 &NWKDST NDST=20,NZNE=2145,-2191              / externals

        Car Occupancy:
 &CARDST CDST=1,CZNE=1,-88                    / dc core
 &CARDST CDST=2,CZNE=89,-319                  / dc noncore
 &CARDST CDST=3,CZNE=320,-639,648,650         / mtg
 &CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
 &CARDST CDST=5,CZNE=1230,-1238               / arl core
 &CARDST CDST=6,CZNE=1239,-1329               / arl noncore
 &CARDST CDST=7,CZNE=1330,-1399               / alx
 &CARDST CDST=8,CZNE=1400,-1779               / ffx
 &CARDST CDST=9,CZNE=1780,-1919               / ldn
 &CARDST CDST=10,CZNE=1920,-2069              / pw
 &CARDST CDST=11,CZNE=1030,-1059              / frd
 &CARDST CDST=12,CZNE=1080,-1109              / how
 &CARDST CDST=13,CZNE=1110,-1149              / aa
 &CARDST CDST=14,CZNE=1200,-1229              / chs
 &CARDST CDST=15,CZNE=1060,-1079              / car
 &CARDST CDST=16,CZNE=1150,-1199              / cal,stm
 &CARDST CDST=17,CZNE=2070,-2114              / stf,kg,spts,fbrg
 &CARDST CDST=18,CZNE=2115,-2129              / fau
 &CARDST CDST=19,CZNE=2130,-2144              / clk,jef
 &CARDST CDST=20,CZNE=2145,-2191              / externals


       External Stations:
 &XTERN EDST = 1, EZNE = 2145        /
 &XTERN EDST = 2, EZNE = 2146        /
 &XTERN EDST = 3, EZNE = 2147,-2191   /
```

7 MC_HBS00.ctl

```
mc_hbs.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   HBS    Year: 1994
               Auto Operating Cost (UPARM(12)): 8.5 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year       Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/03/04 msm db  uparms 43-45         iter 0,1,2,3,4 stop
   06/03/04 msm mb  uparms 53-55,63-65   iter 0 (no new run)
   06/03/04 msm mb  uparms 53-55,63-65   iter 1,2,3,4,5
   06/04/04 msm db  uparms 43-45         iter 0 (values from 2002),1,2 stop
   06/03/04 msm mb  uparms 53-55,63-65   iter 7,8

Set file names:

&FILES
 J1=  'hbsmu.ptt',
 J3=  'op_wk.skm',
 J4=  'mf_op_wk.far',
 J5=  'op_dr.skm',
 J6=  'mf_op_dr.far',
 J7=  'sovop.skm',
 HOVA='hov2op.skm',
 HOVB='hov3op.skm',
```

```
 A1=  'hbsv2.a1f',
 D1=  '..\support\mctf_hbs.asc',
 D2=  '..\support\mccf_hbs.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_hbs.trp',      LIST='mc_hbs.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run
&PARAM
 zones      = 2191
 uparms(1)  = 0
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.610
 uparms(6)  = 0
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 8.5
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 0.27
 uparms(23) = 0.72
 uparms(24) = 1.11
 uparms(26) = 2.845
 uparms(27) = 3.703
 uparms(28) = 4.732
 uparms(30) = 1

 uparms(15) = 4.36
 uparms(31) = 0.02432
 uparms(32) = 0.02432
 uparms(33) = 0.02432
 uparms(34) = 0.00912
 uparms(35) = 0.00912
 uparms(36) = -2.627e-5
 uparms(37) = -2.438e-5
 uparms(38) = 0.0
 uparms(39) = 0.0
 uparms(40) = 0.00416
 uparms(41) = 0.0
 uparms(42) = 0.00912
 uparms(43) = 2.9
 uparms(44) = 0.0
 uparms(45) = -2.0
 uparms(46) = 0.0
 uparms(47) = 0.00912
 uparms(48) = 0.00912
 uparms(49) = 0.00416
 uparms(50) = 0.00416
 uparms(51) = 0.00416
 uparms(52) = 0.0
 uparms(53) = 3.037
 uparms(54) = -2.272
 uparms(55) = -3.751
 uparms(56) = -4.869e-5
 uparms(57) = 0.00912
 uparms(58) = 0.00912
 uparms(59) = 0.00416
 uparms(60) = 0.00416
 uparms(61) = 0.00416
 uparms(62) = 0.0
 uparms(63) = 0.888
 uparms(64) = -1.929
 uparms(65) = -3.507
 uparms(66) = 0.0
 uparms(67) = 0.45633
 uparms(68) = 0.45633
 uparms(69) = 0.0
 uparms(70) = 0.0
 uparms(71) = 0.0
 uparms(72) = 0.0
 uparms(73) = 0.45633
 uparms(74) = 0.45633
 uparms(75) = 0.0
 uparms(76) = 0.0
 uparms(77) = 0.0
 uparms(78) = 0.0
 uparms(79) = 0.0
 uparms(80) = 0.92201
 uparms(81) = 0.48966
 uparms(82) = 0.0
 uparms(83) = 0.45633
 uparms(84) = 0.45633
 uparms(85) = 0.0
 uparms(86) = 0.0
 uparms(87) = 0.0
 uparms(88) = 0.0
 uparms(89) = 0.0
 uparms(90) = 1.51854
 uparms(91) = 0.84071
 uparms(92) = 0.0
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 3
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = 0.0
 uparms(99) = -0.84404
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                   / dc core
 &ADJDST ADST=2,AZNE=89,-319                 / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650        / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238              / arl core
```

```
&ADJDST ADST=6,AZNE=1239,-1329              / arl noncore
&ADJDST ADST=7,AZNE=1330,-1399              / alx
&ADJDST ADST=8,AZNE=1400,-1779              / ffx
&ADJDST ADST=9,AZNE=1780,-1919              / ldn
&ADJDST ADST=10,AZNE=1920,-2069             / pw
&ADJDST ADST=11,AZNE=1030,-1059             / frd
&ADJDST ADST=12,AZNE=1080,-1109             / how
&ADJDST ADST=13,AZNE=1110,-1149             / aa
&ADJDST ADST=14,AZNE=1200,-1229             / chs
&ADJDST ADST=15,AZNE=1060,-1079             / car
&ADJDST ADST=16,AZNE=1150,-1199             / cal,stm
&ADJDST ADST=17,AZNE=2070,-2114             / stf,kg,spts,fbrg
&ADJDST ADST=18,AZNE=2115,-2129             / fau
&ADJDST ADST=19,AZNE=2130,-2144             / clk,jef
&ADJDST ADST=20,AZNE=2145,-2191             / externals

       Non-Work/NHB Transit: (These are not used)
&NWKDST NDST=1,NZNE=1,-88                   / dc core
&NWKDST NDST=2,NZNE=89,-319                 / dc noncore
&NWKDST NDST=3,NZNE=320,-639,648,650        / mtg
&NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
&NWKDST NDST=5,NZNE=1230,-1238              / arl core
&NWKDST NDST=6,NZNE=1239,-1329              / arl noncore
&NWKDST NDST=7,NZNE=1330,-1399              / alx
&NWKDST NDST=8,NZNE=1400,-1779              / ffx
&NWKDST NDST=9,NZNE=1780,-1919              / ldn
&NWKDST NDST=10,NZNE=1920,-2069             / pw
&NWKDST NDST=11,NZNE=1030,-1059             / frd
&NWKDST NDST=12,NZNE=1080,-1109             / how
&NWKDST NDST=13,NZNE=1110,-1149             / aa
&NWKDST NDST=14,NZNE=1200,-1229             / chs
&NWKDST NDST=15,NZNE=1060,-1079             / car
&NWKDST NDST=16,NZNE=1150,-1199             / cal,stm
&NWKDST NDST=17,NZNE=2070,-2114             / stf,kg,spts,fbrg
&NWKDST NDST=18,NZNE=2115,-2129             / fau
&NWKDST NDST=19,NZNE=2130,-2144             / clk,jef
&NWKDST NDST=20,NZNE=2145,-2191             / externals

       Car Occupancy:
&CARDST CDST=1,CZNE=1,-88                   / dc core
&CARDST CDST=2,CZNE=89,-319                 / dc noncore
&CARDST CDST=3,CZNE=320,-639,648,650        / mtg
&CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
&CARDST CDST=5,CZNE=1230,-1238              / arl core
&CARDST CDST=6,CZNE=1239,-1329              / arl noncore
&CARDST CDST=7,CZNE=1330,-1399              / alx
&CARDST CDST=8,CZNE=1400,-1779              / ffx
&CARDST CDST=9,CZNE=1780,-1919              / ldn
&CARDST CDST=10,CZNE=1920,-2069             / pw
&CARDST CDST=11,CZNE=1030,-1059             / frd
&CARDST CDST=12,CZNE=1080,-1109             / how
&CARDST CDST=13,CZNE=1110,-1149             / aa
&CARDST CDST=14,CZNE=1200,-1229             / chs
&CARDST CDST=15,CZNE=1060,-1079             / car
&CARDST CDST=16,CZNE=1150,-1199             / cal,stm
&CARDST CDST=17,CZNE=2070,-2114             / stf,kg,spts,fbrg
&CARDST CDST=18,CZNE=2115,-2129             / fau
&CARDST CDST=19,CZNE=2130,-2144             / clk,jef
&CARDST CDST=20,CZNE=2145,-2191             / externals


       External Stations:
&XTERN EDST = 1, EZNE = 2145         /
&XTERN EDST = 2, EZNE = 2146         /
&XTERN EDST = 3, EZNE = 2147,-2191   /
```

8 MC_HBS30.ctl

```
mc_hbs.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   HBS    Year: 1994
               Auto Operating Cost (UPARM(12)): 7.8 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year       Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/03/04 msm db  uparms 43-45         iter 0,1,2,3,4 stop
   06/03/04 msm mb  uparms 53-55,63-65   iter 0 (no new run)
   06/03/04 msm mb  uparms 53-55,63-65   iter 1,2,3,4,5
   06/04/04 msm db  uparms 43-45         iter 0 (values from 2002),1,2 stop
   06/03/04 msm mb  uparms 53-55,63-65   iter 7,8

Set file names:

&FILES
 J1=  'hbsmu.ptt',
 J3=  'op_wk.skm',
 J4=  'mf_op_wk.far',
 J5=  'op_dr.skm',
 J6=  'mf_op_dr.far',
 J7=  'sovop.skm',
 HOVA='hov2op.skm',
 HOVB='hov3op.skm',
 A1=  'hbsv2.a1f',
 D1=  '..\support\mctf_hbs.asc',
 D2=  '..\support\mccf_hbs.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_hbs.trp',      LIST='mc_hbs.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)
```

```
Here is a list of the UPARMS values we will use in this run
&PARAM
 zones      = 2191
 uparms(1)  = 0
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.610
 uparms(6)  = 0
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 7.8
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 0.27
 uparms(23) = 0.72
 uparms(24) = 1.11
 uparms(26) = 2.845
 uparms(27) = 3.703
 uparms(28) = 4.732
 uparms(30) = 1

 uparms(15) = 4.36
 uparms(31) = 0.02432
 uparms(32) = 0.02432
 uparms(33) = 0.02432
 uparms(34) = 0.00912
 uparms(35) = 0.00912
 uparms(36) = -2.627e-5
 uparms(37) = -2.438e-5
 uparms(38) = 0.0
 uparms(39) = 0.0
 uparms(40) = 0.00416
 uparms(41) = 0.0
 uparms(42) = 0.00912
 uparms(43) = 2.9
 uparms(44) = 0.0
 uparms(45) = -2.0
 uparms(46) = 0.0
 uparms(47) = 0.00912
 uparms(48) = 0.00912
 uparms(49) = 0.00416
 uparms(50) = 0.00416
 uparms(51) = 0.00416
 uparms(52) = 0.0
 uparms(53) = 3.037
 uparms(54) = -2.272
 uparms(55) = -3.751
 uparms(56) = -4.869e-5
 uparms(57) = 0.00912
 uparms(58) = 0.00912
 uparms(59) = 0.00416
 uparms(60) = 0.00416
 uparms(61) = 0.00416
 uparms(62) = 0.0
 uparms(63) = 0.888
 uparms(64) = -1.929
 uparms(65) = -3.507
 uparms(66) = 0.0
 uparms(67) = 0.45633
 uparms(68) = 0.45633
 uparms(69) = 0.0
 uparms(70) = 0.0
 uparms(71) = 0.0
 uparms(72) = 0.0
 uparms(73) = 0.45633
 uparms(74) = 0.45633
 uparms(75) = 0.0
 uparms(76) = 0.0
 uparms(77) = 0.0
 uparms(78) = 0.0
 uparms(79) = 0.0
 uparms(80) = 0.92201
 uparms(81) = 0.48966
 uparms(82) = 0.0
 uparms(83) = 0.45633
 uparms(84) = 0.45633
 uparms(85) = 0.0
 uparms(86) = 0.0
 uparms(87) = 0.0
 uparms(88) = 0.0
 uparms(89) = 0.0
 uparms(90) = 1.51854
 uparms(91) = 0.84071
 uparms(92) = 0.0
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 3
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = 0.0
 uparms(99) = -0.84404
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                    / dc core
 &ADJDST ADST=2,AZNE=89,-319                  / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650         / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238               / arl core
 &ADJDST ADST=6,AZNE=1239,-1329               / arl noncore
 &ADJDST ADST=7,AZNE=1330,-1399               / alx
 &ADJDST ADST=8,AZNE=1400,-1779               / ffx
 &ADJDST ADST=9,AZNE=1780,-1919               / ldn
 &ADJDST ADST=10,AZNE=1920,-2069              / pw
 &ADJDST ADST=11,AZNE=1030,-1059              / frd
 &ADJDST ADST=12,AZNE=1080,-1109              / how
 &ADJDST ADST=13,AZNE=1110,-1149              / aa
 &ADJDST ADST=14,AZNE=1200,-1229              / chs
 &ADJDST ADST=15,AZNE=1060,-1079              / car
 &ADJDST ADST=16,AZNE=1150,-1199              / cal,stm
 &ADJDST ADST=17,AZNE=2070,-2114              / stf,kg,spts,fbrg
 &ADJDST ADST=18,AZNE=2115,-2129              / fau
 &ADJDST ADST=19,AZNE=2130,-2144              / clk,jef
 &ADJDST ADST=20,AZNE=2145,-2191              / externals

       Non-Work/NHB Transit: (These are not used)
 &NWKDST NDST=1,NZNE=1,-88                    / dc core
 &NWKDST NDST=2,NZNE=89,-319                  / dc noncore
 &NWKDST NDST=3,NZNE=320,-639,648,650         / mtg
 &NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
 &NWKDST NDST=5,NZNE=1230,-1238               / arl core
 &NWKDST NDST=6,NZNE=1239,-1329               / arl noncore
```

```
 &NWKDST NDST=7,NZNE=1330,-1399             / alx
 &NWKDST NDST=8,NZNE=1400,-1779             / ffx
 &NWKDST NDST=9,NZNE=1780,-1919             / ldn
 &NWKDST NDST=10,NZNE=1920,-2069            / pw
 &NWKDST NDST=11,NZNE=1030,-1059            / frd
 &NWKDST NDST=12,NZNE=1080,-1109            / how
 &NWKDST NDST=13,NZNE=1110,-1149            / aa
 &NWKDST NDST=14,NZNE=1200,-1229            / chs
 &NWKDST NDST=15,NZNE=1060,-1079            / car
 &NWKDST NDST=16,NZNE=1150,-1199            / cal,stm
 &NWKDST NDST=17,NZNE=2070,-2114            / stf,kg,spts,fbrg
 &NWKDST NDST=18,NZNE=2115,-2129            / fau
 &NWKDST NDST=19,NZNE=2130,-2144            / clk,jef
 &NWKDST NDST=20,NZNE=2145,-2191            / externals

        Car Occupancy:
 &CARDST CDST=1,CZNE=1,-88                  / dc core
 &CARDST CDST=2,CZNE=89,-319                / dc noncore
 &CARDST CDST=3,CZNE=320,-639,648,650       / mtg
 &CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
 &CARDST CDST=5,CZNE=1230,-1238             / arl core
 &CARDST CDST=6,CZNE=1239,-1329             / arl noncore
 &CARDST CDST=7,CZNE=1330,-1399             / alx
 &CARDST CDST=8,CZNE=1400,-1779             / ffx
 &CARDST CDST=9,CZNE=1780,-1919             / ldn
 &CARDST CDST=10,CZNE=1920,-2069            / pw
 &CARDST CDST=11,CZNE=1030,-1059            / frd
 &CARDST CDST=12,CZNE=1080,-1109            / how
 &CARDST CDST=13,CZNE=1110,-1149            / aa
 &CARDST CDST=14,CZNE=1200,-1229            / chs
 &CARDST CDST=15,CZNE=1060,-1079            / car
 &CARDST CDST=16,CZNE=1150,-1199            / cal,stm
 &CARDST CDST=17,CZNE=2070,-2114            / stf,kg,spts,fbrg
 &CARDST CDST=18,CZNE=2115,-2129            / fau
 &CARDST CDST=19,CZNE=2130,-2144            / clk,jef
 &CARDST CDST=20,CZNE=2145,-2191            / externals


        External Stations:
 &XTERN EDST = 1, EZNE = 2145        /
 &XTERN EDST = 2, EZNE = 2146        /
 &XTERN EDST = 3, EZNE = 2147,-2191   /
```

9 MC_HBW00.ctl

```
mc_hbw.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   HBW    Year: 1994
               Auto Operating Cost (UPARM(12)): 8.5 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year        Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/03/04 msm db  uparms 43-45         iter 0,1,2
   06/03/04 msm mb  uparms 53-55,63-65   iter 0 (no new run)
   06/03/04 msm mb  uparms 53-55,63-65   iter 1,2

Set file names:

&FILES
 J1=  'hbwmu.ptt',
 J3=  'am_wk.skm',
 J4=  'mf_am_wk.far',
 J5=  'am_dr.skm',
 J6=  'mf_am_dr.far',
 J7=  'sovam.skm ',
 HOVA='hov2am.skm ',
 HOVB='hov3am.skm ',
 A1=  'hbwv2.a1f',
 D1=  '..\support\mctf_hbw.asc',
 D2=  '..\support\mccf_hbw.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_hbw.trp',      LIST='mc_hbw.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run.
The first set of UPARMS are those that the user may change.
The second set of UPARMS should not be changed w/o re-calibration
&PARAM
 zones      = 2191
 uparms(1)  = 2
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.870
 uparms(6)  = 3
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 8.5
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 0.90
 uparms(23) = 1.25
 uparms(24) = 2.15
```

```
uparms(26) = 2.845
uparms(27) = 3.703
uparms(28) = 4.732
uparms(30) = 1

uparms(15) = 4.55
uparms(31) = 0.075
uparms(32) = 0.075
uparms(33) = 0.075
uparms(34) = 0.03
uparms(35) = 0.03
uparms(36) = 0.0
uparms(37) = 2.518e-5
uparms(38) = 0.0
uparms(39) = 0.0
uparms(40) = 0.00425
uparms(41) = 0.0
uparms(42) = 0.03
uparms(43) = 2.0499
uparms(44) = 0.5876
uparms(45) = 0.3571
uparms(46) = -4.449e-5
uparms(47) = 0.03
uparms(48) = 0.03
uparms(49) = 0.00425
uparms(50) = 0.00425
uparms(51) = 0.00425
uparms(52) = 0.0
uparms(53) = 4.8310
uparms(54) =  0.8546
uparms(55) = -0.0824
uparms(56) = 0.0
uparms(57) = 0.03
uparms(58) = 0.03
uparms(59) = 0.00425
uparms(60) = 0.00425
uparms(61) = 0.00425
uparms(62) = 0.0
uparms(63) = 4.6175
uparms(64) = 2.4071
uparms(65) = 1.8979
uparms(66) = 0.0
uparms(67) = 0.0
uparms(68) = 0.0
uparms(69) = 0.01124
uparms(70) = 0.02318
uparms(71) = 0.05077
uparms(72) = 0.0
uparms(73) = 0.0
uparms(74) = 0.0
uparms(75) = 0.01124
uparms(76) = 0.02318
uparms(77) = 0.05077
uparms(78) = 0.0
uparms(79) = 0.0
uparms(80) = 1.47162
uparms(81) = 1.88085
uparms(82) = 0.0
uparms(83) = 0.0
uparms(84) = 0.0
uparms(85) = 0.01124
uparms(86) = 0.02318
uparms(87) = 0.05077
uparms(88) = 0.0
uparms(89) = 0.0
uparms(90) = 3.04973
uparms(91) = 2.54494
uparms(92) = 0.0
```

```
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 3
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = -0.03611
 uparms(99) = 0.
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                    / dc core
 &ADJDST ADST=2,AZNE=89,-319                  / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650         / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238              / arl core
 &ADJDST ADST=6,AZNE=1239,-1329              / arl noncore
 &ADJDST ADST=7,AZNE=1330,-1399              / alx
 &ADJDST ADST=8,AZNE=1400,-1779              / ffx
 &ADJDST ADST=9,AZNE=1780,-1919              / ldn
 &ADJDST ADST=10,AZNE=1920,-2069             / pw
 &ADJDST ADST=11,AZNE=1030,-1059             / frd
 &ADJDST ADST=12,AZNE=1080,-1109             / how
 &ADJDST ADST=13,AZNE=1110,-1149             / aa
 &ADJDST ADST=14,AZNE=1200,-1229             / chs
 &ADJDST ADST=15,AZNE=1060,-1079             / car
 &ADJDST ADST=16,AZNE=1150,-1199             / cal,stm
 &ADJDST ADST=17,AZNE=2070,-2114             / stf,kg,spts,fbrg
 &ADJDST ADST=18,AZNE=2115,-2129             / fau
 &ADJDST ADST=19,AZNE=2130,-2144             / clk,jef
 &ADJDST ADST=20,AZNE=2145,-2191             / externals

        Non-Work/NHB Transit: (These are not used)
 &NWKDST NDST=1,NZNE=1,-88                    / dc core
 &NWKDST NDST=2,NZNE=89,-319                  / dc noncore
 &NWKDST NDST=3,NZNE=320,-639,648,650         / mtg
 &NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
 &NWKDST NDST=5,NZNE=1230,-1238              / arl core
 &NWKDST NDST=6,NZNE=1239,-1329              / arl noncore
 &NWKDST NDST=7,NZNE=1330,-1399              / alx
 &NWKDST NDST=8,NZNE=1400,-1779              / ffx
 &NWKDST NDST=9,NZNE=1780,-1919              / ldn
 &NWKDST NDST=10,NZNE=1920,-2069             / pw
 &NWKDST NDST=11,NZNE=1030,-1059             / frd
 &NWKDST NDST=12,NZNE=1080,-1109             / how
 &NWKDST NDST=13,NZNE=1110,-1149             / aa
 &NWKDST NDST=14,NZNE=1200,-1229             / chs
 &NWKDST NDST=15,NZNE=1060,-1079             / car
 &NWKDST NDST=16,NZNE=1150,-1199             / cal,stm
 &NWKDST NDST=17,NZNE=2070,-2114             / stf,kg,spts,fbrg
 &NWKDST NDST=18,NZNE=2115,-2129             / fau
 &NWKDST NDST=19,NZNE=2130,-2144             / clk,jef
 &NWKDST NDST=20,NZNE=2145,-2191             / externals

        Car Occupancy:
 &CARDST CDST=1,CZNE=1,-88                    / dc core
 &CARDST CDST=2,CZNE=89,-319                  / dc noncore
 &CARDST CDST=3,CZNE=320,-639,648,650         / mtg
 &CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
 &CARDST CDST=5,CZNE=1230,-1238              / arl core
 &CARDST CDST=6,CZNE=1239,-1329              / arl noncore
 &CARDST CDST=7,CZNE=1330,-1399              / alx
```

```
 &CARDST CDST=8,CZNE=1400,-1779             / ffx
 &CARDST CDST=9,CZNE=1780,-1919             / ldn
 &CARDST CDST=10,CZNE=1920,-2069            / pw
 &CARDST CDST=11,CZNE=1030,-1059            / frd
 &CARDST CDST=12,CZNE=1080,-1109            / how
 &CARDST CDST=13,CZNE=1110,-1149            / aa
 &CARDST CDST=14,CZNE=1200,-1229            / chs
 &CARDST CDST=15,CZNE=1060,-1079            / car
 &CARDST CDST=16,CZNE=1150,-1199            / cal,stm
 &CARDST CDST=17,CZNE=2070,-2114            / stf,kg,spts,fbrg
 &CARDST CDST=18,CZNE=2115,-2129            / fau
 &CARDST CDST=19,CZNE=2130,-2144            / clk,jef
 &CARDST CDST=20,CZNE=2145,-2191            / externals


        External Stations:
 &XTERN EDST = 1, EZNE = 2145         /
 &XTERN EDST = 2, EZNE = 2146         /
 &XTERN EDST = 3, EZNE = 2147,-2191   /
```

10 MC_HBW30.ctl

```
mc_hbw.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   HBW    Year: 1994
               Auto Operating Cost (UPARM(12)): 7.8 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year       Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/03/04 msm db  uparms 43-45        iter 0,1,2
   06/03/04 msm mb  uparms 53-55,63-65   iter 0 (no new run)
   06/03/04 msm mb  uparms 53-55,63-65   iter 1,2

Set file names:

&FILES
 J1=  'hbwmu.ptt',
 J3=  'am_wk.skm',
 J4=  'mf_am_wk.far',
 J5=  'am_dr.skm',
 J6=  'mf_am_dr.far',
 J7=  'sovam.skm ',
 HOVA='hov2am.skm ',
 HOVB='hov3am.skm ',
 A1=  'hbwv2.a1f',
 D1=  '..\support\mctf_hbw.asc',
 D2=  '..\support\mccf_hbw.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_hbw.trp',      LIST='mc_hbw.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run.
The first set of UPARMS are those that the user may change.
The second set of UPARMS should not be changed w/o re-calibration
&PARAM
 zones      = 2191
 uparms(1)  = 2
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.870
 uparms(6)  = 3
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 7.8
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 0.90
 uparms(23) = 1.25
 uparms(24) = 2.15
 uparms(26) = 2.845
 uparms(27) = 3.703
 uparms(28) = 4.732
 uparms(30) = 1

 uparms(15) = 4.55
 uparms(31) = 0.075
 uparms(32) = 0.075
 uparms(33) = 0.075
 uparms(34) = 0.03
 uparms(35) = 0.03
 uparms(36) = 0.0
 uparms(37) = 2.518e-5
 uparms(38) = 0.0
 uparms(39) = 0.0
 uparms(40) = 0.00425
 uparms(41) = 0.0
 uparms(42) = 0.03
 uparms(43) = 2.0499
 uparms(44) = 0.5876
 uparms(45) = 0.3571
 uparms(46) = -4.449e-5
 uparms(47) = 0.03
```

```
 uparms(48) = 0.03
 uparms(49) = 0.00425
 uparms(50) = 0.00425
 uparms(51) = 0.00425
 uparms(52) = 0.0
 uparms(53) = 4.8310
 uparms(54) =  0.8546
 uparms(55) = -0.0824
 uparms(56) = 0.0
 uparms(57) = 0.03
 uparms(58) = 0.03
 uparms(59) = 0.00425
 uparms(60) = 0.00425
 uparms(61) = 0.00425
 uparms(62) = 0.0
 uparms(63) = 4.6175
 uparms(64) = 2.4071
 uparms(65) = 1.8979
 uparms(66) = 0.0
 uparms(67) = 0.0
 uparms(68) = 0.0
 uparms(69) = 0.01124
 uparms(70) = 0.02318
 uparms(71) = 0.05077
 uparms(72) = 0.0
 uparms(73) = 0.0
 uparms(74) = 0.0
 uparms(75) = 0.01124
 uparms(76) = 0.02318
 uparms(77) = 0.05077
 uparms(78) = 0.0
 uparms(79) = 0.0
 uparms(80) = 1.47162
 uparms(81) = 1.88085
 uparms(82) = 0.0
 uparms(83) = 0.0
 uparms(84) = 0.0
 uparms(85) = 0.01124
 uparms(86) = 0.02318
 uparms(87) = 0.05077
 uparms(88) = 0.0
 uparms(89) = 0.0
 uparms(90) = 3.04973
 uparms(91) = 2.54494
 uparms(92) = 0.0
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 3
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = -0.03611
 uparms(99) = 0.
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                   / dc core
 &ADJDST ADST=2,AZNE=89,-319                 / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650        / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238              / arl core
 &ADJDST ADST=6,AZNE=1239,-1329              / arl noncore
&ADJDST ADST=7,AZNE=1330,-1399              / alx
&ADJDST ADST=8,AZNE=1400,-1779              / ffx
&ADJDST ADST=9,AZNE=1780,-1919              / ldn
&ADJDST ADST=10,AZNE=1920,-2069             / pw
&ADJDST ADST=11,AZNE=1030,-1059             / frd
&ADJDST ADST=12,AZNE=1080,-1109             / how
&ADJDST ADST=13,AZNE=1110,-1149             / aa
&ADJDST ADST=14,AZNE=1200,-1229             / chs
&ADJDST ADST=15,AZNE=1060,-1079             / car
&ADJDST ADST=16,AZNE=1150,-1199             / cal,stm
&ADJDST ADST=17,AZNE=2070,-2114             / stf,kg,spts,fbrg
&ADJDST ADST=18,AZNE=2115,-2129             / fau
&ADJDST ADST=19,AZNE=2130,-2144             / clk,jef
&ADJDST ADST=20,AZNE=2145,-2191             / externals

       Non-Work/NHB Transit: (These are not used)
&NWKDST NDST=1,NZNE=1,-88                   / dc core
&NWKDST NDST=2,NZNE=89,-319                 / dc noncore
&NWKDST NDST=3,NZNE=320,-639,648,650        / mtg
&NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
&NWKDST NDST=5,NZNE=1230,-1238              / arl core
&NWKDST NDST=6,NZNE=1239,-1329              / arl noncore
&NWKDST NDST=7,NZNE=1330,-1399              / alx
&NWKDST NDST=8,NZNE=1400,-1779              / ffx
&NWKDST NDST=9,NZNE=1780,-1919              / ldn
&NWKDST NDST=10,NZNE=1920,-2069             / pw
&NWKDST NDST=11,NZNE=1030,-1059             / frd
&NWKDST NDST=12,NZNE=1080,-1109             / how
&NWKDST NDST=13,NZNE=1110,-1149             / aa
&NWKDST NDST=14,NZNE=1200,-1229             / chs
&NWKDST NDST=15,NZNE=1060,-1079             / car
&NWKDST NDST=16,NZNE=1150,-1199             / cal,stm
&NWKDST NDST=17,NZNE=2070,-2114             / stf,kg,spts,fbrg
&NWKDST NDST=18,NZNE=2115,-2129             / fau
&NWKDST NDST=19,NZNE=2130,-2144             / clk,jef
&NWKDST NDST=20,NZNE=2145,-2191             / externals

       Car Occupancy:
&CARDST CDST=1,CZNE=1,-88                   / dc core
&CARDST CDST=2,CZNE=89,-319                 / dc noncore
&CARDST CDST=3,CZNE=320,-639,648,650        / mtg
&CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
&CARDST CDST=5,CZNE=1230,-1238              / arl core
&CARDST CDST=6,CZNE=1239,-1329              / arl noncore
&CARDST CDST=7,CZNE=1330,-1399              / alx
&CARDST CDST=8,CZNE=1400,-1779              / ffx
&CARDST CDST=9,CZNE=1780,-1919              / ldn
&CARDST CDST=10,CZNE=1920,-2069             / pw
&CARDST CDST=11,CZNE=1030,-1059             / frd
&CARDST CDST=12,CZNE=1080,-1109             / how
&CARDST CDST=13,CZNE=1110,-1149             / aa
&CARDST CDST=14,CZNE=1200,-1229             / chs
&CARDST CDST=15,CZNE=1060,-1079             / car
&CARDST CDST=16,CZNE=1150,-1199             / cal,stm
&CARDST CDST=17,CZNE=2070,-2114             / stf,kg,spts,fbrg
&CARDST CDST=18,CZNE=2115,-2129             / fau
&CARDST CDST=19,CZNE=2130,-2144             / clk,jef
&CARDST CDST=20,CZNE=2145,-2191             / externals


       External Stations:
&XTERN EDST = 1, EZNE = 2145         /
&XTERN EDST = 2, EZNE = 2146         /
&XTERN EDST = 3, EZNE = 2147,-2191   /
```

11 MC_NHB00.ctl

```
mc_nhb.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   NHB    Year: 1994
               Auto Operating Cost (UPARM(12)): 8.5 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year       Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8

Record of revisions:
   Date     Psn Adj Description of change
   06/04/04 msm db  uparms 43        iter 0 (started w/ value of 0.85)
   06/04/04 msm db  uparms 43        iter 1,2 stop
   06/04/04 msm mb  uparms 53,63     iter 0 (no new run),1,2 stop

Set file names:

&FILES
 J1=  'nhbmu.ptt',
 J3=  'op_wk.skm',
 J4=  'mf_op_wk.far',
 J5=  'op_dr.skm',
 J6=  'mf_op_dr.far',
 J7=  'sovop.skm',
 HOVA='hov2op.skm',
 HOVB='hov3op.skm',
 A1=  'nhbv2.a1f',
 D1=  '..\support\mctf_nhb.asc',
 D2=  '..\support\mccf_nhb.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_nhb.trp',      LIST='mc_nhb.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run
&PARAM
zones      = 2191
uparms(1)  = 0
uparms(2)  = 0.0
uparms(3)  = 1.0
uparms(4)  = 0.0
uparms(5)  = 0.780
uparms(6)  = 0
uparms(10) = 1.0
uparms(11) = 0.1
uparms(12) = 8.5
uparms(13) = 82.5
uparms(14) = 82.5
uparms(16) = 2
uparms(17) = 2
uparms(18) = 7
uparms(19) = 2
uparms(20) = 1
uparms(21) = 1
uparms(22) = 1.00
uparms(23) = 0.00
uparms(24) = 0.00
uparms(26) = 2.845
uparms(27) = 0.0
uparms(28) = 0.0
uparms(30) = 1

uparms(15) = 4.38
uparms(31) = 0.06695
uparms(32) = 0.06695
uparms(33) = 0.06695
uparms(34) = 0.03242
uparms(35) = 0.03242
uparms(36) = -1.369e-5
uparms(37) = -1.300e-5
uparms(38) = 0.0
uparms(39) = 0.0
uparms(40) = 0.0
uparms(41) = 0.0
uparms(42) = 0.03242
uparms(43) = 1.4
uparms(44) = 0.0
uparms(45) = 0.0
uparms(46) = 0.0
uparms(47) = 0.03242
uparms(48) = 0.03242
uparms(49) = 0.0
uparms(50) = 0.0
uparms(51) = 0.0
uparms(52) = 0.0
uparms(53) = -0.8541
uparms(54) = 0.0
uparms(55) = 0.0
uparms(56) = -1.659e-5
uparms(57) = 0.03242
uparms(58) = 0.03242
uparms(59) = 0.0
uparms(60) = 0.0
uparms(61) = 0.0
uparms(62) = 0.0
uparms(63) = 0.0760
uparms(64) = 0.0
uparms(65) = 0.0
uparms(66) = 0.86043
uparms(67) = 0.00709
uparms(68) = 0.00709
uparms(69) = 0.0
uparms(70) = 0.0
uparms(71) = 0.0
```

```
 uparms(72) = 0.00187
 uparms(73) = 0.00709
 uparms(74) = 0.00709
 uparms(75) = 0.0
 uparms(76) = 0.0
 uparms(77) = 0.0
 uparms(78) = 0.00187
 uparms(79) = 0.92477
 uparms(80) = 0.0
 uparms(81) = 0.0
 uparms(82) = 0.86043
 uparms(83) = 0.00709
 uparms(84) = 0.00709
 uparms(85) = 0.0
 uparms(86) = 0.0
 uparms(87) = 0.0
 uparms(88) = 0.0
 uparms(89) = 1.41003
 uparms(90) = 0.0
 uparms(91) = 0.0
 uparms(92) = -0.76998
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 1
 uparms(96) = 0.0
 uparms(97) = 0.0
 uparms(98) = 0.0
 uparms(99) = -1.47447
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                   / dc core
 &ADJDST ADST=2,AZNE=89,-319                 / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650        / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238              / arl core
 &ADJDST ADST=6,AZNE=1239,-1329              / arl noncore
 &ADJDST ADST=7,AZNE=1330,-1399              / alx
 &ADJDST ADST=8,AZNE=1400,-1779              / ffx
 &ADJDST ADST=9,AZNE=1780,-1919              / ldn
 &ADJDST ADST=10,AZNE=1920,-2069             / pw
 &ADJDST ADST=11,AZNE=1030,-1059             / frd
 &ADJDST ADST=12,AZNE=1080,-1109             / how
 &ADJDST ADST=13,AZNE=1110,-1149             / aa
 &ADJDST ADST=14,AZNE=1200,-1229             / chs
 &ADJDST ADST=15,AZNE=1060,-1079             / car
 &ADJDST ADST=16,AZNE=1150,-1199             / cal,stm
 &ADJDST ADST=17,AZNE=2070,-2114             / stf,kg,spts,fbrg
 &ADJDST ADST=18,AZNE=2115,-2129             / fau
 &ADJDST ADST=19,AZNE=2130,-2144             / clk,jef
 &ADJDST ADST=20,AZNE=2145,-2191             / externals

        Non-Work/NHB Transit: (These are not used)
 &NWKDST NDST=1,NZNE=1,-88                   / dc core
 &NWKDST NDST=2,NZNE=89,-319                 / dc noncore
 &NWKDST NDST=3,NZNE=320,-639,648,650        / mtg
 &NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
 &NWKDST NDST=5,NZNE=1230,-1238              / arl core
 &NWKDST NDST=6,NZNE=1239,-1329              / arl noncore
 &NWKDST NDST=7,NZNE=1330,-1399              / alx
 &NWKDST NDST=8,NZNE=1400,-1779              / ffx
 &NWKDST NDST=9,NZNE=1780,-1919              / ldn
 &NWKDST NDST=10,NZNE=1920,-2069             / pw
 &NWKDST NDST=11,NZNE=1030,-1059             / frd
 &NWKDST NDST=12,NZNE=1080,-1109             / how
 &NWKDST NDST=13,NZNE=1110,-1149             / aa
 &NWKDST NDST=14,NZNE=1200,-1229             / chs
 &NWKDST NDST=15,NZNE=1060,-1079             / car
 &NWKDST NDST=16,NZNE=1150,-1199             / cal,stm
 &NWKDST NDST=17,NZNE=2070,-2114             / stf,kg,spts,fbrg
 &NWKDST NDST=18,NZNE=2115,-2129             / fau
 &NWKDST NDST=19,NZNE=2130,-2144             / clk,jef
 &NWKDST NDST=20,NZNE=2145,-2191             / externals

        Car Occupancy:
 &CARDST CDST=1,CZNE=1,-88                   / dc core
 &CARDST CDST=2,CZNE=89,-319                 / dc noncore
 &CARDST CDST=3,CZNE=320,-639,648,650        / mtg
 &CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
 &CARDST CDST=5,CZNE=1230,-1238              / arl core
 &CARDST CDST=6,CZNE=1239,-1329              / arl noncore
 &CARDST CDST=7,CZNE=1330,-1399              / alx
 &CARDST CDST=8,CZNE=1400,-1779              / ffx
 &CARDST CDST=9,CZNE=1780,-1919              / ldn
 &CARDST CDST=10,CZNE=1920,-2069             / pw
 &CARDST CDST=11,CZNE=1030,-1059             / frd
 &CARDST CDST=12,CZNE=1080,-1109             / how
 &CARDST CDST=13,CZNE=1110,-1149             / aa
 &CARDST CDST=14,CZNE=1200,-1229             / chs
 &CARDST CDST=15,CZNE=1060,-1079             / car
 &CARDST CDST=16,CZNE=1150,-1199             / cal,stm
 &CARDST CDST=17,CZNE=2070,-2114             / stf,kg,spts,fbrg
 &CARDST CDST=18,CZNE=2115,-2129             / fau
 &CARDST CDST=19,CZNE=2130,-2144             / clk,jef
 &CARDST CDST=20,CZNE=2145,-2191             / externals


        External Stations:
 &XTERN EDST = 1, EZNE = 2145        /
 &XTERN EDST = 2, EZNE = 2146        /
 &XTERN EDST = 3, EZNE = 2147,-2191  /
```

12 MC_NHB30.ctl

```
mc_nhb.ctl - Version 2.1D_19 Mode Choice Model Control File 6/2/04
               Purpose:   NHB    Year: 1994
               Auto Operating Cost (UPARM(12)): 7.8 cents/mi in 1994$

Auto operating costs to be used in Version 2.1D, 19 Travel Model

Year       Auto
        operating
           cost
           1994
        cents/mile

year     aoc1994

1994        9.1
2000        8.5
2005        8.3
2010        8.2
2015        8.1
2020        8.0
2025        7.9
2030        7.8
```

```
Record of revisions:
   Date     Psn Adj Description of change
   06/04/04 msm db  uparms 43        iter 0 (started w/ value of 0.85)
   06/04/04 msm db  uparms 43        iter 1,2 stop
   06/04/04 msm mb  uparms 53,63     iter 0 (no new run),1,2 stop

Set file names:

&FILES
 J1=  'nhbmu.ptt',
 J3=  'op_wk.skm',
 J4=  'mf_op_wk.far',
 J5=  'op_dr.skm',
 J6=  'mf_op_dr.far',
 J7=  'sovop.skm',
 HOVA='hov2op.skm',
 HOVB='hov3op.skm',
 A1=  'nhbv2.a1f',
 D1=  '..\support\mctf_nhb.asc',
 D2=  '..\support\mccf_nhb.asc',
 D3=  '..\support\mc_fac.asc',

 J9='mc_nhb.trp',      LIST='mc_nhb.prn'     /

Set user-coded parameters.  Commonly modified UPARMS are:
 1 : minimum carpool size - HOV "A" (or liberal carpool definition)
 2 : intrazonal transit share
 3 : intrazonal auto driver share
 4 : I/X transit share
 5 : I/X auto driver share
 6 : minimum carpool size - HOV "B" (or stringent carpool definition)
11 : factor to scale input highway distance to whole miles
16 : apply parking cost model
17 : apply highway terminal time model
18 : model application option: 5=nwk per, 6=nwk adr, 7=no nwk
19 : un-transformed zonal data report switch (1=yes, 2=NO)
20 : transformed zonal data report switch (1=yes, 2=NO)
21 : run only MODAS & MODBS
30 : calibration report switch (1=yes, 2=no)

Here is a list of the UPARMS values we will use in this run
&PARAM
 zones      = 2191
 uparms(1)  = 0
 uparms(2)  = 0.0
 uparms(3)  = 1.0
 uparms(4)  = 0.0
 uparms(5)  = 0.780
 uparms(6)  = 0
 uparms(10) = 1.0
 uparms(11) = 0.1
 uparms(12) = 7.8
 uparms(13) = 82.5
 uparms(14) = 82.5
 uparms(16) = 2
 uparms(17) = 2
 uparms(18) = 7
 uparms(19) = 2
 uparms(20) = 1
 uparms(21) = 1
 uparms(22) = 1.00
 uparms(23) = 0.00
 uparms(24) = 0.00
 uparms(26) = 2.845
 uparms(27) = 0.0
 uparms(28) = 0.0
 uparms(30) = 1
 uparms(15) = 4.38
 uparms(31) = 0.06695
 uparms(32) = 0.06695
 uparms(33) = 0.06695
 uparms(34) = 0.03242
 uparms(35) = 0.03242
 uparms(36) = -1.369e-5
 uparms(37) = -1.300e-5
 uparms(38) = 0.0
 uparms(39) = 0.0
 uparms(40) = 0.0
 uparms(41) = 0.0
 uparms(42) = 0.03242
 uparms(43) = 1.4
 uparms(44) = 0.0
 uparms(45) = 0.0
 uparms(46) = 0.0
 uparms(47) = 0.03242
 uparms(48) = 0.03242
 uparms(49) = 0.0
 uparms(50) = 0.0
 uparms(51) = 0.0
 uparms(52) = 0.0
 uparms(53) = -0.8541
 uparms(54) = 0.0
 uparms(55) = 0.0
 uparms(56) = -1.659e-5
 uparms(57) = 0.03242
 uparms(58) = 0.03242
 uparms(59) = 0.0
 uparms(60) = 0.0
 uparms(61) = 0.0
 uparms(62) = 0.0
 uparms(63) = 0.0760
 uparms(64) = 0.0
 uparms(65) = 0.0
 uparms(66) = 0.86043
 uparms(67) = 0.00709
 uparms(68) = 0.00709
 uparms(69) = 0.0
 uparms(70) = 0.0
 uparms(71) = 0.0
 uparms(72) = 0.00187
 uparms(73) = 0.00709
 uparms(74) = 0.00709
 uparms(75) = 0.0
 uparms(76) = 0.0
 uparms(77) = 0.0
 uparms(78) = 0.00187
 uparms(79) = 0.92477
 uparms(80) = 0.0
 uparms(81) = 0.0
 uparms(82) = 0.86043
 uparms(83) = 0.00709
 uparms(84) = 0.00709
 uparms(85) = 0.0
 uparms(86) = 0.0
 uparms(87) = 0.0
 uparms(88) = 0.0
 uparms(89) = 1.41003
 uparms(90) = 0.0
 uparms(91) = 0.0
 uparms(92) = -0.76998
 uparms(93) = 0.0
 uparms(94) = 0.0
 uparms(95) = 1
 uparms(96) = 0.0
```

```
 uparms(97) = 0.0
 uparms(98) = 0.0
 uparms(99) = -1.47447
 uparms(100)= 0.0
 OrigSLWalk = t
 DestSLWalk = t
 UseShort   = t
 /

Set zone-district equivalencies for exogenous modal factors
based on 2191 zone system:
HBW Transit:

 &ADJDST ADST=1,AZNE=1,-88                   / dc core
 &ADJDST ADST=2,AZNE=89,-319                 / dc noncore
 &ADJDST ADST=3,AZNE=320,-639,648,650        / mtg
 &ADJDST ADST=4,AZNE=640,-647,649,651,-1029  / pg
 &ADJDST ADST=5,AZNE=1230,-1238              / arl core
 &ADJDST ADST=6,AZNE=1239,-1329              / arl noncore
 &ADJDST ADST=7,AZNE=1330,-1399              / alx
 &ADJDST ADST=8,AZNE=1400,-1779              / ffx
 &ADJDST ADST=9,AZNE=1780,-1919              / ldn
 &ADJDST ADST=10,AZNE=1920,-2069             / pw
 &ADJDST ADST=11,AZNE=1030,-1059             / frd
 &ADJDST ADST=12,AZNE=1080,-1109             / how
 &ADJDST ADST=13,AZNE=1110,-1149             / aa
 &ADJDST ADST=14,AZNE=1200,-1229             / chs
 &ADJDST ADST=15,AZNE=1060,-1079             / car
 &ADJDST ADST=16,AZNE=1150,-1199             / cal,stm
 &ADJDST ADST=17,AZNE=2070,-2114             / stf,kg,spts,fbrg
 &ADJDST ADST=18,AZNE=2115,-2129             / fau
 &ADJDST ADST=19,AZNE=2130,-2144             / clk,jef
 &ADJDST ADST=20,AZNE=2145,-2191             / externals

        Non-Work/NHB Transit: (These are not used)
 &NWKDST NDST=1,NZNE=1,-88                   / dc core
 &NWKDST NDST=2,NZNE=89,-319                 / dc noncore
 &NWKDST NDST=3,NZNE=320,-639,648,650        / mtg
 &NWKDST NDST=4,NZNE=640,-647,649,651,-1029  / pg
 &NWKDST NDST=5,NZNE=1230,-1238              / arl core
 &NWKDST NDST=6,NZNE=1239,-1329              / arl noncore
 &NWKDST NDST=7,NZNE=1330,-1399              / alx
 &NWKDST NDST=8,NZNE=1400,-1779              / ffx
 &NWKDST NDST=9,NZNE=1780,-1919              / ldn
 &NWKDST NDST=10,NZNE=1920,-2069             / pw
 &NWKDST NDST=11,NZNE=1030,-1059             / frd
 &NWKDST NDST=12,NZNE=1080,-1109             / how
 &NWKDST NDST=13,NZNE=1110,-1149             / aa
 &NWKDST NDST=14,NZNE=1200,-1229             / chs
 &NWKDST NDST=15,NZNE=1060,-1079             / car
 &NWKDST NDST=16,NZNE=1150,-1199             / cal,stm
 &NWKDST NDST=17,NZNE=2070,-2114             / stf,kg,spts,fbrg
 &NWKDST NDST=18,NZNE=2115,-2129             / fau
 &NWKDST NDST=19,NZNE=2130,-2144             / clk,jef
 &NWKDST NDST=20,NZNE=2145,-2191             / externals

        Car Occupancy:
 &CARDST CDST=1,CZNE=1,-88                   / dc core
 &CARDST CDST=2,CZNE=89,-319                 / dc noncore
 &CARDST CDST=3,CZNE=320,-639,648,650        / mtg
 &CARDST CDST=4,CZNE=640,-647,649,651,-1029  / pg
 &CARDST CDST=5,CZNE=1230,-1238              / arl core
 &CARDST CDST=6,CZNE=1239,-1329              / arl noncore
 &CARDST CDST=7,CZNE=1330,-1399              / alx
 &CARDST CDST=8,CZNE=1400,-1779              / ffx
 &CARDST CDST=9,CZNE=1780,-1919              / ldn
 &CARDST CDST=10,CZNE=1920,-2069             / pw
 &CARDST CDST=11,CZNE=1030,-1059             / frd
 &CARDST CDST=12,CZNE=1080,-1109             / how
 &CARDST CDST=13,CZNE=1110,-1149             / aa
 &CARDST CDST=14,CZNE=1200,-1229             / chs
 &CARDST CDST=15,CZNE=1060,-1079             / car
 &CARDST CDST=16,CZNE=1150,-1199             / cal,stm
 &CARDST CDST=17,CZNE=2070,-2114             / stf,kg,spts,fbrg
 &CARDST CDST=18,CZNE=2115,-2129             / fau
 &CARDST CDST=19,CZNE=2130,-2144             / clk,jef
 &CARDST CDST=20,CZNE=2145,-2191             / externals


        External Stations:
 &XTERN EDST = 1, EZNE = 2145        /
 &XTERN EDST = 2, EZNE = 2146        /
 &XTERN EDST = 3, EZNE = 2147,-2191  /
```

13 NT_AM.ctl

```
NT_AM.CTL  -   Control File for the NODESTB program (by J.Bruggeman)
              The program creates a fixed format stop nodes file
              using TRNBUILD line files.

Time Period:  AM Peak Hour
 &FILES
   fline(1)='MODE1AM.TB'
   fline(2)='MODE2AM.TB'
   fline(3)='MODE3AM.TB'
   fline(4)='MODE4AM.TB'
   fline(5)='MODE6AM.TB'
   fline(6)='MODE7AM.TB'
   fline(7)='MODE8AM.TB'
   fline(8)='MODE9AM.TB'
   FNODES  ='nt_am.asc'
   FRPT    ='nt_am.rpt'   /
 &PARAMS
   PERIOD=0    /
 &OPTIONS
   STONLY=T,
   plain=T     /
 &FACILS       /
```

14 NT_OP.ctl

```
NT_OP.CTL  -   Control File for the NODESTB program (by J.Bruggeman)
              The program creates a fixed format stop nodes file
              using TRNBUILD line files.

Time Period:  Off-Peak
 &FILES
   fline(1)='MODE1OP.TB'
   fline(2)='MODE2OP.TB'
   fline(3)='MODE3OP.TB'
   fline(4)='MODE4OP.TB'
   fline(5)='MODE6OP.TB'
   fline(6)='MODE7OP.TB'
   fline(7)='MODE8OP.TB'
   fline(8)='MODE9OP.TB'
   FNODES  ='nt_op.asc'
   FRPT    ='nt_op.rpt'   /
 &PARAMS
   PERIOD=0    /
 &OPTIONS
   STONLY=T,
```

```
  plain=T    /
 &FACILS      /
```

15 staprotp.ctl

```
staprotp.ctl
  Control File for STAPROTP.EXE Program

  The 2 INPUT files are:
  unit  7  statf - the consolidated station file
  unit  8  rlnkf - the metrorail/commuter rail link file

  The 14 OUTPUT files are:

  unit 11  metlnkf - metrorail     link file
  unit 28  metlnkm1- metrorail     link file for metro sta. net building
  unit 12  comlnkf - commuter rail link file

  unit 13  metnodf - metrorail station nodes
  unit 29  metnodm1- metrorail station nodes for metro sta. net. building
  unit 14  comnodf - commuter rail     nodes

  unit 15  metpnrf - metrorail     PNR nodes
  unit 16  compnrf - commuter rail PNR nodes
  unit 17  buspnrf - bus           PNR Nodes

  unit 18  mpnrlf  - metrorail      PNR Connector Links
  unit 19  cpnrlf  - commuter rail  PNR Connector Links
  unit 20  bpnrlf  - bus            PNR Connector Links

  unit 21  metblf  - metrorail/bus connector Links
  unit 22  comblf  - comm.rail/bus connector Links

  unit 23  tazpnrf - TAZ-PNR Node equiv file (for MATRIX Run)
  unit 24  mf1a1   - A1 Deck Input file to MFARE1 program
  unit 25  s_pxyf  - station and pnr lot xys (unformated)

&files

   statf   = 'inputs\sta_tpp.bse'
   rlnkf   = 'inputs\rail_lnk.bse'

   metlnkf = 'MET_LINK.TB'
   metlnkm1= 'METLNKM1.TB'
   comlnkf = 'COM_LINK.TB'
   metnodf = 'MET_NODE.TB'
   metnodm1= 'METNODM1.TB'
   comnodf = 'COM_NODE.TB'
   metpnrf = 'MET_PNRN.TB'
   compnrf = 'COM_PNRN.TB'
   buspnrf = 'BUS_PNRN.TB'
   mpnrlf  = 'MET_PNRL.TB'
   cpnrlf  = 'COM_PNRL.TB'
   bpnrlf  = 'BUS_PNRL.TB'
   metblf  = 'MET_BUS.TB'
   comblf  = 'COM_BUS.TB'
   tazpnrf = 'TAZPNR.asc'
   mf1a1   = 'mfare1.a1'
   s_pxyf  = 'stapnr.xys'
   /
```

16 Walk_AM.CTL

```
walk_am.ctl
  Control File for WLKLNKtp.EXE Program
  2005-02-25 Modified to incorporate LRT

   FILES  section refers to INPUT FILE references
  The 2 INPUT files are:
  unit  7  gisslf  - GIS file with short/long walk pcts, distances
  unit  8  cntconnf- walk access links from cnt conn pgm
  unit  9  gisconnf - GIS Rail related Walk access links

  The 1 OUTPUT file is:
  unit 11  finwlkf - final walk access links file in TRNBUILD format

   PARAMS section refers to node ranges of Rail
   Node range(s).  Range 1 is from railnr11 to railnr12 for Metrorail/commRail
                   Range 2 is from railnr21 to railnr22 for LRT
&files
   gisslf   = 'shlgam.asc'
   cntconnf = 'ct2_am.asc'
   gisconnf = 'inputs\giswklam.asc'
   finwlkf  = 'walk_am.tb'
   fwlkpctf = 'shlgam.fin'
   /

&params
   railnr11 = 7301
   railnr12 = 7999
   railnr21 =20000
   railnr22 =22000
   /
```

17 Walk_OP.CTL

```
walk_op.ctl
  Control File for WLKLNKtp.EXE Program
  2005-02-25 Modified to incorporate LRT

   FILES  section refers to INPUT FILE references
  The 2 INPUT files are:
  unit  7  gisslf  - GIS file with short/long walk pcts, distances
  unit  8  cntconnf- walk access links from cnt conn pgm
  unit  9  gisconnf - GIS Rail related Walk access links

  The 1 OUTPUT file is:
  unit 11  finwlkf - final walk access links file in TRNBUILD format

   PARAMS section refers to node ranges of Rail
   Node range(s).  Range 1 is from railnr11 to railnr12 for Metrorail/commRail
                   Range 2 is from railnr21 to railnr22 for LRT
&files
   gisslf   = 'shlgop.asc'
   cntconnf = 'ct2_op.asc'
   gisconnf = 'inputs\giswklop.asc'
   finwlkf  = 'walk_op.tb'
   fwlkpctf = 'shlgop.fin'
   /

&params
   railnr11 = 7301
   railnr12 = 7999
   railnr21 =20000
   railnr22 =22000
   /
```