Metropolitan Washington Council of Governments
National Capital Region Transportation Planning Board

COG/TPB Travel Forecasting Model, Version 2.2

Specification, Validation, and User's Guide

DRAFT

January 19, 2007

The preparation of this report was financially aided through grants from the District of Columbia Department of Transportation, the Maryland Department of Transportation, the Virginia Department of Transportation, and the U.S. Department of Transportation (Federal Highway Administration and Federal Transit Administration) under the Urban Mass Transit Act of 1964, as amended. The material herein does not necessarily reflect the views of the sponsoring agencies.

Title	**Date**	January 19, 2007
COG/TPB Travel Forecasting Model, Version 2.2: Specification, Validation, and User's Guide	**Number of pages**	150+
	Publication number	
	Availability	In PDF form at www.mwcog.org

Agency

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.

Copies of this report can be found on the MWCOG Web Site:

www.mwcog.org/transportation/committee/committee/default.asp?COMMITTEE_ID=43

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

Table of Contents: Model Specification and Validation

Table of Contents: User's Guide

Appendices

List of Figures

List of Tables

List of Equations

List of Exhibits

Chapter 1 Introduction

The Metropolitan Washington Council of Governments (COG) serves as the regional planning organization for the Washington metropolitan area. The National Capital Region Transportation Planning Board (TPB) is the designated Metropolitan Planning Organization (MPO) for transportation for the Washington region. Like most major MPOs in the United States, the TPB maintains a four-step transportation planning model that is used to analyze regional transportation and air quality planning. A modeling capability is necessary for satisfying several stringent federal requirements impacting how transportation plans and programs are studied. Travel forecasting methods must be continually evaluated and refined as new data is collected, as new methods emerge from the research community, and as new questions arise from local decision-makers.

This report documents the COG/TPB Version 2.2 regional travel demand model. The model is the product of several activities that have occurred during the past two years as part of the TPB's Models Development program. The Models Development program 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 local project planning work.

The TPB's short-term 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 TPB's existing travel model, Version 2.1D#50 (COG/TPB 2004.11.17A, B). However, the refinements now incorporated into the Version 2.2 model are numerous and affect each step of the modeling chain to varying degrees. The remainder of this chapter addresses the major refinements of Version 2.2 (Section 1.1), followed by an overview of the model (Section 1.2). The remainder of the report is arranged in three parts. Part 1 (Chapters 2 through 8) addresses the specification of the model inputs and model components, from trip generation through traffic assignment. Much of the model specification is identical to the Version 2.1 D model. The Version 2.2 model was not re-estimated with new data, but some adjustments were made to the home-based work (HBW) trip distribution and mode choice models, based on comparisons of the model with data from the 2000 Census Transportation Planning Package (CTPP). Part 2 (Chapter 9) comprises the model validation and Part 3 (Chapters 10 through 21) is the user's guide, describing the application of the model. This report also includes a series of technical appendices, including new flow charts that were not part of the previous user's guide.

1.1 *Summary of Refinements in Version 2.2 Model*

The key refinements of the Version 2.2 travel model are summarized 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.
- 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 growth trends at individual stations, and socio-economic growth trends between 2000 and 2030. Based on this analysis, the growth assumption has been revised on a station-by-station basis, and 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 may now congest down to 2 mph under extreme congested conditions, compared to a bottom speed of 11 to 13 mph that was found in the Version 2.1D model. Furthermore a queuing delay function has been added to freeway and ramp links. The function imposes additional time to freeways links based upon the computed V/C ratio to represent queuing. 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 in mode choice. 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. The re-estimated models have been adapted into new application programs as TP+ scripts. These models were formerly applied as Fortran executables. It is important to note that the zonal income index that is maintained in the zonal land use file (ZONE.ASC) has been reformulated in accordance with the 2000 Census data.
- Several legacy Fortran programs have been converted into TP+ scripts. These include programs historically used for developing zonal transit fares (MFARE1 and MFARE2) and for applying trip generation (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+ step has been added to the model chain in order to develop base deflation factors for converting transit and highway costs from current year dollars to base/constant year dollars. This capability will facilitate the consistency in cost deflation across modes, and will also enable the analyst to quickly specify alternative cost escalation policies.
- Airport trip forecasts have been updated using the 2000 Regional Air Passenger Survey. Prior forecasts where 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 allows more accurate coding of transit lines. 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.

1.2 *Commercial Vehicle Model*

The inclusion of an explicit commercial vehicle model is one of the major improvements of the TPB's Version 2.2 model, and some additional information is provided here. 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 used 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 previously characterized previously 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 was cleaned, a model was developed to develop daily commercial vehicle volumes for the universe of highway links. The "synthetic" commercial counts where 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 TMIP Quick Response Freight Manual (QRFM) 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 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 i/j level. Delta tables may be either additive or multiplicative. The latter type 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 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, below. It is important to point out that, with the provision of the commercial model, a measured reduction in NHB trip generation 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 to be 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 a four-step model that is based on a 2,191 transportation analysis zone (TAZ) system. The study area is comprised of 22 jurisdictions in all, extending over four states: the District of Columbia[1], Maryland, Virginia, and West Virginia as shown on Figure 1-1. It is important to note that this

[1] The District of Columbia is administratively treated by the TPB as a state.

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 depiction of the Version 2.2 model structure is shown on Figure 1-2. The figure illustrates the basic inputs and outputs associated with each modeling steps.

The demographic models which are first applied for the purpose of disaggregating the total number of zonal households among 64 cross-classes: 4 household income groups[2] by 4 household size groups (1, 2, 3, 4+) 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 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, and Heavy trucks comprise all large combination vehicles.

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 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

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

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.

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

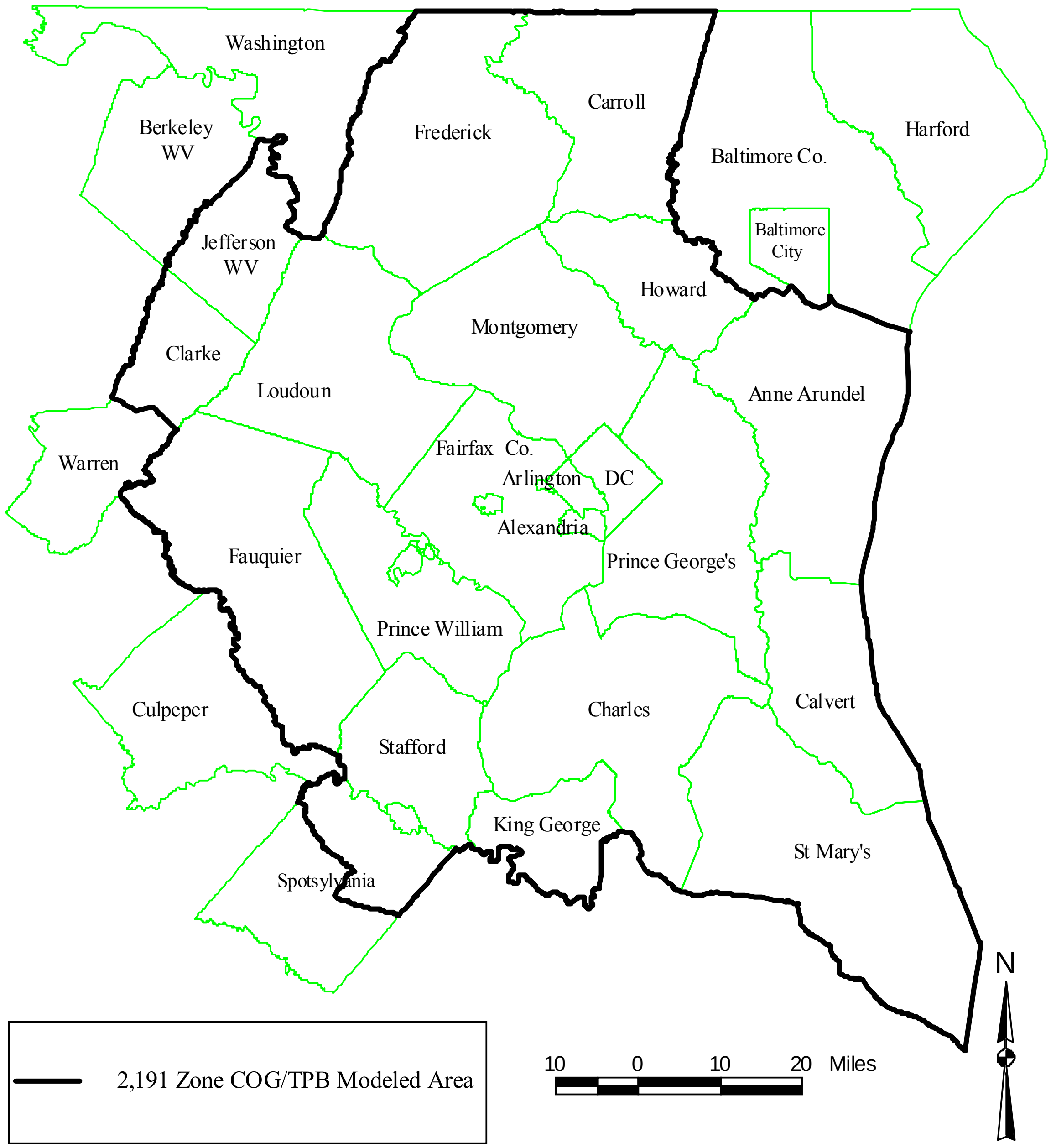
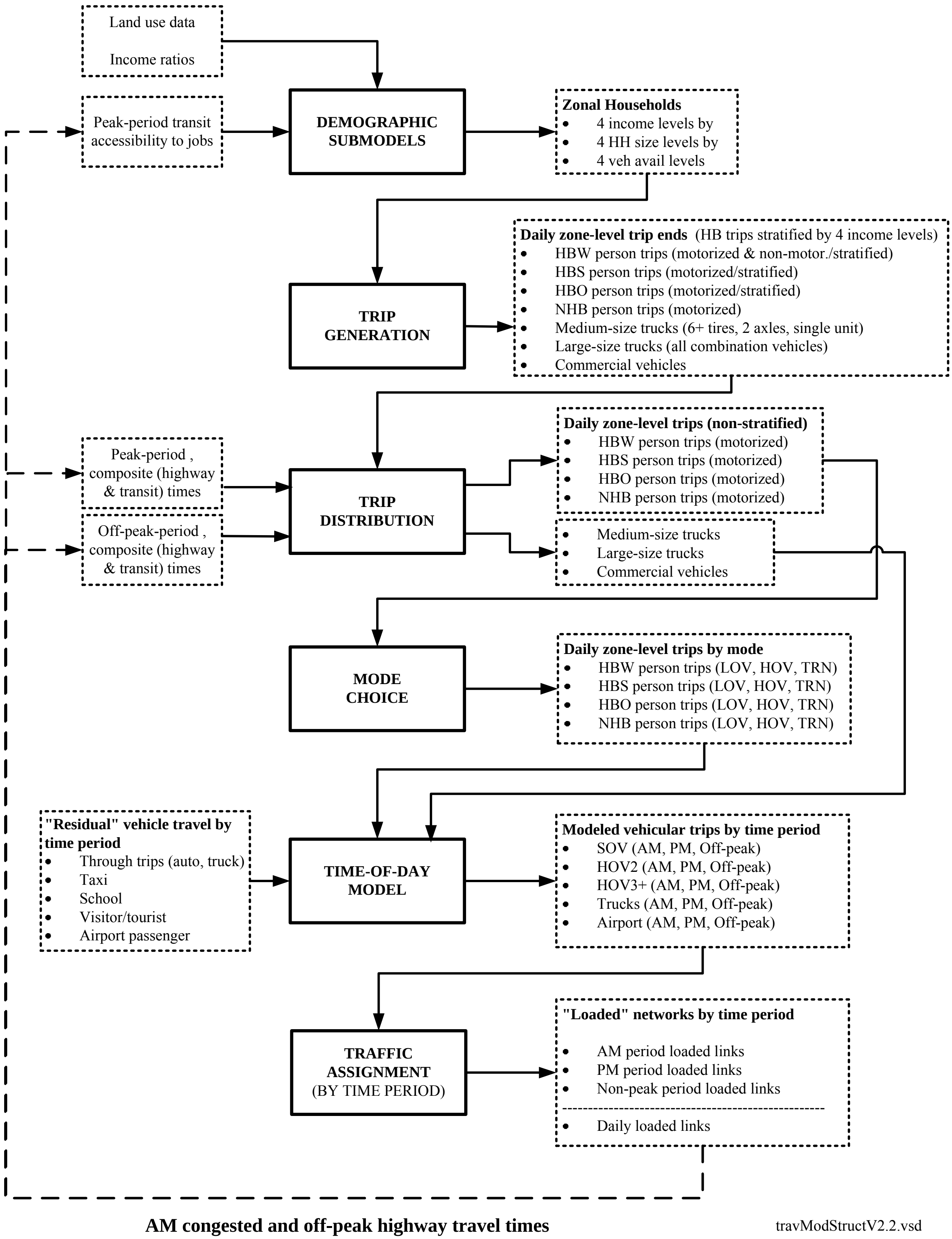


Figure 1-2 Version 2.2 Travel Model Structure



travModStructV2.2.vsd

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 trip orientation, i.e. home-to-non-home or non-home-to-home. This step also includes provisions for apportioning daily residual travel[3] 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 separate assignment executions, which correspond to the above mentioned three time periods. 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. PM travel times are not recycled. A link-level method of successive averaging (MSA) process is applied after each successive highway assignment process to ensure converging highway volumes and speeds. The model uses 20 user equilibrium traffic assignment iterations and six speed-feedback iterations. The highway assignment report file includes a number of equilibrium closure statistics, the newest which is the "relative gap" (RELGAP).[4]

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

Chapter 2 Inputs to the Travel Model

This chapter describes the land use and non-modeled trip files that have been prepared for the Version 2.2 model application. The land use files are developed from COG's Cooperative Forecasting program. Non-modeled 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. These are detailed below.

2.1 *Round 7.0A Land Use*

The Version 2.2 model requires 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 in known as Round 7.0A Cooperative Forecasts, released in August 2006. The Cooperative Forecast files consist of zonal forecasts of households, household population, group quarters population, and employment by category (retail, office, industrial, and other). The files also include a jurisdiction code that is utilized by the travel model, ranging from 0 to 23. The Round 7.0A land use forecasts are provided in five-year increments, from 2000 to 2030.

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 7.0A files (COG/TPB 2006.08.11), but the adjustments were made only to jurisdictions outside of the COG member area. In addition to land use data, the standard zonal land use file requires additional zonal data that do not vary by year, including the 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. Given that the household income submodel was recently updated, the zonal income index defined previously (from the 1990 CTPP) was recently updated based on the 2000 CTPP (COG/TPB 2006.08.11).

The Round 7.0A 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).

Table 2-1 Round 7.0A Land Use Forecasts for Version 2.2 Modeling (w/ CTPP Employment Adjustments)

Year	HH	HHPOP	GQPop	TotPop	TotEMP	OffEMP	RetEMP	IndEMP	OthEMP
2000	2,143,412	5,632,182	115,927	5,748,109	3,441,382	1,628,792	630,271	459,905	722,414
2001	2,184,397	5,737,574	116,621	5,854,206	3,495,953	1,652,006	644,086	467,995	731,896
2002	2,225,373	5,842,960	117,334	5,960,294	3,550,546	1,675,208	657,878	476,110	741,372
2003	2,266,399	5,948,364	118,045	6,066,409	3,605,157	1,698,421	671,672	484,173	750,869
2004	2,307,375	6,053,750	118,758	6,172,497	3,659,750	1,721,623	685,464	492,288	760,345
2005	2,348,360	6,159,142	119,452	6,278,594	3,714,321	1,744,837	699,279	500,378	769,827
2006	2,389,612	6,259,576	120,331	6,379,926	3,792,409	1,786,672	712,794	509,032	783,810
2007	2,430,888	6,360,032	121,228	6,481,265	3,870,493	1,828,568	726,335	517,674	797,838
2008	2,472,108	6,460,457	122,132	6,582,584	3,948,620	1,870,488	739,896	526,420	811,894
2009	2,513,384	6,560,913	123,029	6,683,923	4,026,704	1,912,384	753,437	535,062	825,922
2010	2,554,636	6,661,347	123,908	6,785,255	4,104,792	1,954,219	766,952	543,716	839,905
2011	2,592,637	6,747,104	124,541	6,871,656	4,165,345	1,985,921	777,823	551,546	849,991
2012	2,630,630	6,832,889	125,174	6,958,079	4,225,889	2,017,594	788,696	559,397	860,119
2013	2,668,616	6,918,632	125,843	7,044,459	4,286,562	2,049,383	799,642	567,299	870,321
2014	2,706,609	7,004,417	126,476	7,130,882	4,347,106	2,081,056	810,515	575,150	880,449
2015	2,744,610	7,090,174	127,109	7,217,283	4,407,659	2,112,758	821,386	582,980	890,535
2016	2,775,237	7,161,847	127,810	7,289,653	4,463,366	2,141,562	831,574	590,263	899,992
2017	2,805,907	7,233,528	128,502	7,362,035	4,519,064	2,170,358	841,739	597,557	909,436
2018	2,836,597	7,305,239	129,226	7,434,460	4,574,765	2,199,139	851,913	604,790	918,897
2019	2,867,267	7,376,920	129,918	7,506,842	4,630,463	2,227,935	862,078	612,084	928,341
2020	2,897,894	7,448,593	130,619	7,579,212	4,686,170	2,256,739	872,266	619,367	937,798
2021	2,926,518	7,516,612	131,523	7,648,144	4,738,459	2,282,809	880,843	627,372	947,429
2022	2,955,162	7,584,649	132,440	7,717,097	4,790,740	2,308,877	889,428	635,410	957,067
2023	2,983,813	7,652,674	133,366	7,786,032	4,843,045	2,334,895	898,014	643,388	966,706
2024	3,012,457	7,720,711	134,283	7,854,985	4,895,326	2,360,963	906,599	651,426	976,344
2025	3,041,081	7,788,730	135,187	7,923,917	4,947,615	2,387,033	915,176	659,431	985,975
2026	3,067,834	7,852,977	136,154	7,989,128	4,997,160	2,410,914	924,043	667,046	995,008
2027	3,094,597	7,917,258	137,109	8,054,379	5,046,738	2,434,851	932,971	674,693	1,004,116
2028	3,121,383	7,981,545	138,083	8,119,616	5,096,350	2,458,831	941,913	682,422	1,013,291
2029	3,148,146	8,045,826	139,038	8,184,867	5,145,928	2,482,768	950,841	690,069	1,022,399
2030	3,174,899	8,110,073	140,005	8,250,078	5,195,473	2,506,649	959,708	697,684	1,031,432

Sudirectory: I:\ateam\mod_inputs\lu\rnd70a_2000CTPPIncRatio_2006_10_27

2.2 *External and Through Forecasts*

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 station level;
5. a file containing external auto-person and truck productions by purpose (excluding commercial trips), at the station level;
6. a file containing external auto-person and truck attractions by purpose (excluding commercial trips), at the 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 (these data are collected via roadside surveys). The working assumption, in recent years, assumed that external traffic would grow uniformly at each station at a constant rate of 3% annually. More recently, however, this assumption has been revised based on a more rigorous review of growth indicators, including the forecasted capacity at external stations, historical traffic growth trends, and projected land use growth near external stations (COG/TPB 2006.06.30, Chapter 2). This information suggested that the annual growth assumption should be revised on a facility-specific basis, from 1.1% to 2.7% (the average annual growth rate across all stations is now 1.8%).

A summary of the revised external and through trips are shown on Table 2-2. The projected total external travel shown for 2030, 2.071 million vehicles, is now about 70% of what it would be with a 3% annual growth assumption (about 2.950 million trips). External productions and attractions are shown in greater detail, by 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 Drv Control	Truck Control	Auto XX Trip-Ends	ComVehXX Trip-Ends	Auto XI Adr Trips	Auto IX Adr Trips	TruckXX 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	1,241,868	1,025,617	116,596	71,598	5,442	496,841	451,736	61,065	27,765	27,765
2002	1,268,380	1,047,815	119,218	73,196	5,567	507,774	461,279	62,450	28,384	28,384
2003	1,295,320	1,070,372	121,883	74,819	5,694	518,883	470,976	63,857	29,013	29,013
2004	1,322,688	1,093,287	124,590	76,468	5,824	530,169	480,827	65,287	29,651	29,651
2005	1,350,398	1,116,488	127,330	78,137	5,955	541,596	490,801	66,735	30,298	30,298
2006	1,387,429	1,147,495	130,993	80,368	6,130	556,867	504,130	68,670	31,162	31,162
2007	1,425,145	1,179,074	134,723	82,640	6,308	572,420	517,706	70,640	32,042	32,042
2008	1,463,631	1,211,298	138,530	84,959	6,490	588,291	531,558	72,651	32,940	32,940
2009	1,502,887	1,244,166	142,413	87,324	6,676	604,479	545,688	74,702	33,856	33,856
2010	1,542,997	1,277,751	146,380	89,741	6,865	621,019	560,125	76,797	34,791	34,791
2011	1,571,648	1,301,740	149,214	91,467	7,001	632,834	570,438	78,294	35,460	35,460
2012	1,600,811	1,326,158	152,098	93,224	7,139	644,861	580,935	79,818	36,140	36,140
2013	1,630,317	1,350,863	155,017	95,001	7,278	657,028	591,556	81,359	36,829	36,829
2014	1,660,251	1,375,926	157,977	96,805	7,420	669,372	602,330	82,923	37,527	37,527
2015	1,690,697	1,401,419	160,989	98,639	7,564	681,927	613,289	84,514	38,238	38,238
2016	1,716,953	1,423,403	163,586	100,221	7,688	692,755	622,739	85,885	38,850	38,850
2017	1,743,636	1,445,745	166,225	101,829	7,814	703,758	632,344	87,279	39,473	39,473
2018	1,770,576	1,468,302	168,890	103,452	7,941	714,868	642,041	88,687	40,101	40,101
2019	1,797,858	1,491,145	171,588	105,095	8,070	726,118	651,861	90,112	40,738	40,738
2020	1,825,483	1,514,274	174,320	106,760	8,201	737,510	661,804	91,555	41,383	41,383
2021	1,850,285	1,535,041	176,774	108,254	8,318	747,738	670,731	92,851	41,961	41,961
2022	1,875,429	1,556,094	179,260	109,769	8,437	758,106	679,782	94,165	42,548	42,548
2023	1,900,744	1,577,290	181,764	111,294	8,557	768,546	688,894	95,487	43,139	43,139
2024	1,926,401	1,598,773	184,302	112,840	8,678	779,126	698,129	96,828	43,737	43,737
2025	1,952,314	1,620,470	186,865	114,401	8,801	789,812	707,456	98,182	44,342	44,342
2026	1,975,577	1,639,948	189,166	115,802	8,911	799,405	715,829	99,397	44,885	44,885
2027	1,999,096	1,659,640	191,492	117,219	9,022	809,104	724,295	100,626	45,433	45,433
2028	2,022,872	1,679,547	193,844	118,652	9,134	818,909	732,853	101,868	45,988	45,988
2029	2,046,818	1,699,598	196,212	120,094	9,247	828,784	741,472	103,119	46,547	46,547
2030	2,071,022	1,719,863	198,606	121,553	9,362	838,765	750,184	104,383	47,111	47,111

I:\ateam\mod_inputs\externals\2007-1-11

Ref: ExtAutTrk_CV.txt

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 non-modeled trips consist of taxis, school, and visitor/tourist auto drivers trips (also collectively referred to as 'miscellaneous trips') and airport passenger auto driver trips. The trip totals of these trips are shown on Table 2-5. All of these trips are based on surveyed travel patterns that have been growth factored through time. The airport trips have recently been developed 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 and Airport Passenger Auto Driver Forecasts

Year	School	Taxi	Visitor/ Tourist	Airport
2000	250,448	111,246	222,227	49,723
2001	255,129	113,337	226,490	49,657
2002	259,809	115,428	230,753	49,588
2003	264,490	117,518	235,016	49,522
2004	269,170	119,609	239,279	49,453
2005	273,851	121,700	243,542	49,386
2006	278,407	123,715	247,527	52,871
2007	282,964	125,730	251,512	56,356
2008	287,520	127,746	255,496	59,844
2009	292,077	129,761	259,481	63,329
2010	296,633	131,776	263,466	66,814
2011	300,347	134,043	267,660	69,852
2012	304,060	136,310	271,853	72,891
2013	307,774	138,578	276,047	75,928
2014	311,487	140,845	280,240	78,967
2015	315,201	143,112	284,434	82,006
2016	318,127	144,191	286,834	84,343
2017	321,053	145,270	289,234	86,680
2018	323,979	146,350	291,633	89,021
2019	326,905	147,429	294,033	91,358
2020	329,831	148,508	296,433	93,695
2021	332,552	149,544	298,480	95,254
2022	335,273	150,580	300,527	96,815
2023	337,994	151,616	302,574	98,378
2024	340,715	152,652	304,621	99,938
2025	343,436	153,688	306,668	101,498
2026	346,932	155,598	309,981	103,166
2027	350,429	157,508	313,294	104,837
2028	353,925	159,418	316,607	106,512
2029	357,422	161,328	319,920	108,182
2030	360,918	163,238	323,233	109,851

Ref: I:\ateam\mod_inputs\misc\ and I:\ateam\mod_inputs\airport\ and extrnalPsAs.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. This is because the Census data does not provide individual household incomes, but rather, reports household income tabulations *at zone level* in terms of the number of households falling in 26 discrete income ranges (for reasons of confidentiality). 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.

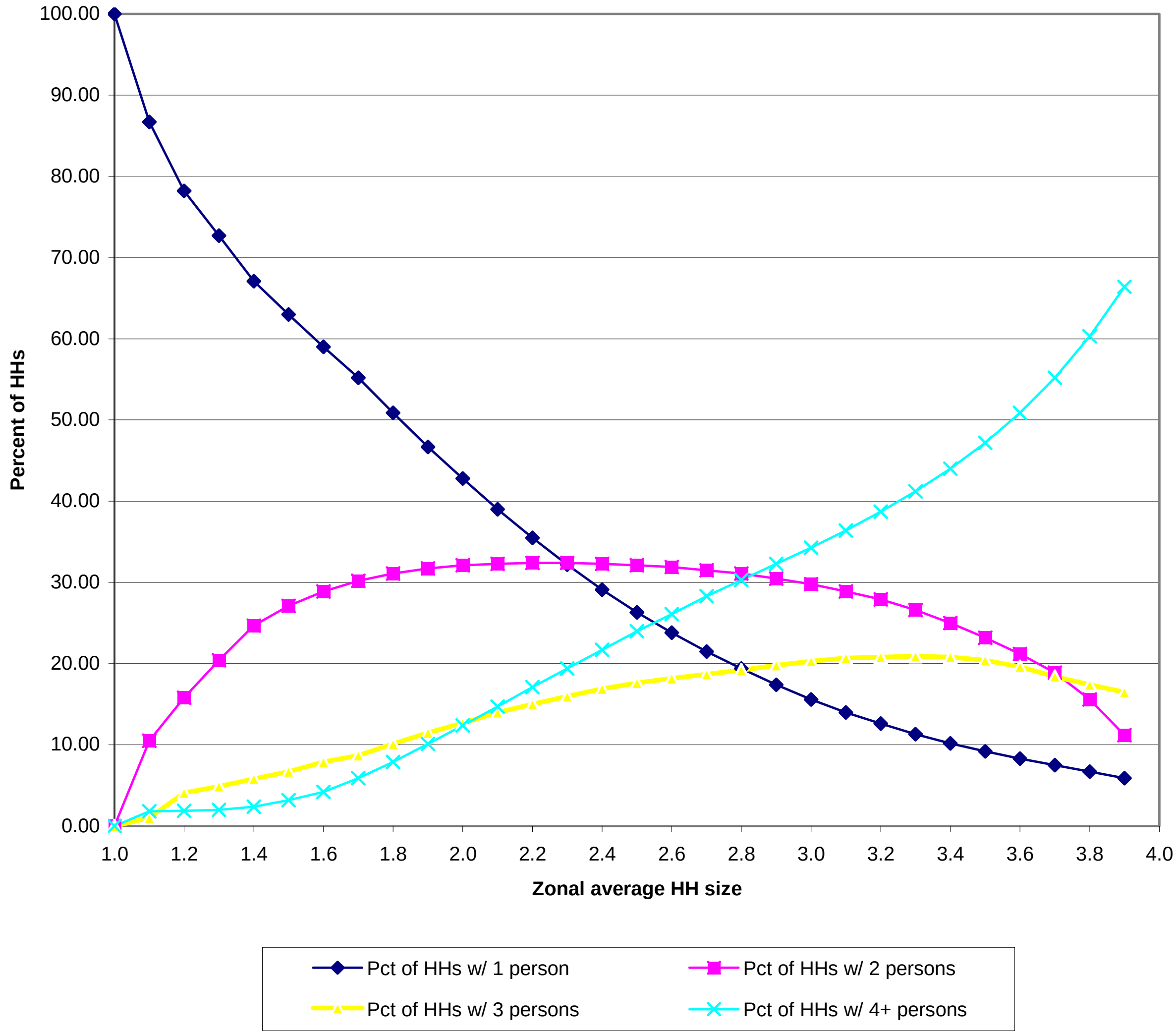
3.2 Household Size Sub-model

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*

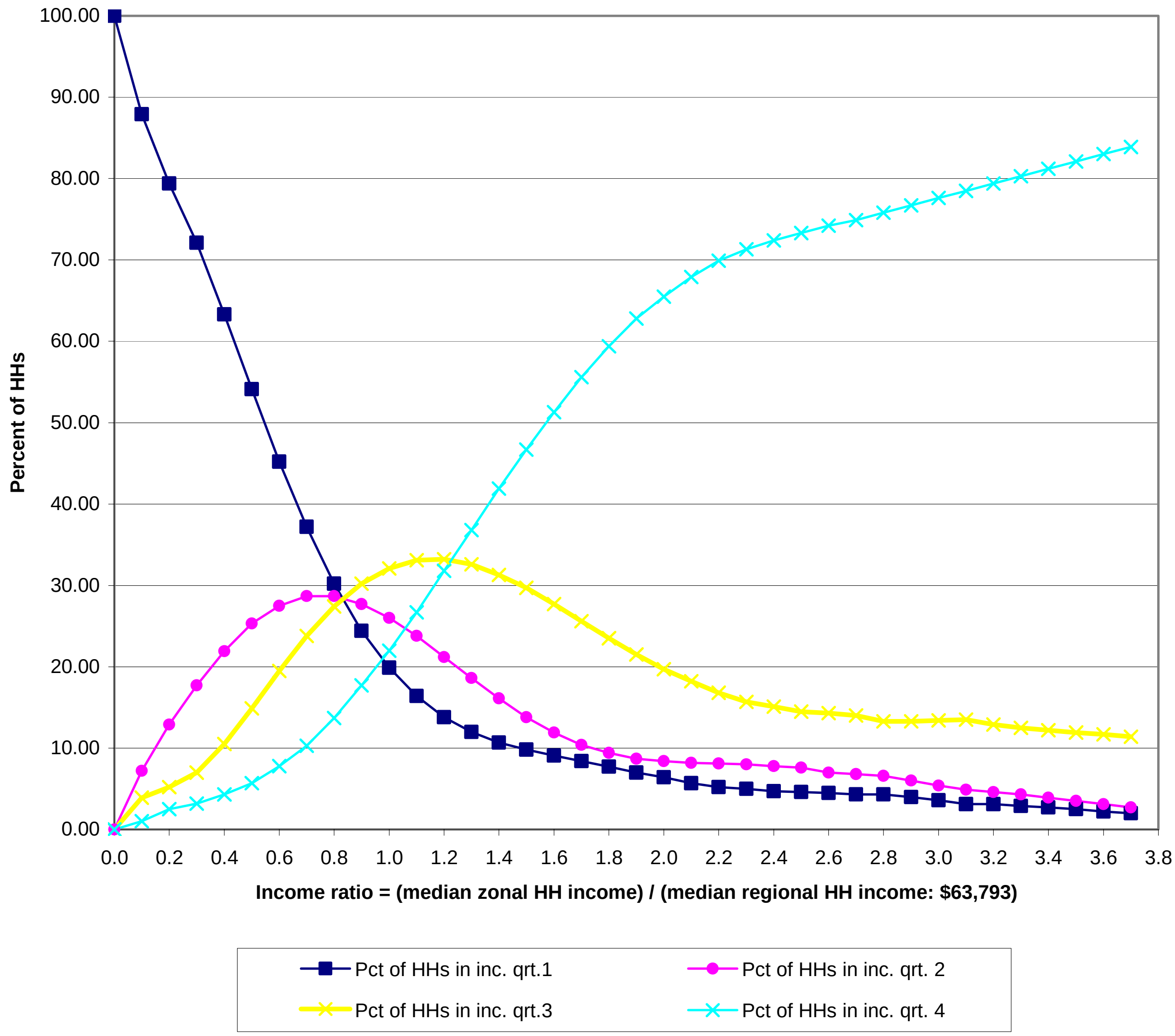
The household income sub-model is also an "aggregate share" model and is, therefore, similar in form to the household size sub-model. The household income sub-model is used to estimate the share of households in each of the four income quartiles in each zone, given the median household income for the 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

Income ratio = (zonal median HH income in 1999) / (regional median HH income in 1999)

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, 1994 (1 to 7)	0.0668
		x		Area type, 1994 (1 to 7)	0.2783
			x	Area type, 1994 (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 1.22, 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

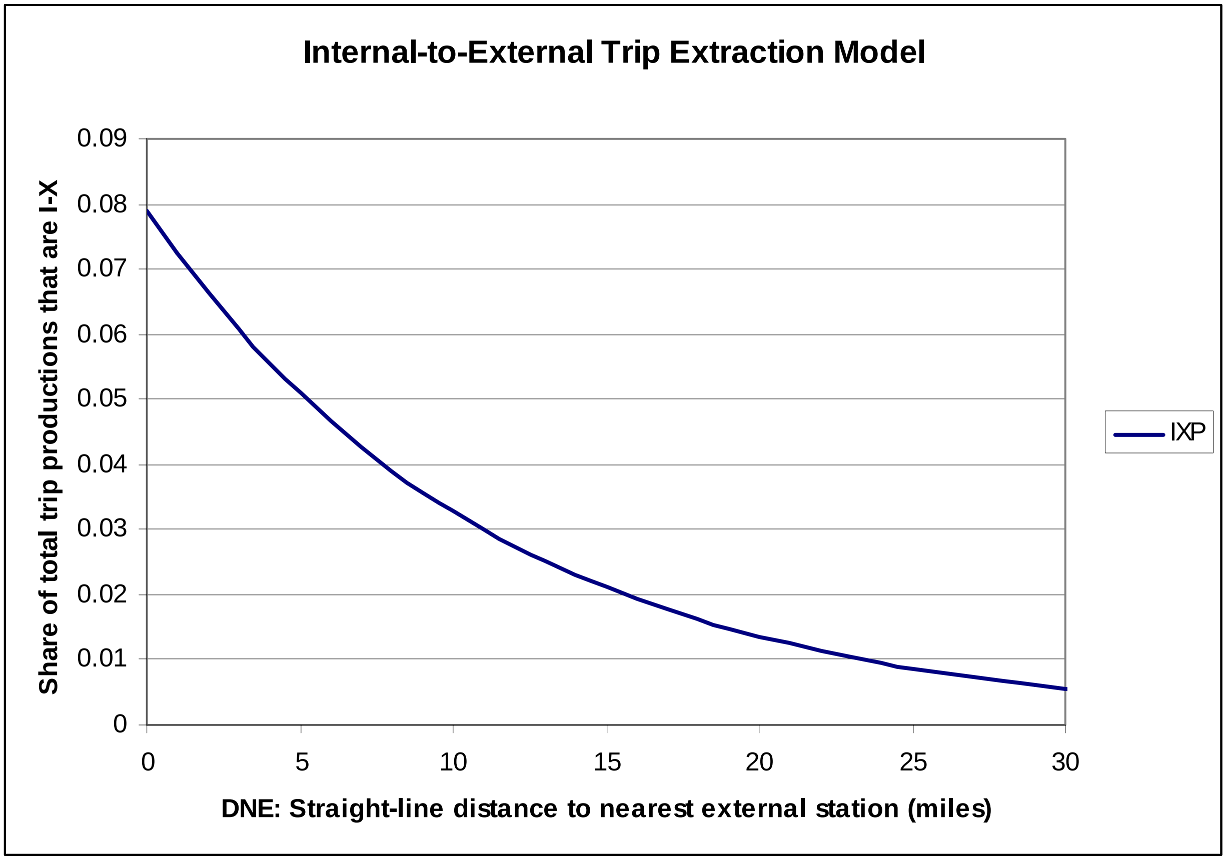
$$\mathrm{IXP} = 0.079\mathrm{Exp}(-0.088 * \mathrm{DNE})$$

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	Vehicles 1	Vehicles 2	Vehicles 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 0	Vehicles 1	Vehicles 2	Vehicles 3+	Sub-Total
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

Income Level	HH Size	Vehicles				Sub-Total
		0	1	2	3+	
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 0	Vehicles 1	Vehicles 2	Vehicles 3+	Sub-Total
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 (R-square: 0.80)

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 used 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

		Land Use Category				
Vehicle Type	**Location**	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, transit time values will generally contribute small effects on the time function, in general, since the regional transit shares are relatively small. Nonetheless, even if transit is not particularly competitive with highway time for a given interchange, the composite time function will still reflect *some* travel time benefit compared to the 'raw' highway time compared to an interchange that is not transit-connected.

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

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.

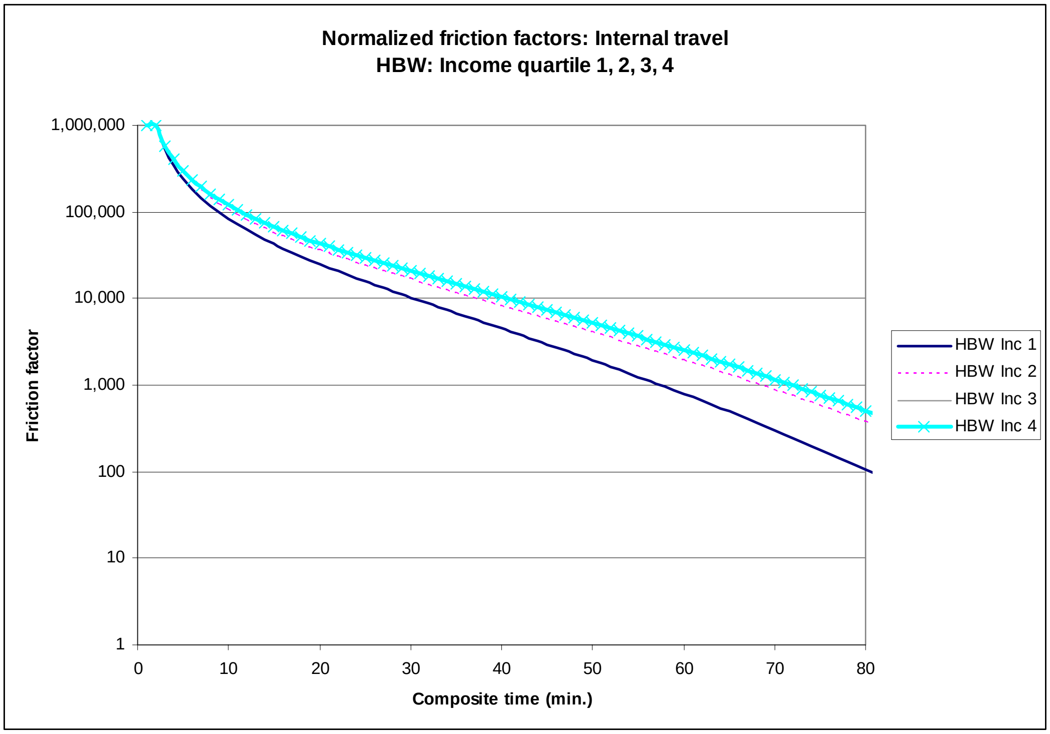
The modeled network contains 47 external stations, numbered consecutively from 2145 to 2191. Among these stations interstate-type facilities are defined as I-95 north and south (external stations 2149, 2182), US 301 (2146), US 15/29 (2154), I-66 (2156), I-70 east and west (2166, 2180), US 15 north (2179), 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*

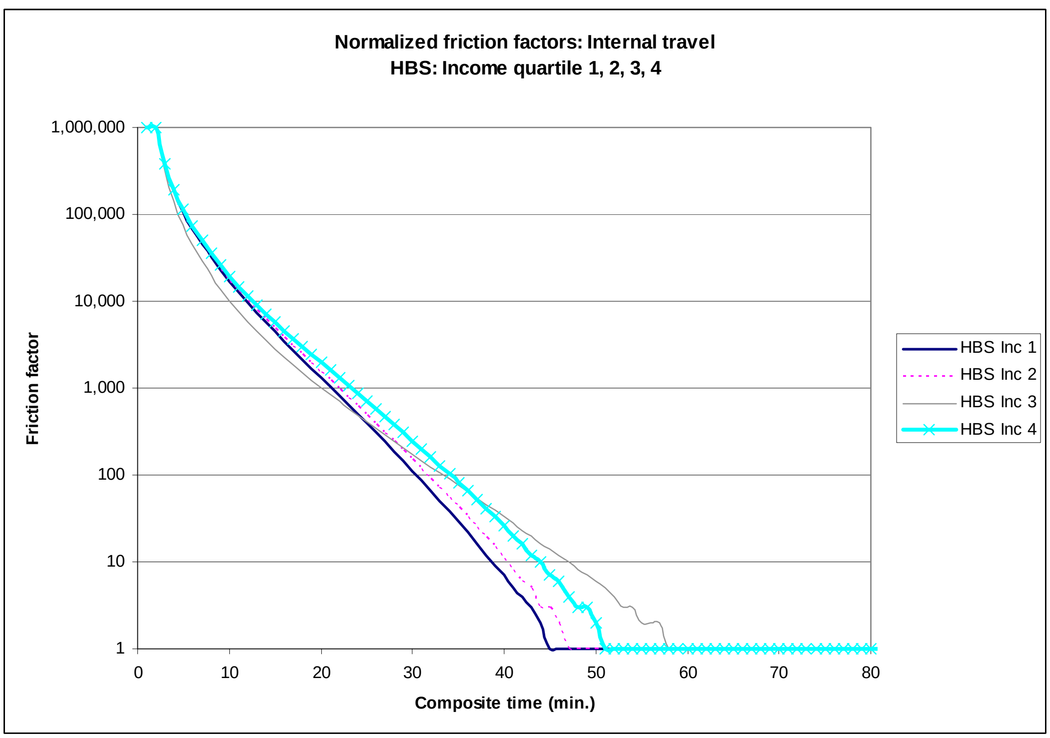
The friction factors, or F-factors, for internal travel are shown in graphical form in Figure 5-1, Figure 5-2, Figure 5-3, and Figure 5-4. The same information is shown in tabular form in Table 5-3. The friction factors for commercial vehicle travel, both internal and external, are shown in Figure 5-5.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



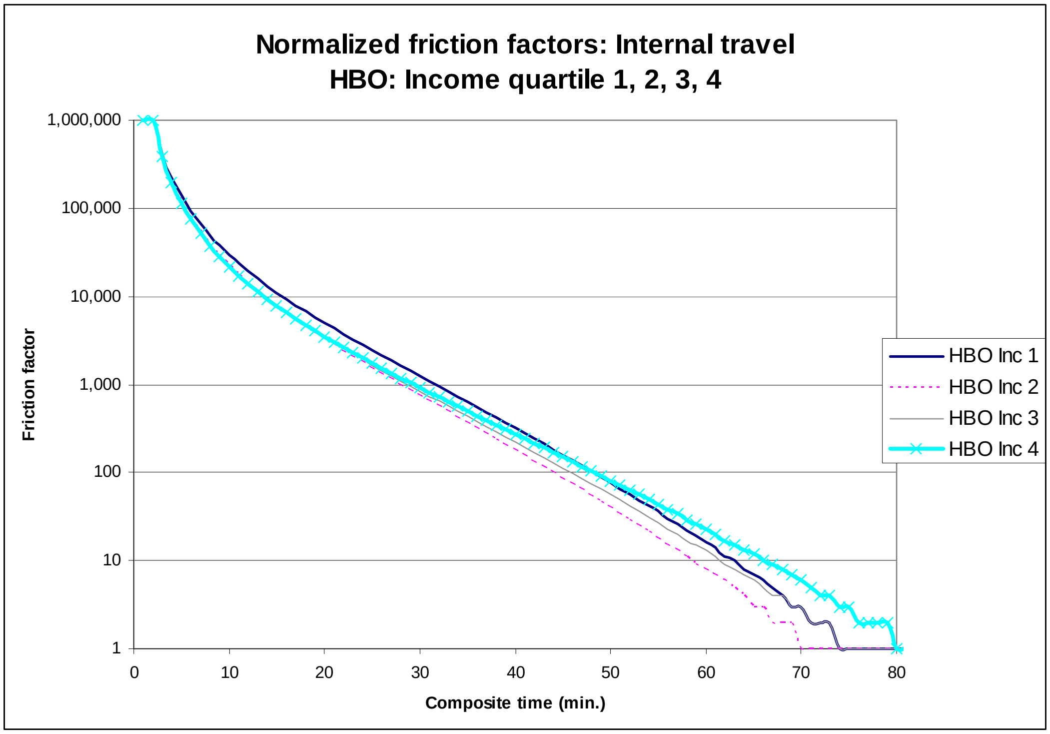
Ref: v22_f_factors.xls

Figure 5-2 Friction factors for HBS, internal travel



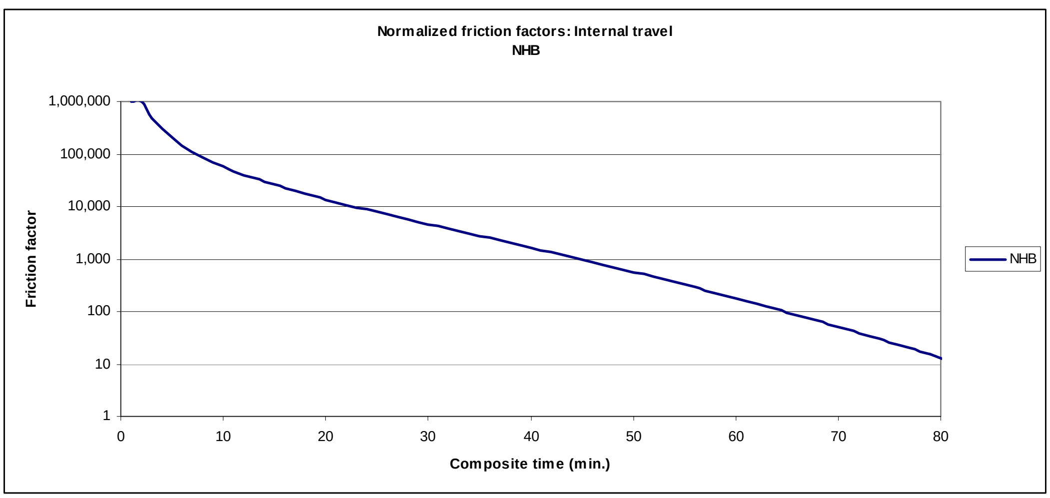
Ref: v22_f_factors.xls

Figure 5-3 Friction factors for HBO, internal travel



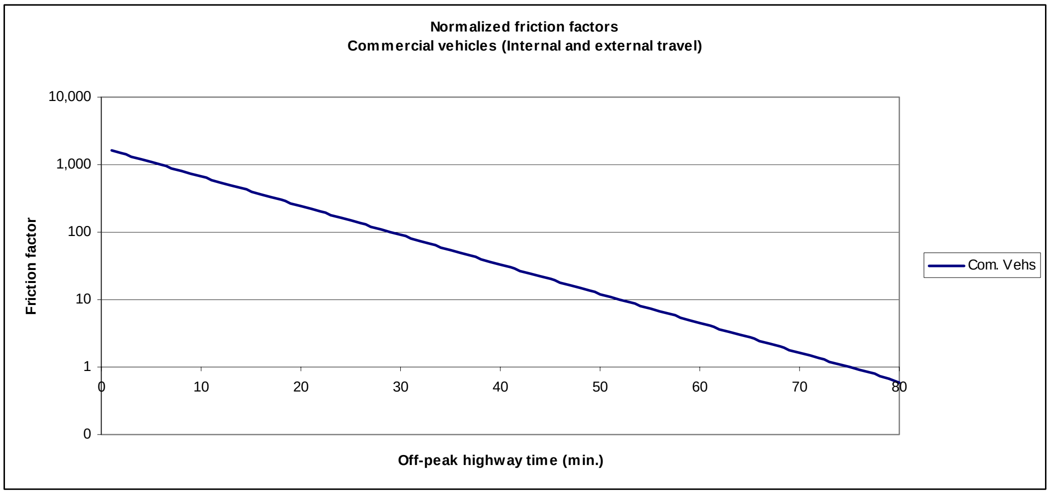
Ref: v22_f_factors.xls

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)



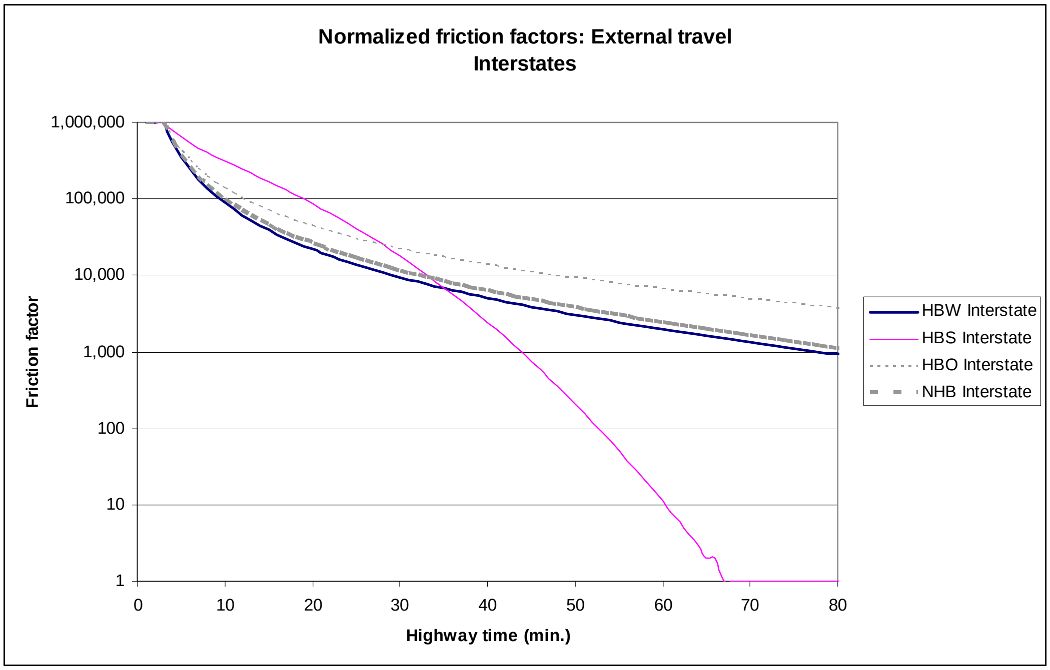
Ref: v22_f_factors.xls

Table 5-3 Friction factors for internal travel: HBW, HBS, HBO, NHB, commercial vehicles

Comp. Time (min)	HBW Inc 1	HBW Inc 2	HBW Inc 3	HBW Inc 4	HBS Inc 1	HBS Inc 2	HBS Inc 3	HBS Inc 4	HBO Inc 1	HBO Inc 2	HBO Inc 3	HBO Inc 4	NHB	Com. 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	19,656	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	17,339	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	15,355	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	13,641	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	12,153	220
22	20,674	30,638	37,618	36,852	826	968	700	1,308	3,733	2,413	2,552	2,602	10,854	199
23	18,857	28,269	34,833	34,120	648	771	585	1,065	3,239	2,075	2,207	2,267	9,713	180
24	17,228	26,126	32,302	31,639	508	613	490	867	2,815	1,787	1,914	1,980	8,707	163
25	15,764	24,182	29,994	29,377	398	487	411	705	2,451	1,543	1,663	1,734	7,817	148
26	14,442	22,410	27,882	27,309	310	386	346	573	2,136	1,333	1,447	1,522	7,027	134
27	13,246	20,792	25,944	25,412	242	305	291	466	1,864	1,154	1,261	1,338	6,323	121
28	12,160	19,309	24,161	23,667	187	241	246	377	1,628	999	1,101	1,179	5,694	109
29	11,171	17,947	22,517	22,058	145	190	208	306	1,422	866	961	1,039	5,132	99
30	10,270	16,693	20,997	20,572	112	149	175	247	1,243	751	841	918	4,627	90
31	9,447	15,536	19,590	19,196	86	117	148	199	1,086	652	735	811	4,174	81
32	8,693	14,467	18,284	17,919	66	91	125	160	950	565	644	718	3,766	73
33	8,002	13,477	17,072	16,734	50	71	106	129	830	491	563	635	3,399	66
34	7,368	12,560	15,943	15,632	38	55	90	103	725	426	493	563	3,067	60
35	6,785	11,708	14,892	14,605	29	42	76	82	634	369	432	499	2,768	54
36	6,249	10,916	13,913	13,648	22	33	64	66	554	320	378	442	2,498	49
37	5,755	10,179	12,998	12,754	16	25	54	52	483	277	331	392	2,254	45
38	5,300	9,493	12,144	11,920	12	19	46	41	422	240	290	348	2,033	40
39	4,881	8,854	11,346	11,140	9	15	39	33	367	208	254	309	1,833	36
40	4,494	8,258	10,599	10,411	7	11	33	26	320	180	222	274	1,652	33
41	4,137	7,701	9,901	9,729	5	8	28	20	279	156	194	243	1,488	30
42	3,808	7,181	9,247	9,090	4	6	23	16	242	134	169	215	1,340	27
43	3,504	6,696	8,635	8,491	3	5	20	12	210	116	148	191	1,206	24
44	3,223	6,242	8,061	7,931	2	3	16	10	183	100	129	169	1,085	22
45	2,963	5,818	7,524	7,406	1	3	14	7	158	86	113	150	975	20
46	2,724	5,422	7,020	6,913	1	2	12	6	137	74	98	133	876	18
47	2,502	5,051	6,548	6,452	1	1	10	4	119	64	85	117	786	16
48	2,298	4,704	6,106	6,019	1	1	8	3	103	55	74	104	705	15
49	2,109	4,380	5,692	5,614	1	1	7	3	88	47	65	92	632	13
50	1,935	4,077	5,303	5,234	1	1	6	2	76	40	56	81	566	12
51	1,774	3,793	4,940	4,878	1	1	5	1	66	34	49	72	507	11
52	1,626	3,528	4,599	4,544	1	1	4	1	56	29	42	63	453	10
53	1,489	3,280	4,280	4,232	1	1	3	1	48	25	36	56	405	9
54	1,363	3,049	3,981	3,939	1	1	3	1	42	21	31	49	361	8
55	1,247	2,832	3,701	3,664	1	1	2	1	36	18	27	43	322	7
56	1,140	2,630	3,440	3,408	1	1	2	1	30	15	23	38	287	7
57	1,041	2,441	3,195	3,167	1	1	2	1	26	13	20	34	255	6
58	951	2,264	2,966	2,942	1	1	1	1	22	11	17	29	227	5
59	868	2,099	2,752	2,732	1	1	1	1	19	9	15	26	202	5
60	791	1,945	2,552	2,536	1	1	1	1	16	8	13	23	179	4
61	721	1,802	2,365	2,352	1	1	1	1	14	7	11	20	158	4
62	656	1,668	2,191	2,180	1	1	1	1	11	6	9	17	140	4
63	597	1,544	2,028	2,020	1	1	1	1	10	5	8	15	124	3
64	543	1,427	1,877	1,871	1	1	1	1	8	4	7	13	110	3
65	493	1,319	1,735	1,731	1	1	1	1	7	3	6	12	97	3
66	447	1,219	1,604	1,601	1	1	1	1	6	3	5	10	85	2
67	406	1,125	1,481	1,480	1	1	1	1	5	2	4	9	75	2
68	368	1,038	1,367	1,367	1	1	1	1	4	2	4	8	66	2
69	333	957	1,261	1,262	1	1	1	1	3	2	3	7	58	2
70	301	882	1,162	1,165	1	1	1	1	3	1	3	6	51	2

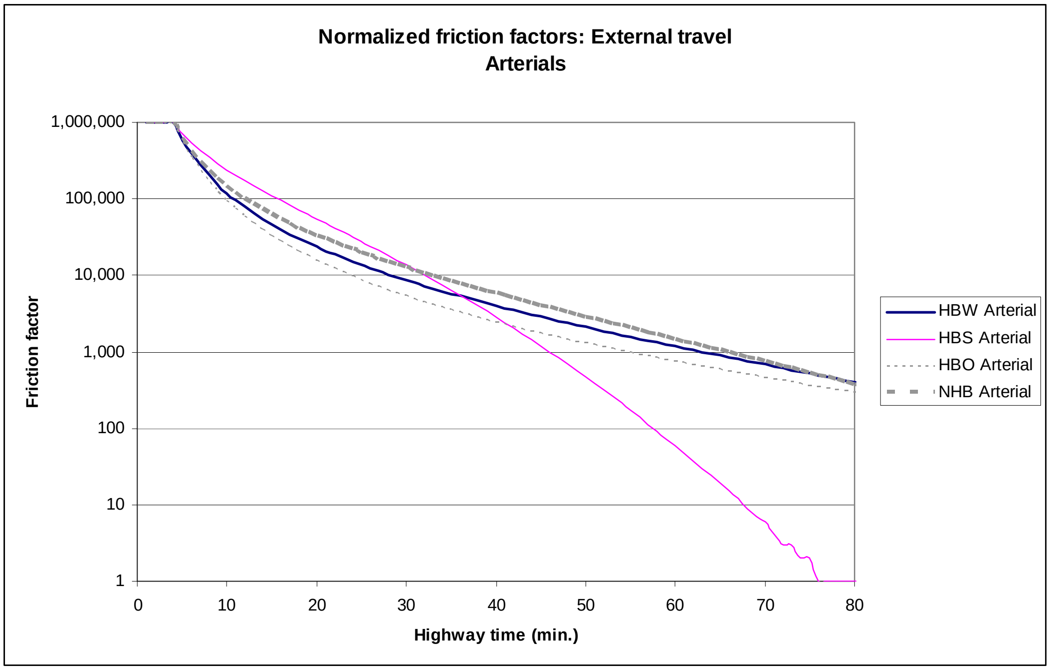
Ref: v22_f_factors.xls

Figure 5-6 Friction factors for external travel on interstates



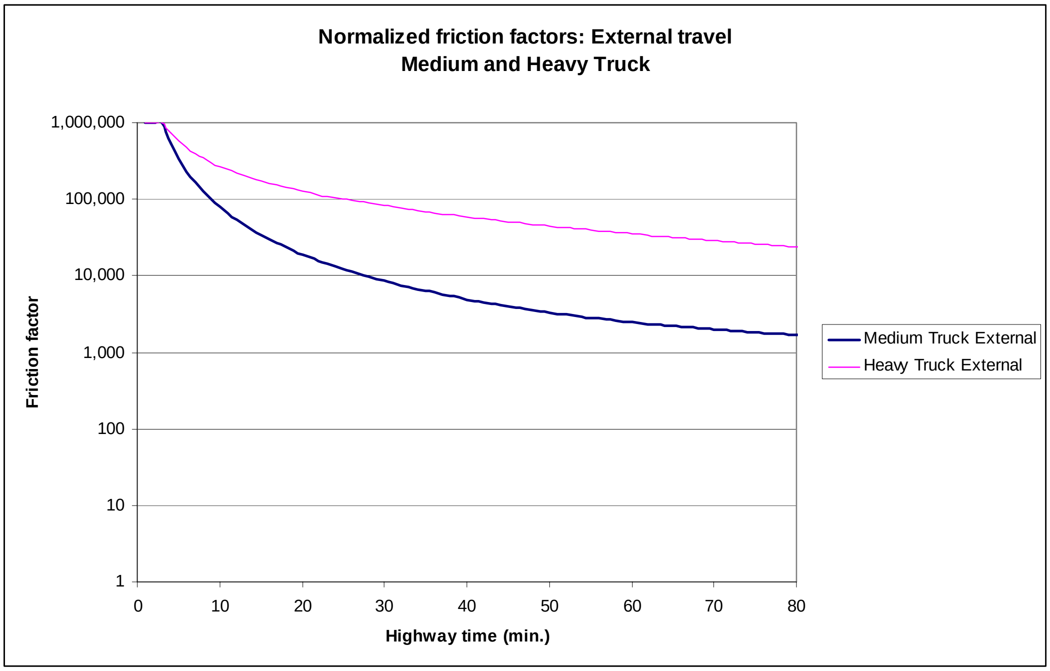
Ref: v22_f_factors.xls

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 5-4 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.

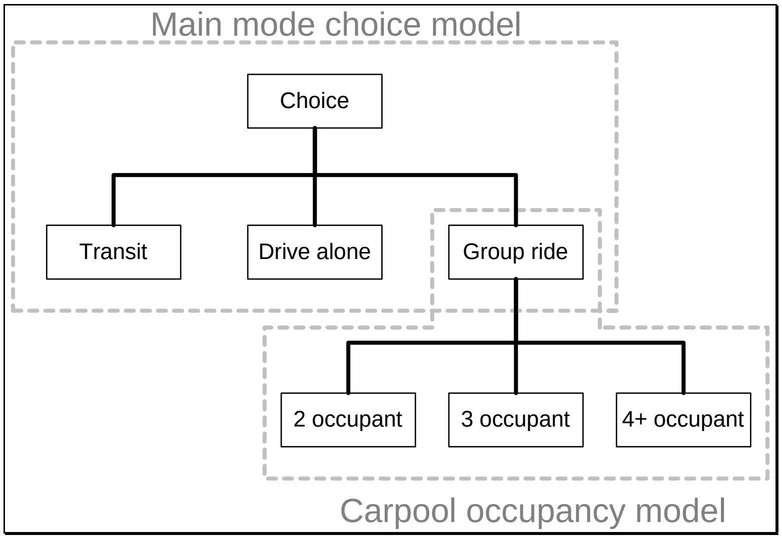
6.1 *Model Structure*

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 COG/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 (i.e. highway terminal time associated with trip origins is not considered at all). 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

Figure 6-2 Parking cost model for the Version 2.1 D #50 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	DA	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	3	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	Utility DA	Utility 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	Utility 3	Utility 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 where 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 individual assignment run utilizes a user equilibrium algorithm that is run for 20 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

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

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

$t/t_0 =$ 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.

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

Facility Type		Area 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

Facility Type		Area 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

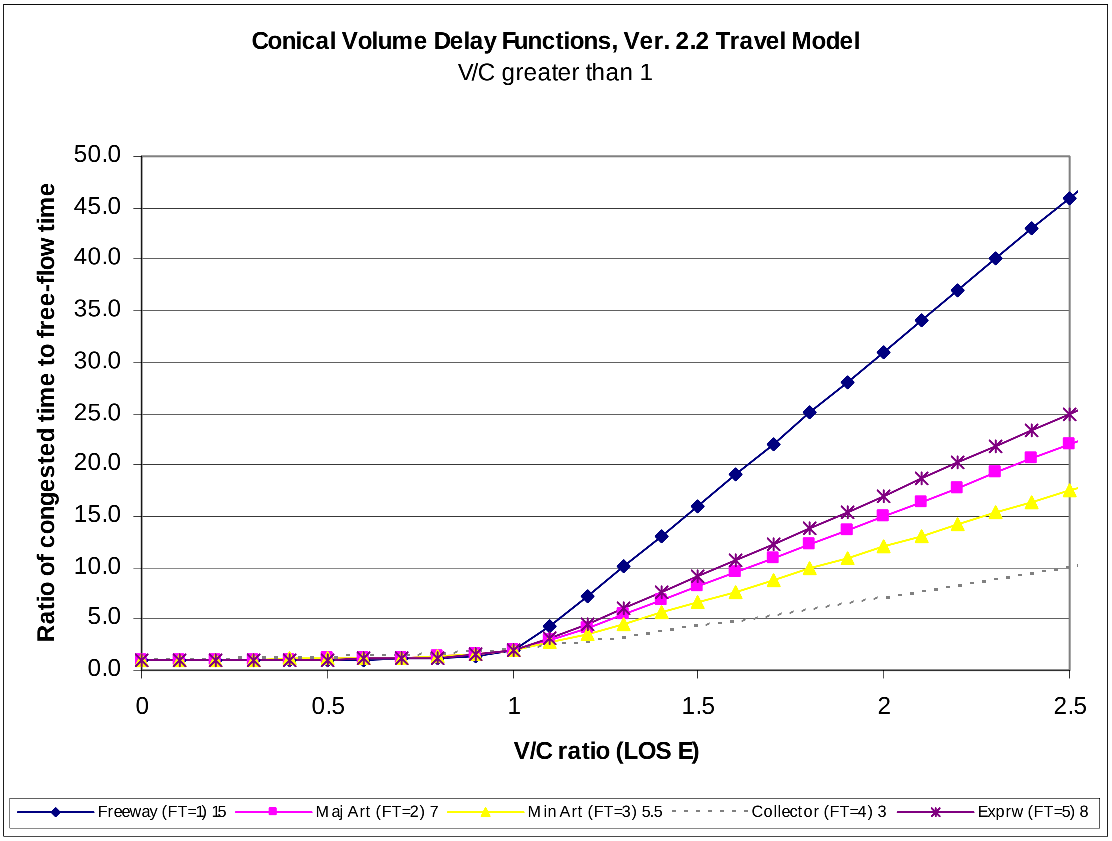
Ref: vdf_v21d.xls

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

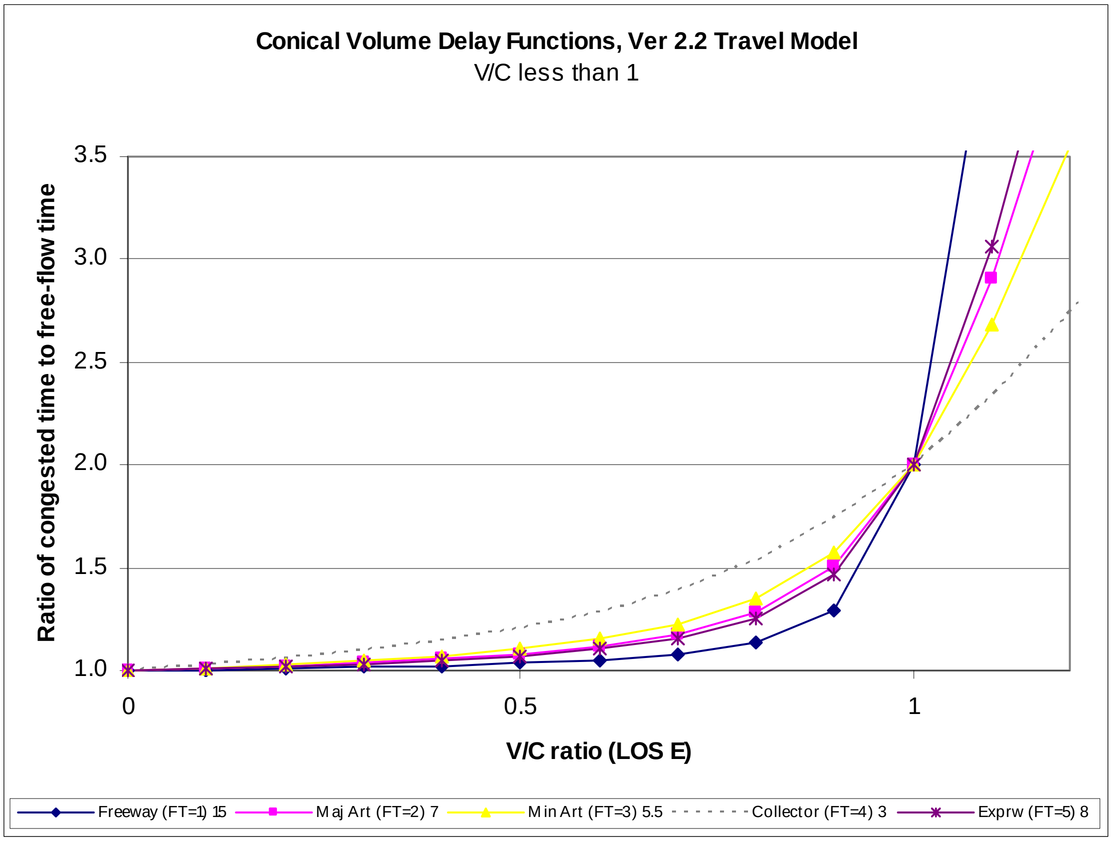
Ref: conical_vdf_v22.xls

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



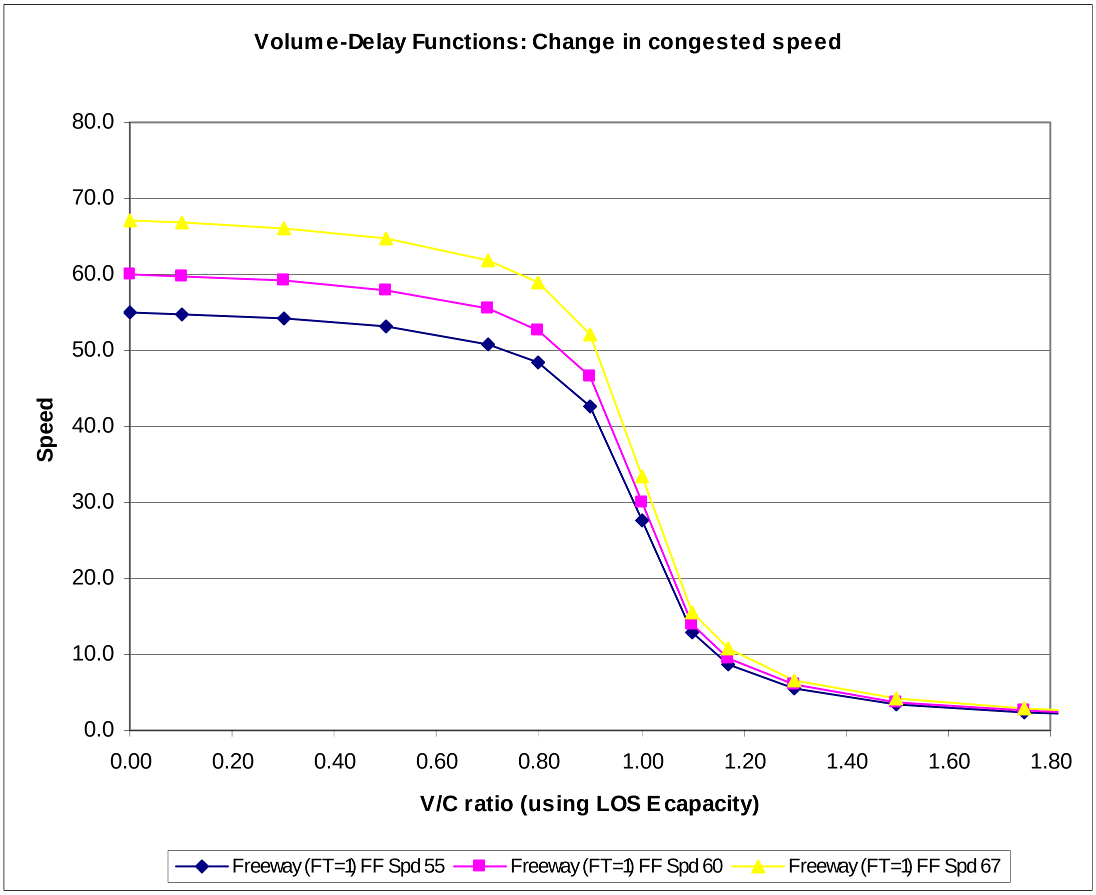
Ref: conical_vdf_v22.xls

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



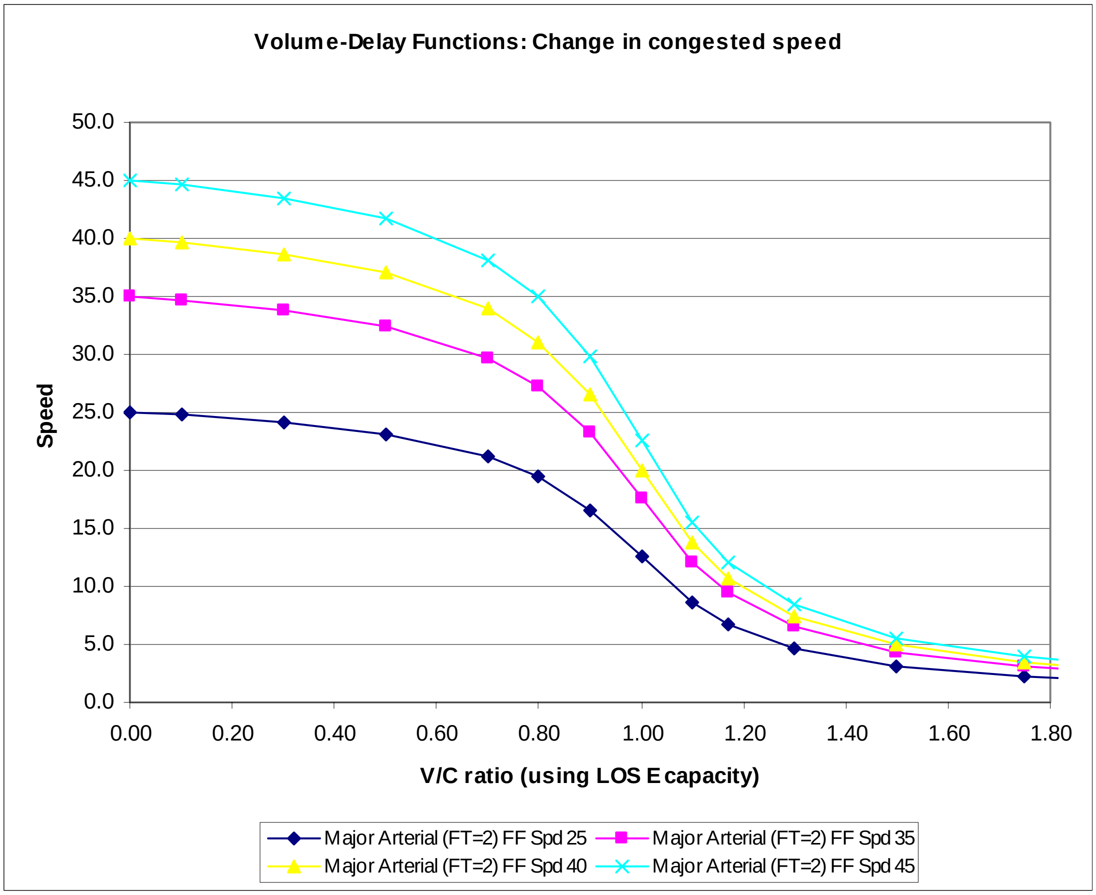
Ref: conical_vdf_v22.xls

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



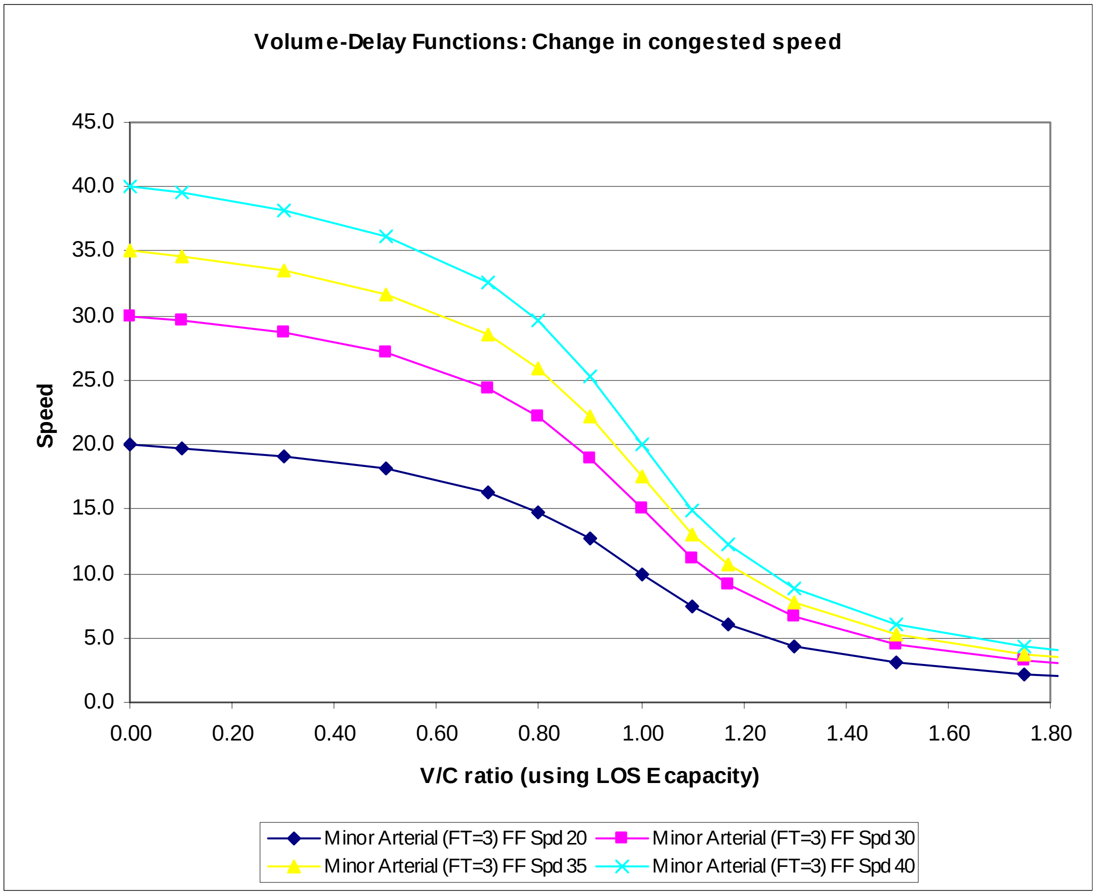
Ref: conical_vdf_v22.xls

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



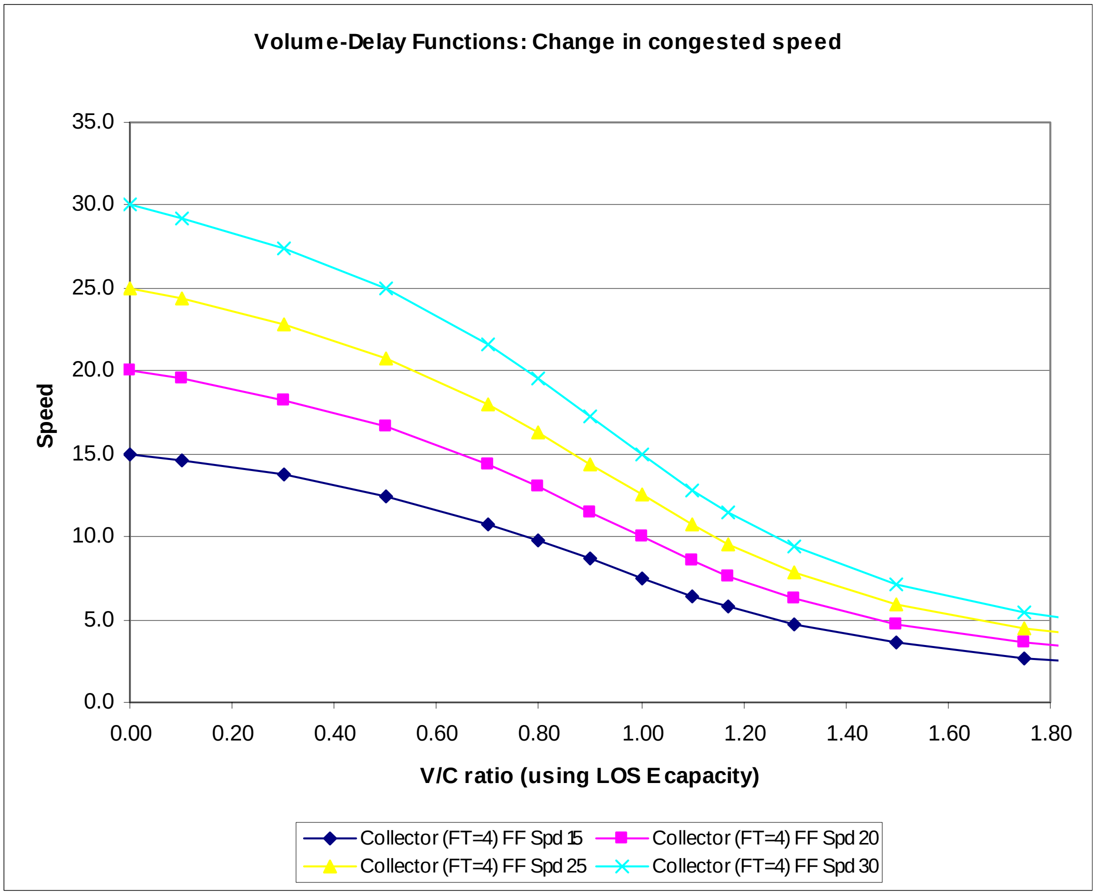
Ref: conical_vdf_v22.xls

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



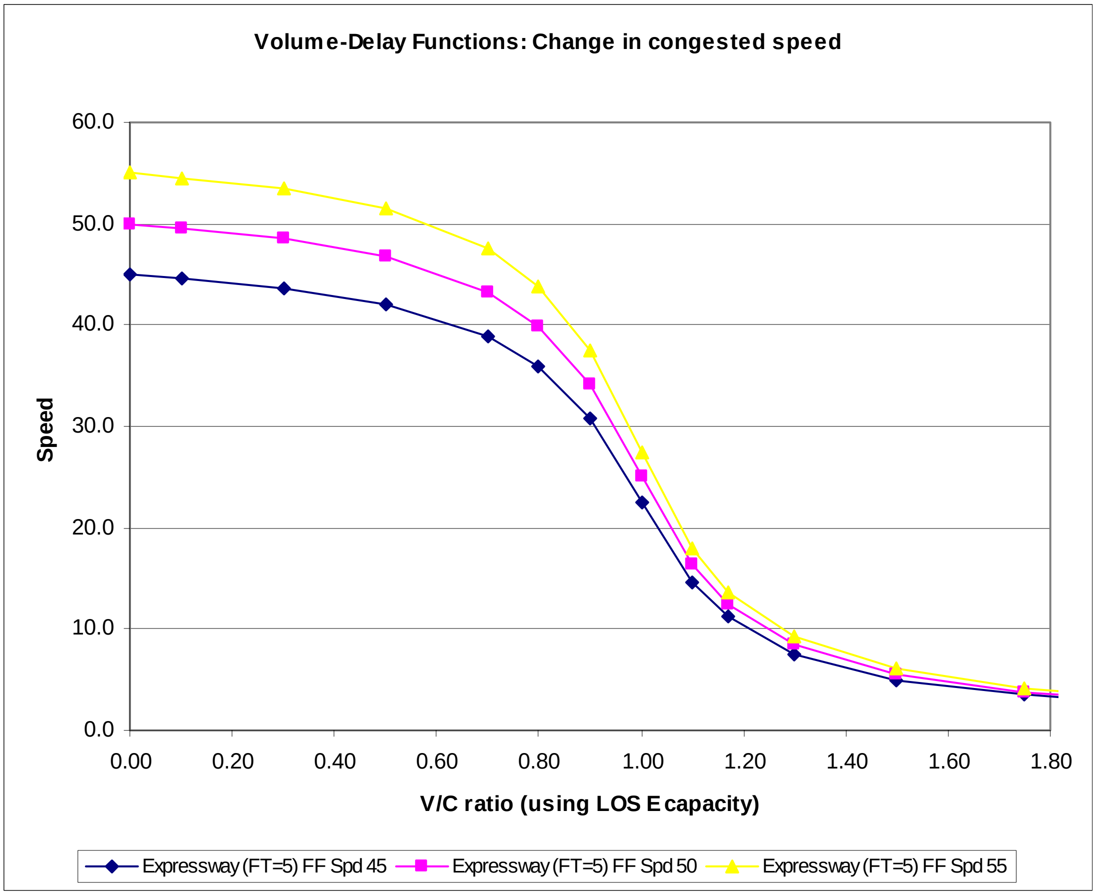
Ref: conical_vdf_v22.xls

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)			
V/C	FF Spd 55 ConSpd	FF Spd 60 ConSpd	FF Spd 67 ConSpd	FF Spd 25 ConSpd	FF Spd 35 ConSpd	FF Spd 40 ConSpd	FF Spd 45 ConSpd	FF Spd 20 ConSpd	FF Spd 30 ConSpd	FF Spd 35 ConSpd	FF Spd 40 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

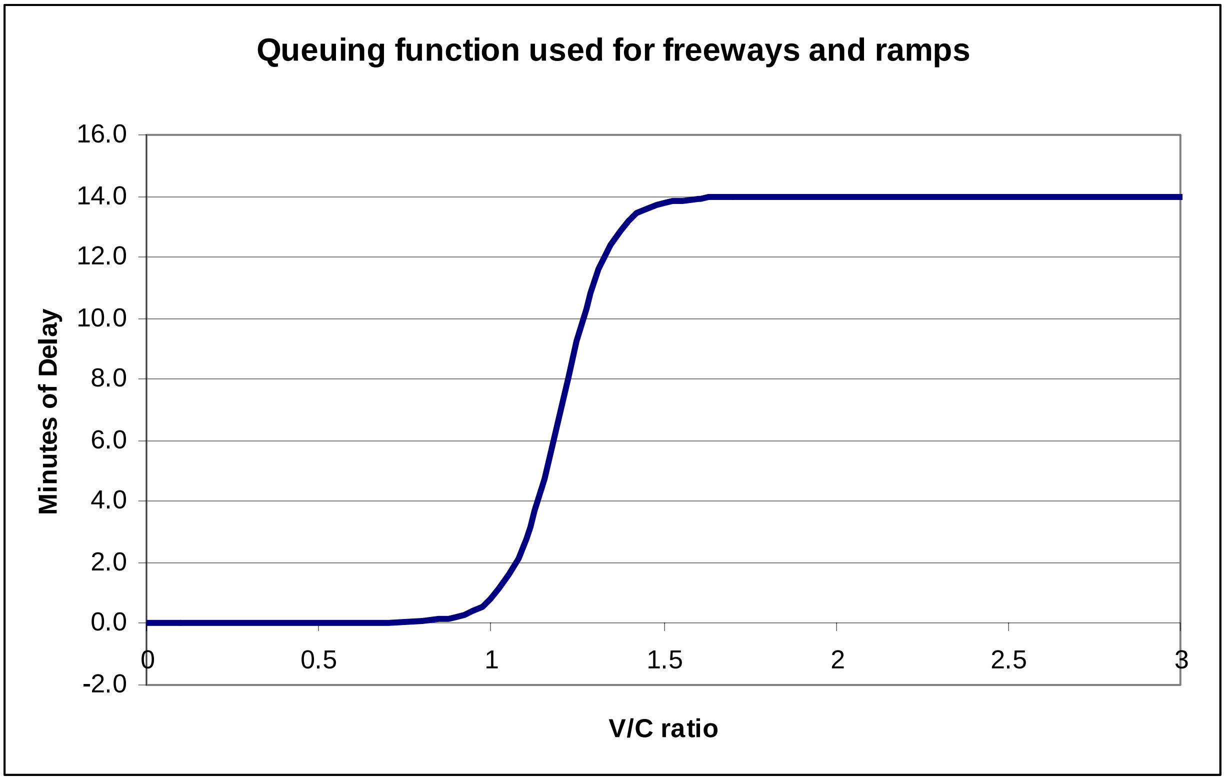
Ref: vdf_v21d.xls

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 ConSpd	FF Spd 20 ConSpd	FF Spd 25 ConSpd	FF Spd 30 ConSpd	FF Spd 45 ConSpd	FF Spd 50 ConSpd	FF Spd 55 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 comparable statistics of the currently adopted Version 2.1D#50 model.

A summary of estimated and observed vehicle-miles-of-travel (VMT) is shown on Table 9-1. Estimated figures shown on the table are provided for both the Version 2.2 model and the Version 2.1D#50 model. In preparing the summary, care was taken to use the same observed count data base so that the comparison shown would be consistent. The observed VMT shown for both models will not be entirely consistent, however, because of inconsistencies in the networks that supported the two models. The Version 2.2 network includes added nodes, enhanced coding detail, and general updates that were not considered in the Version 2.1D network developed years earlier. The VMT shown is based only on links with coded counts (3,900 links approximately). Both models over-simulate the sampled VMT by about 6%. At jurisdiction level, the results appear comparable. In comparing the performance between the two models, one should be mindful that a large number of K-factors used in the Version 2.1D model were reduced or eliminated in Version 2.2, and that reduction will affect performance.

Screenline level performance comparisons are shown on Table 9-2. The table shows performance comparisons of the two models at screenline level, and also indicates the number and percentage of links with observed counts. On average, about half (54%) of all network links comprising the regional screenlines include a coded count. Only 2 screenlines have 100% coverage. The Version 2.2 model is shown to be quite comparable to the Version 2.1D model in overall screenline matches (the estimated-to-observed ratio is 1.18 compared to 1.20). The Version 2.2 model matches observed volumes considerable better than the Version 2.1D model for screenline 20 (the Potomac River bridges), a particularly important regional screenline. The Version 2.2 model shows an estimated to observed ratio of 1.06, as compared to a ratio of 1.16 resulting from the Version 2.1D model.

Transit performance is shown on Table 9-3. The table shows estimated and observed transit trips and percentages for both the 2.2 and 2.1D models. Version 2.2 now over estimates total transit about 8% in contrast to the underestimation of 4% shown for the Version 2.1D model. This reduced performance is, again, 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 well (it overestimated work transit trips by 2%) in comparison with Version 2.1D (it underestimates work transit trips by 7%).

A summary of global statistics over time is shown on Table 9-4. The table displays Version 2.2 modeling results for 2000 and 2030, and for comparison purposes, shows similar 2030 results from the latest Version 2.1D work. The Version 2.2 model shows considerably less external travel in comparison with the 2.1D results which reflects the update in external growth assumptions. 2030 transit trips are shown to increase by 248,000 trips moving from 2.1D to the 2.2 model (a 19% increase). This could be caused by the revised highway assignment procedure which serves to decrease highway speeds more than the procedure used in 2.1D, thus making the transit mode generally more competitive. The decrease in NHB transit trips, however, may be due to the fact that commercial trips have been removed from this purpose, thereby shrinking the market. The simulated 2030 VMT shown for the 2.2 model is about 17 million less than that of the 2.1D model (about 8%). This reduction is due primarily to the revised external trips used in Version 2.2. It is also noteworthy that VMT per capita decreases between 2000 and 2030. This decrease has not been observed in prior models. A secondary factor in the VMT reduction is attributed to the revised highway assignment methodology.

The Version 2.2 model performance results are comparable to those of the Version 2.1D model, despite the fact that a number of adjustment factors have been removed. An effort has been made to strike a balance between a process that replicates observed patterns, and at the same time, is logical and reasonable in the forecasting mode.

Table 9-1 Year 2000 Estimated and Observed VMT Summary by Jurisdiction (VMT in thousands)

	V21D_50			Version 2.2		
Jurisdiction	Est	Obs	Ratio Est / Obs	Est	Obs	Ratio Est / Obs
District of Columbia	2,786	2,372	1.17	2,822	2,367	1.19
Montgomery	7,285	6,892	1.06	7,720	7,107	1.09
Prince George's	8,394	8,188	1.03	8,688	8,529	1.02
Arlington	969	1,007	0.96	956	1,004	0.95
Alexandria	166	107	1.55	155	106	1.46
Fairfax	9,180	8,463	1.08	8,770	8,459	1.04
Loudoun	1,386	1,253	1.11	1,358	1,221	1.11
Prince William	2,528	2,424	1.04	2,576	2,437	1.06
Frederick	3,264	3,074	1.06	3,869	3,367	1.15
Howard	4,590	4,253	1.08	4,476	4,251	1.05
Anne Arundel	6,421	5,601	1.15	6,589	5,656	1.16
Charles	846	1,210	0.70	853	1,089	0.78
Carroll	1,309	1,188	1.10	1,314	1,188	1.11
Calvert	594	748	0.79	579	740	0.78
St. Mary's	704	710	0.99	662	679	0.97
King George	274	254	1.08	267	226	1.18
Fredericksburg	114	238	0.48	155	238	0.65
Stafford	1,475	1,225	1.20	1,394	1,215	1.15
Spotsylvania	1,001	1,061	0.94	850	1,018	0.83
Fauquier	1,279	1,252	1.02	1,226	1,229	1.00
Clarke	249	201	1.24	246	201	1.22
Jefferson	57	58	0.98	52	58	0.90
Total	**54,871**	**51,779**	**1.06**	**55,577**	**52,385**	**1.06**

Note: The above observed counts are based on the same count database. However, due to numerous inconsistencies in the topology between the base year networks supporting the two models, the observed VMT shown will not be exactly consistent.

Ref: Sum_vmt_V21D50_V22.xls

Table 9-2 Year 2000 Estimated and Observed Daily Screenline Crossings (in thousands)

	V21D_50						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	Est	Obs	Ratio Est / Obs	No. of links w/ Screenline Code	No. of links w/ Counts	% of links w/ Counts
1	589	412	1.43	42	16	38.1%	552	412	1.34	40	16	40.0%
2	671	483	1.39	74	27	36.5%	661	483	1.37	74	27	36.5%
3	618	496	1.25	56	24	42.9%	611	496	1.23	56	24	42.9%
4	829	734	1.13	70	38	54.3%	869	734	1.18	68	38	55.9%
5	1,139	800	1.42	50	40	80.0%	1,071	800	1.34	50	40	80.0%
6	1,380	1,210	1.14	103	52	50.5%	1,405	1,210	1.16	103	52	50.5%
7	1,045	882	1.18	68	48	70.6%	950	882	1.08	66	48	72.7%
8	1,003	772	1.30	112	38	33.9%	1,117	870	1.28	108	42	38.9%
9	595	470	1.27	46	26	56.5%	606	470	1.29	44	26	59.1%
10	315	278	1.13	22	14	63.6%	323	278	1.16	20	14	70.0%
11	222	188	1.18	18	16	88.9%	212	188	1.13	18	16	88.9%
12	253	290	0.87	32	6	18.8%	232	290	0.80	32	6	18.8%
13	315	302	1.04	18	8	44.4%	317	302	1.05	18	8	44.4%
14	249	246	1.01	16	6	37.5%	235	246	0.96	16	6	37.5%
15	282	282	1.00	12	8	66.7%	262	282	0.93	12	8	66.7%
16	148	142	1.04	16	2	12.5%	130	142	0.92	16	2	12.5%
17	400	354	1.13	28	24	85.7%	392	354	1.11	28	24	85.7%
18	552	440	1.25	35	32	91.4%	536	440	1.22	35	32	91.4%
19	569	490	1.16	44	32	72.7%	534	490	1.09	42	32	76.2%
20	1,042	898	1.16	14	14	100.0%	950	898	1.06	14	14	100.0%
22	934	794	1.18	122	36	29.5%	957	794	1.21	118	36	30.5%
23	134	100	1.34	24	8	33.3%	146	100	1.46	24	8	33.3%
24	326	310	1.05	28	8	28.6%	337	310	1.09	28	8	28.6%
25	107	88	1.22	10	8	80.0%	136	88	1.55	8	8	100.0%
26	366	324	1.13	20	14	70.0%	383	324	1.18	20	14	70.0%
27	386	342	1.13	16	14	87.5%	430	342	1.26	16	14	87.5%
28	103	106	0.97	10	4	40.0%	97	106	0.92	10	4	40.0%
31	122	78	1.56	20	16	80.0%	125	78	1.60	20	16	80.0%
32	44	32	1.38	8	4	50.0%	42	32	1.31	8	4	50.0%
33	315	138	2.28	14	14	100.0%	280	138	2.03	14	14	100.0%
34	72	60	1.20	14	10	71.4%	66	60	1.10	14	10	71.4%
35	909	844	1.08	42	36	85.7%	889	844	1.05	42	36	85.7%
36	39	20	1.95	6	4	66.7%	43	20	2.15	6	4	66.7%
37	36	30	1.20	10	8	80.0%	37	30	1.23	10	8	80.0%
38	178	180	0.99	18	16	88.9%	199	180	1.11	18	16	88.9%
Total	**16,287**	**13,615**	1.20	**1,238**	**671**	**54.2%**	**16,132**	**13,713**	1.18	**1,216**	**675**	**55.5%**

Note: The above observed counts are based on the same count database. However, due to numerous inconsistencies in the topology between the base year networks supporting the two models, the observed volumes shown will not be exactly consistent.

Ref: Sum_links_V21D50_V22.xls

Table 9-3 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	547,751	538,582	-36,581	0.93	9,169	1.02
Pct. Transit	*16.78%*	*18.77%*	*17.80%*	*-1.02%*	*0.94*	*0.97%*	*1.05*
HBS	34,079	46,597	33,262	817	1.02	13,335	1.40
Pct. Transit	*1.39%*	*1.89%*	*1.36%*	*0.03%*	*1.02*	*0.53%*	*1.39*
HBO	163,864	226,785	151,645	12,219	1.08	75,140	1.50
Pct. Transit	*2.24%*	*3.05%*	*2.07%*	*0.16%*	*1.08*	*0.98%*	*1.47*
NHB	156,238	138,841	166,461	-10,223	0.94	-27,620	0.83
Pct. Transit	2.90%	3.39%	3.09%	-0.18%	*0.94*	*0.30%*	*1.10*
Total	856,182	959,974	889,950	-33,768	0.96	70,024	1.08
Pct. Transit	*4.72%*	*5.67%*	*4.89%*	*-0.18%*	*0.96*	*0.78%*	*1.16*

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.

Ref: compare_mceo_00_uns_scr.xls

Table 9-4 Summary of travel model output: 2000 (Ver. 2.2), 2030 (Ver. 2.2), 2030 (Ver. 2.1D #50)

	2000 Ver22 (A)	2030 Ver22 (B)	2030 Ver21D50 CLRP 2007 (C)	2030 Difference (B) - (C)	2030 Ratio (B) / (C)
Households	2,143,412	3,174,899	3,174,899	0	1.00
Employment	3,441,382	5,195,473	5,195,473	0	1.00
HH Population	5,632,182	8,110,073	8,110,073	0	1.00
HH & GQ Population	5,748,109	8,250,078	8,250,078	0	1.00
Extl. Productions/ HBW Auto Person	272,044	473,487	719,386	-245,899	0.66
Extl. Productions/ HBS Auto Person	69,459	114,180	197,292	-83,112	0.58
Extl. Productions/ HBO Auto Person	189,625	331,773	506,269	-174,496	0.66
Extl. Productions/ NHB Auto Person	72,207	120,063	313,160	-193,097	0.38
Extl. Productions/ Auto Person Subtotal	603,335	1,039,503	1,736,107	-696,604	0.60
Extl. Productions/ Medium Truck	3,637	6,319	9,369	-3,050	0.67
Extl. Productions/ Heavy Truck	23,517	40,790	61,358	-20,568	0.66
Extl. Productions/ Truck Subtotal	27,154	47,109	70,727	-23,618	0.67
Extl. Attractions/ HBW Auto Person	168,565	281,301	445,826	-164,525	0.63
Extl. Attractions/ HBS Auto Person	68,295	114,800	180,844	-66,044	0.63
Extl. Attractions/ HBO Auto Person	265,224	457,646	723,354	-265,708	0.63
Extl. Attractions/ NHB Auto Person	72,193	120,045	313,152	-193,107	0.38
Extl. Attractions/ Auto Person Subtotal	574,277	973,792	1,663,176	-689,384	0.59
Extl. Attractions/ Medium Truck	3,637	6,319	9,369	-3,050	0.67
Extl. Attractions/ Heavy Truck	23,517	40,790	61,358	-20,568	0.66
Extl. Attractions/ Truck Subtotal	27,154	47,109	70,727	-23,618	0.67
Inc. Grp 1 HHs	511,220	750,739	832,311	-81,572	0.90
Inc. Grp 2 HHs	491,340	724,662	864,940	-140,278	0.84
Inc. Grp 3 HHs	590,687	880,392	801,693	78,699	1.10
Inc. Grp 4 HHs	550,162	819,106	674,581	144,525	1.21
HHs Subtotal	2,143,410	3,174,899	3,173,525	1,374	1.00
1 person HHs	538,023	843,235	800,458	42,777	1.05
2 person HHs	658,160	988,036	1,027,141	-39,105	0.96
3 person HHs	378,217	548,790	589,579	-40,789	0.93
4+ person HHs	569,010	794,838	756,347	38,491	1.05
HHs Subtotal	2,143,410	3,174,899	3,173,525	1,374	1.00
0 Vehicle HHs	202,911	350,075	241,235	108,840	1.45
1 Vehicle HHs	706,981	1,089,005	1,076,872	12,133	1.01
2 Vehicle HHs	833,130	1,186,805	1,297,991	-111,186	0.91
3+ Vehicle HHs	400,387	549,014	557,427	-8,413	0.98
HHs Subtotal	2,143,410	3,174,899	3,173,525	1,374	1.00
HBW Motorized Person Trips	4,042,933	5,972,692	6,451,403	-478,711	0.93
HBS Motorized Person Trips	3,115,922	4,552,122	4,666,816	-114,694	0.98
HBO Motorized Person Trips	9,619,558	13,854,672	14,031,312	-176,640	0.99
NHB Motorized Person Trips	5,289,074	7,678,489	10,299,133	-2,620,644	0.75
Total Motorized Person Trips	22,067,487	32,057,975	35,448,664	-3,390,689	0.90
Motorized Person Trips per HH	10.30	10.10	11.17	-1.07	0.90
Motorized Person Trips per capita	3.84	3.89	4.30	-0.41	0.90

Ref: View_From_Space_V22V21D50.xls

Table 9-4 Continued

	2000 Ver22 (A)	2030 Ver22 (B)	2030 Ver21D50 CLRP 2007 (C)	2030 Difference (B) - (C)	2030 Ratio (B) / (C)
Non Motorized HBW Trips	171,219	291,838	299,926	-8,088	0.97
HBW Auto Driver Trips	3,093,013	4,521,087	5,067,991	-546,904	0.89
HBS Auto Driver Trips	2,462,865	3,630,522	3,641,587	-11,065	1.00
HBO Auto Driver Trips	7,023,275	10,167,100	9,645,354	521,746	1.05
NHB Auto Driver Trips	4,047,996	5,956,370	7,976,501	-2,020,131	0.75
Total Auto Driver Trips	16,627,149	24,275,079	26,331,433	-2,056,354	0.92
HBW Auto Passenger Trips	385,161	583,641	633,937	-50,296	0.92
HBS Auto Passenger Trips	604,930	839,845	965,326	-125,481	0.87
HBO Auto Passenger Trips	2,364,654	3,301,961	4,128,941	-826,980	0.80
NHB Auto Passenger Trips	1,100,861	1,494,299	2,073,974	-579,675	0.72
Total Auto Passenger Trips	4,455,606	6,219,746	7,802,178	-1,582,432	0.80
HBW Auto Occupancies	1.12	1.13	1.13	0.00	1.00
HBS Auto Occupancies	1.25	1.23	1.27	-0.04	0.97
HBO Auto Occupancies	1.34	1.32	1.43	-0.11	0.92
NHB Auto Occupancies	1.27	1.25	1.26	-0.01	0.99
Total Auto Occupancies	1.27	1.26	1.30	-0.04	0.97
HBW Transit Trips	564,759	867,965	749,475	118,490	1.16
HBS Transit Trips	48,127	81,754	59,903	21,851	1.36
HBO Transit Trips	231,629	385,611	257,017	128,594	1.50
NHB Transit Trips	140,217	227,820	248,658	-20,838	0.92
Total Transit Trips	984,732	1,563,150	1,315,053	248,097	1.19
HBW Transit Percentage	13.97	14.53	11.62	2.91	1.25
HBS Transit Percentage	1.54	1.80	1.28	0.52	1.41
HBO Transit Percentage	2.41	2.78	1.83	0.95	1.52
NHB Transit Percentage	2.65	2.97	2.41	0.56	1.23
Total Transit Percentage	4.46	4.88	3.71	1.17	1.32
Medium Truck	301,119	455,560	461,528	-5,968	0.99
Heavy Truck	155,744	244,945	284,593	-39,648	0.86
Misc. Auto Driver	583,921	847,389	847,389	0	1.00
Through (X X) Non Commercial Auto Drv.	35,019	60,053	98,796	Data	
Through (X X) Trucks	29,852	51,559	79,469	Definitions	
Airport Passenger Auto Drivers	49,723	109,851	56,694	Different	
Commercial Vehicles (II, Extl.,XX)	1,111,072	1,607,157	N/A		
Total Vehicle Trips	18,893,599	27,651,593	28,159,902	-508,309	0.98
Freeway VMT	54,785,830	78,116,822	91,597,472	-13,480,650	0.85
Major Art VMT	54,488,704	70,146,991	70,849,340	-702,349	0.99
Minor Art VMT	17,824,247	29,129,980	28,056,554	1,073,426	1.04
Collector VMT	7,878,694	12,262,047	14,677,537	-2,415,490	0.84
Express. VMT	7,309,656	8,182,839	8,962,536	-779,697	0.91
Ramp VMT	1,228,132	1,695,188	2,626,690	-931,502	0.65
Total VMT	143,515,262	199,533,867	216,770,129	-17,236,262	0.92
VMT per Capita	24.97	24.19	26.27	-2.08	0.92
VMT per HH	66.96	62.85	68.28	-5.43	0.92
VMT per Vehicle Trip	7.60	7.22	7.70	-0.48	0.94

Ref: View_From_Space_V22V21D50.xls

Chapter 10 Model Application Overview

The Version 2.2 model is applied on microcomputer using Cube/TP+ software (Version 4.1.0). An Intel-based microcomputer with a minimum processing speed of 3.0 GHz and a minimum storage capacity of 60 GB of hard disk storage capacity is recommended (each model run generates approximately 2 GB of output files and listings). TPB has developed the Version 2.2 model on PCs running the Microsoft Windows XP Professional operating system. Depending on the processing speeds and type of model run (e.g., with or without the transit constraint through the regional core), model executions require about 11 to 15 hours to complete.

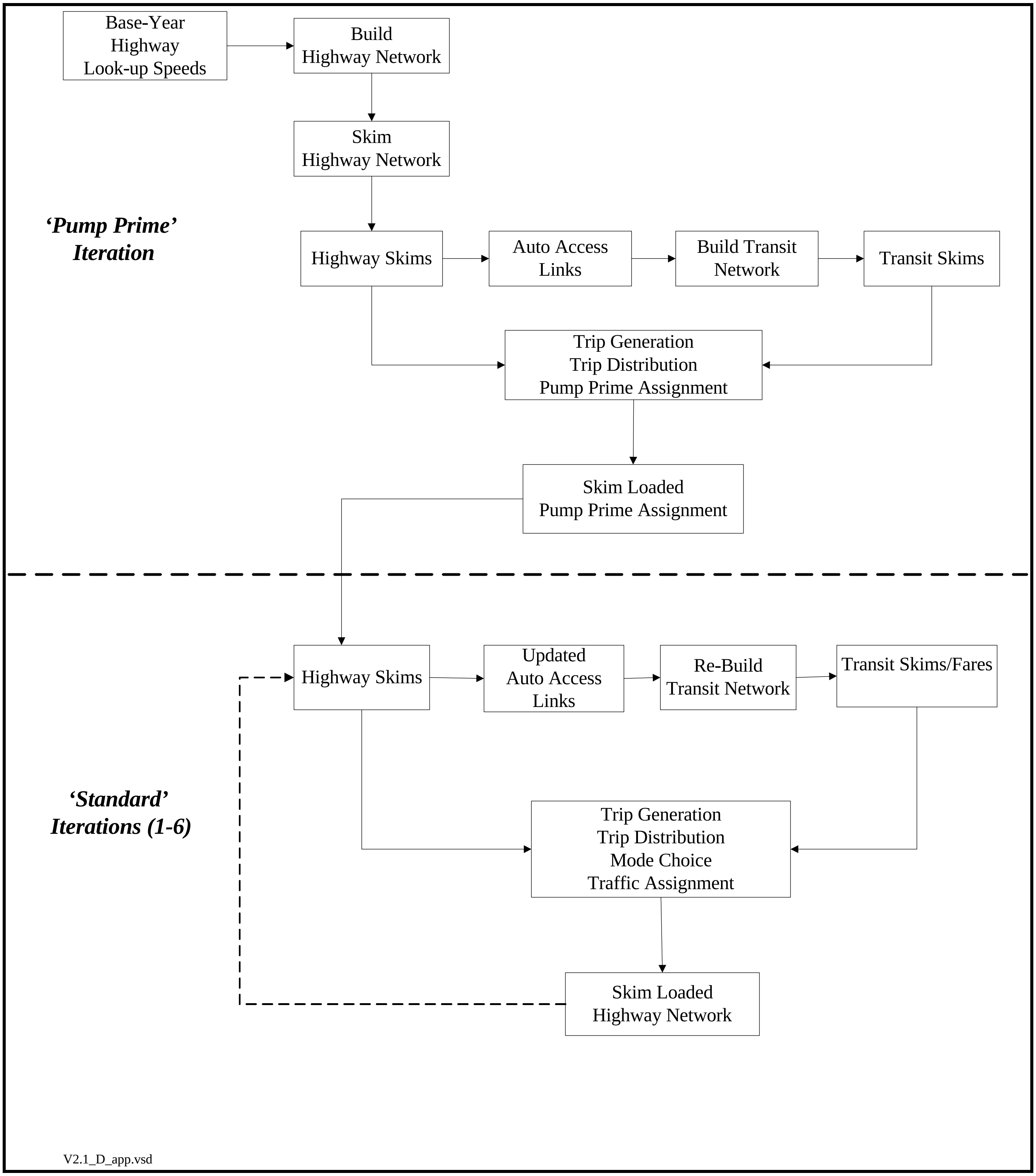
The application steps of the model are graphically outlined on Figure 10-1. The figure indicates that an initial (or pump-prime) iteration occurs where a first pass of the four-step process occurs using *initial* AM and off-peak highway speeds, and *initial* mode choice percentages (the mode choice model 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 distribution is next executed. The resulting person trips are converted to vehicle trips on the basis of default mode choice and car occupancy percentages, which are then assigned to the highway network.

The next series of ‘standard’ iterations (1 through 6) involve the execution of the complete four step model which now includes: 1) a mode choice model execution and 2) the use of recycled traffic assignment based speeds as input. The AM and off-peak restrained highway times are used to update the zone-to-PNR link speeds, and the transit network is again 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, and then the next highway assignment step is executed. The assignment consists of three separate assignments, pertaining to the AM period (6-9 AM), PM period (4-7 PM), and off-peak period (all other hours of the day). The standard four-step loop iterates six times.

The Version 2.2 model uses a successive volume averaging for each of the three time-of-day periods to force convergence of link volumes, and hence, link highway speeds. The averaging occurs 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 the ½ of the first iteration link volume plus ½ 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 6th iteration, over 95% 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 (i.e., 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.

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:

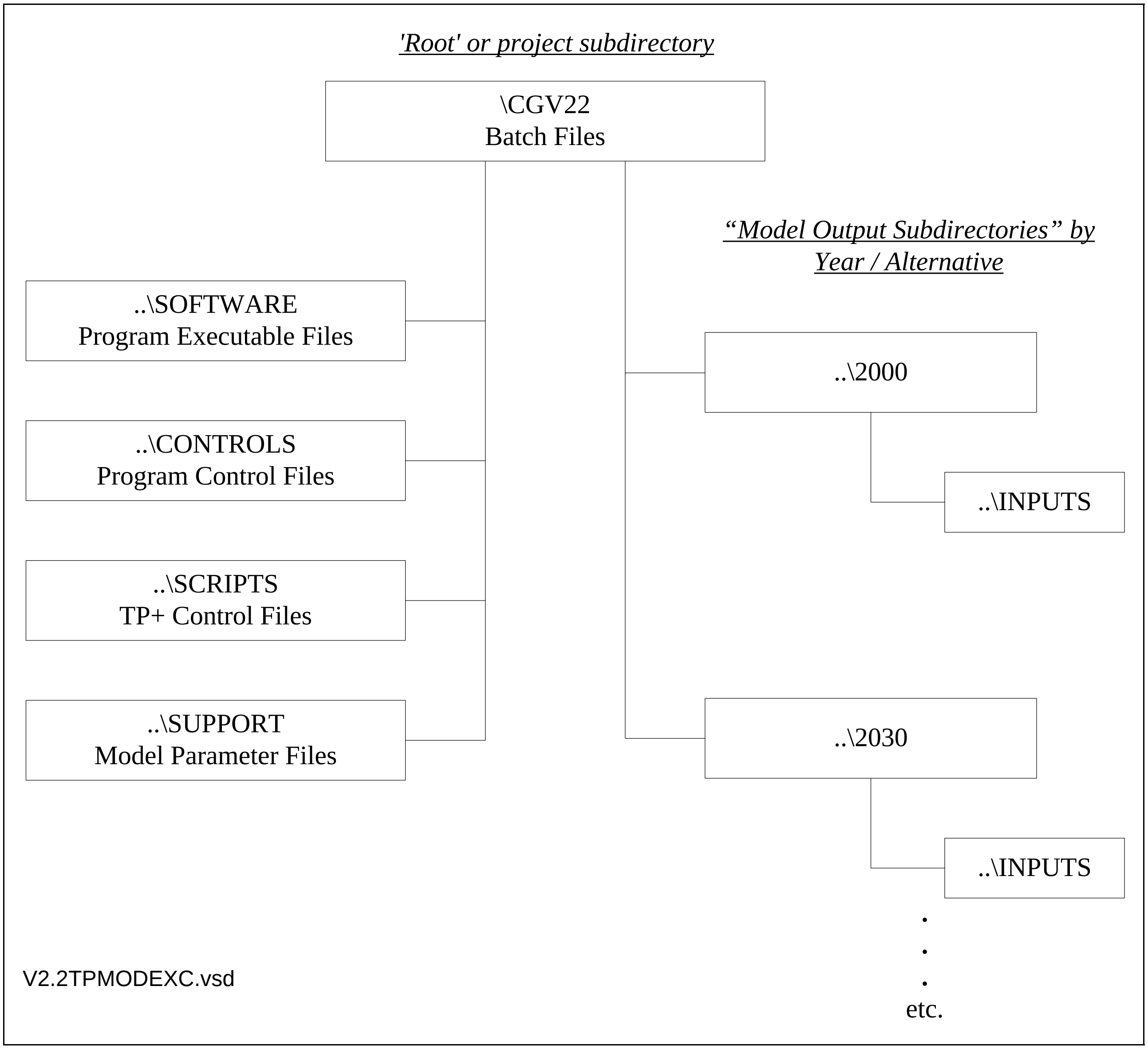
1. A series of pre-established 'parent' and 'child' batch files;
2. A standardized subdirectory system, in which input files, output files, TP+ scripts, etc. are rigidly organized; and
3. The use of generically named input and output files, which are stored in designated locations in the subdirectory 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 typically is related to a project). On the left side of the figure, there are four specially designated subdirectories under the root which are established specifically for non-TP+ software 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 year or alternative 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 must not be altered or renamed.

On the right side of Figure 10-2 are subdirectories that are established for model inputs and outputs of one or more alternatives. The figure indicates that each alternative subdirectory has its own *INPUTS* where all necessary model inputs are stored and generically named (e.g., land use file, network files, etc.). The alternative subdirectory (e.g., ..\2000 on Figure 10-2) is arbitrarily named and typically has some relation to a year and/or an alternative. 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.

Standardized 'parent' and 'child' batch files reside in root subdirectory. The 'child' batch files function to execute individual modeling steps, such as the trip generation step of the traffic assignment. 'Child' batch files generally call TP+ scripts and/or program executables. There are also named listings that result from each model step. Listing files are assigned *.RPT or *.TAB naming extensions. The former refers to TP+ listings while the latter refers to files containing 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, such as the iteration code, 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. Consequently it is the subdirectory name, rather than the filename itself, that identifies the year / alternative associated with a specific file. Accordingly, it is incumbent on the analyst to make certain that the appropriate files are placed in the correct subdirectory. 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 software executables is shown on Table 10-1. There are fewer non-TP+ executables used by the Versions 2.2 model than in previous TPB models, since several Fortran programs have been converted to TP+ scripts. A list of the generically named input files is shown in Table

10-2. The list of files shown must exist, as named, in the \INPUTS subdirectory. Each file must be provided in the prescribed file format (described later).

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 an execution. The sequence of batch file applications, by iteration, is shown on Table 10-4. The table indicates that there are 73 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 73 ‘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 following chapters address the specific details of each modeling step.

Table 10-1 Non-TP+ Software Required for Version 2.2 Model Execution

Executable Name	Size (bytes)	Date	Description	Comments	Requires a Control File?
STAPROTP.EXE	141,568	2/25/2005	Station/PNR lot support file generator	Creates TP+ transit network files from 'Station file'	Yes
NODESTB.EXE	105,472	4/9/2001	Reads TRNBUILD route/line files creates formated stop node file	Executed 2X to process AM/Off-Pk transit lines	Yes
SORTLINE.EXE	45,056	11/9/2001	Sorts the stop nodes file	Executed 2X to process AM/Off-Pk transit lines	No
CNTCONN2.EXE	129,024	9/27/2002	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 4X for each purpose	Yes
COGMC.EXE	561,486	4/6/2001	Mode choice model application program	Executed 4X for each purpose	Yes
EXTRTAB.EXE	24,663	7/26/2001	Utility pgm to extract text sections of TP+ report files.	Program is 'called' by many TP+ Scripts	No

Ref: v22_software.xls

Table 10-2 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	Trip	AEXT.ASC	Zonal External Attractions	Text
34	Trip	PEXT.ASC	Zonal External Productions	Text
35	Trip	CV_Ext_Thru_Ends.ASC	Zonal Commercial Vehicles External and Through trip ends	Text
36	Trip	AIRPAX.ADR	Air Passenger Auto Dr. Trips	Binary
37	Trip	SCHL.ADR	School Auto Dr. Trips	Binary
38	Trip	TAXI.ADR	Taxi Auto Dr. Trips	Binary
39	Trip	VISI.ADR	Visitor/Tourist Auto Dr. Trips	Binary
40	Trip	XXAUT.VTT	Through Auto Drivers	Binary
41	Trip	XXTRK.VTT	Through Trucks	Binary
42	Trip	XXCV.VTT	Through Commercial Vehicles trips	Binary

Ref: v22_inputs.xls

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

Batch File	Scripts / Programs	Purpose
Set_Factors.bat	Set_Factors.s	Create K-factorsand 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 trip generation
Trip_Distribution.bat	Trip_Distribution.s CV_Trip_Distribution.s	Execute trip distribution
Mode_Choice.bat or Mode_Choice_TC.bat	COGMC.exe MC_Summary.s MC_Constraint.s MC_ConSummary.s	Execute mode choice model
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
Misc_Time-of-Day.bat	Misc_Time-of-Day.s	Convert daily miscellaneous trips to AM, PM, and Off-peak
Time-of-Day.bat	Time-of-Day.s CV_Time-of-Day.s	Convert daily modeled trips to AM, PM, and Off-peak
Highway_Assignment.bat	Highway_Assignment.s	Execute highway assignment
Highway_Skims.bat	Highway_Skims.s	Create highway skims from assignment

Ref: Flowchart_Table.xls

Table 10-4 Sequence of Batch Files Executed by Iteration

Batch File	Scripts / Programs	Initial (Pump Prime) Iteration PP	Standard Iterations 1	2	3	4	5	6
Set_Factors.bat	Set_Factors.s	1						
Set_CPI.bat	Set_CPI.s	2						
PP_Highway_Build.bat	Staproto.exe Highway_Build_Toll.s	3						
PP_Highway_PNR.bat	Pump_Prime_Skims.s	4						
Highway_PNR.bat	Auto_Access.s		14	24	34	44	54	64
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	15	25	35	45	55	65
Transit_Fare.bat	Metrorail_Skims.s Mfare1.S Mfare2.s		16	26	36	46	56	66
Trip_Generation.bat	Trip_Generation.s CV_Trip_Generation.s	7	17	27	37	47	57	67
Trip_Distribution.bat	Trip_Distribution.s CV_Trip_Distribution.s	8	18	28	38	48	58	68
Mode_Choice.bat or Mode_Choice_TC.bat	COGMC.exe MC_Summary.s MC_Constraint.s MC_ConSummary.s		19	29	39	49	59	69
PP_Auto_Drivers.bat	PP_Auto_Drivers.s	9						
Auto_Driver.bat	MC_Auto_Drivers.s		20	30	40	50	60	70
Misc_Time-of-Day.bat	Misc_Time-of-Day.s	10						
Time-of-Day.bat	Time-of-Day.s CV_Time-of-Day.s	11	21	31	41	51	61	71
Highway_Assignment.bat	Highway_Assignment.s	12	22	32	42	52	62	72
Highway_Skims.bat	Highway_Skims.s	13	23	33	43	53	63	73

Ref: Flowchart_Table.xls

10.2 *Launching a Model Run*

The model is normally launched from a command window or command prompt (prior to Windows 2000, this was known as a DOS window). The command window should be opened to the root directory (e.g., c:\user\cgv22). 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.[1] The command prompt should show something like this:

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

The basic syntax for running the model is

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

For example:

```
C:\user\cgv22> runall_2000.bat 2000
```

will run the “runall_2000.bat” batch file using the “2000” subdirectory as the scenario subdirectory. While the model is running, it sends information to the screen (in the command window). 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.
```

[1] 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).

This information includes both “standard output” and “standard error.” “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. When we launch 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:

```
C:\user\cgv22> cmd /c runall_20000.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 till 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.[2] Thus, the final command is:

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

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

Chapter 11 Set-Up Programs and Highway Network Building

Input(s):

Zonal Land Use File	ZONE.ASC	ASCII
Node Coordinate File	NODE.ASC	ASCII
Link File	LINK.ASC	ASCII
Station/PNR Lot File	STA_TPP.BSE	ASCII
Metrorail/Commuter Rail Link File	RAIL_LNK.BSE	ASCII
Initial Speed Lookup Files	TAZAMSPD.LKP, TAZOPSPD.LKP, AMSPD.LKP, OPSPD.LKP	ASCII
Area Type Override File	AREAOVER.ASC	ASCII
Toll Deflation File	TOLL.ESC	ASCII

Output(s):

Freeway Node File	TRN_FWYN.ASC	ASCII
AM, PM, Off-Peak Highway Network File	ZONEHWY.NET	Binary
TRNBUILD Station Node/Link Files	MET_NODE.TB, COM_NODE.TB, MET_LINK.TB, COM_LINK.TB	ASCII
TRNBUILD Walk Link File	WLKNET.TB	ASCII
TRNBUILD PNR Node/Link Files	MET_PNRN.TB, MET_PNRL.TB, COM_PNRN.TB, COM_PNRL.TB, BUS_PNRN.TB, BUS_PNRL.TB	ASCII
TRNBUILD Bus/Station Connect Link Files	MET_BUS.TB, COM_BUS.TB	ASCII
MFARE1 A1 Deck File	MFARE1.A1	ASCII
MFARE1 Metrorail Link File	METLNKM1.TB	ASCII
TAZ/PNR Equivalence table	TAZPNR.ASC	ASCII
Highway and Transit Coordinate (XY) File	TRN_NODE.ASC	ASCII
Zonal Highway Terminal Time File	ZTERMTM.ASC	ASCII
Station PNR Coordinate File	STAPNR.XYS	ASCII

Program File(s):

STAPROTP.EXE
TP+

Control/Support File(s):

SET_FACTORS.S
SET_CPI.S
STAPROTP.CTL (Control files for the STAPROTP Program)
HIGHWAY_BUILD_TOLL.S (TP+ script file for network building)

Application Details:

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, based on the NAD83 system 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.[3] 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 Exhibit 11-1 :

Exhibit 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 build ASCII 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.

The STAPROTP program is used to create transit link and node files in TRNBUILD format, on the basis of two user-prepared files. Exhibit 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.

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

Exhibits 2-5 through 2-9 show the input file format descriptions for the HIGHWAY_BUILD_TOLL.S and STAPROTP programs.

Exhibit 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 1-digit facility type indicator that ranges from a value of ‘0’ to ‘9’. 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 time period-specific toll attributes: *AMTOLL*, *PMTOLL*, and *OPTOLL*. Under default conditions, all three attributes are assigned the *TOLL* value that is coded or automatically generated during network building.

The TOLL.ESC file is a TP+ script section that is called into the highway network building process. It contains three ‘look-up tables’ named *ESCFAC*, *DSTFAC, and TTFAC*, which contain user-specified parameters that vary by *TOLLGRP* codes. *ESCFAC* values are the deflation factors used to convert current year tolls into constant 1994 values. This parameter exists because the future pricing policies may vary between tolled facilities. These factors are directly analogous to the deflation parameter referenced in the MFARE2 program, i.e., UPARMS(2). 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 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     Toll Escaltion - by toll group |
;|//////////////////////////////////////////////////////////////////|
;    ==========================================
;    = TOLL ESCALATION FACTORS by TOLL GROUP    =
;    = TABLE LOOKUP                             =
;    = For converting current year cents to     =
;    = 1994 cents  -updated 11/14/03 rjm        =
;    ==========================================
; Use 2000 to 1994 deflation factor
 LOOKUP NAME= ESCFAC,
        LOOKUP[1] = 1, RESULT=2,
        FAIL= 0,0,0,INTERPOLATE=F,
;   Toll  Escalation Toll Rate
;   Grp   Factor
;   ---   ------
 R=" 1    0.86063     ",  ;
   " 2    0.86063     ",  ;
   " 3    0.86063     ",  ;
   " 4    0.86063     ",  ;
   " 5    0.86063     ",  ;
   " 6    0.86063     ",  ;
   " 7    0.86063     ",  ;
   " 8    0.86063     ",  ;
   " 9    0.86063     "   ;
; 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    ",  ;
   " 4    0.0000    ",  ;
   " 5    0.0000    ",  ;
   " 6    0.0000    ",  ;
   " 7    0.0000    ",  ;
   " 8    0.0000    ",  ;
   " 9    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   ",  ;
   " 5    1.0000  1.0000   1.0000   ",  ;
   " 6    1.0000  1.0000   1.0000   ",  ;
   " 7    1.0000  1.0000   1.0000   ",  ;
   " 8    1.0000  1.0000   1.0000   ",  ;
   " 9    1.0000  1.0000   1.0000   "   ;
; end of toll time adjustment factor 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)

Exhibit 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 1990 CTPP.
97- 98	I2	Airline distance to the nearest external station in whole miles.

Exhibit 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)

Exhibit 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 (1-9)
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)

Exhibit 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)
21-44	A24	Station Name/PNR lot name
45-50	I6	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	1st Bus Node
71-75	I5	2nd 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)

Exhibit 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 1/100ths 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`	ASCII
TAZ/PNR Equivalency File	`TAZPNR.ASC`	ASCII
Restrained Highway Skims	`??_AM.SKM, ??_OP.SKM`	Binary
Time / Toll Value Equivalent File	`TOLL.SKM`	ASCII
TAZ Coordinate File	`BASEZON.DAT`	ASCII

Output(s):

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

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

Output(s):

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

Program File(s):

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

Control/Support File(s):

CNTCONN2 Control (CTL) files, NODESTB Control Files, NETSW2 Control (CTL) file,
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 nodes 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' ASCII 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.

Exhibits 4-1 through 4-5 are the control file descriptions used with the pre-transit network programs. Exhibits 4-6 through 4-8 show the file format descriptions of the input files used.

Exhibit 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

Exhibit 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)

Exhibit 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

Exhibit 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:

Exhibit 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

Exhibit 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

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

Columns	*Format*	*Field Description*
Zonal data		
1-4	I4	TAZ Number (or Station No.)
5-8	I4	Bus fare zone 1
13-16	I4	Bus fare zone 2
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		
29-32	I4	Station Bus Fare Code 1
37-40	I4	Station Bus Fare Code 2

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	ASCII
Peak and Off-Peak Walk Access Links, TRNBUILD Format	WALK_AM.TB, WALK_OP.TB	ASCII
Peak/Off-Peak Zonal Drive Access Links, TRNBUILD Format	PNR_AM.TB, PNR_OP.TB	ASCII
Walk Network Links, TRNBUILD Format	WLKNET.TB	ASCII
Rail Links File, TRNBUILD Format	MET_LINK.TB, COM_LINK.TB	ASCII
Rail Node File, TRNBUILD Format	MET_NODE.TB, COM_NODE.TB	ASCII
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	ASCII
Station/Bus Connect Links, TRNBUILD Format	MET_BUS.TB, COM_BUS.TB	ASCII
Local Bus Time Factors	LBUS_TIMFTRS.ASC	ASCII

Output(s):

Peak/Off-Peak Walk Access Skims	??_AM_WK.SKM, ??_OP_WK.SKM	Binary
Peak/Off-Peak Drive Access Skims	??_AM_DR.SKM, ??_OP_DR.SKM	Binary
Peak/Off-Peak Walk Access Station-to-Station Tables	??_AM_WK.STA, ??_OP_WK.STA	Binary
Peak/Off-Peak Drive Access Station-to-Station Tables	??_AM_DR.STA, ??_OP_DR.STA	Binary
Transit Accessibility File	JOBACC.ASC	ASCII

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. Four TRNBUILD procedures are executed to produce walk-access and drive access skims for the AM-peak and off-peak periods. 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,[4] 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
5) Non-Metrorail In-Vehicle time

[4] 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.

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 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	ASCII
Metro Station XY File	METNODM1.TB	ASCII
Metrorail turn penalty file	INPUTS\TRNPEN.DAT	ASCII
MFARE1 A1 (Coordinate) File	MFARE1.A1	ASCII
Deflation factor file	Trn_deflator.txt	ASCII
WMATA tariff parameters	Inputs\tarrif.txt	ASCII
Metrorail station discount file	Inputs\mfare1_sta_disc.asc	ASCII
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	ASCII
Peak /Off-Peak MFARE2 A2 File	FARE_A2.ASC	ASCII

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

Exhibit 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)

Exhibit 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

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

Columns	*Format*	*Field Description*

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

Columns	*Format*	*Field Description*

Chapter 16 Demographic Submodels

Input(s):

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

Output(s):

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

Program File(s):

COGMCA1.EXE

Control/Support File(s):

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

Application Details:

Exhibit 16-1 COGMCA1 Control Parameters

Type	***Name***	***Description (MFARE1)***
&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

Exhibit 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

Exhibit 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)

Exhibit 16-4 Household Income, Household Size File (HHSIZINC.DAT)

Data Item	***Begin Col.***	***End Col.***	***Format***
TAZ	1	4	I4
HHs Income level 1 Size 1			
HHs Income level 1 Size 2			
HHs Income level 1 Size 3			
HHs Income level 1 Size 4+			
HHs Income level 2 Size 1			
HHs Income level 2 Size 2			
HHs Income level 2 Size 3			
HHs Income level 2 Size 4+			
HHs Income level 3 Size 1			
HHs Income level 3 Size 2			
HHs Income level 3 Size 3			
HHs Income level 3 Size 4+			
HHs Income level 4 Size 1			
HHs Income level 4 Size 2			
HHs Income level 4 Size 3			
HHs Income level 4 Size 4+			

Exhibit 16-5 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

Exhibit 16-6 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	ASCII
Zonal HHs of Income Level 1, Stratified by Size and Vehicle Avail.	HHI1_SV.ASC	ASCII
Zonal HHs of Income Level 2, Stratified by Size and Vehicle Avail.	HHI2_SV.ASC	ASCII
Zonal HHs of Income Level 3, Stratified by Size and Vehicle Avail.	HHI3_SV.ASC	ASCII
Zonal HHs of Income Level 4, Stratified by Size and Vehicle Avail.	HHI4_SV.ASC	ASCII
Zonal Adjustment File, Purpose-Specific: HBW, HBS, HBO, NHB, MEDTRK, HVYTRK	ADJZPAF7.UPW, ADJZPAF7.UPS, ADJZPAF7.UPO, ADJZPAF7.UPN, ADJZPAF7.UPM, ADJZPAF7.UPH	ASCII
External Production File	PEXT.ASC	ASCII
External Attraction File	AEXT.ASC	ASCII
Zonal Area Type File	BASEZON.DAT	ASCII

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	ASCII
HBW Non-Motorized Trip Ends	HBW_NM_PsAs.ASC	ASCII

Control/Support File(s):

TRIP_GENERATION.S
CV_TRIP_GENERATION.S

Application Details:

The trip generation process functions to generate trip-end (production and attraction) files corresponding to six 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 user identifies the specific purpose in a given run using the &Tpurp parameter.

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 shown as Exhibits 8-2-through 8-4.

Input File Descriptions and Formats

1. Land Use File

2. Zonal HH File, Income Stratified

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

Columns	Format	Field Description
1-4	I4	TAZ
		HH in Size group 1, Veh. Availability. Group 1
		HH in Size group 1, Veh. Availability. Group 2
		HH in Size group 1, Veh. Availability. Group 3
		HH in Size group 1, Veh. Availability. Group 4
		HH in Size group 2, Veh. Availability. Group 1
		HH in Size group 2, Veh. Availability. Group 2
		…
		HH in Size group 4, Veh. Availability. Group 4

3. Zonal Adjustment File (Purpose-Specific)

Exhibit 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

Exhibit 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,	ASCII
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	ASCII
Highway Terminal Time File	ZTERMTM.ASC	ASCII
F-Factor Files	HBWV2.FFS, HBSV2.FFS, HBOV2.FFS, N_TV2.FFS	ASCII
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	ASCII

Output(s):

6 Trip Tables (HBW, HBS, HBO,	HBWEST??.PTT, HBSEST??.PTT,	Binary

NHB, Med Truck, Heavy Truck)	HBOEST??.PTT, NHBEST??.PTT, MTKEST??.PTT, HTKEST??.PTT	

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

Exhibit 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	ASCII
Transit Percentage Adjustment File	MCTF_HBW.ASC, MCTF_HBS.ASC, MCTF_HBO.ASC, MCTF_NHB.ASC	ASCII
Car Occupancy Adjustment Files	MCCF_HBW.ASC, MCCF_HBS.ASC, MCCF_HBO.ASC, MCCF_NHB.ASC	ASCII
Non-work Transit Factors File (unused)	MC_FAC.ASC	ASCII

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 2005).

Input file format descriptions for the mode choice model are shown as Exhibits 10-1 and 10-2. A summary of user-defined parameters (UPARMS) is shown as Exhibits 10-3 and 10-4.

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 2005 levels. The transit constraint was therefore applied to impose a transit trip maximum on forecasted transit trips, as established by 2005 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 2.1 transit constraint process, specifically:

1) The program reads the constrained (2005) 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 2005 *daily* totals. Given that the Version 2.1/TP+ model now 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. Exhibit 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.

Exhibit 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 2005 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).

2005 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[5]. 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) $DConFTrn_{ij} = DUncFTrn_{ij} - PUncFTrn_{ij} + P05Trn_{ij}$

[5] 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
$P05Trn_{ij}$ = Peak period 2005 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 2005 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 (2005) peak transit trips
- Constrained (2005) 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, 2005 transit trip tables *must* exist on the machine of execution. The user also *must* specify the path of the pre-existing 2005 transit trip tables produced by the mode choice model. The path of the 2005 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 _path05_=\cgv2tp\cg2005\

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 _path05_ 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

Exhibit 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.

Exhibit 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

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

COG/TPB Model, Version 2.1D #50

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)
UPARMS(22)	R	0.9	0.27	0.75	1	Average daily work person trips per household for 0-auto households

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
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)

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

COG/TPB Model, Version 2.1D #50

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
UPARMS(49)	R	0.00425	0.00416	0	0	Coefficient on drive alone highway operating cost

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
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
UPARMS(73)	R	0	0.45633	0.6853	0.00709	Coefficient on 3 persons: Auto highway terminal (excess) time

Keyword	**Type**	**Purpose**				**Description**
		HBW	**HBS**	**HBO**	**NHB**	
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
UPARMS(96)	R	0	0	0	0	Transit bias coefficient for long walk to long walk access market

Keyword	Type	Purpose				Description
		HBW	HBS	HBO	NHB	
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	Binary
Daily Miscellaneous and Truck Trips	VISI.ADR, TAXI.ADR, SCHL.ADR, AIRPAX.ADR, XXTRK.VTT, XXAUT.VTT, MTKEST??.VTT, HTKEST??.VTT	Binary
Time of Day Percent File by Purpose, Mode, and Direction	V2TODTPP.PAR	ASCII / TP+ script

Output(s):

Trip Tables by Time Period	AM??.ADR, PM??.ADR, OP??.ADR	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 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 = '63.30'    ; 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 = '10.00'    ; AM  Pk Prd            Air Pax, Auto Dr.
PMAIRPXP = '10.00'    ; PM  Pk Prd            Air Pax, Auto Dr.
OPAIRPXP = '80.00'    ; 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_21D.txt ..\support\Qeueing_time.txt	Text
Modeled vehicle trip tables by occupant level and time period	`AM??.ADR, PM??.ADR, OP??.ADR`	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):

Loaded Links Files by Time Period	`I6HWY.NET`	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 20 fixed iterations.

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

- AM modeled trips
- PM modeled trips
- Off-peak modeled trips
- AM truck and non-modeled trips
- PM truck and non-modeled trips
- Off-peak truck and non-modeled trips

The modeled trip files contain 3 trip tables corresponding to SOV, 2 occupant HOVs, and 3+occupant HOVs. The non-modeled files each contain 7 trip tables corresponding to through trucks, through auto drivers, taxi auto drivers, visitor auto drivers, school auto drivers, medium size trucks, and heavy trucks. The program first collapses the six files into three files (AM,PM and Off-peak) containing five tables: 1) 1-occupant auto drivers, 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 6^{th} (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 Exhibit 21-1.

Exhibit 21-1 Link variables on the loaded-link highway network from the final speed feedback iteration (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	Alpha	Project ID
TAZ	4	Transportation Analysis Zone associated with the link
AREATP	1	Area type (1-7)
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
PPOPSPD	2	Pump prime iteration, off-peak speed
PPPMSPD	2	Pump prime iteration, PM speed
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
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 volume-delay function value for the corresponding VC ratio
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 volume-delay function value for the corresponding VC ratio
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 volume-delay function value for the corresponding VC ratio
PP24VOL	12.5	Pump prime iteration, daily (24-hour) estimated volume (AAWT)

Variable	Format	Description
PP24VMT	12.5	Pump prime iteration, daily (24-hour) estimated vehicle miles of travel
TVOL00	3	Interim variable, can be disregarded
TVMT00	6.2	Interim variable, can be disregarded
TVOLEST	3	Interim variable, can be disregarded
TVOLOBS	3	Interim variable, can be disregarded
TVMTEST	6.2	Interim variable, can be disregarded
TVMTOBS	6.2	Interim variable, can be disregarded
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 volume-delay function value for the corresponding VC ratio
I1AMSPD	8.5	First iteration, AM speed
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 volume-delay function value for the corresponding VC ratio
I1PMSPD	8.5	First iteration, PM speed
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 volume-delay function value for the corresponding VC ratio
I1OPSPD	8.5	First iteration, OP speed
I124VOL	12.5	First iteration, daily (24-hour) estimated volume (AAWT)
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 volume-delay function value for the corresponding VC ratio
I6AMSPD	8.5	Sixth iteration, AM speed
I6PMVOL	5	Sixth iteration, PM estimated volume
I6PMVC	7.5	Sixth iteration, PM estimated volume-to-capacity ratio
I6PMVDF	7.5	Sixth iteration, PM volume-delay function value for the corresponding VC ratio
I6PMSPD	8.5	Sixth iteration, PM speed
I6OPVOL	5	Sixth iteration, OP estimated volume
I6OPVC	7.5	Sixth iteration, OP estimated volume-to-capacity ratio
I6OPVDF	7.5	Sixth iteration, OP volume-delay function value for the corresponding VC ratio
I6OPSPD	8.5	Sixth iteration, OP speed
I624VOL	6	Sixth iteration, daily (24-hour) estimated volume (AAWT)
I624VMT	12.5	Sixth iteration, daily (24-hour) estimated vehicle miles of travel
ATYPE	1	Interim variable, can be disregarded
COMP	1	Interim variable, can be disregarded

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).

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.

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

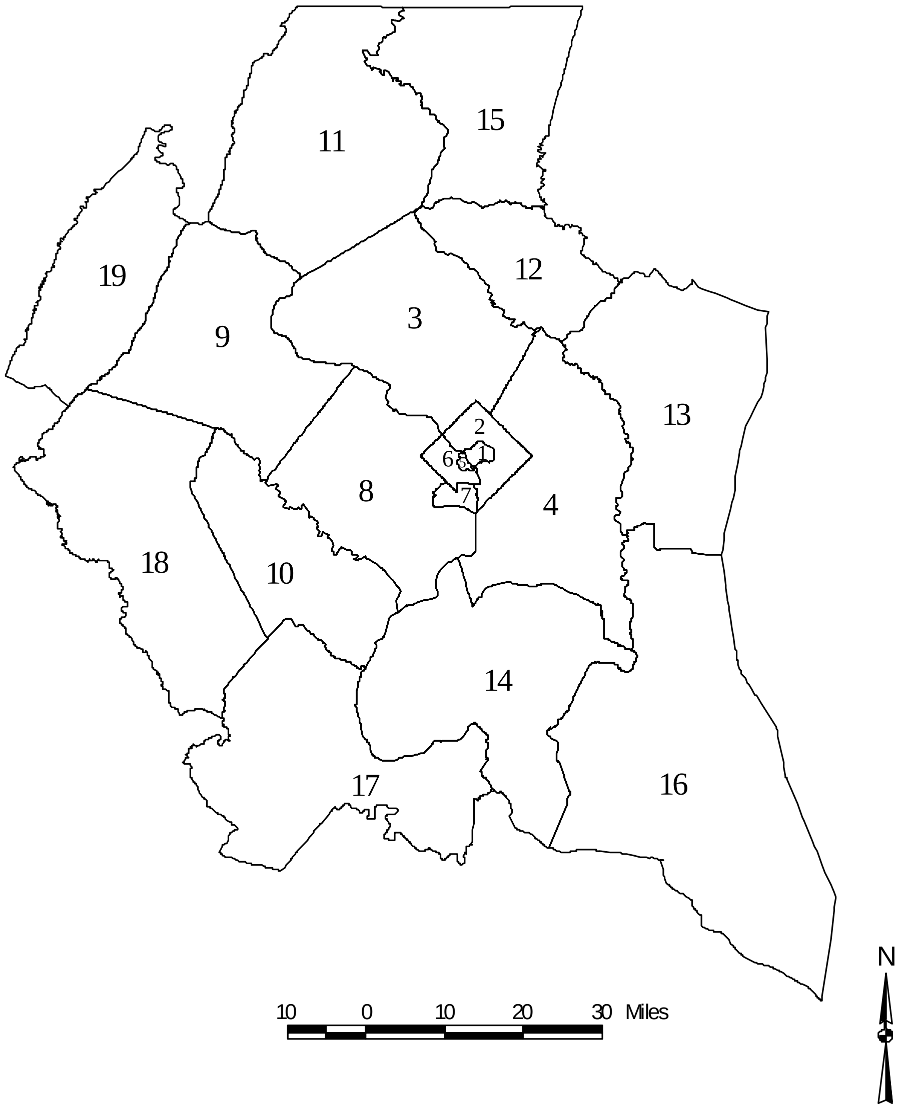


Table 2-1 Superdistricts defined in terms of TAZ

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_summary2000.tab

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

Simulation - Year: 2000 Alternative: V2.2 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	4503	3079	749	641	447	688	305	1179	28	15	4	0	30	49	2	0	5	0	0	0	0	0	952	12676
2 DC NC	45667	32959	14254	12653	3527	5198	1986	7244	121	33	25	2	603	918	16	3	60	2	0	0	1	0	7881	133153
3 MTG	48269	27394	271472	24008	3425	5671	1363	18256	543	56	5107	314	6921	2489	7	0	22	5	1	158	0	0	18725	434206
4 PG	55167	64847	33483	159274	4838	8417	5761	11990	79	67	53	21	9176	21042	753	311	4046	1	1	2	5	103	18042	397479
5 ARLCR	903	252	131	37	635	442	135	565	16	6	0	0	3	3	0	0	2	1	0	0	0	0	99	3230
6 ARNCR	14975	4971	2842	746	5563	20167	5166	23562	524	170	9	0	13	30	0	0	6	10	3	0	4	0	1774	80535
7 ALX	8574	2917	1037	950	3064	8239	13388	20115	180	248	0	0	8	29	1	0	18	11	16	1	10	0	968	59774
8 FFX	37098	15076	10804	4088	11231	27578	28068	323736	23798	11159	105	0	56	102	7	2	61	884	298	65	274	6	7330	501826
9 LDN	621	412	1838	64	384	775	322	46233	43095	1115	2154	24	58	5	0	0	0	394	5	1483	0	0	2475	101457
10 PW	1859	376	281	211	705	2021	4042	60621	3966	79288	23	0	1	1	1	0	2	2993	3283	48	3021	81	2002	164826
11 FRD	193	401	19030	461	50	64	8	779	2923	15	75541	3263	4499	597	0	0	0	8	0	2126	0	0	9189	119147
12 CAR	22	62	4354	624	1	2	0	35	165	1	10708	49812	7405	1069	0	0	0	0	0	183	0	0	13774	88217
13 HOW	2253	3538	15586	14434	146	214	68	467	71	1	3039	771	51095	16010	4	0	3	0	0	93	0	0	22405	130198
14 AAR	6178	7953	5567	29821	411	644	296	462	3	0	103	40	17483	161808	811	49	218	0	0	0	0	0	27378	259225
15 CAL	968	1784	282	6934	82	132	129	174	0	0	0	0	56	3341	17858	8684	1402	0	1	0	0	101	316	42244
16 STM	87	273	24	2035	7	12	34	39	0	1	0	0	1	115	2396	39953	3727	0	14	0	36	1064	167	49985
17 CHS	2580	4606	445	17153	231	398	676	899	1	3	0	0	27	783	1341	2388	31209	0	26	0	84	1779	507	65136
18 FAU	1	1	13	2	1	21	21	5747	1673	6120	13	0	0	0	0	0	0	13770	1085	134	1010	26	1035	30673
19 STA	43	25	12	13	68	188	467	4864	38	8793	0	0	0	0	0	6	24	1411	19743	2	13960	712	1665	52034
20 CL/JF	7	15	1228	8	2	5	1	1279	5427	222	3820	45	129	7	0	0	0	286	1	17917	0	0	4797	35196
21 SP/FB	8	6	2	2	10	27	96	1252	7	2965	0	0	0	0	2	3	17	492	6616	0	38000	632	5196	55333
22 KGEO	0	2	1	87	0	0	0	15	1	111	0	0	0	3	16	131	485	23	436	0	992	7369	178	9850
23 EXTL	4279	4846	18323	18191	637	1393	900	13624	5027	7230	21276	18988	28616	62239	593	392	1050	5309	2694	9831	10395	827	0	236660
TOTAL	234255	175795	401758	292437	35465	82296	63232	543137	87686	117619	121980	73280	126180	270640	23808	51922	42357	25600	34223	32043	67792	12700	146855	3063060

Simulation - Year: 2000 Alternative: V2.2 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	5194	3514	873	749	505	812	353	1386	42	17	5	0	38	72	2	0	6	0	0	0	0	0	1091	14659
2 DC NC	52974	36273	16235	14526	4014	6025	2283	8408	156	45	35	3	741	1155	21	3	78	2	0	0	1	0	9060	152038
3 MTG	56568	30537	299149	26707	3947	6583	1551	20632	640	67	5766	359	7754	2851	9	0	23	6	1	196	1	1	21528	484876
4 PG	64431	72259	38037	173840	5547	9815	6484	13732	98	76	73	26	10260	23635	855	365	4492	1	3	2	6	132	20734	444903
5 ARLCR	1048	282	151	42	665	507	153	638	21	7	0	0	3	4	0	0	2	1	0	0	0	0	115	3639
6 ARNCR	16727	5456	3230	825	6179	22542	5734	26324	627	200	11	0	15	38	1	0	8	11	4	1	6	0	2036	89975
7 ALX	9378	3168	1141	1052	3330	9198	14586	22503	218	281	2	0	8	36	1	0	19	13	21	1	15	0	1110	66081
8 FFX	38828	15903	12042	4546	11773	29377	30711	353310	26346	12378	128	0	69	120	10	2	68	1022	349	84	327	8	8407	545808
9 LDN	622	419	2014	66	378	779	335	51770	46748	1278	2428	30	72	8	0	0	0	444	6	1649	1	0	2846	111893
10 PW	1981	402	287	235	749	2184	4401	65958	4470	85578	26	0	0	0	1	0	4	3365	3699	57	3484	99	2307	179287
11 FRD	206	415	21146	540	51	63	11	1031	3404	23	80274	3679	5263	724	0	0	0	10	0	2437	0	0	10564	129841
12 CAR	30	72	5039	738	1	2	0	50	209	1	12215	52039	8399	1244	0	0	0	0	0	227	0	0	15834	96100
13 HOW	2761	4071	17671	16119	167	265	82	563	92	1	3493	860	54247	17692	6	1	4	0	0	116	0	0	25750	143961
14 AAR	7687	9254	6565	33688	495	801	357	558	3	1	126	48	19522	173763	910	60	257	0	0	3	0	1	31463	285562
15 CAL	1217	2081	348	7899	102	166	151	213	0	0	0	0	73	3829	18928	9686	1614	0	1	0	1	130	363	46802
16 STM	117	323	32	2363	10	14	38	53	0	2	0	0	2	142	2708	42970	4205	0	21	0	52	1270	188	54510
17 CHS	3173	5271	541	19285	275	487	777	1050	1	5	0	0	30	929	1516	2710	33116	0	33	0	111	2094	582	71986
18 FAU	1	1	14	2	1	19	20	6536	1918	6856	16	0	0	0	0	0	1	14543	1216	157	1149	31	1189	33670
19 STA	48	28	13	14	73	216	523	5341	46	9791	0	0	0	0	1	8	33	1607	20770	2	15332	814	1913	56573
20 CL/JF	7	15	1463	6	1	6	1	1721	6280	269	4377	55	167	12	0	0	0	334	2	18813	0	0	5516	39045
21 SP/FB	10	5	4	3	10	33	109	1401	11	3441	0	0	0	0	2	3	25	583	7326	1	39903	726	5972	59568
22 KGEO	0	3	1	110	0	0	2	16	1	135	0	0	0	5	21	164	579	26	498	0	1123	7701	206	10591
23 EXTL	4918	5567	21067	20908	732	1605	1034	15658	5782	8310	24453	21828	32890	71538	683	450	1203	6101	3096	11301	11948	951	0	272023
TOTAL	267926	195319	447063	324263	39005	91499	69696	598852	97113	128762	133428	78927	139553	297797	25675	56422	45737	28069	37046	35047	73460	13958	168774	3393391

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

Simulation - Year: 2000 Alternative: V2.2 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	14436	3876	1193	442	947	1381	349	1085	0	2	0	0	5	4	0	0	0	0	0	0	0	0	0	23720
2 DC NC	86517	25331	9491	3962	3336	4662	1045	2848	0	5	0	0	29	19	0	0	0	0	0	0	0	0	0	137245
3 MTG	47974	7978	30038	2043	1658	2325	308	2040	0	0	0	0	7	9	0	0	0	0	0	0	0	0	0	94380
4 PG	53618	16747	6909	13426	2869	4355	1014	1486	0	0	0	0	123	63	0	0	0	0	0	0	0	0	0	100610
5 ARLCR	2240	191	94	15	219	443	71	302	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3575
6 ARNCR	21884	2154	995	144	3817	4608	1547	5871	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	41023
7 ALX	11821	1308	445	109	2057	4851	3360	3562	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	27516
8 FFX	43474	4360	2014	253	5988	12132	5135	15025	29	84	0	0	0	0	0	0	0	0	0	0	0	0	0	88494
9 LDN	462	49	158	0	135	213	13	2361	327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3718
10 PW	5850	260	95	13	731	1284	1322	4196	0	2723	0	0	0	0	0	0	0	0	0	0	0	0	0	16474
11 FRD	163	77	1308	4	15	14	2	3	0	0	262	0	0	0	0	0	0	0	0	0	0	0	0	1848
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	2098	639	1520	421	79	102	17	42	0	0	0	0	852	68	0	0	0	0	0	0	0	0	0	5838
14 AAR	5916	1432	758	771	236	322	57	50	0	0	0	0	215	324	4	0	0	0	0	0	0	0	0	10085
15 CAL	1520	507	65	110	65	95	27	23	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	2454
16 STM	182	75	8	29	10	11	6	5	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	366
17 CHS	3960	1213	152	338	186	284	93	74	0	0	0	0	0	0	0	0	66	0	0	0	0	0	0	6366
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	119	16	7	1	58	110	103	224	0	6	0	0	0	0	0	0	0	0	11	0	3	0	0	658
20 CL/JF	11	5	132	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151
21 SP/FB	40	5	1	0	8	18	28	93	0	4	0	0	0	0	0	0	0	0	17	0	24	0	0	238
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	302285	66223	55383	22082	22415	37211	14497	39290	358	2827	262	0	1232	487	46	0	106	0	28	0	27	0	0	564759

Simulation - Year: 2000 Alternative: V2.2 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	859	336	1139	107	87	174	28	423	8	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3162
4 PG	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
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	1457	222	34	30	218	391	13	6	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	2375
7 ALX	1387	236	139	29	276	373	0	72	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	2515
8 FFX	18324	3717	1007	317	3883	7654	1393	6610	3	0	2	0	3	11	0	0	1	0	0	0	0	0	0	42925
9 LDN	859	268	439	37	439	840	236	4057	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7176
10 PW	5302	522	273	117	1218	2652	1535	7930	30	1	2	0	0	0	0	0	3	0	0	0	0	0	0	19585
11 FRD	153	191	1936	40	33	48	7	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2496
12 CAR	1	1	57	0	0	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67
13 HOW	0	1	1	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
18 FAU	4	4	7	1	6	27	17	479	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	546
19 STA	207	60	29	12	189	414	303	1397	4	26	0	0	0	0	0	0	0	0	0	0	0	0	0	2641
20 CL/JF	25	17	178	3	8	13	1	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	373
21 SP/FB	70	25	11	3	36	93	99	541	2	16	0	0	0	0	0	0	0	0	0	0	0	0	0	896
22 KGEO	0	2	0	1	0	0	0	9	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	14
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	28648	5602	5250	697	6393	12682	3632	21755	47	46	6	0	5	16	0	0	4	0	0	0	0	0	0	84783

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBW 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	326	143	490	48	37	70	15	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1304
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	551	88	8	13	85	150	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	903
7 ALX	396	72	37	15	81	103	0	22	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	727
8 FFX	6422	1440	370	123	1503	2890	527	2764	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	16043
9 LDN	253	88	145	13	147	278	78	1385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2387
10 PW	1526	158	84	41	380	831	470	2684	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6183
11 FRD	56	75	812	22	10	20	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1023
12 CAR	0	0	23	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
13 HOW	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
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	1	3	0	3	13	5	199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224
19 STA	57	17	6	5	52	118	88	401	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	750
20 CL/JF	5	7	69	2	3	1	1	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125
21 SP/FB	19	8	2	1	8	27	27	153	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	252
22 KGEO	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
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	9611	2097	2050	283	2309	4502	1219	7854	11	11	2	0	1	3	0	0	0	0	0	0	0	0	0	29953

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBW 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	4503	3079	749	641	447	688	305	1179	28	15	4	0	30	49	2	0	5	0	0	0	0	0	952	12676
2 DC NC	45667	32959	14254	12653	3527	5198	1986	7244	121	33	25	2	603	918	16	3	60	2	0	0	1	0	7881	133153
3 MTG	48595	27537	271962	24056	3462	5741	1378	18431	543	56	5107	314	6921	2489	7	0	22	5	1	158	0	0	18725	435510
4 PG	55167	64847	33483	159274	4838	8417	5761	11990	79	67	53	21	9176	21042	753	311	4046	1	1	2	5	103	18042	397479
5 ARLCR	903	252	131	37	635	442	135	565	16	6	0	0	3	3	0	0	2	1	0	0	0	0	99	3230
6 ARNCR	15526	5059	2850	759	5648	20317	5173	23562	524	170	10	0	13	30	0	0	6	10	3	0	4	0	1774	81438
7 ALX	8970	2989	1074	965	3145	8342	13388	20137	180	248	0	0	9	29	1	0	18	11	16	1	10	0	968	60501
8 FFX	43520	16516	11174	4211	12734	30468	28595	326500	23799	11159	105	0	56	105	7	2	61	884	298	65	274	6	7330	517869
9 LDN	874	500	1983	77	531	1053	400	47618	43095	1115	2154	24	58	5	0	0	0	394	5	1483	0	0	2475	103844
10 PW	3385	534	365	252	1085	2852	4512	63305	3974	79288	24	0	1	1	1	0	2	2993	3283	48	3021	81	2002	171009
11 FRD	249	476	19842	483	60	84	9	806	2923	15	75541	3263	4499	597	0	0	0	8	0	2126	0	0	9189	120170
12 CAR	22	62	4377	624	1	3	0	36	165	1	10708	49812	7405	1069	0	0	0	0	0	183	0	0	13774	88242
13 HOW	2253	3538	15587	14434	146	214	68	469	71	1	3039	771	51095	16010	4	0	3	0	0	93	0	0	22405	130201
14 AAR	6178	7953	5567	29821	411	644	296	462	3	0	103	40	17483	161808	811	49	218	0	0	0	0	0	27378	259225
15 CAL	968	1784	282	6934	82	132	129	174	0	0	0	0	56	3341	17858	8684	1402	0	1	0	0	101	316	42244
16 STM	87	273	24	2035	7	12	34	39	0	1	0	0	1	115	2396	39953	3727	0	14	0	36	1064	167	49985
17 CHS	2580	4606	445	17153	231	398	676	899	1	3	0	0	27	783	1341	2388	31209	0	26	0	84	1779	507	65136
18 FAU	1	2	16	2	4	34	26	5946	1673	6120	13	0	0	0	0	0	0	13770	1085	134	1010	26	1035	30897
19 STA	100	42	18	18	120	306	555	5265	39	8798	0	0	0	0	0	6	24	1411	19743	2	13960	712	1665	52784
20 CL/JF	12	22	1297	10	5	6	2	1316	5427	222	3820	45	129	7	0	0	0	286	1	17917	0	0	4797	35321
21 SP/FB	27	14	4	3	18	54	123	1405	8	2971	0	0	0	0	2	3	17	492	6616	0	38000	632	5196	55585
22 KGEO	0	2	1	87	0	0	0	19	1	111	0	0	0	3	16	131	485	23	436	0	992	7369	178	9854
23 EXTL	4279	4846	18323	18191	637	1393	900	13624	5027	7230	21276	18988	28616	62239	593	392	1050	5309	2694	9831	10395	827	0	236660
TOTAL	243866	177892	403808	292720	37774	86798	64451	550991	87697	117630	121982	73280	126181	270643	23808	51922	42357	25600	34223	32043	67792	12700	146855	3093013

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

Simulation - Year: 2000 Alternative: V2.2 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	5194	3514	873	749	505	812	353	1386	42	17	5	0	38	72	2	0	6	0	0	0	0	0	1091	14659
2 DC NC	52974	36273	16235	14526	4014	6025	2283	8408	156	45	35	3	741	1155	21	3	78	2	0	0	1	0	9060	152038
3 MTG	57427	30873	300288	26814	4034	6757	1579	21055	648	67	5766	359	7754	2852	9	0	23	6	1	196	1	1	21528	488038
4 PG	64431	72259	38037	173840	5547	9815	6484	13737	98	76	73	26	10260	23635	855	365	4492	1	3	2	6	132	20734	444908
5 ARLCR	1048	282	151	42	665	507	153	638	21	7	0	0	3	4	0	0	2	1	0	0	0	0	115	3639
6 ARNCR	18184	5678	3264	855	6397	22933	5747	26330	627	200	12	0	15	41	1	0	8	11	4	1	6	0	2036	92350
7 ALX	10765	3404	1280	1081	3606	9571	14586	22575	218	281	3	0	9	37	1	0	19	13	21	1	15	0	1110	68596
8 FFX	57152	19620	13049	4863	15656	37031	32104	359920	26349	12378	130	0	72	131	10	2	69	1022	349	84	327	8	8407	588733
9 LDN	1481	687	2453	103	817	1619	571	55827	46748	1278	2428	30	73	8	0	0	0	444	6	1649	1	0	2846	119069
10 PW	7283	924	560	352	1967	4836	5936	73888	4500	85579	28	0	0	0	1	0	7	3365	3699	57	3484	99	2307	198872
11 FRD	359	606	23082	580	84	111	18	1119	3404	23	80274	3679	5263	724	0	0	0	10	0	2437	0	0	10564	132337
12 CAR	31	73	5096	738	1	4	0	56	209	1	12215	52039	8399	1244	0	0	0	0	0	227	0	0	15834	96167
13 HOW	2761	4072	17672	16119	167	266	82	566	92	1	3493	860	54247	17692	6	1	4	0	0	116	0	0	25750	143967
14 AAR	7687	9254	6565	33688	495	801	357	558	3	1	126	48	19522	173763	910	60	257	0	0	3	0	1	31463	285562
15 CAL	1217	2081	348	7899	102	166	151	213	0	0	0	0	73	3829	18928	9686	1614	0	1	0	1	130	363	46802
16 STM	117	323	32	2363	10	14	38	53	0	2	0	0	2	142	2708	42970	4205	0	21	0	52	1270	188	54510
17 CHS	3173	5271	541	19285	275	487	777	1051	1	5	0	0	30	929	1516	2710	33116	0	33	0	111	2094	582	71987
18 FAU	5	5	21	3	7	46	37	7015	1918	6857	16	0	0	0	0	0	1	14543	1216	157	1149	31	1189	34216
19 STA	255	88	42	26	262	630	826	6738	50	9817	0	0	0	0	1	8	33	1607	20770	2	15332	814	1913	59214
20 CL/JF	32	32	1641	9	9	19	2	1849	6280	269	4377	55	167	12	0	0	0	334	2	18813	0	0	5516	39418
21 SP/FB	80	30	15	6	46	126	208	1942	13	3457	0	0	0	0	2	3	25	583	7326	1	39903	726	5972	60464
22 KGEO	0	5	1	111	0	0	2	25	1	137	0	0	0	5	21	164	579	26	498	0	1123	7701	206	10605
23 EXTL	4918	5567	21067	20908	732	1605	1034	15658	5782	8310	24453	21828	32890	71538	683	450	1203	6101	3096	11301	11948	951	0	272023
TOTAL	296574	200921	452313	324960	45398	104181	73328	620607	97160	128808	133434	78927	139558	297813	25675	56422	45741	28069	37046	35047	73460	13958	168774	3478174

Simulation - Year: 2000 Alternative: V2.2 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	19630	7390	2066	1191	1452	2193	702	2471	42	19	5	0	43	76	2	0	6	0	0	0	0	0	1091	38379
2 DC NC	139491	61604	25726	18488	7350	10687	3328	11256	156	50	35	3	770	1174	21	3	78	2	0	0	1	0	9060	289283
3 MTG	105401	38851	330326	28857	5692	9082	1887	23095	648	67	5766	359	7761	2861	9	0	23	6	1	196	1	1	21528	582418
4 PG	118049	89006	44946	187266	8416	14170	7498	15223	98	76	73	26	10383	23698	855	365	4492	1	3	2	6	132	20734	545518
5 ARLCR	3288	473	245	57	884	950	224	940	21	7	0	0	3	4	0	0	2	1	0	0	0	0	115	7214
6 ARNCR	40068	7832	4259	999	10214	27541	7294	32201	629	200	12	0	16	41	1	0	8	11	4	1	6	0	2036	133373
7 ALX	22586	4712	1725	1190	5663	14422	17946	26137	218	284	3	0	9	37	1	0	19	13	21	1	15	0	1110	96112
8 FFX	100626	23980	15063	5116	21644	49163	37239	374945	26378	12462	130	0	72	131	10	2	69	1022	349	84	327	8	8407	677227
9 LDN	1943	736	2611	103	952	1832	584	58188	47075	1278	2428	30	73	8	0	0	0	444	6	1649	1	0	2846	122787
10 PW	13133	1184	655	365	2698	6120	7258	78084	4500	88302	28	0	0	0	1	0	7	3365	3699	57	3484	99	2307	215346
11 FRD	522	683	24390	584	99	125	20	1122	3404	23	80536	3679	5263	724	0	0	0	10	0	2437	0	0	10564	134185
12 CAR	31	73	5096	738	1	4	0	56	209	1	12215	52039	8399	1244	0	0	0	0	0	227	0	0	15834	96167
13 HOW	4859	4711	19192	16540	246	368	99	608	92	1	3493	860	55099	17760	6	1	4	0	0	116	0	0	25750	149805
14 AAR	13603	10686	7323	34459	731	1123	414	608	3	1	126	48	19737	174087	914	60	257	0	0	3	0	1	31463	295647
15 CAL	2737	2588	413	8009	167	261	178	236	0	0	0	0	73	3829	18970	9686	1614	0	1	0	1	130	363	49256
16 STM	299	398	40	2392	20	25	44	58	0	2	0	0	2	142	2708	42970	4245	0	21	0	52	1270	188	54876
17 CHS	7133	6484	693	19623	461	771	870	1125	1	5	0	0	30	929	1516	2710	33182	0	33	0	111	2094	582	78353
18 FAU	5	5	21	3	7	46	37	7015	1918	6857	16	0	0	0	0	0	1	14543	1216	157	1149	31	1189	34216
19 STA	374	104	49	27	320	740	929	6962	50	9823	0	0	0	0	1	8	33	1607	20781	2	15335	814	1913	59872
20 CL/JF	43	37	1773	10	10	20	2	1849	6280	269	4377	55	167	12	0	0	0	334	2	18813	0	0	5516	39569
21 SP/FB	120	35	16	6	54	144	236	2035	13	3461	0	0	0	0	2	3	25	583	7343	1	39927	726	5972	60702
22 KGEO	0	5	1	111	0	0	2	25	1	137	0	0	0	5	21	164	579	26	498	0	1123	7701	206	10605
23 EXTL	4918	5567	21067	20908	732	1605	1034	15658	5782	8310	24453	21828	32890	71538	683	450	1203	6101	3096	11301	11948	951	0	272023
TOTAL	598859	267144	507696	347042	67813	141392	87825	659897	97518	131635	133696	78927	140790	298300	25721	56422	45847	28069	37074	35047	73487	13958	168774	4042933

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

Simulation - Year: 2000 Alternative: V2.2 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	73.5	52.4	57.7	37.1	65.2	63.0	49.7	43.9	0	10.5	0	0	11.6	5.3	0	0	0	0	0	0	0	0	0	61.8
2 DC NC	62.0	41.1	36.9	21.4	45.4	43.6	31.4	25.3	0	10.0	0	0	3.8	1.6	0	0	0	0	0	0	0	0	0	47.4
3 MTG	45.5	20.5	9.1	7.1	29.1	25.6	16.3	8.8	0	0	0	0	0.1	0.3	0	0	0	0	0	0	0	0	0	16.2
4 PG	45.4	18.8	15.4	7.2	34.1	30.7	13.5	9.8	0	0	0	0	1.2	0.3	0	0	0	0	0	0	0	0	0	18.4
5 ARLCR	68.1	40.4	38.4	26.3	24.8	46.6	31.7	32.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.6
6 ARNCR	54.6	27.5	23.4	14.4	37.4	16.7	21.2	18.2	0.3	0	0	0	6.3	0	0	0	0	0	0	0	0	0	0	30.8
7 ALX	52.3	27.8	25.8	9.2	36.3	33.6	18.7	13.6	0	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	28.6
8 FFX	43.2	18.2	13.4	4.9	27.7	24.7	13.8	4.0	0.1	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	13.1
9 LDN	23.8	6.7	6.1	0	14.2	11.6	2.2	4.1	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.0
10 PW	44.5	22.0	14.5	3.6	27.1	21.0	18.2	5.4	0	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7
11 FRD	31.2	11.3	5.4	0.7	15.2	11.2	10.0	0.3	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	43.2	13.6	7.9	2.5	32.1	27.7	17.2	6.9	0	0	0	0	1.5	0.4	0	0	0	0	0	0	0	0	0	3.9
14 AAR	43.5	13.4	10.4	2.2	32.3	28.7	13.8	8.2	0	0	0	0	1.1	0.2	0.4	0	0	0	0	0	0	0	0	3.4
15 CAL	55.5	19.6	15.7	1.4	38.9	36.4	15.2	9.7	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	5.0
16 STM	60.9	18.8	20.0	1.2	50.0	44.0	13.6	8.6	0	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0.7
17 CHS	55.5	18.7	21.9	1.7	40.3	36.8	10.7	6.6	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	8.1
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	31.8	15.4	14.3	3.7	18.1	14.9	11.1	3.2	0	0.1	0	0	0	0	0	0	0	0	0.1	0	0.0	0	0	1.1
20 CL/JF	25.6	13.5	7.4	10.0	10.0	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
21 SP/FB	33.3	14.3	6.3	0	14.8	12.5	11.9	4.6	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	50.5	24.8	10.9	6.4	33.1	26.3	16.5	6.0	0.4	2.1	0.2	0	0.9	0.2	0.2	0	0.2	0	0.1	0	0.0	0	0	14.0

Simulation - Year: 2000 Alternative: V2.2 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	1.13	1.18	1.16	1.18	1.50	1.13	1.25	0	1.27	1.47	1.00	0	1.20	0	0	0	0	0	1.15	1.16
2 DC NC	1.16	1.10	1.14	1.15	1.14	1.16	1.15	1.16	1.29	1.36	1.40	1.50	1.23	1.26	1.31	1.00	1.30	1.00	0	0	1.00	0	1.15	1.14
3 MTG	1.18	1.12	1.10	1.11	1.17	1.18	1.15	1.14	1.19	1.20	1.13	1.14	1.12	1.15	1.29	0	1.05	1.20	1.00	1.24	1.00	1.00	1.15	1.12
4 PG	1.17	1.11	1.14	1.09	1.15	1.17	1.13	1.15	1.24	1.13	1.38	1.24	1.12	1.12	1.14	1.17	1.11	1.00	3.00	1.00	1.20	1.28	1.15	1.12
5 ARLCR	1.16	1.12	1.15	1.14	1.05	1.15	1.13	1.13	1.31	1.17	0	0	1.00	1.33	0	0	1.00	1.00	0	0	0	0	1.16	1.13
6 ARNCR	1.17	1.12	1.15	1.13	1.13	1.13	1.11	1.12	1.20	1.18	1.20	0	1.15	1.37	1.00	0	1.33	1.10	1.33	1.00	1.50	0	1.15	1.13
7 ALX	1.20	1.14	1.19	1.12	1.15	1.15	1.09	1.12	1.21	1.13	3.00	0	1.00	1.28	1.00	0	1.06	1.18	1.31	1.00	1.50	0	1.15	1.13
8 FFX	1.31	1.19	1.17	1.15	1.23	1.22	1.12	1.10	1.11	1.11	1.24	0	1.29	1.25	1.43	1.00	1.13	1.16	1.17	1.29	1.19	1.33	1.15	1.14
9 LDN	1.69	1.37	1.24	1.34	1.54	1.54	1.43	1.17	1.08	1.15	1.13	1.25	1.26	1.60	0	0	0	1.13	1.20	1.11	1.00	0	1.15	1.15
10 PW	2.15	1.73	1.53	1.40	1.81	1.70	1.32	1.17	1.13	1.08	1.17	0	0	0	1.00	0	3.50	1.12	1.13	1.19	1.15	1.22	1.15	1.16
11 FRD	1.44	1.27	1.16	1.20	1.40	1.32	2.00	1.39	1.16	1.53	1.06	1.13	1.17	1.21	0	0	0	1.25	0	1.15	0	0	1.15	1.10
12 CAR	1.41	1.18	1.16	1.18	1.00	1.33	0	1.56	1.27	1.00	1.14	1.04	1.13	1.16	0	0	0	0	0	1.24	0	0	1.15	1.09
13 HOW	1.23	1.15	1.13	1.12	1.14	1.24	1.21	1.21	1.30	1.00	1.15	1.12	1.06	1.11	1.50	1.00	1.33	0	0	1.25	0	0	1.15	1.11
14 AAR	1.24	1.16	1.18	1.13	1.20	1.24	1.21	1.21	1.00	1.00	1.22	1.20	1.12	1.07	1.12	1.22	1.18	0	0	3.00	0	1.00	1.15	1.10
15 CAL	1.26	1.17	1.23	1.14	1.24	1.26	1.17	1.22	0	0	0	0	1.30	1.15	1.06	1.12	1.15	0	1.00	0	1.00	1.29	1.15	1.11
16 STM	1.34	1.18	1.33	1.16	1.43	1.17	1.12	1.36	0	2.00	0	0	2.00	1.23	1.13	1.08	1.13	0	1.50	0	1.44	1.19	1.13	1.09
17 CHS	1.23	1.14	1.22	1.12	1.19	1.22	1.15	1.17	1.00	1.67	0	0	1.11	1.19	1.13	1.13	1.06	0	1.27	0	1.32	1.18	1.15	1.11
18 FAU	5.00	2.50	1.31	1.50	1.75	1.35	1.42	1.18	1.15	1.12	1.23	0	0	0	0	0	1.00	1.06	1.12	1.17	1.14	1.19	1.15	1.11
19 STA	2.55	2.10	2.33	1.44	2.18	2.06	1.49	1.28	1.28	1.12	0	0	0	0	1.00	1.33	1.38	1.14	1.05	1.00	1.10	1.14	1.15	1.12
20 CL/JF	2.67	1.45	1.27	0.90	1.80	3.17	1.00	1.41	1.16	1.21	1.15	1.22	1.29	1.71	0	0	0	1.17	2.00	1.05	0	0	1.15	1.12
21 SP/FB	2.96	2.14	3.75	2.00	2.56	2.33	1.69	1.38	1.63	1.16	0	0	0	0	1.00	1.00	1.47	1.18	1.11	1.00	1.05	1.15	1.15	1.09
22 KGEO	0	2.50	1.00	1.28	0	0	2.00	1.32	1.00	1.23	0	0	0	1.67	1.31	1.25	1.19	1.13	1.14	0	1.13	1.05	1.16	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	1.15	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	1.12

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

Simulation - Year: 2000 Alternative: V2.2 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	3684	2888	544	672	231	3315	707	617	11	22	23	0	11	23	2	18	17	3	85	6	156	1	2	13038
2 DC NC	8014	69971	20168	22196	743	12861	2849	2165	78	89	68	4	150	213	17	68	112	17	444	37	667	2	38	140971
3 MTG	512	9337	381330	22618	86	1370	230	1947	111	121	1056	39	3373	448	18	115	81	33	601	76	1078	7	864	425451
4 PG	869	7099	12469	258385	64	1417	1773	1484	160	195	191	12	3167	10556	252	197	9625	36	1012	103	1756	11	890	311723
5 ARLCR	131	108	32	14	1770	2097	279	354	3	3	2	0	1	1	0	1	6	0	10	0	10	0	1	4823
6 ARNCR	488	534	295	98	817	58782	5289	10676	38	57	15	1	3	11	2	9	6	3	60	5	111	0	5	77305
7 ALX	126	132	43	151	129	14023	39247	11937	14	145	9	1	3	7	2	7	9	2	57	4	95	0	5	66148
8 FFX	269	444	2118	673	422	23641	18002	414775	24441	11975	288	27	112	316	51	357	318	327	2067	258	3499	14	71	504465
9 LDN	5	28	252	94	7	124	45	4502	58321	149	720	14	32	84	9	18	33	72	543	1605	971	4	528	68160
10 PW	11	22	259	133	4	147	154	6704	701	116171	116	8	43	121	16	72	102	2209	6133	87	3619	12	90	136934
11 FRD	28	34	2981	208	6	126	82	490	376	90	67412	516	258	111	10	0	24	28	450	294	361	0	3692	77577
12 CAR	41	64	848	382	10	180	121	742	393	96	896	35699	1252	191	10	0	40	34	91	35	67	0	14323	55515
13 HOW	1	9	1916	4896	3	31	15	55	17	29	717	184	66581	3455	3	24	18	6	168	25	292	2	6568	85015
14 AAR	38	84	715	6996	8	166	108	613	276	155	147	9	6726	178957	564	90	160	30	905	45	1043	7	6627	204469
15 CAL	18	30	236	665	2	72	47	264	89	70	44	5	45	300	24708	2205	84	6	373	8	498	1	3	29773
16 STM	36	53	369	371	5	136	89	537	136	87	8	0	74	104	210	29241	556	7	776	0	684	5	5	33489
17 CHS	23	40	242	1674	2	75	56	336	158	69	43	2	53	66	564	587	44364	14	456	1	465	20	12	49322
18 FAU	8	14	134	70	2	38	26	232	396	535	38	2	25	40	2	1	14	17075	2623	33	873	1	479	22661
19 STA	1	0	8	2	0	2	1	11	3	642	2	0	2	1	0	1	1	5	30766	2	9279	0	115	40844
20 CL/JF	15	26	277	118	5	76	48	358	806	50	213	2	61	60	0	0	12	25	550	19228	308	0	6560	28798
21 SP/FB	1	1	2	1	0	0	0	3	1	3	1	0	0	1	0	0	0	0	1926	0	35062	0	624	37626
22 KGEO	12	16	99	91	3	52	37	214	114	40	0	0	12	38	7	11	37	12	642	0	1110	3628	225	6400
23 EXTL	0	13	533	1459	0	2	2	50	67	187	2426	6317	6032	16580	2	1	9	1327	962	1296	4884	209	0	42358
TOTAL	14331	90947	425870	321967	4319	118733	69207	459066	86710	130980	74435	42842	88016	211684	26449	33023	55628	21271	51700	23148	66888	3924	41727	2462865

Simulation - Year: 2000 Alternative: V2.2 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	4318	3632	690	893	275	4149	904	813	18	29	33	2	16	33	3	32	25	5	132	10	250	1	5	16268
2 DC NC	10450	83958	26241	30390	921	16736	3800	2954	128	126	107	6	219	332	22	114	182	26	741	73	1105	4	62	178697
3 MTG	669	12093	470372	30422	110	1834	302	2674	176	187	1499	59	4682	654	29	198	149	42	1036	123	1858	10	1411	530589
4 PG	1188	9433	16750	320660	85	1894	2384	2092	256	305	306	18	4354	14692	356	323	13369	64	1711	191	3002	16	1465	394914
5 ARLCR	162	136	42	16	1794	2587	352	452	3	5	3	0	1	1	0	2	10	0	12	0	17	0	1	5596
6 ARNCR	627	688	399	126	992	68067	6828	13876	57	78	21	1	6	20	5	11	9	6	98	13	160	0	9	92097
7 ALX	172	178	54	208	154	17965	45589	15576	19	203	12	1	6	12	3	11	13	2	88	8	137	0	8	80419
8 FFX	364	611	2968	971	526	31281	23836	511655	33113	16400	465	54	166	520	79	651	546	474	3277	438	5672	30	115	634212
9 LDN	6	33	393	163	7	189	65	6143	70115	221	1031	20	57	151	17	41	58	114	932	2265	1685	6	865	84577
10 PW	11	27	417	215	4	220	213	9239	1000	141955	187	14	81	211	30	126	175	3077	8895	158	5470	17	156	171898
11 FRD	42	58	4243	350	7	206	137	806	582	164	78883	720	385	193	17	0	52	49	848	420	683	0	6057	94902
12 CAR	68	102	1300	624	14	295	206	1256	669	173	1314	38867	1784	315	18	0	74	66	170	57	125	0	23480	70977
13 HOW	1	12	2661	6622	4	44	23	85	34	42	1042	258	75684	4759	7	42	34	10	305	43	533	3	10768	103016
14 AAR	56	128	1097	9693	11	253	165	1000	482	274	248	18	9262	204043	785	158	254	57	1669	85	1918	12	10860	242528
15 CAL	26	48	395	967	5	113	72	441	161	123	80	7	75	439	28269	3076	128	13	676	15	913	1	4	36047
16 STM	56	93	639	616	10	221	143	923	251	151	13	0	136	174	304	33580	793	14	1384	0	1190	7	7	40705
17 CHS	29	64	401	2353	4	115	81	536	273	117	79	4	87	108	785	819	50022	27	790	1	799	29	18	57541
18 FAU	12	22	223	121	2	61	42	352	558	763	67	3	42	73	5	3	26	19437	3769	46	1325	2	785	27739
19 STA	1	0	12	2	0	4	1	16	4	887	4	0	3	2	0	2	1	7	35503	2	12671	0	188	49310
20 CL/JF	25	44	456	216	10	129	82	597	1170	88	309	2	105	113	1	0	20	41	1002	20584	568	0	10751	36313
21 SP/FB	1	1	4	1	0	0	1	4	2	7	1	0	0	2	0	0	0	0	2642	0	38219	0	1023	41908
22 KGEO	19	30	178	156	3	86	61	370	211	66	0	0	24	67	13	16	62	19	944	0	1611	3798	370	8104
23 EXTL	0	17	877	2394	0	3	2	84	108	309	3979	10354	9891	27178	3	2	12	2174	1578	2121	8009	343	0	69438
TOTAL	18303	111408	530812	408179	4938	146452	85289	571944	109390	162673	89683	50408	107066	254092	30751	39207	66014	25724	68202	26653	87920	4279	68408	3067795

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBS MODE: Transit

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	549	639	152	121	91	918	153	119	0	2	0	0	0	0	0	0	1	0	1	0	0	0	0	2746
2 DC NC	1749	6369	3463	2660	207	2514	441	260	0	2	0	0	5	1	0	0	1	0	0	0	2	0	0	17674
3 MTG	36	732	9543	325	12	100	10	27	0	0	0	0	8	0	0	0	0	0	0	0	1	0	0	10794
4 PG	62	429	545	2925	11	96	45	35	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	4164
5 ARLCR	18	11	4	1	20	216	24	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	317
6 ARNCR	48	49	5	4	127	1794	211	446	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2684
7 ALX	1	5	1	4	10	603	855	366	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1847
8 FFX	7	18	66	7	68	1469	916	4034	0	68	0	0	1	0	0	0	0	0	0	0	0	0	0	6654
9 LDN	0	0	0	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
10 PW	0	0	0	0	0	6	5	28	0	1117	0	0	0	0	0	0	0	0	0	0	0	0	0	1156
11 FRD	0	0	0	0	0	0	0	0	0	0	7	0	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	0	0	1	8	0	0	0	1	0	0	0	0	17	1	0	0	0	0	0	0	0	0	0	28
14 AAR	0	1	7	5	1	4	0	3	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	28
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	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	2470	8253	13787	6060	547	7720	2660	5342	27	1191	7	0	40	16	0	0	2	0	1	0	4	0	0	48127

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBS MODE: HOV 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	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: V2.2 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: V2.2 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	3684	2888	544	672	231	3315	707	617	11	22	23	0	11	23	2	18	17	3	85	6	156	1	2	13038
2 DC NC	8014	69971	20168	22196	743	12861	2849	2165	78	89	68	4	150	213	17	68	112	17	444	37	667	2	38	140971
3 MTG	512	9337	381330	22618	86	1370	230	1947	111	121	1056	39	3373	448	18	115	81	33	601	76	1078	7	864	425451
4 PG	869	7099	12469	258385	64	1417	1773	1484	160	195	191	12	3167	10556	252	197	9625	36	1012	103	1756	11	890	311723
5 ARLCR	131	108	32	14	1770	2097	279	354	3	3	2	0	1	1	0	1	6	0	10	0	10	0	1	4823
6 ARNCR	488	534	295	98	817	58782	5289	10676	38	57	15	1	3	11	2	9	6	3	60	5	111	0	5	77305
7 ALX	126	132	43	151	129	14023	39247	11937	14	145	9	1	3	7	2	7	9	2	57	4	95	0	5	66148
8 FFX	269	444	2118	673	422	23641	18002	414775	24441	11975	288	27	112	316	51	357	318	327	2067	258	3499	14	71	504465
9 LDN	5	28	252	94	7	124	45	4502	58321	149	720	14	32	84	9	18	33	72	543	1605	971	4	528	68160
10 PW	11	22	259	133	4	147	154	6704	701	116171	116	8	43	121	16	72	102	2209	6133	87	3619	12	90	136934
11 FRD	28	34	2981	208	6	126	82	490	376	90	67412	516	258	111	10	0	24	28	450	294	361	0	3692	77577
12 CAR	41	64	848	382	10	180	121	742	393	96	896	35699	1252	191	10	0	40	34	91	35	67	0	14323	55515
13 HOW	1	9	1916	4896	3	31	15	55	17	29	717	184	66581	3455	3	24	18	6	168	25	292	2	6568	85015
14 AAR	38	84	715	6996	8	166	108	613	276	155	147	9	6726	178957	564	90	160	30	905	45	1043	7	6627	204469
15 CAL	18	30	236	665	2	72	47	264	89	70	44	5	45	300	24708	2205	84	6	373	8	498	1	3	29773
16 STM	36	53	369	371	5	136	89	537	136	87	8	0	74	104	210	29241	556	7	776	0	684	5	5	33489
17 CHS	23	40	242	1674	2	75	56	336	158	69	43	2	53	66	564	587	44364	14	456	1	465	20	12	49322
18 FAU	8	14	134	70	2	38	26	232	396	535	38	2	25	40	2	1	14	17075	2623	33	873	1	479	22661
19 STA	1	0	8	2	0	2	1	11	3	642	2	0	2	1	0	1	1	5	30766	2	9279	0	115	40844
20 CL/JF	15	26	277	118	5	76	48	358	806	50	213	2	61	60	0	0	12	25	550	19228	308	0	6560	28798
21 SP/FB	1	1	2	1	0	0	0	3	1	3	1	0	0	1	0	0	0	0	1926	0	35062	0	624	37626
22 KGEO	12	16	99	91	3	52	37	214	114	40	0	0	12	38	7	11	37	12	642	0	1110	3628	225	6400
23 EXTL	0	13	533	1459	0	2	2	50	67	187	2426	6317	6032	16580	2	1	9	1327	962	1296	4884	209	0	42358
TOTAL	14331	90947	425870	321967	4319	118733	69207	459066	86710	130980	74435	42842	88016	211684	26449	33023	55628	21271	51700	23148	66888	3924	41727	2462865

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
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	4318	3632	690	893	275	4149	904	813	18	29	33	2	16	33	3	32	25	5	132	10	250	1	5	16268
2 DC NC	10450	83958	26241	30390	921	16736	3800	2954	128	126	107	6	219	332	22	114	182	26	741	73	1105	4	62	178697
3 MTG	669	12093	470372	30422	110	1834	302	2674	176	187	1499	59	4682	654	29	198	149	42	1036	123	1858	10	1411	530589
4 PG	1188	9433	16750	320660	85	1894	2384	2092	256	305	306	18	4354	14692	356	323	13369	64	1711	191	3002	16	1465	394914
5 ARLCR	162	136	42	16	1794	2587	352	452	3	5	3	0	1	1	0	2	10	0	12	0	17	0	1	5596
6 ARNCR	627	688	399	126	992	68067	6828	13876	57	78	21	1	6	20	5	11	9	6	98	13	160	0	9	92097
7 ALX	172	178	54	208	154	17965	45589	15576	19	203	12	1	6	12	3	11	13	2	88	8	137	0	8	80419
8 FFX	364	611	2968	971	526	31281	23836	511655	33113	16400	465	54	166	520	79	651	546	474	3277	438	5672	30	115	634212
9 LDN	6	33	393	163	7	189	65	6143	70115	221	1031	20	57	151	17	41	58	114	932	2265	1685	6	865	84577
10 PW	11	27	417	215	4	220	213	9239	1000	141955	187	14	81	211	30	126	175	3077	8895	158	5470	17	156	171898
11 FRD	42	58	4243	350	7	206	137	806	582	164	78883	720	385	193	17	0	52	49	848	420	683	0	6057	94902
12 CAR	68	102	1300	624	14	295	206	1256	669	173	1314	38867	1784	315	18	0	74	66	170	57	125	0	23480	70977
13 HOW	1	12	2661	6622	4	44	23	85	34	42	1042	258	75684	4759	7	42	34	10	305	43	533	3	10768	103016
14 AAR	56	128	1097	9693	11	253	165	1000	482	274	248	18	9262	204043	785	158	254	57	1669	85	1918	12	10860	242528
15 CAL	26	48	395	967	5	113	72	441	161	123	80	7	75	439	28269	3076	128	13	676	15	913	1	4	36047
16 STM	56	93	639	616	10	221	143	923	251	151	13	0	136	174	304	33580	793	14	1384	0	1190	7	7	40705
17 CHS	29	64	401	2353	4	115	81	536	273	117	79	4	87	108	785	819	50022	27	790	1	799	29	18	57541
18 FAU	12	22	223	121	2	61	42	352	558	763	67	3	42	73	5	3	26	19437	3769	46	1325	2	785	27739
19 STA	1	0	12	2	0	4	1	16	4	887	4	0	3	2	0	2	1	7	35503	2	12671	0	188	49310
20 CL/JF	25	44	456	216	10	129	82	597	1170	88	309	2	105	113	1	0	20	41	1002	20584	568	0	10751	36313
21 SP/FB	1	1	4	1	0	0	1	4	2	7	1	0	0	2	0	0	0	0	2642	0	38219	0	1023	41908
22 KGEO	19	30	178	156	3	86	61	370	211	66	0	0	24	67	13	16	62	19	944	0	1611	3798	370	8104
23 EXTL	0	17	877	2394	0	3	2	84	108	309	3979	10354	9891	27178	3	2	12	2174	1578	2121	8009	343	0	69438
TOTAL	18303	111408	530812	408179	4938	146452	85289	571944	109390	162673	89683	50408	107066	254092	30751	39207	66014	25724	68202	26653	87920	4279	68408	3067795

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
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	4867	4271	842	1014	366	5067	1057	932	18	31	33	2	16	33	3	32	26	5	133	10	250	1	5	19014
2 DC NC	12199	90327	29704	33050	1128	19250	4241	3214	128	128	107	6	224	333	22	114	183	26	741	73	1107	4	62	196371
3 MTG	705	12825	479915	30747	122	1934	312	2701	176	187	1499	59	4690	654	29	198	149	42	1036	123	1859	10	1411	541383
4 PG	1250	9862	17295	323585	96	1990	2429	2127	256	305	306	18	4362	14700	356	323	13369	64	1711	191	3002	16	1465	399078
5 ARLCR	180	147	46	17	1814	2803	376	475	3	5	3	0	1	1	0	2	10	0	12	0	17	0	1	5913
6 ARNCR	675	737	404	130	1119	69861	7039	14322	57	78	21	1	6	20	5	11	9	6	98	13	160	0	9	94781
7 ALX	173	183	55	212	164	18568	46444	15942	19	205	12	1	6	12	3	11	13	2	88	8	137	0	8	82266
8 FFX	371	629	3034	978	594	32750	24752	515689	33113	16468	465	54	167	520	79	651	546	474	3277	438	5672	30	115	640866
9 LDN	6	33	393	163	7	189	65	6143	70142	221	1031	20	57	151	17	41	58	114	932	2265	1685	6	865	84604
10 PW	11	27	417	215	4	226	218	9267	1000	143072	187	14	81	211	30	126	175	3077	8895	158	5470	17	156	173054
11 FRD	42	58	4243	350	7	206	137	806	582	164	78890	720	385	193	17	0	52	49	848	420	683	0	6057	94909
12 CAR	68	102	1300	624	14	295	206	1256	669	173	1314	38867	1784	315	18	0	74	66	170	57	125	0	23480	70977
13 HOW	1	12	2662	6630	4	44	23	86	34	42	1042	258	75701	4760	7	42	34	10	305	43	533	3	10768	103044
14 AAR	56	129	1104	9698	12	257	165	1003	482	274	248	18	9263	204049	785	158	254	57	1669	85	1918	12	10860	242556
15 CAL	26	48	395	967	5	113	72	441	161	123	80	7	75	439	28269	3076	128	13	676	15	913	1	4	36047
16 STM	56	93	639	616	10	221	143	923	251	151	13	0	136	174	304	33580	793	14	1384	0	1190	7	7	40705
17 CHS	29	64	401	2353	4	115	81	536	273	117	79	4	87	108	785	819	50022	27	790	1	799	29	18	57541
18 FAU	12	22	223	121	2	61	42	352	558	763	67	3	42	73	5	3	26	19437	3769	46	1325	2	785	27739
19 STA	1	0	12	2	0	4	1	16	4	887	4	0	3	2	0	2	1	7	35503	2	12672	0	188	49311
20 CL/JF	25	44	456	216	10	129	82	597	1170	88	309	2	105	113	1	0	20	41	1002	20584	568	0	10751	36313
21 SP/FB	1	1	4	1	0	0	1	4	2	7	1	0	0	2	0	0	0	0	2642	0	38219	0	1023	41908
22 KGEO	19	30	178	156	3	86	61	370	211	66	0	0	24	67	13	16	62	19	944	0	1611	3798	370	8104
23 EXTL	0	17	877	2394	0	3	2	84	108	309	3979	10354	9891	27178	3	2	12	2174	1578	2121	8009	343	0	69438
TOTAL	20773	119661	544599	414239	5485	154172	87949	577286	109417	163864	89690	50408	107106	254108	30751	39207	66016	25724	68203	26653	87924	4279	68408	3115922

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

Simulation - Year: 2000 Alternative: V2.2 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	11.3	15.0	18.1	11.9	24.9	18.1	14.5	12.8	0	6.5	0	0	0	0	0	0	3.8	0	0.8	0	0	0	0	14.4
2 DC NC	14.3	7.1	11.7	8.0	18.4	13.1	10.4	8.1	0	1.6	0	0	2.2	0.3	0	0	0.5	0	0	0	0.2	0	0	9.0
3 MTG	5.1	5.7	2.0	1.1	9.8	5.2	3.2	1.0	0	0	0	0	0.2	0	0	0	0	0	0	0	0.1	0	0	2.0
4 PG	5.0	4.4	3.2	0.9	11.5	4.8	1.9	1.6	0	0	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	1.0
5 ARLCR	10.0	7.5	8.7	5.9	1.1	7.7	6.4	4.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.4
6 ARNCR	7.1	6.6	1.2	3.1	11.3	2.6	3.0	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8
7 ALX	0.6	2.7	1.8	1.9	6.1	3.2	1.8	2.3	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.2
8 FFX	1.9	2.9	2.2	0.7	11.4	4.5	3.7	0.8	0	0.4	0	0	0.6	0	0	0	0	0	0	0	0	0	0	1.0
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	0.0
10 PW	0	0	0	0	0	2.7	2.3	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	1.2	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0	0.8	0.6	0.1	8.3	1.6	0	0.3	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	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	11.9	6.9	2.5	1.5	10.0	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	0	0	1.5

Simulation - Year: 2000 Alternative: V2.2 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	1.27	1.33	1.19	1.25	1.28	1.32	1.64	1.32	1.43	2.00	1.45	1.43	1.50	1.78	1.47	1.67	1.55	1.67	1.60	1.00	2.50	1.25
2 DC NC	1.30	1.20	1.30	1.37	1.24	1.30	1.33	1.36	1.64	1.42	1.57	1.50	1.46	1.56	1.29	1.68	1.63	1.53	1.67	1.97	1.66	2.00	1.63	1.27
3 MTG	1.31	1.30	1.23	1.35	1.28	1.34	1.31	1.37	1.59	1.55	1.42	1.51	1.39	1.46	1.61	1.72	1.84	1.27	1.72	1.62	1.72	1.43	1.63	1.25
4 PG	1.37	1.33	1.34	1.24	1.33	1.34	1.34	1.41	1.60	1.56	1.60	1.50	1.37	1.39	1.41	1.64	1.39	1.78	1.69	1.85	1.71	1.45	1.65	1.27
5 ARLCR	1.24	1.26	1.31	1.14	1.01	1.23	1.26	1.28	1.00	1.67	1.50	0	1.00	1.00	0	2.00	1.67	0	1.20	0	1.70	0	1.00	1.16
6 ARNCR	1.28	1.29	1.35	1.29	1.21	1.16	1.29	1.30	1.50	1.37	1.40	1.00	2.00	1.82	2.50	1.22	1.50	2.00	1.63	2.60	1.44	0	1.80	1.19
7 ALX	1.37	1.35	1.26	1.38	1.19	1.28	1.16	1.30	1.36	1.40	1.33	1.00	2.00	1.71	1.50	1.57	1.44	1.00	1.54	2.00	1.44	0	1.60	1.22
8 FFX	1.35	1.38	1.40	1.44	1.25	1.32	1.32	1.23	1.35	1.37	1.61	2.00	1.48	1.65	1.55	1.82	1.72	1.45	1.59	1.70	1.62	2.14	1.62	1.26
9 LDN	1.20	1.18	1.56	1.73	1.00	1.52	1.44	1.36	1.20	1.48	1.43	1.43	1.78	1.80	1.89	2.28	1.76	1.58	1.72	1.41	1.74	1.50	1.64	1.24
10 PW	1.00	1.23	1.61	1.62	1.00	1.50	1.38	1.38	1.43	1.22	1.61	1.75	1.88	1.74	1.88	1.75	1.72	1.39	1.45	1.82	1.51	1.42	1.73	1.26
11 FRD	1.50	1.71	1.42	1.68	1.17	1.63	1.67	1.64	1.55	1.82	1.17	1.40	1.49	1.74	1.70	0	2.17	1.75	1.88	1.43	1.89	0	1.64	1.22
12 CAR	1.66	1.59	1.53	1.63	1.40	1.64	1.70	1.69	1.70	1.80	1.47	1.09	1.42	1.65	1.80	0	1.85	1.94	1.87	1.63	1.87	0	1.64	1.28
13 HOW	1.00	1.33	1.39	1.35	1.33	1.42	1.53	1.55	2.00	1.45	1.45	1.40	1.14	1.38	2.33	1.75	1.89	1.67	1.82	1.72	1.83	1.50	1.64	1.21
14 AAR	1.47	1.52	1.53	1.39	1.38	1.52	1.53	1.63	1.75	1.77	1.69	2.00	1.38	1.14	1.39	1.76	1.59	1.90	1.84	1.89	1.84	1.71	1.64	1.19
15 CAL	1.44	1.60	1.67	1.45	2.50	1.57	1.53	1.67	1.81	1.76	1.82	1.40	1.67	1.46	1.14	1.40	1.52	2.17	1.81	1.88	1.83	1.00	1.33	1.21
16 STM	1.56	1.75	1.73	1.66	2.00	1.63	1.61	1.72	1.85	1.74	1.63	0	1.84	1.67	1.45	1.15	1.43	2.00	1.78	0	1.74	1.40	1.40	1.22
17 CHS	1.26	1.60	1.66	1.41	2.00	1.53	1.45	1.60	1.73	1.70	1.84	2.00	1.64	1.64	1.39	1.40	1.13	1.93	1.73	1.00	1.72	1.45	1.50	1.17
18 FAU	1.50	1.57	1.66	1.73	1.00	1.61	1.62	1.52	1.41	1.43	1.76	1.50	1.68	1.83	2.50	3.00	1.86	1.14	1.44	1.39	1.52	2.00	1.64	1.22
19 STA	1.00	0	1.50	1.00	0	2.00	1.00	1.45	1.33	1.38	2.00	0	1.50	2.00	0	2.00	1.00	1.40	1.15	1.00	1.37	0	1.63	1.21
20 CL/JF	1.67	1.69	1.65	1.83	2.00	1.70	1.71	1.67	1.45	1.76	1.45	1.00	1.72	1.88	1.00	0	1.67	1.64	1.82	1.07	1.84	0	1.64	1.26
21 SP/FB	1.00	1.00	2.00	1.00	0	0	1.00	1.33	2.00	2.33	1.00	0	0	2.00	0	0	0	0	1.37	0	1.09	0	1.64	1.11
22 KGEO	1.58	1.88	1.80	1.71	1.00	1.65	1.65	1.73	1.85	1.65	0	0	2.00	1.76	1.86	1.45	1.68	1.58	1.47	0	1.45	1.05	1.64	1.27
23 EXTL	0	1.31	1.65	1.64	0	1.50	1.00	1.68	1.61	1.65	1.64	1.64	1.64	1.64	1.50	2.00	1.33	1.64	1.64	1.64	1.64	1.64	0	1.64
TOTAL	1.28	1.22	1.25	1.27	1.14	1.23	1.23	1.25	1.26	1.24	1.20	1.18	1.22	1.20	1.16	1.19	1.19	1.21	1.32	1.15	1.31	1.09	1.64	1.25

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBO 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	12865	8304	1145	1332	331	1619	410	1032	12	15	0	0	20	40	2	2	8	2	0	1	0	0	465	27605
2 DC NC	55057	268161	54053	43331	2782	14074	4544	11284	187	130	22	8	730	1254	34	11	165	8	4	12	16	6	7841	463714
3 MTG	12529	48309	1021615	45488	1164	7543	1795	24291	1125	111	6404	644	14658	3333	13	18	35	26	39	249	54	20	22862	1212325
4 PG	26753	79449	47995	633162	1448	6276	5983	8598	100	131	44	25	9748	26875	828	225	9306	21	38	30	39	27	16054	873155
5 ARLCR	1030	1027	302	144	3131	2552	511	1150	12	14	0	0	2	6	0	0	0	1	1	0	0	1	133	10017
6 ARNCR	13190	10979	4718	2127	5584	141123	17946	50629	551	348	7	5	28	72	2	4	12	12	22	4	5	6	3191	250565
7 ALX	4663	4084	1033	1759	1575	17163	65530	29555	88	514	3	1	10	47	5	0	14	8	35	3	15	1	1497	127603
8 FFX	13714	11023	11904	5386	3802	47806	42384	1070385	38282	19430	36	20	86	201	14	22	107	941	731	90	388	18	15825	1282595
9 LDN	184	141	646	61	37	510	114	21749	182770	698	1436	21	49	30	2	0	12	446	11	3786	17	6	2973	215699
10 PW	1179	813	432	366	318	2489	2967	59146	3490	304149	25	20	47	108	8	12	33	1861	5492	95	3015	23	5559	391647
11 FRD	118	209	17970	221	20	95	50	458	2527	57	218865	4516	4319	353	7	3	25	29	36	3677	31	0	9925	263511
12 CAR	129	160	2225	248	24	105	75	326	83	59	5203	143485	5260	336	6	1	32	32	2	41	2	0	14148	171982
13 HOW	246	1075	13362	9844	9	49	25	146	31	19	1455	1382	188495	15880	2	13	5	3	10	62	9	5	13845	245972
14 AAR	1592	4419	4201	35664	75	323	233	606	88	105	68	62	22298	513483	1556	50	286	29	49	26	37	9	31047	616306
15 CAL	274	607	261	4367	17	95	89	272	39	43	18	9	43	3438	86600	6081	1167	5	24	3	28	12	592	104084
16 STM	113	148	245	693	14	78	31	220	22	45	5	2	58	107	2015	100471	3595	7	23	0	29	293	432	108646
17 CHS	742	1254	233	11899	35	179	263	499	38	33	17	10	43	290	871	2525	137316	28	27	7	33	1137	1116	158595
18 FAU	99	105	216	107	14	169	68	5575	1332	5023	29	10	33	82	6	9	30	42969	2474	282	1038	14	1686	61370
19 STA	35	26	49	28	10	51	89	954	18	3637	8	0	8	24	4	3	6	535	74226	8	14026	139	2422	96306
20 CL/JF	120	174	550	165	21	105	63	378	4888	148	4478	24	96	62	1	0	10	424	25	58758	8	0	4684	75182
21 SP/FB	38	44	84	45	6	30	18	176	22	825	7	0	4	19	1	11	13	313	10973	1	105692	42	7703	126067
22 KGEO	98	131	162	130	17	81	42	238	51	75	0	0	14	42	9	80	525	89	880	0	595	19172	345	22776
23 EXTL	1600	4813	15212	10112	190	2012	1099	10457	2468	3148	7010	7832	11394	25368	308	272	699	962	1827	4397	6149	224	0	117553
TOTAL	146368	445455	1198613	806679	20624	244527	144329	1298124	238224	338757	245140	158076	257443	591450	92294	109813	153401	48751	96949	71532	131226	21155	164345	7023275

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBO 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	15892	11663	1602	1926	441	2229	578	1454	15	18	0	0	25	66	2	2	13	2	1	1	2	1	747	36680
2 DC NC	79922	353972	80301	66176	4001	20464	6731	16940	298	190	33	12	1127	1938	62	13	255	12	13	20	24	7	12639	645150
3 MTG	18517	72275	1353847	69368	1695	11242	2687	37195	1744	182	9928	1004	22619	5132	22	36	60	34	55	376	96	29	36880	1645023
4 PG	39977	120319	72824	826880	2133	9286	9055	13171	139	219	67	43	14960	41474	1277	355	14464	34	59	41	62	40	25902	1192781
5 ARLCR	1430	1431	419	209	3312	3527	719	1623	18	21	0	0	3	8	0	1	0	2	2	0	0	1	212	12938
6 ARNCR	19094	16007	6995	3153	7959	177267	26404	75609	833	516	9	8	33	117	5	6	21	23	28	6	16	6	5143	339258
7 ALX	6786	6009	1528	2631	2283	25022	81894	43924	128	774	4	1	14	60	5	2	28	15	49	4	19	2	2420	173602
8 FFX	20446	16578	18100	8251	5577	71246	63845	1427890	59063	29960	59	27	136	311	20	37	160	1461	1124	151	604	29	25503	1750578
9 LDN	268	213	992	97	59	762	172	33573	224669	1079	2235	30	74	55	3	1	22	700	17	5905	27	7	4800	275760
10 PW	1764	1241	656	564	467	3712	4508	91140	5402	388264	38	39	71	178	10	27	44	2883	8512	151	4676	35	8977	523359
11 FRD	177	318	27841	343	31	142	78	708	3919	87	273072	7032	6712	547	10	3	44	45	55	5726	54	0	16009	342953
12 CAR	192	246	3452	383	35	155	113	504	127	97	8097	157775	8173	524	9	2	57	49	5	66	5	0	22820	202886
13 HOW	373	1631	20619	15149	18	72	35	230	47	26	2265	2150	221529	24548	3	18	8	6	15	96	17	7	22332	311194
14 AAR	2399	6745	6450	55075	111	477	356	932	135	157	109	94	34388	662504	2419	79	448	50	78	39	60	17	50069	823191
15 CAL	419	928	403	6789	28	138	136	421	62	70	31	17	66	5354	98637	9446	1817	11	40	6	42	17	952	125830
16 STM	167	230	393	1079	20	115	48	350	34	72	9	3	92	167	3131	119135	5606	15	37	0	42	458	699	131902
17 CHS	1124	1921	360	18463	47	272	397	770	59	57	28	12	72	449	1357	3943	159039	40	46	11	51	1770	1800	192088
18 FAU	151	156	332	168	21	253	104	8629	2076	7809	43	19	56	127	11	14	45	47829	3851	440	1613	24	2719	76490
19 STA	52	43	73	45	14	80	133	1480	27	5650	11	1	13	38	5	5	8	833	95613	14	21767	219	3909	130033
20 CL/JF	180	263	855	256	31	156	92	586	7595	229	6949	38	149	94	4	0	20	656	38	65243	16	0	7556	91006
21 SP/FB	56	69	126	71	7	44	30	270	33	1274	13	0	8	29	3	14	23	482	16964	1	117029	68	12424	149038
22 KGEO	149	199	258	203	25	120	64	366	87	115	0	0	19	65	15	122	819	138	1373	0	921	20972	558	26588
23 EXTL	2580	7762	24522	16326	302	3246	1771	16869	3984	5073	11302	12633	18381	40905	504	440	1131	1552	2943	7094	9919	362	0	189601
TOTAL	212115	620219	1622948	1093605	28617	330027	199950	1774634	310494	441939	314302	180938	328720	784690	107514	133701	184132	56872	130918	85391	157062	24071	265070	9387929

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

Simulation - Year: 2000 Alternative: V2.2 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	6976	3979	919	673	336	1339	247	509	0	4	0	0	2	2	0	0	0	0	0	0	0	0	0	14986
2 DC NC	34533	27369	11976	7260	1288	4934	1124	1861	0	10	0	0	20	17	0	0	2	0	0	0	1	0	0	90395
3 MTG	5491	6381	22555	2046	254	940	161	440	0	0	0	0	25	4	0	0	0	0	0	0	0	0	0	38297
4 PG	7665	6262	2920	6542	274	794	223	252	0	0	0	0	21	13	0	0	0	0	0	0	0	0	0	24966
5 ARLCR	1025	327	106	38	115	593	127	253	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2585
6 ARNCR	8695	2353	815	286	1338	7824	1815	4513	0	7	0	0	2	0	0	0	0	0	0	0	0	0	0	27648
7 ALX	1968	561	149	88	331	2126	1780	1635	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	8644
8 FFX	3939	1072	560	128	683	4659	1932	8790	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	21821
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	86	9	8	1	22	47	45	164	0	1421	0	0	0	0	0	0	0	0	0	0	0	0	0	1803
11 FRD	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	31
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	11	20	10	0	0	0	0	0	0	0	0	38	2	0	0	0	0	0	0	0	0	0	100
14 AAR	72	62	48	42	5	6	0	2	0	0	0	0	5	20	0	0	0	0	0	0	0	0	0	262
15 CAL	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
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	70470	48386	40076	17117	4646	23262	7454	18419	87	1507	31	0	113	58	0	0	2	0	0	0	1	0	0	231629

Simulation - Year: 2000 Alternative: V2.2 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: V2.2 Iteration: i6
Purpose: HBO 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: V2.2 Iteration: i6
Purpose: HBO 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	12865	8304	1145	1332	331	1619	410	1032	12	15	0	0	20	40	2	2	8	2	0	1	0	0	465	27605
2 DC NC	55057	268161	54053	43331	2782	14074	4544	11284	187	130	22	8	730	1254	34	11	165	8	4	12	16	6	7841	463714
3 MTG	12529	483091021615		45488	1164	7543	1795	24291	1125	111	6404	644	14658	3333	13	18	35	26	39	249	54	20	22862	1212325
4 PG	26753	79449	47995	633162	1448	6276	5983	8598	100	131	44	25	9748	26875	828	225	9306	21	38	30	39	27	16054	873155
5 ARLCR	1030	1027	302	144	3131	2552	511	1150	12	14	0	0	2	6	0	0	0	1	1	0	0	1	133	10017
6 ARNCR	13190	10979	4718	2127	5584	141123	17946	50629	551	348	7	5	28	72	2	4	12	12	22	4	5	6	3191	250565
7 ALX	4663	4084	1033	1759	1575	17163	65530	29555	88	514	3	1	10	47	5	0	14	8	35	3	15	1	1497	127603
8 FFX	13714	11023	11904	5386	3802	47806	423841070385		38282	19430	36	20	86	201	14	22	107	941	731	90	388	18	15825	1282595
9 LDN	184	141	646	61	37	510	114	21749	182770	698	1436	21	49	30	2	0	12	446	11	3786	17	6	2973	215699
10 PW	1179	813	432	366	318	2489	2967	59146	3490	304149	25	20	47	108	8	12	33	1861	5492	95	3015	23	5559	391647
11 FRD	118	209	17970	221	20	95	50	458	2527	57	218865	4516	4319	353	7	3	25	29	36	3677	31	0	9925	263511
12 CAR	129	160	2225	248	24	105	75	326	83	59	5203	143485	5260	336	6	1	32	32	2	41	2	0	14148	171982
13 HOW	246	1075	13362	9844	9	49	25	146	31	19	1455	1382	188495	15880	2	13	5	3	10	62	9	5	13845	245972
14 AAR	1592	4419	4201	35664	75	323	233	606	88	105	68	62	22298	513483	1556	50	286	29	49	26	37	9	31047	616306
15 CAL	274	607	261	4367	17	95	89	272	39	43	18	9	43	3438	86600	6081	1167	5	24	3	28	12	592	104084
16 STM	113	148	245	693	14	78	31	220	22	45	5	2	58	107	2015	100471	3595	7	23	0	29	293	432	108646
17 CHS	742	1254	233	11899	35	179	263	499	38	33	17	10	43	290	871	2525	137316	28	27	7	33	1137	1116	158595
18 FAU	99	105	216	107	14	169	68	5575	1332	5023	29	10	33	82	6	9	30	42969	2474	282	1038	14	1686	61370
19 STA	35	26	49	28	10	51	89	954	18	3637	8	0	8	24	4	3	6	535	74226	8	14026	139	2422	96306
20 CL/JF	120	174	550	165	21	105	63	378	4888	148	4478	24	96	62	1	0	10	424	25	58758	8	0	4684	75182
21 SP/FB	38	44	84	45	6	30	18	176	22	825	7	0	4	19	1	11	13	313	10973	1	105692	42	7703	126067
22 KGEO	98	131	162	130	17	81	42	238	51	75	0	0	14	42	9	80	525	89	880	0	595	19172	345	22776
23 EXTL	1600	4813	15212	10112	190	2012	1099	10457	2468	3148	7010	7832	11394	25368	308	272	699	962	1827	4397	6149	224	0	117553
TOTAL	146368	445455	1198613	806679	20624	244527	144329	1298124	238224	338757	245140	158076	257443	591450	92294	109813	153401	48751	96949	71532	131226	21155	164345	7023275

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBO 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	15892	11663	1602	1926	441	2229	578	1454	15	18	0	0	25	66	2	2	13	2	1	1	2	1	747	36680
2 DC NC	79922	353972	80301	66176	4001	20464	6731	16940	298	190	33	12	1127	1938	62	13	255	12	13	20	24	7	12639	645150
3 MTG	18517	72275	1353847	69368	1695	11242	2687	37195	1744	182	9928	1004	22619	5132	22	36	60	34	55	376	96	29	36880	1645023
4 PG	39977	120319	72824	826880	2133	9286	9055	13171	139	219	67	43	14960	41474	1277	355	14464	34	59	41	62	40	25902	1192781
5 ARLCR	1430	1431	419	209	3312	3527	719	1623	18	21	0	0	3	8	0	1	0	2	2	0	0	1	212	12938
6 ARNCR	19094	16007	6995	3153	7959	177267	26404	75609	833	516	9	8	33	117	5	6	21	23	28	6	16	6	5143	339258
7 ALX	6786	6009	1528	2631	2283	25022	81894	43924	128	774	4	1	14	60	5	2	28	15	49	4	19	2	2420	173602
8 FFX	20446	16578	18100	8251	5577	71246	63845	1427890	59063	29960	59	27	136	311	20	37	160	1461	1124	151	604	29	25503	1750578
9 LDN	268	213	992	97	59	762	172	33573	224669	1079	2235	30	74	55	3	1	22	700	17	5905	27	7	4800	275760
10 PW	1764	1241	656	564	467	3712	4508	91140	5402	388264	38	39	71	178	10	27	44	2883	8512	151	4676	35	8977	523359
11 FRD	177	318	27841	343	31	142	78	708	3919	87	273072	7032	6712	547	10	3	44	45	55	5726	54	0	16009	342953
12 CAR	192	246	3452	383	35	155	113	504	127	97	8097	157775	8173	524	9	2	57	49	5	66	5	0	22820	202886
13 HOW	373	1631	20619	15149	18	72	35	230	47	26	2265	2150	221529	24548	3	18	8	6	15	96	17	7	22332	311194
14 AAR	2399	6745	6450	55075	111	477	356	932	135	157	109	94	34388	662504	2419	79	448	50	78	39	60	17	50069	823191
15 CAL	419	928	403	6789	28	138	136	421	62	70	31	17	66	5354	98637	9446	1817	11	40	6	42	17	952	125830
16 STM	167	230	393	1079	20	115	48	350	34	72	9	3	92	167	3131	119135	5606	15	37	0	42	458	699	131902
17 CHS	1124	1921	360	18463	47	272	397	770	59	57	28	12	72	449	1357	3943	159039	40	46	11	51	1770	1800	192088
18 FAU	151	156	332	168	21	253	104	8629	2076	7809	43	19	56	127	11	14	45	47829	3851	440	1613	24	2719	76490
19 STA	52	43	73	45	14	80	133	1480	27	5650	11	1	13	38	5	5	8	833	95613	14	21767	219	3909	130033
20 CL/JF	180	263	855	256	31	156	92	586	7595	229	6949	38	149	94	4	0	20	656	38	65243	16	0	7556	91006
21 SP/FB	56	69	126	71	7	44	30	270	33	1274	13	0	8	29	3	14	23	482	16964	1	117029	68	12424	149038
22 KGEO	149	199	258	203	25	120	64	366	87	115	0	0	19	65	15	122	819	138	1373	0	921	20972	558	26588
23 EXTL	2580	7762	24522	16326	302	3246	1771	16869	3984	5073	11302	12633	18381	40905	504	440	1131	1552	2943	7094	9919	362	0	189601
TOTAL	212115	620219	1622948	1093605	28617	330027	199950	1774634	310494	441939	314302	180938	328720	784690	107514	133701	184132	56872	130918	85391	157062	24071	265070	9387929

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBO 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	22868	15642	2521	2599	777	3568	825	1963	15	22	0	0	27	68	2	2	13	2	1	1	2	1	747	51666
2 DC NC	114455	381341	92277	73436	5289	25398	7855	18801	298	200	33	12	1147	1955	62	13	257	12	13	20	25	7	12639	735545
3 MTG	24008	78656	1376402	71414	1949	12182	2848	37635	1744	182	9928	1004	22644	5136	22	36	60	34	55	376	96	29	36880	1683320
4 PG	47642	126581	75744	833422	2407	10080	9278	13423	139	219	67	43	14981	41487	1277	355	14464	34	59	41	62	40	25902	1217747
5 ARLCR	2455	1758	525	247	3427	4120	846	1876	18	22	0	0	3	8	0	1	0	2	2	0	0	1	212	15523
6 ARNCR	27789	18360	7810	3439	9297	185091	28219	80122	833	523	9	8	35	117	5	6	21	23	28	6	16	6	5143	366906
7 ALX	8754	6570	1677	2719	2614	27148	83674	45559	128	780	4	1	14	60	5	2	28	15	49	4	19	2	2420	182246
8 FFX	24385	17650	18660	8379	6260	75905	65777	1436680	59063	30018	59	27	136	311	20	37	160	1461	1124	151	604	29	25503	1772399
9 LDN	268	213	992	97	59	762	172	33573	224756	1079	2235	30	74	55	3	1	22	700	17	5905	27	7	4800	275847
10 PW	1850	1250	664	565	489	3759	4553	91304	5402	389685	38	39	71	178	10	27	44	2883	8512	151	4676	35	8977	525162
11 FRD	177	318	27841	343	31	142	78	708	3919	87	273103	7032	6712	547	10	3	44	45	55	5726	54	0	16009	342984
12 CAR	192	246	3452	383	35	155	113	504	127	97	8097	157775	8173	524	9	2	57	49	5	66	5	0	22820	202886
13 HOW	392	1642	20639	15159	18	72	35	230	47	26	2265	2150	221567	24550	3	18	8	6	15	96	17	7	22332	311294
14 AAR	2471	6807	6498	55117	116	483	356	934	135	157	109	94	34393	662524	2419	79	448	50	78	39	60	17	50069	823453
15 CAL	420	928	403	6792	28	138	136	421	62	70	31	17	66	5354	98637	9446	1817	11	40	6	42	17	952	125834
16 STM	167	230	393	1079	20	115	48	350	34	72	9	3	92	167	3131	119135	5606	15	37	0	42	458	699	131902
17 CHS	1124	1921	360	18463	47	272	397	770	59	57	28	12	72	449	1357	3943	159039	40	46	11	51	1770	1800	192088
18 FAU	151	156	332	168	21	253	104	8629	2076	7809	43	19	56	127	11	14	45	47829	3851	440	1613	24	2719	76490
19 STA	52	43	73	45	14	80	133	1480	27	5650	11	1	13	38	5	5	8	833	95613	14	21767	219	3909	130033
20 CL/JF	180	263	855	256	31	156	92	586	7595	229	6949	38	149	94	4	0	20	656	38	65243	16	0	7556	91006
21 SP/FB	56	69	126	71	7	44	30	270	33	1274	13	0	8	29	3	14	23	482	16964	1	117029	68	12424	149038
22 KGEO	149	199	258	203	25	120	64	366	87	115	0	0	19	65	15	122	819	138	1373	0	921	20972	558	26588
23 EXTL	2580	7762	24522	16326	302	3246	1771	16869	3984	5073	11302	12633	18381	40905	504	440	1131	1552	2943	7094	9919	362	0	189601
TOTAL	282585	668605	1663024	1110722	33263	353289	207404	1793053	310581	443446	314333	180938	328833	784748	107514	133701	184134	56872	130918	85391	157063	24071	265070	9619558

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: HBO MODE: Transit Percentage

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	30.5	25.4	36.5	25.9	43.2	37.5	29.9	25.9	0	18.2	0	0	7.4	2.9	0	0	0	0	0	0	0	0	0	29.0
2 DC NC	30.2	7.2	13.0	9.9	24.4	19.4	14.3	9.9	0	5.0	0	0	1.7	0.9	0	0	0.8	0	0	0	4.0	0	0	12.3
3 MTG	22.9	8.1	1.6	2.9	13.0	7.7	5.7	1.2	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0	0	0	2.3
4 PG	16.1	4.9	3.9	0.8	11.4	7.9	2.4	1.9	0	0	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	2.1
5 ARLCR	41.8	18.6	20.2	15.4	3.4	14.4	15.0	13.5	0	4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	16.7
6 ARNCR	31.3	12.8	10.4	8.3	14.4	4.2	6.4	5.6	0	1.3	0	0	5.7	0	0	0	0	0	0	0	0	0	0	7.5
7 ALX	22.5	8.5	8.9	3.2	12.7	7.8	2.1	3.6	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	4.7
8 FFX	16.2	6.1	3.0	1.5	10.9	6.1	2.9	0.6	0	0.2	0	0	0	0	0	0	0	0	0	0	0	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	4.6	0.7	1.2	0.2	4.5	1.3	1.0	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	4.8	0.7	0.1	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	2.9	0.9	0.7	0.1	4.3	1.2	0	0.2	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0.2	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	24.9	7.2	2.4	1.5	14.0	6.6	3.6	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: V2.2 Iteration: i6
Purpose: HBO MODE: Avg. Auto Occupancy

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	1.24	1.40	1.40	1.45	1.33	1.38	1.41	1.41	1.25	1.20	0	0	1.25	1.65	1.00	1.00	1.63	1.00	1.00	1.00	2.00	1.00	1.61	1.33
2 DC NC	1.45	1.32	1.49	1.53	1.44	1.45	1.48	1.50	1.59	1.46	1.50	1.50	1.54	1.55	1.82	1.18	1.55	1.50	3.25	1.67	1.50	1.17	1.61	1.39
3 MTG	1.48	1.50	1.33	1.52	1.46	1.49	1.50	1.53	1.55	1.64	1.55	1.56	1.54	1.54	1.69	2.00	1.71	1.31	1.41	1.51	1.78	1.45	1.61	1.36
4 PG	1.49	1.51	1.52	1.31	1.47	1.48	1.51	1.53	1.39	1.67	1.52	1.72	1.53	1.54	1.54	1.58	1.55	1.62	1.55	1.37	1.59	1.48	1.61	1.37
5 ARLCR	1.39	1.39	1.39	1.45	1.06	1.38	1.41	1.41	1.50	1.50	0	0	1.50	1.33	0	1.00	0	2.00	2.00	0	0	1.00	1.59	1.29
6 ARNCR	1.45	1.46	1.48	1.48	1.43	1.26	1.47	1.49	1.51	1.48	1.29	1.60	1.18	1.63	2.50	1.50	1.75	1.92	1.27	1.50	3.20	1.00	1.61	1.35
7 ALX	1.46	1.47	1.48	1.50	1.45	1.46	1.25	1.49	1.45	1.51	1.33	1.00	1.40	1.28	1.00	2.00	2.00	1.88	1.40	1.33	1.27	2.00	1.62	1.36
8 FFX	1.49	1.50	1.52	1.53	1.47	1.49	1.51	1.33	1.54	1.54	1.64	1.35	1.58	1.55	1.43	1.68	1.50	1.55	1.54	1.68	1.56	1.61	1.61	1.36
9 LDN	1.46	1.51	1.54	1.59	1.59	1.49	1.51	1.54	1.23	1.55	1.56	1.43	1.51	1.83	1.50	1.00	1.83	1.57	1.55	1.56	1.59	1.17	1.61	1.28
10 PW	1.50	1.53	1.52	1.54	1.47	1.49	1.52	1.54	1.55	1.28	1.52	1.95	1.51	1.65	1.25	2.25	1.33	1.55	1.55	1.59	1.55	1.52	1.61	1.34
11 FRD	1.50	1.52	1.55	1.55	1.55	1.49	1.56	1.55	1.55	1.53	1.25	1.56	1.55	1.55	1.43	1.00	1.76	1.55	1.53	1.56	1.74	0	1.61	1.30
12 CAR	1.49	1.54	1.55	1.54	1.46	1.48	1.51	1.55	1.53	1.64	1.56	1.10	1.55	1.56	1.50	2.00	1.78	1.53	2.50	1.61	2.50	0	1.61	1.18
13 HOW	1.52	1.52	1.54	1.54	2.00	1.47	1.40	1.58	1.52	1.37	1.56	1.56	1.18	1.55	1.50	1.38	1.60	2.00	1.50	1.55	1.89	1.40	1.61	1.27
14 AAR	1.51	1.53	1.54	1.54	1.48	1.48	1.53	1.54	1.53	1.50	1.60	1.52	1.54	1.29	1.55	1.58	1.57	1.72	1.59	1.50	1.62	1.89	1.61	1.34
15 CAL	1.53	1.53	1.54	1.55	1.65	1.45	1.53	1.55	1.59	1.63	1.72	1.89	1.53	1.56	1.14	1.55	1.56	2.20	1.67	2.00	1.50	1.42	1.61	1.21
16 STM	1.48	1.55	1.60	1.56	1.43	1.47	1.55	1.59	1.55	1.60	1.80	1.50	1.59	1.56	1.55	1.19	1.56	2.14	1.61	0	1.45	1.56	1.62	1.21
17 CHS	1.51	1.53	1.55	1.55	1.34	1.52	1.51	1.54	1.55	1.73	1.65	1.20	1.67	1.55	1.56	1.56	1.16	1.43	1.70	1.57	1.55	1.56	1.61	1.21
18 FAU	1.53	1.49	1.54	1.57	1.50	1.50	1.53	1.55	1.56	1.55	1.48	1.90	1.70	1.55	1.83	1.56	1.50	1.11	1.56	1.56	1.55	1.71	1.61	1.25
19 STA	1.49	1.65	1.49	1.61	1.40	1.57	1.49	1.55	1.50	1.55	1.38	1.00	1.63	1.58	1.25	1.67	1.33	1.56	1.29	1.75	1.55	1.58	1.61	1.35
20 CL/JF	1.50	1.51	1.55	1.55	1.48	1.49	1.46	1.55	1.55	1.55	1.55	1.58	1.55	1.52	4.00	0	2.00	1.55	1.52	1.11	2.00	0	1.61	1.21
21 SP/FB	1.47	1.57	1.50	1.58	1.17	1.47	1.67	1.53	1.50	1.54	1.86	0	2.00	1.53	3.00	1.27	1.77	1.54	1.55	1.00	1.11	1.62	1.61	1.18
22 KGEO	1.52	1.52	1.59	1.56	1.47	1.48	1.52	1.54	1.71	1.53	0	0	1.36	1.55	1.67	1.52	1.56	1.55	1.56	0	1.55	1.09	1.62	1.17
23 EXTL	1.61	1.61	1.61	1.61	1.59	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.64	1.62	1.62	1.61	1.61	1.61	1.61	1.62	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: V2.2   Iteration: i6
Purpose: NHB   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	49019	33877	9991	18584	2228	12747	6757	14884	207	693	21	6	352	1078	55	2	331	6	21	2	6	1	911	151779
2 DC NC	26800	76764	30888	38881	1778	9765	5280	11901	170	488	74	9	1272	2415	133	10	485	7	18	1	3	3	1653	208798
3 MTG	8491	31947	506409	41743	1007	6354	2405	22253	941	454	8854	1158	13475	4284	30	1	84	18	6	109	4	2	6123	656152
4 PG	16500	39599	43138	303823	954	5303	5480	9684	65	397	98	86	12769	27324	1693	249	7368	4	15	2	6	8	5949	480514
5 ARLCR	1751	1964	995	988	2508	3894	1649	3674	56	182	4	1	13	48	3	1	16	1	8	0	1	0	80	17837
6 ARNCR	9831	10141	5925	5347	3712	54064	14524	36861	569	1372	22	2	78	241	15	1	95	33	45	2	12	2	605	143499
7 ALX	5385	5134	2134	5384	1495	14233	41381	34513	181	2005	8	1	36	190	26	1	198	11	87	0	30	1	408	112842
8 FFX	13233	12074	19434	10523	3496	36575	34451	545497	28220	31979	141	8	180	317	49	5	337	1404	850	53	283	5	2754	741868
9 LDN	268	202	862	67	62	599	196	30162	83871	2146	1499	22	38	11	2	0	1	431	4	1307	3	0	650	122403
10 PW	763	547	412	448	184	1449	1957	33582	2057	146512	9	3	5	12	5	0	12	2431	2852	20	1080	7	780	195127
11 FRD	35	130	12771	155	5	46	12	252	1745	13	121942	3188	2681	184	2	0	3	0	0	1300	2	0	2280	146746
12 CAR	4	16	1783	136	1	3	1	18	32	7	3851	81356	3059	289	0	0	4	2	0	24	0	0	2127	92713
13 HOW	426	1403	14820	13950	21	83	41	211	33	5	2147	2221	115798	20571	8	3	9	0	0	24	2	1	10186	181963
14 AAR	1230	2588	5003	27781	49	254	186	308	7	13	155	220	21530	265834	1237	7	266	1	3	3	5	1	18041	344722
15 CAL	102	201	68	2627	6	26	39	59	2	3	3	1	16	1783	34455	2496	1043	1	1	0	1	3	97	43033
16 STM	10	25	15	578	1	3	6	22	1	3	0	0	4	36	3123	55002	2589	0	1	0	4	67	53	61543
17 CHS	489	767	121	9807	22	138	262	367	1	12	4	2	19	374	792	1562	64233	1	2	0	3	178	218	79374
18 FAU	9	8	12	5	4	34	17	1565	430	2825	2	1	0	5	0	0	1	16572	456	55	216	1	190	22408
19 STA	31	17	11	20	10	57	118	1132	4	3736	1	0	2	4	0	1	3	551	32041	1	8741	124	329	46934
20 CL/JF	3	3	244	7	1	1	2	110	2079	43	1974	32	47	5	0	0	0	100	1	31042	0	0	1269	36963
21 SP/FB	11	5	15	8	3	20	50	460	4	1706	1	0	2	8	0	1	3	269	9343	2	78718	211	1469	92309
22 KGEO	2	2	6	24	0	2	1	11	3	20	0	0	2	5	4	86	364	3	314	0	498	10734	97	12178
23 EXTL	892	1646	6305	5881	80	608	398	2886	654	804	2291	2155	10785	17218	85	56	208	184	332	1258	1473	92	0	56291
TOTAL	135285	219060	661362	486767	17627	146258	115213	750412	121332	195418	143101	90472	182163	342236	41717	59484	77653	22030	46400	35205	91091	11441	56269	4047996

Simulation - Year: 2000 Alternative: V2.2   Iteration: i6
Purpose: NHB   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	61328	45603	13450	25289	2972	17051	9094	20171	295	940	30	10	479	1469	78	4	450	7	31	2	7	1	1171	199932
2 DC NC	36043	98331	41712	53049	2361	13062	7126	16140	251	659	95	12	1744	3293	183	11	676	9	21	2	3	3	2121	276907
3 MTG	11455	43112	645773	57014	1345	8545	3241	30382	1307	615	12190	1594	18507	5872	51	2	110	27	8	151	7	2	7850	849160
4 PG	22462	54055	58973	387615	1276	7148	7469	13272	91	546	136	122	17533	37603	2345	340	10171	6	20	2	7	11	7624	628827
5 ARLCR	2323	2608	1327	1329	2682	5131	2198	4916	72	247	4	1	18	64	4	1	23	4	9	0	2	0	101	23064
6 ARNCR	13095	13525	7932	7192	4891	65516	19394	49556	766	1858	30	3	104	325	22	2	130	39	60	2	16	2	778	185238
7 ALX	7253	6922	2887	7328	1999	19035	51001	46813	246	2729	10	2	48	253	37	2	275	12	126	0	45	1	523	147547
8 FFX	17952	16396	26540	14414	4690	49248	46762	700556	38807	43915	187	15	253	444	65	8	459	1935	1168	70	391	5	3559	967839
9 LDN	363	274	1188	92	82	815	263	41472	102393	2947	2071	30	51	15	2	0	1	596	6	1808	3	0	834	155306
10 PW	1041	750	557	626	257	1945	2673	46134	2829	181216	14	3	6	17	5	3	17	3345	3944	35	1491	8	998	247914
11 FRD	46	178	17588	214	8	64	16	343	2410	18	147358	4399	3703	255	3	0	4	3	0	1791	4	0	2923	181328
12 CAR	5	21	2458	193	1	5	3	25	44	7	5319	89367	4221	397	0	0	5	2	0	36	0	0	2728	104837
13 HOW	580	1916	20354	19168	25	111	56	291	44	5	2958	3066	134738	28310	11	3	15	0	2	34	3	1	13060	224751
14 AAR	1681	3547	6861	38240	69	343	254	427	10	15	213	306	29629	312447	1712	11	361	2	5	3	7	1	23130	419274
15 CAL	138	279	92	3627	7	36	54	79	5	6	4	2	22	2463	39430	3446	1444	1	1	0	2	3	121	51262
16 STM	12	32	28	795	2	6	11	31	1	5	0	0	6	50	4317	64902	3570	2	2	0	5	89	68	73934
17 CHS	669	1050	166	13526	34	187	353	505	4	18	6	2	26	518	1094	2160	74159	1	4	0	7	244	272	95005
18 FAU	11	11	19	8	5	48	21	2160	590	3898	2	1	1	6	0	0	1	18186	630	77	298	3	243	26219
19 STA	41	25	15	27	13	77	161	1562	5	5154	1	0	3	8	1	1	3	764	36088	1	12051	173	423	56597
20 CL/JF	3	4	340	8	2	2	2	153	2869	62	2725	47	62	9	0	0	0	139	1	34595	0	0	1625	42648
21 SP/FB	15	8	18	12	6	26	68	635	4	2353	2	0	4	8	1	1	5	372	12877	2	86820	293	1884	105414
22 KGEO	2	4	8	33	0	3	1	14	4	31	0	0	3	6	6	119	504	6	435	0	686	11697	124	13686
23 EXTL	1143	2105	8086	7546	100	780	515	3700	835	1029	2933	2763	13824	22075	114	71	268	233	427	1614	1888	119	0	72168
TOTAL	177661	290756	856372	637345	22827	189184	150736	979337	153882	248273	176288	101745	224985	415907	49481	71087	92651	25691	55865	40225	103743	12656	72160	5148857

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

Simulation - Year: 2000 Alternative: V2.2 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	24809	4312	3458	1804	1297	4445	1152	1920	0	10	0	0	1	2	0	0	0	0	0	0	0	0	0	43210
2 DC NC	14270	2636	4103	1153	548	1726	404	578	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	25422
3 MTG	6366	3624	11529	855	326	958	224	436	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24318
4 PG	5503	1542	1360	877	176	520	138	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10267
5 ARLCR	1899	309	209	82	124	513	191	261	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3589
6 ARNCR	8062	1185	787	265	769	2303	586	1405	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	15364
7 ALX	2569	359	216	92	297	948	539	482	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5504
8 FFX	4534	650	562	135	526	2321	738	2704	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	12174
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	58	9	5	0	9	24	24	33	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0	289
11 FRD	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	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	14	2	2	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	21
14 AAR	9	11	29	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53
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	68093	14639	22260	5265	4074	13759	3996	7971	2	146	4	0	4	3	0	0	1	0	0	0	0	0	0	140217

Simulation - Year: 2000 Alternative: V2.2 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: V2.2 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: V2.2 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	49019	33877	9991	18584	2228	12747	6757	14884	207	693	21	6	352	1078	55	2	331	6	21	2	6	1	911	151779
2 DC NC	26800	76764	30888	38881	1778	9765	5280	11901	170	488	74	9	1272	2415	133	10	485	7	18	1	3	3	1653	208798
3 MTG	8491	31947	506409	41743	1007	6354	2405	22253	941	454	8854	1158	13475	4284	30	1	84	18	6	109	4	2	6123	656152
4 PG	16500	39599	43138	303823	954	5303	5480	9684	65	397	98	86	12769	27324	1693	249	7368	4	15	2	6	8	5949	480514
5 ARLCR	1751	1964	995	988	2508	3894	1649	3674	56	182	4	1	13	48	3	1	16	1	8	0	1	0	80	17837
6 ARNCR	9831	10141	5925	5347	3712	54064	14524	36861	569	1372	22	2	78	241	15	1	95	33	45	2	12	2	605	143499
7 ALX	5385	5134	2134	5384	1495	14233	41381	34513	181	2005	8	1	36	190	26	1	198	11	87	0	30	1	408	112842
8 FFX	13233	12074	19434	10523	3496	36575	34451	545497	28220	31979	141	8	180	317	49	5	337	1404	850	53	283	5	2754	741868
9 LDN	268	202	862	67	62	599	196	30162	83871	2146	1499	22	38	11	2	0	1	431	4	1307	3	0	650	122403
10 PW	763	547	412	448	184	1449	1957	33582	2057	146512	9	3	5	12	5	0	12	2431	2852	20	1080	7	780	195127
11 FRD	35	130	12771	155	5	46	12	252	1745	13	121942	3188	2681	184	2	0	3	0	0	1300	2	0	2280	146746
12 CAR	4	16	1783	136	1	3	1	18	32	7	3851	81356	3059	289	0	0	4	2	0	24	0	0	2127	92713
13 HOW	426	1403	14820	13950	21	83	41	211	33	5	2147	2221	115798	20571	8	3	9	0	0	24	2	1	10186	181963
14 AAR	1230	2588	5003	27781	49	254	186	308	7	13	155	220	21530	265834	1237	7	266	1	3	3	5	1	18041	344722
15 CAL	102	201	68	2627	6	26	39	59	2	3	3	1	16	1783	34455	2496	1043	1	1	0	1	3	97	43033
16 STM	10	25	15	578	1	3	6	22	1	3	0	0	4	36	3123	55002	2589	0	1	0	4	67	53	61543
17 CHS	489	767	121	9807	22	138	262	367	1	12	4	2	19	374	792	1562	64233	1	2	0	3	178	218	79374
18 FAU	9	8	12	5	4	34	17	1565	430	2825	2	1	0	5	0	0	1	16572	456	55	216	1	190	22408
19 STA	31	17	11	20	10	57	118	1132	4	3736	1	0	2	4	0	1	3	551	32041	1	8741	124	329	46934
20 CL/JF	3	3	244	7	1	1	2	110	2079	43	1974	32	47	5	0	0	0	100	1	31042	0	0	1269	36963
21 SP/FB	11	5	15	8	3	20	50	460	4	1706	1	0	2	8	0	1	3	269	9343	2	78718	211	1469	92309
22 KGEO	2	2	6	24	0	2	1	11	3	20	0	0	2	5	4	86	364	3	314	0	498	10734	97	12178
23 EXTL	892	1646	6305	5881	80	608	398	2886	654	804	2291	2155	10785	17218	85	56	208	184	332	1258	1473	92	0	56291
TOTAL	135285	219060	661362	486767	17627	146258	115213	750412	121332	195418	143101	90472	182163	342236	41717	59484	77653	22030	46400	35205	91091	11441	56269	4047996

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: NHB 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	61328	45603	13450	25289	2972	17051	9094	20171	295	940	30	10	479	1469	78	4	450	7	31	2	7	1	1171	199932
2 DC NC	36043	98331	41712	53049	2361	13062	7126	16140	251	659	95	12	1744	3293	183	11	676	9	21	2	3	3	2121	276907
3 MTG	11455	43112	645773	57014	1345	8545	3241	30382	1307	615	12190	1594	18507	5872	51	2	110	27	8	151	7	2	7850	849160
4 PG	22462	54055	58973	387615	1276	7148	7469	13272	91	546	136	122	17533	37603	2345	340	10171	6	20	2	7	11	7624	628827
5 ARLCR	2323	2608	1327	1329	2682	5131	2198	4916	72	247	4	1	18	64	4	1	23	4	9	0	2	0	101	23064
6 ARNCR	13095	13525	7932	7192	4891	65516	19394	49556	766	1858	30	3	104	325	22	2	130	39	60	2	16	2	778	185238
7 ALX	7253	6922	2887	7328	1999	19035	51001	46813	246	2729	10	2	48	253	37	2	275	12	126	0	45	1	523	147547
8 FFX	17952	16396	26540	14414	4690	49248	46762	700556	38807	43915	187	15	253	444	65	8	459	1935	1168	70	391	5	3559	967839
9 LDN	363	274	1188	92	82	815	263	41472	102393	2947	2071	30	51	15	2	0	1	596	6	1808	3	0	834	155306
10 PW	1041	750	557	626	257	1945	2673	46134	2829	181216	14	3	6	17	5	3	17	3345	3944	35	1491	8	998	247914
11 FRD	46	178	17588	214	8	64	16	343	2410	18	147358	4399	3703	255	3	0	4	3	0	1791	4	0	2923	181328
12 CAR	5	21	2458	193	1	5	3	25	44	7	5319	89367	4221	397	0	0	5	2	0	36	0	0	2728	104837
13 HOW	580	1916	20354	19168	25	111	56	291	44	5	2958	3066	134738	28310	11	3	15	0	2	34	3	1	13060	224751
14 AAR	1681	3547	6861	38240	69	343	254	427	10	15	213	306	29629	312447	1712	11	361	2	5	3	7	1	23130	419274
15 CAL	138	279	92	3627	7	36	54	79	5	6	4	2	22	2463	39430	3446	1444	1	1	0	2	3	121	51262
16 STM	12	32	28	795	2	6	11	31	1	5	0	0	6	50	4317	64902	3570	2	2	0	5	89	68	73934
17 CHS	669	1050	166	13526	34	187	353	505	4	18	6	2	26	518	1094	2160	74159	1	4	0	7	244	272	95005
18 FAU	11	11	19	8	5	48	21	2160	590	3898	2	1	1	6	0	0	1	18186	630	77	298	3	243	26219
19 STA	41	25	15	27	13	77	161	1562	5	5154	1	0	3	8	1	1	3	764	36088	1	12051	173	423	56597
20 CL/JF	3	4	340	8	2	2	2	153	2869	62	2725	47	62	9	0	0	0	139	1	34595	0	0	1625	42648
21 SP/FB	15	8	18	12	6	26	68	635	4	2353	2	0	4	8	1	1	5	372	12877	2	86820	293	1884	105414
22 KGEO	2	4	8	33	0	3	1	14	4	31	0	0	3	6	6	119	504	6	435	0	686	11697	124	13686
23 EXTL	1143	2105	8086	7546	100	780	515	3700	835	1029	2933	2763	13824	22075	114	71	268	233	427	1614	1888	119	0	72168
TOTAL	177661	290756	856372	637345	22827	189184	150736	979337	153882	248273	176288	101745	224985	415907	49481	71087	92651	25691	55865	40225	103743	12656	72160	5148857

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: NHB 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	86137	49915	16908	27093	4269	21496	10246	22091	295	950	30	10	480	1471	78	4	450	7	31	2	7	1	1171	243142
2 DC NC	50313	100967	45815	54202	2909	14788	7530	16718	251	659	95	12	1746	3294	183	11	677	9	21	2	3	3	2121	302329
3 MTG	17821	46736	657302	57869	1671	9503	3465	30818	1307	615	12190	1594	18507	5872	51	2	110	27	8	151	7	2	7850	873478
4 PG	27965	55597	60333	388492	1452	7668	7607	13423	91	546	136	122	17533	37603	2345	340	10171	6	20	2	7	11	7624	639094
5 ARLCR	4222	2917	1536	1411	2806	5644	2389	5177	72	248	4	1	18	64	4	1	23	4	9	0	2	0	101	26653
6 ARNCR	21157	14710	8719	7457	5660	67819	19980	50961	766	1860	30	3	104	325	22	2	130	39	60	2	16	2	778	200602
7 ALX	9822	7281	3103	7420	2296	19983	51540	47295	246	2731	10	2	48	253	37	2	275	12	126	0	45	1	523	153051
8 FFX	22486	17046	27102	14549	5216	51569	47500	703260	38807	43919	187	15	253	444	65	8	459	1935	1168	70	391	5	3559	980013
9 LDN	363	274	1188	92	82	815	263	41472	102395	2947	2071	30	51	15	2	0	1	596	6	1808	3	0	834	155308
10 PW	1099	759	562	626	266	1969	2697	46167	2829	181343	14	3	6	17	5	3	17	3345	3944	35	1491	8	998	248203
11 FRD	46	178	17588	214	8	64	16	343	2410	18	147362	4399	3703	255	3	0	4	3	0	1791	4	0	2923	181332
12 CAR	5	21	2458	193	1	5	3	25	44	7	5319	89367	4221	397	0	0	5	2	0	36	0	0	2728	104837
13 HOW	594	1918	20356	19168	27	111	56	291	44	5	2958	3066	134739	28310	11	3	15	0	2	34	3	1	13060	224772
14 AAR	1690	3558	6890	38242	69	344	254	428	10	15	213	306	29629	312447	1712	11	361	2	5	3	7	1	23130	419327
15 CAL	138	279	92	3627	7	36	54	79	5	6	4	2	22	2463	39430	3446	1444	1	1	0	2	3	121	51262
16 STM	12	32	28	795	2	6	11	31	1	5	0	0	6	50	4317	64902	3570	2	2	0	5	89	68	73934
17 CHS	669	1050	166	13526	34	187	353	505	4	18	6	2	26	518	1094	2160	74159	1	4	0	7	244	272	95005
18 FAU	11	11	19	8	5	48	21	2160	590	3898	2	1	1	6	0	0	1	18186	630	77	298	3	243	26219
19 STA	41	25	15	27	13	77	161	1562	5	5154	1	0	3	8	1	1	3	764	36088	1	12051	173	423	56597
20 CL/JF	3	4	340	8	2	2	2	153	2869	62	2725	47	62	9	0	0	0	139	1	34595	0	0	1625	42648
21 SP/FB	15	8	18	12	6	26	68	635	4	2353	2	0	4	8	1	1	5	372	12877	2	86820	293	1884	105414
22 KGEO	2	4	8	33	0	3	1	14	4	31	0	0	3	6	6	119	504	6	435	0	686	11697	124	13686
23 EXTL	1143	2105	8086	7546	100	780	515	3700	835	1029	2933	2763	13824	22075	114	71	268	233	427	1614	1888	119	0	72168
TOTAL	245754	305395	878632	642610	26901	202943	154732	987308	153884	248419	176292	101745	224989	415910	49481	71087	92652	25691	55865	40225	103743	12656	72160	5289074

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: NHB MODE: Transit Percentage

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	28.8	8.6	20.5	6.7	30.4	20.7	11.2	8.7	0	1.1	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	17.8
2 DC NC	28.4	2.6	9.0	2.1	18.8	11.7	5.4	3.5	0	0	0	0	0.1	0.0	0	0	0.1	0	0	0	0	0	0	8.4
3 MTG	35.7	7.8	1.8	1.5	19.5	10.1	6.5	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8
4 PG	19.7	2.8	2.3	0.2	12.1	6.8	1.8	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6
5 ARLCR	45.0	10.6	13.6	5.8	4.4	9.1	8.0	5.0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	13.5
6 ARNCR	38.1	8.1	9.0	3.6	13.6	3.4	2.9	2.8	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7
7 ALX	26.2	4.9	7.0	1.2	12.9	4.7	1.0	1.0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6
8 FFX	20.2	3.8	2.1	0.9	10.1	4.5	1.6	0.4	0	0.0	0	0	0	0	0	0	0	0	0	0	0	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	5.3	1.2	0.9	0	3.4	1.2	0.9	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	2.4	0.1	0.0	0	7.4	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0.5	0.3	0.4	0.0	0	0.3	0	0.2	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	27.7	4.8	2.5	0.8	15.1	6.8	2.6	0.8	0.0	0.1	0.0	0	0.0	0.0	0	0	0.0	0	0	0	0	0	0	2.7

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: NHB MODE: Avg. Auto Occupancy

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	1.25	1.35	1.35	1.36	1.33	1.34	1.35	1.36	1.43	1.36	1.43	1.67	1.36	1.36	1.42	2.00	1.36	1.17	1.48	1.00	1.17	1.00	1.29	1.32
2 DC NC	1.34	1.28	1.35	1.36	1.33	1.34	1.35	1.36	1.48	1.35	1.28	1.33	1.37	1.36	1.38	1.10	1.39	1.29	1.17	2.00	1.00	1.00	1.28	1.33
3 MTG	1.35	1.35	1.28	1.37	1.34	1.34	1.35	1.37	1.39	1.35	1.38	1.38	1.37	1.37	1.70	2.00	1.31	1.50	1.33	1.39	1.75	1.00	1.28	1.29
4 PG	1.36	1.37	1.37	1.28	1.34	1.35	1.36	1.37	1.40	1.38	1.39	1.42	1.37	1.38	1.39	1.37	1.38	1.50	1.33	1.00	1.17	1.38	1.28	1.31
5 ARLCR	1.33	1.33	1.33	1.35	1.07	1.32	1.33	1.34	1.29	1.36	1.00	1.00	1.38	1.33	1.33	1.00	1.44	4.00	1.13	0	2.00	0	1.26	1.29
6 ARNCR	1.33	1.33	1.34	1.35	1.32	1.21	1.34	1.34	1.35	1.35	1.36	1.50	1.33	1.35	1.47	2.00	1.37	1.18	1.33	1.00	1.33	1.00	1.29	1.29
7 ALX	1.35	1.35	1.35	1.36	1.34	1.34	1.23	1.36	1.36	1.36	1.25	2.00	1.33	1.33	1.42	2.00	1.39	1.09	1.45	0	1.50	1.00	1.28	1.31
8 FFX	1.36	1.36	1.37	1.37	1.34	1.35	1.36	1.28	1.38	1.37	1.33	1.88	1.41	1.40	1.33	1.60	1.36	1.38	1.37	1.32	1.38	1.00	1.29	1.30
9 LDN	1.35	1.36	1.38	1.37	1.32	1.36	1.34	1.37	1.22	1.37	1.38	1.36	1.34	1.36	1.00	0	1.00	1.38	1.50	1.38	1.00	0	1.28	1.27
10 PW	1.36	1.37	1.35	1.40	1.40	1.34	1.37	1.37	1.38	1.24	1.56	1.00	1.20	1.42	1.00	3.00	1.42	1.38	1.38	1.75	1.38	1.14	1.28	1.27
11 FRD	1.31	1.37	1.38	1.38	1.60	1.39	1.33	1.36	1.38	1.38	1.21	1.38	1.38	1.39	1.50	0	1.33	3.00	0	1.38	2.00	0	1.28	1.24
12 CAR	1.25	1.31	1.38	1.42	1.00	1.67	3.00	1.39	1.38	1.00	1.38	1.10	1.38	1.37	0	0	1.25	1.00	0	1.50	0	0	1.28	1.13
13 HOW	1.36	1.37	1.37	1.37	1.19	1.34	1.37	1.38	1.33	1.00	1.38	1.38	1.16	1.38	1.38	1.00	1.67	0	2.00	1.42	1.50	1.00	1.28	1.24
14 AAR	1.37	1.37	1.37	1.38	1.41	1.35	1.37	1.39	1.43	1.15	1.37	1.39	1.38	1.18	1.38	1.57	1.36	2.00	1.67	1.00	1.40	1.00	1.28	1.22
15 CAL	1.35	1.39	1.35	1.38	1.17	1.38	1.38	1.34	2.50	2.00	1.33	2.00	1.38	1.38	1.14	1.38	1.38	1.00	1.00	0	2.00	1.00	1.25	1.19
16 STM	1.20	1.28	1.87	1.38	2.00	2.00	1.83	1.41	1.00	1.67	0	0	1.50	1.39	1.38	1.18	1.38	2.00	2.00	0	1.25	1.33	1.28	1.20
17 CHS	1.37	1.37	1.37	1.38	1.55	1.36	1.35	1.38	4.00	1.50	1.50	1.00	1.37	1.39	1.38	1.38	1.15	1.00	2.00	0	2.33	1.37	1.25	1.20
18 FAU	1.22	1.38	1.58	1.60	1.25	1.41	1.24	1.38	1.37	1.38	1.00	1.00	1.00	1.20	0	0	1.00	1.10	1.38	1.40	1.38	3.00	1.28	1.17
19 STA	1.32	1.47	1.36	1.35	1.30	1.35	1.36	1.38	1.25	1.38	1.00	0	1.50	2.00	1.00	1.00	1.00	1.39	1.13	1.00	1.38	1.40	1.29	1.21
20 CL/JF	1.00	1.33	1.39	1.14	2.00	2.00	1.00	1.39	1.38	1.44	1.38	1.47	1.32	1.80	0	0	0	1.39	1.00	1.11	0	0	1.28	1.15
21 SP/FB	1.36	1.60	1.20	1.50	2.00	1.30	1.36	1.38	1.00	1.38	2.00	0	2.00	1.00	1.00	1.00	1.67	1.38	1.38	1.00	1.10	1.39	1.28	1.14
22 KGEO	1.00	2.00	1.33	1.38	0	1.50	1.00	1.27	1.33	1.55	0	0	1.50	1.20	1.50	1.38	1.38	2.00	1.39	0	1.38	1.09	1.28	1.12
23 EXTL	1.28	1.28	1.28	1.28	1.25	1.28	1.29	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.34	1.27	1.29	1.27	1.29	1.28	1.28	1.29	0	1.28
TOTAL	1.31	1.33	1.29	1.31	1.30	1.29	1.31	1.31	1.27	1.27	1.23	1.12	1.24	1.22	1.19	1.20	1.19	1.17	1.20	1.14	1.14	1.11	1.28	1.27

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
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	70071	48148	12429	21229	3237	18369	8179	17712	258	745	48	6	413	1190	61	22	361	11	106	9	162	2	2330	205098
2 DC NC	135538	447855	119363	117061	8830	41898	14659	32594	556	740	189	23	2755	4800	200	92	822	34	466	50	687	11	17413	946636
3 MTG	69801	116987	2180826	133857	5682	20938	5793	66747	2720	742	21421	2155	38427	10554	68	134	222	82	647	592	1136	29	48574	2728134
4 PG	99289	190994	137085	1354644	7304	21413	18997	31756	404	790	386	144	34860	85797	3526	982	30345	62	1066	137	1806	149	40935	2062871
5 ARLCR	3815	3351	1460	1183	8044	8985	2574	5743	87	205	6	1	19	58	3	2	24	3	19	0	11	1	313	35907
6 ARNCR	38484	26625	13780	8318	15676	274136	42925	121728	1682	1947	53	8	122	354	19	14	119	58	130	11	132	8	5575	551904
7 ALX	18748	12267	4247	8244	6263	53658	159546	96120	463	2912	20	3	57	273	34	8	239	32	195	8	150	2	2878	366367
8 FFX	64314	38617	44260	20670	18951	135600	122905	2354393	114741	74543	570	55	434	936	121	386	823	3556	3946	466	4444	43	25980	3030754
9 LDN	1078	783	3598	286	490	2008	677	102646	368057	4108	5809	81	177	130	13	18	46	1343	563	8181	991	10	6626	507719
10 PW	3812	1758	1384	1158	1211	6106	9120	160053	10214	646120	173	31	96	242	30	84	149	9494	17760	250	10735	123	8431	888534
11 FRD	374	774	52752	1045	81	331	152	1979	7571	175	483760	11483	11757	1245	19	3	52	65	486	7397	394	0	25086	606981
12 CAR	196	302	9210	1390	36	290	197	1121	673	163	20658	310352	16976	1885	16	1	76	68	93	283	69	0	44372	408427
13 HOW	2926	6025	45684	43124	179	377	149	879	152	54	7358	4558	421969	55916	17	40	35	9	178	204	303	8	53004	643148
14 AAR	9038	15044	15486	100262	543	1387	823	1989	374	273	473	331	68037	1120082	4168	196	930	60	957	74	1085	17	83093	1424722
15 CAL	1362	2622	847	14593	107	325	304	769	130	116	65	15	160	8862	163621	19466	3696	12	399	11	527	117	1008	219134
16 STM	246	499	653	3677	27	229	160	818	159	136	13	2	137	362	7744	224667	10467	14	814	0	753	1429	657	253663
17 CHS	3834	6667	1041	40533	290	790	1257	2101	198	117	64	14	142	1513	3568	7062	277122	43	511	8	585	3114	1853	352427
18 FAU	117	128	375	184	21	262	132	13119	3831	14503	82	13	58	127	8	10	45	90386	6638	504	3137	42	3390	137112
19 STA	110	68	80	63	88	298	675	6961	63	16808	11	0	12	29	4	11	34	2502	156776	13	46006	975	4531	236118
20 CL/JF	145	218	2299	298	29	187	114	2125	13200	463	10485	103	333	134	1	0	22	835	577	126945	316	0	17310	176139
21 SP/FB	58	56	103	56	19	77	164	1891	34	5499	9	0	6	28	3	15	33	1074	28858	3	257472	885	14992	311335
22 KGEO	112	151	268	332	20	135	80	478	169	246	0	0	28	88	36	308	1411	127	2272	0	3195	40903	845	51204
23 EXTL	6771	11318	40373	35643	907	4015	2399	27017	8216	11369	33003	35292	56827	121405	988	721	1966	7782	5815	16782	22901	1352	0	452862
TOTAL	530239	931257	2687603	1907850	78035	591814	391981	3050739	533952	782774	584656	364670	653802	1416010	184268	254242	329039	117652	229272	161928	356997	49220	409196	16597196

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
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	86732	64412	16615	28857	4193	24241	10929	23824	370	1004	68	12	558	1640	85	38	494	14	164	13	259	3	3014	267539
2 DC NC	179389	572534	164489	164141	11297	56287	19940	44442	833	1020	270	33	3831	6718	288	141	1191	49	775	95	1133	14	23882	1252792
3 MTG	87209	158017	2769141	183511	7097	28204	7781	90883	3867	1051	29383	3016	53562	14509	111	236	342	109	1100	846	1962	42	67669	3509648
4 PG	128058	256066	186584	1708995	9041	28143	25392	42267	584	1146	582	209	47107	117404	4833	1383	42496	105	1793	236	3077	199	55725	2661425
5 ARLCR	4963	4457	1939	1596	8453	11752	3422	7629	114	280	7	1	25	77	4	4	35	7	23	0	19	1	429	45237
6 ARNCR	49543	35676	18556	11296	20021	333392	58360	165365	2283	2652	71	12	158	500	33	19	168	79	190	22	198	8	7966	706568
7 ALX	23589	16277	5610	11219	7766	71220	193070	128816	611	3987	28	4	76	361	46	15	335	42	284	13	216	3	4061	467649
8 FFX	77590	49488	59650	28182	22566	181152	165154	2993411	157329	102653	839	96	624	1395	174	698	1233	4892	5918	743	6994	72	37584	3898437
9 LDN	1259	939	4587	418	526	2545	835	132958	443925	5525	7765	110	254	229	22	42	81	1854	961	11627	1716	13	9345	627536
10 PW	4797	2420	1917	1640	1477	8061	11795	212471	13701	797013	265	56	158	406	46	156	240	12670	25050	401	15121	159	12438	1122458
11 FRD	471	969	70818	1447	97	475	242	2888	10315	292	579587	15830	16063	1719	30	3	100	107	903	10374	741	0	35553	749024
12 CAR	295	441	12249	1938	51	457	322	1835	1049	278	26945	338048	22577	2480	27	2	136	117	175	386	130	0	64862	474800
13 HOW	3715	7630	61305	57058	214	492	196	1169	217	74	9758	6334	486198	75309	27	64	61	16	322	289	553	11	71910	782922
14 AAR	11823	19674	20973	136696	686	1874	1132	2917	630	447	696	466	92801	1352757	5826	308	1320	109	1752	130	1985	31	115522	1770555
15 CAL	1800	3336	1238	19282	142	453	413	1154	228	199	115	26	236	12085	185264	25654	5003	25	718	21	958	151	1440	259941
16 STM	352	678	1092	4853	42	356	240	1357	286	230	22	3	236	533	10460	260587	14174	31	1444	0	1289	1824	962	301051
17 CHS	4995	8306	1468	53627	360	1061	1608	2861	337	197	113	18	215	2004	4752	9632	316336	68	873	12	968	4137	2672	416620
18 FAU	175	190	588	299	29	381	187	17677	5142	19326	128	23	99	206	16	17	73	99995	9466	720	4385	60	4936	164118
19 STA	142	96	113	88	100	377	818	8399	82	21482	16	1	19	48	7	16	45	3211	187974	19	61821	1206	6433	292513
20 CL/JF	215	326	3114	486	44	293	177	3057	17914	648	14360	142	483	228	5	0	40	1170	1043	139235	584	0	25448	209012
21 SP/FB	82	83	152	87	23	103	208	2310	50	7075	16	0	12	39	6	18	53	1437	39809	4	281971	1087	21303	355928
22 KGEO	170	236	445	502	28	209	128	766	303	347	0	0	46	143	55	421	1964	189	3250	0	4341	44168	1258	58969
23 EXTL	8641	15451	54552	47174	1134	5634	3322	36311	10709	14721	42667	47578	74986	161696	1304	963	2614	10060	8044	22130	31764	1775	0	603230
TOTAL	676005	1217702	3457195	2463392	95387	757162	505671	3924767	670879	981647	713701	412018	800324	1752486	213421	300417	388534	136356	292031	187316	422185	54964	574412	20997972

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: ALL MODE: Transit

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	46770	12806	5722	3040	2671	8083	1901	3633	0	18	0	0	8	8	0	0	1	0	1	0	0	0	0	84662
2 DC NC	137069	61705	29033	15035	5379	13836	3014	5547	0	17	0	0	56	38	0	0	4	0	0	0	3	0	0	270736
3 MTG	59867	18715	73665	5269	2250	4323	703	2943	0	0	0	0	40	13	0	0	0	0	0	0	1	0	0	167789
4 PG	66848	24980	11734	23770	3330	5765	1420	1924	0	0	0	0	152	84	0	0	0	0	0	0	0	0	0	140007
5 ARLCR	5182	838	413	136	478	1765	413	839	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	10066
6 ARNCR	38689	5741	2602	699	6051	16529	4159	12235	2	9	0	0	3	0	0	0	0	0	0	0	0	0	0	86719
7 ALX	16359	2233	811	293	2695	8528	6534	6045	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	43511
8 FFX	51954	6100	3202	523	7265	20581	8721	30553	29	214	0	0	1	0	0	0	0	0	0	0	0	0	0	129143
9 LDN	462	49	158	0	135	213	13	2361	443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3834
10 PW	5994	278	108	14	762	1361	1396	4421	0	5388	0	0	0	0	0	0	0	0	0	0	0	0	0	19722
11 FRD	163	77	1308	4	15	14	2	3	0	0	304	0	0	0	0	0	0	0	0	0	0	0	0	1890
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	2131	652	1543	439	81	102	17	43	0	0	0	0	908	71	0	0	0	0	0	0	0	0	0	5987
14 AAR	5997	1506	842	820	242	333	57	56	0	0	0	0	221	350	4	0	0	0	0	0	0	0	0	10428
15 CAL	1521	507	65	113	65	95	27	23	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	2458
16 STM	182	75	8	29	10	11	6	5	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	366
17 CHS	3960	1213	152	338	186	284	93	74	0	0	0	0	0	0	0	0	66	0	0	0	0	0	0	6366
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	119	16	7	1	58	110	103	224	0	6	0	0	0	0	0	0	0	0	11	0	4	0	0	659
20 CL/JF	11	5	132	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151
21 SP/FB	40	5	1	0	8	18	28	93	0	4	0	0	0	0	0	0	0	0	17	0	24	0	0	238
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	443318	137501	131506	50524	31682	81952	28607	71022	474	5671	304	0	1389	564	46	0	111	0	29	0	32	0	0	984732

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: ALL MODE: HOV 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	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	859	336	1139	107	87	174	28	423	8	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3162
4 PG	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
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	1457	222	34	30	218	391	13	6	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	2375
7 ALX	1387	236	139	29	276	373	0	72	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	2515
8 FFX	18324	3717	1007	317	3883	7654	1393	6610	3	0	2	0	3	11	0	0	1	0	0	0	0	0	0	42925
9 LDN	859	268	439	37	439	840	236	4057	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7176
10 PW	5302	522	273	117	1218	2652	1535	7930	30	1	2	0	0	0	0	0	3	0	0	0	0	0	0	19585
11 FRD	153	191	1936	40	33	48	7	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2496
12 CAR	1	1	57	0	0	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67
13 HOW	0	1	1	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
18 FAU	4	4	7	1	6	27	17	479	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	546
19 STA	207	60	29	12	189	414	303	1397	4	26	0	0	0	0	0	0	0	0	0	0	0	0	0	2641
20 CL/JF	25	17	178	3	8	13	1	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	373
21 SP/FB	70	25	11	3	36	93	99	541	2	16	0	0	0	0	0	0	0	0	0	0	0	0	0	896
22 KGEO	0	2	0	1	0	0	0	9	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	14
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	28648	5602	5250	697	6393	12682	3632	21755	47	46	6	0	5	16	0	0	4	0	0	0	0	0	0	84783

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
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	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	326	143	490	48	37	70	15	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1304
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	551	88	8	13	85	150	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	903
7 ALX	396	72	37	15	81	103	0	22	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	727
8 FFX	6422	1440	370	123	1503	2890	527	2764	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	16043
9 LDN	253	88	145	13	147	278	78	1385	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2387
10 PW	1526	158	84	41	380	831	470	2684	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6183
11 FRD	56	75	812	22	10	20	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1023
12 CAR	0	0	23	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
13 HOW	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
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	1	3	0	3	13	5	199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224
19 STA	57	17	6	5	52	118	88	401	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	750
20 CL/JF	5	7	69	2	3	1	1	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125
21 SP/FB	19	8	2	1	8	27	27	153	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	252
22 KGEO	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
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	9611	2097	2050	283	2309	4502	1219	7854	11	11	2	0	1	3	0	0	0	0	0	0	0	0	0	29953

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
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	70071	48148	12429	21229	3237	18369	8179	17712	258	745	48	6	413	1190	61	22	361	11	106	9	162	2	2330	205098
2 DC NC	135538	447855	119363	117061	8830	41898	14659	32594	556	740	189	23	2755	4800	200	92	822	34	466	50	687	11	17413	946636
3 MTG	70127	117130	2181316	133905	5719	21008	5808	66922	2720	742	21421	2155	38427	10554	68	134	222	82	647	592	1136	29	48574	2729438
4 PG	99289	190994	137085	1354644	7304	21413	18997	31756	404	790	386	144	34860	85797	3526	982	30345	62	1066	137	1806	149	40935	2062871
5 ARLCR	3815	3351	1460	1183	8044	8985	2574	5743	87	205	6	1	19	58	3	2	24	3	19	0	11	1	313	35907
6 ARNCR	39035	26713	13788	8331	15761	274286	42932	121728	1682	1947	54	8	122	354	19	14	119	58	130	11	132	8	5575	552807
7 ALX	19144	12339	4284	8259	6344	53761	159546	96142	463	2912	20	3	58	273	34	8	239	32	195	8	150	2	2878	367094
8 FFX	70736	40057	44630	20793	20454	138490	123432	2357157	114742	74543	570	55	434	939	121	386	823	3556	3946	466	4444	43	25980	3046797
9 LDN	1331	871	3743	299	637	2286	755	104031	368057	4108	5809	81	177	130	13	18	46	1343	563	8181	991	10	6626	510106
10 PW	5338	1916	1468	1199	1591	6937	9590	162737	10222	646120	174	31	96	242	30	84	149	9494	17760	250	10735	123	8431	894717
11 FRD	430	849	53564	1067	91	351	153	2006	7571	175	483760	11483	11757	1245	19	3	52	65	486	7397	394	0	25086	608004
12 CAR	196	302	9233	1390	36	291	197	1122	673	163	20658	310352	16976	1885	16	1	76	68	93	283	69	0	44372	408452
13 HOW	2926	6025	45685	43124	179	377	149	881	152	54	7358	4558	421969	55916	17	40	35	9	178	204	303	8	53004	643151
14 AAR	9038	15044	15486	100262	543	1387	823	1989	374	273	473	331	68037	1120082	4168	196	930	60	957	74	1085	17	83093	1424722
15 CAL	1362	2622	847	14593	107	325	304	769	130	116	65	15	160	8862	163621	19466	3696	12	399	11	527	117	1008	219134
16 STM	246	499	653	3677	27	229	160	818	159	136	13	2	137	362	7744	224667	10467	14	814	0	753	1429	657	253663
17 CHS	3834	6667	1041	40533	290	790	1257	2101	198	117	64	14	142	1513	3568	7062	277122	43	511	8	585	3114	1853	352427
18 FAU	117	129	378	184	24	275	137	13318	3831	14503	82	13	58	127	8	10	45	90386	6638	504	3137	42	3390	137336
19 STA	167	85	86	68	140	416	763	7362	64	16813	11	0	12	29	4	11	34	2502	156776	13	46006	975	4531	236868
20 CL/JF	150	225	2368	300	32	188	115	2162	13200	463	10485	103	333	134	1	0	22	835	577	126945	316	0	17310	176264
21 SP/FB	77	64	105	57	27	104	191	2044	35	5505	9	0	6	28	3	15	33	1074	28858	3	257472	885	14992	311587
22 KGEO	112	151	268	332	20	135	80	482	169	246	0	0	28	88	36	308	1411	127	2272	0	3195	40903	845	51208
23 EXTL	6771	11318	40373	35643	907	4015	2399	27017	8216	11369	33003	35292	56827	121405	988	721	1966	7782	5815	16782	22901	1352	0	452862
TOTAL	539850	933354	2689653	1908133	80344	596316	393200	3058593	533963	782785	584658	364670	653803	1416013	184268	254242	329039	117652	229272	161928	356997	49220	409196	16627149

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: ALL 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	86732	64412	16615	28857	4193	24241	10929	23824	370	1004	68	12	558	1640	85	38	494	14	164	13	259	3	3014	267539
2 DC NC	179389	572534	164489	164141	11297	56287	19940	44442	833	1020	270	33	3831	6718	288	141	1191	49	775	95	1133	14	23882	1252792
3 MTG	88068	158353	2770280	183618	7184	28378	7809	91306	3875	1051	29383	3016	53562	14510	111	236	342	109	1100	846	1962	42	67669	3512810
4 PG	128058	256066	186584	1708995	9041	28143	25392	42272	584	1146	582	209	47107	117404	4833	1383	42496	105	1793	236	3077	199	55725	2661430
5 ARLCR	4963	4457	1939	1596	8453	11752	3422	7629	114	280	7	1	25	77	4	4	35	7	23	0	19	1	429	45237
6 ARNCR	51000	35898	18590	11326	20239	333783	58373	165371	2283	2652	72	12	158	503	33	19	168	79	190	22	198	8	7966	708943
7 ALX	24976	16513	5749	11248	8042	71593	193070	128888	611	3987	29	4	77	362	46	15	335	42	284	13	216	3	4061	470164
8 FFX	95914	53205	60657	28499	26449	188806	166547	3000021	157332	102653	841	96	627	1406	174	698	1234	4892	5918	743	6994	72	37584	3941362
9 LDN	2118	1207	5026	455	965	3385	1071	137015	443925	5525	7765	110	255	229	22	42	81	1854	961	11627	1716	13	9345	634712
10 PW	10099	2942	2190	1757	2695	10713	13330	220401	13731	797014	267	56	158	406	46	156	243	12670	25050	401	15121	159	12438	1142043
11 FRD	624	1160	72754	1487	130	523	249	2976	10315	292	579587	15830	16063	1719	30	3	100	107	903	10374	741	0	35553	751520
12 CAR	296	442	12306	1938	51	459	322	1841	1049	278	26945	338048	22577	2480	27	2	136	117	175	386	130	0	64862	474867
13 HOW	3715	7631	61306	57058	214	493	196	1172	217	74	9758	6334	486198	75309	27	64	61	16	322	289	553	11	71910	782928
14 AAR	11823	19674	20973	136696	686	1874	1132	2917	630	447	696	466	92801	1352757	5826	308	1320	109	1752	130	1985	31	115522	1770555
15 CAL	1800	3336	1238	19282	142	453	413	1154	228	199	115	26	236	12085	185264	25654	5003	25	718	21	958	151	1440	259941
16 STM	352	678	1092	4853	42	356	240	1357	286	230	22	3	236	533	10460	260587	14174	31	1444	0	1289	1824	962	301051
17 CHS	4995	8306	1468	53627	360	1061	1608	2862	337	197	113	18	215	2004	4752	9632	316336	68	873	12	968	4137	2672	416621
18 FAU	179	194	595	300	35	408	204	18156	5142	19327	128	23	99	206	16	17	73	99995	9466	720	4385	60	4936	164664
19 STA	349	156	142	100	289	791	1121	9796	86	21508	16	1	19	48	7	16	45	3211	187974	19	61821	1206	6433	295154
20 CL/JF	240	343	3292	489	52	306	178	3185	17914	648	14360	142	483	228	5	0	40	1170	1043	139235	584	0	25448	209385
21 SP/FB	152	108	163	90	59	196	307	2851	52	7091	16	0	12	39	6	18	53	1437	39809	4	281971	1087	21303	356824
22 KGEO	170	238	445	503	28	209	128	775	303	349	0	0	46	143	55	421	1964	189	3250	0	4341	44168	1258	58983
23 EXTL	8641	15451	54552	47174	1134	5634	3322	36311	10709	14721	42667	47578	74986	161696	1304	963	2614	10060	8044	22130	31764	1775	0	603230
TOTAL	704653	1223304	3462445	2464089	101780	769844	509303	3946522	670926	981693	713707	412018	800329	1752502	213421	300417	388538	136356	292031	187316	422185	54964	574412	21082755

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: ALL 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	133502	77218	22337	31897	6864	32324	12830	27457	370	1022	68	12	566	1648	85	38	495	14	165	13	259	3	3014	352201
2 DC NC	316458	634239	193522	179176	16676	70123	22954	49989	833	1037	270	33	3887	6756	288	141	1195	49	775	95	1136	14	23882	1523528
3 MTG	147935	177068	2843945	188887	9434	32701	8512	94249	3875	1051	29383	3016	53602	14523	111	236	342	109	1100	846	1963	42	67669	3680599
4 PG	194906	281046	198318	1732765	12371	33908	26812	44196	584	1146	582	209	47259	117488	4833	1383	42496	105	1793	236	3077	199	55725	2801437
5 ARLCR	10145	5295	2352	1732	8931	13517	3835	8468	114	282	7	1	25	77	4	4	35	7	23	0	19	1	429	55303
6 ARNCR	89689	41639	21192	12025	26290	350312	62532	177606	2285	2661	72	12	161	503	33	19	168	79	190	22	198	8	7966	795662
7 ALX	41335	18746	6560	11541	10737	80121	199604	134933	611	4000	29	4	77	362	46	15	335	42	284	13	216	3	4061	513675
8 FFX	147868	59305	63859	29022	33714	209387	175268	3030574	157361	102867	841	96	628	1406	174	698	1234	4892	5918	743	6994	72	37584	4070505
9 LDN	2580	1256	5184	455	1100	3598	1084	139376	444368	5525	7765	110	255	229	22	42	81	1854	961	11627	1716	13	9345	638546
10 PW	16093	3220	2298	1771	3457	12074	14726	224822	13731	802402	267	56	158	406	46	156	243	12670	25050	401	15121	159	12438	1161765
11 FRD	787	1237	74062	1491	145	537	251	2979	10315	292	579891	15830	16063	1719	30	3	100	107	903	10374	741	0	35553	753410
12 CAR	296	442	12306	1938	51	459	322	1841	1049	278	26945	338048	22577	2480	27	2	136	117	175	386	130	0	64862	474867
13 HOW	5846	8283	62849	57497	295	595	213	1215	217	74	9758	6334	487106	75380	27	64	61	16	322	289	553	11	71910	788915
14 AAR	17820	21180	21815	137516	928	2207	1189	2973	630	447	696	466	93022	1353107	5830	308	1320	109	1752	130	1985	31	115522	1780983
15 CAL	3321	3843	1303	19395	207	548	440	1177	228	199	115	26	236	12085	185306	25654	5003	25	718	21	958	151	1440	262399
16 STM	534	753	1100	4882	52	367	246	1362	286	230	22	3	236	533	10460	260587	14214	31	1444	0	1289	1824	962	301417
17 CHS	8955	9519	1620	53965	546	1345	1701	2936	337	197	113	18	215	2004	4752	9632	316402	68	873	12	968	4137	2672	422987
18 FAU	179	194	595	300	35	408	204	18156	5142	19327	128	23	99	206	16	17	73	99995	9466	720	4385	60	4936	164664
19 STA	468	172	149	101	347	901	1224	10020	86	21514	16	1	19	48	7	16	45	3211	187985	19	61825	1206	6433	295813
20 CL/JF	251	348	3424	490	53	307	178	3185	17914	648	14360	142	483	228	5	0	40	1170	1043	139235	584	0	25448	209536
21 SP/FB	192	113	164	90	67	214	335	2944	52	7095	16	0	12	39	6	18	53	1437	39826	4	281995	1087	21303	357062
22 KGEO	170	238	445	503	28	209	128	775	303	349	0	0	46	143	55	421	1964	189	3250	0	4341	44168	1258	58983
23 EXTL	8641	15451	54552	47174	1134	5634	3322	36311	10709	14721	42667	47578	74986	161696	1304	963	2614	10060	8044	22130	31764	1775	0	603230
TOTAL	1147971	1360805	3593951	2514613	133462	851796	537910	4017544	671400	987364	714011	412018	801718	1753066	213467	300417	388649	136356	292060	187316	422217	54964	574412	22067487

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

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: ALL MODE: Transit Percentage

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	35.0	16.6	25.6	9.5	38.9	25.0	14.8	13.2	0	1.8	0	0	1.4	0.5	0	0	0.2	0	0.6	0	0	0	0	24.0
2 DC NC	43.3	9.7	15.0	8.4	32.3	19.7	13.1	11.1	0	1.6	0	0	1.4	0.6	0	0	0.3	0	0	0	0.3	0	0	17.8
3 MTG	40.5	10.6	2.6	2.8	23.8	13.2	8.3	3.1	0	0	0	0	0.1	0.1	0	0	0	0	0	0	0.1	0	0	4.6
4 PG	34.3	8.9	5.9	1.4	26.9	17.0	5.3	4.4	0	0	0	0	0.3	0.1	0	0	0	0	0	0	0	0	0	5.0
5 ARLCR	51.1	15.8	17.6	7.9	5.4	13.1	10.8	9.9	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	18.2
6 ARNCR	43.1	13.8	12.3	5.8	23.0	4.7	6.7	6.9	0.1	0.3	0	0	1.9	0	0	0	0	0	0	0	0	0	0	10.9
7 ALX	39.6	11.9	12.4	2.5	25.1	10.6	3.3	4.5	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	8.5
8 FFX	35.1	10.3	5.0	1.8	21.5	9.8	5.0	1.0	0.0	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0	0	3.2
9 LDN	17.9	3.9	3.0	0	12.3	5.9	1.2	1.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
10 PW	37.2	8.6	4.7	0.8	22.0	11.3	9.5	2.0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7
11 FRD	20.7	6.2	1.8	0.3	10.3	2.6	0.8	0.1	0	0	0.1	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	36.5	7.9	2.5	0.8	27.5	17.1	8.0	3.5	0	0	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	0.8
14 AAR	33.7	7.1	3.9	0.6	26.1	15.1	4.8	1.9	0	0	0	0	0.2	0.0	0.1	0	0	0	0	0	0	0	0	0.6
15 CAL	45.8	13.2	5.0	0.6	31.4	17.3	6.1	2.0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.9
16 STM	34.1	10.0	0.7	0.6	19.2	3.0	2.4	0.4	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0.1
17 CHS	44.2	12.7	9.4	0.6	34.1	21.1	5.5	2.5	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	1.5
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	25.4	9.3	4.7	1.0	16.7	12.2	8.4	2.2	0	0.0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0	0.2
20 CL/JF	4.4	1.4	3.9	0.2	1.9	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
21 SP/FB	20.8	4.4	0.6	0	11.9	8.4	8.4	3.2	0	0.1	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	38.6	10.1	3.7	2.0	23.7	9.6	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	4.5

Simulation - Year: 2000 Alternative: V2.2 Iteration: i6
Purpose: ALL MODE: Avg. Auto Occupancy

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	1.24	1.34	1.34	1.36	1.30	1.32	1.34	1.35	1.43	1.35	1.42	2.00	1.35	1.38	1.39	1.73	1.37	1.27	1.55	1.44	1.60	1.50	1.29	1.30
2 DC NC	1.32	1.28	1.38	1.40	1.28	1.34	1.36	1.36	1.50	1.38	1.43	1.43	1.39	1.40	1.44	1.53	1.45	1.44	1.66	1.90	1.65	1.27	1.37	1.32
3 MTG	1.26	1.35	1.27	1.37	1.26	1.35	1.34	1.36	1.42	1.42	1.37	1.40	1.39	1.37	1.63	1.76	1.54	1.33	1.70	1.43	1.73	1.45	1.39	1.29
4 PG	1.29	1.34	1.36	1.26	1.24	1.31	1.34	1.33	1.45	1.45	1.51	1.45	1.35	1.37	1.37	1.41	1.40	1.69	1.68	1.72	1.70	1.34	1.36	1.29
5 ARLCR	1.30	1.33	1.33	1.35	1.05	1.31	1.33	1.33	1.31	1.37	1.17	1.00	1.32	1.33	1.33	2.00	1.46	2.33	1.21	0	1.73	1.00	1.37	1.26
6 ARNCR	1.31	1.34	1.35	1.36	1.28	1.22	1.36	1.36	1.36	1.36	1.33	1.50	1.30	1.42	1.74	1.36	1.41	1.36	1.46	2.00	1.50	1.00	1.43	1.28
7 ALX	1.30	1.34	1.34	1.36	1.27	1.33	1.21	1.34	1.32	1.37	1.45	1.33	1.33	1.33	1.35	1.88	1.40	1.31	1.46	1.63	1.44	1.50	1.41	1.28
8 FFX	1.36	1.33	1.36	1.37	1.29	1.36	1.35	1.27	1.37	1.38	1.48	1.75	1.44	1.50	1.44	1.81	1.50	1.38	1.50	1.59	1.57	1.67	1.45	1.29
9 LDN	1.59	1.39	1.34	1.52	1.51	1.48	1.42	1.32	1.21	1.34	1.34	1.36	1.44	1.76	1.69	2.33	1.76	1.38	1.71	1.42	1.73	1.30	1.41	1.24
10 PW	1.89	1.54	1.49	1.47	1.69	1.54	1.39	1.35	1.34	1.23	1.53	1.81	1.65	1.68	1.53	1.86	1.63	1.33	1.41	1.60	1.41	1.29	1.48	1.28
11 FRD	1.45	1.37	1.36	1.39	1.43	1.49	1.63	1.48	1.36	1.67	1.20	1.38	1.37	1.38	1.58	1.00	1.92	1.65	1.86	1.40	1.88	0	1.42	1.24
12 CAR	1.51	1.46	1.33	1.39	1.42	1.58	1.63	1.64	1.56	1.71	1.30	1.09	1.33	1.32	1.69	2.00	1.79	1.72	1.88	1.36	1.88	0	1.46	1.16
13 HOW	1.27	1.27	1.34	1.32	1.20	1.31	1.32	1.33	1.43	1.37	1.33	1.39	1.15	1.35	1.59	1.60	1.74	1.78	1.81	1.42	1.83	1.38	1.36	1.22
14 AAR	1.31	1.31	1.35	1.36	1.26	1.35	1.38	1.47	1.68	1.64	1.47	1.41	1.36	1.21	1.40	1.57	1.42	1.82	1.83	1.76	1.83	1.82	1.39	1.24
15 CAL	1.32	1.27	1.46	1.32	1.33	1.39	1.36	1.50	1.75	1.72	1.77	1.73	1.48	1.36	1.13	1.32	1.35	2.08	1.80	1.91	1.82	1.29	1.43	1.19
16 STM	1.43	1.36	1.67	1.32	1.56	1.55	1.50	1.66	1.80	1.69	1.69	1.50	1.72	1.47	1.35	1.16	1.35	2.21	1.77	0	1.71	1.28	1.46	1.19
17 CHS	1.30	1.25	1.41	1.32	1.24	1.34	1.28	1.36	1.70	1.68	1.77	1.29	1.51	1.32	1.33	1.36	1.14	1.58	1.71	1.50	1.65	1.33	1.44	1.18
18 FAU	1.53	1.50	1.57	1.63	1.46	1.48	1.49	1.36	1.34	1.33	1.56	1.77	1.71	1.62	2.00	1.70	1.62	1.11	1.43	1.43	1.40	1.43	1.46	1.20
19 STA	2.09	1.84	1.65	1.47	2.06	1.90	1.47	1.33	1.34	1.28	1.45	1.00	1.58	1.66	1.75	1.45	1.32	1.28	1.20	1.46	1.34	1.24	1.42	1.25
20 CL/JF	1.60	1.52	1.39	1.63	1.63	1.63	1.55	1.47	1.36	1.40	1.37	1.38	1.45	1.70	5.00	0	1.82	1.40	1.81	1.10	1.85	0	1.47	1.19
21 SP/FB	1.97	1.69	1.55	1.58	2.19	1.88	1.61	1.39	1.49	1.29	1.78	0	2.00	1.39	2.00	1.20	1.61	1.34	1.38	1.33	1.10	1.23	1.42	1.15
22 KGEO	1.52	1.58	1.66	1.52	1.40	1.55	1.60	1.61	1.79	1.42	0	0	1.64	1.63	1.53	1.37	1.39	1.49	1.43	0	1.36	1.08	1.49	1.15
23 EXTL	1.28	1.37	1.35	1.32	1.25	1.40	1.38	1.34	1.30	1.29	1.29	1.35	1.32	1.33	1.32	1.34	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	1.25	1.22	1.13	1.22	1.24	1.16	1.18	1.18	1.16	1.27	1.16	1.18	1.12	1.40	1.27

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

Ref: compare_mceo_00ctpp_HBW.doc

1	HBW	Estimated	Auto Driver
2	HBW	Estimated	Transit
3	HBW	Estimated	Auto Person
4	HBW	Estimated	Auto Pax
5	HBW	Estimated	Person
6	HBW	Estimated	Pct Transit
7	HBW	Estimated	Car Occupancy
8	HBW	Observed	Auto Driver
9	HBW	Observed	Transit
10	HBW	Observed	Auto Person
11	HBW	Observed	Auto Pax
12	HBW	Observed	Person
13	HBW	Observed	Pct Transit
14	HBW	Observed	Car Occupancy
15	HBW	Difference (Est-Obs)	Auto Driver
16	HBW	Difference (Est-Obs)	Transit
17	HBW	Difference (Est-Obs)	Auto Person
18	HBW	Difference (Est-Obs)	Auto Pax
19	HBW	Difference (Est-Obs)	Person
20	HBW	Difference (Est-Obs)	Pct Transit
21	HBW	Difference (Est-Obs)	Car Occupancy
22	HBW	Ratio (Est-to-Obs)	Auto Driver
23	HBW	Ratio (Est-to-Obs)	Transit
24	HBW	Ratio (Est-to-Obs)	Auto Person
25	HBW	Ratio (Est-to-Obs)	Auto Pax
26	HBW	Ratio (Est-to-Obs)	Person
27	HBW	Ratio (Est-to-Obs)	Pct Transit
28	HBW	Ratio (Est-to-Obs)	Car Occupancy

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 Purpose: HBW Table: Estimated 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	4503	3079	749	641	447	688	305	1179	28	15	0	0	0	0	0	0	5	0	0	0	0	0	0	11639
2 DC NC	45667	32959	14254	12653	3527	5198	1986	7244	121	33	25	0	0	0	16	3	60	2	0	0	1	0	0	123749
3 MTG	48595	27537	271962	24056	3462	5741	1378	18431	543	56	5107	0	0	0	7	0	22	5	1	158	0	0	0	407061
4 PG	55167	64847	33483	159274	4838	8417	5761	11990	79	67	53	0	0	0	753	311	4046	1	1	0	5	103	0	349196
5 ARLCR	903	252	131	37	635	442	135	565	16	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3122
6 ARNCR	15526	5059	2850	759	5648	20317	5173	23562	524	170	10	0	0	0	0	0	6	10	3	0	4	0	0	79621
7 ALX	8970	2989	1074	965	3145	8342	13388	20137	180	248	0	0	0	0	1	0	18	11	16	1	10	0	0	59495
8 FFX	43520	16516	11174	4211	12734	30468	28595	326500	23799	11159	105	0	0	0	7	2	61	884	298	65	274	6	0	510378
9 LDN	874	500	1983	77	531	1053	400	47618	43095	1115	2154	0	0	0	0	0	0	394	5	1483	0	0	0	101282
10 PW	3385	534	365	252	1085	2852	4512	63305	3974	79288	24	0	0	0	1	0	2	2993	3283	48	3021	81	0	169005
11 FRD	249	476	19842	483	60	84	9	806	2923	15	75541	0	0	0	0	0	0	8	0	2126	0	0	0	102622
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	968	1784	282	6934	82	132	129	174	0	0	0	0	0	0	17858	8684	1402	0	1	0	0	101	0	38531
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	2580	4606	445	17153	231	398	676	899	1	3	0	0	0	0	1341	2388	31209	0	26	0	84	1779	0	63819
18 FAU	1	2	16	2	4	34	26	5946	1673	6120	13	0	0	0	0	0	0	13770	1085	134	1010	26	0	29862
19 STA	100	42	18	18	120	306	555	5265	39	8798	0	0	0	0	0	6	24	1411	19743	0	13960	712	0	51117
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	231008	161182	358628	227515	36549	84472	63028	533621	76995	107093	83032	0	0	0	19984	11394	36855	19489	24462	4015	18369	2808	0	2100499

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 Purpose: HBW Table: Estimated 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	14436	3876	1193	442	947	1381	349	1085	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23709
2 DC NC	86517	25331	9491	3962	3336	4662	1045	2848	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	137197
3 MTG	47974	7978	30038	2043	1658	2325	308	2040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94364
4 PG	53618	16747	6909	13426	2869	4355	1014	1486	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100424
5 ARLCR	2240	191	94	15	219	443	71	302	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3575
6 ARNCR	21884	2154	995	144	3817	4608	1547	5871	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41022
7 ALX	11821	1308	445	109	2057	4851	3360	3562	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	27516
8 FFX	43474	4360	2014	253	5988	12132	5135	15025	29	84	0	0	0	0	0	0	0	0	0	0	0	0	0	88494
9 LDN	462	49	158	0	135	213	13	2361	327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3718
10 PW	5850	260	95	13	731	1284	1322	4196	0	2723	0	0	0	0	0	0	0	0	0	0	0	0	0	16474
11 FRD	163	77	1308	4	15	14	2	0	0	0	262	0	0	0	0	0	0	0	0	0	0	0	0	1845
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	1520	507	0	110	65	95	27	23	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	2389
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	3960	1213	152	338	186	284	93	74	0	0	0	0	0	0	0	0	66	0	0	0	0	0	0	6366
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	119	16	7	1	58	110	103	224	0	6	0	0	0	0	0	0	0	0	11	0	3	0	0	658
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	294038	64067	52899	20860	22081	36757	14389	39097	358	2821	262	0	0	0	42	0	66	0	11	0	3	0	0	547751

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   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	5194	3514	873	749	505	812	353	1386	42	17	0	0	0	0	0	0	6	0	0	0	0	0	0	13451
2 DC NC	52974	36273	16235	14526	4014	6025	2283	8408	156	45	35	0	0	0	21	3	78	2	0	0	1	0	0	141079
3 MTG	57427	30873	300288	26814	4034	6757	1579	21055	648	67	5766	0	0	0	9	0	23	6	1	196	1	1	0	455545
4 PG	64431	72259	38037	173840	5547	9815	6484	13737	98	76	73	0	0	0	855	365	4492	1	3	0	6	132	0	390251
5 ARLCR	1048	282	151	42	665	507	153	638	21	7	0	0	0	0	0	0	0	0	0	0	0	0	0	3514
6 ARNCR	18184	5678	3264	855	6397	22933	5747	26330	627	200	12	0	0	0	0	0	8	11	4	0	6	0	0	90256
7 ALX	10765	3404	1280	1081	3606	9571	14586	22575	218	281	3	0	0	0	1	0	19	13	21	1	15	0	0	67440
8 FFX	57152	19620	13049	4863	15656	37031	32104	359920	26349	12378	130	0	0	0	10	2	69	1022	349	84	327	8	0	580123
9 LDN	1481	687	2453	103	817	1619	571	55827	46748	1278	2428	0	0	0	0	0	0	444	6	1649	1	0	0	116112
10 PW	7283	924	560	352	1967	4836	5936	73888	4500	85579	28	0	0	0	1	0	7	3365	3699	57	3484	99	0	196565
11 FRD	359	606	23082	580	84	111	18	1119	3404	23	80274	0	0	0	0	0	0	10	0	2437	0	0	0	112107
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	1217	2081	348	7899	102	166	151	213	0	0	0	0	0	0	18928	9686	1614	0	1	0	1	130	0	42537
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	3173	5271	541	19285	275	487	777	1051	1	5	0	0	0	0	1516	2710	33116	0	33	0	111	2094	0	70446
18 FAU	5	5	21	3	7	46	37	7015	1918	6857	16	0	0	0	0	0	0	14543	1216	157	1149	31	0	33026
19 STA	255	88	42	26	262	630	826	6738	50	9817	0	0	0	0	1	8	33	1607	20770	0	15332	814	0	57299
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	280948	181565	400224	251018	43938	101346	71605	599900	84780	116630	88765	0	0	0	21342	12774	39465	21024	26103	4581	20434	3309	0	2369751

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   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	691	435	124	108	58	124	48	207	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1811
2 DC NC	7307	3314	1981	1873	487	827	297	1164	35	12	10	0	0	0	0	0	18	0	0	0	0	0	0	17325
3 MTG	8832	3336	28326	2758	572	1016	201	2624	105	11	659	0	0	0	2	0	1	0	0	0	1	0	0	48444
4 PG	9264	7412	4554	14566	709	1398	723	1747	19	9	20	0	0	0	102	54	446	0	2	0	1	29	0	41055
5 ARLCR	145	30	20	0	30	65	18	73	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	386
6 ARNCR	2658	619	414	96	749	2616	574	2768	103	30	2	0	0	0	0	0	2	1	1	0	2	0	0	10635
7 ALX	1795	415	206	116	461	1229	1198	2438	38	33	0	0	0	0	0	0	0	2	5	0	5	0	0	7941
8 FFX	13632	3104	1875	652	2922	6563	3509	33420	2550	1219	25	0	0	0	3	0	8	138	51	19	53	2	0	69745
9 LDN	607	187	470	26	286	566	171	8209	3653	163	274	0	0	0	0	0	0	50	0	166	1	0	0	14829
10 PW	3898	390	195	100	882	1984	1424	10583	526	6291	4	0	0	0	0	0	5	372	416	9	463	18	0	27560
11 FRD	110	130	3240	97	24	27	9	313	481	8	4733	0	0	0	0	0	0	2	0	311	0	0	0	9485
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	249	297	66	965	20	34	22	39	0	0	0	0	0	0	1070	1002	212	0	0	0	0	29	0	4005
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	593	665	96	2132	44	89	101	152	0	2	0	0	0	0	175	322	1907	0	7	0	27	315	0	6627
18 FAU	4	3	5	1	3	12	11	1069	245	737	0	0	0	0	0	0	0	773	131	23	139	0	0	3156
19 STA	155	46	24	8	142	324	271	1473	11	1019	0	0	0	0	1	0	9	196	1027	0	1372	102	0	6180
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	49940	20383	41596	23498	7389	16874	8577	66279	7785	9536	5727	0	0	0	1353	1378	2608	1534	1640	528	2064	495	0	269184

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   Purpose: HBW   Table: Estimated 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	19630	7390	2066	1191	1452	2193	702	2471	42	19	0	0	0	0	0	0	6	0	0	0	0	0	0	37162
2 DC NC	139491	61604	25726	18488	7350	10687	3328	11256	156	50	35	0	0	0	21	3	78	2	0	0	1	0	0	278276
3 MTG	105401	38851	330326	28857	5692	9082	1887	23095	648	67	5766	0	0	0	9	0	23	6	1	196	1	1	0	549909
4 PG	118049	89006	44946	187266	8416	14170	7498	15223	98	76	73	0	0	0	855	365	4492	1	3	0	6	132	0	490675
5 ARLCR	3288	473	245	57	884	950	224	940	21	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7089
6 ARNCR	40068	7832	4259	999	10214	27541	7294	32201	629	200	12	0	0	0	0	0	8	11	4	0	6	0	0	131278
7 ALX	22586	4712	1725	1190	5663	14422	17946	26137	218	284	3	0	0	0	1	0	19	13	21	1	15	0	0	94956
8 FFX	100626	23980	15063	5116	21644	49163	37239	374945	26378	12462	130	0	0	0	10	2	69	1022	349	84	327	8	0	668617
9 LDN	1943	736	2611	103	952	1832	584	58188	47075	1278	2428	0	0	0	0	0	0	444	6	1649	1	0	0	119830
10 PW	13133	1184	655	365	2698	6120	7258	78084	4500	88302	28	0	0	0	1	0	7	3365	3699	57	3484	99	0	213039
11 FRD	522	683	24390	584	99	125	20	1122	3404	23	80536	0	0	0	0	0	0	10	0	2437	0	0	0	113955
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	2737	2588	413	8009	167	261	178	236	0	0	0	0	0	0	18970	9686	1614	0	1	0	1	130	0	44991
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	7133	6484	693	19623	461	771	870	1125	1	5	0	0	0	0	1516	2710	33182	0	33	0	111	2094	0	76812
18 FAU	5	5	21	3	7	46	37	7015	1918	6857	16	0	0	0	0	0	0	14543	1216	157	1149	31	0	33026
19 STA	374	104	49	27	320	740	929	6962	50	9823	0	0	0	0	1	8	33	1607	20781	0	15335	814	0	57957
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	574986	245632	453188	271878	66019	138103	85994	639000	85138	119453	89027	0	0	0	21384	12774	39531	21024	26114	4581	20437	3309	0	2917572

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   Purpose: HBW   Table: Estimated 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	73.5	52.4	57.7	37.1	65.2	63.0	49.7	43.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63.8
2 DC NC	62.0	41.1	36.9	21.4	45.4	43.6	31.4	25.3	0	10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.3
3 MTG	45.5	20.5	9.1	7.1	29.1	25.6	16.3	8.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.2
4 PG	45.4	18.8	15.4	7.2	34.1	30.7	13.5	9.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.5
5 ARLCR	68.1	40.4	38.4	26.3	24.8	46.6	31.7	32.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50.4
6 ARNCR	54.6	27.5	23.4	14.4	37.4	16.7	21.2	18.2	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31.2
7 ALX	52.3	27.8	25.8	9.2	36.3	33.6	18.7	13.6	0	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	29.0
8 FFX	43.2	18.2	13.4	4.9	27.7	24.7	13.8	4.0	0.1	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	13.2
9 LDN	23.8	6.7	6.1	0	14.2	11.6	2.2	4.1	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1
10 PW	44.5	22.0	14.5	3.6	27.1	21.0	18.2	5.4	0	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7
11 FRD	31.2	11.3	5.4	0.7	15.2	11.2	10.0	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	55.5	19.6	0	1.4	38.9	36.4	15.2	9.7	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	55.5	18.7	21.9	1.7	40.3	36.8	10.7	6.6	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	8.3
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	31.8	15.4	14.3	3.7	18.1	14.9	11.1	3.2	0	0.1	0	0	0	0	0	0	0	0	0.1	0	0.0	0	0	1.1
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	51.1	26.1	11.7	7.7	33.4	26.6	16.7	6.1	0.4	2.4	0.3	0	0	0	0.2	0	0.2	0	0.0	0	0.0	0	0	18.8

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   Purpose: HBW   Table: Estimated 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	1.15	1.14	1.17	1.17	1.13	1.18	1.16	1.18	1.50	1.13	0	0	0	0	0	0	1.20	0	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	1.29	1.36	1.40	0	0	0	1.31	1.00	1.30	1.00	0	0	1.00	0	0	1.14
3 MTG	1.18	1.12	1.10	1.11	1.17	1.18	1.15	1.14	1.19	1.20	1.13	0	0	0	1.29	0	1.05	1.20	1.00	1.24	0	0	0	1.12
4 PG	1.17	1.11	1.14	1.09	1.15	1.17	1.13	1.15	1.24	1.13	1.38	0	0	0	1.14	1.17	1.11	1.00	3.00	0	1.20	1.28	0	1.12
5 ARLCR	1.16	1.12	1.15	1.14	1.05	1.15	1.13	1.13	1.31	1.17	0	0	0	0	0	0	0	0	0	0	0	0	0	1.13
6 ARNCR	1.17	1.12	1.15	1.13	1.13	1.13	1.11	1.12	1.20	1.18	1.20	0	0	0	0	0	1.33	1.10	1.33	0	1.50	0	0	1.13
7 ALX	1.20	1.14	1.19	1.12	1.15	1.15	1.09	1.12	1.21	1.13	0	0	0	0	1.00	0	1.06	1.18	1.31	1.00	1.50	0	0	1.13
8 FFX	1.31	1.19	1.17	1.15	1.23	1.22	1.12	1.10	1.11	1.11	1.24	0	0	0	1.43	1.00	1.13	1.16	1.17	1.29	1.19	1.33	0	1.14
9 LDN	1.69	1.37	1.24	1.34	1.54	1.54	1.43	1.17	1.08	1.15	1.13	0	0	0	0	0	0	1.13	1.20	1.11	0	0	0	1.15
10 PW	2.15	1.73	1.53	1.40	1.81	1.70	1.32	1.17	1.13	1.08	1.17	0	0	0	1.00	0	3.50	1.12	1.13	1.19	1.15	1.22	0	1.16
11 FRD	1.44	1.27	1.16	1.20	1.40	1.32	2.00	1.39	1.16	1.53	1.06	0	0	0	0	0	0	1.25	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	1.23	1.14	1.24	1.26	1.17	1.22	0	0	0	0	0	0	1.06	1.12	1.15	0	1.00	0	0	1.29	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	1.14	1.22	1.12	1.19	1.22	1.15	1.17	1.00	1.67	0	0	0	0	1.13	1.13	1.06	0	1.27	0	1.32	1.18	0	1.10
18 FAU	5.00	2.50	1.31	1.50	1.75	1.35	1.42	1.18	1.15	1.12	1.23	0	0	0	0	0	0	1.06	1.12	1.17	1.14	1.19	0	1.11
19 STA	2.55	2.10	2.33	1.44	2.18	2.06	1.49	1.28	1.28	1.12	0	0	0	0	0	1.33	1.38	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 - Model V2.2   Purpose: HBW   Table: Observed 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	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 - Model V2.2   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 - Model V2.2   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 - Model V2.2   Purpose: HBW   Table: Observed 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	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 - Model V2.2   Purpose: HBW   Table: Observed 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	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 - Model V2.2 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 - Model V2.2 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 - Model V2.2   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	583	482	-430	-240	257	123	-127	-488	-99	-22	0	0	0	0	0	0	-9	-13	-5	0	0	0	0	12
2 DC NC	1255	-2340	1168	1945	1340	558	-929	-2812	-465	-360	-97	0	0	0	-35	-82	-176	-41	-34	-14	-80	-20	0	-1219
3 MTG	4985	-5516	12922	-6352	471	-882	-1604	-9497	-1592	-803	387	0	0	0	-213	-120	-480	-75	-205	147	-166	-20	0	-8613
4 PG	-7065	16528	-7393	8578	205	-1657	-2471	-9583	-1009	-755	-348	0	0	0	31	-84	-185	-74	-174	0	-228	31	0	-5653
5 ARLCR	113	46	-169	-45	18	-62	-92	-551	-93	-19	0	0	0	0	0	-19	0	0	-16	0	0	-10	0	-899
6 ARNCR	-1579	-987	-1300	-1063	992	3275	594	1551	-699	-594	-19	0	0	0	0	-36	-90	-58	-102	0	-65	-5	0	-185
7 ALX	-4677	-1629	-1465	-985	179	1128	-1519	3109	-598	-419	-18	0	0	0	-19	-55	-102	-16	-97	-2	-66	-6	0	-7257
8 FFX	-10542	-4276	-9211	-6901	-2167	-4514	-4525	-530	4223	-173	-149	0	0	0	-58	-173	-533	41	-416	-18	-396	-98	0	-40416
9 LDN	-3916	-842	-1449	-657	-483	-942	-577	389	2788	-380	1628	0	0	0	-4	-16	-37	26	-55	1309	-49	-5	0	-3272
10 PW	-5779	-2979	-2020	-1658	-2329	-3075	-3008	-3304	-1684	8152	-39	0	0	0	-23	-99	-101	1871	1316	-5	1947	61	0	-12756
11 FRD	-1530	-540	-7128	-907	-62	-352	-180	-1488	1496	-152	10132	0	0	0	-27	-3	-12	-5	-47	1749	-4	-12	0	928
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	223	-787	-3191	-184	-377	-284	-912	-98	-42	-11	0	0	0	2124	4211	-13	-27	-14	0	-5	87	0	-822
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	-4205	447	-1091	217	-792	-941	-694	-2316	-392	-179	-11	0	0	0	602	-232	4017	-3	-31	0	-1	1372	0	-4233
18 FAU	-910	-272	-322	-160	-234	-466	-308	-1227	-256	807	-7	0	0	0	0	-10	0	2136	709	103	799	13	0	395
19 STA	-1576	-463	-340	-430	-580	-937	-791	-3574	-393	-1010	-10	0	0	0	-12	-35	15	1226	5652	0	5193	-513	0	1422
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	-36365	-2118	-19015	-11849	-3369	-9121	-16515	-31233	1129	4051	11438	0	0	0	2366	3247	2294	4988	6481	3269	6879	875	0	-82568

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   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	486	-28	-785	-81	114	-202	-60	243	0	0	0	0	0	0	0	-18	0	0	0	0	0	0	0	-331
2 DC NC	1025	138	132	189	846	-62	-399	11	-159	-146	0	0	0	0	-31	0	-77	-13	-28	0	-26	-7	0	1393
3 MTG	-6779	595	492	-53	266	-247	-237	1213	-22	-81	-56	0	0	0	0	0	-24	0	-9	0	-7	0	0	-4949
4 PG	10838	8269	-226	130	299	938	-9	-170	-24	-54	0	0	0	0	-7	-24	-93	-21	-22	0	0	0	0	19824
5 ARLCR	-902	-275	-2	-12	-148	105	-41	-25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1300
6 ARNCR	-5189	-58	47	-262	1360	123	621	3457	-44	-20	0	0	0	0	0	0	-22	0	-8	0	-73	0	0	-68
7 ALX	450	376	-28	-23	685	2711	82	1960	0	-9	0	0	0	0	0	0	0	0	-27	0	-22	0	0	6155
8 FFX	5667	1229	979	-96	1277	4478	2938	4371	-248	6	0	0	0	0	0	-32	-15	0	0	0	-91	0	0	20463
9 LDN	-696	-124	130	-7	-70	-82	-9	2292	149	0	-7	0	0	0	0	0	0	0	-12	0	0	0	0	1564
10 PW	1301	-166	-6	-109	166	7	926	3727	-14	1871	0	0	0	0	0	0	0	0	0	0	-28	0	0	7675
11 FRD	-826	12	913	-20	-3	-4	-2	0	-10	0	-356	0	0	0	0	0	0	0	0	0	0	0	0	-296
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	851	470	0	98	52	86	18	-12	0	0	0	0	0	0	-36	-14	0	0	0	0	0	0	0	1513
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	1982	1111	69	263	177	253	79	52	0	0	0	0	0	0	0	-24	-151	-10	0	0	0	0	0	3801
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	-824	-81	-32	-11	-73	-307	-83	105	0	-41	0	0	0	0	0	0	0	0	-89	0	-11	-10	0	-1457
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	7239	11404	1683	6	4932	7751	3760	17224	-372	1507	-419	0	0	0	-74	-112	-382	-108	-195	0	-258	-17	0	53569

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 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	554	522	-443	-266	295	158	-101	-442	-92	-33	0	0	0	0	0	0	-8	-13	-5	0	0	0	0	126
2 DC NC	-458	-5147	1751	2163	1516	820	-945	-2741	-457	-375	-100	0	0	0	-30	-145	-182	-48	-40	-14	-88	-20	0	-4540
3 MTG	7321	-5287	21444	-5865	790	-441	-1629	-8304	-1558	-951	617	0	0	0	-225	-132	-574	-74	-250	185	-173	-19	0	4875
4 PG	-10094	17743	-7253	6808	333	-1770	-2519	-9906	-1148	-878	-389	0	0	0	29	-102	-97	-124	-196	0	-232	54	0	-9741
5 ARLCR	98	47	-181	-40	-44	-61	-103	-541	-95	-18	0	0	0	0	0	-19	0	0	-16	0	0	-10	0	-983
6 ARNCR	-2045	-884	-1167	-1173	1170	3927	778	2820	-691	-729	-39	0	0	0	0	-41	-96	-71	-108	0	-78	-5	0	1568
7 ALX	-5075	-1723	-1445	-1069	262	1619	-1959	4294	-607	-527	-15	0	0	0	-19	-67	-101	-25	-96	-6	-67	-6	0	-6632
8 FFX	-11114	-3842	-8476	-7394	-2018	-2648	-3374	12299	5229	149	-163	0	0	0	-67	-222	-611	112	-405	-25	-423	-113	0	-23106
9 LDN	-4155	-756	-1208	-688	-299	-597	-463	6432	3946	-268	1892	0	0	0	-4	-16	-52	12	-54	1464	-55	-5	0	5126
10 PW	-6637	-3663	-2137	-2052	-3225	-3244	-2741	1558	-1669	7427	-41	0	0	0	-27	-132	-102	2160	1485	-5	2308	73	0	-10664
11 FRD	-1916	-491	-6731	-959	-67	-451	-186	-1378	1885	-179	10612	0	0	0	-27	-3	-16	-9	-52	2037	-4	-12	0	2053
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	-1904	284	-810	-3014	-232	-440	-330	-982	-117	-62	-11	0	0	0	1765	4791	48	-27	-20	0	-4	112	0	-953
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	-5479	653	-1195	1094	-904	-1114	-715	-2442	-441	-194	-11	0	0	0	681	-153	3738	-9	-43	0	24	1663	0	-4847
18 FAU	-1043	-316	-335	-174	-280	-528	-323	-893	-147	1199	-4	0	0	0	0	-10	0	2088	807	118	930	18	0	1107
19 STA	-2577	-723	-389	-469	-947	-1267	-817	-3192	-421	-719	-10	0	0	0	-20	-33	20	1416	5547	0	6138	-526	0	1011
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	-44524	-3583	-8575	-13098	-3650	-6037	-15427	-3418	3617	3842	12338	0	0	0	2056	3716	1967	5388	6554	3754	8276	1204	0	-45600

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 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	-29	40	-13	-26	38	35	26	46	7	-11	0	0	0	0	0	0	0	0	0	0	0	0	0	113
2 DC NC	-1713	-2807	583	218	176	262	-16	71	8	-15	-3	0	0	0	0	-63	-6	-7	-6	0	-8	0	0	-3326
3 MTG	2336	229	8522	487	319	441	-25	1193	34	-148	230	0	0	0	-12	-12	-94	0	-45	0	-7	0	0	13448
4 PG	-3029	1215	140	-1770	128	-113	-48	-323	-139	-123	-41	0	0	0	-2	-18	88	-50	-22	0	-4	23	0	-4088
5 ARLCR	-15	1	-12	0	-62	1	-11	10	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-90
6 ARNCR	-466	103	133	-110	178	652	184	1269	8	-135	-20	0	0	0	0	-5	-6	-13	-6	0	-13	0	0	1753
7 ALX	-398	-94	20	-84	83	491	-440	1185	-9	-108	0	0	0	0	0	-12	0	-9	1	-4	-1	0	0	621
8 FFX	-572	434	735	-493	149	1866	1151	12829	1006	322	-14	0	0	0	-9	-49	-78	71	11	-7	-27	-15	0	17310
9 LDN	-239	86	241	-31	184	345	114	6043	1158	112	264	0	0	0	0	0	-15	-14	0	155	-6	0	0	8397
10 PW	-858	-684	-117	-394	-896	-169	267	4862	15	-725	-2	0	0	0	-4	-33	-1	289	169	0	361	12	0	2092
11 FRD	-386	49	397	-52	-5	-99	-6	110	389	-27	480	0	0	0	0	0	-4	-4	-5	288	0	0	0	1125
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	-382	61	-23	177	-48	-63	-46	-70	-19	-20	0	0	0	0	-359	580	61	0	-6	0	0	25	0	-132
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	-1274	206	-104	877	-112	-173	-21	-126	-49	-15	0	0	0	0	79	79	-279	-6	-12	0	25	291	0	-614
18 FAU	-133	-44	-13	-14	-46	-62	-15	334	109	392	0	0	0	0	0	0	0	-48	98	15	131	0	0	704
19 STA	-1001	-260	-49	-39	-367	-330	-26	382	-28	291	0	0	0	0	-8	0	5	190	-105	0	945	-13	0	-413
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	-8159	-1465	10440	-1254	-281	3084	1088	27815	2488	-210	894	0	0	0	-315	467	-329	399	72	447	1396	323	0	36900

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 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	1040	494	-1228	-347	409	-44	-161	-199	-92	-31	0	0	0	0	0	-18	-8	-13	-5	0	0	0	0	-203
2 DC NC	567	-5009	1883	2352	2362	758	-1344	-2730	-616	-521	-100	0	0	0	-61	-145	-259	-61	-68	-14	-114	-27	0	-3147
3 MTG	542	-4692	21936	-5918	1056	-688	-1866	-7091	-1580	-1032	561	0	0	0	-225	-132	-598	-74	-259	185	-180	-19	0	-74
4 PG	744	26012	-7479	6938	632	-832	-2528	-10076	-1172	-932	-389	0	0	0	22	-126	-190	-145	-218	0	-232	54	0	10083
5 ARLCR	-804	-228	-183	-52	-192	44	-144	-566	-95	-18	0	0	0	0	0	-19	0	0	-16	0	0	-10	0	-2283
6 ARNCR	-7234	-942	-1120	-1435	2530	4050	1399	6277	-735	-749	-39	0	0	0	0	-41	-118	-71	-116	0	-151	-5	0	1500
7 ALX	-4625	-1347	-1473	-1092	947	4330	-1877	6254	-607	-536	-15	0	0	0	-19	-67	-101	-25	-123	-6	-89	-6	0	-477
8 FFX	-5447	-2613	-7497	-7490	-741	1830	-436	16670	4981	155	-163	0	0	0	-67	-254	-626	112	-405	-25	-514	-113	0	-2643
9 LDN	-4851	-880	-1078	-695	-369	-679	-472	8724	4095	-268	1885	0	0	0	-4	-16	-52	12	-66	1464	-55	-5	0	6690
10 PW	-5336	-3829	-2143	-2161	-3059	-3237	-1815	5285	-1683	9298	-41	0	0	0	-27	-132	-102	2160	1485	-5	2280	73	0	-2989
11 FRD	-2742	-479	-5818	-979	-70	-455	-188	-1375	1875	-179	10256	0	0	0	-27	-3	-16	-9	-52	2037	-4	-12	0	1760
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	-1053	754	-745	-2916	-180	-354	-312	-994	-117	-62	-11	0	0	0	1729	4777	48	-27	-20	0	-4	112	0	625
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	-3497	1764	-1126	1357	-727	-861	-636	-2390	-441	-194	-11	0	0	0	681	-177	3587	-19	-43	0	24	1663	0	-1046
18 FAU	-1188	-380	-335	-174	-296	-574	-387	-893	-147	1180	-4	0	0	0	0	-10	0	2024	807	118	930	18	0	689
19 STA	-3401	-804	-421	-480	-1020	-1574	-900	-3087	-421	-760	-10	0	0	0	-20	-33	20	1416	5458	0	6127	-536	0	-446
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	-37285	7821	-6827	-13092	1282	1714	-11667	13809	3245	5351	11919	0	0	0	1982	3604	1585	5280	6359	3754	8018	1187	0	8039

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 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	-1.5	-4.2	-2.3	3.1	-14.6	-7.8	2.3	12.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.5
2 DC NC	0.5	3.3	-2.4	-2.0	-4.5	-4.0	0.5	5.0	-20.6	-16.4	0	0	0	0	-37.8	0	-22.8	-20.6	0	0	-22.6	0	0	1.0
3 MTG	-6.7	3.6	-0.5	1.1	-0.9	-0.7	1.8	6.1	-1.0	-7.4	-1.1	0	0	0	0	0	-3.9	0	-3.5	0	-3.9	0	0	-0.9
4 PG	9.0	5.4	1.8	-0.2	1.1	8.0	3.3	3.2	-1.9	-5.4	0	0	0	0	-0.8	-4.9	-2.0	-14.4	-10.0	0	0	0	0	3.7
5 ARLCR	-8.7	-26.1	15.9	1.5	-9.3	9.3	1.3	10.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.6
6 ARNCR	-2.6	2.3	5.7	-2.3	5.4	-2.4	5.5	8.9	-3.1	-2.1	0	0	0	0	0	0	-17.5	0	-6.7	0	-46.5	0	0	-0.4
7 ALX	10.5	12.4	11.0	3.4	7.2	12.4	2.2	5.6	0	-0.4	0	0	0	0	0	0	0	0	-18.8	0	-21.2	0	0	6.6
8 FFX	7.6	6.4	8.8	2.2	6.6	8.5	8.0	1.0	-1.2	0.0	0	0	0	0	0	-12.5	-2.2	0	0	0	-10.8	0	0	3.1
9 LDN	6.7	-4.0	5.3	-0.9	-1.3	-0.1	0.1	3.9	0.3	0	-1.3	0	0	0	0	0	0	0	-16.7	0	0	0	0	1.2
10 PW	19.9	13.5	10.9	-1.3	17.3	7.3	13.8	4.7	-0.2	2.0	0	0	0	0	0	0	0	0	0	0	-2.3	0	0	3.7
11 FRD	0.9	5.7	4.1	-0.9	4.5	8.1	8.1	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	37.9	17.6	0	1.3	35.2	34.9	13.3	6.9	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	36.9	16.5	17.4	1.3	39.6	34.9	9.8	6.0	0	0	0	0	0	0	0	-0.8	-0.5	0	0	0	0	0	0	5.0
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	6.8	4.7	6.0	1.3	8.3	-3.2	0.9	2.0	0	-0.4	0	0	0	0	0	0	0	0	-0.6	0	-0.1	-0.7	0	-2.5
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	4.3	3.9	0.5	0.4	7.0	5.3	5.8	2.6	-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	1.8

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   Purpose: HBW   Table: Difference (Est-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	-0.03	-0.01	0.05	0.02	0.02	0.02	0.11	0.08	0.44	-0.22	0	0	0	0	0	0	0.20	0	0	0	0	0	0	0.01
2 DC NC	-0.04	-0.07	0.03	-0.01	-0.00	0.04	0.04	0.05	0.24	0.29	0.29	0	0	0	0.31	-0.74	0.20	-0.16	0	0	-0.10	0	0	-0.03
3 MTG	0.03	0.03	0.03	0.04	0.08	0.09	0.07	0.09	0.16	0.01	0.04	0	0	0	0.22	0	-0.14	0.20	-0.22	0.24	0	0	0	0.03
4 PG	-0.03	-0.01	0.03	-0.02	0.02	0.02	0.03	0.05	0.10	-0.03	0.23	0	0	0	-0.01	-0.01	0.03	-0.67	1.86	0	0.18	0.20	0	-0.01
5 ARLCR	-0.04	-0.02	0.05	0.14	-0.10	0.02	0.01	0.07	0.25	0.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01
6 ARNCR	-0.01	0.04	0.08	0.01	0.01	0.01	0.03	0.05	0.12	-0.04	-0.56	0	0	0	0	0	0.25	-0.11	0.27	0	0.28	0	0	0.02
7 ALX	0.04	0.03	0.12	0.02	0.02	0.05	-0.02	0.05	0.15	-0.08	0	0	0	0	0	0	0.06	-0.23	0.28	-1.33	0.42	0	0	0.02
8 FFX	0.05	0.06	0.11	0.05	0.04	0.08	0.05	0.04	0.03	0.03	0.08	0	0	0	0.24	-0.28	-0.01	0.08	0.12	-0.02	0.07	0.17	0	0.04
9 LDN	0.52	0.30	0.17	0.26	0.44	0.43	0.37	0.13	0.02	0.11	0.11	0	0	0	0	0	0	-0.05	0.20	0.05	0	0	0	0.08
10 PW	0.63	0.42	0.40	0.14	0.29	0.33	0.16	0.08	0.04	-0.02	0.07	0	0	0	-0.17	0	2.44	0.05	0.00	0.02	0.06	-0.08	0	0.02
11 FRD	0.16	0.19	0.06	0.09	0.16	0.03	0.92	0.30	0.10	0.32	-0.00	0	0	0	0	0	0	-0.21	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	0.00	0.02	0.15	0.06	-0.01	0.07	0.01	0.12	0	0	0	0	0	0	-0.03	0.02	0.04	0	-0.40	0	0	0.00	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	-0.05	0.03	0.09	0.05	0.04	0.03	0.06	0.08	-0.12	0.57	0	0	0	0	0.00	0.04	-0.02	0	-0.06	0	0.30	0.12	0	-0.00
18 FAU	3.85	1.33	0.26	0.41	0.54	0.20	0.35	0.08	0.08	0.06	0.23	0	0	0	0	0	0	-0.01	0.03	-0.09	0.10	0.19	0	0.02
19 STA	0.86	0.49	1.13	0.34	0.46	0.53	0.27	0.16	0.19	0.04	0	0	0	0	0	0.33	-0.07	0.11	-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 - Model V2.2   Purpose: HBW   Table: Ratio (Est-to-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	1.15	1.19	0.64	0.73	2.35	1.22	0.71	0.71	0.22	0.41	0	0	0	0	0	0	0.36	0	0	0	0	0	0	1.00
2 DC NC	1.03	0.93	1.09	1.18	1.61	1.12	0.68	0.72	0.21	0.08	0.20	0	0	0	0.31	0.04	0.25	0.05	0	0	0.01	0	0	0.99
3 MTG	1.11	0.83	1.05	0.79	1.16	0.87	0.46	0.66	0.25	0.07	1.08	0	0	0	0.03	0	0.04	0.06	0.00	14.36	0	0	0	0.98
4 PG	0.89	1.34	0.82	1.06	1.04	0.84	0.70	0.56	0.07	0.08	0.13	0	0	0	1.04	0.79	0.96	0.01	0.01	0	0.02	1.43	0	0.98
5 ARLCR	1.14	1.22	0.44	0.45	1.03	0.88	0.59	0.51	0.15	0.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0.78
6 ARNCR	0.91	0.84	0.69	0.42	1.21	1.19	1.13	1.07	0.43	0.22	0.34	0	0	0	0	0	0.06	0.15	0.03	0	0.06	0	0	1.00
7 ALX	0.66	0.65	0.42	0.49	1.06	1.16	0.90	1.18	0.23	0.37	0	0	0	0	0.05	0	0.15	0.41	0.14	0.33	0.13	0	0	0.89
8 FFX	0.81	0.79	0.55	0.38	0.85	0.87	0.86	1.00	1.22	0.98	0.41	0	0	0	0.11	0.01	0.10	1.05	0.42	0.78	0.41	0.06	0	0.93
9 LDN	0.18	0.37	0.58	0.10	0.52	0.53	0.41	1.01	1.07	0.75	4.10	0	0	0	0	0	0	1.07	0.08	8.52	0	0	0	0.97
10 PW	0.37	0.15	0.15	0.13	0.32	0.48	0.60	0.95	0.70	1.11	0.38	0	0	0	0.04	0	0.02	2.67	1.67	0.91	2.81	4.05	0	0.93
11 FRD	0.14	0.47	0.74	0.35	0.49	0.19	0.05	0.35	2.05	0.09	1.15	0	0	0	0	0	0	0.62	0	5.64	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	0.39	1.14	0.26	0.68	0.31	0.26	0.31	0.16	0	0	0	0	0	0	1.13	1.94	0.99	0	0.07	0	0	7.21	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	0.38	1.11	0.29	1.01	0.23	0.30	0.49	0.28	0.00	0.02	0	0	0	0	1.81	0.91	1.15	0	0.46	0	0.99	4.37	0	0.94
18 FAU	0.00	0.01	0.05	0.01	0.02	0.07	0.08	0.83	0.87	1.15	0.65	0	0	0	0	0	0	1.18	2.89	4.32	4.79	2.00	0	1.01
19 STA	0.06	0.08	0.05	0.04	0.17	0.25	0.41	0.60	0.09	0.90	0	0	0	0	0	0.15	2.67	7.63	1.40	0	1.59	0.58	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	0.86	0.99	0.95	0.95	0.92	0.90	0.79	0.94	1.01	1.04	1.16	0	0	0	1.13	1.40	1.07	1.34	1.36	5.38	1.60	1.45	0	0.96

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   Purpose: HBW   Table: Ratio (Est-to-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	1.03	0.99	0.60	0.85	1.14	0.87	0.85	1.29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.99
2 DC NC	1.01	1.01	1.01	1.05	1.34	0.99	0.72	1.00	0	0.03	0	0	0	0	0	0	0	0	0	0	0	0	0	1.01
3 MTG	0.88	1.08	1.02	0.97	1.19	0.90	0.57	2.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.95
4 PG	1.25	1.98	0.97	1.01	1.12	1.27	0.99	0.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.25
5 ARLCR	0.71	0.41	0.98	0.56	0.60	1.31	0.63	0.92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.73
6 ARNCR	0.81	0.97	1.05	0.35	1.55	1.03	1.67	2.43	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00
7 ALX	1.04	1.40	0.94	0.83	1.50	2.27	1.03	2.22	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	1.29
8 FFX	1.15	1.39	1.95	0.72	1.27	1.59	2.34	1.41	0.10	1.08	0	0	0	0	0	0	0	0	0	0	0	0	0	1.30
9 LDN	0.40	0.28	5.64	0	0.66	0.72	0.59	34.22	1.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.73
10 PW	1.29	0.61	0.94	0.11	1.29	1.01	3.34	8.95	0	3.20	0	0	0	0	0	0	0	0	0	0	0	0	0	1.87
11 FRD	0.16	1.18	3.31	0.17	0.83	0.78	0.50	0	0	0	0.42	0	0	0	0	0	0	0	0	0	0	0	0	0.86
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	2.27	13.70	0	9.17	5.00	10.56	3.00	0.66	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	2.00	11.89	1.83	4.51	20.67	9.16	6.64	3.36	0	0	0	0	0	0	0	0	0.30	0	0	0	0	0	0	2.48
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	0.13	0.16	0.18	0.08	0.44	0.26	0.55	1.88	0	0.13	0	0	0	0	0	0	0	0	0.11	0	0.21	0	0	0.31
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	1.03	1.22	1.03	1.00	1.29	1.27	1.35	1.79	0.49	2.15	0.38	0	0	0	0.36	0	0.15	0	0.05	0	0.01	0	0	1.11

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   Purpose: HBW   Table: Ratio (Est-to-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	1.12	1.17	0.66	0.74	2.40	1.24	0.78	0.76	0.31	0.34	0	0	0	0	0	0	0.43	0	0	0	0	0	0	1.01
2 DC NC	0.99	0.88	1.12	1.17	1.61	1.16	0.71	0.75	0.25	0.11	0.26	0	0	0	0.41	0.02	0.30	0.04	0	0	0.01	0	0	0.97
3 MTG	1.15	0.85	1.08	0.82	1.24	0.94	0.49	0.72	0.29	0.07	1.12	0	0	0	0.04	0	0.04	0.07	0.00	17.82	0.01	0.05	0	1.01
4 PG	0.86	1.33	0.84	1.04	1.06	0.85	0.72	0.58	0.08	0.08	0.16	0	0	0	1.04	0.78	0.98	0.01	0.02	0	0.03	1.69	0	0.98
5 ARLCR	1.10	1.20	0.45	0.51	0.94	0.89	0.60	0.54	0.18	0.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0.78
6 ARNCR	0.90	0.87	0.74	0.42	1.22	1.21	1.16	1.12	0.48	0.22	0.24	0	0	0	0	0	0.08	0.13	0.04	0	0.07	0	0	1.02
7 ALX	0.68	0.66	0.47	0.50	1.08	1.20	0.88	1.23	0.26	0.35	0.17	0	0	0	0.05	0	0.16	0.34	0.18	0.14	0.18	0	0	0.91
8 FFX	0.84	0.84	0.61	0.40	0.89	0.93	0.90	1.04	1.25	1.01	0.44	0	0	0	0.13	0.01	0.10	1.12	0.46	0.77	0.44	0.07	0	0.96
9 LDN	0.26	0.48	0.67	0.13	0.73	0.73	0.55	1.13	1.09	0.83	4.53	0	0	0	0	0	0	1.03	0.10	8.91	0.02	0	0	1.05
10 PW	0.52	0.20	0.21	0.15	0.38	0.60	0.68	1.02	0.73	1.10	0.41	0	0	0	0.04	0	0.06	2.79	1.67	0.92	2.96	3.81	0	0.95
11 FRD	0.16	0.55	0.77	0.38	0.56	0.20	0.09	0.45	2.24	0.11	1.15	0	0	0	0	0	0	0.53	0	6.09	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	0.39	1.16	0.30	0.72	0.31	0.27	0.31	0.18	0	0	0	0	0	0	1.10	1.98	1.03	0	0.05	0	0.20	7.22	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	0.37	1.14	0.31	1.06	0.23	0.30	0.52	0.30	0.00	0.03	0	0	0	0	1.82	0.95	1.13	0	0.43	0	1.28	4.86	0	0.94
18 FAU	0.00	0.02	0.06	0.02	0.02	0.08	0.10	0.89	0.93	1.21	0.80	0	0	0	0	0	0	1.17	2.97	4.03	5.25	2.38	0	1.03
19 STA	0.09	0.11	0.10	0.05	0.22	0.33	0.50	0.68	0.11	0.93	0	0	0	0	0.05	0.20	2.54	8.41	1.36	0	1.67	0.61	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	0.86	0.98	0.98	0.95	0.92	0.94	0.82	0.99	1.04	1.03	1.16	0	0	0	1.11	1.41	1.05	1.34	1.34	5.54	1.68	1.57	0	0.98

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   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	0.96	1.10	0.91	0.81	2.90	1.39	2.18	1.29	2.00	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	1.07
2 DC NC	0.81	0.54	1.42	1.13	1.57	1.46	0.95	1.06	1.30	0.44	0.77	0	0	0	0	0	0.75	0	0	0	0	0	0	0.84
3 MTG	1.36	1.07	1.43	1.21	2.26	1.77	0.89	1.83	1.48	0.07	1.54	0	0	0	0.14	0	0.01	0	0	0	0.13	0	0	1.38
4 PG	0.75	1.20	1.03	0.89	1.22	0.93	0.94	0.84	0.12	0.07	0.33	0	0	0	0.98	0.75	1.25	0	0.08	0	0.20	4.83	0	0.91
5 ARLCR	0.91	1.03	0.63	0	0.33	1.02	0.62	1.16	0.71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.81
6 ARNCR	0.85	1.20	1.47	0.47	1.31	1.33	1.47	1.85	1.08	0.18	0.09	0	0	0	0	0	0.25	0.07	0.14	0	0.13	0	0	1.20
7 ALX	0.82	0.82	1.11	0.58	1.22	1.67	0.73	1.95	0.81	0.23	0	0	0	0	0	0	0	0.18	1.25	0	0.83	0	0	1.08
8 FFX	0.96	1.16	1.64	0.57	1.05	1.40	1.49	1.62	1.65	1.36	0.64	0	0	0	0.25	0	0.09	2.06	1.27	0.73	0.66	0.12	0	1.33
9 LDN	0.72	1.85	2.05	0.46	2.80	2.56	3.00	3.79	1.46	3.20	27.40	0	0	0	0	0	0	0.78	0	15.09	0.14	0	0	2.31
10 PW	0.82	0.36	0.63	0.20	0.50	0.92	1.23	1.85	1.03	0.90	0.67	0	0	0	0	0	0.83	4.48	1.68	1.00	4.54	3.00	0	1.08
11 FRD	0.22	1.60	1.14	0.65	0.83	0.21	0.60	1.54	5.23	0.23	1.11	0	0	0	0	0	0	0.33	0	13.52	0	0	0	1.13
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	0.39	1.26	0.74	1.22	0.29	0.35	0.32	0.36	0	0	0	0	0	0	0.75	2.37	1.40	0	0	0	0	7.25	0	0.97
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	0.32	1.45	0.48	1.70	0.28	0.34	0.83	0.55	0	0.12	0	0	0	0	1.82	1.33	0.87	0	0.37	0	13.50	13.13	0	0.92
18 FAU	0.03	0.06	0.28	0.07	0.06	0.16	0.42	1.45	1.80	2.14	0	0	0	0	0	0	0	0.94	3.97	2.88	17.38	0	0	1.29
19 STA	0.13	0.15	0.33	0.17	0.28	0.50	0.91	1.35	0.28	1.40	0	0	0	0	0.11	0	2.25	32.67	0.91	0	3.21	0.89	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	0.86	0.93	1.34	0.95	0.96	1.22	1.15	1.72	1.47	0.98	1.18	0	0	0	0.81	1.51	0.89	1.35	1.05	6.52	3.09	2.88	0	1.16

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2   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	1.06	1.07	0.63	0.77	1.39	0.98	0.81	0.93	0.31	0.38	0	0	0	0	0	0	0.43	0	0	0	0	0	0	0.99
2 DC NC	1.00	0.92	1.08	1.15	1.47	1.08	0.71	0.80	0.20	0.09	0.26	0	0	0	0.26	0.02	0.23	0.03	0	0	0.01	0	0	0.99
3 MTG	1.01	0.89	1.07	0.83	1.23	0.93	0.50	0.77	0.29	0.06	1.11	0	0	0	0.04	0	0.04	0.07	0.00	17.82	0.01	0.05	0	1.00
4 PG	1.01	1.41	0.86	1.04	1.08	0.94	0.75	0.60	0.08	0.08	0.16	0	0	0	1.03	0.74	0.96	0.01	0.01	0	0.03	1.69	0	1.02
5 ARLCR	0.80	0.67	0.57	0.52	0.82	1.05	0.61	0.62	0.18	0.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0.76
6 ARNCR	0.85	0.89	0.79	0.41	1.33	1.17	1.24	1.24	0.46	0.21	0.24	0	0	0	0	0	0.06	0.13	0.03	0	0.04	0	0	1.01
7 ALX	0.83	0.78	0.54	0.52	1.20	1.43	0.91	1.31	0.26	0.35	0.17	0	0	0	0.05	0	0.16	0.34	0.15	0.14	0.14	0	0	1.00
8 FFX	0.95	0.90	0.67	0.41	0.97	1.04	0.99	1.05	1.23	1.01	0.44	0	0	0	0.13	0.01	0.10	1.12	0.46	0.77	0.39	0.07	0	1.00
9 LDN	0.29	0.46	0.71	0.13	0.72	0.73	0.55	1.18	1.10	0.83	4.47	0	0	0	0	0	0	1.03	0.08	8.91	0.02	0	0	1.06
10 PW	0.71	0.24	0.23	0.14	0.47	0.65	0.80	1.07	0.73	1.12	0.41	0	0	0	0.04	0	0.06	2.79	1.67	0.92	2.89	3.81	0	0.99
11 FRD	0.16	0.59	0.81	0.37	0.59	0.22	0.10	0.45	2.23	0.11	1.15	0	0	0	0	0	0	0.53	0	6.09	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	0.72	1.41	0.36	0.73	0.48	0.42	0.36	0.19	0	0	0	0	0	0	1.10	1.97	1.03	0	0.05	0	0.20	7.22	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	0.67	1.37	0.38	1.07	0.39	0.47	0.58	0.32	0.00	0.03	0	0	0	0	1.82	0.94	1.12	0	0.43	0	1.28	4.86	0	0.99
18 FAU	0.00	0.01	0.06	0.02	0.02	0.07	0.09	0.89	0.93	1.21	0.80	0	0	0	0	0	0	1.16	2.97	4.03	5.25	2.38	0	1.02
19 STA	0.10	0.11	0.10	0.05	0.24	0.32	0.51	0.69	0.11	0.93	0	0	0	0	0.05	0.20	2.54	8.41	1.36	0	1.67	0.60	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	1.05	1.15	0	0	0	1.10	1.39	1.04	1.34	1.32	5.54	1.65	1.56	0	1.00

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

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 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	0.96	1.09	0.82	0.89	1.05	1.39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.99
2 DC NC	1.01	1.09	0.94	0.92	0.91	0.92	1.02	1.25	0	0.38	0	0	0	0	0	0	0	0	0	0	0	0	0	1.02
3 MTG	0.87	1.21	0.95	1.17	0.97	0.97	1.12	3.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.95
4 PG	1.25	1.40	1.13	0.97	1.03	1.35	1.33	1.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.22
5 ARLCR	0.89	0.61	1.71	1.06	0.73	1.25	1.04	1.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.97
6 ARNCR	0.95	1.09	1.33	0.86	1.17	0.88	1.35	1.96	0.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.99
7 ALX	1.25	1.80	1.74	1.58	1.25	1.59	1.13	1.69	0	0.72	0	0	0	0	0	0	0	0	0	0	0	0	0	1.29
8 FFX	1.21	1.54	2.91	1.79	1.31	1.53	2.36	1.35	0.08	1.06	0	0	0	0	0	0	0	0	0	0	0	0	0	1.31
9 LDN	1.40	0.62	7.97	0	0.91	0.99	1.07	29.09	1.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.63
10 PW	1.81	2.58	4.02	0.74	2.76	1.54	4.17	8.34	0	2.86	0	0	0	0	0	0	0	0	0	0	0	0	0	1.90
11 FRD	1.03	2.02	4.10	0.45	1.42	3.61	5.20	0	0	0	0.37	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	3.15	9.71	0	12.50	10.39	24.87	8.26	3.42	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	2.98	8.66	4.81	4.20	53.26	19.39	11.50	10.51	0	0	0	0	0	0	0	0	0.27	0	0	0	0	0	0	2.52
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	1.27	1.44	1.72	1.56	1.85	0.82	1.09	2.72	0	0.14	0	0	0	0	0	0	0	0	0.08	0	0.13	0	0	0.31
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	1.09	1.18	1.05	1.05	1.26	1.25	1.54	1.75	0.47	2.05	0.33	0	0	0	0.33	0	0.14	0	0.04	0	0.01	0	0	1.11

Yr 2000 Est/Obs Mode Choice Anaylsis - Model V2.2 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	1.04	1.01	1.02	1.02	1.10	1.07	1.42	0.84	0	0	0	0	0	0	1.20	0	0	0	0	0	0	1.01
2 DC NC	0.96	0.94	1.03	0.99	1.00	1.03	1.04	1.05	1.23	1.28	1.27	0	0	0	1.31	0.57	1.18	0.86	0	0	0.91	0	0	0.98
3 MTG	1.03	1.02	1.03	1.04	1.07	1.08	1.07	1.09	1.15	1.01	1.03	0	0	0	1.21	0	0.88	1.20	0.82	1.24	0	0	0	1.03
4 PG	0.98	0.99	1.03	0.98	1.02	1.01	1.03	1.05	1.08	0.98	1.20	0	0	0	0.99	0.99	1.02	0.60	2.64	0	1.17	1.18	0	0.99
5 ARLCR	0.97	0.98	1.04	1.14	0.91	1.02	1.00	1.07	1.23	1.17	0	0	0	0	0	0	0	0	0	0	0	0	0	1.01
6 ARNCR	0.99	1.03	1.07	1.01	1.01	1.01	1.02	1.05	1.11	0.97	0.68	0	0	0	0	0	1.23	0.91	1.25	0	1.23	0	0	1.02
7 ALX	1.03	1.03	1.11	1.02	1.02	1.04	0.98	1.04	1.14	0.94	0	0	0	0	1.00	0	1.06	0.84	1.27	0.43	1.39	0	0	1.02
8 FFX	1.04	1.05	1.11	1.05	1.04	1.07	1.05	1.04	1.03	1.03	1.07	0	0	0	1.21	0.78	0.99	1.07	1.11	0.98	1.07	1.15	0	1.04
9 LDN	1.44	1.28	1.16	1.24	1.40	1.38	1.35	1.12	1.02	1.11	1.11	0	0	0	0	0	0	0.96	1.20	1.05	0	0	0	1.08
10 PW	1.42	1.33	1.36	1.11	1.19	1.24	1.14	1.07	1.04	0.98	1.07	0	0	0	0.86	0	3.31	1.05	1.00	1.02	1.05	0.94	0	1.02
11 FRD	1.13	1.18	1.05	1.08	1.13	1.03	1.85	1.28	1.09	1.27	1.00	0	0	0	0	0	0	0.86	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	1.00	1.01	1.14	1.06	0.99	1.06	1.01	1.11	0	0	0	0	0	0	0.97	1.02	1.04	0	0.71	0	0	1.00	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	0.96	1.03	1.08	1.05	1.03	1.02	1.06	1.08	0.89	1.52	0	0	0	0	1.00	1.04	0.98	0	0.95	0	1.29	1.11	0	1.00
18 FAU	4.35	2.13	1.25	1.37	1.45	1.18	1.32	1.07	1.07	1.05	1.23	0	0	0	0	0	0	0.99	1.03	0.93	1.10	1.19	0	1.02
19 STA	1.51	1.30	1.94	1.31	1.26	1.35	1.22	1.14	1.18	1.04	0	0	0	0	0	1.33	0.95	1.10	0.97	0	1.05	1.05	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	0.99	1.03	1.00	1.01	1.05	1.04	1.05	1.03	0.99	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: V2.2 Iter. i6 * W/Tran.Constraint *
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	4143	2792	640	748	445	836	300	949	70	5	2	0	41	88	1	0	1	0	0	0	0	0	1434	12495
2 DC NC	50762	32953	14112	16169	4527	8480	2466	7247	248	7	22	0	792	1217	14	0	12	0	0	0	1	0	10238	149267
3 MTG	43453	22777	356716	38981	3418	7060	1247	14824	504	5	5675	166	11038	3708	1	0	2	0	0	27	0	0	32799	542401
4 PG	52206	65033	28978	238699	4611	9891	9282	12569	105	22	36	3	11661	25402	615	255	4557	0	0	0	0	115	23536	487577
5 ARLCR	932	276	141	50	1128	680	162	551	45	2	0	0	2	2	0	0	0	0	1	0	0	0	139	4111
6 ARNCR	12648	5746	2951	834	5854	28939	5602	21461	897	43	2	0	18	46	0	0	2	0	0	0	0	0	1765	86808
7 ALX	7245	3343	905	1328	3243	11818	21151	19946	242	65	0	0	5	38	1	0	4	0	1	0	3	0	842	70180
8 FFX	24507	13732	9160	5601	9560	33929	39241	443838	41714	7863	27	0	52	62	3	0	22	192	162	12	109	0	7555	637342
9 LDN	386	271	2776	49	287	758	236	84553	166614	5232	5426	17	44	0	0	0	0	860	12	2674	1	0	6278	276474
10 PW	372	121	106	130	142	754	2540	92752	13746	170567	7	0	0	5	0	0	0	6280	7657	74	4487	76	2987	302803
11 FRD	66	131	19663	891	9	20	0	118	1996	0	151302	5264	9071	443	0	0	0	0	0	1102	0	0	17801	207877
12 CAR	0	16	3249	684	0	0	0	0	34	0	11231	70672	12868	485	0	0	0	0	0	32	0	0	21056	120327
13 HOW	937	1413	15182	15029	65	106	17	179	20	0	2349	550	91710	20029	0	0	0	0	0	13	0	0	36947	184546
14 AAR	2493	3868	1812	29777	155	268	206	257	3	1	9	3	11716	234758	788	22	75	0	0	0	0	0	45533	331744
15 CAL	455	1231	106	10275	36	87	170	192	0	0	0	0	19	3964	30785	9627	1631	0	0	0	0	83	198	58859
16 STM	75	160	19	2544	4	6	34	44	0	0	0	0	1	74	3798	62204	5427	0	0	0	0	2494	78	76962
17 CHS	2216	5402	193	34893	152	342	955	940	0	1	0	0	18	494	2411	3966	57375	0	0	0	0	5681	299	115338
18 FAU	0	0	1	0	0	0	0	996	3381	13543	10	0	0	0	0	0	0	42851	8606	356	1684	36	2885	74349
19 STA	0	3	0	1	3	17	46	1995	58	9306	0	0	0	0	0	0	1	613	58642	0	39282	5838	3512	119317
20 CL/JF	1	15	669	12	0	1	0	318	7617	43	4239	22	114	0	0	0	0	171	0	44498	0	0	11163	68883
21 SP/FB	0	0	0	0	0	0	1	51	3	343	0	0	0	0	0	0	0	17	5091	0	93186	1782	16945	117419
22 KGEO	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	2	9	0	78	0	235	17619	850	18797
23 EXTL	3580	4800	23711	31807	378	856	661	7711	14185	16563	50813	33931	45688	100131	1460	488	1899	16333	5985	26507	22148	2146	0	411781
TOTAL	206477	164083	481090	428505	34016	104848	84318	711491	251483	223612	231150	110628	194858	390946	39877	76564	71017	67317	86235	75295	161136	35870	244840	4475657

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
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	4907	3274	766	888	539	1012	355	1142	104	5	3	0	56	117	1	0	1	0	0	0	0	0	1648	14818
2 DC NC	60244	36515	16394	18704	5269	10071	2866	8353	305	7	27	0	971	1524	15	0	15	0	0	0	1	0	11765	173046
3 MTG	51103	25456	394823	44113	3898	8074	1417	16307	564	8	6361	187	12502	4369	2	0	2	0	0	31	0	0	37697	606914
4 PG	60905	73227	33309	259812	5168	11257	10206	13885	119	24	53	4	12984	28317	693	288	5027	0	0	0	0	134	27066	542478
5 ARLCR	1111	315	162	59	1187	794	188	637	53	2	0	0	1	4	0	0	0	0	1	0	0	0	162	4676
6 ARNCR	13977	6429	3423	949	6576	32997	6306	24260	1078	50	1	0	22	40	0	0	2	0	0	0	0	0	2029	98139
7 ALX	7929	3715	1056	1461	3554	13231	23194	22421	310	79	0	0	8	41	2	0	5	0	1	0	3	0	967	77977
8 FFX	26613	15163	10148	6117	10506	37704	43136	485630	45983	8679	27	0	64	71	5	0	25	215	185	14	126	0	8672	699083
9 LDN	424	314	3101	42	317	850	275	94456	181104	5803	6048	17	63	0	0	0	0	970	15	2968	1	0	7220	303988
10 PW	387	138	126	148	162	880	2884	101260	15183	184093	7	0	0	1	0	0	0	6955	8575	84	5145	93	3437	329558
11 FRD	80	145	21511	1006	9	22	2	136	2250	0	159701	5906	10481	522	0	0	0	1	0	1243	0	0	20459	223474
12 CAR	0	19	3676	795	0	0	0	0	39	0	12701	73722	14547	558	0	0	0	0	0	40	0	0	24201	130298
13 HOW	1155	1628	17273	16715	76	124	25	199	20	0	2675	610	97463	22047	0	0	1	0	0	16	0	0	42469	202496
14 AAR	2810	4298	2078	32713	176	302	234	295	3	1	11	4	12964	250788	876	27	87	0	0	0	0	0	52342	360009
15 CAL	545	1432	117	11571	39	104	191	216	0	0	0	0	22	4493	32597	10707	1861	0	0	0	0	105	227	64227
16 STM	95	192	23	2930	6	9	37	50	0	0	0	0	1	90	4257	66588	6081	0	0	0	0	2921	88	83368
17 CHS	2634	6256	223	38991	173	394	1063	1046	0	1	0	0	19	579	2705	4467	60995	0	0	0	2	6570	342	126459
18 FAU	0	0	1	0	0	0	0	1091	3776	14840	11	0	0	0	0	0	0	44948	9580	404	1917	44	3317	79929
19 STA	-0	3	0	2	2	22	55	2218	65	10265	0	0	0	0	0	0	1	684	62058	0	43248	6558	4035	129216
20 CL/JF	2	17	756	15	1	0	0	410	8747	50	4801	25	142	0	0	0	0	195	0	46753	0	0	12833	74747
21 SP/FB	0	0	0	0	0	0	1	61	3	392	0	0	0	0	0	0	0	19	5645	0	98122	2047	19478	125768
22 KGEO	0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	3	10	0	87	0	267	18489	978	19839
23 EXTL	4116	5517	27255	36557	432	986	763	8865	16305	19036	58408	39000	52515	115091	1678	560	2184	18775	6881	30465	25458	2467	0	473314
TOTAL	239037	184054	536221	473591	38089	118832	93199	782937	276012	243337	250835	119475	214825	428652	42831	82640	76297	72762	93028	82018	174290	39428	281432	4943821

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Transit

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	20923	6681	2054	1122	1911	3020	708	2234	75	0	0	0	32	40	0	0	0	0	0	0	0	0	0	38800
2 DC NC	99482	34513	13387	7558	5340	7336	1484	3976	85	1	2	0	130	177	0	0	0	0	0	0	0	0	0	173470
3 MTG	58281	11288	61731	6528	2886	3770	464	3427	62	0	98	0	441	92	0	0	0	0	0	0	0	0	0	149069
4 PG	60810	29405	9961	28583	4204	6343	1982	2704	35	0	3	0	551	407	0	0	2	0	0	0	0	0	0	144990
5 ARLCR	4053	429	212	42	575	1207	169	731	23	0	0	0	1	1	0	0	0	0	0	0	0	0	0	7443
6 ARNCR	30176	2361	1021	188	7189	10068	2946	11374	235	3	1	0	1	7	0	0	0	0	0	0	0	0	0	65570
7 ALX	15870	1367	380	135	3477	10639	7744	6053	55	3	0	0	0	3	0	0	0	0	0	0	0	0	0	45727
8 FFX	52322	4359	2415	353	9598	24102	14347	32341	3143	127	0	0	1	5	0	0	0	0	0	0	9	0	0	143122
9 LDN	801	75	145	9	313	534	66	11177	11354	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24475
10 PW	4410	157	85	19	447	1381	2632	16457	151	10328	0	0	0	1	0	0	0	0	1	0	136	0	0	36206
11 FRD	115	57	3537	34	9	11	2	18	2	0	3019	0	11	0	0	0	0	0	0	0	0	0	0	6817
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	1202	430	2003	1113	64	64	10	36	1	0	1	0	963	43	0	0	0	0	0	0	0	0	0	5929
14 AAR	3596	1400	395	1990	153	183	59	66	1	0	0	0	117	219	6	0	0	0	0	0	0	0	0	8184
15 CAL	1478	1046	85	940	70	125	72	58	0	0	0	0	0	1	102	0	1	0	0	0	0	0	0	3977
16 STM	338	139	28	167	15	13	17	18	0	0	0	0	0	2	2	4	47	0	0	0	0	0	0	791
17 CHS	5136	2751	192	1472	268	372	245	212	2	0	0	0	1	3	1	0	600	0	0	0	0	0	0	11255
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	3	1	0	0	5	24	52	406	2	86	0	0	0	0	0	0	0	0	23	0	211	0	0	813
20 CL/JF	4	5	100	3	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	118
21 SP/FB	0	0	0	0	0	1	4	21	0	10	0	0	0	0	0	0	0	0	22	0	1152	0	0	1210
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	359001	96465	97732	50255	36528	69193	33002	91312	15226	10558	3124	0	2249	1001	111	4	650	0	46	1	1508	0	0	867965

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: HOV 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	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	17	40	129	319	40	1	0	0	0	0	0	0	0	0	0	0	0	0	0	546
3 MTG	2075	725	8734	873	451	997	85	1877	116	0	0	0	18	17	0	0	0	0	0	0	0	0	0	15968
4 PG	2200	593	235	763	663	1596	2153	1702	66	4	0	0	0	0	0	0	0	0	0	0	0	0	0	9974
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	1664	341	86	49	323	841	37	9	1	0	0	0	1	7	0	0	1	0	0	0	0	0	0	3359
7 ALX	1555	401	133	111	438	805	134	140	3	0	0	0	1	8	2	0	0	0	0	0	0	0	0	3731
8 FFX	19333	5077	3785	759	4902	10108	4056	15742	520	1	1	0	17	17	2	0	2	0	0	0	0	0	0	64322
9 LDN	889	259	758	43	547	1012	133	10116	5	37	6	0	1	0	0	0	0	0	0	0	0	0	0	13806
10 PW	4035	557	441	158	868	2285	3392	20023	826	452	1	0	0	11	0	0	0	2	2	0	0	0	0	33052
11 FRD	166	184	5645	253	45	65	4	214	30	0	178	0	7	3	0	0	0	0	0	0	0	0	0	6795
12 CAR	0	2	202	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	207
13 HOW	9	8	149	0	4	14	6	29	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	222
14 AAR	1094	683	256	1748	44	88	104	65	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4084
15 CAL	55	23	22	114	15	36	77	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	391
16 STM	14	0	0	6	2	2	19	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
17 CHS	224	15	5	40	63	145	317	208	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1019
18 FAU	0	0	0	0	0	0	0	488	85	554	0	0	0	0	0	0	0	0	0	0	0	0	0	1127
19 STA	12	13	1	3	42	118	167	971	0	65	0	0	0	0	0	0	0	0	0	0	0	0	0	1392
20 CL/JF	8	42	582	21	3	3	0	97	0	3	42	0	1	0	0	0	0	0	0	0	0	0	0	802
21 SP/FB	2	0	0	0	1	4	6	36	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	54
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	33337	8922	21034	4943	8427	18159	10821	52095	1697	1123	228	0	46	63	4	0	3	2	2	0	0	0	0	160906

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW 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	1	17	34	79	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143
3 MTG	565	215	2530	258	113	283	21	545	22	0	0	0	4	4	0	0	0	0	0	0	0	0	0	4559
4 PG	615	160	63	230	192	453	627	480	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2831
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	473	99	25	15	95	246	11	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	967
7 ALX	445	118	39	30	129	232	40	42	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	1079
8 FFX	5388	1476	992	228	1387	2887	1176	4374	136	0	0	0	2	9	0	0	0	0	0	0	0	0	0	18055
9 LDN	232	66	208	11	149	269	36	2748	2	9	1	0	0	0	0	0	0	0	0	0	0	0	0	3731
10 PW	1124	150	118	47	251	656	976	5760	240	136	0	0	0	0	0	0	0	2	0	0	0	0	0	9459
11 FRD	45	51	1630	70	10	21	3	55	7	0	52	0	1	2	0	0	0	0	0	0	0	0	0	1947
12 CAR	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58
13 HOW	2	2	40	0	4	4	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60
14 AAR	304	197	74	503	13	27	28	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1165
15 CAL	14	7	8	30	5	9	23	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	111
16 STM	3	0	0	3	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
17 CHS	62	5	1	11	17	41	88	59	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	287
18 FAU	0	0	0	0	0	0	0	138	27	162	0	0	0	0	0	0	0	0	0	0	0	0	0	327
19 STA	2	4	0	1	11	34	48	277	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	396
20 CL/JF	2	12	164	6	1	1	0	26	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	225
21 SP/FB	0	0	0	0	0	1	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
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	9276	2563	5951	1442	2380	5182	3118	14641	457	327	65	0	8	19	0	0	0	2	0	0	0	0	0	45430

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW 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	4143	2792	640	748	445	836	300	949	70	5	2	0	41	88	1	0	1	0	0	0	0	0	1434	12495
2 DC NC	50762	32953	14112	16169	4528	8497	2500	7326	259	7	22	0	792	1217	14	0	12	0	0	0	1	0	10238	149410
3 MTG	44018	22992	359246	39239	3531	7342	1268	15369	525	5	5675	166	11042	3712	1	0	2	0	0	27	0	0	32799	546960
4 PG	52821	65193	29041	238929	4803	10344	9909	13049	116	23	36	3	11661	25402	615	255	4557	0	0	0	0	115	23536	490408
5 ARLCR	932	276	141	50	1128	680	162	551	45	2	0	0	2	2	0	0	0	0	1	0	0	0	139	4111
6 ARNCR	13121	5845	2976	848	5949	29185	5613	21463	897	43	2	0	18	47	0	0	2	0	0	0	0	0	1765	87775
7 ALX	7690	3461	944	1358	3372	12050	21191	19988	242	65	0	0	6	41	1	0	4	0	1	0	3	0	842	71259
8 FFX	29895	15209	10153	5829	10947	36816	40417	448212	41850	7863	27	0	54	71	3	0	22	192	162	12	109	0	7555	655397
9 LDN	618	338	2984	59	436	1027	272	87301	166616	5241	5427	17	44	0	0	0	0	860	12	2674	1	0	6278	280205
10 PW	1496	271	224	177	393	1410	3516	98512	13986	170703	7	0	0	5	0	0	0	6282	7657	74	4487	76	2987	312262
11 FRD	111	182	21293	961	19	40	3	173	2003	0	151354	5264	9072	445	0	0	0	0	0	1102	0	0	17801	209824
12 CAR	0	16	3307	684	0	0	0	0	34	0	11231	70672	12868	485	0	0	0	0	0	32	0	0	21056	120385
13 HOW	939	1415	15222	15029	69	110	17	186	20	0	2349	550	91710	20029	0	0	0	0	0	13	0	0	36947	184606
14 AAR	2797	4065	1886	30280	168	295	234	276	3	1	9	3	11716	234758	788	22	75	0	0	0	0	0	45533	332909
15 CAL	469	1238	114	10305	41	96	193	207	0	0	0	0	19	3964	30785	9627	1631	0	0	0	0	83	198	58970
16 STM	78	160	19	2547	5	7	38	48	0	0	0	0	1	74	3798	62204	5427	0	0	0	0	2494	78	76978
17 CHS	2278	5407	194	34904	169	383	1043	1000	1	1	0	0	18	494	2411	3966	57375	0	0	0	0	5681	299	115625
18 FAU	0	0	1	0	0	0	0	1134	3408	13705	10	0	0	0	0	0	0	42851	8606	356	1684	36	2885	74676
19 STA	2	7	0	2	14	51	94	2272	58	9325	0	0	0	0	0	0	1	613	58642	0	39282	5838	3512	119713
20 CL/JF	3	27	833	18	1	2	0	344	7617	43	4251	22	114	0	0	0	0	171	0	44498	0	0	11163	69108
21 SP/FB	0	0	0	0	0	1	4	61	3	343	0	0	0	0	0	0	0	17	5091	0	93186	1782	16945	117433
22 KGEO	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	2	9	0	78	0	235	17619	850	18797
23 EXTL	3580	4800	23711	31807	378	856	661	7711	14185	16563	50813	33931	45688	100131	1460	488	1899	16333	5985	26507	22148	2146	0	411781
TOTAL	215753	166646	487041	429947	36396	110029	87436	726132	251940	223939	231215	110628	194866	390966	39877	76564	71017	67319	86235	75295	161136	35870	244840	4521087

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW 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	4907	3274	766	888	539	1012	355	1142	104	5	3	0	56	117	1	0	1	0	0	0	0	0	1648	14818
2 DC NC	60244	36515	16394	18704	5285	10112	2995	8671	345	8	27	0	971	1524	15	0	15	0	0	0	1	0	11765	173592
3 MTG	53178	26181	403557	44986	4350	9070	1502	18183	680	8	6361	187	12520	4386	2	0	2	0	0	31	0	0	37697	622881
4 PG	63105	73820	33544	260575	5831	12853	12359	15586	185	28	53	4	12984	28317	693	288	5027	0	0	0	0	134	27066	552453
5 ARLCR	1111	315	162	59	1187	794	188	637	53	2	0	0	1	4	0	0	0	0	1	0	0	0	162	4676
6 ARNCR	15641	6770	3509	998	6899	33838	6343	24269	1079	50	1	0	23	46	0	0	3	0	0	0	0	0	2029	101498
7 ALX	9484	4116	1189	1571	3992	14036	23328	22561	313	79	0	0	9	49	4	0	5	0	1	0	3	0	967	81707
8 FFX	45946	20240	13934	6876	15408	47812	47192	501372	46503	8680	28	0	81	88	7	0	27	215	185	14	126	0	8672	763405
9 LDN	1313	573	3859	84	864	1862	408	104572	181109	5840	6054	17	64	0	0	0	0	970	15	2968	1	0	7220	317794
10 PW	4422	695	567	306	1030	3165	6276	121283	16009	184545	8	0	0	12	0	0	0	6957	8577	84	5145	93	3437	362611
11 FRD	247	329	27156	1259	54	87	7	350	2280	0	159879	5906	10488	525	0	0	0	1	0	1243	0	0	20459	230269
12 CAR	0	21	3878	798	0	0	0	0	39	0	12701	73722	14547	558	0	0	0	0	0	40	0	0	24201	130505
13 HOW	1164	1636	17422	16715	80	137	31	228	22	0	2675	610	97463	22047	0	0	1	0	0	16	0	0	42469	202718
14 AAR	3904	4981	2334	34461	220	390	338	360	5	1	11	4	12964	250788	876	27	87	0	0	0	0	0	52342	364093
15 CAL	600	1455	139	11685	54	139	268	265	0	0	0	0	22	4493	32597	10707	1861	0	0	0	0	105	227	64618
16 STM	110	192	23	2936	8	11	56	62	0	0	0	0	1	90	4257	66588	6081	0	0	0	0	2921	88	83424
17 CHS	2858	6271	228	39031	236	539	1380	1254	1	2	0	0	19	579	2705	4467	60995	0	0	0	2	6570	342	127479
18 FAU	0	0	1	0	0	0	0	1579	3861	15394	11	0	0	0	0	0	0	44948	9580	404	1917	44	3317	81056
19 STA	12	16	1	5	44	140	222	3189	65	10330	0	0	0	0	0	0	1	684	62058	0	43248	6558	4035	130608
20 CL/JF	10	59	1338	36	4	3	0	507	8747	53	4843	25	143	0	0	0	0	195	0	46753	0	0	12833	75549
21 SP/FB	2	0	0	0	1	4	7	97	3	397	0	0	0	0	0	0	0	19	5645	0	98122	2047	19478	125822
22 KGEO	0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	3	10	0	87	0	267	18489	978	19839
23 EXTL	4116	5517	27255	36557	432	986	763	8865	16305	19036	58408	39000	52515	115091	1678	560	2184	18775	6881	30465	25458	2467	0	473314
TOTAL	272373	192976	557255	478534	46516	136991	104020	835032	277708	244460	251063	119475	214871	428714	42835	82640	76300	72764	93030	82018	174290	39428	281432	5104727

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW 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	25830	9955	2820	2010	2450	4032	1063	3376	179	5	3	0	88	157	1	0	1	0	0	0	0	0	1648	53618
2 DC NC	159726	71028	29781	26262	10625	17448	4479	12648	430	9	29	0	1101	1701	15	0	15	0	0	0	1	0	11765	347062
3 MTG	111459	37469	465288	51514	7236	12840	1965	21611	742	8	6459	187	12961	4478	2	0	2	0	0	31	0	0	37697	771950
4 PG	123914	103225	43505	289158	10035	19197	14341	18290	220	28	56	4	13535	28724	693	288	5029	0	0	0	0	134	27066	697442
5 ARLCR	5164	744	374	101	1762	2001	357	1368	76	2	0	0	2	5	0	0	0	0	1	0	0	0	162	12119
6 ARNCR	45817	9131	4530	1186	14088	43906	9289	35643	1314	53	2	0	24	53	0	0	3	0	0	0	0	0	2029	167068
7 ALX	25354	5483	1569	1707	7469	24675	31072	28614	368	82	0	0	9	52	4	0	5	0	1	0	3	0	967	127434
8 FFX	98268	24599	16349	7229	25006	71914	61539	533713	49646	8807	28	0	82	93	7	0	27	215	185	14	135	0	8672	906527
9 LDN	2115	648	4005	93	1177	2396	474	115749	192463	5840	6054	17	64	0	0	0	0	970	15	2968	1	0	7220	342268
10 PW	8832	852	653	325	1477	4546	8908	137740	16160	194873	8	0	0	13	0	0	0	6957	8578	84	5281	93	3437	398817
11 FRD	362	386	30693	1293	63	98	9	368	2282	0	162898	5906	10499	525	0	0	0	1	0	1243	0	0	20459	237085
12 CAR	0	21	3878	798	0	0	0	0	39	0	12701	73722	14547	558	0	0	0	0	0	40	0	0	24201	130505
13 HOW	2366	2066	19425	17828	144	201	41	264	23	0	2676	610	98426	22090	0	0	1	0	0	16	0	0	42469	208647
14 AAR	7500	6381	2729	36451	373	573	397	425	6	1	11	4	13081	251007	882	27	87	0	0	0	0	0	52342	372277
15 CAL	2078	2501	224	12625	124	264	340	322	0	0	0	0	22	4494	32699	10707	1862	0	0	0	0	105	227	68595
16 STM	448	331	51	3103	23	24	73	80	0	0	0	0	1	92	4259	66592	6128	0	0	0	0	2921	88	84214
17 CHS	7994	9022	420	40503	504	911	1625	1466	3	2	0	0	20	582	2706	4467	61595	0	0	0	2	6570	342	138734
18 FAU	0	0	1	0	0	0	0	1579	3861	15394	11	0	0	0	0	0	0	44948	9580	404	1917	44	3317	81056
19 STA	15	17	1	5	49	164	274	3595	67	10416	0	0	0	0	0	0	1	684	62081	0	43459	6558	4035	131421
20 CL/JF	14	65	1438	39	5	3	0	510	8747	53	4843	25	143	0	0	0	0	195	0	46754	0	0	12833	75667
21 SP/FB	2	0	0	0	1	5	11	118	3	407	0	0	0	0	0	0	0	19	5667	0	99274	2047	19478	127032
22 KGEO	0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	3	10	0	87	0	267	18489	978	19839
23 EXTL	4116	5517	27255	36557	432	986	763	8865	16305	19036	58408	39000	52515	115091	1678	560	2184	18775	6881	30465	25458	2467	0	473314
TOTAL	631374	289441	654987	528789	83044	206184	137021	926345	292934	255018	254187	119475	217120	429715	42946	82644	76950	72764	93076	82019	175798	39428	281432	5972692

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Transit Percentage

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	81.0	67.1	72.8	55.8	78.0	74.9	66.6	66.2	41.9	0	0	0	36.4	25.5	0	0	0	0	0	0	0	0	0	72.4
2 DC NC	62.3	48.6	45.0	28.8	50.3	42.0	33.1	31.4	19.7	8.9	6.9	0	11.8	10.4	0	0	0	0	0	0	0	0	0	50.0
3 MTG	52.3	30.1	13.3	12.7	39.9	29.4	23.6	15.9	8.4	0	1.5	0	3.4	2.1	0	0	0	0	0	0	0	0	0	19.3
4 PG	49.1	28.5	22.9	9.9	41.9	33.0	13.8	14.8	16.0	0	5.4	0	4.1	1.4	0	0	0.0	0	0	0	0	0	0	20.8
5 ARLCR	78.5	57.7	56.7	41.6	32.6	60.3	47.3	53.4	30.3	0	0	0	50.0	20.0	0	0	0	0	0	0	0	0	0	61.4
6 ARNCR	65.9	25.9	22.5	15.8	51.0	22.9	31.7	31.9	17.9	5.7	30.5	0	2.5	12.7	0	0	0	0	0	0	0	0	0	39.2
7 ALX	62.6	24.9	24.2	7.9	46.6	43.1	24.9	21.2	14.9	3.7	0	0	0	5.9	0	0	0	0	0	0	0	0	0	35.9
8 FFX	53.2	17.7	14.8	4.9	38.4	33.5	23.3	6.1	6.3	1.4	0	0	1.5	5.2	0	0	0	0	0	0	6.7	0	0	15.8
9 LDN	37.9	11.6	3.6	9.2	26.6	22.3	13.9	9.7	5.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.2
10 PW	49.9	18.4	13.1	5.8	30.3	30.4	29.5	11.9	0.9	5.3	0	0	0	9.4	0	0	0	0	0.0	0	2.6	0	0	9.1
11 FRD	31.8	14.8	11.5	2.6	14.3	11.4	26.7	5.0	0.1	0	1.9	0	0.1	0	0	0	0	0	0	0	0	0	0	2.9
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	50.8	20.8	10.3	6.2	44.4	31.8	23.4	13.6	3.5	0	0.0	0	1.0	0.2	0	0	0	0	0	0	0	0	0	2.8
14 AAR	48.0	21.9	14.5	5.5	41.0	31.9	14.9	15.4	13.3	0	0	0	0.9	0.1	0.7	0	0	0	0	0	0	0	0	2.2
15 CAL	71.1	41.8	37.9	7.4	56.6	47.3	21.1	17.8	0	0	0	0	0	0.0	0.3	0	0.1	0	0	0	0	0	0	5.8
16 STM	75.5	42.0	54.9	5.4	66.5	53.1	23.0	23.0	0	0	0	0	0	2.2	0.0	0.0	0.8	0	0	0	0	0	0	0.9
17 CHS	64.2	30.5	45.7	3.6	53.3	40.8	15.1	14.5	53.2	0	0	0	5.0	0.5	0.0	0	1.0	0	0	0	0	0	0	8.1
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	20.2	7.2	0	0	10.3	14.6	19.0	11.3	3.0	0.8	0	0	0	0	0	0	0	0	0.0	0	0.5	0	0	0.6
20 CL/JF	28.9	8.4	7.0	7.8	20.2	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.2
21 SP/FB	0	0	0	0	0	20.0	36.4	17.8	0	2.5	0	0	0	0	0	0	0	0	0.4	0	1.2	0	0	1.0
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	56.9	33.3	14.9	9.5	44.0	33.6	24.1	9.9	5.2	4.1	1.2	0	1.0	0.2	0.3	0.0	0.8	0	0.0	0.0	0.9	0	0	14.5

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBW MODE: Avg. Auto Occupancy

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	1.18	1.17	1.20	1.19	1.21	1.21	1.18	1.20	1.49	1.00	1.50	0	1.37	1.33	1.00	0	1.00	0	0	0	0	0	1.15	1.19
2 DC NC	1.19	1.11	1.16	1.16	1.17	1.19	1.20	1.18	1.33	1.14	1.23	0	1.23	1.25	1.07	0	1.25	0	0	0	1.00	0	1.15	1.16
3 MTG	1.21	1.14	1.12	1.15	1.23	1.24	1.18	1.18	1.29	1.60	1.12	1.13	1.13	1.18	2.00	0	1.00	0	0	1.15	0	0	1.15	1.14
4 PG	1.19	1.13	1.16	1.09	1.21	1.24	1.25	1.19	1.59	1.22	1.47	1.33	1.11	1.11	1.13	1.13	1.10	0	0	0	0	1.17	1.15	1.13
5 ARLCR	1.19	1.14	1.15	1.18	1.05	1.17	1.16	1.16	1.18	1.00	0	0	0.50	2.00	0	0	0	0	1.00	0	0	0	1.17	1.14
6 ARNCR	1.19	1.16	1.18	1.18	1.16	1.16	1.13	1.13	1.20	1.16	0.59	0	1.27	0.98	0	0	1.50	0	0	0	0	0	1.15	1.16
7 ALX	1.23	1.19	1.26	1.16	1.18	1.16	1.10	1.13	1.29	1.22	0	0	1.50	1.19	4.00	0	1.25	0	1.00	0	1.00	0	1.15	1.15
8 FFX	1.54	1.33	1.37	1.18	1.41	1.30	1.17	1.12	1.11	1.10	1.04	0	1.51	1.24	2.33	0	1.23	1.12	1.14	1.17	1.16	0	1.15	1.16
9 LDN	2.12	1.70	1.29	1.42	1.98	1.81	1.50	1.20	1.09	1.11	1.12	1.00	1.45	0	0	0	0	1.13	1.25	1.11	1.00	0	1.15	1.13
10 PW	2.96	2.57	2.54	1.73	2.62	2.24	1.78	1.23	1.14	1.08	1.14	0	0	2.26	0	0	0	1.11	1.12	1.14	1.15	1.22	1.15	1.16
11 FRD	2.22	1.81	1.28	1.31	2.78	2.17	2.04	2.02	1.14	0	1.06	1.12	1.16	1.18	0	0	0	1.00	0	1.13	0	0	1.15	1.10
12 CAR	0	1.31	1.17	1.17	0	0	0	0	1.15	0	1.13	1.04	1.13	1.15	0	0	0	0	0	1.25	0	0	1.15	1.08
13 HOW	1.24	1.16	1.14	1.11	1.17	1.24	1.84	1.23	1.10	0	1.14	1.11	1.06	1.10	0	0	1.00	0	0	1.23	0	0	1.15	1.10
14 AAR	1.40	1.23	1.24	1.14	1.31	1.32	1.44	1.31	1.64	1.00	1.22	1.33	1.11	1.07	1.11	1.23	1.16	0	0	0	0	0	1.15	1.09
15 CAL	1.28	1.18	1.22	1.13	1.31	1.46	1.39	1.28	0	0	0	0	1.16	1.13	1.06	1.11	1.14	0	0	0	0	1.27	1.15	1.10
16 STM	1.41	1.20	1.21	1.15	1.53	1.57	1.46	1.29	0	0	0	0	1.00	1.22	1.12	1.07	1.12	0	0	0	0	1.17	1.13	1.08
17 CHS	1.25	1.16	1.18	1.12	1.39	1.41	1.32	1.25	1.03	2.00	0	0	1.06	1.17	1.12	1.13	1.06	0	0	0	2.00	1.16	1.14	1.10
18 FAU	0	0	1.00	0	0	0	0	1.39	1.13	1.12	1.10	0	0	0	0	0	0	1.05	1.11	1.13	1.14	1.22	1.15	1.09
19 STA	5.99	2.19	1.00	2.50	3.14	2.75	2.36	1.40	1.12	1.11	0	0	0	0	0	0	1.00	1.12	1.06	0	1.10	1.12	1.15	1.09
20 CL/JF	3.32	2.17	1.61	1.99	3.99	1.50	0	1.47	1.15	1.23	1.14	1.14	1.25	0	0	0	0	1.14	0	1.05	0	0	1.15	1.09
21 SP/FB	2.00	0	0	0	1.00	4.00	1.75	1.59	1.00	1.16	0	0	0	0	0	0	0	1.12	1.11	0	1.05	1.15	1.15	1.07
22 KGEO	0	0	0	1.00	0	0	0	0	0	2.00	0	0	0	0	0	1.50	1.11	0	1.12	0	1.14	1.05	1.15	1.06
23 EXTL	1.15	1.15	1.15	1.15	1.14	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	1.26	1.16	1.14	1.11	1.28	1.25	1.19	1.15	1.10	1.09	1.09	1.08	1.10	1.10	1.07	1.08	1.07	1.08	1.08	1.09	1.08	1.10	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: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBS 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	4344	3091	545	1539	342	2731	443	434	173	65	26	4	42	153	13	73	55	12	467	35	1085	2	7	15681
2 DC NC	6741	73002	23369	34351	1040	9457	1788	1564	957	181	75	14	254	751	51	307	237	39	2614	159	4032	24	89	161097
3 MTG	336	8117	495233	44460	115	965	168	1919	2182	393	940	66	3923	1991	70	174	229	74	2698	249	3950	13	1101	569366
4 PG	350	4127	8796	345829	30	490	1563	1233	1030	288	107	29	3369	14963	289	545	11399	54	3020	134	5476	29	881	404031
5 ARLCR	100	109	39	51	3145	3192	294	450	40	8	4	0	3	16	2	4	13	1	66	2	118	0	2	7659
6 ARNCR	396	470	309	438	1542	75482	5443	12162	287	105	20	2	43	137	13	65	54	5	478	27	1072	3	43	98597
7 ALX	106	166	91	1716	232	16496	56203	14144	227	166	18	2	33	137	11	70	50	8	549	35	947	4	41	91452
8 FFX	144	388	2901	6506	565	23763	15118	537052	57023	20461	323	62	566	2324	195	950	734	241	6894	836	16993	81	337	694458
9 LDN	13	24	511	497	7	141	66	6283	173057	1255	422	29	187	797	23	10	87	117	2542	2143	4501	4	1114	193831
10 PW	15	32	578	702	9	199	120	5757	2257	230690	145	9	223	971	63	125	169	4585	8484	411	7815	45	300	263705
11 FRD	33	84	5008	1860	22	322	200	1155	4963	376	111680	1221	1057	1316	28	0	88	100	308	1099	0	0	6949	137870
12 CAR	26	46	761	1213	8	156	102	576	2318	61	504	46605	1658	708	17	0	48	2	0	92	0	0	21778	76679
13 HOW	3	9	2755	7271	2	45	20	86	217	52	436	285	87775	7727	21	35	31	8	111	94	0	0	10650	117633
14 AAR	23	53	567	7891	8	150	92	541	1407	197	81	13	4555	227574	704	206	189	18	1264	68	286	10	9865	255762
15 CAL	9	18	186	954	0	53	33	186	300	83	22	4	93	378	36494	2197	109	8	515	2	769	6	18	42437
16 STM	22	32	184	923	8	102	65	328	226	73	0	0	122	295	301	45897	839	0	1425	0	2016	3	19	52880
17 CHS	12	19	174	3828	1	51	38	224	748	95	3	0	87	189	966	948	77952	13	1331	1	1431	11	39	88161
18 FAU	5	16	209	320	6	48	35	228	1570	1371	40	0	43	35	0	0	34	38249	8154	67	2428	6	1218	54082
19 STA	1	0	9	3	0	2	1	4	15	863	0	0	0	4	0	3	2	9	75544	0	15399	0	123	91982
20 CL/JF	11	22	269	467	5	54	38	351	3400	133	64	4	160	267	0	0	1	43	662	34969	290	0	13805	55015
21 SP/FB	1	0	0	2	0	1	1	2	7	2	0	0	0	0	0	0	0	0	548	0	74550	0	1250	76364
22 KGEO	6	12	15	243	1	38	29	89	2	90	0	0	6	50	15	22	53	17	1812	0	1898	7229	514	12141
23 EXTL	16	100	954	1558	8	145	84	602	422	632	4618	9988	8271	24937	42	55	99	2889	475	2751	10453	541	0	69640
TOTAL	12713	89937	543464	462622	7096	134083	81945	585370	252829	257640	119528	58337	112470	285720	39318	51686	92473	46492	119961	43174	155509	8011	70143	3630522

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBS 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	4969	3907	681	2062	409	3353	557	571	259	95	35	6	59	227	19	129	80	18	730	63	1718	5	11	19963
2 DC NC	8582	87012	29515	47053	1291	12053	2361	2110	1503	288	122	28	374	1100	73	527	360	74	4210	266	6490	37	150	205580
3 MTG	424	10335	593367	59833	136	1278	234	2602	3289	623	1313	97	5427	2878	121	293	361	119	4538	397	6472	16	1813	695964
4 PG	452	5461	11660	424471	36	643	2036	1693	1675	445	177	41	4551	20645	428	876	15677	91	4922	243	9073	53	1440	506788
5 ARLCR	120	133	49	67	3205	3790	360	559	53	10	4	1	4	23	2	6	19	1	91	5	169	0	5	8676
6 ARNCR	488	592	407	561	1822	85689	6847	15584	409	147	33	8	59	190	17	103	81	10	690	47	1572	4	66	115426
7 ALX	143	211	128	2262	286	20856	63525	18186	343	226	27	4	51	196	16	115	70	13	811	59	1420	7	68	109025
8 FFX	181	532	4007	9016	708	30981	19581	646109	76971	27704	521	99	883	3697	319	1606	1209	350	10705	1399	26678	135	556	863948
9 LDN	18	32	777	845	12	205	94	8454	206123	1760	608	46	304	1390	41	18	143	170	4195	3025	7416	5	1828	237510
10 PW	18	41	877	1132	11	265	167	7822	3194	275490	224	14	372	1631	110	215	284	6312	12127	684	11876	80	496	323443
11 FRD	53	128	7009	3021	33	491	317	1842	7660	644	126601	1696	1590	2134	57	0	149	172	567	1582	0	0	11393	167140
12 CAR	38	75	1129	1925	13	244	169	952	3881	104	722	50229	2359	1110	29	0	83	4	0	150	0	0	35706	98922
13 HOW	3	12	3792	9813	2	67	28	135	355	90	621	392	99061	10528	35	62	51	11	200	156	0	0	17458	142872
14 AAR	31	78	852	10940	10	218	140	847	2437	328	142	19	6231	258184	981	345	303	29	2170	127	488	16	16167	301084
15 CAL	13	26	293	1408	1	77	49	299	525	138	39	7	153	571	41455	3056	165	13	894	2	1364	7	33	50588
16 STM	28	57	302	1516	10	155	100	539	396	125	0	0	210	492	432	51508	1179	0	2428	0	3400	4	31	62912
17 CHS	13	32	267	5331	2	71	52	343	1276	157	4	3	139	307	1338	1316	87837	22	2230	1	2379	15	63	103198
18 FAU	7	26	342	544	7	74	54	344	2266	1931	67	0	74	65	0	0	59	42041	11656	107	3768	9	1997	65438
19 STA	1	0	13	6	0	2	1	7	21	1176	0	0	1	8	0	4	3	12	86893	0	20629	1	202	108980
20 CL/JF	16	39	425	811	6	88	65	571	5031	216	93	7	268	474	0	0	2	68	1152	37828	496	0	22634	70290
21 SP/FB	1	0	0	3	0	1	2	4	12	2	0	0	0	0	0	0	0	0	745	0	80669	0	2051	83490
22 KGEO	10	20	27	408	3	60	45	148	3	143	0	0	11	87	22	39	79	29	2681	0	2722	7588	840	14965
23 EXTL	27	164	1558	2554	12	238	139	987	697	1032	7574	16375	13558	40883	70	90	160	4736	778	4506	17140	888	0	114166
TOTAL	15635	108913	657478	585583	8015	160899	96923	710708	318380	312874	138927	69072	135739	346821	45565	60308	108355	54295	155413	50647	205939	8870	115008	4470367

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

Simulation - Year: 2030 Alt: V2.2 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	1050	988	234	380	188	1227	160	135	40	4	1	0	4	3	0	0	3	0	1	0	0	0	0	4418
2 DC NC	2543	7816	5370	5484	373	2457	378	264	131	4	0	0	12	7	0	0	2	0	1	0	0	0	0	24842
3 MTG	44	676	18343	669	18	105	13	117	70	0	0	0	12	1	0	0	0	0	0	0	0	0	0	20070
4 PG	46	320	543	5129	6	43	58	46	49	2	0	0	16	21	0	0	0	0	0	0	0	0	0	6280
5 ARLCR	27	17	5	2	83	573	46	53	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	809
6 ARNCR	32	25	14	6	146	3936	372	766	19	3	0	0	1	1	0	0	1	0	0	0	0	0	0	5322
7 ALX	3	6	4	9	16	1119	1653	545	7	4	0	0	0	1	1	0	1	0	1	0	0	0	0	3368
8 FFX	3	12	123	33	65	2181	981	8749	918	175	1	0	0	2	0	0	0	0	0	0	0	0	0	13242
9 LDN	0	0	14	0	1	10	2	9	814	0	0	0	0	0	0	0	0	0	0	0	0	0	0	849
10 PW	0	0	11	1	0	9	0	48	3	2312	0	0	0	0	0	0	0	0	0	0	0	0	0	2383
11 FRD	0	1	6	2	0	3	1	4	4	0	52	0	0	0	0	0	0	0	0	0	0	0	0	72
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	2	12	0	0	1	1	3	0	0	0	13	2	0	0	0	0	0	0	0	0	0	34
14 AAR	0	1	9	6	0	3	1	8	16	0	0	0	2	4	0	0	0	0	0	0	0	0	0	49
15 CAL	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
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	14	0	0	0	0	0	0	14
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	3749	9862	24678	11732	896	11667	3666	10745	2078	2504	54	0	60	41	1	0	20	0	3	0	0	0	0	81754

Simulation - Year: 2030 Alt: V2.2 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: V2.2   Iter. i6 * W/Tran.Constraint *
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: 2030 Alt: V2.2   Iter. i6 * W/Tran.Constraint *
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	4344	3091	545	1539	342	2731	443	434	173	65	26	4	42	153	13	73	55	12	467	35	1085	2	7	15681
2 DC NC	6741	73002	23369	34351	1040	9457	1788	1564	957	181	75	14	254	751	51	307	237	39	2614	159	4032	24	89	161097
3 MTG	336	8117	495233	44460	115	965	168	1919	2182	393	940	66	3923	1991	70	174	229	74	2698	249	3950	13	1101	569366
4 PG	350	4127	8796	345829	30	490	1563	1233	1030	288	107	29	3369	14963	289	545	11399	54	3020	134	5476	29	881	404031
5 ARLCR	100	109	39	51	3145	3192	294	450	40	8	4	0	3	16	2	4	13	1	66	2	118	0	2	7659
6 ARNCR	396	470	309	438	1542	75482	5443	12162	287	105	20	2	43	137	13	65	54	5	478	27	1072	3	43	98597
7 ALX	106	166	91	1716	232	16496	56203	14144	227	166	18	2	33	137	11	70	50	8	549	35	947	4	41	91452
8 FFX	144	388	2901	6506	565	23763	15118	537052	57023	20461	323	62	566	2324	195	950	734	241	6894	836	16993	81	337	694458
9 LDN	13	24	511	497	7	141	66	6283	173057	1255	422	29	187	797	23	10	87	117	2542	2143	4501	4	1114	193831
10 PW	15	32	578	702	9	199	120	5757	2257	230690	145	9	223	971	63	125	169	4585	8484	411	7815	45	300	263705
11 FRD	33	84	5008	1860	22	322	200	1155	4963	376	111680	1221	1057	1316	28	0	88	100	308	1099	0	0	6949	137870
12 CAR	26	46	761	1213	8	156	102	576	2318	61	504	46605	1658	708	17	0	48	2	0	92	0	0	21778	76679
13 HOW	3	9	2755	7271	2	45	20	86	217	52	436	285	87775	7727	21	35	31	8	111	94	0	0	10650	117633
14 AAR	23	53	567	7891	8	150	92	541	1407	197	81	13	4555	227574	704	206	189	18	1264	68	286	10	9865	255762
15 CAL	9	18	186	954	0	53	33	186	300	83	22	4	93	378	36494	2197	109	8	515	2	769	6	18	42437
16 STM	22	32	184	923	8	102	65	328	226	73	0	0	122	295	301	45897	839	0	1425	0	2016	3	19	52880
17 CHS	12	19	174	3828	1	51	38	224	748	95	3	0	87	189	966	948	77952	13	1331	1	1431	11	39	88161
18 FAU	5	16	209	320	6	48	35	228	1570	1371	40	0	43	35	0	0	34	38249	8154	67	2428	6	1218	54082
19 STA	1	0	9	3	0	2	1	4	15	863	0	0	0	4	0	3	2	9	75544	0	15399	0	123	91982
20 CL/JF	11	22	269	467	5	54	38	351	3400	133	64	4	160	267	0	0	1	43	662	34969	290	0	13805	55015
21 SP/FB	1	0	0	2	0	1	1	2	7	2	0	0	0	0	0	0	0	0	548	0	74550	0	1250	76364
22 KGEO	6	12	15	243	1	38	29	89	2	90	0	0	6	50	15	22	53	17	1812	0	1898	7229	514	12141
23 EXTL	16	100	954	1558	8	145	84	602	422	632	4618	9988	8271	24937	42	55	99	2889	475	2751	10453	541	0	69640
TOTAL	12713	89937	543464	462622	7096	134083	81945	585370	252829	257640	119528	58337	112470	285720	39318	51686	92473	46492	119961	43174	155509	8011	70143	3630522

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

Simulation - Year: 2030 Alt: V2.2   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	4969	3907	681	2062	409	3353	557	571	259	95	35	6	59	227	19	129	80	18	730	63	1718	5	11	19963
2 DC NC	8582	87012	29515	47053	1291	12053	2361	2110	1503	288	122	28	374	1100	73	527	360	74	4210	266	6490	37	150	205580
3 MTG	424	10335	593367	59833	136	1278	234	2602	3289	623	1313	97	5427	2878	121	293	361	119	4538	397	6472	16	1813	695964
4 PG	452	5461	11660	424471	36	643	2036	1693	1675	445	177	41	4551	20645	428	876	15677	91	4922	243	9073	53	1440	506788
5 ARLCR	120	133	49	67	3205	3790	360	559	53	10	4	1	4	23	2	6	19	1	91	5	169	0	5	8676
6 ARNCR	488	592	407	561	1822	85689	6847	15584	409	147	33	8	59	190	17	103	81	10	690	47	1572	4	66	115426
7 ALX	143	211	128	2262	286	20856	63525	18186	343	226	27	4	51	196	16	115	70	13	811	59	1420	7	68	109025
8 FFX	181	532	4007	9016	708	30981	19581	646109	76971	27704	521	99	883	3697	319	1606	1209	350	10705	1399	26678	135	556	863948
9 LDN	18	32	777	845	12	205	94	8454	206123	1760	608	46	304	1390	41	18	143	170	4195	3025	7416	5	1828	237510
10 PW	18	41	877	1132	11	265	167	7822	3194	275490	224	14	372	1631	110	215	284	6312	12127	684	11876	80	496	323443
11 FRD	53	128	7009	3021	33	491	317	1842	7660	644	126601	1696	1590	2134	57	0	149	172	567	1582	0	0	11393	167140
12 CAR	38	75	1129	1925	13	244	169	952	3881	104	722	50229	2359	1110	29	0	83	4	0	150	0	0	35706	98922
13 HOW	3	12	3792	9813	2	67	28	135	355	90	621	392	99061	10528	35	62	51	11	200	156	0	0	17458	142872
14 AAR	31	78	852	10940	10	218	140	847	2437	328	142	19	6231	258184	981	345	303	29	2170	127	488	16	16167	301084
15 CAL	13	26	293	1408	1	77	49	299	525	138	39	7	153	571	41455	3056	165	13	894	2	1364	7	33	50588
16 STM	28	57	302	1516	10	155	100	539	396	125	0	0	210	492	432	51508	1179	0	2428	0	3400	4	31	62912
17 CHS	13	32	267	5331	2	71	52	343	1276	157	4	3	139	307	1338	1316	87837	22	2230	1	2379	15	63	103198
18 FAU	7	26	342	544	7	74	54	344	2266	1931	67	0	74	65	0	0	59	42041	11656	107	3768	9	1997	65438
19 STA	1	0	13	6	0	2	1	7	21	1176	0	0	1	8	0	4	3	12	86893	0	20629	1	202	108980
20 CL/JF	16	39	425	811	6	88	65	571	5031	216	93	7	268	474	0	0	2	68	1152	37828	496	0	22634	70290
21 SP/FB	1	0	0	3	0	1	2	4	12	2	0	0	0	0	0	0	0	0	745	0	80669	0	2051	83490
22 KGEO	10	20	27	408	3	60	45	148	3	143	0	0	11	87	22	39	79	29	2681	0	2722	7588	840	14965
23 EXTL	27	164	1558	2554	12	238	139	987	697	1032	7574	16375	13558	40883	70	90	160	4736	778	4506	17140	888	0	114166
TOTAL	15635	108913	657478	585583	8015	160899	96923	710708	318380	312874	138927	69072	135739	346821	45565	60308	108355	54295	155413	50647	205939	8870	115008	4470367

Simulation - Year: 2030 Alt: V2.2   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	6019	4895	915	2442	597	4580	717	706	299	99	36	6	63	230	19	129	83	18	731	63	1718	5	11	24381
2 DC NC	11124	94828	34885	52537	1664	14511	2739	2374	1634	292	122	28	386	1107	73	527	362	74	4211	266	6490	37	150	230422
3 MTG	468	11011	611710	60502	154	1383	247	2719	3359	623	1313	97	5439	2879	121	293	361	119	4538	397	6472	16	1813	716034
4 PG	498	5781	12203	429600	42	686	2094	1739	1724	447	177	41	4567	20666	428	876	15677	91	4922	243	9073	53	1440	513068
5 ARLCR	147	150	54	69	3288	4363	406	612	56	10	4	1	4	23	2	6	19	1	91	5	169	0	5	9485
6 ARNCR	520	617	421	567	1968	89625	7219	16350	428	150	33	8	60	191	17	103	82	10	690	47	1572	4	66	120748
7 ALX	146	217	132	2271	302	21975	65178	18731	350	230	27	4	51	197	17	115	71	13	812	59	1420	7	68	112393
8 FFX	184	544	4130	9049	773	33162	20562	654858	77889	27879	522	99	883	3699	319	1606	1209	350	10705	1399	26678	135	556	877190
9 LDN	18	32	791	845	13	215	96	8463	206937	1760	608	46	304	1390	41	18	143	170	4195	3025	7416	5	1828	238359
10 PW	18	41	888	1133	11	274	167	7870	3197	277802	224	14	372	1631	110	215	284	6312	12127	684	11876	80	496	325826
11 FRD	53	129	7015	3023	33	494	318	1846	7664	644	126653	1696	1590	2134	57	0	149	172	567	1582	0	0	11393	167212
12 CAR	38	75	1129	1925	13	244	169	952	3881	104	722	50229	2359	1110	29	0	83	4	0	150	0	0	35706	98922
13 HOW	3	12	3794	9825	2	67	29	136	358	90	621	392	99074	10530	35	62	51	11	200	156	0	0	17458	142906
14 AAR	31	79	861	10946	10	221	141	855	2453	328	142	19	6233	258188	981	345	303	29	2170	127	488	16	16167	301133
15 CAL	13	26	294	1408	1	77	49	299	526	138	39	7	153	571	41455	3056	165	13	894	2	1364	7	33	50590
16 STM	28	57	302	1516	10	155	100	539	396	125	0	0	210	492	432	51508	1179	0	2428	0	3400	4	31	62912
17 CHS	13	32	267	5331	2	71	52	343	1276	157	4	3	139	307	1338	1316	87851	22	2230	1	2379	15	63	103212
18 FAU	7	26	342	544	7	74	54	344	2266	1931	67	0	74	65	0	0	59	42041	11656	107	3768	9	1997	65438
19 STA	1	0	13	6	0	2	1	7	21	1176	0	0	1	8	0	4	3	12	86893	0	20629	1	202	108980
20 CL/JF	16	39	425	811	6	88	65	571	5031	216	93	7	268	474	0	0	2	68	1152	37828	496	0	22634	70290
21 SP/FB	1	0	0	3	0	1	2	4	12	2	0	0	0	0	0	0	0	0	745	0	80669	0	2051	83490
22 KGEO	10	20	27	408	3	60	45	148	3	143	0	0	11	87	22	39	79	29	2681	0	2722	7588	840	14965
23 EXTL	27	164	1558	2554	12	238	139	987	697	1032	7574	16375	13558	40883	70	90	160	4736	778	4506	17140	888	0	114166
TOTAL	19384	118775	682156	597315	8912	172566	100589	721453	320457	315378	138981	69072	135799	346862	45566	60308	108375	54295	155416	50647	205939	8870	115008	4552122

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

Simulation - Year: 2030 Alt: V2.2 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	17.4	20.2	25.6	15.6	31.5	26.8	22.3	19.1	13.4	4.0	2.8	0	6.3	1.3	0	0	3.6	0	0.1	0	0	0	0	18.1
2 DC NC	22.9	8.2	15.4	10.4	22.4	16.9	13.8	11.1	8.0	1.3	0	0	3.1	0.6	0	0	0.6	0	0.0	0	0	0	0	10.8
3 MTG	9.5	6.1	3.0	1.1	11.8	7.6	5.3	4.3	2.1	0	0	0	0.2	0.0	0	0	0	0	0	0	0	0	0	2.8
4 PG	9.3	5.5	4.4	1.2	14.4	6.3	2.8	2.6	2.8	0.4	0	0	0.4	0.1	0	0	0	0	0	0	0	0	0	1.2
5 ARLCR	18.4	11.3	9.3	2.9	2.5	13.1	11.3	8.7	5.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.5
6 ARNCR	6.2	4.1	3.3	1.0	7.4	4.4	5.2	4.7	4.4	2.0	0	0	0.9	0.5	0	0	0.6	0	0	0	0	0	0	4.4
7 ALX	2.2	2.6	3.2	0.4	5.3	5.1	2.5	2.9	2.0	1.7	0	0	0	0.3	3.1	0	0.7	0	0.1	0	0	0	0	3.0
8 FFX	1.4	2.2	3.0	0.4	8.4	6.6	4.8	1.3	1.2	0.6	0.1	0	0	0.0	0	0	0	0	0	0	0	0	0	1.5
9 LDN	0	0	1.7	0	4.1	4.7	2.1	0.1	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
10 PW	0	0	1.2	0.0	0	3.3	0	0.6	0.1	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7
11 FRD	0	0.8	0.1	0.1	0	0.6	0.3	0.2	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	0.1	0.1	0	0	3.2	0.7	0.8	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0	1.3	1.0	0.1	0	1.3	0.7	0.9	0.7	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0.3	0	0	0	0	0	0.2	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	19.3	8.3	3.6	2.0	10.1	6.8	3.6	1.5	0.6	0.8	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0	0	1.8

Simulation - Year: 2030 Alt: V2.2 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	1.14	1.26	1.25	1.34	1.20	1.23	1.26	1.32	1.50	1.46	1.35	1.50	1.40	1.48	1.46	1.77	1.45	1.50	1.56	1.80	1.58	2.50	1.57	1.27
2 DC NC	1.27	1.19	1.26	1.37	1.24	1.27	1.32	1.35	1.57	1.59	1.63	2.00	1.47	1.46	1.43	1.72	1.52	1.90	1.61	1.67	1.61	1.54	1.69	1.28
3 MTG	1.26	1.27	1.20	1.35	1.18	1.32	1.39	1.36	1.51	1.59	1.40	1.47	1.38	1.45	1.73	1.68	1.58	1.61	1.68	1.59	1.64	1.23	1.65	1.22
4 PG	1.29	1.32	1.33	1.23	1.20	1.31	1.30	1.37	1.63	1.55	1.65	1.41	1.35	1.38	1.48	1.61	1.38	1.69	1.63	1.81	1.66	1.83	1.63	1.25
5 ARLCR	1.20	1.22	1.26	1.31	1.02	1.19	1.22	1.24	1.33	1.25	1.00	1.00	1.33	1.44	1.00	1.50	1.46	1.00	1.38	2.50	1.43	0	2.50	1.13
6 ARNCR	1.23	1.26	1.32	1.28	1.18	1.14	1.26	1.28	1.43	1.40	1.65	4.00	1.37	1.39	1.31	1.58	1.50	2.00	1.44	1.74	1.47	1.33	1.53	1.17
7 ALX	1.35	1.27	1.41	1.32	1.24	1.26	1.13	1.29	1.51	1.36	1.50	2.00	1.55	1.43	1.50	1.64	1.40	1.63	1.48	1.69	1.50	1.75	1.66	1.19
8 FFX	1.26	1.37	1.38	1.39	1.25	1.30	1.30	1.20	1.35	1.35	1.61	1.60	1.56	1.59	1.64	1.69	1.65	1.45	1.55	1.67	1.57	1.67	1.65	1.24
9 LDN	1.38	1.33	1.52	1.70	1.69	1.45	1.42	1.35	1.19	1.40	1.44	1.59	1.63	1.74	1.78	1.80	1.64	1.45	1.65	1.41	1.65	1.25	1.64	1.23
10 PW	1.20	1.28	1.52	1.61	1.22	1.33	1.39	1.36	1.42	1.19	1.54	1.56	1.67	1.68	1.75	1.72	1.68	1.38	1.43	1.66	1.52	1.78	1.65	1.23
11 FRD	1.61	1.52	1.40	1.62	1.50	1.52	1.58	1.59	1.54	1.71	1.13	1.39	1.50	1.62	2.04	0	1.69	1.72	1.84	1.44	0	0	1.64	1.21
12 CAR	1.46	1.63	1.48	1.59	1.63	1.56	1.66	1.65	1.67	1.70	1.43	1.08	1.42	1.57	1.71	0	1.73	2.00	0	1.63	0	0	1.64	1.29
13 HOW	1.00	1.33	1.38	1.35	1.00	1.49	1.40	1.57	1.64	1.73	1.42	1.38	1.13	1.36	1.67	1.77	1.65	1.38	1.80	1.66	0	0	1.64	1.21
14 AAR	1.35	1.47	1.50	1.39	1.25	1.45	1.52	1.57	1.73	1.66	1.75	1.46	1.37	1.13	1.39	1.67	1.60	1.61	1.72	1.87	1.71	1.60	1.64	1.18
15 CAL	1.44	1.44	1.58	1.48	1.00	1.45	1.48	1.61	1.75	1.66	1.77	1.75	1.65	1.51	1.14	1.39	1.51	1.63	1.74	1.00	1.77	1.17	1.83	1.19
16 STM	1.27	1.78	1.64	1.64	1.25	1.52	1.54	1.64	1.75	1.71	0	0	1.72	1.67	1.44	1.12	1.41	0	1.70	0	1.69	1.33	1.63	1.19
17 CHS	1.08	1.68	1.53	1.39	2.00	1.39	1.37	1.53	1.71	1.65	1.33	3.00	1.60	1.62	1.39	1.39	1.13	1.69	1.68	1.00	1.66	1.36	1.62	1.17
18 FAU	1.40	1.63	1.64	1.70	1.17	1.54	1.54	1.51	1.44	1.41	1.68	0	1.72	1.86	0	0	1.74	1.10	1.43	1.60	1.55	1.50	1.64	1.21
19 STA	1.00	0	1.44	2.00	0	1.00	1.00	1.75	1.40	1.36	0	0	1.00	2.00	0	1.33	1.50	1.33	1.15	0	1.34	1.00	1.64	1.18
20 CL/JF	1.45	1.77	1.58	1.74	1.20	1.63	1.71	1.63	1.48	1.62	1.45	1.75	1.68	1.78	0	0	2.00	1.58	1.74	1.08	1.71	0	1.64	1.28
21 SP/FB	1.00	0	0	1.50	0	1.00	2.00	2.00	1.71	1.00	0	0	0	0	0	0	0	0	1.36	0	1.08	0	1.64	1.09
22 KGEO	1.67	1.67	1.80	1.68	3.00	1.58	1.55	1.66	1.50	1.59	0	0	1.83	1.74	1.47	1.77	1.49	1.71	1.48	0	1.43	1.05	1.63	1.23
23 EXTL	1.69	1.64	1.63	1.64	1.50	1.64	1.65	1.64	1.65	1.63	1.64	1.64	1.64	1.64	1.67	1.64	1.62	1.64	1.64	1.64	1.64	1.64	0	1.64
TOTAL	1.23	1.21	1.21	1.27	1.13	1.20	1.18	1.21	1.26	1.21	1.16	1.18	1.21	1.21	1.16	1.17	1.17	1.17	1.30	1.17	1.32	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: V2.2   Iter. i6 * W/Tran.Constraint *
Purpose: HBO   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	17586	9766	1122	1381	358	1823	383	921	16	10	3	1	7	23	2	1	6	4	4	1	2	1	749	34170
2 DC NC	73057	313906	60812	45669	3365	16962	4799	11154	333	69	8	6	516	801	24	10	93	29	33	17	69	21	10403	542156
3 MTG	14467	51204	1367739	60719	1291	7917	1526	25041	1909	153	8209	620	18762	3856	20	18	57	63	136	209	189	23	37718	1601846
4 PG	30983	87234	45080	839365	1314	6428	11572	11234	344	164	49	36	11278	29117	843	272	15210	62	152	39	171	60	22704	1113710
5 ARLCR	1142	1084	318	121	6275	4169	666	1439	20	10	2	0	0	2	0	0	1	0	2	2	4	0	227	15484
6 ARNCR	13596	10977	4432	1783	7831	182928	20630	57681	897	260	3	2	19	50	1	7	12	11	20	17	44	13	4221	305435
7 ALX	5601	4902	993	2719	2267	22820	91318	34659	112	360	3	3	13	37	3	4	37	14	12	7	26	7	2105	168021
8 FFX	13277	11782	12103	8764	5030	61727	52044	1462512	79533	26753	55	32	125	300	17	30	147	547	507	113	290	57	23984	1759728
9 LDN	225	202	893	187	50	635	146	37437	548725	3510	1851	23	66	129	4	1	29	910	66	5154	88	1	9555	609887
10 PW	1051	710	689	533	367	3604	3500	99879	23082	578888	57	16	132	371	16	10	50	3604	6563	224	966	139	11777	736228
11 FRD	293	318	28240	581	33	259	168	960	4704	161	384960	6689	7405	636	10	0	27	99	20	5660	0	0	21336	462559
12 CAR	236	275	2563	476	34	232	140	542	284	32	6442	163579	7456	440	6	0	25	2	0	48	0	0	22434	205246
13 HOW	221	758	17020	12438	8	71	44	228	111	35	1925	1787	249874	19502	4	4	27	4	5	60	0	2	20285	324413
14 AAR	1413	3688	3046	38787	73	439	361	1015	367	163	119	50	25163	614547	1672	86	309	5	80	45	7	32	45551	737019
15 CAL	344	738	407	5563	28	173	168	526	149	65	21	9	94	3828	121047	7657	1930	4	58	0	76	43	1152	144080
16 STM	249	293	347	968	28	237	78	477	43	50	0	0	89	245	2976	151443	5715	0	52	0	110	595	883	164878
17 CHS	842	1564	384	21207	30	274	847	1247	233	89	15	9	84	368	1570	4188	235015	51	94	4	196	2479	2405	273195
18 FAU	325	304	719	369	40	307	198	7442	4860	12497	69	3	89	75	0	1	61	104252	8232	650	1872	135	5768	148268
19 STA	48	45	96	56	7	47	42	473	66	3631	0	0	7	18	2	8	12	706	173441	7	29628	246	6108	214694
20 CL/JF	324	443	903	391	49	301	169	841	8704	360	4979	32	156	144	1	0	1	957	41	108232	10	0	10818	137856
21 SP/FB	120	153	70	84	23	128	75	298	78	121	0	0	0	0	1	14	52	147	12943	2	184061	33	22506	220909
22 KGEO	140	168	35	186	26	137	90	243	4	155	0	0	4	28	8	50	280	246	1201	0	525	37143	979	41648
23 EXTL	2493	6683	24229	15392	315	3033	1645	15747	8074	6338	14870	12696	17809	38293	587	505	1375	3008	4109	10268	17504	697	0	205670
TOTAL	178032	507196	1572239	1057739	28841	314651	190610	1771996	682648	633875	423640	185593	339148	712810	128814	164309	260472	114725	207771	130759	235838	41727	283668	10167100

Simulation - Year: 2030 Alt: V2.2   Iter. i6 * W/Tran.Constraint *
Purpose: HBO   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	20975	13408	1523	1938	468	2415	520	1286	24	12	3	1	11	34	3	2	7	9	5	1	2	1	1213	43861
2 DC NC	102760	410663	88273	69539	4695	23932	6978	16602	504	105	14	11	766	1262	40	17	143	39	44	29	94	32	16792	743335
3 MTG	20522	75014	1777693	91880	1806	11414	2284	37688	2915	233	12666	969	28842	5922	22	33	83	93	222	329	277	34	60833	2131775
4 PG	44396	130835	67394	1087083	1877	9277	17159	17088	537	258	87	50	17193	44825	1308	424	23568	95	228	62	266	102	36610	1500722
5 ARLCR	1522	1460	433	165	6536	5485	905	1964	29	17	3	0	0	3	0	0	1	1	2	2	4	0	369	18901
6 ARNCR	18798	15427	6316	2596	10641	223864	29606	84500	1334	389	8	3	31	67	3	9	19	17	25	23	63	17	6815	400571
7 ALX	7854	7019	1425	3997	3186	32430	112106	50686	170	534	3	5	22	59	3	7	53	21	25	9	30	12	3392	223048
8 FFX	19156	17449	17991	13340	7155	89878	77041	1917746	121506	40982	83	43	196	454	30	44	215	862	787	164	430	104	38674	2364331
9 LDN	321	315	1354	290	75	918	223	56935	685572	5413	2875	36	112	198	6	2	38	1422	102	8021	142	3	15421	779794
10 PW	1528	1062	1028	818	523	5253	5218	152610	35663	729696	85	28	212	579	26	18	81	5586	10130	339	1486	211	18991	971171
11 FRD	425	477	43417	893	50	374	249	1461	7285	248	486303	10404	11485	991	13	0	47	158	33	8794	0	0	34411	607519
12 CAR	344	410	3948	738	51	340	212	836	442	54	10006	203318	11563	681	8	0	38	7	0	75	0	0	36180	269251
13 HOW	316	1143	26088	19028	14	100	65	347	170	57	2990	2776	295574	29987	7	6	37	5	8	97	0	3	32718	411536
14 AAR	2040	5582	4628	59706	108	621	545	1543	573	262	178	82	38600	793163	2603	131	479	14	129	73	11	52	73469	984593
15 CAL	501	1121	615	8624	41	248	253	801	233	110	41	14	147	5953	138457	11881	3000	6	98	1	131	64	1859	174199
16 STM	365	441	552	1505	42	351	115	760	68	88	0	1	147	384	4616	178309	8890	0	85	0	172	923	1423	199237
17 CHS	1225	2367	581	32796	46	397	1263	1917	356	144	27	16	129	573	2442	6526	274083	88	142	6	302	3858	3882	333166
18 FAU	474	455	1081	573	60	443	294	11443	7546	19376	110	7	143	136	6	1	98	114585	12827	1014	2894	219	9303	183088
19 STA	71	68	145	87	10	69	62	729	103	5628	0	0	13	35	4	10	20	1100	216641	14	45706	385	9851	280751
20 CL/JF	471	670	1362	620	69	434	258	1283	13472	562	7706	47	245	230	1	0	1	1482	70	119538	16	0	17444	165981
21 SP/FB	175	234	124	142	30	188	113	456	128	187	0	0	0	0	1	24	77	226	19886	2	244328	50	36302	302673
22 KGEO	203	252	55	289	41	215	136	384	14	242	0	0	4	43	12	78	435	387	1865	0	813	40789	1579	47836
23 EXTL	4018	10791	39059	24833	517	4885	2651	25401	13019	10226	23988	20481	28715	61768	947	813	2214	4847	6633	16562	28234	1120	0	331722
TOTAL	248460	696662	2085085	1421480	38043	413532	258257	2384466	891663	814823	547176	238292	434150	947347	150558	198335	313628	131050	269987	155155	325401	47979	457531	13469061

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Transit

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	14321	8162	1402	1339	683	2830	422	805	8	5	0	0	2	0	0	0	0	0	0	0	0	0	0	29979
2 DC NC	45666	38827	16581	10181	1828	6268	1390	2377	35	3	0	0	32	14	0	0	1	0	0	0	0	0	0	123202
3 MTG	7032	9395	48853	3416	424	1410	213	1554	42	1	5	0	43	11	0	0	2	0	0	0	0	0	0	72399
4 PG	9434	8825	3753	9560	313	952	467	338	11	2	0	0	49	33	1	0	0	0	0	0	0	0	0	33739
5 ARLCR	1805	627	190	63	433	1799	343	613	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	5880
6 ARNCR	13041	2623	952	286	3442	18940	4068	9665	114	26	0	0	1	2	0	0	1	0	0	0	0	0	0	53160
7 ALX	3058	668	148	124	741	4413	4021	2900	12	11	0	0	0	0	0	0	0	0	1	0	0	0	0	16096
8 FFX	4953	1136	911	208	1292	9352	4178	22055	1236	114	0	0	0	1	0	0	1	0	0	0	0	0	0	45436
9 LDN	20	8	8	1	6	50	3	196	1012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1304
10 PW	110	22	10	1	32	178	115	376	1	2894	0	0	0	0	0	0	0	0	1	0	0	0	0	3740
11 FRD	8	1	15	1	0	1	0	1	0	0	328	0	0	0	0	0	0	0	0	0	0	0	0	354
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	13	2	23	27	1	0	0	2	0	0	0	0	35	5	0	0	0	0	0	0	0	0	0	108
14 AAR	55	23	14	43	2	7	1	12	1	0	0	0	10	4	0	0	0	0	0	0	0	0	0	171
15 CAL	2	1	0	0	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	3	0	0	0	0	0	0	0	3
17 CHS	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	35
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	1	0	0	0	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	99520	70321	72859	25250	9196	46199	15220	40893	2476	3059	333	0	172	70	1	3	37	0	2	0	0	0	0	385611

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: HOV 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	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: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBO 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: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBO 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	17586	9766	1122	1381	358	1823	383	921	16	10	3	1	7	23	2	1	6	4	4	1	2	1	749	34170
2 DC NC	73057	313906	60812	45669	3365	16962	4799	11154	333	69	8	6	516	801	24	10	93	29	33	17	69	21	10403	542156
3 MTG	14467	51204	1367739	60719	1291	7917	1526	25041	1909	153	8209	620	18762	3856	20	18	57	63	136	209	189	23	37718	1601846
4 PG	30983	87234	45080	839365	1314	6428	11572	11234	344	164	49	36	11278	29117	843	272	15210	62	152	39	171	60	22704	1113710
5 ARLCR	1142	1084	318	121	6275	4169	666	1439	20	10	2	0	0	2	0	0	1	0	2	2	4	0	227	15484
6 ARNCR	13596	10977	4432	1783	7831	182928	20630	57681	897	260	3	2	19	50	1	7	12	11	20	17	44	13	4221	305435
7 ALX	5601	4902	993	2719	2267	22820	91318	34659	112	360	3	3	13	37	3	4	37	14	12	7	26	7	2105	168021
8 FFX	13277	11782	12103	8764	5030	61727	52044	1462512	79533	26753	55	32	125	300	17	30	147	547	507	113	290	57	23984	1759728
9 LDN	225	202	893	187	50	635	146	37437	548725	3510	1851	23	66	129	4	1	29	910	66	5154	88	1	9555	609887
10 PW	1051	710	689	533	367	3604	3500	99879	23082	578888	57	16	132	371	16	10	50	3604	6563	224	966	139	11777	736228
11 FRD	293	318	28240	581	33	259	168	960	4704	161	384960	6689	7405	636	10	0	27	99	20	5660	0	0	21336	462559
12 CAR	236	275	2563	476	34	232	140	542	284	32	6442	163579	7456	440	6	0	25	2	0	48	0	0	22434	205246
13 HOW	221	758	17020	12438	8	71	44	228	111	35	1925	1787	249874	19502	4	4	27	4	5	60	0	2	20285	324413
14 AAR	1413	3688	3046	38787	73	439	361	1015	367	163	119	50	25163	614547	1672	86	309	5	80	45	7	32	45551	737019
15 CAL	344	738	407	5563	28	173	168	526	149	65	21	9	94	3828	121047	7657	1930	4	58	0	76	43	1152	144080
16 STM	249	293	347	968	28	237	78	477	43	50	0	0	89	245	2976	151443	5715	0	52	0	110	595	883	164878
17 CHS	842	1564	384	21207	30	274	847	1247	233	89	15	9	84	368	1570	4188	235015	51	94	4	196	2479	2405	273195
18 FAU	325	304	719	369	40	307	198	7442	4860	12497	69	3	89	75	0	1	61	104252	8232	650	1872	135	5768	148268
19 STA	48	45	96	56	7	47	42	473	66	3631	0	0	7	18	2	8	12	706	173441	7	29628	246	6108	214694
20 CL/JF	324	443	903	391	49	301	169	841	8704	360	4979	32	156	144	1	0	1	957	41	108232	10	0	10818	137856
21 SP/FB	120	153	70	84	23	128	75	298	78	121	0	0	0	0	1	14	52	147	12943	2	184061	33	22506	220909
22 KGEO	140	168	35	186	26	137	90	243	4	155	0	0	4	28	8	50	280	246	1201	0	525	37143	979	41648
23 EXTL	2493	6683	24229	15392	315	3033	1645	15747	8074	6338	14870	12696	17809	38293	587	505	1375	3008	4109	10268	17504	697	0	205670
TOTAL	178032	507196	1572239	1057739	28841	314651	190610	1771996	682648	633875	423640	185593	339148	712810	128814	164309	260472	114725	207771	130759	235838	41727	283668	10167100

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

Simulation - Year: 2030 Alt: V2.2 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	20975	13408	1523	1938	468	2415	520	1286	24	12	3	1	11	34	3	2	7	9	5	1	2	1	1213	43861
2 DC NC	102760	410663	88273	69539	4695	23932	6978	16602	504	105	14	11	766	1262	40	17	143	39	44	29	94	32	16792	743335
3 MTG	20522	75014	1777693	91880	1806	11414	2284	37688	2915	233	12666	969	28842	5922	22	33	83	93	222	329	277	34	60833	2131775
4 PG	44396	130835	67394	1087083	1877	9277	17159	17088	537	258	87	50	17193	44825	1308	424	23568	95	228	62	266	102	36610	1500722
5 ARLCR	1522	1460	433	165	6536	5485	905	1964	29	17	3	0	0	3	0	0	1	1	2	2	4	0	369	18901
6 ARNCR	18798	15427	6316	2596	10641	223864	29606	84500	1334	389	8	3	31	67	3	9	19	17	25	23	63	17	6815	400571
7 ALX	7854	7019	1425	3997	3186	32430	112106	50686	170	534	3	5	22	59	3	7	53	21	25	9	30	12	3392	223048
8 FFX	19156	17449	17991	13340	7155	89878	77041	1917746	121506	40982	83	43	196	454	30	44	215	862	787	164	430	104	38674	2364331
9 LDN	321	315	1354	290	75	918	223	56935	685572	5413	2875	36	112	198	6	2	38	1422	102	8021	142	3	15421	779794
10 PW	1528	1062	1028	818	523	5253	5218	152610	35663	729696	85	28	212	579	26	18	81	5586	10130	339	1486	211	18991	971171
11 FRD	425	477	43417	893	50	374	249	1461	7285	248	486303	10404	11485	991	13	0	47	158	33	8794	0	0	34411	607519
12 CAR	344	410	3948	738	51	340	212	836	442	54	10006	203318	11563	681	8	0	38	7	0	75	0	0	36180	269251
13 HOW	316	1143	26088	19028	14	100	65	347	170	57	2990	2776	295574	29987	7	6	37	5	8	97	0	3	32718	411536
14 AAR	2040	5582	4628	59706	108	621	545	1543	573	262	178	82	38600	793163	2603	131	479	14	129	73	11	52	73469	984593
15 CAL	501	1121	615	8624	41	248	253	801	233	110	41	14	147	5953	138457	11881	3000	6	98	1	131	64	1859	174199
16 STM	365	441	552	1505	42	351	115	760	68	88	0	1	147	384	4616	178309	8890	0	85	0	172	923	1423	199237
17 CHS	1225	2367	581	32796	46	397	1263	1917	356	144	27	16	129	573	2442	6526	274083	88	142	6	302	3858	3882	333166
18 FAU	474	455	1081	573	60	443	294	11443	7546	19376	110	7	143	136	6	1	98	114585	12827	1014	2894	219	9303	183088
19 STA	71	68	145	87	10	69	62	729	103	5628	0	0	13	35	4	10	20	1100	216641	14	45706	385	9851	280751
20 CL/JF	471	670	1362	620	69	434	258	1283	13472	562	7706	47	245	230	1	0	1	1482	70	119538	16	0	17444	165981
21 SP/FB	175	234	124	142	30	188	113	456	128	187	0	0	0	0	1	24	77	226	19886	2	244328	50	36302	302673
22 KGEO	203	252	55	289	41	215	136	384	14	242	0	0	4	43	12	78	435	387	1865	0	813	40789	1579	47836
23 EXTL	4018	10791	39059	24833	517	4885	2651	25401	13019	10226	23988	20481	28715	61768	947	813	2214	4847	6633	16562	28234	1120	0	331722
TOTAL	248460	696662	2085085	1421480	38043	413532	258257	2384466	891663	814823	547176	238292	434150	947347	150558	198335	313628	131050	269987	155155	325401	47979	457531	13469061

Simulation - Year: 2030 Alt: V2.2 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	35296	21570	2925	3277	1151	5245	942	2091	32	17	3	1	13	34	3	2	7	9	5	1	2	1	1213	73840
2 DC NC	148426	449490	104854	79720	6524	30200	8368	18979	539	108	14	11	798	1276	40	17	144	39	44	29	94	32	16792	866537
3 MTG	27554	84409	1826546	95296	2230	12824	2497	39241	2957	234	12671	969	28885	5933	22	33	85	93	222	329	277	34	60833	2204174
4 PG	53831	139660	71147	1096643	2190	10229	17626	17426	548	260	87	50	17242	44858	1309	424	23568	95	228	62	266	102	36610	1534461
5 ARLCR	3327	2087	623	228	6969	7284	1248	2577	33	20	3	0	0	3	0	0	1	1	2	2	4	0	369	24781
6 ARNCR	31839	18050	7268	2882	14083	242804	33674	94165	1448	415	8	3	32	69	3	9	20	17	25	23	63	17	6815	453731
7 ALX	10911	7687	1573	4121	3927	36843	116127	53586	182	545	3	5	22	59	3	7	53	21	26	9	30	12	3392	239144
8 FFX	24109	18585	18902	13548	8447	99230	81219	1939801	122742	41096	83	43	196	455	30	44	216	862	787	164	430	104	38674	2409767
9 LDN	341	323	1362	291	81	968	226	57131	686584	5413	2875	36	112	198	6	2	38	1422	102	8021	142	3	15421	781098
10 PW	1638	1084	1038	819	555	5431	5333	152986	35664	732590	85	28	212	579	26	18	81	5586	10131	339	1486	211	18991	974911
11 FRD	433	478	43432	894	50	375	249	1462	7285	248	486631	10404	11485	991	13	0	47	158	33	8794	0	0	34411	607873
12 CAR	344	410	3948	738	51	340	212	836	442	54	10006	203318	11563	681	8	0	38	7	0	75	0	0	36180	269251
13 HOW	329	1145	26111	19055	15	100	65	349	170	57	2990	2776	295609	29992	7	6	37	5	8	97	0	3	32718	411644
14 AAR	2095	5605	4642	59749	110	628	546	1555	574	262	178	82	38610	793167	2603	131	479	14	129	73	11	52	73469	984764
15 CAL	503	1122	615	8624	41	248	253	801	233	110	41	14	147	5953	138457	11881	3000	6	98	1	131	64	1859	174202
16 STM	365	441	552	1505	42	351	115	760	68	88	0	1	147	384	4616	178312	8890	0	85	0	172	923	1423	199240
17 CHS	1227	2367	581	32796	46	397	1263	1917	356	144	27	16	129	573	2442	6526	274116	88	142	6	302	3858	3882	333201
18 FAU	474	455	1081	573	60	443	294	11443	7546	19376	110	7	143	136	6	1	98	114585	12827	1014	2894	219	9303	183088
19 STA	71	68	145	87	10	69	62	729	103	5628	0	0	13	35	4	10	20	1100	216641	14	45706	385	9851	280751
20 CL/JF	471	670	1362	620	69	434	258	1283	13472	562	7706	47	245	230	1	0	1	1482	70	119538	16	0	17444	165981
21 SP/FB	176	234	124	142	30	188	113	456	128	187	0	0	0	0	1	24	77	226	19886	2	244328	50	36302	302674
22 KGEO	203	252	55	289	41	215	136	384	14	242	0	0	4	43	12	78	435	387	1865	0	813	40789	1579	47836
23 EXTL	4018	10791	39059	24833	517	4885	2651	25401	13019	10226	23988	20481	28715	61768	947	813	2214	4847	6633	16562	28234	1120	0	331722
TOTAL	347980	766983	2157945	1446730	47239	459731	273477	2425359	894139	817882	547509	238292	434322	947417	150559	198338	313665	131050	269989	155155	325401	47979	457531	13854672

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Transit Percentage

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	40.6	37.8	47.9	40.9	59.3	54.0	44.8	38.5	25.0	29.4	0	0	15.4	0	0	0	0	0	0	0	0	0	0	40.6
2 DC NC	30.8	8.6	15.8	12.8	28.0	20.8	16.6	12.5	6.5	3.0	0	0	4.0	1.1	0	0	0.7	0	0	0	0	0	0	14.2
3 MTG	25.5	11.1	2.7	3.6	19.0	11.0	8.5	4.0	1.4	0.3	0.0	0	0.1	0.2	0	0	2.4	0	0	0	0	0	0	3.3
4 PG	17.5	6.3	5.3	0.9	14.3	9.3	2.7	1.9	2.0	0.6	0	0	0.3	0.1	0.1	0	0	0	0	0	0	0	0	2.2
5 ARLCR	54.3	30.0	30.5	27.6	6.2	24.7	27.5	23.8	12.1	15.0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.7
6 ARNCR	41.0	14.5	13.1	9.9	24.4	7.8	12.1	10.3	7.9	6.3	0	0	2.2	3.0	0	0	3.5	0	0	0	0	0	0	11.7
7 ALX	28.0	8.7	9.4	3.0	18.9	12.0	3.5	5.4	6.6	2.0	0	0	0	0	0	0	0	0	3.8	0	0	0	0	6.7
8 FFX	20.5	6.1	4.8	1.5	15.3	9.4	5.1	1.1	1.0	0.3	0	0	0	0.2	0	0	0.3	0	0	0	0	0	0	1.9
9 LDN	5.9	2.6	0.6	0.2	7.0	5.2	1.3	0.3	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
10 PW	6.7	2.0	0.9	0.1	5.8	3.3	2.2	0.2	0.0	0.4	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.4
11 FRD	1.8	0.2	0.0	0.1	0	0.2	0	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	4.0	0.2	0.1	0.1	5.8	0	0	0.5	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	2.6	0.4	0.3	0.1	1.6	1.1	0.1	0.8	0.1	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0.3	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
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
17 CHS	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	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	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
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	28.6	9.2	3.4	1.7	19.5	10.0	5.6	1.7	0.3	0.4	0.1	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	0	0	0	2.8

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: HBO MODE: Avg. Auto Occupancy

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	1.19	1.37	1.36	1.40	1.31	1.32	1.36	1.40	1.50	1.20	1.00	1.00	1.57	1.48	1.50	2.00	1.17	2.25	1.25	1.00	1.00	1.00	1.62	1.28
2 DC NC	1.41	1.31	1.45	1.52	1.40	1.41	1.45	1.49	1.51	1.51	1.75	1.83	1.48	1.58	1.67	1.70	1.54	1.34	1.33	1.71	1.36	1.52	1.61	1.37
3 MTG	1.42	1.47	1.30	1.51	1.40	1.44	1.50	1.51	1.53	1.52	1.54	1.56	1.54	1.54	1.10	1.83	1.46	1.48	1.63	1.57	1.47	1.48	1.61	1.33
4 PG	1.43	1.50	1.49	1.30	1.43	1.44	1.48	1.52	1.56	1.57	1.78	1.39	1.52	1.54	1.55	1.56	1.55	1.53	1.50	1.59	1.56	1.70	1.61	1.35
5 ARLCR	1.33	1.35	1.36	1.36	1.04	1.32	1.36	1.36	1.45	1.70	1.50	0	0	1.50	0	0	1.00	1.00	1.00	1.00	1.00	0	1.63	1.22
6 ARNCR	1.38	1.41	1.43	1.46	1.36	1.22	1.44	1.46	1.49	1.50	2.67	1.50	1.65	1.34	3.00	1.29	1.57	1.55	1.25	1.35	1.43	1.31	1.61	1.31
7 ALX	1.40	1.43	1.44	1.47	1.41	1.42	1.23	1.46	1.52	1.48	1.00	1.67	1.69	1.59	1.00	1.75	1.43	1.50	2.08	1.29	1.15	1.71	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	1.51	1.34	1.57	1.51	1.76	1.47	1.46	1.58	1.55	1.45	1.48	1.82	1.61	1.34
9 LDN	1.43	1.56	1.52	1.55	1.50	1.45	1.53	1.52	1.25	1.54	1.55	1.57	1.70	1.53	1.50	2.00	1.31	1.56	1.55	1.56	1.61	3.00	1.61	1.28
10 PW	1.45	1.50	1.49	1.53	1.42	1.46	1.49	1.53	1.55	1.26	1.49	1.75	1.61	1.56	1.63	1.80	1.62	1.55	1.54	1.51	1.54	1.52	1.61	1.32
11 FRD	1.45	1.50	1.54	1.54	1.52	1.44	1.48	1.52	1.55	1.54	1.26	1.56	1.55	1.56	1.30	0	1.74	1.60	1.65	1.55	0	0	1.61	1.31
12 CAR	1.46	1.49	1.54	1.55	1.50	1.47	1.51	1.54	1.56	1.69	1.55	1.24	1.55	1.55	1.33	0	1.52	3.50	0	1.56	0	0	1.61	1.31
13 HOW	1.43	1.51	1.53	1.53	1.77	1.41	1.48	1.52	1.53	1.63	1.55	1.55	1.18	1.54	1.75	1.50	1.37	1.25	1.60	1.62	0	1.50	1.61	1.27
14 AAR	1.44	1.51	1.52	1.54	1.48	1.41	1.51	1.52	1.56	1.61	1.50	1.64	1.53	1.29	1.56	1.52	1.55	2.80	1.61	1.62	1.57	1.63	1.61	1.34
15 CAL	1.46	1.52	1.51	1.55	1.46	1.43	1.51	1.52	1.56	1.69	1.95	1.56	1.56	1.56	1.14	1.55	1.55	1.50	1.69	1.00	1.72	1.49	1.61	1.21
16 STM	1.47	1.51	1.59	1.55	1.50	1.48	1.47	1.59	1.58	1.76	0	1.00	1.65	1.57	1.55	1.18	1.56	0	1.63	0	1.56	1.55	1.61	1.21
17 CHS	1.45	1.51	1.51	1.55	1.53	1.45	1.49	1.54	1.53	1.62	1.80	1.78	1.54	1.56	1.56	1.56	1.17	1.73	1.51	1.50	1.54	1.56	1.61	1.22
18 FAU	1.46	1.50	1.50	1.55	1.50	1.44	1.48	1.54	1.55	1.55	1.59	2.33	1.61	1.81	6.00	1.00	1.61	1.10	1.56	1.56	1.55	1.62	1.61	1.23
19 STA	1.48	1.51	1.51	1.55	1.43	1.47	1.48	1.54	1.56	1.55	0	0	1.86	1.94	2.00	1.25	1.67	1.56	1.25	2.00	1.54	1.57	1.61	1.31
20 CL/JF	1.45	1.51	1.51	1.59	1.41	1.44	1.53	1.53	1.55	1.56	1.55	1.47	1.57	1.60	1.00	0	1.00	1.55	1.71	1.10	1.60	0	1.61	1.20
21 SP/FB	1.46	1.53	1.77	1.69	1.30	1.47	1.51	1.53	1.64	1.55	0	0	0	0	1.00	1.71	1.48	1.54	1.54	1.00	1.33	1.52	1.61	1.37
22 KGEO	1.45	1.50	1.57	1.55	1.58	1.57	1.51	1.58	3.50	1.56	0	0	1.00	1.54	1.50	1.56	1.55	1.57	1.55	0	1.55	1.10	1.61	1.15
23 EXTL	1.61	1.61	1.61	1.61	1.64	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	1.61	1.61	1.61	0	1.61
TOTAL	1.40	1.37	1.33	1.34	1.32	1.31	1.35	1.35	1.31	1.29	1.29	1.28	1.28	1.33	1.17	1.21	1.20	1.14	1.30	1.19	1.38	1.15	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: V2.2 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	51760	37105	9094	19434	2271	12487	6658	12565	158	456	13	4	226	630	44	4	218	1	8	4	5	1	1058	154204
2 DC NC	28513	87799	30925	45539	1993	10499	5911	10983	147	319	18	8	920	1756	103	4	410	8	4	3	2	1	1981	227846
3 MTG	7729	33417	703359	53419	1031	6048	2008	18020	873	151	11588	1192	16360	3556	17	3	45	19	13	79	5	1	10926	869858
4 PG	17043	46247	52202	476232	1010	5768	10779	13216	56	320	113	164	18130	31198	2013	278	12161	16	12	4	14	8	9493	696476
5 ARLCR	1870	2241	1096	989	4407	5833	2427	4711	64	190	2	0	9	23	2	0	9	2	1	0	1	0	107	23984
6 ARNCR	9233	10740	6021	5211	5266	76477	19124	46852	731	1323	13	2	42	101	9	2	72	9	12	3	2	0	760	182006
7 ALX	5345	5905	1929	9262	2091	18396	65188	43181	160	1847	3	2	21	112	30	3	337	3	30	2	2	1	523	154374
8 FFX	10603	11489	17535	14564	4225	44958	41568	765376	50157	43607	63	12	98	197	57	9	484	886	423	32	24	9	3754	1010130
9 LDN	144	152	910	59	65	727	177	53677	291214	8525	2089	24	38	18	3	1	9	929	7	2150	8	1	1846	362774
10 PW	489	352	183	402	195	1494	1991	46733	8266	298194	12	1	12	14	3	1	12	5303	3288	29	237	4	1673	368889
11 FRD	16	66	16998	169	3	17	10	101	2351	17	205249	4480	3724	154	6	0	3	6	1	1459	0	0	4472	239302
12 CAR	4	11	1751	223	2	6	2	24	29	4	4981	103616	4068	250	2	0	1	1	0	15	0	0	3461	118451
13 HOW	318	1078	17918	19359	13	53	27	97	32	9	3193	3358	165862	27806	8	3	7	3	3	18	0	0	15252	254417
14 AAR	852	2003	3835	32834	37	141	159	184	25	25	164	259	29170	363972	1378	13	185	2	3	4	0	0	28766	464011
15 CAL	73	172	38	3230	3	17	49	63	3	8	4	2	14	1985	50182	3554	1660	0	1	0	2	4	183	61247
16 STM	8	12	15	594	2	6	9	28	1	8	0	0	3	38	4160	79278	4054	0	3	0	10	54	97	88380
17 CHS	313	640	52	15651	13	109	531	528	8	17	2	0	11	256	1281	2608	106971	3	4	0	7	174	363	129542
18 FAU	4	2	11	9	2	11	5	1201	975	6376	4	0	2	0	1	0	2	38260	979	77	129	1	579	48630
19 STA	8	4	17	13	4	15	35	479	8	4252	1	0	1	2	1	1	3	1085	87936	2	12179	163	665	106874
20 CL/JF	4	3	150	9	2	2	2	62	3292	43	2135	21	29	10	0	0	0	118	1	56761	0	0	3050	65694
21 SP/FB	8	5	9	14	0	8	4	44	12	351	0	0	0	0	1	3	6	114	12000	0	189235	217	4265	206296
22 KGEO	5	3	5	26	0	3	6	14	0	11	0	0	1	7	3	98	427	5	475	0	660	27277	343	29369
23 EXTL	1215	2105	9992	9613	129	855	600	3794	1895	1624	4690	3619	17194	26792	170	88	341	537	653	3016	4341	352	0	93615
TOTAL	135558	241552	874045	706856	22765	183930	157270	1021933	360457	367677	234337	116764	255935	458877	59474	85951	127417	47310	105857	63658	206863	28268	93617	5956370

Simulation - Year: 2030 Alt: V2.2 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	63413	49114	11966	26027	2960	16364	8815	16777	214	611	14	5	303	846	66	5	292	2	9	4	7	1	1359	199174
2 DC NC	37664	111434	41123	61782	2604	13798	7869	14775	203	428	28	10	1253	2376	143	6	562	8	5	4	3	1	2541	298619
3 MTG	10163	44336	883099	72339	1336	7974	2680	24244	1208	199	15877	1644	22380	4855	21	7	59	23	16	102	7	1	14019	1106588
4 PG	22830	62791	70805	599139	1352	7682	14512	18049	73	442	158	229	24843	42880	2775	390	16736	19	13	5	16	8	12191	897936
5 ARLCR	2418	2928	1427	1305	4660	7488	3177	6189	83	251	3	0	11	29	3	0	14	2	2	0	1	0	137	30128
6 ARNCR	12030	14026	7865	6899	6756	91514	25128	62047	972	1768	21	3	49	137	10	2	103	9	18	4	5	0	969	230334
7 ALX	7078	7838	2556	12454	2745	24256	78808	57875	216	2485	8	4	27	150	41	4	454	4	42	2	2	1	672	197722
8 FFX	14192	15441	23565	19877	5577	59795	55755	965451	68452	59655	88	17	137	264	82	12	653	1212	568	43	37	10	4810	1295693
9 LDN	195	202	1245	87	89	973	241	73271	352523	11719	2879	31	52	29	5	1	10	1290	12	2955	10	1	2371	450190
10 PW	655	483	247	549	261	1990	2687	63919	11376	368132	13	3	16	23	4	2	18	7301	4528	40	331	4	2145	464728
11 FRD	22	86	23302	234	3	24	12	139	3241	26	244295	6178	5135	214	6	0	6	6	1	2011	0	0	5733	290674
12 CAR	4	16	2410	307	2	7	5	31	37	5	6875	113298	5611	347	3	0	1	1	0	22	0	0	4439	133421
13 HOW	427	1463	24503	26542	17	72	39	129	45	14	4402	4632	193322	38197	11	4	10	4	4	21	0	0	19556	313414
14 AAR	1142	2736	5239	45127	43	189	213	257	30	35	226	355	40078	421464	1907	18	258	2	4	5	0	0	36884	556212
15 CAL	97	237	52	4455	4	23	69	85	3	9	5	2	17	2742	57613	4911	2292	0	1	1	2	5	239	72864
16 STM	8	16	25	820	2	6	12	41	1	11	0	0	6	48	5744	93291	5599	0	4	0	11	76	125	105846
17 CHS	423	870	76	21549	16	151	716	719	15	21	3	0	15	356	1763	3608	124791	3	4	0	9	243	464	155815
18 FAU	4	3	18	12	3	13	8	1650	1344	8785	5	0	2	1	1	0	2	41804	1352	105	179	1	741	56033
19 STA	9	8	20	20	4	21	45	659	14	5856	1	0	2	4	1	4	3	1500	99789	2	16741	224	851	125778
20 CL/JF	4	4	206	13	2	5	3	86	4540	59	2947	29	40	12	0	0	0	162	1	63012	0	0	3912	75037
21 SP/FB	10	8	12	21	1	9	7	62	14	481	0	0	0	0	1	3	7	158	16493	0	219067	301	5469	242124
22 KGEO	7	6	5	35	0	5	6	21	0	15	0	0	1	10	4	137	590	5	655	0	910	29467	441	32320
23 EXTL	1558	2697	12814	12321	165	1095	773	4861	2427	2088	6016	4641	22038	34352	218	112	437	689	836	3862	5566	451	0	120017
TOTAL	174352	316743	1112580	911914	28601	233454	201581	1311336	447031	463095	283864	131081	315338	549336	70422	102517	152897	54204	124357	72200	242904	30795	120068	7450669

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: Transit

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	32722	5668	4342	2618	2226	6939	1892	3026	36	9	0	0	4	0	0	0	1	0	0	0	0	0	0	59483
2 DC NC	17516	3425	5552	2041	879	2215	685	965	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	33290
3 MTG	7126	3983	24708	1427	533	1326	303	1239	16	0	0	0	4	0	0	0	2	0	0	0	0	0	0	40667
4 PG	7628	2702	2450	2240	311	798	426	367	3	0	0	0	2	0	0	0	1	0	0	0	0	0	0	16929
5 ARLCR	2594	436	361	120	321	1246	446	654	9	3	0	0	0	0	1	0	0	0	0	0	0	0	0	6191
6 ARNCR	10638	1411	1090	354	1960	5342	1953	4085	79	15	0	0	0	0	0	0	0	0	0	0	0	0	0	26927
7 ALX	3529	533	281	197	686	2790	2651	1567	8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12254
8 FFX	5891	995	1310	268	1250	6334	2663	10499	700	24	0	0	0	0	1	0	0	0	0	0	0	0	0	29935
9 LDN	56	14	29	2	19	128	14	1105	161	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1531
10 PW	54	5	3	2	12	57	79	62	1	263	0	0	0	0	0	0	0	0	0	0	0	0	0	537
11 FRD	0	0	0	0	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	38
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	9	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
14 AAR	15	1	3	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
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	87778	19173	40132	9270	8200	27177	11111	23570	1022	331	38	0	10	0	2	0	4	0	0	0	0	0	0	227820

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: NHB MODE: HOV 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	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: V2.2 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: V2.2 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	51760	37105	9094	19434	2271	12487	6658	12565	158	456	13	4	226	630	44	4	218	1	8	4	5	1	1058	154204
2 DC NC	28513	87799	30925	45539	1993	10499	5911	10983	147	319	18	8	920	1756	103	4	410	8	4	3	2	1	1981	227846
3 MTG	7729	33417	703359	53419	1031	6048	2008	18020	873	151	11588	1192	16360	3556	17	3	45	19	13	79	5	1	10926	869858
4 PG	17043	46247	52202	476232	1010	5768	10779	13216	56	320	113	164	18130	31198	2013	278	12161	16	12	4	14	8	9493	696476
5 ARLCR	1870	2241	1096	989	4407	5833	2427	4711	64	190	2	0	9	23	2	0	9	2	1	0	1	0	107	23984
6 ARNCR	9233	10740	6021	5211	5266	76477	19124	46852	731	1323	13	2	42	101	9	2	72	9	12	3	2	0	760	182006
7 ALX	5345	5905	1929	9262	2091	18396	65188	43181	160	1847	3	2	21	112	30	3	337	3	30	2	2	1	523	154374
8 FFX	10603	11489	17535	14564	4225	44958	41568	765376	50157	43607	63	12	98	197	57	9	484	886	423	32	24	9	3754	1010130
9 LDN	144	152	910	59	65	727	177	53677	291214	8525	2089	24	38	18	3	1	9	929	7	2150	8	1	1846	362774
10 PW	489	352	183	402	195	1494	1991	46733	8266	298194	12	1	12	14	3	1	12	5303	3288	29	237	4	1673	368889
11 FRD	16	66	16998	169	3	17	10	101	2351	17	205249	4480	3724	154	6	0	3	6	1	1459	0	0	4472	239302
12 CAR	4	11	1751	223	2	6	2	24	29	4	4981	103616	4068	250	2	0	1	1	0	15	0	0	3461	118451
13 HOW	318	1078	17918	19359	13	53	27	97	32	9	3193	3358	165862	27806	8	3	7	3	3	18	0	0	15252	254417
14 AAR	852	2003	3835	32834	37	141	159	184	25	25	164	259	29170	363972	1378	13	185	2	3	4	0	0	28766	464011
15 CAL	73	172	38	3230	3	17	49	63	3	8	4	2	14	1985	50182	3554	1660	0	1	0	2	4	183	61247
16 STM	8	12	15	594	2	6	9	28	1	8	0	0	3	38	4160	79278	4054	0	3	0	10	54	97	88380
17 CHS	313	640	52	15651	13	109	531	528	8	17	2	0	11	256	1281	2608	106971	3	4	0	7	174	363	129542
18 FAU	4	2	11	9	2	11	5	1201	975	6376	4	0	2	0	1	0	2	38260	979	77	129	1	579	48630
19 STA	8	4	17	13	4	15	35	479	8	4252	1	0	1	2	1	1	3	1085	87936	2	12179	163	665	106874
20 CL/JF	4	3	150	9	2	2	2	62	3292	43	2135	21	29	10	0	0	0	118	1	56761	0	0	3050	65694
21 SP/FB	8	5	9	14	0	8	4	44	12	351	0	0	0	0	1	3	6	114	12000	0	189235	217	4265	206296
22 KGEO	5	3	5	26	0	3	6	14	0	11	0	0	1	7	3	98	427	5	475	0	660	27277	343	29369
23 EXTL	1215	2105	9992	9613	129	855	600	3794	1895	1624	4690	3619	17194	26792	170	88	341	537	653	3016	4341	352	0	93615
TOTAL	135558	241552	874045	706856	22765	183930	157270	1021933	360457	367677	234337	116764	255935	458877	59474	85951	127417	47310	105857	63658	206863	28268	93617	5956370

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: NHB 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	63413	49114	11966	26027	2960	16364	8815	16777	214	611	14	5	303	846	66	5	292	2	9	4	7	1	1359	199174
2 DC NC	37664	111434	41123	61782	2604	13798	7869	14775	203	428	28	10	1253	2376	143	6	562	8	5	4	3	1	2541	298619
3 MTG	10163	44336	883099	72339	1336	7974	2680	24244	1208	199	15877	1644	22380	4855	21	7	59	23	16	102	7	1	14019	1106588
4 PG	22830	62791	70805	599139	1352	7682	14512	18049	73	442	158	229	24843	42880	2775	390	16736	19	13	5	16	8	12191	897936
5 ARLCR	2418	2928	1427	1305	4660	7488	3177	6189	83	251	3	0	11	29	3	0	14	2	2	0	1	0	137	30128
6 ARNCR	12030	14026	7865	6899	6756	91514	25128	62047	972	1768	21	3	49	137	10	2	103	9	18	4	5	0	969	230334
7 ALX	7078	7838	2556	12454	2745	24256	78808	57875	216	2485	8	4	27	150	41	4	454	4	42	2	2	1	672	197722
8 FFX	14192	15441	23565	19877	5577	59795	55755	965451	68452	59655	88	17	137	264	82	12	653	1212	568	43	37	10	4810	1295693
9 LDN	195	202	1245	87	89	973	241	73271	352523	11719	2879	31	52	29	5	1	10	1290	12	2955	10	1	2371	450190
10 PW	655	483	247	549	261	1990	2687	63919	11376	368132	13	3	16	23	4	2	18	7301	4528	40	331	4	2145	464728
11 FRD	22	86	23302	234	3	24	12	139	3241	26	244295	6178	5135	214	6	0	6	6	1	2011	0	0	5733	290674
12 CAR	4	16	2410	307	2	7	5	31	37	5	6875	113298	5611	347	3	0	1	1	0	22	0	0	4439	133421
13 HOW	427	1463	24503	26542	17	72	39	129	45	14	4402	4632	193322	38197	11	4	10	4	4	21	0	0	19556	313414
14 AAR	1142	2736	5239	45127	43	189	213	257	30	35	226	355	40078	421464	1907	18	258	2	4	5	0	0	36884	556212
15 CAL	97	237	52	4455	4	23	69	85	3	9	5	2	17	2742	57613	4911	2292	0	1	1	2	5	239	72864
16 STM	8	16	25	820	2	6	12	41	1	11	0	0	6	48	5744	93291	5599	0	4	0	11	76	125	105846
17 CHS	423	870	76	21549	16	151	716	719	15	21	3	0	15	356	1763	3608	124791	3	4	0	9	243	464	155815
18 FAU	4	3	18	12	3	13	8	1650	1344	8785	5	0	2	1	1	0	2	41804	1352	105	179	1	741	56033
19 STA	9	8	20	20	4	21	45	659	14	5856	1	0	2	4	1	4	3	1500	99789	2	16741	224	851	125778
20 CL/JF	4	4	206	13	2	5	3	86	4540	59	2947	29	40	12	0	0	0	162	1	63012	0	0	3912	75037
21 SP/FB	10	8	12	21	1	9	7	62	14	481	0	0	0	0	1	3	7	158	16493	0	219067	301	5469	242124
22 KGEO	7	6	5	35	0	5	6	21	0	15	0	0	1	10	4	137	590	5	655	0	910	29467	441	32320
23 EXTL	1558	2697	12814	12321	165	1095	773	4861	2427	2088	6016	4641	22038	34352	218	112	437	689	836	3862	5566	451	0	120017
TOTAL	174352	316743	1112580	911914	28601	233454	201581	1311336	447031	463095	283864	131081	315338	549336	70422	102517	152897	54204	124357	72200	242904	30795	120068	7450669

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: NHB 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	96135	54782	16308	28645	5186	23303	10707	19803	250	620	14	5	307	846	66	5	293	2	9	4	7	1	1359	258657
2 DC NC	55180	114859	46675	63823	3483	16013	8554	15740	212	431	28	10	1253	2376	143	6	562	8	5	4	3	1	2541	331910
3 MTG	17289	48319	907807	73766	1869	9299	2983	25483	1224	199	15877	1644	22384	4855	21	7	61	23	16	102	7	1	14019	1147255
4 PG	30457	65493	73255	601379	1663	8480	14938	18416	76	442	158	229	24845	42880	2775	390	16737	19	13	5	16	8	12191	914865
5 ARLCR	5012	3364	1788	1425	4981	8734	3623	6843	92	254	3	0	11	29	4	0	14	2	2	0	1	0	137	36319
6 ARNCR	22667	15437	8955	7253	8716	96856	27081	66132	1051	1783	21	3	49	137	10	2	103	9	18	4	5	0	969	257261
7 ALX	10607	8371	2837	12651	3431	27046	81459	59442	224	2497	8	4	27	150	41	4	454	4	42	2	2	1	672	209977
8 FFX	20083	16436	24875	20145	6827	66129	58418	975950	69152	59679	88	17	137	264	83	12	653	1212	568	43	37	10	4810	1325629
9 LDN	251	216	1274	89	108	1101	255	74376	352684	11721	2879	31	52	29	5	1	10	1290	12	2955	10	1	2371	451721
10 PW	709	488	250	551	273	2047	2766	63981	11377	368395	13	3	16	23	4	2	18	7301	4528	40	331	4	2145	465265
11 FRD	22	86	23302	234	3	24	12	139	3241	26	244333	6178	5135	214	6	0	6	6	1	2011	0	0	5733	290712
12 CAR	4	16	2410	307	2	7	5	31	37	5	6875	113298	5611	347	3	0	1	1	0	22	0	0	4439	133421
13 HOW	436	1463	24506	26542	17	73	39	129	45	14	4402	4632	193322	38197	11	4	10	4	4	21	0	0	19556	313427
14 AAR	1157	2737	5242	45128	45	191	213	257	30	35	226	355	40078	421464	1907	18	258	2	4	5	0	0	36884	556236
15 CAL	97	237	52	4455	4	23	69	85	3	9	5	2	17	2742	57613	4911	2292	0	1	1	2	5	239	72864
16 STM	8	16	25	820	2	6	12	41	1	11	0	0	6	48	5744	93291	5599	0	4	0	11	76	125	105846
17 CHS	423	870	76	21549	16	151	716	719	15	21	3	0	15	356	1763	3608	124791	3	4	0	9	243	464	155815
18 FAU	4	3	18	12	3	13	8	1650	1344	8785	5	0	2	1	1	0	2	41804	1352	105	179	1	741	56033
19 STA	9	8	20	20	4	21	45	659	14	5856	1	0	2	4	1	4	3	1500	99789	2	16741	224	851	125778
20 CL/JF	4	4	206	13	2	5	3	86	4540	59	2947	29	40	12	0	0	0	162	1	63012	0	0	3912	75037
21 SP/FB	10	8	12	21	1	9	7	62	14	481	0	0	0	0	1	3	7	158	16493	0	219067	301	5469	242124
22 KGEO	7	6	5	35	0	5	6	21	0	15	0	0	1	10	4	137	590	5	655	0	910	29467	441	32320
23 EXTL	1558	2697	12814	12321	165	1095	773	4861	2427	2088	6016	4641	22038	34352	218	112	437	689	836	3862	5566	451	0	120017
TOTAL	262131	335916	1152712	921184	36801	260631	212692	1334906	448053	463426	283902	131081	315348	549336	70424	102517	152901	54204	124357	72200	242904	30795	120068	7678489

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

Simulation - Year: 2030 Alt: V2.2 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	34.0	10.3	26.6	9.1	42.9	29.8	17.7	15.3	14.4	1.5	0	0	1.3	0	0	0	0.3	0	0	0	0	0	0	23.0
2 DC NC	31.7	3.0	11.9	3.2	25.2	13.8	8.0	6.1	4.2	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	10.0
3 MTG	41.2	8.2	2.7	1.9	28.5	14.3	10.1	4.9	1.3	0	0	0	0.0	0	0	0	3.3	0	0	0	0	0	0	3.5
4 PG	25.0	4.1	3.3	0.4	18.7	9.4	2.9	2.0	4.2	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	1.9
5 ARLCR	51.8	13.0	20.2	8.4	6.4	14.3	12.3	9.6	9.8	1.2	0	0	0	0	25.0	0	0	0	0	0	0	0	0	17.0
6 ARNCR	46.9	9.1	12.2	4.9	22.5	5.5	7.2	6.2	7.5	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	10.5
7 ALX	33.3	6.4	9.9	1.6	20.0	10.3	3.3	2.6	3.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	5.8
8 FFX	29.3	6.1	5.3	1.3	18.3	9.6	4.6	1.1	1.0	0.0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	2.3
9 LDN	22.4	6.7	2.3	2.6	18.0	11.6	5.5	1.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
10 PW	7.7	0.9	1.2	0.3	4.3	2.8	2.9	0.1	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	0.0	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	2.1	0	0.0	0	0	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	1.3	0.0	0.1	0.0	4.4	0.8	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	33.5	5.7	3.5	1.0	22.3	10.4	5.2	1.8	0.2	0.1	0.0	0	0.0	0	0.0	0	0.0	0	0	0	0	0	0	3.0

Simulation - Year: 2030 Alt: V2.2 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	1.35	1.34	1.08	1.25	1.34	1.34	1.50	1.25	1.34	2.00	1.13	1.00	1.40	1.00	1.28	1.29
2 DC NC	1.32	1.27	1.33	1.36	1.31	1.31	1.33	1.35	1.38	1.34	1.56	1.25	1.36	1.35	1.39	1.50	1.37	1.00	1.25	1.33	1.50	1.00	1.28	1.31
3 MTG	1.31	1.33	1.26	1.35	1.30	1.32	1.33	1.35	1.38	1.32	1.37	1.38	1.37	1.37	1.24	2.33	1.31	1.21	1.23	1.29	1.40	1.00	1.28	1.27
4 PG	1.34	1.36	1.36	1.26	1.34	1.33	1.35	1.37	1.31	1.38	1.40	1.40	1.37	1.37	1.38	1.40	1.38	1.19	1.08	1.25	1.14	1.00	1.28	1.29
5 ARLCR	1.29	1.31	1.30	1.32	1.06	1.28	1.31	1.31	1.30	1.32	1.50	0	1.22	1.26	1.50	0	1.56	1.00	2.00	0	1.00	0	1.28	1.26
6 ARNCR	1.30	1.31	1.31	1.32	1.28	1.20	1.31	1.32	1.33	1.34	1.62	1.50	1.17	1.36	1.11	1.00	1.43	1.00	1.50	1.33	2.50	0	1.27	1.27
7 ALX	1.32	1.33	1.32	1.34	1.31	1.32	1.21	1.34	1.35	1.35	2.67	2.00	1.29	1.34	1.37	1.33	1.35	1.33	1.40	1.00	1.00	1.00	1.28	1.28
8 FFX	1.34	1.34	1.34	1.36	1.32	1.33	1.34	1.26	1.36	1.37	1.40	1.42	1.40	1.34	1.44	1.33	1.35	1.37	1.34	1.34	1.54	1.11	1.28	1.28
9 LDN	1.35	1.33	1.37	1.46	1.35	1.34	1.36	1.37	1.21	1.37	1.38	1.29	1.37	1.61	1.67	1.00	1.11	1.39	1.71	1.37	1.25	1.00	1.28	1.24
10 PW	1.34	1.37	1.35	1.37	1.34	1.33	1.35	1.37	1.38	1.23	1.08	3.00	1.33	1.64	1.33	2.00	1.50	1.38	1.38	1.38	1.40	1.00	1.28	1.26
11 FRD	1.38	1.30	1.37	1.38	1.00	1.41	1.20	1.38	1.38	1.53	1.19	1.38	1.38	1.39	1.00	0	2.00	1.00	1.00	1.38	0	0	1.28	1.21
12 CAR	1.00	1.45	1.38	1.38	1.00	1.17	2.50	1.29	1.28	1.25	1.38	1.09	1.38	1.39	1.50	0	1.00	1.00	0	1.47	0	0	1.28	1.13
13 HOW	1.34	1.36	1.37	1.37	1.31	1.36	1.44	1.33	1.41	1.56	1.38	1.38	1.17	1.37	1.38	1.33	1.43	1.33	1.33	1.17	0	0	1.28	1.23
14 AAR	1.34	1.37	1.37	1.37	1.16	1.34	1.34	1.40	1.20	1.40	1.38	1.37	1.37	1.16	1.38	1.38	1.39	1.00	1.33	1.25	0	0	1.28	1.20
15 CAL	1.33	1.38	1.37	1.38	1.33	1.35	1.41	1.35	1.00	1.13	1.25	1.00	1.21	1.38	1.15	1.38	1.38	0	1.00	1.00	1.00	1.25	1.31	1.19
16 STM	1.00	1.33	1.67	1.38	1.00	1.00	1.33	1.46	1.00	1.38	0	0	2.00	1.26	1.38	1.18	1.38	0	1.33	0	1.10	1.41	1.29	1.20
17 CHS	1.35	1.36	1.46	1.38	1.23	1.39	1.35	1.36	1.88	1.24	1.50	0	1.36	1.39	1.38	1.38	1.17	1.00	1.00	0	1.29	1.40	1.28	1.20
18 FAU	1.00	1.50	1.64	1.33	1.50	1.18	1.60	1.37	1.38	1.38	1.25	0	1.00	1.00	1.00	0	1.00	1.09	1.38	1.36	1.39	1.00	1.28	1.15
19 STA	1.13	2.00	1.18	1.54	1.00	1.40	1.29	1.38	1.75	1.38	1.00	0	2.00	2.00	1.00	4.00	1.00	1.38	1.13	1.00	1.37	1.37	1.28	1.18
20 CL/JF	1.00	1.33	1.37	1.44	1.00	2.50	1.50	1.39	1.38	1.37	1.38	1.38	1.38	1.20	0	0	0	1.37	1.00	1.11	0	0	1.28	1.14
21 SP/FB	1.25	1.60	1.33	1.50	1.00	1.13	1.75	1.41	1.17	1.37	0	0	0	0	1.00	1.00	1.17	1.39	1.37	0	1.16	1.39	1.28	1.17
22 KGEO	1.40	2.00	1.00	1.35	0	1.67	1.00	1.50	0	1.36	0	0	1.00	1.43	1.33	1.40	1.38	1.00	1.38	0	1.38	1.08	1.29	1.10
23 EXTL	1.28	1.28	1.28	1.28	1.28	1.28	1.29	1.28	1.28	1.29	1.28	1.28	1.28	1.28	1.28	1.27	1.28	1.28	1.28	1.28	1.28	1.28	0	1.28
TOTAL	1.29	1.31	1.27	1.29	1.26	1.27	1.28	1.28	1.24	1.26	1.21	1.12	1.23	1.20	1.18	1.19	1.20	1.15	1.17	1.13	1.17	1.09	1.28	1.25

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

Simulation - Year: 2030 Alt: V2.2 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	77833	52754	11401	23102	3416	17877	7784	14869	417	536	44	9	316	894	60	78	280	17	479	40	1092	4	3248	216550
2 DC NC	159073	507660	129218	141728	10924	45398	14965	30947	1686	576	123	28	2482	4525	192	321	752	76	2651	179	4104	46	22711	1080365
3 MTG	65985	115515	2923047	197579	5854	21989	4950	59804	5468	702	26412	2044	50083	13111	108	195	333	156	2847	564	4144	37	82544	3583471
4 PG	100582	202641	135056	1900125	6965	22577	33196	38252	1535	794	305	232	44438	100680	3760	1350	43327	132	3184	177	5661	212	56614	2701795
5 ARLCR	4044	3710	1594	1211	14955	13874	3549	7151	169	210	8	0	14	43	4	4	23	3	70	4	123	0	475	51238
6 ARNCR	35874	27932	13713	8266	20493	363826	50799	138156	2812	1731	38	6	123	334	23	74	141	25	510	47	1118	16	6789	672846
7 ALX	18298	14316	3917	15025	7832	69530	233860	111930	741	2438	24	7	72	325	45	77	428	25	592	44	978	12	3511	484027
8 FFX	48530	37392	41698	35435	19380	164377	147971	3208778	228427	98684	468	106	841	2884	272	989	1387	1866	7986	993	17416	147	35630	4101658
9 LDN	768	649	5091	792	410	2261	625	181950	1179610	18522	9788	93	335	944	30	12	125	2816	2627	12121	4598	6	18793	1442966
10 PW	1927	1215	1556	1768	714	6051	8151	245121	47351	1278339	221	26	367	1361	82	136	231	19772	25992	738	13505	264	16737	1671625
11 FRD	408	599	69909	3501	67	618	378	2334	14015	554	853191	17654	21257	2549	44	0	118	205	329	9320	0	0	50558	1047608
12 CAR	266	348	8324	2596	44	394	244	1142	2665	97	23158	384472	26050	1883	25	0	74	5	0	187	0	0	68729	520703
13 HOW	1479	3258	52875	54097	88	275	108	590	380	96	7903	5980	595221	75064	33	42	65	15	119	185	0	2	83134	881009
14 AAR	4781	9612	9260	109289	274	999	818	1997	1802	386	373	325	70604	1440851	4542	327	758	25	1347	117	293	42	129715	1788536
15 CAL	882	2159	737	20022	67	330	420	967	452	156	47	15	220	10155	238508	23035	5330	12	574	2	847	136	1551	306623
16 STM	354	497	565	5029	42	351	186	877	270	131	0	0	215	652	11235	338822	16035	0	1480	0	2136	3146	1077	383100
17 CHS	3383	7625	803	75579	196	776	2371	2939	989	202	20	9	200	1307	6228	11710	477313	67	1429	5	1634	8345	3106	606236
18 FAU	334	322	940	698	48	366	238	9867	10786	33787	123	3	134	110	1	1	97	223612	25971	1150	6113	178	10450	325329
19 STA	57	52	122	73	14	81	124	2951	147	18052	1	0	8	24	3	12	18	2413	395563	9	96488	6247	10408	532867
20 CL/JF	340	483	1991	879	56	358	209	1572	23013	579	11417	79	459	421	1	0	2	1289	704	244460	300	0	38836	327448
21 SP/FB	129	158	79	100	23	137	81	395	100	817	0	0	0	0	2	17	58	278	30582	2	541032	2032	44966	620988
22 KGEO	151	183	55	458	27	178	125	346	6	257	0	0	11	85	26	172	769	268	3566	0	3318	89268	2686	101955
23 EXTL	7304	13688	58886	58370	830	4889	2990	27854	24576	25157	74991	60234	88962	190153	2259	1136	3714	22767	11222	42542	54446	3736	0	780706
TOTAL	532780	1002768	3470838	2655722	92718	737512	514142	4090789	1547417	1482804	1008656	471322	902411	1848354	267483	378510	551378	275844	519824	312886	759346	113876	692268	24229649

Simulation - Year: 2030 Alt: V2.2 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	94264	69703	14936	30915	4376	23144	10247	19776	601	723	55	12	429	1224	89	136	380	29	744	68	1727	7	4231	277816
2 DC NC	209250	645624	175305	197078	13859	59855	20075	41839	2515	828	191	49	3364	6262	271	550	1080	121	4259	299	6588	70	31248	1420580
3 MTG	82211	155141	3648982	268165	7176	28739	6615	80839	7976	1063	36217	2897	69151	18024	166	333	505	235	4776	859	6756	51	114362	4541241
4 PG	128583	272314	183168	2370505	8433	28859	43913	50714	2404	1170	475	324	59571	136667	5204	1978	61008	205	5163	310	9355	297	77307	3447925
5 ARLCR	5171	4836	2071	1596	15588	17557	4630	9349	218	280	10	1	16	59	5	6	34	4	96	7	174	0	673	62381
6 ARNCR	45292	36473	18011	11005	25795	434064	67887	186391	3793	2354	63	14	162	434	30	114	206	36	733	74	1640	21	9879	844470
7 ALX	23004	18783	5165	20174	9771	90773	277633	149168	1039	3324	38	13	108	446	62	126	582	38	879	70	1455	20	5099	607771
8 FFX	60143	48585	55711	48350	23946	218358	195513	4014936	312912	137020	719	159	1280	4487	436	1662	2102	2639	12245	1620	27271	249	52712	5223056
9 LDN	958	862	6477	1264	493	2946	833	233116	1425322	24695	12410	130	531	1617	52	21	191	3852	4324	16969	7569	9	26840	1771482
10 PW	2587	1725	2279	2648	957	8388	10956	325611	65416	1557411	329	45	600	2234	140	235	383	26154	35360	1147	18838	388	25069	2088900
11 FRD	581	836	95239	5154	95	911	580	3578	20436	918	1016900	24184	28691	3861	76	0	202	337	601	13630	0	0	71996	1288806
12 CAR	386	520	11163	3765	66	591	386	1819	4399	163	30304	440567	34080	2696	40	0	122	12	0	287	0	0	100526	631892
13 HOW	1901	4246	71656	72098	109	363	157	811	590	161	10688	8410	685420	100759	53	72	99	20	212	290	0	3	112201	1070319
14 AAR	6023	12694	12797	148486	337	1330	1132	2942	3043	626	557	460	97873	1723599	6367	521	1127	45	2303	205	499	68	178862	2201897
15 CAL	1156	2816	1077	26058	85	452	562	1401	761	257	85	23	339	13759	270122	30555	7318	19	993	4	1497	181	2358	361878
16 STM	496	706	902	6771	60	521	264	1390	465	224	0	1	364	1014	15049	389696	21749	0	2517	0	3583	3924	1667	451363
17 CHS	4295	9525	1147	98667	237	1013	3094	4025	1647	323	34	19	302	1815	8248	15917	547706	113	2376	7	2692	10686	4751	718639
18 FAU	485	484	1442	1129	70	530	356	14528	14932	44932	193	7	219	202	7	1	159	243378	35415	1630	8758	273	15358	384488
19 STA	81	79	178	115	16	114	163	3613	203	22925	1	0	16	47	5	18	27	3296	465381	16	126324	7168	14939	644725
20 CL/JF	493	730	2749	1459	78	527	326	2350	31790	887	15547	108	695	716	1	0	3	1907	1223	267131	512	0	56823	386055
21 SP/FB	186	242	136	166	31	198	123	583	157	1062	0	0	0	0	2	27	84	403	42769	2	642186	2398	63300	754055
22 KGEO	220	278	87	735	44	280	187	553	17	402	0	0	16	140	38	257	1114	421	5288	0	4712	96333	3838	114960
23 EXTL	9719	19169	80686	76265	1126	7204	4326	40114	32448	32382	95986	80497	116826	252094	2913	1575	4995	29047	15128	55395	76398	4926	0	1039219
TOTAL	677484	1306372	4391363	3392568	112748	926716	649959	5189447	1933085	1834130	1220803	557920	1100053	2272156	309377	443800	651177	312311	642785	360020	948534	127072	974039	30333919

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Transit

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	69016	21499	8032	5459	5008	14016	3182	6200	159	18	1	0	42	43	0	0	4	0	1	0	0	0	0	132680
2 DC NC	165206	84581	40890	25264	8421	18276	3936	7582	259	11	2	0	174	198	0	0	3	0	1	0	0	0	0	354805
3 MTG	72484	25342	153635	12040	3862	6610	992	6338	190	1	103	0	500	104	0	0	4	0	0	0	0	0	0	282205
4 PG	77918	41252	16707	45512	4834	8137	2933	3455	98	3	3	0	618	461	1	0	3	0	0	0	0	0	0	201937
5 ARLCR	8479	1509	768	227	1412	4825	1004	2051	39	6	0	0	1	1	1	0	0	0	0	0	0	0	0	20323
6 ARNCR	53888	6421	3077	834	12737	38286	9339	25890	447	47	1	0	2	10	0	0	1	0	0	0	0	0	0	150979
7 ALX	22460	2574	813	465	4920	18961	16069	11065	82	30	0	0	0	4	1	0	1	0	2	0	0	0	0	77446
8 FFX	63169	6502	4759	862	12205	41969	22169	73644	5997	440	1	0	1	7	1	0	1	0	0	0	9	0	0	231735
9 LDN	878	98	196	12	339	722	85	12487	13341	2	0	0	0	0	0	0	0	0	0	0	0	0	0	28159
10 PW	4575	183	109	22	491	1625	2826	16943	156	15797	0	0	0	1	0	0	0	0	2	0	136	0	0	42867
11 FRD	123	59	3558	37	9	15	3	23	6	0	3437	0	11	0	0	0	0	0	0	0	0	0	0	7281
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	1224	432	2031	1152	65	65	11	39	4	0	1	0	1011	50	0	0	0	0	0	0	0	0	0	6083
14 AAR	3666	1425	421	2040	157	194	61	85	18	0	0	0	129	227	6	0	0	0	0	0	0	0	0	8429
15 CAL	1479	1047	86	940	70	125	72	58	1	0	0	0	0	1	102	0	1	0	0	0	0	0	0	3982
16 STM	338	139	28	167	15	13	17	18	0	0	0	0	0	2	2	7	47	0	0	0	0	0	0	794
17 CHS	5138	2751	192	1472	268	372	245	212	2	0	0	0	1	3	1	0	647	0	0	0	0	0	0	11304
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	3	1	0	0	5	24	52	406	2	86	0	0	0	0	0	0	0	0	23	0	211	0	0	813
20 CL/JF	4	5	100	3	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	118
21 SP/FB	1	0	0	0	0	1	4	21	0	10	0	0	0	0	0	0	0	0	22	0	1152	0	0	1211
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	550048	195821	235402	96508	54820	154236	62999	166520	20801	16451	3548	0	2490	1112	114	7	711	0	51	1	1508	0	0	1563150

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: HOV 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	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	17	40	129	319	40	1	0	0	0	0	0	0	0	0	0	0	0	0	0	546
3 MTG	2075	725	8734	873	451	997	85	1877	116	0	0	0	18	17	0	0	0	0	0	0	0	0	0	15968
4 PG	2200	593	235	763	663	1596	2153	1702	66	4	0	0	0	0	0	0	0	0	0	0	0	0	0	9974
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	1664	341	86	49	323	841	37	9	1	0	0	0	1	7	0	0	1	0	0	0	0	0	0	3359
7 ALX	1555	401	133	111	438	805	134	140	3	0	0	0	1	8	2	0	0	0	0	0	0	0	0	3731
8 FFX	19333	5077	3785	759	4902	10108	4056	15742	520	1	1	0	17	17	2	0	2	0	0	0	0	0	0	64322
9 LDN	889	259	758	43	547	1012	133	10116	5	37	6	0	1	0	0	0	0	0	0	0	0	0	0	13806
10 PW	4035	557	441	158	868	2285	3392	20023	826	452	1	0	0	11	0	0	0	2	2	0	0	0	0	33052
11 FRD	166	184	5645	253	45	65	4	214	30	0	178	0	7	3	0	0	0	0	0	0	0	0	0	6795
12 CAR	0	2	202	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	207
13 HOW	9	8	149	0	4	14	6	29	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	222
14 AAR	1094	683	256	1748	44	88	104	65	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4084
15 CAL	55	23	22	114	15	36	77	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	391
16 STM	14	0	0	6	2	2	19	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
17 CHS	224	15	5	40	63	145	317	208	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1019
18 FAU	0	0	0	0	0	0	0	488	85	554	0	0	0	0	0	0	0	0	0	0	0	0	0	1127
19 STA	12	13	1	3	42	118	167	971	0	65	0	0	0	0	0	0	0	0	0	0	0	0	0	1392
20 CL/JF	8	42	582	21	3	3	0	97	0	3	42	0	1	0	0	0	0	0	0	0	0	0	0	802
21 SP/FB	2	0	0	0	1	4	6	36	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	54
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	33337	8922	21034	4943	8427	18159	10821	52095	1697	1123	228	0	46	63	4	0	3	2	2	0	0	0	0	160906

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

Simulation - Year: 2030 Alt: V2.2 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 DC NC	0	0	0	0	1	17	34	79	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143
3 MTG	565	215	2530	258	113	283	21	545	22	0	0	0	4	4	0	0	0	0	0	0	0	0	0	4559
4 PG	615	160	63	230	192	453	627	480	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2831
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	473	99	25	15	95	246	11	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	967
7 ALX	445	118	39	30	129	232	40	42	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	1079
8 FFX	5388	1476	992	228	1387	2887	1176	4374	136	0	0	0	2	9	0	0	0	0	0	0	0	0	0	18055
9 LDN	232	66	208	11	149	269	36	2748	2	9	1	0	0	0	0	0	0	0	0	0	0	0	0	3731
10 PW	1124	150	118	47	251	656	976	5760	240	136	0	0	0	0	0	0	0	2	0	0	0	0	0	9459
11 FRD	45	51	1630	70	10	21	3	55	7	0	52	0	1	2	0	0	0	0	0	0	0	0	0	1947
12 CAR	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58
13 HOW	2	2	40	0	4	4	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60
14 AAR	304	197	74	503	13	27	28	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1165
15 CAL	14	7	8	30	5	9	23	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	111
16 STM	3	0	0	3	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
17 CHS	62	5	1	11	17	41	88	59	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	287
18 FAU	0	0	0	0	0	0	0	138	27	162	0	0	0	0	0	0	0	0	0	0	0	0	0	327
19 STA	2	4	0	1	11	34	48	277	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	396
20 CL/JF	2	12	164	6	1	1	0	26	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	225
21 SP/FB	0	0	0	0	0	1	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
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	9276	2563	5951	1442	2380	5182	3118	14641	457	327	65	0	8	19	0	0	0	2	0	0	0	0	0	45430

Simulation - Year: 2030 Alt: V2.2 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	77833	52754	11401	23102	3416	17877	7784	14869	417	536	44	9	316	894	60	78	280	17	479	40	1092	4	3248	216550
2 DC NC	159073	507660	129218	141728	10926	45415	14998	31027	1697	576	123	28	2482	4525	192	321	752	76	2651	179	4104	46	22711	1080508
3 MTG	66550	115730	2925577	197837	5967	22272	4971	60348	5490	702	26412	2044	50087	13115	108	195	333	156	2847	564	4144	37	82544	3588030
4 PG	101197	202801	135119	1900355	7156	23030	33823	38732	1546	795	305	232	44438	100680	3760	1350	43327	132	3184	177	5661	212	56614	2704625
5 ARLCR	4044	3710	1594	1211	14955	13874	3549	7151	169	210	8	0	14	43	4	4	23	3	70	4	123	0	475	51238
6 ARNCR	36347	28032	13739	8281	20588	364072	50810	138158	2812	1731	38	6	123	335	23	74	141	25	510	47	1118	16	6789	673813
7 ALX	18743	14433	3957	15055	7961	69762	233900	111972	741	2438	24	7	73	328	45	77	428	25	592	44	978	12	3511	485106
8 FFX	53918	38869	42691	35663	20767	167264	149147	3213152	228563	98684	468	106	843	2893	272	989	1387	1866	7986	993	17416	147	35630	4119714
9 LDN	1000	716	5299	803	559	2530	661	184698	1179612	18531	9789	93	335	944	30	12	125	2816	2627	12121	4598	6	18793	1446697
10 PW	3051	1365	1674	1815	965	6707	9127	250881	47591	1278475	221	26	367	1361	82	136	231	19774	25992	738	13505	264	16737	1681084
11 FRD	453	650	71539	3571	77	639	381	2389	14022	554	853243	17654	21258	2551	44	0	118	205	329	9320	0	0	50558	1049555
12 CAR	266	348	8382	2596	44	394	244	1142	2665	97	23158	384472	26050	1883	25	0	74	5	0	187	0	0	68729	520761
13 HOW	1481	3260	52915	54097	92	280	108	597	380	96	7903	5980	595221	75064	33	42	65	15	119	185	0	2	83134	881069
14 AAR	5085	9809	9334	109792	287	1025	847	2016	1802	386	373	325	70604	1440851	4542	327	758	25	1347	117	293	42	129715	1789701
15 CAL	896	2166	745	20052	72	339	443	982	452	156	47	15	220	10155	238508	23035	5330	12	574	2	847	136	1551	306734
16 STM	357	497	565	5032	43	352	190	881	270	131	0	0	215	652	11235	338822	16035	0	1480	0	2136	3146	1077	383116
17 CHS	3445	7630	804	75590	213	817	2459	2999	990	202	20	9	200	1307	6228	11710	477313	67	1429	5	1634	8345	3106	606523
18 FAU	334	322	940	698	48	366	238	10005	10813	33949	123	3	134	110	1	1	97	223612	25971	1150	6113	178	10450	325656
19 STA	59	56	122	74	25	115	172	3228	147	18071	1	0	8	24	3	12	18	2413	395563	9	96488	6247	10408	533263
20 CL/JF	342	495	2155	885	57	359	209	1598	23013	579	11429	79	459	421	1	0	2	1289	704	244460	300	0	38836	327673
21 SP/FB	129	158	79	100	23	138	84	405	100	817	0	0	0	0	2	17	58	278	30582	2	541032	2032	44966	621002
22 KGEO	151	183	55	458	27	178	125	346	6	257	0	0	11	85	26	172	769	268	3566	0	3318	89268	2686	101955
23 EXTL	7304	13688	58886	58370	830	4889	2990	27854	24576	25157	74991	60234	88962	190153	2259	1136	3714	22767	11222	42542	54446	3736	0	780706
TOTAL	542056	1005331	3476789	2657164	95098	742694	517260	4105430	1547874	1483131	1008721	471322	902419	1848373	267483	378510	551378	275846	519824	312886	759346	113876	692268	24275079

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: ALL 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	94264	69703	14936	30915	4376	23144	10247	19776	601	723	55	12	429	1224	89	136	380	29	744	68	1727	7	4231	277816
2 DC NC	209250	645624	175305	197078	13875	59895	20204	42158	2555	829	191	49	3364	6262	271	550	1080	121	4259	299	6588	70	31248	1421126
3 MTG	84287	155866	3657716	269038	7628	29736	6700	82716	8092	1063	36217	2897	69169	18041	166	333	505	235	4776	859	6756	51	114362	4557209
4 PG	130782	272907	183403	2371268	9096	30455	46066	52416	2470	1174	475	324	59571	136667	5204	1978	61008	205	5163	310	9355	297	77307	3457899
5 ARLCR	5171	4836	2071	1596	15588	17557	4630	9349	218	280	10	1	16	59	5	6	34	4	96	7	174	0	673	62381
6 ARNCR	46956	36814	18097	11054	26118	434905	67924	186400	3794	2354	63	14	163	440	30	114	207	36	733	74	1640	21	9879	847830
7 ALX	24559	19185	5297	20285	10209	91578	277767	149308	1042	3324	38	13	109	454	64	126	582	38	879	70	1455	20	5099	611502
8 FFX	79476	53662	59497	49109	28848	228466	199569	4030678	313432	137021	720	159	1297	4504	438	1662	2104	2639	12245	1620	27271	249	52712	5287378
9 LDN	1847	1121	7236	1306	1040	3958	966	243232	1425327	24732	12416	130	532	1617	52	21	191	3852	4324	16969	7569	9	26840	1785287
10 PW	6622	2281	2720	2806	1825	10673	14348	345634	66242	1557863	330	45	600	2245	140	235	383	26156	35362	1147	18838	388	25069	2121952
11 FRD	747	1020	100884	5407	140	976	585	3792	20466	918	1017078	24184	28698	3864	76	0	202	337	601	13630	0	0	71996	1295601
12 CAR	386	522	11365	3768	66	591	386	1819	4399	163	30304	440567	34080	2696	40	0	122	12	0	287	0	0	100526	632099
13 HOW	1910	4254	71805	72098	113	377	164	840	592	161	10688	8410	685420	100759	53	72	99	20	212	290	0	3	112201	1070541
14 AAR	7117	13377	13053	150234	381	1418	1236	3007	3045	626	557	460	97873	1723599	6367	521	1127	45	2303	205	499	68	178862	2205982
15 CAL	1212	2839	1099	26172	100	487	639	1450	761	257	85	23	339	13759	270122	30555	7318	19	993	4	1497	181	2358	362269
16 STM	511	706	902	6777	62	523	283	1402	465	224	0	1	364	1014	15049	389696	21749	0	2517	0	3583	3924	1667	451419
17 CHS	4519	9540	1152	98707	300	1158	3411	4233	1648	324	34	19	302	1815	8248	15917	547706	113	2376	7	2692	10686	4751	719658
18 FAU	485	484	1442	1129	70	530	356	15016	15017	45486	193	7	219	202	7	1	159	243378	35415	1630	8758	273	15358	385615
19 STA	93	92	179	118	58	232	330	4584	203	22990	1	0	16	47	5	18	27	3296	465381	16	126324	7168	14939	646117
20 CL/JF	501	772	3331	1480	81	530	326	2447	31790	890	15589	108	696	716	1	0	3	1907	1223	267131	512	0	56823	386857
21 SP/FB	188	242	136	166	32	202	129	619	157	1067	0	0	0	0	2	27	84	403	42769	2	642186	2398	63300	754109
22 KGEO	220	278	87	735	44	280	187	553	17	402	0	0	16	140	38	257	1114	421	5288	0	4712	96333	3838	114960
23 EXTL	9719	19169	80686	76265	1126	7204	4326	40114	32448	32382	95986	80497	116826	252094	2913	1575	4995	29047	15128	55395	76398	4926	0	1039219
TOTAL	710821	1315294	4412398	3397511	121175	944876	660780	5241542	1934782	1835253	1221031	557920	1100099	2272218	309381	443800	651180	312313	642787	360020	948534	127072	974039	30494825

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: ALL 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	163280	91202	22968	36374	9384	37160	13429	25976	760	741	56	12	471	1267	89	136	384	29	745	68	1727	7	4231	410496
2 DC NC	374456	730205	216195	222342	22296	78171	24140	49741	2815	840	193	49	3538	6460	271	550	1083	121	4260	299	6588	70	31248	1775931
3 MTG	156770	181208	3811351	281078	11489	36347	7692	89054	8282	1064	36320	2897	69669	18145	166	333	509	235	4776	859	6756	51	114362	4839414
4 PG	208700	314159	200110	2416780	13930	38591	48999	55871	2568	1177	478	324	60189	137128	5205	1978	61011	205	5163	310	9355	297	77307	3659836
5 ARLCR	13650	6345	2839	1823	17000	22382	5634	11400	257	286	10	1	17	60	6	6	34	4	96	7	174	0	673	82704
6 ARNCR	100844	43235	21173	11888	38855	473191	77263	212290	4241	2401	64	14	165	450	30	114	208	36	733	74	1640	21	9879	998809
7 ALX	47019	21758	6111	20750	15129	110539	293836	160373	1124	3354	38	13	109	458	65	126	583	38	881	70	1455	20	5099	688948
8 FFX	142645	60164	64256	49971	41053	270435	221738	4104322	319429	137461	721	159	1298	4511	439	1662	2105	2639	12245	1620	27280	249	52712	5519113
9 LDN	2725	1219	7432	1318	1379	4680	1051	255719	1438668	24734	12416	130	532	1617	52	21	191	3852	4324	16969	7569	9	26840	1813446
10 PW	11197	2465	2829	2828	2316	12298	17174	362577	66398	1573660	330	45	600	2246	140	235	383	26156	35364	1147	18974	388	25069	2164819
11 FRD	870	1079	104442	5444	149	991	588	3815	20472	918	1020515	24184	28709	3864	76	0	202	337	601	13630	0	0	71996	1302882
12 CAR	386	522	11365	3768	66	591	386	1819	4399	163	30304	440567	34080	2696	40	0	122	12	0	287	0	0	100526	632099
13 HOW	3134	4686	73836	73250	178	441	174	878	596	161	10689	8410	686431	100809	53	72	99	20	212	290	0	3	112201	1076624
14 AAR	10783	14802	13474	152274	538	1613	1297	3092	3063	626	557	460	98002	1723826	6373	521	1127	45	2303	205	499	68	178862	2214410
15 CAL	2691	3886	1185	27112	170	612	711	1507	762	257	85	23	339	13760	270224	30555	7319	19	993	4	1497	181	2358	366251
16 STM	849	845	930	6944	77	536	300	1420	465	224	0	1	364	1016	15051	389703	21796	0	2517	0	3583	3924	1667	452212
17 CHS	9657	12291	1344	100179	568	1530	3656	4445	1650	324	34	19	303	1818	8249	15917	548353	113	2376	7	2692	10686	4751	730962
18 FAU	485	484	1442	1129	70	530	356	15016	15017	45486	193	7	219	202	7	1	159	243378	35415	1630	8758	273	15358	385615
19 STA	96	93	179	118	63	256	382	4990	205	23076	1	0	16	47	5	18	27	3296	465404	16	126535	7168	14939	646930
20 CL/JF	505	778	3431	1483	82	530	326	2450	31790	890	15589	108	696	716	1	0	3	1907	1223	267132	512	0	56823	386975
21 SP/FB	189	242	136	166	32	203	133	640	157	1077	0	0	0	0	2	27	84	403	42791	2	643338	2398	63300	755320
22 KGEO	220	278	87	735	44	280	187	553	17	402	0	0	16	140	38	257	1114	421	5288	0	4712	96333	3838	114960
23 EXTL	9719	19169	80686	76265	1126	7204	4326	40114	32448	32382	95986	80497	116826	252094	2913	1575	4995	29047	15128	55395	76398	4926	0	1039219
TOTAL	1260869	1511115	4647800	3494018	175995	1099112	723779	5408063	1955583	1851704	1224579	557920	1102589	2273330	309495	443807	651891	312313	642838	360021	950042	127072	974039	32057975

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

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Transit Percentage

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	42.3	23.6	35.0	15.0	53.4	37.7	23.7	23.9	20.9	2.4	1.8	0	8.9	3.4	0	0	1.0	0	0.1	0	0	0	0	32.3
2 DC NC	44.1	11.6	18.9	11.4	37.8	23.4	16.3	15.2	9.2	1.3	1.0	0	4.9	3.1	0	0	0.3	0	0.0	0	0	0	0	20.0
3 MTG	46.2	14.0	4.0	4.3	33.6	18.2	12.9	7.1	2.3	0.1	0.3	0	0.7	0.6	0	0	0.8	0	0	0	0	0	0	5.8
4 PG	37.3	13.1	8.3	1.9	34.7	21.1	6.0	6.2	3.8	0.3	0.6	0	1.0	0.3	0.0	0	0.0	0	0	0	0	0	0	5.5
5 ARLCR	62.1	23.8	27.1	12.5	8.3	21.6	17.8	18.0	15.2	2.1	0	0	5.9	1.7	16.7	0	0	0	0	0	0	0	0	24.6
6 ARNCR	53.4	14.9	14.5	7.0	32.8	8.1	12.1	12.2	10.5	2.0	1.0	0	1.1	2.2	0	0	0.6	0	0	0	0	0	0	15.1
7 ALX	47.8	11.8	13.3	2.2	32.5	17.2	5.5	6.9	7.3	0.9	0	0	0	0.8	0.8	0	0.1	0	0.2	0	0	0	0	11.2
8 FFX	44.3	10.8	7.4	1.7	29.7	15.5	10.0	1.8	1.9	0.3	0.1	0	0.1	0.2	0.2	0	0.0	0	0	0	0.0	0	0	4.2
9 LDN	32.2	8.0	2.6	0.9	24.6	15.4	8.1	4.9	0.9	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6
10 PW	40.9	7.4	3.9	0.8	21.2	13.2	16.5	4.7	0.2	1.0	0	0	0	0.1	0	0	0	0	0.0	0	0.7	0	0	2.0
11 FRD	14.1	5.5	3.4	0.7	6.0	1.5	0.6	0.6	0.0	0	0.3	0	0.0	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	39.0	9.2	2.8	1.6	36.4	14.7	6.1	4.4	0.6	0	0.0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	0.6
14 AAR	34.0	9.6	3.1	1.3	29.2	12.0	4.7	2.8	0.6	0	0	0	0.1	0.0	0.1	0	0	0	0	0	0	0	0	0.4
15 CAL	55.0	26.9	7.3	3.5	41.3	20.4	10.1	3.8	0.1	0	0	0	0	0.0	0.0	0	0.0	0	0	0	0	0	0	1.1
16 STM	39.9	16.4	3.0	2.4	19.9	2.4	5.6	1.3	0	0	0	0	0	0.2	0.0	0.0	0.2	0	0	0	0	0	0	0.2
17 CHS	53.2	22.4	14.3	1.5	47.3	24.3	6.7	4.8	0.1	0	0	0	0.3	0.2	0.0	0	0.1	0	0	0	0	0	0	1.5
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	3.2	1.3	0	0	8.0	9.4	13.6	8.1	1.0	0.4	0	0	0	0	0	0	0	0	0.0	0	0.2	0	0	0.1
20 CL/JF	0.8	0.7	2.9	0.2	1.2	0	0	0.1	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	0.5	3.0	3.3	0	0.9	0	0	0	0	0	0	0	0	0.1	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	43.6	13.0	5.1	2.8	31.1	14.0	8.7	3.1	1.1	0.9	0.3	0	0.2	0.0	0.0	0.0	0.1	0	0.0	0.0	0.2	0	0	4.9

Simulation - Year: 2030 Alt: V2.2 Iter. i6 * W/Tran.Constraint *
Purpose: ALL MODE: Avg. Auto Occupancy

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	1.21	1.32	1.31	1.34	1.28	1.29	1.32	1.33	1.44	1.35	1.25	1.33	1.36	1.37	1.48	1.74	1.36	1.71	1.55	1.70	1.58	1.75	1.30	1.28
2 DC NC	1.32	1.27	1.36	1.39	1.27	1.32	1.35	1.36	1.51	1.44	1.55	1.75	1.36	1.38	1.41	1.71	1.44	1.59	1.61	1.67	1.61	1.52	1.38	1.32
3 MTG	1.27	1.35	1.25	1.36	1.28	1.34	1.35	1.37	1.47	1.51	1.37	1.42	1.38	1.38	1.54	1.71	1.52	1.51	1.68	1.52	1.63	1.38	1.39	1.27
4 PG	1.29	1.35	1.36	1.25	1.27	1.32	1.36	1.35	1.60	1.48	1.56	1.40	1.34	1.36	1.38	1.47	1.41	1.55	1.62	1.75	1.65	1.40	1.37	1.28
5 ARLCR	1.28	1.30	1.30	1.32	1.04	1.27	1.30	1.31	1.29	1.33	1.25	1.00	1.14	1.37	1.25	1.50	1.48	1.33	1.37	1.75	1.41	0	1.42	1.22
6 ARNCR	1.29	1.31	1.32	1.33	1.27	1.19	1.34	1.35	1.35	1.36	1.65	2.33	1.33	1.31	1.30	1.54	1.47	1.44	1.44	1.57	1.47	1.31	1.46	1.26
7 ALX	1.31	1.33	1.34	1.35	1.28	1.31	1.19	1.33	1.41	1.36	1.58	1.86	1.49	1.39	1.43	1.64	1.36	1.52	1.48	1.59	1.49	1.67	1.45	1.26
8 FFX	1.47	1.38	1.39	1.38	1.39	1.37	1.34	1.25	1.37	1.39	1.54	1.50	1.54	1.56	1.61	1.68	1.52	1.41	1.53	1.63	1.57	1.69	1.48	1.28
9 LDN	1.85	1.57	1.37	1.63	1.86	1.56	1.46	1.32	1.21	1.33	1.27	1.40	1.59	1.71	1.73	1.75	1.53	1.37	1.65	1.40	1.65	1.50	1.43	1.23
10 PW	2.17	1.67	1.62	1.55	1.89	1.59	1.57	1.38	1.39	1.22	1.49	1.73	1.63	1.65	1.71	1.73	1.66	1.32	1.36	1.55	1.39	1.47	1.50	1.26
11 FRD	1.65	1.57	1.41	1.51	1.81	1.53	1.53	1.59	1.46	1.66	1.19	1.37	1.35	1.51	1.73	0	1.71	1.64	1.83	1.46	0	0	1.42	1.23
12 CAR	1.45	1.50	1.36	1.45	1.50	1.50	1.58	1.59	1.65	1.68	1.31	1.15	1.31	1.43	1.60	0	1.65	2.40	0	1.53	0	0	1.46	1.21
13 HOW	1.29	1.30	1.36	1.33	1.23	1.35	1.51	1.41	1.56	1.68	1.35	1.41	1.15	1.34	1.61	1.71	1.52	1.33	1.78	1.57	0	1.50	1.35	1.22
14 AAR	1.40	1.36	1.40	1.37	1.33	1.38	1.46	1.49	1.69	1.62	1.49	1.42	1.39	1.20	1.40	1.59	1.49	1.80	1.71	1.75	1.70	1.62	1.38	1.23
15 CAL	1.35	1.31	1.48	1.31	1.39	1.44	1.44	1.48	1.68	1.65	1.81	1.53	1.54	1.35	1.13	1.33	1.37	1.58	1.73	2.00	1.77	1.33	1.52	1.18
16 STM	1.43	1.42	1.60	1.35	1.43	1.49	1.49	1.59	1.72	1.71	0	1.00	1.69	1.56	1.34	1.15	1.36	0	1.70	0	1.68	1.25	1.55	1.18
17 CHS	1.31	1.25	1.43	1.31	1.41	1.42	1.39	1.41	1.66	1.60	1.70	2.11	1.51	1.39	1.32	1.36	1.15	1.69	1.66	1.40	1.65	1.28	1.53	1.19
18 FAU	1.45	1.50	1.53	1.62	1.46	1.45	1.50	1.50	1.39	1.34	1.57	2.33	1.63	1.84	7.00	1.00	1.64	1.09	1.36	1.42	1.43	1.53	1.47	1.18
19 STA	1.58	1.63	1.47	1.59	2.32	2.02	1.92	1.42	1.38	1.27	1.00	0	2.00	1.96	1.67	1.50	1.50	1.37	1.18	1.78	1.31	1.15	1.44	1.21
20 CL/JF	1.46	1.56	1.55	1.67	1.42	1.48	1.56	1.53	1.38	1.54	1.36	1.37	1.52	1.70	1.00	0	1.50	1.48	1.74	1.09	1.71	0	1.46	1.18
21 SP/FB	1.46	1.53	1.72	1.66	1.39	1.46	1.54	1.53	1.57	1.31	0	0	0	0	1.00	1.59	1.45	1.45	1.40	1.00	1.19	1.18	1.41	1.21
22 KGEO	1.46	1.52	1.58	1.60	1.63	1.57	1.50	1.60	2.83	1.56	0	0	1.45	1.65	1.46	1.49	1.45	1.57	1.48	0	1.42	1.08	1.43	1.13
23 EXTL	1.33	1.40	1.37	1.31	1.36	1.47	1.45	1.44	1.32	1.29	1.28	1.34	1.31	1.33	1.29	1.39	1.34	1.28	1.35	1.30	1.40	1.32	0	1.33
TOTAL	1.31	1.31	1.27	1.28	1.27	1.27	1.28	1.28	1.25	1.24	1.21	1.18	1.22	1.23	1.16	1.17	1.18	1.13	1.24	1.15	1.25	1.12	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

Ref:

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(1/10th  mi)
;                                           3- tolls   (1980 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
;   Program to Allocation Total Zonal Households among 64 Classes:
;   4 HH Size groups by 4 Income Groups by 4 Veh. Avail. groups
;
;   Programmer: Milone
;   Date:      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@

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

   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  Qeueing 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)
;
;-----------------------------------------------------------------------------
;
;
;
;
;   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
;                2) 2-occ adrs
;                3) 3-occ adrs
;                4) Trucks
;                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.TT'     ; AM     Non-Modeled Trips                 //
MISCPM  = 'MISCPM.TT'     ; PM     Non-Modeled Trips                 //
MISCOP  = 'MISCOP.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            ; PM Thru     Truck
 MW[32] = MI.6.2*@XXAD1OCC@ ; PM Thru     Auto Driver-1 OCC
 MW[33] = MI.6.2*@XXAD2OCC@ ; PM Thru     Auto Driver-2 OCC
 MW[34] = MI.6.2*@XXAD3OCC@ ; PM Thru     Auto Driver-3+OCC
 MW[35] = MI.6.3            ; PM Taxi     Auto Driver
 MW[36] = MI.6.4            ; PM Visitor  Auto Driver
 MW[37] = MI.6.5            ; PM School   Auto Driver
 MW[38] = MI.6.6            ; PM I-I,I-E,E-I Medium Truck
 MW[39] = MI.6.7            ; PM 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] +MW[45] ; 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]+MW[55] ; 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]+MW[65] ; 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\Qeueing_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   Qeueing Time (MIN)
       lookup[2] = 1,result = 3,  ;Fwys        Qeueing Time (MIN)
       lookup[3] = 1,result = 4,  ;MajArts     Qeueing Time (MIN)
       lookup[4] = 1,result = 5,  ;MinArts     Qeueing Time (MIN)
       lookup[5] = 1,result = 6,  ;Colls       Qeueing Time (MIN)
       lookup[6] = 1,result = 7,  ;Expways     Qeueing Time (MIN)
       lookup[7] = 1,result = 8,  ;Ramps       Qeueing 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)      ; TC(LINKCLASS) =
  TC[2]= T0*VCRV(2,VC) + QTIME(2,VC)      ;   Uncongested Time(T0) *
  TC[3]= T0*VCRV(3,VC) + QTIME(3,VC)      ;   Volume Delay Funtion(VDF)Value
  TC[4]= T0*VCRV(4,VC) + QTIME(4,VC)      ;   VDF function is based on VC
  TC[5]= T0*VCRV(5,VC) + QTIME(5,VC)      ; Note: the LINKCLASS is defined
  TC[6]= T0*VCRV(6,VC) + QTIME(6,VC)      ; during the LINKREAD phase below.
  TC[7]= T0*VCRV(7,VC) + QTIME(7,VC)      ; during the LINKREAD phase below.
}
;
;
;
CAPFAC=@CAPFAC@  ;
; 10 iterations changed to 20 (RM) 3/09/04 / GAP,AAD, RMSE,&RAAD params set to
zero
;  to ensure 'maxiters' iterations are completely executed (RM) 6/15/04 .
MAXITERS=20     ;
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

  _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   Qeueing Time (MIN)
        lookup[2] = 1,result = 3,  ;Fwys        Qeueing Time (MIN)
        lookup[3] = 1,result = 4,  ;MajArts     Qeueing Time (MIN)
        lookup[4] = 1,result = 5,  ;MinArts     Qeueing Time (MIN)
        lookup[5] = 1,result = 6,  ;Colls       Qeueing Time (MIN)
        lookup[6] = 1,result = 7,  ;Expways     Qeueing Time (MIN)
        lookup[7] = 1,result = 8,  ;Ramps       Qeueing 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 Qeueing Time  if Appropriate
; ------------------------------------------------

      _BaseSpeed                  =  %_iter_%@prd@SPD
      _BaseTime                   =  Distance / _Basespeed  * 60.0
      %_iter_%@prd@QTimePen       =  QTIME(FTPlus1, %_iter_%@prd@VC)
      _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(6.4),' ',%_iter_%@prd@SPD(6.4),
                  ' <-- a,b, Dst, base speed,time, BaseVCRatio, TimePen, final
time,speed(2x)',
                  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
;========================================================================
;
; 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@

; 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
;
; With the TAZ designated, now the speed/capacity class is defined as
; a two-digit code-- facility type & areatype
;
           SPDCLASS =  FTYPE*10 + ZNAT(1,TAZ) ;  Speed Class
           CAPCLASS =  FTYPE*10 + ZNAT(1,TAZ) ;  Capacity Class
           AREATP   =  ZNAT(1,TAZ)            ;  Area Type
;
;
; 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=@OU_BSNET@

READ FILE=@IN_TESC@
READ FILE=@HWY_Defl@
;
; Compute AM, PM, Off-Peak Tolls
; The tolls are read in as undeflated, tbased 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.  It it is zero, then 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
; -----------------------------------------------------------------------------



;
; 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

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


;-----------------------------------------------------------------------
; 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 1980 cents)                       //;
;
; 6/30/03 MODIFICATIONS FOR IMPROVED TOLL MODELING MADE  rjm
;
;
;//////////////////////////////////////////////////////////////;
;
;
;   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'
    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'
    MYID    = '%_iter_% OP skims'
  ENDIF

RUN PGM=HWYLOAD
;
;
  NETI   =@NETIN@                         ; Pk Prd TP+ network
  MATO[1]=@MATOUT1@, MO=1-3, FORMAT=MINUTP ; LOV   skims
  MATO[2]=@MATOUT2@, MO=4-6, FORMAT=MINUTP ; HOV2  skims
  MATO[3]=@MATOUT3@, MO=7-9, FORMAT=MINUTP ; HOV3+ skims
  ID=@MYID@
;-
  READ FILE = @in_tskm@
;-

  PHASE=LINKREAD
       SPEED        =  LI.%_iter_%@PRD@SPD ;Restrained speed (min)
       IF (SPEED = 0)
          T1 = 0
       ELSE
          T1 = LI.DISTANCE / SPEED * 60.0
       ENDIF
;-
   ; Define AM /OP link level tolls by vehicle type here:
       LW.SOV@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(1,LI.TOLLGRP)           ;  SOV
TOLLS in 1980 cents
       LW.HV2@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(2,LI.TOLLGRP)           ;  HOV 2
occ TOLLS in 1980 cents
       LW.HV3@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(3,LI.TOLLGRP)           ;  HOV
3+occ TOLLS in 1980 cents
       LW.TRK@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(4,LI.TOLLGRP)           ;  Truck
TOLLS in 1980 cents
       LW.APX@PRD@TOLL = LI.@PRD@TOLL * @PRD@_TFAC(5,LI.TOLLGRP)           ;  AP Pax
TOLLS in 1980 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
;
  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(LI.@PRD@TOLL), NOACCESS=0  ;
    PATHLOAD PATH=LW.HV2@PRD@IMP, EXCLUDEGRP=2,             ; HOV2  paths
             MW[4]=PATHTRACE(TIME),    NOACCESS=0, ; -excluding links
             MW[5]=PATHTRACE(DIST),    NOACCESS=0, ;   w/ LIMIT=3,5-9
             MW[6]=PATHTRACE(LI.@PRD@TOLL), NOACCESS=0  ;
    PATHLOAD PATH=LW.HV3@PRD@IMP, EXCLUDEGRP=3,             ; HOV3+ paths
             MW[7]=PATHTRACE(TIME),    NOACCESS=0, ; -excluding links
             MW[8]=PATHTRACE(DIST),    NOACCESS=0, ;   w/ LIMIT=5-9
             MW[9]=PATHTRACE(LI.@PRD@TOLL), NOACCESS=0  ;

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

```
     mw[1] = ROUND(MW[1])                      ; ROUND TIME SKIMS
     mw[4] = ROUND(MW[4])                      ; TO WHOLE MINUTES
     mw[7] = ROUND(MW[7])                      ;
     mw[1] = MIN(MW[1],326.0)  ; Impose Max TIME / MC Model Maximum
     mw[4] = MIN(MW[4],326.0)  ; Impose Max TIME / MC Model Maximum
     mw[7] = MIN(MW[7],326.0)  ; Impose Max TIME / MC Model Maximum
                               ;  ...just in case
     mw[2] = ROUND(MW[2]*10)                   ; FACTOR/ROUND DIST.
     mw[5] = ROUND(MW[5]*10)                   ; SKIMS TO IMPLICIT
     mw[8] = ROUND(MW[8]*10)                   ; 1/10THS OF MILES

     mw[3] = ROUND(MW[3])                      ; ROUND TOLL
     mw[6] = ROUND(MW[6])                      ; SKIMS TO 1980
     mw[9] = ROUND(MW[9])                      ; WHOLE CENTS

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


     IF (i = 1-2)                        ;  for select rows (Is)
         printrow MW=1-3, j=1-2191       ;  print work matrices 1-3
     ENDIF                               ;  row value to all Js.
  ENDPHASE
ENDRUN
ENDLOOP
```

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+ Occc.  (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 Links
LNKIN='METLNKM1.TB'    ; Input Station Nodes
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 Statio-to-Station Fares
-text file
OP_Sta_Fares    = 'OP_Metrorail_Fares.TXT'     ;  Output OP Statio-to-Station Fares
-text file


RUN PGM=MATRIX
ZONES=@STATSIZE@
read FILE=@MSTA_Tariff@


;
; Set up zone arrays for accumulating I/O variables
;
;
;
;==============================================================
; Read Station Coordinate file                                =
;==============================================================
;
      LOOKUP Name=StaXYS,
             LOOKUP[1]   = 1,Result = 2, ; Xcrds
             LOOKUP[2]   = 1,Result = 3, ; YCrds
             Interpolate = N, FAIL=0,0,0,list=Y,file=@MSTA_XYS@

;
;==============================================================
; Read Station Fare Discount Lookup                           =
;   - The station-specific discount values are in cents.      =
;     The discounts are subtracted from the final             =
;     computed fares to/from the station                      =
;==============================================================
;
      LOOKUP Name=StaDSC,
             LOOKUP[1]   = 1,Result = 2,   ;  AM Fare Discount in cents
             LOOKUP[2]   = 1,Result = 3,   ;  OP Fare Discount in cents
             Interpolate = N, FAIL=0,0,0,list=Y,file=@MSTA_Discount@


;==============================================================
; Over-the Rail Distance Skims                                =
;==============================================================


     FILEI MATI = RLDIST.SKM
           MW[1]= MI.1.1     ;   (Over-the-rail distance in 1/100s mi)

           ROWSUM1 = ROWSUM(1)
;==============================================================
; Now, loop through each station i/j, compute composite distance,
;      and compute AM and Off peak fares.  Use generalized cost
;      calculation:
;
; FARE = (incremental cost + Rate*Distance) <-Per short  Distance  +
;        (incremental cost + Rate*Distance) <-Per medium Distance  +
;        (incremental cost + Rate*Distance) <-Per long   Distance
;
;==============================================================
  IF (rowsum1 > 0)      ; exclude unused stations
    JLOOP

     IF (MW[1] !=0 || I=J )   ; exclude station i/js that are 'unused

;     Calculate airline distance (MW[2]) in 100s of miles
      IxCrd  = StaXYS(1,I)
      JxCrd  = StaXYS(1,J)
      IyCrd  = StaXYS(2,I)
      JyCrd  = StaXYS(2,J)
      MW[2]  = ((IxCrd-JxCrd)^2 + (IyCrd-JyCrd)^2 )^ 0.5

;     Calculate Composite (airline/over-the rail) distance MW[3] in whole miles
      MW[3]  =         ((MW[1]  + MW[2]) / 2.0) * @MR_Dst_Ftr@

;     Calculate peak (MW[10]) and off-peak fares (MW[20]) based on comp distance
;     Fares computed units in non-defalted cents


;   Peak Fare Calculation:  -------------------------------------------------------
---------------


      PkDist1 = Pk_Fare_Dist1
      PkDist2 = Pk_Fare_Dist1 + Pk_Fare_Dist2


      IF       (MW[3] <= PkDist1)

                 MW[10] = Pk_Fare_Incr1 + (Pk_Fare_Rate1 * MW[3])

        ELSEIF (MW[3] >  PkDist1 && MW[3] <= PkDist2)

                 MW[10] = Pk_Fare_Incr1 + (Pk_Fare_Rate1 *  Pk_Fare_Dist1)   +
                          Pk_Fare_Incr2 + (Pk_Fare_Rate2 * (MW[3] - PkDist1))

        ELSEIF (MW[3] >  PkDist2)

                 MW[10] = Pk_Fare_Incr1 + (Pk_Fare_Rate1 *  Pk_Fare_Dist1)   +
                          Pk_Fare_Incr2 + (Pk_Fare_Rate2 *  Pk_Fare_Dist2)   +
                          Pk_Fare_Incr3 + (Pk_Fare_Rate3 * (MW[3] - PkDist2))
      ENDIF

;     Round computed AM fare MW[10] to nearest nickle as in original program Final
Fare
;     is 'FinAMFare'
```

```
                    FARE        = MW[10]
                    temp1       = INT(Fare/10.0)
                    temp2       = temp1  * 10.0
                    DiffCheck   = Fare - temp2
                    IF        (DiffCheck < 2.5)
                         FinAMFare = temp2
                      ELSEIF  (DiffCheck > 7.5)
                         FinAMFare = temp2 + 10.0
                      ElSE
                         FinAMFare = temp2 +  5.0
                    ENDIF

;     Impose Max Fare rule
                 If (FinAMFare > Pk_Fare_Max)  FinAMFare = Pk_Fare_Max

;     Apply AM station discounts if used
                    FinAMFare = FinAMFare - StaDSC(1,I) - StaDsc(1,J)

;     Compute IJ Index so station-to-station fares can be read in as a lookup
;     Index merges separate I/J numbers into one number (index for  station 1 to
station 1 is '1001')
                    IJindex = (I * 1000.0)  + J

;    Write out the AM Fares:
      Print List =  I(5),J(5), FinAMFare(6),IJindex(7),' ; ', MW[10](6),
MW[1](10.0),MW[2](10.0),MW[3](10.2),
                    IxCrd(7), JxCrd(7), IyCrd(7), JyCrd(7),
                    PkDist1(10.2),PkDist2(10.2),
               ';<
I/J/AM_Fare_n5/AM_Fare/R_Dst100s/A_Dst100s/CmpDstMi/iXcrd/jXcrd/iYcrd/jYcrdI/Dist1/D
ist2',
                File=@AM_Sta_Fares@



;     END of Peak Fare Calculation -------------------------------------------------
---------------

;    Off-Peak Calculation:  --------------------------------------------------------
----------------

      OpDist1 = Op_Fare_Dist1
      OpDist2 = Op_Fare_Dist1 + Op_Fare_Dist2


      IF       (MW[3] <= OpDist1)

                 MW[20] = Op_Fare_Incr1 + (Op_Fare_Rate1 * MW[3])

        ELSEIF (MW[3] >  OpDist1 && MW[3] <= OpDist2)

                 MW[20] = Op_Fare_Incr1 + (Op_Fare_Rate1 *  Op_Fare_Dist1)   +
                          Op_Fare_Incr2 + (Op_Fare_Rate2 * (MW[3] - OpDist1))

        ELSEIF (MW[3] >  OpDist2)

                 MW[20] = Op_Fare_Incr1 + (Op_Fare_Rate1 *  Op_Fare_Dist1)   +
                          Op_Fare_Incr2 + (Op_Fare_Rate2 *  Op_Fare_Dist2)   +
                          Op_Fare_Incr3 + (Op_Fare_Rate3 * (MW[3] - OpDist2))
      ENDIF

;     Round computed Off-peak fare MW[20] to nearest nickle as in original program
Final Fare
;     is 'FinOPFare'
                    FARE        = MW[20]
                    temp1       = INT(Fare/10.0)
                    temp2       = temp1  * 10.0
                    DiffCheck   = Fare - temp2
                    IF        (DiffCheck < 2.5)
                         FinOPFare = temp2
                      ELSEIF  (DiffCheck > 7.5)
                         FinOPFare = temp2 + 10.0
                      ElSE
                         FinOPFare = temp2 +  5.0
                    ENDIF


;     Impose Max Fare rule
                 If (FinOPFare > Op_Fare_Max)  FinOPFare = Op_Fare_Max

;     Apply Off-pk station discounts if used
                    FinOPFare = FinOPFare - StaDSC(2,I) - StaDsc(2,J)

;     Compute IJ Index so station-to-station fares can be read in as a lookup
;     Index merges separate I/J numbers into one number (index for  station 1 to
station 1 is '1001')
                    IJindex = (I * 1000.0)  + J

;     Write out the Off-Pk Fares:
      Print List =  I(5),J(5),FinOPFare(6),IJindex(7),' ; ', MW[20](6),
MW[1](10.0),MW[2](10.0),MW[3](10.2),
                    IxCrd(7), JxCrd(7), IyCrd(7), JyCrd(7),
                    OpDist1(10.2),OpDist2(10.2),
               ';<
I/J/OP_Fare/R_Dst100s/A_Dst100s/CmpDstMi/iXcrd/jXcrd/iYcrd/jYcrdI/Dist1/Dist2',
                File=@OP_Sta_Fares@



;     END of Off Peak Fare Calculation --------------------------------------------
-----------------


     ENDIF
    ENDJLOOP
   endif
ENDRUN
```

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'.
; Buck rounding is removed per version 2.2
; =====================================================================
;
;
;//////////////////////////////////////////////////////////////////////
;                                                                   //
; Input/Output filenames:                                           //
;                                                                   //
READ FILE=..\support\V2TODTPP.PAR  ; Time of Day Factor File       //
;                                                                   //
; I/P PP Auto Driver 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 = 'MTKESTPP.VTT'              ;  Medium Truck Trips       //
HTKTDOUT = 'HTKESTPP.VTT'              ;  Heavy  Truck Trips       //
;
APXADR   = 'inputs\airpax.adr'         ;  Air Passenger Auto Dr.   //
;
; O/P Auto Dr. Pct. tables:                                         //
MISCAM  = 'MISCAM.TT'                  ; AM     Non-Modeled Trips  //
MISCPM  = 'MISCPM.TT'                  ; PM     Non-Modeled Trips  //
MISCOP  = 'MISCOP.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 used to develop 1-occ, 2-occ, and 3+occ auto driver
;  trip tables directly from the 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+ Occ.   (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+ Occ.   (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+ Occ.  (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+ Occ.   (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 percentage file containing short and
;                 long walk percentages 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 file 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
;
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
```

19 PUMP_PRIME_SKIMS.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 Base CPI year
           _BseGrowRate = CPI_Table(2,@ModeledYear@)                            ;
then use the defaltion rate from table
           _AltGrowRate = CPI_Table(2,@ModeledYear@) * INFLATIONFTR

           _FutBseCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_BseGrowRate)^(@ModeledYear@ - BaseCPIYear))
           _FutAltCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_AltGrowRate)^(@ModeledYear@ - BaseCPIYear))

           DEFLATIONFTR = (_FutAltCPI / _FutBseCPI)  *  CPI_Table(3,@ModeledYear@)
```

```
         ELSE
           _BseGrowRate = ( (CPI_Table(1,CurrCPIYear) / CPI_Table(1,BaseCPIYear)) ^
(1.0/ (CurrCPIYear - BaseCPIYear)) ) - 1.0
           _AltGrowRate = _BseGrowRate * INFLATIONFTR

           _FutBseCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_BseGrowRate)^(@ModeledYear@ - BaseCPIYear))
           _FutAltCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_AltGrowRate)^(@ModeledYear@ - BaseCPIYear))

           DEFLATIONFTR =  (_FutAltCPI / _FutBseCPI)  *  CPI_Table(3,CurrCPIYear)
        ENDIF

               ;  print out small text file containing deflation factor deriviation:
           Print List='Modeled Year:                                          ',
@ModeledYear@(8.0) ,'\n',                             file=@CPI_rept@
           Print List='Base    Year & CPI:                                    ',
BaseCPIYear(8.0) , _BseCPI(8.1),'\n',                 file=@CPI_rept@
           Print List='Current Year & CPI & deflator (Base CPI/Curr CPI):  ',
CurrCPIYear(8.0) , _CurCPI(8.1),_CurCPIdefl(8.5),'\n',file=@CPI_rept@
           Print List='Inflation Factor Assumption (1.00 = direct CPI):    ',
INFLATIONFTR(8.5),'\n',                               file=@CPI_rept@
           Print List='Modeled Year Growth rate & CPI w/  Full  CPI:    (A)',
_BseGrowRate(8.5)  , _FutBseCPI(8.1),'(forecasts years only)','\n',file=@CPI_rept@
           Print List='Modeled Year growth rate & CPI w/ Infla. Factor: (B)',
_AltGrowRate(8.5)  , _FutAltCPI(8.1),'(forecasts years only)','\n',file=@CPI_rept@
           Print List='Deflation Factor ((B)/(A) * Current Deflator :      ',
DEFLATIONFTR(8.5)  ,                                    file=@CPI_rept@

ENDIF
          Print List = 'DEFLATIONFTR  = ', DEFLATIONFTR(8.5),'  ;; Transit Deflation
Factor ',  File = TRN_Deflator.txt
          Print List = 'DEFLATIONFTR  = ', DEFLATIONFTR(8.5),'  ;; Highway Deflation
Factor ',  File = HWY_Deflator.txt




ENDRUN
;===============================================================
; End of CPI/Deflation section                                 =
;===============================================================
```

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 Base CPI year
           _BseGrowRate = CPI_Table(2,@ModeledYear@)                            ;
then use the defaltion rate from table
           _AltGrowRate = CPI_Table(2,@ModeledYear@) * INFLATIONFTR

           _FutBseCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_BseGrowRate)^(@ModeledYear@ - BaseCPIYear))
           _FutAltCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_AltGrowRate)^(@ModeledYear@ - BaseCPIYear))

           DEFLATIONFTR = (_FutAltCPI / _FutBseCPI)  *  CPI_Table(3,@ModeledYear@)


         ELSE
           _BseGrowRate = ( (CPI_Table(1,CurrCPIYear) / CPI_Table(1,BaseCPIYear)) ^
(1.0/ (CurrCPIYear - BaseCPIYear)) ) - 1.0
           _AltGrowRate = _BseGrowRate * INFLATIONFTR

           _FutBseCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_BseGrowRate)^(@ModeledYear@ - BaseCPIYear))
           _FutAltCPI   = CPI_Table(1,BaseCPIYear) * ((1.0 +
_AltGrowRate)^(@ModeledYear@ - BaseCPIYear))

           DEFLATIONFTR =  (_FutAltCPI / _FutBseCPI)  *  CPI_Table(3,CurrCPIYear)
        ENDIF

               ;  print out small text file containing deflation factor deriviation:
           Print List='Modeled Year:                                          ',
@ModeledYear@(8.0) ,'\n',                           file=@CPI_rept@
           Print List='Base    Year & CPI:                                    ',
BaseCPIYear(8.0) , _BseCPI(8.1),'\n',               file=@CPI_rept@
           Print List='Current Year & CPI & deflator (Base CPI/Curr CPI):  ',
CurrCPIYear(8.0) , _CurCPI(8.1),_CurCPIdefl(8.5),'\n',file=@CPI_rept@
           Print List='Inflation Factor Assumption (1.00 = direct CPI):    ',
INFLATIONFTR(8.5),'\n',                             file=@CPI_rept@
           Print List='Modeled Year Growth rate & CPI w/  Full  CPI:    (A)',
_BseGrowRate(8.5)  , _FutBseCPI(8.1),'(forecasts years only)','\n',file=@CPI_rept@
           Print List='Modeled Year growth rate & CPI w/ Infla. Factor: (B)',
_AltGrowRate(8.5)  , _FutAltCPI(8.1),'(forecasts years only)','\n',file=@CPI_rept@
           Print List='Deflation Factor ((B)/(A) * Current Deflator :      ',
DEFLATIONFTR(8.5)  ,                                  file=@CPI_rept@

ENDIF
          Print List = 'DEFLATIONFTR  = ', DEFLATIONFTR(8.5),'  ;; Transit Deflation
Factor ',  File = TRN_Deflator.txt
          Print List = 'DEFLATIONFTR  = ', DEFLATIONFTR(8.5),'  ;; Highway Deflation
Factor ',  File = HWY_Deflator.txt




ENDRUN
;==============================================================
; End of CPI/Deflation section                                =
;==============================================================
```

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 PENALTY 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 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, 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 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/'80$) by income level (for toll modeling)
;
toll_inc   = 'inputs\toll.inc'    ;
;
; -------------------------------------------------------------------
;$
; -------------------------------------------------------------------
; 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)
;
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
```

25 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
;=================================================================
;
;=================================================================
; 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  = 1.17                   ;  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) * NHBZmod(in,I) *
JurPmod(4,JurCode) * @NHB_GlobalAdj@ * nonExtSH

;        #Note:#        Zonal production factor for NHB productions: NHBZmod(1,I)
NHBZmod(2,I)NHBZmod(3,I)NHBZmod(4,I)
;                       should not be used as a zonal special generator factor since
the computed productions 'prodn[isv]' is
;                       only to arrive at a regional control total that the NHB
attractions will be controlled
;                       to.  Use NHBZmod(5,I) as a special generator adjustment
only.

      ; 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
```

26 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
```

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_=V2.2_Run_P_CV

:: 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 err
if not exist          controls\mc_hbs00.ctl    goto err
if not exist          controls\mc_hbo00.ctl    goto err
if not exist          controls\mc_nhb00.ctl    goto err
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 Misc_Time-of-Day.bat %1

call Time-of-Day.bat %1

call Highway_Assignment.bat %1

call Highway_Skims.bat %1


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


REM (copy year/alt specific MC controls to generic filenames on output S.D.)
copy controls\mc_hbw00.ctl   %1\mc_hbw.ctl  /y
copy controls\mc_hbs00.ctl   %1\mc_hbs.ctl  /y
copy controls\mc_hbo00.ctl   %1\mc_hbo.ctl  /y
copy controls\mc_nhb00.ctl   %1\mc_nhb.ctl  /y

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

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

1.2 runall2000.bat

```
:: runall2000.bat, 2007-01-02
:: Source:  I:\ateam\model_dev\Version_2.2P_CV


set root=C:\Version_2.2P_CV
set scenar=2000
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=
```

1.3 runall_2030.bat

```
:: runall_2030.bat

:: TPB Travel Model, Version 2.2

set _year_=2030
set _alt_=V2.2_Run_P_CV

:: 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 err
if not exist          controls\mc_hbs30.ctl    goto err
if not exist          controls\mc_hbo30.ctl    goto err
if not exist          controls\mc_nhb30.ctl    goto err
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

set _path10_=C:\Version_2.2P_CV\2010

if not exist    %_path10_%\mc_hbwi6.fin goto err
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 Misc_Time-of-Day.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 =============================================

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

1.4 runall2030.bat

```
:: runall2030.bat, 2006-01-02
:: Source:  I:\ateam\model_dev\Version_2.2P_CV


set root=C:\Version_2.2P_CV
set scenar=2030
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..
```

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..
```

2.7 Misc_Time-of-Day.bat

```
CD %1

REM  Non-Modeled Time-of-Day Trips

del tppl*.*
del                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     Misc_Time-of-Day.rpt
copy               Misc_Time-of-Day.rpt temp.dat
..\software\extrtab       temp.dat
copy extrtab.out          Misc_Time-of-Day.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.skm  sovam.skm
copy hov2%_prev_%am.skm hov2am.skm
copy hov3%_prev_%am.skm hov3am.skm

copy sov%_prev_%op.skm  sovop.skm
copy hov2%_prev_%op.skm hov2op.skm
copy hov3%_prev_%op.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.skm  sovam.skm
copy hov2%_prev_%am.skm hov2am.skm
copy hov3%_prev_%am.skm hov3am.skm

copy sov%_prev_%op.skm  sovop.skm
copy hov2%_prev_%op.skm hov2op.skm
copy hov3%_prev_%op.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 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..
```

3.9 Time-of-Day.bat

```
CD %1

REM  Time-of-Day Trips

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

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

goto end

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

3.10 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..
```

3.11 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..
```

Appendix G Flowcharts

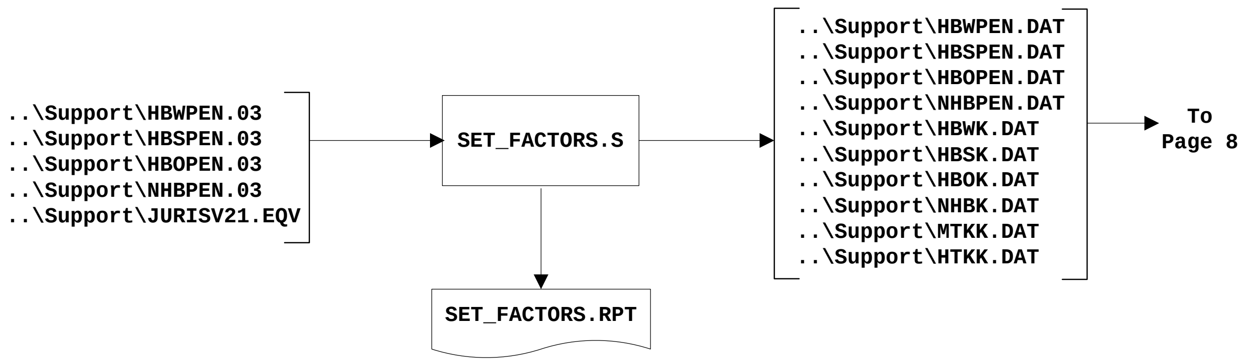
Ref: v2.2_MODAPP.vsd

Flowchart Numbers associated with Flowchart Steps

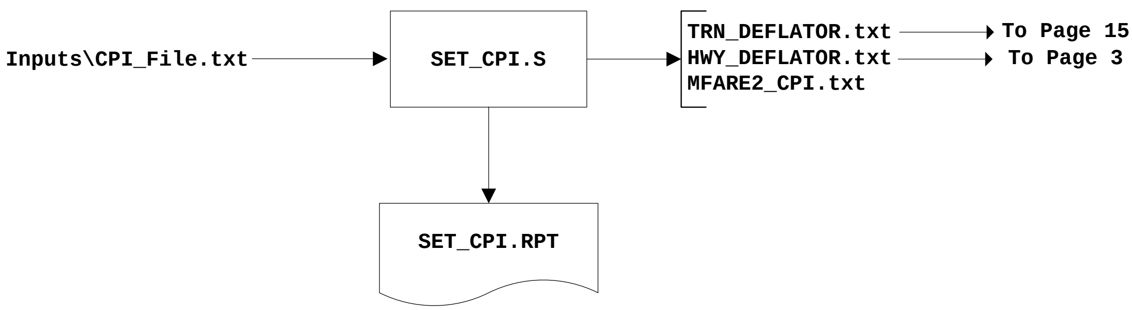
This Appendix contains detailed data processing flow charts showing the relationship of input and output files to the processing steps comprising the Version 2.2 travel model. The flowcharts are arranged on the basis of the 17 batch files used in the model application. Many of the batch files are reused 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				14			
PP_Transit_Prep.bat	5						
Transit_Skim.bat				6			
Transit_Fare.bat				15			
Trip_Generation.bat				7			
Trip_Distribution.bat				8			
Mode_Choice.bat or Mode_Choice_TC.bat				16			
PP_Auto_Drivers.bat	9						
Auto_Driver.bat				17			
Misc_Time-of-Day.bat	10						
Time-of-Day.bat				11			
Highway_Assignment.bat				12			
Highway_Skims.bat				13			

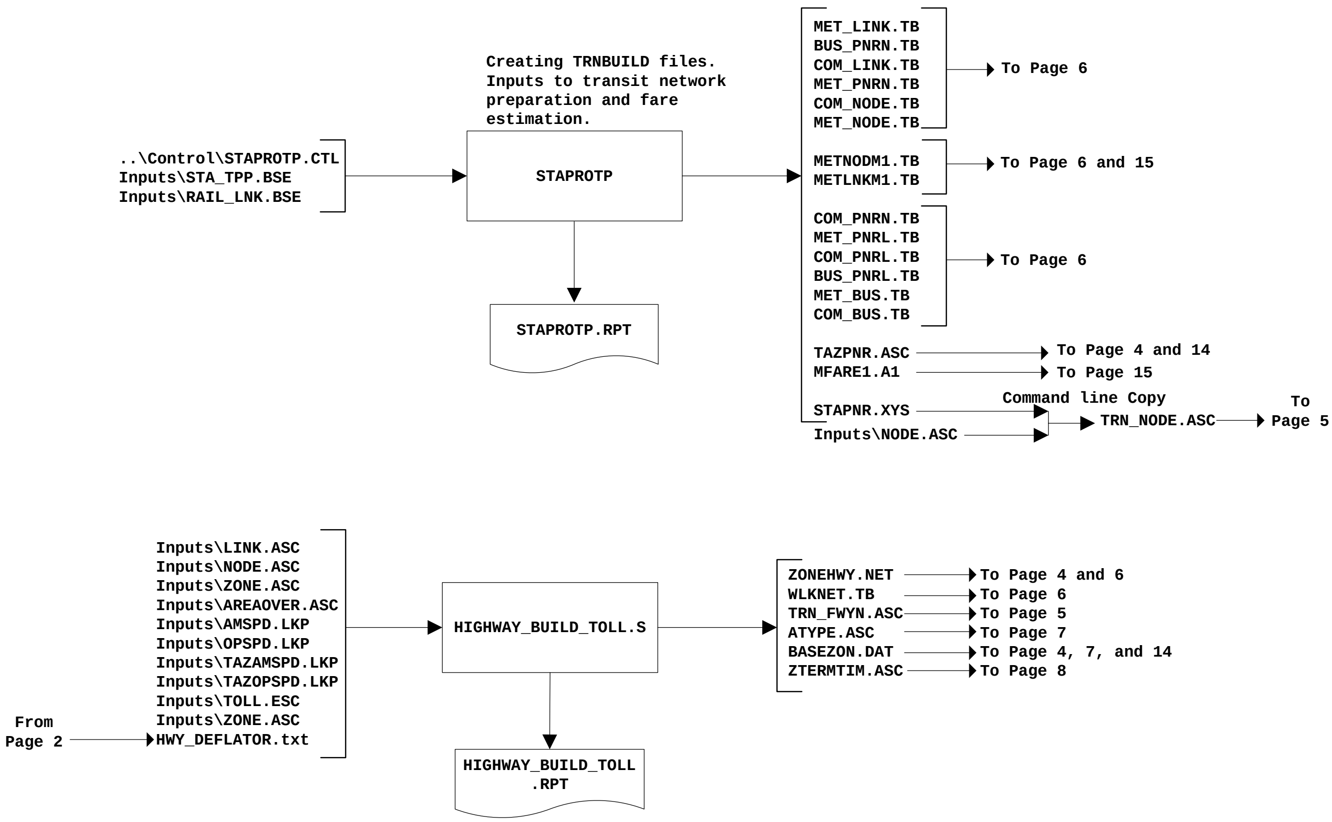
Set_Factors.bat



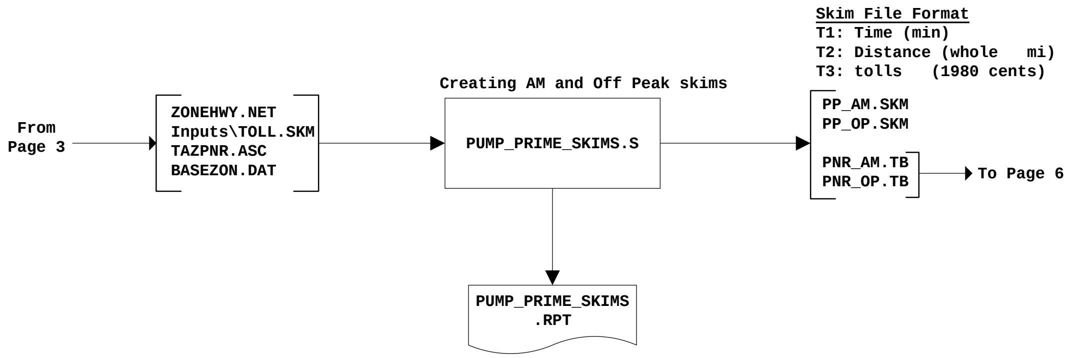
Set_CPI.bat


Inputs\CPI_File.txt
SET_CPI.S
TRN_DEFLATOR.txt
HWY_DEFLATOR.txt
MFARE2_CPI.txt
To Page 15
To Page 3
SET_CPI.RPT

PP_Highway_Build.bat: Highway Network Preparation

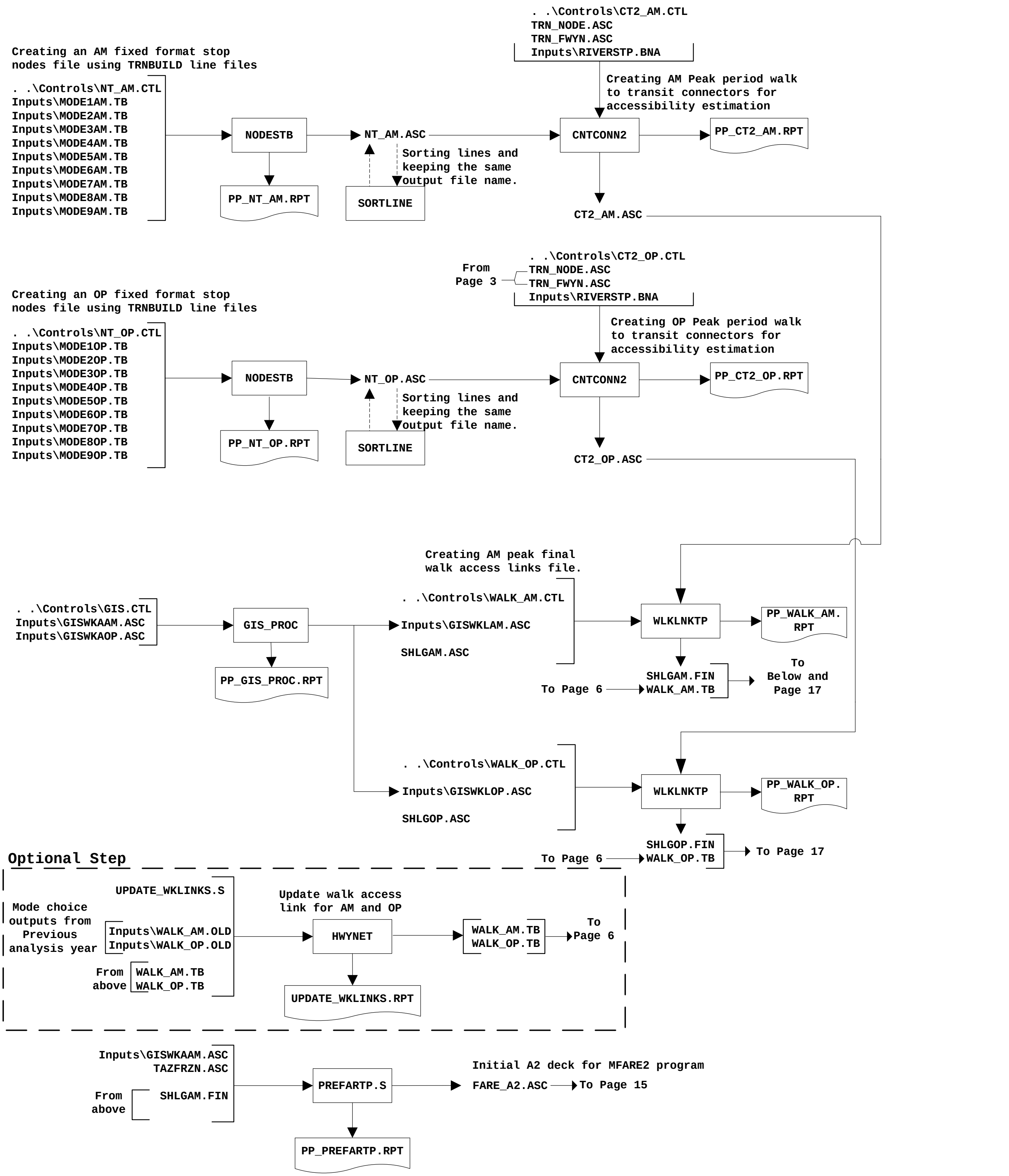


PP_Highway_PNR.bat: Highway Path Building



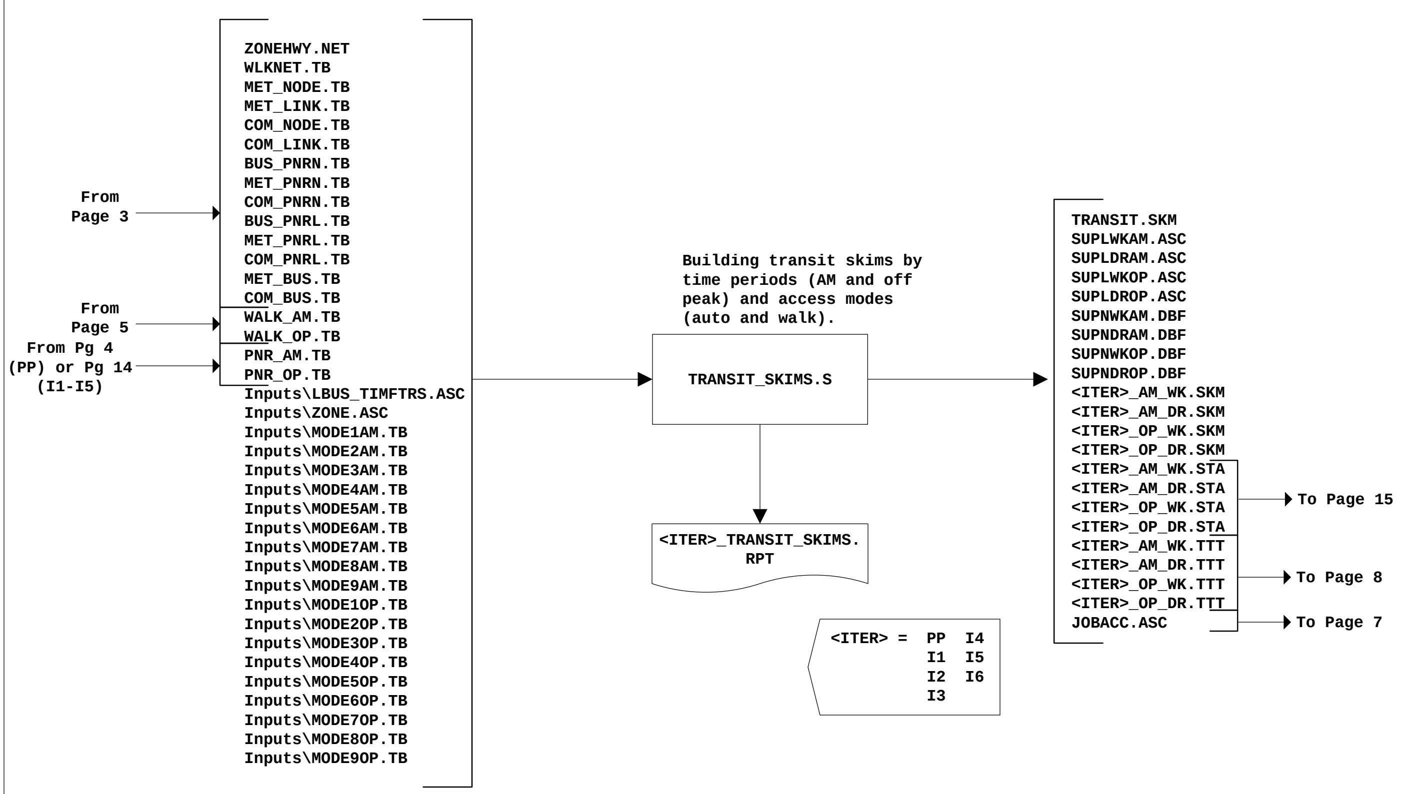
TITLE:	**Version 2.2 Model Application**
COMPANY: COG/TPB	**CREATOR:** RM/MS
DATE: January 2007	PG: 5 OF 17
FILENAME: V2.2_MODAPP.VSD	

PP_Transit_Prep.bat

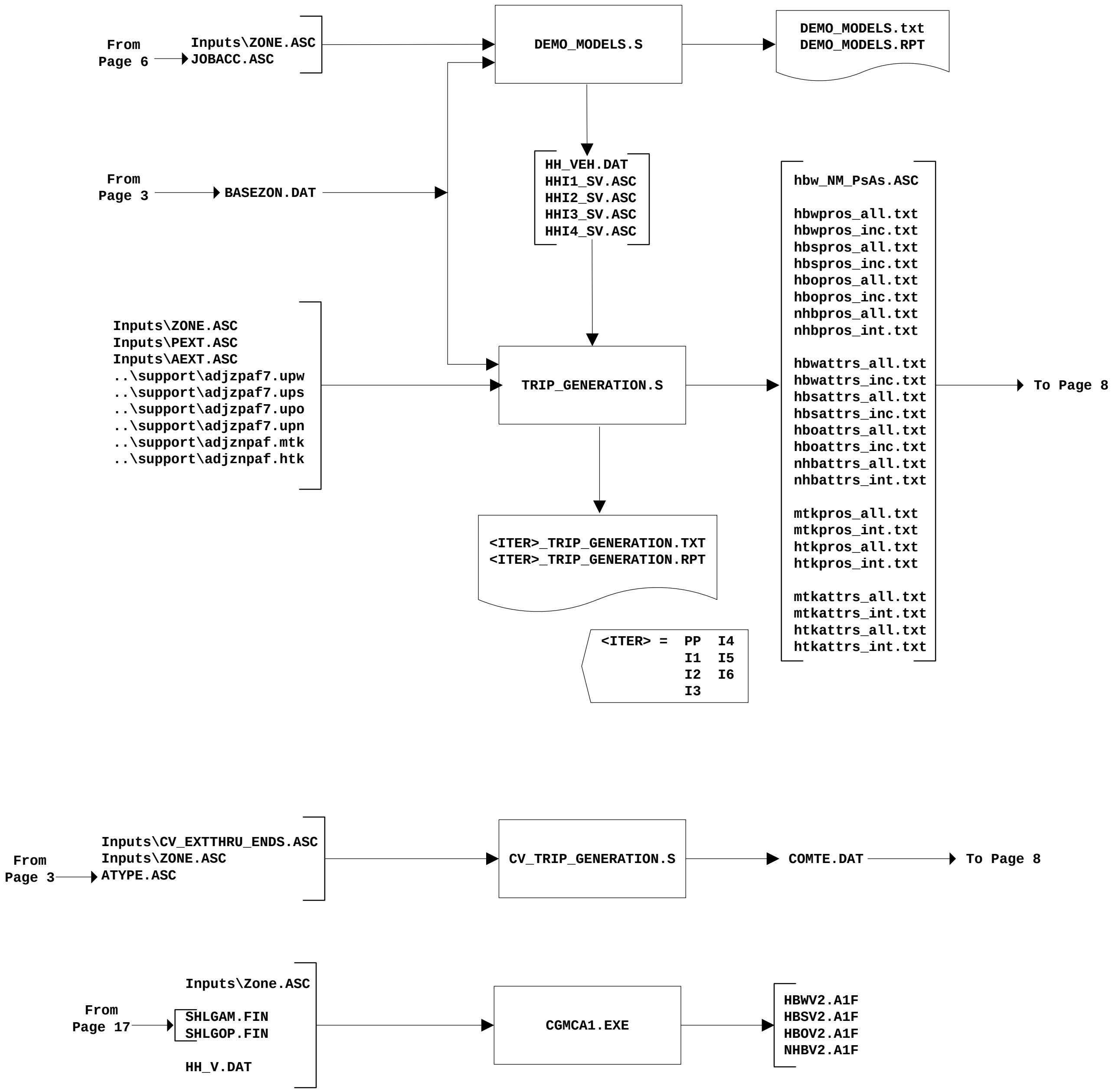


TITLE: Version 2.2 Model Application		
COMPANY: COG/TPB	CREATOR: RM/MS	
DATE: January 2007	PG: 6	OF 17
FILENAME: V2.2_MODAPP.VSD		

Transit_Skim.bat: Transit Path Building



Trip Generation.bat: Trip Generation



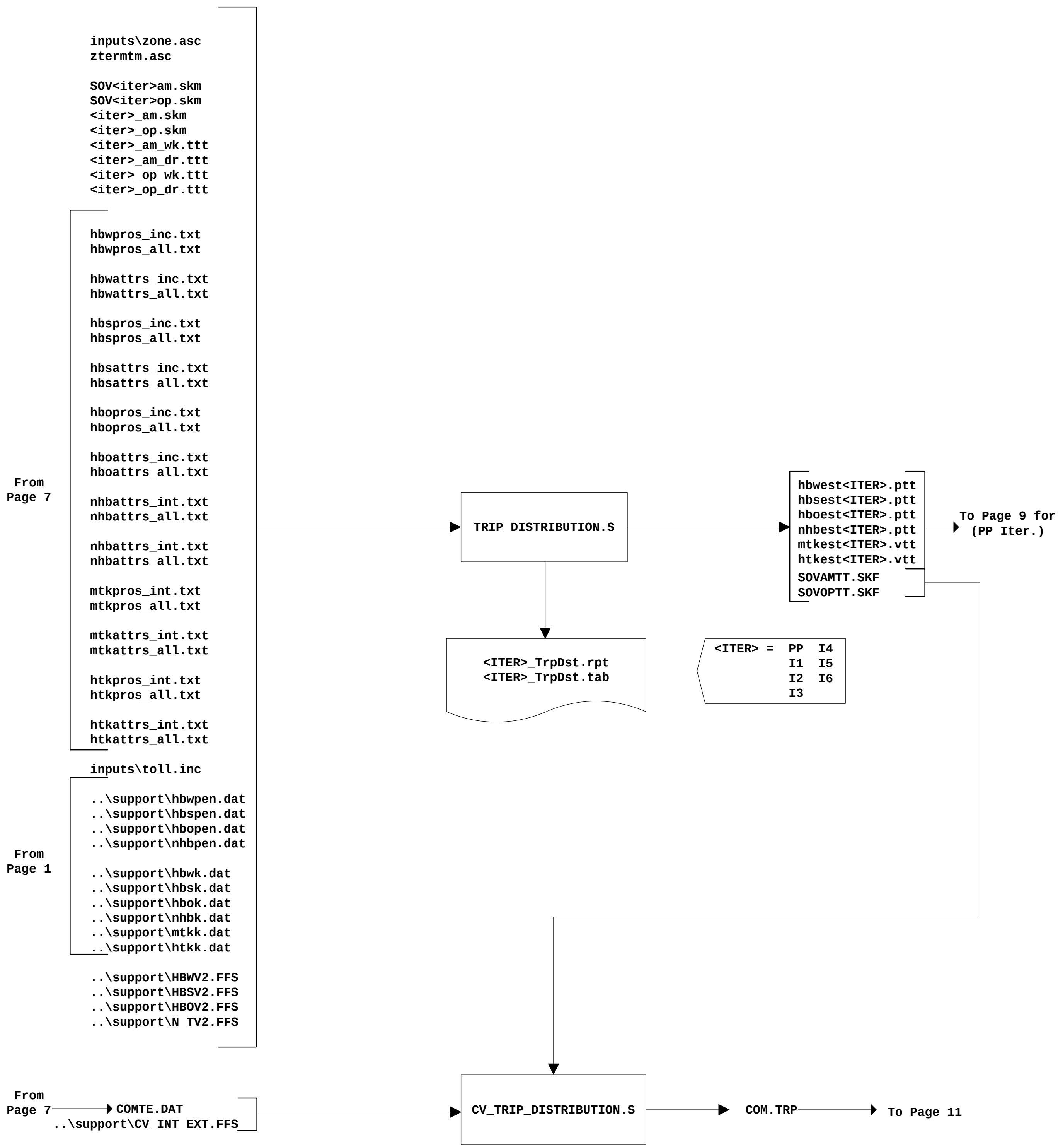
TITLE: Version 2.2 Model Application

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

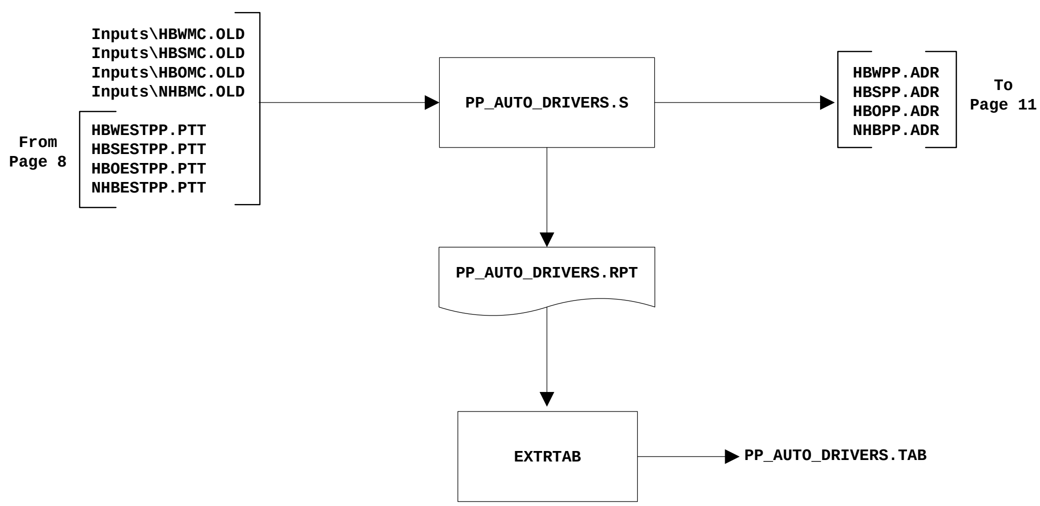
DATE: January 2007

FILENAME: V2.2_MODAPP.VSD

Trip Distribution.bat: Trip Distribution

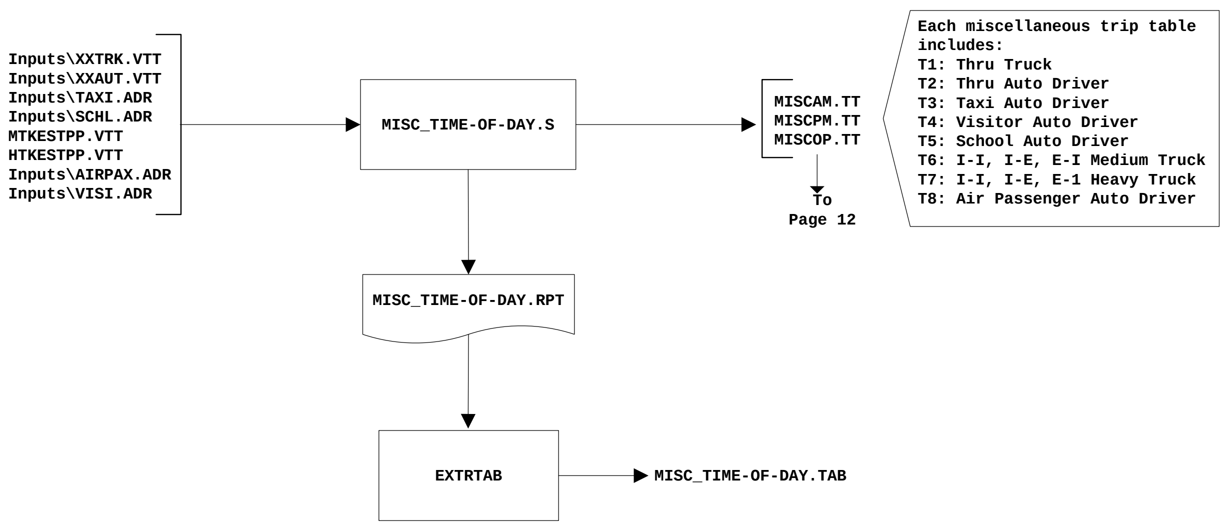


PP_Auto_Drivers.bat: Pump Prime Auto Driver Trips

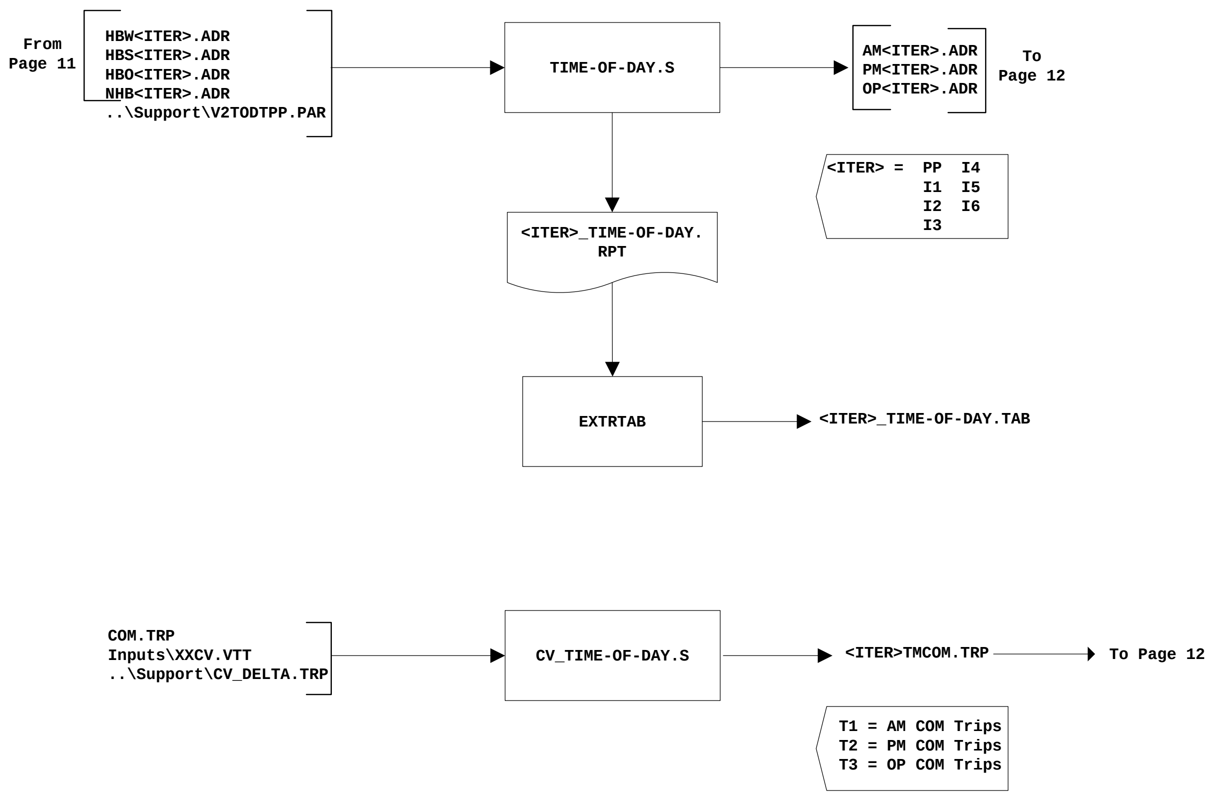


TITLE:	**Version 2.2 Model Application**
COMPANY: COG/TPB	**CREATOR:** RM/MS
DATE: January 2007	PG: 10 OF 17
FILENAME: V2.2_MODAPP.VSD	

Misc_Time-of-Day.bat



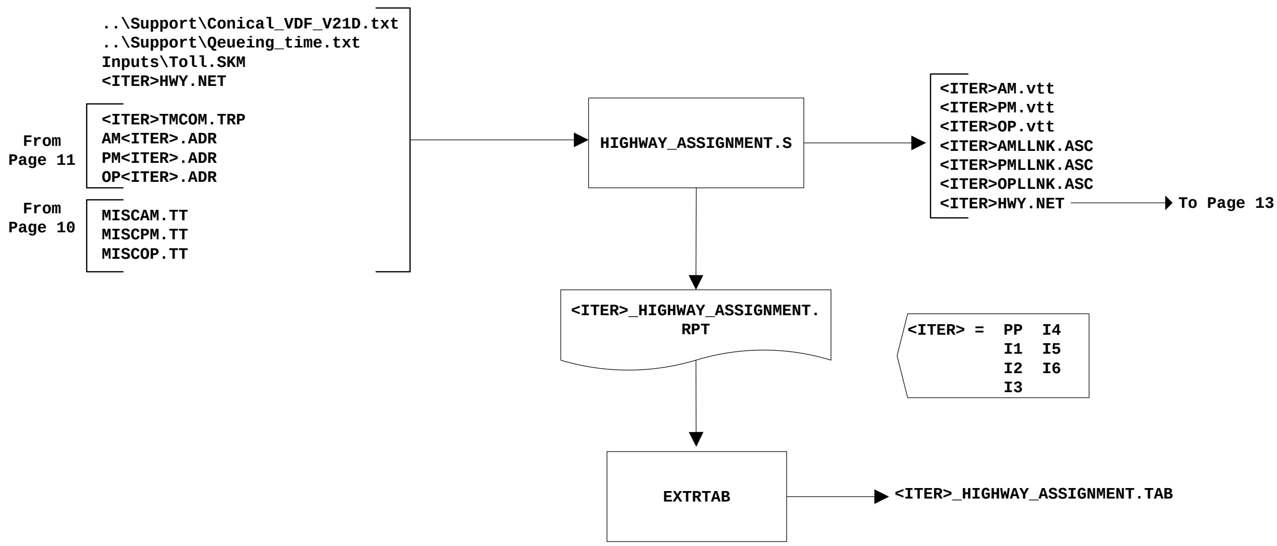
Time-of-Day.bat



TITLE: Version 2.2 Model Application

COMPANY:	**COG/TPB**	**CREATOR:**	**RM/MS**
DATE:	January 2007	PG: 12	OF 17
FILENAME:	V2.2_MODAPP.VSD		

Highway_Assignment.bat



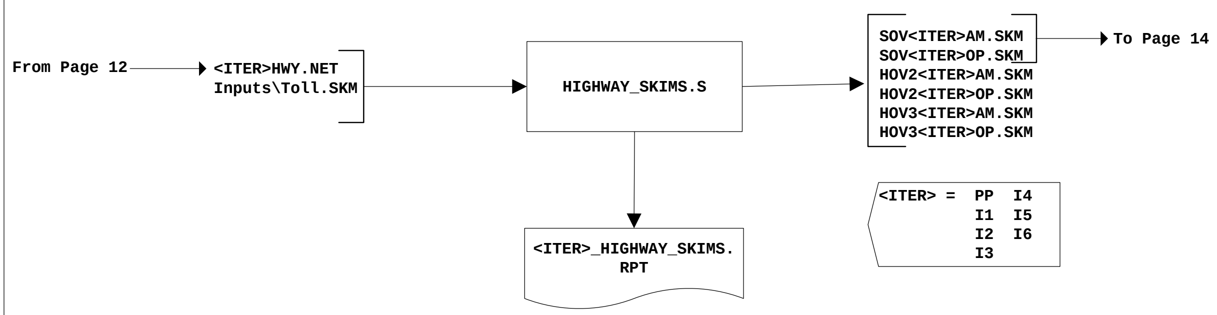
TITLE: **Version 2.2 Model Application**

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

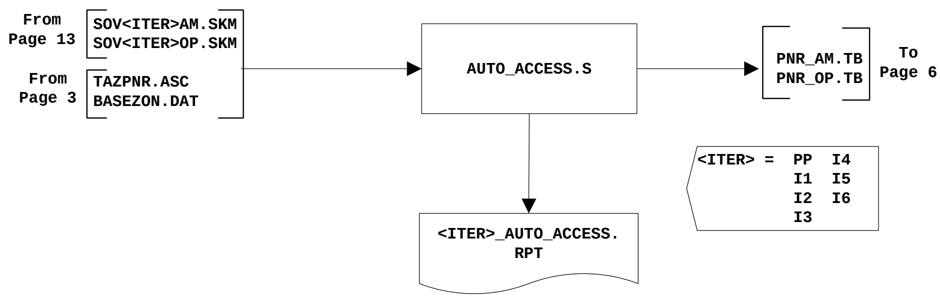
DATE: January 2007

FILENAME: V2.2_MODAPP.VSD

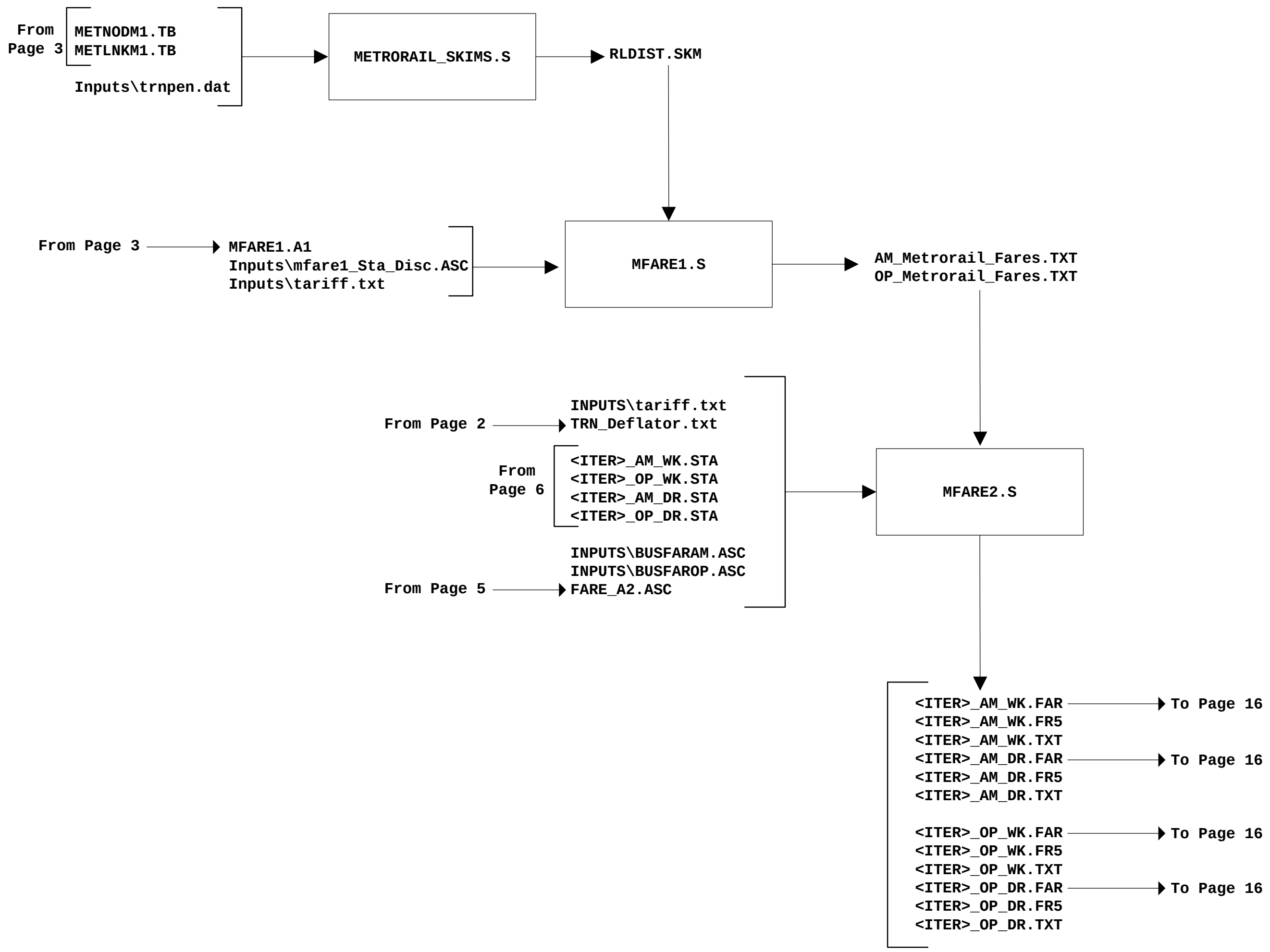
Highway_Skims.bat



Highway_PNR.bat: Base Highway Path Building



Transit_Fare.bat



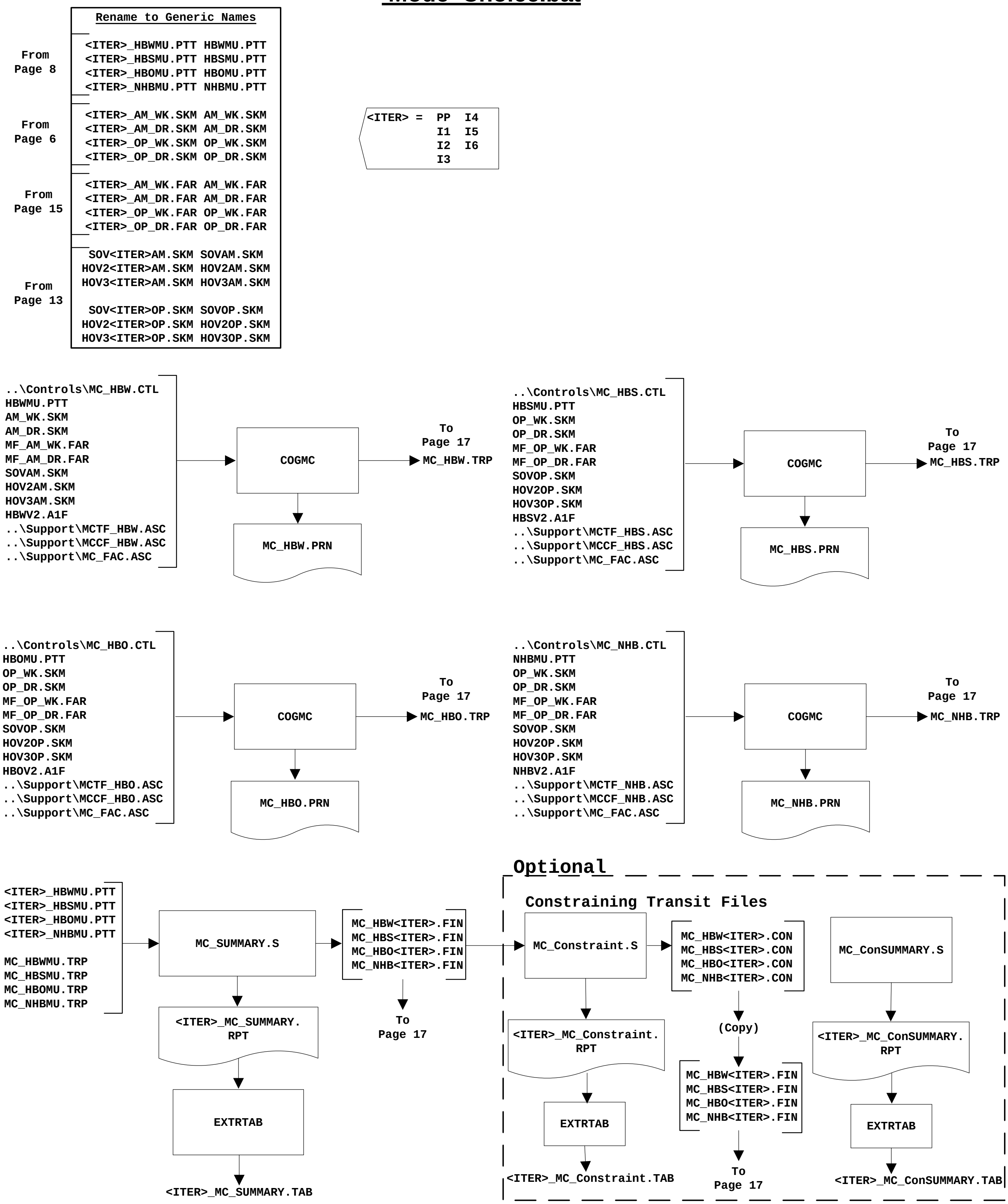
TITLE: Version 2.2 Model Application

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

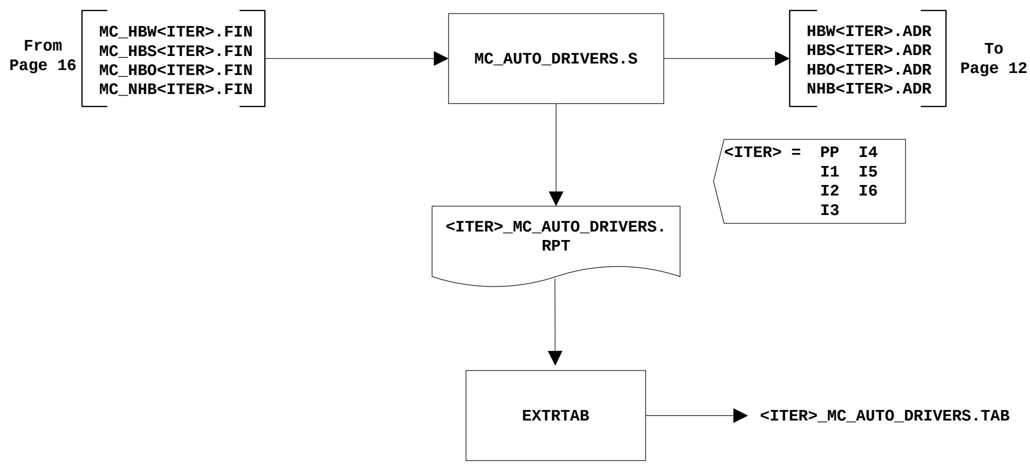
DATE: January 2007 PG: 16 OF 17

FILENAME: V2.2_MODAPP.VSD

Mode Choice.bat



Auto_Driver.bat



Appendix H Fortran and other control files

Ref:

3.12 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'
  /
```

3.13 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
 /
```

3.14 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
 /
```

3.15 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
   /
```

3.16 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   /
```

3.17 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  /
```

3.18 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   /
```

3.19 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   /
```

3.20 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   /
```

3.21 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   /
```

3.22 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   /
```

3.23 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   /
```

3.24 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       /
```

3.25 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       /
```

3.26 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'
   /
```

3.27 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
   /
```

3.28 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
   /
```