MIAMI-DADE MPO
CUBE VOYAGER FSUTMS MODEL

USER'S MANUAL

Submitted to:
Miami-Dade MPO

Submitted by:
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1. Background

This study converted the MPO's validated 2000 travel demand model from a FSUTMS/Tranplan model to a FSUTMS/Cube Voyager model. The intent was to make a simple conversion and then verify that the model produced results that were equivalent to the earlier model. The intent was not to enhance or revalidate the model. Despite the intent to convert the model without changes or improvements, several significant enhancements were made because of major deficiencies in the model procedures and data files, and changes in the Cube Voyager transit network procedures that precluded a simple conversion.

The consultant also prepared a model setup for the 2030 cost-feasible alternative. This is includes zonal data, and the highway and transit networks for this alternative. The 2030 cost-feasible alternative is distributed with the 2000 model setup.

This report describes the model conversion, and presents a comparison between old and new 2000 model results. It also describes input data files and the assumed folder structure.

It is also important to note that the consultant used the model in an MPO project, the Health District Study. As is almost always the case, this test uncovered a few deficiencies in the new model setup, which were corrected. This report is written for the version of the model after the corrections.

2. Model Description

The Miami-Dade Model is a FSUTMS/Cube model and is set up to use Cube Voyager software and the latest FSUTMS transit framework. The model appears in a Cube flowchart, and uses the Cube scenario manager. It closely replicates the FSUTMS/Tranplan model.

In most cases, the fixed-format ASCII input files of the model were converted to database (DBF) or comma-delimited format. This makes the files easier to maintain and edit. Files and formats are explained in the next section. This section describes major changes in the model that extend beyond minor issues like file format.

Trip Generation

No major changes were made to the trip generation procedure beyond the change in data input format. Please note that now ZDATA1 and ZDATA2 are now stored together as a single file in the DBF of an ArcGIS shape file for the TAZs. This makes it easy to edit and display the data in ArcGIS. The DBF file also can be manipulated as a spreadsheet. An important caveat is to not sort or re-order the records in any manner, as this will "break" the spatial relationship with the shape file. Use of the shape file allows the analyst to edit the data in ArcGIS, and to open and edit the files in Excel.

Trip generation data files were revised to be stored as database (DBF) files.

- EETRIPS_{YEAR}{Alt}.DBF
- {SCENARIO_DIR}\Input\ZDATA_{YEAR}{Alt}.dbf
- {SCENARIO_DIR}\Input\ZDATA3A_{YEAR}{Alt}.dbf
- {SCENARIO_DIR}\Input\ZDATA4A_{YEAR}{Alt}.dbf
- {SCENARIO_DIR}\Input\School_{YEAR}{Alt}.dbf
- {SCENARIO_DIR}\Input\MIAMI_SERPM_{YEAR}{Alt}.NET

ZDATA (1&2) field names should be self-evident and are listed here.

ZDATA1 Format

- TAZ = TAZ
- Reference Zone = REFTAZ
- Households without children = HHC0
- Households with children = HHC1
- Vehicles in households without children = VC0
- Vehicles in households with children = VC1
- Workers in households without children = WC0
- Workers in households with children = WC1

- Persons in households without children = PC0
- Persons in households with children = PC1
- Hotel/Motel Units = HMR
- Exurban Flag = TD

ZDATA2 Format

- Sector number = SECTOR
- Industrial Employment = INDEMP
- Retail Employment = RETEMP
- Service Employment = SEREMP
- Total Employment = TOTEMP
- School Enrollment = SCHENR
- Short-term parking ($) = SHORTPARK
- All-day parking ($) = LONGPARK

ZDATA3 Format (Special Generators)

- TAZ = ZONE
- Production or attraction generator = P_OR_A
- Operand = OPERAND (+ - T R)
- Number of trips = TRIPS_DIFF
- % HBW = PCT_HBW
- % HBSH = PCT_HBSH
- % HBSR = PCT_HBSR
- % HBSCH = PCT_HBSCH
- % HBO = PCT_HBO
- % TRKS = PCT_TRKS
- % NHB = PCT_NHB
- Total Employment = TOT_EMP
- Commercial Employment = COMM_EMP
- Service Employment = SERV_EMP
- School trips = SCHOOL
- Total DUs = TOT_DU
- Description = DESCR

ZDATA4 Format (External Stations)

- card = card (always=4)
- TAZ = TAZ
- Total person trip productions = PROD
- % productions HBW = PPCT_HBW
- % productions HBSH = PPCT_HBSH
- % productions HBSR = PPCT_HBSR
- % productions HBSCH = PPCT_HBSCH
- % productions HBO = PPCT_HBO

- % productions TRKS = PPCT_TRKS
- % productions NHB = PPCT_NHB
- Total person trip attractions = ATTR
- % attractions HBW = APCT_HBW
- % attractions HBSH = APCT_HBSH
- % attractions HBSR = APCT_HBSR
- % attractions HBSCH = APCT_HBSCH
- % attractions HBO = APCT_HBO
- % attractions TRKS = APCT_TRKS
- % attractions NHB = APCT_NHB
- % of peak trips from 0 auto HHs = HBW0
- % of peak trips from 1 auto HHs = HBW1
- % of peak trips from 2+ auto HHs = HBW2
- % of off-peak trips from 0 auto HHs = HBO0
- % of off-peak trips from 1 auto HHs = HBO1
- % of off-peak trips from 2+ auto HHs = HBO2
- Roadway name = DESCR

SCHOOL_{YEAR}{Alt}.DBF Format

- TAZ = TAZ
- TAZ for grade school students = GR_TAZ
- TAZ for middle school students = MID_TAZ
- TAZ for high school students = HIGH_TAZ
- Enrollment of grade schools in this TAZ = GR_STUD
- Enrollment of middle schools in this TAZ = MID_STUD
- Enrollment of high schools in this TAZ = HI_STUD
- Enrollment of private schools in this TAZ = PRIV_STUD

Please note that the data required here has not changed. However, the data is now stored in DBF files instead of ASCII files.

The GRATES, DUWEIGHT and STP283 files are unchanged and are stored in the APPLICATIONS folder.

Network (Multi-Modal)

The major change here is that the highway network is now stored as a Voyager network and transit network station data are now stored on the highway network node layer. Also, what has traditionally been thought of as a highway network is now a multi-modal network, meaning that the network contains transit guideway links and station walk links, as well as highways. LINKS and XY files are no longer used. The input model network is shown in red in the Cube flowchart, and is called {SCENARIO_DIR}\Input\MIAMI_SERPM.NET. All edits to the input highway network must be made to this file – all other network edits will be ignored or overwritten.

The most up-to-date highway and transit networks available at the time of model conversion were those developed for SERPM6. These networks corrected some long-standing errors and simplifications and contained all attributes and coding requirements needed by the Cube Voyager model. Thus, the basis for the highway and transit networks was SERPM6, and the Miami-Dade portion was extracted from this model. Thus, the base networks were a little different, and more accurate than those used in the 2000 Miami-Dade FSUTMS/Tranplan model validation.

Furthermore, the STATDATA file is now an output, generated from the model. This means that if the user makes changes to LINKS, XY and STATDATA files, they will be ignored. It is important to note that the model used micro-coded station networks, which means that station data must appear on both the highway network node and transit network (Facility_Type=59 or 69) nodes. Fixed-guideway links are Facility Type 69, and highway node-to-station links are mode 59.

The multi-modal highway network links must contain the following fields:

- **TFGMODE** – Fixed-guideway mode;
- **TFGSPEED** – Fixed-guideway mode speed (mph);
- **TFGTIME** – Fixed-guideway mode time (minutes), calculated from TFGSPEED if non-zero;
- TFGDIST – Fixed-guideway mode distance (miles);
- TBSSPEED – Mixed-flow bus speed (mph);
- TBSTIME – Mixed-flow bus time (minutes); and,
- TBSDIST – Mixed-flow bus distance (miles).

The attributes printed in bold underline are the only variables the user must furnish. The TFGTIME is calculated from the TFGSPEED if non-zero.

The multi-modal highway network nodes must contain the following fields (station attributes):

- STATIONNUM – A unique integer station number;
- STATIONZON – Zone nearest to the station. This can be entered but will be overwritten by a program calculation based on coordinates;
- SERVICEMIL – Maximum driving distance to the station allowed for auto-access connectors;
- PARKINGSPA – Number of parking spaces at the station;
- PARKINGCOS – Parking cost in off-peak period (short-term);
- PARKINGCOL – Parking cost in peak period (long-term);
- TERMTIMEKN – KNR terminal time;
- TERMTIMEPN – PNR terminal time;
- ACTIVEFLAG – 0=not active, 1=active;
- STATIONDES – Station description; and,
- FAREZONE – Fare zone for zone-based fares coded on station nodes only.

It is important to understand the microcoding of the fixed-guideway transit system. Microcoding is explained in detail in the FSUTMS transit framework reports posted on the FSUTMSOnline Web site.

- Fixed-guideway stations should be nodes on the Facility_Type=69 guideway (non-highway) links. In the 2000 and 2030 networks, stations are numbered between 30000 and 39999.

- The transit guideway system and station nodes are NOT highway nodes.
- There must be a two-way node-to-station link (Facility_Type=59) between the fixed-guideway stations and the nearest node on the highway network.
- All station attributes listed above MUST appear on the station node and the highway node. These are the two nodes of the node-to-station links.

If the microcoding is not done properly, the transit line will not be connected to the network and the line will receive no loads. The consultant spent considerable time in developing the 2030 microcoding, but it is recommended that the link and station node data be reviewed before using them in a planning study.

The station attribute data are used in transit path-building and to create the station data file used in the development of transit skims.

Area types are now calculated from the area type coded on the network centroid connectors, and terminal times are then assigned from the TERMT.dbf files stored in the PARAMETERS folder.

All transit routes run on links in the multi-modal network. Thus, running times for all possible modes are placed on the network. These times for congested and uncongested conditions are calculated from the highway times using TCURVELOOKUP.dbf and TCURVES.SYN stored in the PARAMETERS folder. This methodology is essentially the same as FSUTMS/Tranplan. Free-flow highway speeds and capacities are input from SPDCAP.{YEAR}{Alt} as stored in the input folder for the alternative.

All toll road data is also stored on the network. Thus, the TOLLLINKS file is now an output, not an input. Important links attributes are (these are the same definitions as the toll facilities model):

- Location code on ALL links, toll and non-toll: always 3 for Miami-Dade
- TOLL – Unique toll link number + 300 for Miami-Dade
- TOLLTYPE – 1 for barrier, 2 for ticket
- PLAZADESC – Plaza Description
- PLAZALNSMIN – minimum number of lanes at the plaza
- PLAZALNSMAX – maximum number of lanes at the plaza
- CARTOLL – Auto toll in dollars
- SVCMINUTES – Service plaza minutes
- SVCSECONDS – Service plaza seconds
- DECELCODE – Deceleration code (1)
- ACCELCODE – Acceleration code (1)
- EXACTCHGLNS – Exact change lanes (not used)
- AVILANES – (not used)
- Percent trucks – (not used)

Other important files used in the network step are:

- Transit speed curve: {CATALOG_DIR}\PARAMETERS\TCURVELOOKUP.dbf and {CATALOG_DIR}\PARAMETERS\TCURVES.SYN – These files are unchanged from earlier versions, except for the dbf format of the speed lookup.
- Terminal times: {CATALOG_DIR}\Parameters\TERMT.dbf – This file defines the terminal times as a function of the two-digit area type.
- {SCENARIO_DIR}\Input\SPDCAP.{YEAR}{ALT} – This is the standard speed-capacity table.
- {SCENARIO_DIR}\Input\TCARDS.{YEAR}{Alt} – Please note that this file is specific to the network.
- {SCENARIO_DIR}\Input\VFACTORS.{YEAR}{Alt} – This is the standard VFACTORS file.

Distribution

The distribution step is changed very little from the FSUTMS/Tranplan procedure except for file formats. Friction factors are stored in the alternative input folder. Most skims and trip tables are maintained in Voyager and Tranplan format so they can be used in Voyager and in the FORTRAN mode choice model.

Friction factors are input in {SCENARIO_DIR}\Input\FF.{YEAR}{Alt}.

Transit Network

The transit network part of the model adheres to the new FSUTMS transit framework. Thus, the INET process has completely replaced with Public Transport (PT). The user is referred to the FSUTMS transit framework as documented in reports posted on the FSUTMSOnline Web site for a thorough explanation of all data and variables. The user will notice that the transit network process is long and slow in terms of computer running time. This is a characteristic of the PT software. The current remedy is the use of Cube Cluster, which can be used by this model if run on multi-core hardware, and faster computers.

Here are some elements of the PT process the user should be aware of:

- As noted earlier, the transit system runs on the multi-modal highway network. Link and node attributes of the multi-model highway network described earlier have great bearing on the transit network and must be coded properly.

- Both peak and off-peak transit networks are coded in TROUTE_{YEAR}{Alt}.LIN, which is stored in the input folder of the alternative. This file is akin to the INET "&ROUTES" file. A few notes here:
  - A negative node number means no stop, which is opposite of INET.
  - Transit MODE and OPERATOR codes are shown in Table 3-1.
  - XYSPEED is the speed in MPH for routes without an underlying link in the multi-model highway network.
  - USERA1 (old route) – User variables are not used and are present to track network conversion. They may or may not be meaningful.
  - USERA2 (old mode)
  - USERA3 (old route)
  - USERA4 (old operator)
  - HEADWAY[1] is the AM peak headway.
  - HEADWAY[2] is the midday (off-peak) headway.
  - HEADWAY[3] is the PM peak headway, but is not used.

All transit fares are specified in a file called:

{SCENARIO_DIR}\Input\TFARES_{YEAR}{Alt}.FAR

Transit modes, operators, vehicle types and wait curves are defined in a file called:

{CATALOG_DIR}\PARAMETERS\TSYSD.PTS

Table 3-1
Miami-Dade PT Modes

Number	Mode (Weight)	
Non-transit Modes		
1	WALKCON (2.25)	Walk-access/egress (centroid-to-stop & visa-versa)
2	AUTOCON (1.50)	Auto access
4	ALLWALKCON (9.99)	All walk access
3, 5-10	---	Other access connectors (for future)
11	STATCON (2.25)	Fixed-guideway platform to street connectors
12	XFERCON (2.25)	Sidewalks
13-20	Other	Other non-centroid connectors
Transit Modes		**Operator**
21	Local and express bus	4,6
22	Bus rapid transit/premium bus (busway)	4
23	Circulator (Metromover)	9
24	Heavy Rail (Metrorail)	8
25	Commuter Rail (Tri-Rail)	10
26	Other mode (Jitney)	11
27	Project mode (for planning studies)	
31-37	Same as 21-27, but for different agency	
41-47	As needed	
51-57	As needed	

Mode Choice

The mode choice model was adapted from the earlier FORTRAN program used in the MPO model. However, it had to be modified greatly to work with the new FSUTMS Transit Framework. Major changes included replacing the long- and short-walk buffers with a single 0.5 mile walk/cannot-walk buffer and all transit impedances formerly calculated from station data are incorporated in the transit skims. The mode choice model does not read the station data file, and all times and weights are obtained from the network.

PCWALK percentages are specified as integers in the following columns:

- Zone number (1-5)
- AM peak service production walk percentage (6-11)
- AM peak service attraction walk percentage (12-17)
- Midday service production walk percentage (18-23)
- Midday service attraction walk percentage (24-29)

The PCWALK file must be called:

{SCENARIO_DIR}\Input\PCWALK.{YEAR}{ALT}.

The mode choice model constant file is unchanged and must be called:

{CATALOG_DIR}\PARAMETERS\mode9.SYN.

The consultant also implemented an automatic procedure for updating the mode constants, thereby allowing the model to be updated easily to match target mode shares. This procedure is run if the MCAL key is set to 1. If the calibration option is selected, the modal constants are adjusted to match the shares specified in the mtarget.dbf file in the PARAMETERS folders. The user should not invoke this option without a complete understanding of the updating process.

Highway Assignment

The highway assignment model is similar to prior models and uses the equilibrium method and the toll facilities model. The reader should recognize that this assignment technique is different in many ways from the Tranplan assignment, using floating point trips tables and times in place of integer values. The primary change in the algorithm is that the "damping" method has been removed. Damping is not actually part of the equilibrium assignment, but is designed to produce the equilibrium condition in fewer iterations. However, experimentation showed that less computer time was used when the damping method was disabled. Furthermore, tests showed that damping produced a different assignment result with and without Cluster. Thus, damping was removed from the model.

Standard Cube Voyager Highway output fields are presented in the loaded highway network ({SCENARIO_DIR}\output\HRLDXY_{Alt}{Year}.NET). Important output fields are:

- V_1 - Total directional vehicles
- TIME_1 - Directional congested time (minutes)
- VC_1 - Directional volume/capacity
- CSPD_1 - Directional congested speed
- VDT_1 - Directional vehicle miles
- VHT_1 - Directional vehicle hours
- V1_1 - Directional trucks
- V2_1 - Directional single occupant vehicles (SOVs)
- V3_1 - Directional high occupant vehicles (HOVs)
- VT_1 - Total two-way vehicles
- V1T_1 - Two-way trucks
- V2T_1 - Two-way single occupant vehicles (SOV's)
- V3T_1 - Two-way high occupant vehicles (HOVs)

Selected link and selected zone applications are also included in the catalog. They are identical to the standard FSUTMS assignment explained earlier, except:

- The selected zones are specified in the SELZONE key;
- The selected links are specified in the SELLINK key;
- Trucks for the selected paths are reported in volume fields V4;
- SOVs for the selected paths are reported in volume fields V5; and,
- HOVs for the selected paths are reported in volume fields V6.

The user is referred to the Cube Voyager HIGHWAY documentation. Almost any combination of links and nodes can be specified in the keys, and they can be logical "ANDs" and logical "ORs." The selected link and analyses do not ordinarily run with the model, but must be invoked separately, after a standard model run has been completed.

Transit Assignment

PT is used for the transit assignment. Like the Tranplan model, assignments are made for peak and off-peak periods for walk access, auto access, and jitney trips. The new FSUTMS transit assignment reporting program is used to produce transit assignment summaries. Besides the loaded transit networks, several important transit summaries are produced:

- Link loads for the six path sets: AM1LINKS.DBF, AM2LINKS.DBF, AMJLINKS.DBF, MD1LINKS.DBF, MD2LINKS.DBF and MDJLINKS.DBF.

- A Metrorail summary: {SCENARIO_DIR}\Output\Metrorail OnOff.prn from the MATRIX of execution sequence #15. This also produces a comparison to 2000 observed boardings, which is input in {CATALOG_DIR}\Parameters\MR_OBS.dbf.

- Boarding summaries by line for auto access (#12), walk access (#13) and jitneys (#14).

Post-processing

Post-processing runs the traditional FSUTMS HEVAL program. The FSUTMS root-mean-square error program has been replaced with a Voyager network script that accomplishes the same task.

3. Model Folder Structure

The mode assumes that certain files will be found in certain folders as follows. Files and folders in any other configuration will not be found, and the model will fail.

- MiamiDade – This is the {CATALOG_DIR}, and the catalog file called "Miami in Voyager.cat" must be located here.

  - Application – Scripts, output print files, and certain other files go here.

  - Parameters – Calibration constants and files that should not change between years and alternatives are written here.

  - Usr.Prg – Compiled executable files called by the scripts.

    ✓ Autocon.exe – The FSUTMS transit framework auto connector program;
    ✓ HEVALDBF.EXE – The FSUTMS HEVAL program;
    ✓ LSTGENMD.exe – The Miami-Dade lifestyle trip generation program;
    ✓ modemia.exe – The Miami-Dade mode choice program, adapted to PT;
    ✓ rewalk.exe – The FSUTMS transit framework walk connector program; and,
    ✓ TAReport.exe – The FSUTMS transit framework transit reporting program.

  - Year2000 – This is the base alternative, and for the Year 2000 validation this is the {SCENARIO_DIR}.

    ✓ Input – The folder containing the input files for the parent folder;
    ✓ Output – The folder containing the output files for the parent folder; and,
    ✓ Myalt – The {SCENARIO_DIR} for some alternative.

      - Input – The input files for Myalt; and,
      - Output – The output files for Myalt

    ✓ Another alternative.
    ✓ Yet another.

4. Validation Comparison

A series of comparisons of the results of the Cube Voyager model to the results of the FSUTMS/Tranplan model were made for the 2000 validation. The following tables demonstrate that the models produce results that are substantially the same.

Table 4-1
External

Station	TRANPLAN	Voyager	Difference	% Diff
1501	100	100	-	0%
1521	100	100	-	0%
Total	**200**	**200**	**-**	**-**

Table 4-2
Trip Generation
User-written Program

	TRANPLAN		Voyager		Difference		% Diff	
	Productions	Attractions	Productions	Attractions	Prods	Attrs	Prods	Attrs
HBW	1,820,947	1,769,768	1,820,947	1,769,768	-	-	0%	0%
HBSH	956,020	956,568	956,020	956,568	-	-	0%	0%
HBSR	943,923	944,516	943,923	944,516	-	-	0%	0%
HBSC	368,723	368,598	368,723	368,598	-	-	0%	0%
HBO	922,972	923,567	922,972	923,567	-	-	0%	0%
NHB	1,953,556	1,953,556	1,953,556	1,953,556	-	-	0%	0%
TRUCKS	811,654	811,654	811,654	811,654	-	-	0%	0%
Total	**7,777,795**	**7,728,227**	**7,777,795**	**7,728,227**	**-**	**-**	**0%**	**0%**

Table 4-3
Trip Distribution

Total Trips	TRANPLAN	Voyager	Difference	% Diff
HBW	1,820,947	1,820,947	-	0.0%
HBSH	956,020	956,019	(1)	0.0%
HBSR	943,923	943,923	-	0.0%
HBSCH	368,723	368,723	-	0.0%
HBO	922,972	922,972	-	0.0%
NHB	1,953,556	1,953,556	-	0.0%
TRUCKS	811,654	811,654	-	0.0%
Sum	7,777,795	7,777,794	(1)	0.0%

Trip Hrs	TRANPLAN	Voyager	Difference	% Diff
HBW	631,960	623,067	(8,892)	1.4%
HBSH	246,876	242,191	(4,685)	1.9%
HBSR	259,925	256,432	(3,493)	1.3%
HBSCH	111,600	110,494	(1,106)	1.0%
HBO	277,722	269,969	(7,753)	2.8%
NHB	537,260	506,297	(30,964)	5.8%
TRUCKS	231,754	223,611	(8,144)	3.5%
Sum	2,297,098	2,232,062	(65,036)	2.8%

Avg. Trip Length	TRANPLAN	Voyager	Difference	% Diff
HBW	20.823	20.530	(0)	1%
HBSH	15.494	15.200	(0)	2%
HBSR	16.522	16.300	(0)	1%
HBSC	18.160	17.980	(0)	1%
HBO	18.054	17.550	(1)	3%
NHB	16.501	15.550	(1)	6%
TRUCKS	17.132	16.530	(1)	4%
Mean	17.720	17.219	(1)	3%

Intrazonals	TRANPLAN	Voyager	Difference	% Diff
HBW	12,952	18,715	5,763	-44%
HBSH	9,245	18,759	9,514	-103%
HBSR	13,693	21,987	8,294	-61%
HBSC	3,355	4,231	876	-26%
HBO	18,453	32,098	13,645	-74%
NHB	91,927	226,795	134,868	-147%
TRUCKS	37,323	68,484	31,161	0%
Sum	186,948	391,069	204,121	-109%

Table 4-4
Mode Choice

Mode	TRANPLAN	Voyager	Difference	% Diff
HBW				
DA	1,488,562	1,487,482	(1,081)	0%
A2	214,414	214,483	69	0%
A3	40,302	40,518	216	-1%
WL	45,496	41,876	(3,621)	8%
WJ	532	536	3	-1%
WP	15,658	17,839	2,181	-14%
PNR	8,945	10,122	1,177	-13%
KNR	7,039	8,094	1,056	-15%
Total	**1,820,947**	**1,820,947**	**(0)**	**0%**
HBO				
DA	1,469,668	1,468,891	(778)	0%
A2	1,152,325	1,152,858	533	0%
A3	1,054,774	1,055,817	1,043	0%
WL	41,752	38,404	(3,348)	8%
WJ	1,674	1,664	(11)	1%
WP	8,899	10,163	1,264	-14%
PNR	4,726	5,397	671	-14%
KNR	4,484	5,107	623	-14%
Total	**3,738,302**	**3,738,301**	**(1)**	**0%**
NHB				
DA	1,090,632	1,090,630	(2)	0%
A2	465,279	465,165	(114)	0%
A3	364,818	365,044	226	0%
WL	21,905	20,315	(1,590)	7%
WJ	288	289	1	0%
WP	4,924	5,621	697	-14%
PNR	2,863	3,257	395	-14%
KNR	2,848	3,235	388	-14%
Total	**1,953,556**	**1,953,556**	**-**	**0%**

Table 4-5
Metrorail Summary

STA	STATION NAME	WORK Walk A	WORK Walk E	WORK Walk A	WORK Walk E	NWRK Auto A	NWRK Auto E	NWRK Auto A	NWRK Auto E	Daily Walk A	Daily Auto A	Daily Acc	OBS Acc	Vol/Obs Ratio
30001	MR: OKEECHOBEE	1426	1426	551	551	215	215	168	168	1977	382	2359	1937	1.22
30002	MR: HIALEAH	368	368	205	205	610	610	198	198	572	808	1380	1421	0.97
30003	TR-MI4:MR-Transfer	242	242	89	89	117	117	370	370	331	487	818	971	0.84
30004	MR: NORTHSIDE	446	446	225	225	239	239	241	241	671	479	1150	1462	0.79
30005	MR: MLK JR.	292	292	180	180	143	143	179	179	472	322	793	1048	0.76
30006	MR: BRWNSVILLE	735	735	312	312	160	160	96	96	1046	256	1302	686	1.90
30007	MR: E. HEIGHTS	362	362	199	199	153	153	166	166	560	319	879	1071	0.82
30008	MR: ALLAPATTAH	836	836	461	461	135	135	186	186	1297	320	1617	1492	1.08
30009	MR: ST CLARA	107	107	169	169	116	116	176	176	275	292	567	440	1.29
30010	MR: CIVIC CTR	1253	1253	1188	1188	0	0	0	0	2440	0	2440	4660	0.52
30011	MR: CULMER	542	542	334	334	113	113	490	490	876	603	1478	764	1.93
30012	MR: OVERTOWN	416	416	299	299	16	16	164	164	715	180	895	920	0.97
30013	MR: GOVT CTR	4171	4171	3482	3482	3	3	1	1	7653	4	7656	9117	0.84
30014	MR: BRICKELL	1929	1929	1545	1545	17	17	11	11	3473	28	3501	2297	1.52
30015	MR: VIZCAYA	577	577	333	333	78	78	235	235	910	313	1222	1021	1.20
30016	MR: COCO GROVE	457	457	614	614	276	276	385	385	1071	660	1731	1353	1.28
30017	MR: DOUGLAS RD	2084	2084	1585	1585	143	143	341	341	3669	484	4153	2642	1.57
30018	MR: UNIVERSITY	212	212	561	561	135	135	267	267	772	402	1174	1736	0.68
30019	MR: S MIAMI	503	503	386	386	454	454	268	268	889	722	1611	2842	0.57
30020	MR: DADELAND N	1978	1978	807	807	477	477	44	44	2784	521	3305	5977	0.55
30021	MR: DADELAND S	1259	1259	907	907	2904	2904	1543	1543	2166	4446	6612	5705	1.16
TOTAL		20189	20189	14426	14426	6499	6499	5525	5525	34615	12024	46638	49562	0.94

Table 4-6
Traffic Assignment

Statistics	TRANPLAN	Voyager	Difference	% Diff
VMT	45,158,008	44,674,473	(483,535)	1%
VHT	2,039,565	2,223,376	183,811	-9%
CGSPD	22.14	20.36	(2)	8%
Total Truck (Purp1)	812,005	811,654	(351)	0%
Total LOV (Purp2)	4,049,211	4,047,005	(2,206)	0%
Total HOV (Purp3)	1,372,624	1,372,976	352	0%
Total	**6,233,840**	**6,231,635**	**(2,205)**	**0%**

Table 4-7
Highway Evaluation

Statistics	TRANPLAN	Voyager	Difference	% Diff
Total Number of Links	7,847	7,907	60	-1%
Total System Miles	1,816	1,829	13	-1%
Total Lane Miles	5,473	5,506	33	-1%
Total Directional Miles	3,161	3,178	17	-1%
Total VMT Using Volumes	9,640,140	9,731,570	91,430	-1%
Total VMT Using Counts	9,651,494	9,396,150	(255,344)	3%
Total VMT V/C	1.00	1.04	0	-4%
Total VHT Using Volumes	383,948	442,193	58,245	-15%
Total VHT Using Counts	380,553	429,549	48,996	-13%
Total VHT V/C	1.01	1.03	0	-2%
Total Volumes All Links	181,427,136	175,871,744	(5,555,392)	3%
Average Total Volume	23,121	22,244	(877)	4%
Total VMT All Links	42,313,680	41,914,860	(398,820)	1%
Total VHT All Links	1,867,951	2,025,498	157,547	-8%
Total Orig. Speed (mph)	33.54	33.52	(0)	0%
Total Cong. Speed (mph)	24.78	23.08	(2)	7%