August 31, 2010

Basic User's Guide

Montgomery MPO Cube Land Model Development

AUBURN UNIVERSITY
URBAN MODELING LAB

Whitehouse Group®

Contents

Overview 1

Input Files 2

Network 2

Highway Network (*.MDB\HWYNET) 3

Turn Penalties (*.PEN) 4

Transit Line File (*.LIN) 5

Transit System File (*.PTS) 6

Transit Fares File (*.FAR) 7

Transit Factor File (*.FAC) 8

Friction Factors (*.DBF) 9

TRANPLAN P&A (*.DAT) 10

Other Files 11

Input Geodatabase (*.MDB) 11

Built Area (*.DBF) 14

Sidewalk Centerline Miles (*.DBF) 15

Roadway Centerline Miles (*.DBF) 16

Zonal Data (*.DAT) 17

Population and Income by Census Tract (*.CSV) 18

TAZ to Census Tract Equivalency Table (*.DBF) 19

Businesses (*.DBF) 20

Households (*.DBF) 21

Output Files 22

Overview 22

Land Use 22

New Land Use Data (ZDUPDATE.DAT) 22

Rents (RENTS.DBF) 23

Bids (BIDS.DBF) 24

Transportation 25

Final Highway Trips (Final HWY Trips.MAT) 25

Final Transit Trips (Final TRN Trips.MAT) 26

Final Highway O/D (Final Auto OD.MAT) 27

Final Highway Report (Final HWY Report.PRN) 28

Final Highway Loads (OUTPUT.MDB\FHWYLOAD) 29

Final Transit Report (Final TRN Report.PRN) 30

Congested Travel Time Skims (FCGSKIM.MAT) 31

Parcel Based Land Use Editor 32

Overview 32

Target 33
Alternative 33
Edit Parcel tool 33
Commands 34
Refresh Toolbar 34
Create new alternative from existing 34
Populate LC_ALTS Temporary Field 35
Create Alternatives Table 35
Creating Scenarios 36
Scenario Manager 36
Application Manager 38
Data Manager 39
Workspace 40
Process Flow 41

Overview

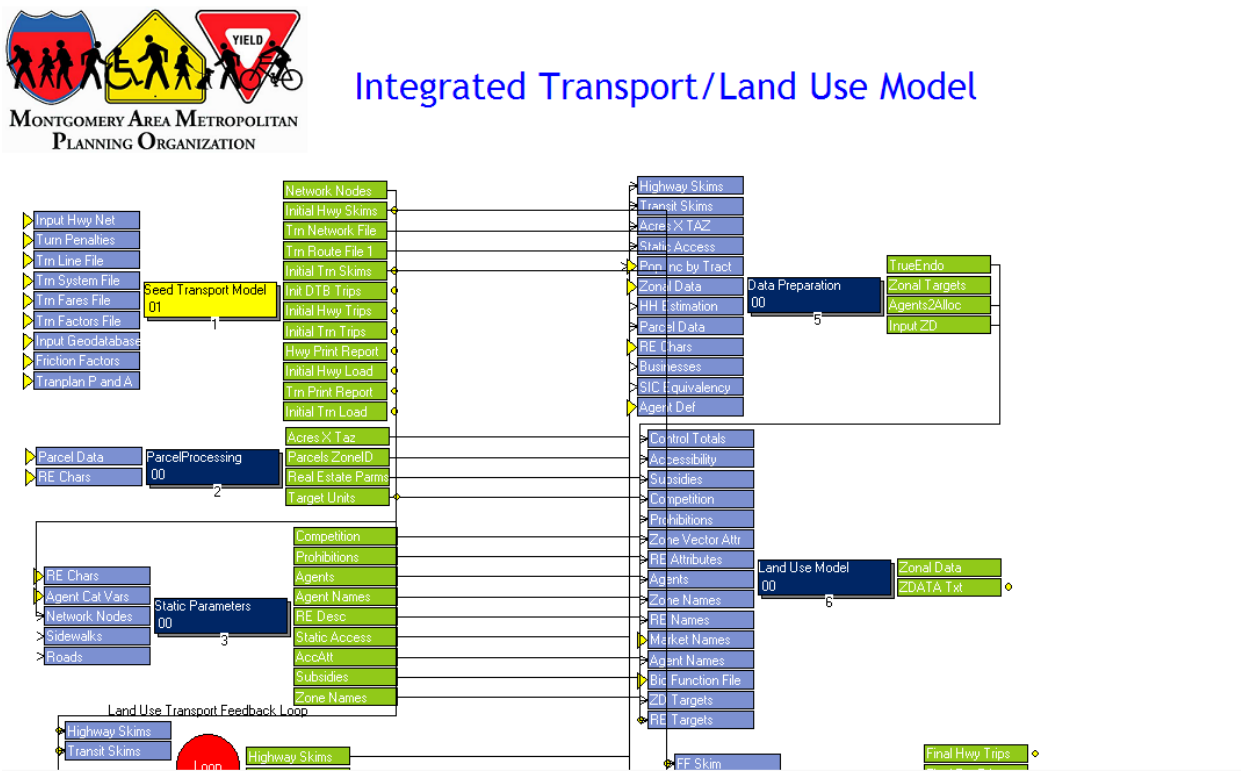
This document describes the key input files, output files, editing tools and process used by the Montgomery Integrated Model. It is intended to familiarize users with the basic information used by the model, how to edit it, and how to evaluate scenarios. It is assumed that users are generally familiar with the Cube environment.

General information on scripting, editing and scenario management can be found in the general Cube documentation and is not included in this document for the sake of brevity.

Input Files

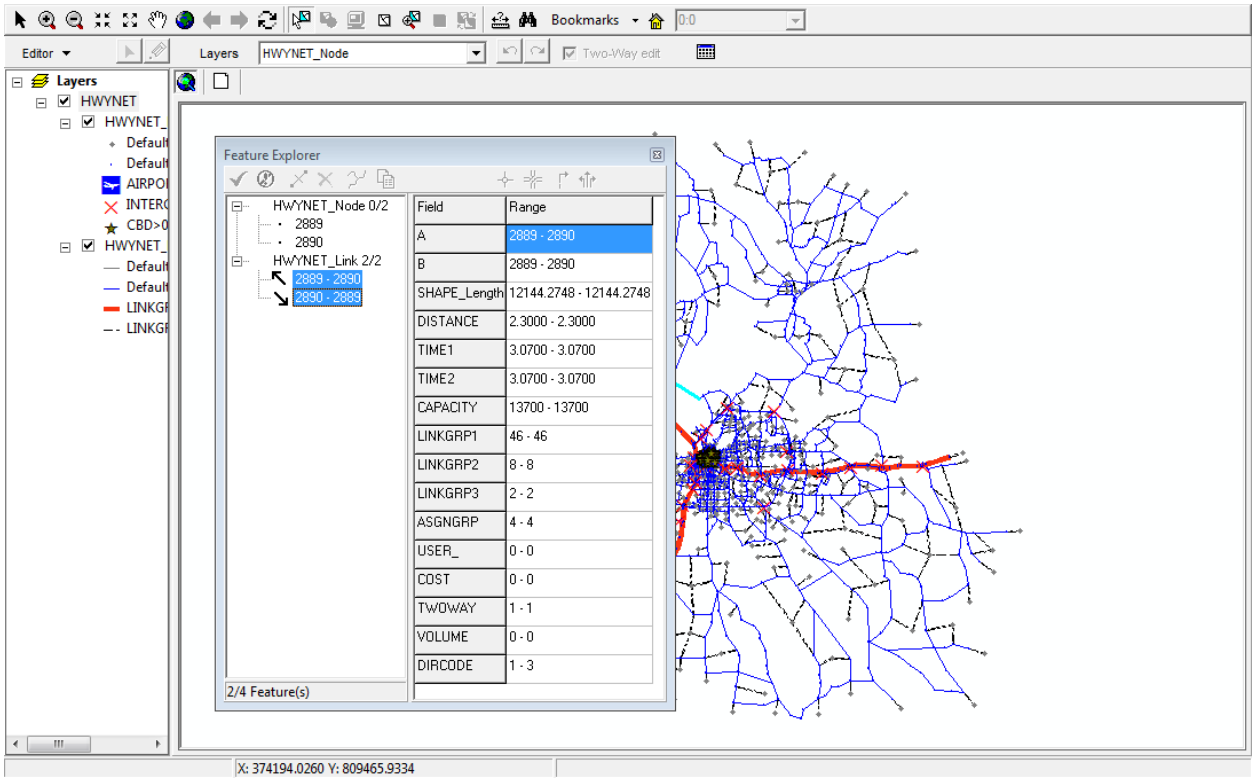
Network

The Cube Voyager version of the Montgomery Model includes the same input files as the TRANPLAN predecessor (see Figure below) with all of the same attributes with a few more added for use in the integrated model. Each file is described in the following sections



Highway Network (*.MDB\HWYNET)

The TRANPLAN highway network has been converted into a Cube geodatabase format. All attributes remain the same as the TRANPLAN network and editing is achieved in the same way as the TRANPLAN network. Documentation for the network development process will be integrated once it is provided.



Turn Penalties (*.PEN)

Turn penalties are stored in a space or comma delimited format in the form of:

- From Node
- Through Node
- To Node
- Set (Voyager-specific, value set to 1 for most instances)
- Time Penalty (0 or -1 denotes a prohibitor)

```
2603  1713  1744 1 1
2845  1902  2876 1 1
2876  1902  2845 1 1
1921  1920  3373 1 0.3
3373  1920  1921 1 0.3
3370  1925  1924 1 2
2770  1926  2659 1 3
2059  2058  2060 1 2
2063  2064  2065 1 2
2065  2064  2063 1 2
2067  2068  2069 1 2
2069  2068  2067 1 2
2070  2074  3394 1 1
2188  2189  2190 1 0.3
2190  2189  2188 1 0.3
1790  2210  3267 1 0.5
3267  2210  1790 1 0.5
1922  2276  2277 1 1
2277  2276  1922 1 1
2376  2377  2737 1 1
2737  2377  2376 1 1
2412  2413  2604 1 1
1899  2773  1900 1 1
1900  2773  1899 1 1
1922  2906  2185 1 0.5
2185  2906  1922 1 0.5
2926  2924  2927 1 1.5
2927  2924  2926 1 1.5
2128  3368  3369 1 1.5
3392  3391  3456 1 2
3456  3391  3392 1 2
2644  3540  2656 1 3
```

Transit Line File (*.LIN)

The Cube Voyager PT Line format is used for the Montgomery Model. It is comparable to the INET formatted file used by the TRANPLAN version of the model except for the following:

- In INET, stops are denoted by a negative sign at the node number. In Voyager, a negative sign denotes no stop
- Headway can be stored for up to 5 time periods with a zero headway indicating the particular line is not used in that time period. In the Montgomery Model, only one time period is used.

See the Cube Voyager documentation for the complete "PT Line" file format and available variables.

```
LINE MODE=1, NAME=M1L10, LONGNAME='1 AUM OB', HEADWAY[1]=45,
     ONEWAY=T, N=-2157, -2158, -2160, -2163, -2165, -2166, -2148,
     -2140, 2141, -2235, -2142, -2143, -1728, -1727, 1929, 1723,
     -1933, 1724, 1720, 1719, -1691, -1692, -1693, -2465, -2601,
     -2602, -1695, 1696, -2811, -2802, -2801, -1698, -1699, -2456,
     1678, -2813, -1677, -2814, 1676, 2596, 1670, -2434, -3303,
     -1669, -3187, -3304, 1667, -1666, 1665, -2428, 1663, 1426,
     -1656, -1655, -2318, -1428, 1657, -2320, -2631, -3477, -2632,
     -1659, -2818, 1617, -3072, 1618
LINE MODE=1, NAME=M1L11, LONGNAME='1 AUM IB ', HEADWAY[1]=45,
     ONEWAY=T, N=1618, -3072, -1617, -2818, -1659, -2632, -3477,
     -2631, -2320, 1657, -1428, -2318, -1655, -1656, -1426, 1663,
     -2428, -1665, -1666, -1667, -3304, -3187, -1669, -3303, -2434,
     1670, 2596, -1676, -2814, -1677, -2813, 1678, -2456, 1699,
     1698, -2801, -2802, -2811, 1696, -1695, -2602, -2601, -2465,
     -1693, -1692, 1691, 1719, 1720, 1724, -1933, 1723, 1929, 1727,
     -1728, 2143, -2144, 2145, -2146, -2147, -2148, -2149, -2150,
     -2151, -2152, 2154, 2157
LINE MODE=1, NAME=M1L20, LONGNAME='2 Eastdale Mall OB',
     HEADWAY[1]=30, ONEWAY=T, N=2157, 2158, 2160, 2163, 2165,
     2166, 2221, -2227, -2171, -2226, -2169, -2230, 2168, 1544,
     1545, 2479, 1548, 1549, -1550, 1570, -1571, 1572, 1573, 1575,
     -1576, -1577, -1579, 1580, -2454, 1582, 1583, -2427, -2451,
     -1584, -1612, 1611, -2617, -2204, -3529, -2426, 3133, -1614,
     1615, 2424, 1620, -1619, 1618
LINE MODE=1, NAME=M1L21, LONGNAME='2 Eastdale Mall IB',
     HEADWAY[1]=30, ONEWAY=T, N=1618, -1619, 1620, -2424, 1615,
     -2421, -1621, 1622, -1621, -2421, -1615, -1614, 3133, -2426,
     -3529, -2204, -2617, 1611, -1612, -1584, -2451, -2427, 1583,
     1582, -2454, 1580, -1579, -1577, -1576, 1575, 1573, 1572,
     -1571, 1570, -1550, 1549, 1548, 2479, 1545, 1544, 2168, -2230,
     -2169, -2226, 2171, 2172, -2170, 2173, 2175, 2176, 2219, 2158,
     2152, 2154, 2157
LINE MODE=1, NAME=M1L30, LONGNAME='3 Montgomery Commons OB',
     HEADWAY[1]=60, ONEWAY=T, N=1987, 2001, 2002, -2003, 2266,
     -2382, -2695, 2005, 2015, 1934, 2016, 2026, 2025, 2269, -2027,
     2268, 2030, 2029, -1780, 1782, 1783, 1785, 1784, -3249, -1829,
     -3177, -3251, 3178, 3179, 3180, -3272, -1672, -3269, 3181,
     3182, -3287, -3183, -3288, 3184, 2281
LINE MODE=1, NAME=M1L31, LONGNAME='3 Montgomery Commons IB',
     HEADWAY[1]=60, ONEWAY=T, N=2281, -3289, -1799, -3290, 1798,
     2280, -3270, -3267, -3271, 1827, 1828, 2279, -3252, -1829,
```

Transit System File (*.PTS)

The transit system file defines the modes, operators and vehicle types. To maintain compatibility to the greatest extent possible with the INET/TRANPLAN version of the model, this file has been structured to include alternate modes/operators and vehicle types but only Local Bus is used. See the Cube Voyager documentation for additional functionality.

```
;;<<PT>><<SYSTEM>>;;
; MODE DEFINITIONS
MODE NUMBER=001 LONGNAME="Fix Route Standard Bus" NAME="LBUS"
MODE NUMBER=002 LONGNAME="Fix Route Express Bus" NAME="XBUS"
MODE NUMBER=003 LONGNAME="Full Busway" NAME="Busway"
MODE NUMBER=021 LONGNAME="Light Rail" NAME="LRT"
MODE NUMBER=022 LONGNAME="Heavy Rail" NAME="HRT"
MODE NUMBER=023 LONGNAME="Commuter Rail" NAME="CRT"
MODE NUMBER=101 LONGNAME="Walk Access" NAME="IWALK"
MODE NUMBER=102 LONGNAME="Walk Egress" NAME="OWALK"
MODE NUMBER=103 LONGNAME="Walk Transfer" NAME="XWALK"
MODE NUMBER=104 LONGNAME="Auto Access" NAME="IAUTO"
MODE NUMBER=105 LONGNAME="Direct Walk Only" NAME="DWALK"
; OPERATORS
OPERATOR NUMBER=001 LONGNAME="MGM Transit" NAME="MGM Bus"
OPERATOR NUMBER=002 LONGNAME="MGM Rail"    NAME="MGM Rail"
; VEHICLE TYPES
VEHICLETYPE NUMBER=001 LONGNAME="Bus-40 Ft" NAME="BUS40" SEATCAP=40 CRUSHCAP=80
VEHICLETYPE NUMBER=002 LONGNAME="Artic Bus" NAME="BUS70" SEATCAP=70 CRUSHCAP=110
VEHICLETYPE NUMBER=003 LONGNAME="Bus-24 Ft" NAME="BUS24" SEATCAP=20 CRUSHCAP=22
VEHICLETYPE NUMBER=004 LONGNAME="LRT 1 CAR" NAME="LRT01" SEATCAP=50 CRUSHCAP=75
VEHICLETYPE NUMBER=005 LONGNAME="LRT 2 CAR" NAME="LRT02" SEATCAP=100 CRUSHCAP=150
VEHICLETYPE NUMBER=006 LONGNAME="LRT 3 CAR" NAME="LRT03" SEATCAP=150 CRUSHCAP=225
VEHICLETYPE NUMBER=007 LONGNAME="LRT 4 CAR" NAME="LRT04" SEATCAP=40 CRUSHCAP=80
VEHICLETYPE NUMBER=008 LONGNAME="HR  2 CAR" NAME="HR-02" SEATCAP=120 CRUSHCAP=160
VEHICLETYPE NUMBER=009 LONGNAME="HR  3 CAR" NAME="HR-03" SEATCAP=180 CRUSHCAP=240
VEHICLETYPE NUMBER=010 LONGNAME="CRT 3 CAR" NAME="CRT03" SEATCAP=210 CRUSHCAP=250
VEHICLETYPE NUMBER=011 LONGNAME="CRT 4 CAR" NAME="CRT04" SEATCAP=280 CRUSHCAP=320
; WAIT CURVE DEFINITIONS
WAITCRVDEF NUMBER=001 LONGNAME="InitialWait" NAME="IWAIT" ,
           CURVE=1-2,2-2,4-2,16-8,27-12,48-15,60-30,90-30
WAITCRVDEF NUMBER=002 LONGNAME="TransferWait" NAME="XWAIT" ,
           CURVE=1-2,2-2,4-2,12-6,20-8,40-15,60-30,90-30
```

Transit Fares File (*.FAR)

The transit fares file uses the Cube Voyager formatted fares. See Cube Voyager's documentation for specifics on its application. Boarding and transfer fares can be assigned to specific modes, lines and operators by assigning the appropriate FARESYSTEM to each.

```
; Fare system file
Faresystem  Number=1 Longname="Flat Fares" Structure="Flat" SAME=SEPARATE, IBOARDFARE=1.00 FAREFROMFS=0.00,0.00
Faresystem  Number=2 Longname="Flat Fares" Structure="Flat" SAME=SEPARATE, IBOARDFARE=1.50 FAREFROMFS=0.25,0.00
```

Transit Factor File (*.FAC)

The transit factor file is used to control transit path building. For the Montgomery application, the parameters in the file should be considered static (i.e. not change between alternatives) as it is set to be most compatible to the original INET path building parameters.

```
/*For Route Enumeration*/

VALUEOFTIME=999*5.50

FARESYSTEM=1, MODE=1

MAXFERS=2
EXTRAXFERS1 = 2
EXTRAXFERS2 = 1
SPREADFACT = 5
SPREADFUNC=2
SPREADCONST = 2
LOOKBACK=2.0

DELACCESSMODE=104 ;DELETE AUTO ACCESS FOR THIS PATH

/*For Route Enumeration and Evaluation*/

XFERPEN = 1,FROM=5 TO=5

/*For Route Evaluation*/
ALPHA = 1.0
LAMBDAW = 0.2
LAMBDAA = 0.2
CHOICECUT=0.01

IWAITCURVE=1, NODES=1001-999999
XWAITCURVE=2, N=1001-999999
WAITFACTOR=2.25,N=1001-999999
RUNFACTOR[101]=2.25
RUNFACTOR[102]=2.25
RUNFACTOR[103]=2.25
RUNFACTOR[005]=1.00
BESTPATHONLY=T
```

Friction Factors (*.DBF)

This is a database file that contains the model's friction factors used for trip distribution. The file should only be changed on a model validation effort.

TIME	FF01	FF02	FF03	FF04	FF05	FF06
1	25	24000	11000	9800	0	0
2	51	10500	9000	6200	825	10
3	90	5100	6000	3900	700	10
4	129	3400	4150	2770	660	10
5	168	2300	2900	2030	625	10
6	208	1600	2050	1570	580	10
7	247	1150	1400	1200	560	10
8	281	750	946	970	535	10
9	315	590	682	790	508	10
10	350	420	499	640	480	10
11	384	365	361	530	460	10
12	418	295	275	425	440	10
13	445	255	209	350	418	10
14	473	225	162	290	395	10
15	500	200	130	250	359	10
16	528	183	105	210	340	10
17	555	167	86	170	325	10
18	519	152	72	145	310	10
19	483	138	65	122	295	10
20	447	125	59	99	280	10
21	411	113	54	82	270	10
22	375	102	50	69	260	10
23	321	72	46	59	250	10
24	267	63	42	51	245	10
25	214	55	36	45	235	10
26	160	48	33	39	225	10
27	106	42	28	34	215	10
28	123	37	25	30	205	10

TRANPLAN P&A (*.DAT)

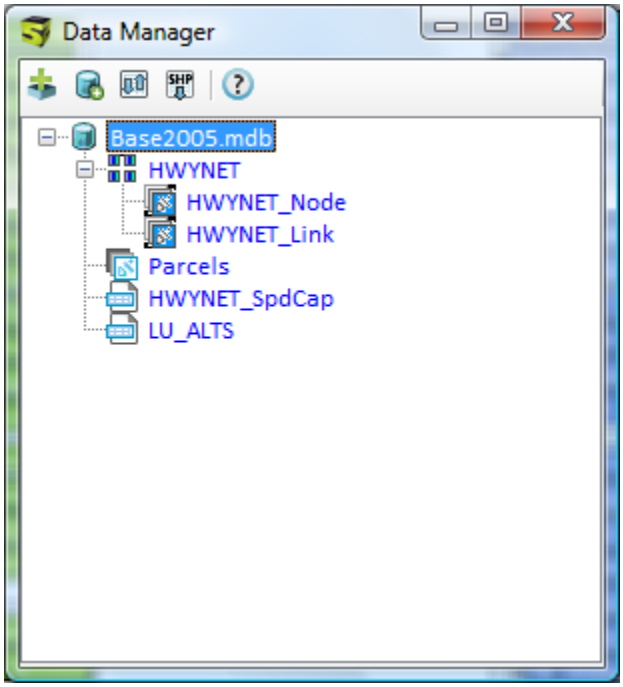
This is a flat ASCII file in TRANPLAN format. See the TRANPLAN manual for details. It is input to the integrated model only for the seed model assignment so that skims can be developed. It is regenerated during the model run during the interaction between the land use and transport models. It is kept in this format to maintain backward compatibility with the TRANPLAN implementation of the Montgomery model.

```
GP    1 1       0      0      0      0      0      0
GP    2 1     190    457    216    133      0      0
GP    3 1       0      0      0      0      0      0
GP    4 1       0      0      0      0      0      0
GP    5 1       0      0      0      0      0      0
GP    6 1       0      0      0      0      0      0
GP    7 1       0      0      0      0      0      0
GP    8 1       2      5      2      1      0      0
GP    9 1      46    112     53     32      0      0
GP   10 1      47    114     54     33      0      0
GP   11 1       1      3      2      1      0      0
GP   12 1     142    342    162     99      0      0
GP   13 1      15     36     17     10      0      0
GP   14 1     311    748    353    217      0      0
GP   15 1      10     23     11      7      0      0
GP   16 1     304    732    346    213      0      0
GP   17 1      44    107     50     31      0      0
GP   18 1       0      0      0      0      0      0
GP   19 1       0      0      0      0      0      0
GP   20 1       0      0      0      0      0      0
GP   21 1      26     63     30     18      0      0
GP   22 1      59    143     68     42      0      0
GP   23 1     185    446    210    130      0      0
GP   24 1     155    374    176    109      0      0
GP   25 1     139    335    158     97      0      0
GP   26 1     116    280    132     81      0      0
GP   27 1     130    314    148     91      0      0
GP   28 1     240    578    273    168      0      0
GP   29 1     349    841    397    244      0      0
GP   30 1      42    102     48     30      0      0
GP   31 1     139    334    158     97      0      0
GP   32 1     272    655    309    190      0      0
GP   33 1     321    774    365    225      0      0
GP   34 1     273    657    310    191      0      0
GP   35 1     295    710    335    206      0      0
GP   36 1     663   1598    754    464      0      0
GP   37 1     304    734    346    213      0      0
GP   38 1     249    599    282    174      0      0
GP   39 1     429   1033    487    300      0      0
GP   40 1     431   1039    490    302      0      0
GP   41 1      48    116     55     34      0      0
GP   42 1     588   1416    668    411      0      0
```

Other Files

Input Geodatabase (*.MDB)

The input geodatabase includes the highway network (described previously), the parcel GIS data and the land use alternatives table.



Parcels (Coverage within MDB)

Parcels is a mandatory file name within a geodatabase and refers to the parcel geography for the three county region. Key fields in the database that must be populated include the TAZ, ACRES and LAND_CLASS. The LAND_CLASS must assume one of the following values:

Single Family

- "Rural"
- "Urban Low"
- "Urban Medium Low"
- "Urban Medium"
- "Urban Medium High"

Multi-Family

- "Low"

- “Medium”
- “High”

Strictly Commercial Use

- “Local Retail Non-Strip Mall”
- “Local Retail Strip Mall”
- “Regional Mall”
- “Regional Auto Dealers”

It should be noted that “Regional Auto Dealers” is intended to represent any use that has a large lot size with small building footprints

Industrial Use

- “Light Industry”
- “Light Manufacturing”
- “Heavy Industry”

Office

- “Office – Single Story”
- “Office – 2-3 Story”
- “Office – CBD Tower”

Services

- “Regional Hospital”
- “Government – CBD”
- “Government – Non-CBD”

Mixed Use

- “New Urban – Primarily Residential”
- “New Urban – Balanced Residential/Commercial”
- “New Urban – Primarily Commercial”
- “Agricultural/Forestry/Farming”

Unusable

- “Parks & Recreation”
- “Slivers”
- “Undevelopable Land”

LU_ALTS (Table within MDB)

This table describes the parcel redesignation in a scenario from one of the PARCELS attributes to another. The table contains simply the PARCEL_NO (key field), the LU_ALT (the alternative to which the change applies), and the LU_CODE (the new LAND_CLASS attribute for that alternative).

PARCEL_NO	LU_ALT	LU_CODE
DUMMY	XX	WW
10 05 16 00 010 040.000	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.290	NewUrban	Residential - Urban Medium High
10 05 16 00 010 040.010	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.270	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.260	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.250	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.240	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.230	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.220	NewUrban	Residential - Urban Medium High
10 05 16 00 010 030.000	NewUrban	New Urban - Primarily Commercial
10 05 16 00 010 030.010	NewUrban	New Urban - Primarily Commercial
10 05 15 00 010 020.010	NewUrban	New Urban - Primarily Commercial
10 05 15 00 010 090.000	NewUrban	Regional Mall
10 05 15 00 010 010.300	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.310	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.320	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.330	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.340	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.080	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.070	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.060	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.050	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.350	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.360	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.370	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.380	NewUrban	Residential - Urban Medium High
10 05 15 00 010 010.390	NewUrban	Residential - Urban Medium High

Built Area (*.DBF)

The BUILTAREA file describes generalized real estate characteristics to be used whenever parcel data is missing some data. The file contains:

- RECAT -values = 1-21
- DESC- A description of the real estate category
- FAR- A generalized floor/area ratio
- BLTAREA- the average amount of built area
- IS_SNGLFAM- a Boolean flag indicating the use is single family
- AVGLOTSZ- the average lot size for the category
- AGENT- values =1-3 for household, retail, non-retail respectively
- RESUBMKT- Real estate sub-market within the broader real estate category

RECAT	DESC	FAR	BLT_AREA	IS_SNGLFAM	AVGLOTSZ	AGENT	RESUBMKT
1	SF- RURAL (<1 Unit/5 Acres)	0.05	3000	1	3.035	1	1
2	SF- URBAN LOW (0.51-1.0 Units/Acre)	0.11	4000	1	1.07	1	1
3	SF- URBAN MED/LOW (1.0-1.5 Units/Acre)	0.51	2200	1	0.75	1	1
4	SF- URBAN MEDIUM (1.5-2.0 Units/Acre)	0.81	2000	1	0.529	1	1
5	SF- URBAN MEDIUM HIGH (2.5-5.0 Units/Acre)	1.21	1600	1	0.568	1	1
6	MF- LOW (<8 Units/Acre)	0.51	2000	0	0.684	1	2
7	MF- MEDIUM (8-20 Units/Acre)	0.75	4000	0	0.498	1	2
8	MF- HIGH (> 20 Units/Acre)	1.11	6400	0	0.861	1	2
9	RETAIL- LOCAL, NON-STRIP	0.51	5000	0	3.228	2	1
10	RETAIL- LOCAL, STRIP	0.51	1500	0	2.128	2	1
11	RETAIL- REGIONAL	0.51	10000	0	3.77	2	2
12	RETAIL- REGIONAL AUTO DLR	0.15	30000	0	10.493	2	2
13	INDUSTRIAL- LIGHT INDUSTRY	0.25	10000	0	3.86	3	1
14	INDUSTRIAL- LIGHT MANUFACTURING	0.31	15000	0	4.058	3	1
15	INDUSTRIAL- HEAVY MANUFACTURING	0.61	200000	0	10.073	3	1
16	OFFICE- 1 STORY	0.21	2000	0	1.03	3	2
17	OFFICE- 2-3 STORY	0.61	10000	0	1.356	3	2
18	OFFICE- CBD STYLE TOWER	1.01	5000	0	0.361	3	2
19	SERVICE- HOSPITAL	1.01	500000	0	54.253	3	3
20	SERVICE- GOVT CBD	1.01	175000	0	8.543	3	3
21	SERIVCE- GOVT NON-CBD	0.2	10000	0	29.387	3	3

Sidewalk Centerline Miles (*.DBF)

The two key fields in this data table are the TAZ and the LENGTH. The length of the sidewalks is summed up across all sidewalks to get the centerline miles of sidewalks in the TAZ.

FID_SIDEWA	ID	STREET	FROM_	TO	SIDE_OF_RO	DIRECTION	LENGTH	FI
0	0	Clay St	Holt St	Goldthwaite St	Both	East	1	
0	0	Clay St	Holt St	Goldthwaite St	Both	East	589	
0	0	Clay St	Holt St	Goldthwaite St	Both	East	1084	
1	0	Herron St.	Holt St	Goldwaithe St	Both	West	37	
1	0	Herron St.	Holt St	Goldwaithe St	Both	West	897	
1	0	Herron St.	Holt St	Goldwaithe St	Both	West	1102	
2	0	Bibb St	Wilkinson St	Madison St. - Coosa St	Both	n/a	86	
2	0	Bibb St	Wilkinson St	Madison St. - Coosa St	Both	n/a	1795	
3	0	Madison St	Court St	Panama/Atl Hwy	Both	n/a	2641	
3	0	Madison St	Court St	Panama/Atl Hwy	Both	n/a	1987	
3	0	Madison St	Court St	Panama/Atl Hwy	Both	n/a	201	
3	0	Madison St	Court St	Panama/Atl Hwy	Both	n/a	3307	
3	0	Madison St	Court St	Panama/Atl Hwy	Both	n/a	2759	
4	0	Day St	Sampson	Air Base Blvd	South	East	2239	
5	0	Day St	Hill St	Sampson St	South	East	763	
5	0	Day St	Hill St	Sampson St	South	East	1615	
5	0	Day St	Hill St	Sampson St	South	East	966	
5	0	Day St	Hill St	Sampson St	South	East	524	
6	0	Court St	Randolph	Madison	Both	N/S	481	
6	0	Court St	Randolph	Madison	Both	N/S	63	
6	0	Court St	Randolph	Madison	Both	N/S	672	
7	0	Court St	Washignton St	Felder Ave	Both	South	431	
7	0	Court St	Washignton St	Felder Ave	Both	South	98	
7	0	Court St	Washignton St	Felder Ave	Both	South	438	
7	0	Court St	Washignton St	Felder Ave	Both	South	1131	
7	0	Court St	Washignton St	Felder Ave	Both	South	812	
7	0	Court St	Washignton St	Felder Ave	Both	South	1996	

Roadway Centerline Miles (*.DBF)

The two key fields in this data table are the TAZ and the LENGTH. The length of the roads is summed up across all roadways to get the centerline miles of roads in the TAZ.

FID_ROADS	STATEFP	COUNTYFP	COUNTYNS	TLID	TFIDL	TFIDR	MTFCC	FULLNAME	SMID	LFRO
4528	01	101		1454176	212519242	212745361	S1400			
15977	01	101		1425345	212519242	212745361	S1400			
24211	01	051		1357682	210466391	210466826	S1400	Edwards Cook Rd		
24361	01	051		1357684	210466827	210466826	S1400	Edwards Cook Rd		
0	01	101		1528174	212735095	212738537	S1400	Bryan St	2644	
1	01	101		1496621	212737491	212735096	S1400	Spruce St	2644	
2	01	101		1470748	212735096	212737507	S1400	E 2nd St	2644	
3	01	101		1470746	212741063	212735096	S1400	Spruce St	2644	
3	01	101		1470746	212741063	212735096	S1400	Spruce St	2644	
4	01	101		1543806	212736514	212735098	S1400	Fairground Rd	2644	
5	01	101		1469950	212742001	212735098	S1400	Fairground Rd	2644	
6	01	101		1469946	212736506	212735098	S1400	Fairground Rd	2644	
7	01	101		1471660	212735100	212735100	S1400	Green Ridge Rd	2644	
8	01	101		1497285	212735102	212738558	S1400	Willow Lane Dr	2644	
9	01	101		1471676	212735102	212738556	S1400	Willow Lane Dr	2644	
10	01	101		1471759	212738586	212735104	S1400	Avondale Rd	2644	
11	01	101		1525888	212736171	212735106	S1400	Triple Crown Dr	2644	
12	01	101		1525890	212735107	212735108	S1400	Hollybrook Dr		
13	01	101		1495344	212742447	212735111	S1400	Bell Rd	2644	
13	01	101		1495344	212742447	212735111	S1400	Bell Rd	2644	
13	01	101		1495344	212742447	212735111	S1400	Bell Rd	2644	
14	01	101		1547168	212742447	212735111	S1400	Bell Rd	2644	
14	01	101		1547168	212742447	212735111	S1400	Bell Rd	2644	
15	01	101		1489272	212735114	212735114	S1400	Carolina Ct	2644	
16	01	101		1485982	212735746	212735114	S1200	Atlanta Hwy	2644	
17	01	101		1519364	212735121	212735122	S1400	Ballentine Dr		
18	01	101		1476859	212735126	212741106	S1400	Semmes Dr	2644	

Zonal Data (*.DAT)

This is the standard Alabama trip generation formatted land use file. It is used to develop control totals for key variables used in the allocation process as well as to populate variables that are not forecast as part of the land use model (average income and school enrollment).

1	0	0	42	1211	4257	0
2	176	11611	27	129	440	0
3	0	0	53	344	0	0
4	0	0	30	74	0	0
5	0	0	52	985	185	0
6	0	0	0	517	0	0
7	0	0	1	2802	0	0
8	2	18162	57	1543	0	0
9	43	18162	28	457	0	0
10	44	18162	23	1469	589	0
11	1	11611	0	1025	92	0
12	132	18162	0	1574	0	0
13	14	17716	137	46	499	0
14	234	24602	8	101	0	0
15	9	11611	2	884	259	0
16	282	11611	15	312	37	0
17	41	11611	71	114	0	0
18	0	0	205	446	0	0
19	0	0	8	1098	0	0
20	0	0	168	1456	0	0
21	24	11611	23	231	0	0
22	55	11611	22	150	0	0
23	172	11033	20	156	0	0
24	144	16944	22	191	0	0
25	129	16944	18	193	29	0
26	108	15476	0	123	594	0
27	121	15476	33	272	0	0
28	181	22768	3	91	0	0
29	263	21857	17	247	120	0
30	32	21857	84	508	0	0
31	204	9750	22	58	0	0
32	252	13462	5	106	600	0
33	298	14191	70	86	25	0
34	253	17500	39	143	84	0
35	179	34032	87	177	1009	0
36	403	34032	80	103	0	0
37	185	34671	62	191	815	0
38	151	34671	48	48	0	0
39	302	51583	38	75	0	0
40	304	53250	0	88	0	0
41	34	53250	93	206	790	0
42	451	46350	235	172	28	0

Population and Income by Census Tract (*.CSV)

This is the 2000 Census breakdown of households by size and income by county and census tract. It can be updated as the new census comes out should such information be available. Variables are defined as the following where P is person and I is income. COKEY is the county/tract number combined to create a unique key:

```
FIELDS=COUNTY,CONUM,TRACT,TRACTNUM,COKEY,
P1I1(13.10),P1I2(13.10),P1I3(13.10),P1I4(13.10),
P2I1(13.10),P2I2(13.10),P2I3(13.10),P2I4(13.10),
P3I1(13.10),P3I2(13.10),P3I3(13.10),P3I4(13.10)
```

```
Autauga,201,0.04632095,0.130567178,0.019686404,0.011001226,0.074045898,0.208716876,0.031469507,0.017585901,0.102785174,0.289725709,0.
Autauga,202,0.074721781,0.104928458,0.014308426,0.006041335,0.111533246,0.156621154,0.02135743,0.009017582,0.187353876,0.263092677,0.
Autauga,203,0.037906092,0.129526647,0.030256881,0.006969282,0.057629587,0.196922626,0.046000299,0.010595574,0.089680267,0.306441092,0
Autauga,204,0.028312987,0.127188961,0.031385714,0.005157792,0.057128571,0.256635714,0.063328571,0.010407143,0.061987013,0.278461039,0
Autauga,205,0.018704705,0.099020081,0.05176609,0.009844581,0.032234757,0.170646282,0.089211105,0.016965662,0.053360629,0.282483683,0.
Autauga,206,0.053109241,0.107972842,0.022647184,0.007495899,0.084377019,0.171541268,0.035980591,0.011909069,0.140245182,0.285123088,0
Autauga,207,0.083511882,0.18333658,0.016312817,0.010956369,0.088922511,0.195214724,0.017369703,0.011666219,0.111506005,0.244793067,0.
Autauga,208,0.025480155,0.097945331,0.030461237,0.004262657,0.051837255,0.199261629,0.061970854,0.008672022,0.083797066,0.322114663,0
Autauga,209,0.049119757,0.113953181,0.024327084,0.004306709,0.081455648,0.188969382,0.040341778,0.007141846,0.125648031,0.291491523,0
Autauga,210,0.069467463,0.126030754,0.012474034,0.005806878,0.101073513,0.18337176,0.018149423,0.00844887,0.154408722,0.280134709,0.0
Autauga,211,0.104485,0.141470841,0.011095752,0.005547876,0.121019664,0.163858482,0.012851646,0.006425823,0.17238266,0.233403071,0.018
Elmore,301,0.037373504,0.131222526,0.026392154,0.007751542,0.06111073,0.214566563,0.043154738,0.012674818,0.085858051,0.301457155,0.0
Elmore,302,0.041866226,0.142320396,0.020685384,0.004954583,0.071161051,0.241905467,0.035159454,0.008421426,0.086500467,0.294050406,0.
Elmore,303,0.032157719,0.095564748,0.041968549,0.017623157,0.092389638,0.274559037,0.120576307,0.050631609,0.047130626,0.140060503,0.
Elmore,304,0.083115725,0.144238315,0.019977098,0.007697597,0.106879799,0.185478284,0.02568886,0.00989846,0.13591177,0.235860117,0.032
Elmore,305,0.055984771,0.132021779,0.024089601,0.006998096,0.088824999,0.209464722,0.038220372,0.011103125,0.110718485,0.261093351,0.
Elmore,306,0.058493587,0.144367152,0.022288659,0.005430739,0.08243979,0.203468417,0.031413227,0.007653984,0.112746702,0.278268455,0.0
Elmore,307,0.016868853,0.08450094,0.036923464,0.01948013,0.043598412,0.218397001,0.095430581,0.050347393,0.046450974,0.232686303,0.10
Elmore,308,0.088049152,0.170449133,0.019479901,0.004090779,0.094292246,0.182534769,0.020861116,0.004380834,0.129813298,0.251297866,0.
Elmore,309,0.011642205,0.085969062,0.021182346,0.00479702,0.031781178,0.234680458,0.057824088,0.013095022,0.050776355,0.37494577,0.09
Elmore,310,0.038148055,0.127802001,0.024068173,0.003489885,0.06091383,0.204070937,0.038431438,0.005572559,0.098077419,0.328574823,0.0
Elmore,311,0.027164512,0.121776519,0.022394158,0.006227961,0.044099709,0.197695771,0.03635537,0.010110665,0.081720853,0.366348606,0.0
Elmore,312,0.058302671,0.116001169,0.010573023,0.0066459,0.08984346,0.178755899,0.016292855,0.010241223,0.156270273,0.310921165,0.028
Elmore,313,0.039921253,0.102500515,0.025535216,0.007732495,0.076825202,0.197253898,0.049140445,0.014880557,0.110479747,0.283664216,0.
Montgomery,1,0.243351716,0.136075368,0.008639706,0.003599877,0.114944853,0.064273897,0.004080882,0.001700368,0.263026961,0.147077206,
Montgomery,2,0.362346735,0.19510978,0.01639578,0.011477046,0.101938979,0.05489022,0.004612623,0.003228836,0.154761905,0.083333333,0.0
Montgomery,3,0.154731614,0.13279498,0.003917256,0.001566902,0.151892502,0.130358375,0.00384538,0.001538152,0.22145075,0.190055201,0.0
Montgomery,4,0.114648375,0.179895417,0.013826159,0.002796302,0.115745488,0.181616905,0.013958467,0.002823061,0.138053466,0.216620479,
Montgomery,5,0.143707342,0.240416056,0.016871302,0.006025465,0.111537992,0.18659815,0.013094607,0.004676645,0.097826466,0.16365937,0.
Montgomery,6,0.284798123,0.124992401,0.007969314,0,0.130016534,0.057061749,0.003638165,0,0.26691225,0.117142637,0.007468826,0
Montgomery,7,0.16888905,0.157597049,0.013746783,0.002945739,0.142586657,0.133053247,0.011605891,0.002486977,0.18065591,0.168577172,0.
Montgomery,9,0.038515605,0.095042104,0.01607126,0.001662544,0.054955192,0.135608856,0.022930944,0.002372167,0.161107957,0.397554168,0
Montgomery,10,0.241581829,0.076886803,0.000655285,0.001310571,0.183233675,0.058316685,0.000497017,0.000994034,0.329104059,0.104741979
Montgomery,11,0.249745674,0.118894282,0.010152263,0.005188935,0.157431706,0.074947163,0.006399663,0.003270939,0.243233901,0.115794278
Montgomery,12,0.273840445,0.131849103,0.006761492,0.001690373,0.169647495,0.081682127,0.004188827,0.001047207,0.217736549,0.104836116
Montgomery,13,0.108925648,0.169754256,0.041589793,0.018955892,0.097033021,0.151220293,0.037048972,0.016886266,0.115142248,0.179442465
Montgomery,14,0.050228127,0.241313392,0.075615169,0.058144516,0.03713751,0.178421517,0.0559081,0.042990705,0.030734491,0.147659186,0.
Montgomery,15,0.21367159,0.189633536,0.044260544,0.009920467,0.140289428,0.124506867,0.029059953,0.006513438,0.113094862,0.10037169,0
Montgomery,16,0.131105384,0.229938674,0.022590466,0.003630611,0.102127914,0.179116649,0.017597425,0.002828158,0.105308368,0.184694676
Montgomery,17,0.035402792,0.183778824,0.033937071,0.005524639,0.051696462,0.268360617,0.049556163,0.008067282,0.04977956,0.258409818,
Montgomery,18,0.090841998,0.212584215,0.031364884,0.011848956,0.096247184,0.22523318,0.033231125,0.012553981,0.074975161,0.175453383,
```

TAZ to Census Tract Equivalency Table (*.DBF)

This is a simple table that can be updated based on the Census data used in the model. It defines which TAZs belong to each count and respective census tract.

TAZ	COUNTY	TRACT
1	101	1
2	101	1
3	101	1
4	101	1
5	101	1
6	101	2
7	101	2
8	101	2
9	101	2
10	101	2
11	101	1
12	101	2
13	101	6
14	101	5
15	101	5
16	101	1
17	101	1
18	101	1
19	101	2
20	101	1
21	101	1
22	101	1
23	101	2
24	101	2
25	101	2
26	101	7
27	101	7
28	101	7

Businesses (*.DBF)

This is the INFOUSA database used to disaggregate total employment in retail/non-retail in the model from the control totals to a more refined set of size/SIC codes. The file should not be changed except on a major model update or when the TAZ numbers are revised.

JOIN_COUNT	JOIN_COU_1	STATUS	SCORE	ARC_KEYFIE	COMP_NAME	B_ADDRESS	CITY
0	0	U	0	2549 MADISON AVE	1 China	2549 MADISON AVE	Montgomery
0	0	U	0	2033 COLISEUM BLVD	1 Nails	2033 COLISEUM BLVD	Montgomery
1	1	M	100	3405 ATLANTA HWY	1 Stop Cash	3405 ATLANTA HWY	Montgomery
0	0	U	0	1174 S DECATUR ST	1 Stop Cash LLC	1174 S DECATUR ST	Montgomery
1	1	M	100	1702 E MAIN ST	1 Stop Cash LLC	1702 E MAIN ST	Prattville
0	0	U	0	2720 E SOUTH BLVD	1 Stop Cash Title Loans	2720 E SOUTH BLVD	Montgomery
0	0	U	0	743 OLIVER RD	1-800 Radiator	743 OLIVER RD	Montgomery
1	1	M	100	3086 WOODLEY RD	100 Black Men-Grtr Montgome	3086 WOODLEY RD	Montgomery
0	0	U	0	988 S MEMORIAL DR	100 Percent Protection Agenc	988 S MEMORIAL DR	Prattville
0	0	U	0	1001 S COURT ST	1001 Ways II Barber & Style	1001 S COURT ST	Montgomery
0	0	U	0	1502 S COURT ST	2 Caring Friends	1502 S COURT ST	Montgomery
0	0	U	0	6768 TAYLOR CIR	2's Co Hair Salon	6768 TAYLOR CIR	Montgomery
1	1	M	100	2020 NORMANDIE DR	20/20 Ophthalmic Assoc	2020 NORMANDIE DR	Montgomery
0	0	U	0	2020 NORMANDIE DR # B	20/20 Optical Shoppe	2020 NORMANDIE DR # B	Montgomery
0	0	U	0	3106 S COURT ST	21st Century Hair Studio	3106 S COURT ST	Montgomery
0	0	U	0	3101 WETUMPKA HWY	231 Turf Mart Holladay Turf	3101 WETUMPKA HWY	Montgomery
0	0	U	0	2940 ZELDA RD # A	2940 Salon-Spa	2940 ZELDA RD # A	Montgomery
0	1	O	0	19570 RIFLE RANGE RD	3 AM Inc	19570 RIFLE RANGE RD	Tallassee
1	1	M	100	733 S MEMORIAL DR	3 D Dogs	733 S MEMORIAL DR	Prattville
0	0	U	0	2015 MOUNT MEIGS RD # B	3 D Electronic Svc Inc	2015 MOUNT MEIGS RD # B	Montgomery
0	0	U	0	1707 HIGHWAY 31 N	31-65 Club	1707 HIGHWAY 31 N	Prattville
1	1	M	100	569 PIKE RD	334ONLINE.COM	569 PIKE RD	Pike Road
1	1	M	100	1408 MOBILE RD	4 Way Convenience Store	1408 MOBILE RD	Montgomery
1	1	M	100	1332 MOBILE RD	4 Way Tire Svc	1332 MOBILE RD	Montgomery
0	0	U	0	34 FIRETOWER RD	4 Wheeler Super Store	34 FIRETOWER RD	Wetumpka
1	1	M	100	1563 HIGHWAY 31 N	4 Wheeler Superstore	1563 HIGHWAY 31 N	Prattville
1	1	M	100	1651 BALM RD	4-Way MARKET LLC	1651 BALM RD	Wetumpka

Households (*.DBF)

This is the INFOUSA database used for model estimation purposes only. The file should not be changed except on a major model update or when the TAZ numbers are revised.

JOIN_COUNT	STATUS	ST_NUM	ST_NAME	ADDRESS	CITY	STATE	ZIP
0	U	408	CLEAR CREEK VW	408 CLEAR CREEK VW	Prattville	AL	36067
1	M	383	ARBOR LN	383 ARBOR LN	Prattville	AL	36066
0	U	2035	COUNTY ROAD 123	2035 COUNTY ROAD 123	Marbury	AL	36051
1	M	306	DRIVER RD	306 DRIVER RD	Deatsville	AL	36022
1	M	149	10TH ST	149 10TH ST	Prattville	AL	36067
0	U	420	COUNTY ROAD 21	420 COUNTY ROAD 21	Prattville	AL	36067
1	M	1918	CHANCELLOR RIDGE RD	1918 CHANCELLOR RIDGE F	Prattville	AL	36066
0	U	1388	PADRES PL	1388 PADRES PL	Prattville	AL	36067
1	M	416	PARKWOOD DR	416 PARKWOOD DR	Prattville	AL	36067
1	M	603	MARLYN DR	603 MARLYN DR	Prattville	AL	36067
1	M	506	MOSSY OAK RDG	506 MOSSY OAK RDG	Prattville	AL	36066
1	M	527	JASMINE TRL	527 JASMINE TRL	Prattville	AL	36066
0	U	1854	COUNTY ROAD 7	1854 COUNTY ROAD 7	Plantersville	AL	36758
1	M	2154	COUNTY ROAD 85	2154 COUNTY ROAD 85	Deatsville	AL	36022
1	M	2505	WYNGATE DR	2505 WYNGATE DR	Prattville	AL	36067
1	M	132	HERITAGE HILLS DR	132 HERITAGE HILLS DR	Prattville	AL	36067
1	M	1538	NORTHINGTON RD	1538 NORTHINGTON RD	Prattville	AL	36067
0	U	120	HUNTS ALY	120 HUNTS ALY	Prattville	AL	36067
0	U	2703	WYNFREY DR	2703 WYNFREY DR	Prattville	AL	36067
1	M	219	SWEETBRIAR LN	219 SWEETBRIAR LN	Prattville	AL	36067
1	M	140	SHADY OAK LN	140 SHADY OAK LN	Prattville	AL	36066
1	M	103	ASHWOOD CT	103 ASHWOOD CT	Prattville	AL	36066
1	M	1954	REGENT RD	1954 REGENT RD	Prattville	AL	36066
1	M	306	HAMPSTEAD ST	306 HAMPSTEAD ST	Prattville	AL	36066
1	M	501	JASMINE TRL	501 JASMINE TRL	Prattville	AL	36066
1	M	307	ESTHER CT	307 ESTHER CT	Prattville	AL	36067
1	M	1734	WINDERMERE AVE	1734 WINDERMERE AVE	Prattville	AL	36066

Output Files

Overview

The Integrated Model produces interim and final output files. Only the final output files are described in this section.

Land Use

New Land Use Data (ZDUPDATE.DAT)

This is the Alabama trip generation formatted input zonal data file. This file is stored in the Cube Scenario output directory.

1	1	0	75	961	4257	0
2	245	11611	57	234	440	0
3	1	0	88	435	0	0
4	1	0	61	165	0	0
5	1	0	86	844	185	0
6	1	0	0	562	0	0
7	1	0	7	1630	0	0
8	15	18162	91	1119	0	0
9	101	18162	58	520	0	0
10	102	18162	52	1086	589	0
11	9	11611	0	865	92	0
12	204	18162	0	1134	0	0
13	50	17716	160	122	499	0
14	293	24602	27	201	0	0
15	38	11611	11	788	259	0
16	330	11611	39	409	37	0
17	98	11611	106	216	0	0
18	1	0	206	511	0	0
19	1	0	26	903	0	0
20	1	0	181	1079	0	0
21	70	11611	52	338	0	0
22	118	11611	50	258	0	0
23	241	11033	47	264	0	0
24	216	16944	50	300	0	0
25	201	16944	44	302	29	0
26	180	15476	0	227	594	0
27	193	15476	65	375	0	0
28	249	22768	14	188	0	0
29	316	21857	43	353	120	0
30	84	21857	117	555	0	0
31	269	9750	50	141	0	0
32	307	13462	20	207	600	0
33	342	14191	105	181	25	0
34	308	17500	72	250	84	0
35	248	34032	120	286	1009	0
36	413	34032	114	203	0	0
37	253	34671	97	300	815	0
38	222	34671	83	125	0	0
39	345	51583	71	166	0	0
40	346	53250	0	184	0	0
41	87	53250	125	314	790	0
42	443	46350	225	280	28	0

Rents (RENTS.DBF)

The RENTS file describes the relative rents paid by zone by land use type. It represents the equilibrated values and should only be used for relative analysis as the amounts are not scaled.

IDZONE	IDREST	RENTS
1	1	1500
1	2	1500.0036694
1	3	1500.0076783
1	4	1500.0068032
1	5	1500.0047753
1	6	1500.0043081
1	7	1500.0151763
1	8	1500.0150963
1	9	1497.6399276
1	10	1497.6458156
1	11	1497.6492787
1	12	1497.6440674
1	13	1500.3521204
1	14	1500.3520826
1	15	1500.3549077
1	16	1500.3636946
1	17	1500.3670179
1	18	1500.4088754
1	19	1502.421774
1	20	1500.355002
1	21	1500.3641701
2	1	1499.9985513
2	2	1500.0022208
2	3	1500.0062297
2	4	1500.0053546
2	5	1500.0033268
2	6	1500.0028595
2	7	1500.0137277

Bids (BIDS.DBF)

The BIDS file describes the relative willingness to pay by agent, zone by land use type. It represents the equilibrated values and should only be used for relative analysis as the amounts are not scaled.

IDAGENT	IDZONE	IDREST	LOCBID
1	1	1	-1487.217798
1	1	2	-1487.217799
1	1	3	-1487.2177943
1	1	4	-1487.2177938
1	1	5	-1487.2177919
1	1	6	-1487.2177947
1	1	7	-1487.2177944
1	1	8	-1487.2177906
1	1	9	-1487.5541328
1	1	10	-1487.5541328
1	1	11	-1487.5541328
1	1	12	-1487.5541328
1	1	13	-1487.5541328
1	1	14	-1487.5541328
1	1	15	-1487.5541328
1	1	16	-1487.5541328
1	1	17	-1487.5541328
1	1	18	-1487.5541328
1	1	19	-1487.5541328
1	1	20	-1487.5541328
1	1	21	-1487.5541328
1	2	1	-1487.2199953
1	2	2	-1487.2199964
1	2	3	-1487.2199915
1	2	4	-1487.2199911
1	2	5	-1487.2199891
1	2	6	-1487.2199919
1	2	7	-1487.2199916

Transportation

Final Highway Trips (Final HWY Trips.MAT)

This is the final set of auto trip tables from the mode choice model. The file is stored in a Cube Voyager binary format.

*1 P1AUTO | 2 P2AUTO | 3 P3AUTO | 4 P4AUTO | 5 P5AUTO | 6 P6AUTO | 7 TOTALAUTO

	Sum	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	168080.36	847.37	241.10	414.07	179.21	744.04	462.21	1362.33	1029.37	494.38	955.00	701.42	980.81	244.97	197
1	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	(
2	242.42	0.50	0.20	0.27	0.12	0.51	0.34	1.03	0.86	0.42	0.63	0.42	0.94	0.23	(
3	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	(
4	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	(
5	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(
6	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(
7	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(
8	14.66	0.04	0.02	0.02	0.01	0.03	0.02	0.05	0.05	0.02	0.04	0.03	0.04	0.01	(
9	102.24	0.29	0.09	0.12	0.05	0.23	0.14	0.43	0.26	0.17	0.27	0.21	0.28	0.06	(
10	101.89	0.26	0.08	0.12	0.05	0.20	0.14	0.49	0.29	0.13	0.34	0.20	0.25	0.08	(
11	9.05	0.02	0.01	0.01	0.01	0.02	0.01	0.04	0.03	0.01	0.02	0.02	0.03	0.01	(
12	209.21	0.67	0.20	0.24	0.11	0.49	0.37	1.29	0.61	0.29	0.52	0.38	0.67	0.15	(
13	51.16	0.14	0.05	0.07	0.03	0.12	0.09	0.26	0.14	0.07	0.15	0.11	0.15	0.04	(
14	367.96	1.30	0.39	0.54	0.24	0.96	0.55	1.57	1.81	0.86	1.74	0.97	1.81	0.45	(
15	38.04	0.13	0.04	0.05	0.02	0.08	0.05	0.13	0.12	0.08	0.15	0.09	0.17	0.04	(
16	331.90	0.81	0.25	0.39	0.17	0.72	0.44	1.43	1.39	0.68	1.32	0.71	1.38	0.35	(
17	99.40	0.22	0.07	0.11	0.05	0.22	0.14	0.46	0.40	0.19	0.30	0.20	0.43	0.11	(
18	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(
19	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(
20	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	(
21	69.91	0.15	0.04	0.09	0.04	0.15	0.10	0.30	0.27	0.13	0.20	0.14	0.29	0.07	(
22	119.35	0.27	0.07	0.15	0.07	0.27	0.19	0.66	0.50	0.24	0.34	0.24	0.49	0.13	(
23	244.92	0.56	0.15	0.31	0.13	0.56	0.40	1.41	1.07	0.52	0.70	0.49	0.99	0.27	(
24	226.13	0.64	0.20	0.34	0.14	0.57	0.47	1.49	0.90	0.44	0.80	0.53	0.76	0.23	(
25	203.60	0.47	0.12	0.25	0.11	0.45	0.30	0.98	0.85	0.41	0.55	0.39	0.75	0.22	(

Final Transit Trips (Final TRN Trips.MAT)

This is the final transit trip table resulting from mode choice. The file is stored as a Cube Voyager binary matrix file.

✓ *1 P1TRN | 2 P2TRN | 3 P3TRN | 4 P4TRN | 5 P5TRN | 6 P6TRN | 7 TOTALTRANSIT | 8 SHARE1 | 9 SHARE2

	Sum	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2366.40	80.72	19.88	54.95	23.76	88.93	41.71	103.68	54.57	23.53	64.00	73.54	35.23	8.05	6.81	47.98	29.83	14.56	43.16	59.78	63.
1	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
2	21.57	0.27	0.00	0.15	0.06	0.27	0.17	0.48	0.27	0.10	0.33	0.24	0.01	0.04	0.04	0.25	0.15	0.09	0.18	0.28	0.
3	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
4	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
5	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
6	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
7	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
8	1.48	0.02	0.00	0.01	0.00	0.02	0.01	0.03	0.00	0.01	0.02	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.01	0.02	0.
9	6.86	0.10	0.02	0.07	0.03	0.09	0.05	0.14	0.12	0.00	0.09	0.10	0.12	0.03	0.00	0.06	0.03	0.02	0.03	0.09	0.
10	8.08	0.12	0.03	0.06	0.03	0.11	0.06	0.11	0.14	0.05	0.00	0.10	0.12	0.02	0.01	0.07	0.04	0.03	0.07	0.08	0.
11	0.92	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.
12	10.85	0.08	0.01	0.12	0.05	0.18	0.07	0.01	0.28	0.12	0.23	0.18	0.00	0.05	0.00	0.02	0.05	0.01	0.06	0.01	0.
13	2.79	0.06	0.01	0.03	0.01	0.05	0.01	0.04	0.06	0.02	0.04	0.05	0.04	0.00	0.00	0.02	0.02	0.01	0.02	0.03	0.
14	21.15	0.34	0.08	0.27	0.11	0.41	0.25	0.71	0.05	0.03	0.06	0.45	0.09	0.02	0.00	0.30	0.21	0.04	0.24	0.41	0.
15	2.87	0.02	0.00	0.02	0.01	0.04	0.02	0.07	0.05	0.00	0.01	0.04	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.04	0.
16	24.12	0.38	0.10	0.19	0.08	0.27	0.18	0.43	0.13	0.02	0.01	0.32	0.01	0.01	0.10	0.31	0.00	0.12	0.26	0.34	0.
17	6.64	0.11	0.03	0.06	0.03	0.10	0.06	0.14	0.08	0.03	0.12	0.10	0.00	0.01	0.00	0.07	0.04	0.00	0.01	0.08	0.
18	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
19	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
20	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
21	5.11	0.08	0.02	0.04	0.02	0.08	0.05	0.14	0.08	0.03	0.10	0.07	0.00	0.01	0.00	0.07	0.04	0.02	0.03	0.08	0.
22	7.69	0.13	0.04	0.07	0.03	0.14	0.07	0.11	0.09	0.03	0.16	0.12	0.00	0.01	0.01	0.06	0.04	0.00	0.04	0.07	0.
23	15.14	0.28	0.08	0.15	0.07	0.28	0.15	0.21	0.15	0.04	0.34	0.24	0.00	0.01	0.01	0.12	0.09	0.00	0.09	0.15	0.
24	6.93	0.16	0.02	0.09	0.05	0.22	0.04	0.01	0.13	0.05	0.11	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
25	13.42	0.23	0.06	0.12	0.05	0.23	0.14	0.34	0.09	0.02	0.26	0.19	0.00	0.00	0.02	0.19	0.12	0.07	0.10	0.22	0.

Final Highway O/D (Final Auto OD.MAT)

This is the O/D format automobile trip table resulting from mode choice used for highway assignment. The file is a Cube Voyager binary file format.

*1 TOTALAUTO

	Sum	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1053373.60	2873.51	1551.84	1128.75	562.58	1825.83	919.92	2709.86	2344.80	1476.02	2503.61	1456.72	2554.59	1266.20	1612
1	2873.51	0.11	15.79	0.06	0.05	0.06	0.04	0.05	0.61	4.32	4.72	0.50	9.46	1.70	1
2	1551.84	15.79	12.43	5.14	2.63	7.04	2.58	7.31	6.77	5.45	9.62	5.94	9.92	4.35	4
3	1128.75	0.06	5.14	0.04	0.02	0.04	0.02	0.04	0.26	1.77	1.93	0.22	3.80	0.72	4
4	562.58	0.05	2.63	0.02	0.02	0.03	0.02	0.04	0.16	0.99	1.09	0.12	1.95	0.40	2
5	1825.83	0.06	7.04	0.04	0.03	0.05	0.03	0.05	0.43	2.98	3.17	0.29	5.42	1.19	7
6	919.92	0.04	2.58	0.02	0.02	0.03	0.02	0.04	0.22	1.38	1.24	0.11	2.00	0.60	3
7	2709.86	0.05	7.31	0.04	0.04	0.05	0.04	0.07	0.60	3.94	3.55	0.30	5.84	1.73	1
8	2344.80	0.61	6.77	0.26	0.16	0.43	0.22	0.60	1.39	4.58	3.96	0.53	6.50	2.21	9
9	1476.02	4.32	5.45	1.77	0.99	2.98	1.38	3.94	4.58	5.12	6.51	2.01	6.28	3.56	5
10	2503.61	4.72	9.62	1.93	1.09	3.17	1.24	3.55	3.96	6.51	9.52	2.46	10.58	4.04	8
11	1456.72	0.50	5.94	0.22	0.12	0.29	0.11	0.30	0.53	2.01	2.46	0.54	4.88	1.04	4
12	2554.59	9.46	9.92	3.80	1.95	5.42	2.00	5.84	6.50	6.28	10.58	4.88	15.11	5.43	6
13	1266.20	1.70	4.35	0.72	0.40	1.19	0.60	1.73	2.21	3.56	4.04	1.04	5.43	2.89	4
14	1612.33	11.26	4.83	4.51	2.46	7.69	3.70	11.58	9.03	5.41	8.62	4.22	6.71	4.76	13
15	1529.76	1.53	4.01	0.65	0.36	1.14	0.58	1.74	1.51	2.60	2.78	0.69	3.64	1.44	7
16	1942.83	16.44	8.52	6.88	3.82	11.30	4.65	12.96	9.64	7.30	12.74	6.03	10.47	5.91	7
17	1197.07	5.53	5.78	2.12	1.07	2.75	1.15	3.22	2.56	2.64	4.03	1.98	4.79	1.92	5
18	1848.45	0.06	6.84	0.04	0.03	0.05	0.04	0.06	0.50	3.25	2.91	0.28	5.08	1.36	10
19	1609.80	0.04	4.13	0.02	0.02	0.04	0.03	0.05	0.36	2.26	2.04	0.17	3.36	1.00	7
20	2670.90	0.08	12.83	0.04	0.04	0.04	0.03	0.05	0.47	3.24	3.57	0.39	7.10	1.38	10
21	1044.31	4.15	5.17	1.29	0.66	1.77	0.68	1.89	1.69	1.87	2.81	1.42	3.68	1.36	3
22	1054.53	6.45	5.27	1.98	1.02	2.71	1.08	3.13	2.75	2.35	3.81	2.29	4.71	2.00	2
23	1452.82	12.43	7.85	4.06	2.06	5.52	2.14	6.27	5.57	4.09	7.02	4.60	8.11	3.78	3
24	1459.47	10.10	7.14	3.21	1.62	4.48	1.82	5.42	5.57	4.25	7.69	4.05	11.30	4.53	3
25	1379.96	10.69	8.56	3.65	1.86	5.03	1.82	5.29	5.50	4.40	7.68	4.37	9.20	4.01	3

Final Highway Report (Final HWY Report.PRN)

This is the output print report from the Cube Voyager highway assignment run. It is a text file and contains information about the highway assignment process including convergence, average speed, number of trips assigned, etc.

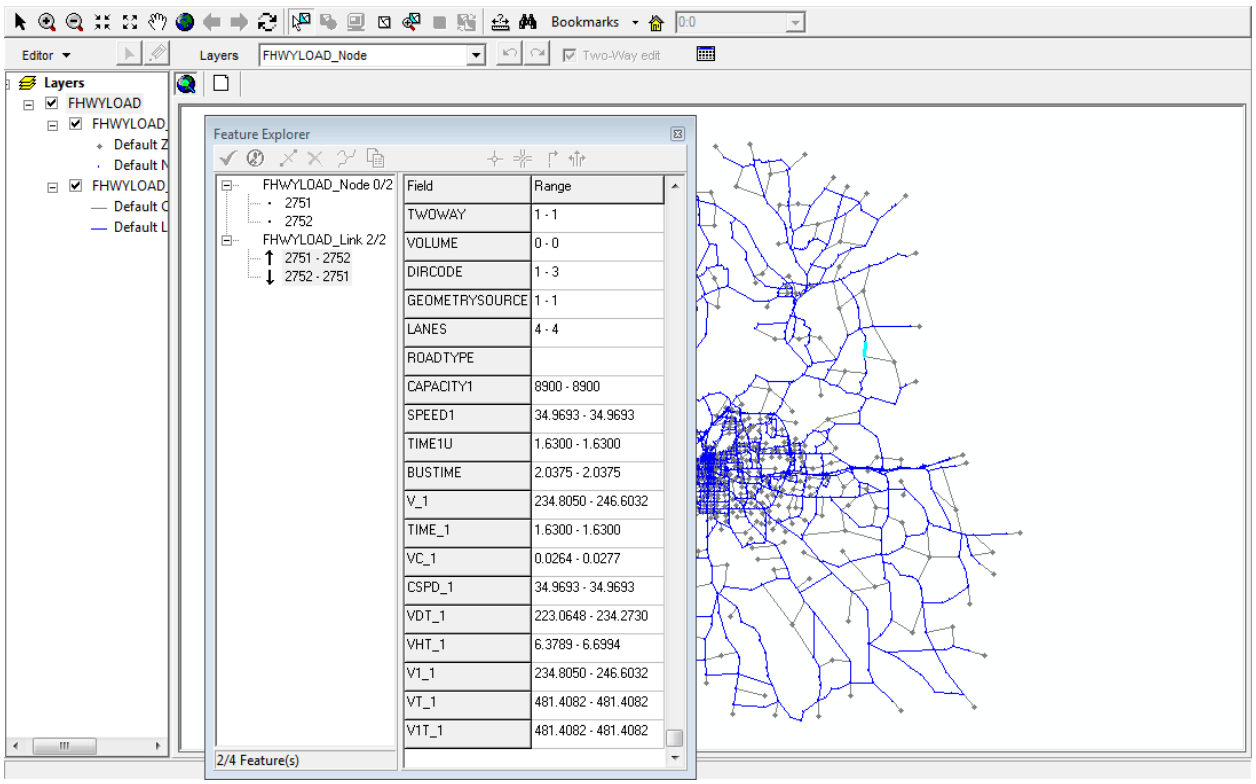
```
----------------------------
 50  13,593 10,503 13,593      0  0.000     --      0 1.00e-9 5.38e-5    5e-7    5e-7
□Page 344  (VOYAGER HIGHWAY)
Whitehouse Group
----------------------------
```

Iter	VehCost	VehDist	VehTime/60	Ave_D/T
1	21,700,317.79	10,568,716.83	361,671.96	29.22
2	14,022,083.79	10,601,770.36	233,701.40	45.36
3	13,764,327.30	10,584,726.34	229,405.45	46.14
4	13,680,579.26	10,538,756.07	228,009.65	46.22
5	13,597,593.53	10,525,008.38	226,626.56	46.44
6	13,653,162.75	10,516,029.12	227,552.71	46.21
7	13,587,871.34	10,512,622.95	226,464.52	46.42
8	13,618,931.21	10,514,130.22	226,982.19	46.32
9	13,595,650.18	10,504,295.31	226,594.17	46.36
10	13,603,084.37	10,508,203.13	226,718.07	46.35
11	13,603,970.79	10,501,858.02	226,732.85	46.32
12	13,598,975.99	10,506,653.59	226,649.60	46.36
13	13,597,947.48	10,506,200.62	226,632.46	46.36
14	13,597,281.82	10,505,638.26	226,621.36	46.36
15	13,597,564.49	10,504,674.19	226,626.07	46.35
16	13,597,331.52	10,504,201.13	226,622.19	46.35
17	13,596,206.33	10,504,139.48	226,603.44	46.35
18	13,599,381.69	10,501,914.08	226,656.36	46.33
19	13,594,216.90	10,504,762.48	226,570.28	46.36
20	13,593,038.59	10,503,400.40	226,550.64	46.36
21	13,593,038.60	10,503,400.41	226,550.64	46.36
22	13,593,038.60	10,503,400.41	226,550.64	46.36
23	13,593,038.60	10,503,400.41	226,550.64	46.36
24	13,593,038.59	10,503,400.41	226,550.64	46.36
25	13,593,038.60	10,503,400.41	226,550.64	46.36
26	13,593,038.60	10,503,400.41	226,550.64	46.36
27	13,593,038.60	10,503,400.42	226,550.64	46.36
28	13,593,038.60	10,503,400.42	226,550.64	46.36
29	13,593,038.59	10,503,400.42	226,550.64	46.36
30	13,593,038.60	10,503,400.42	226,550.64	46.36
31	13,593,038.60	10,503,400.42	226,550.64	46.36
32	13,593,038.60	10,503,400.42	226,550.64	46.36
33	13,593,038.60	10,503,400.43	226,550.64	46.36

Final Highway Loads (OUTPUT.MDB\FHWYLOAD)

This is a Cube Voyager network file stored in the output geodatabase that contains all of the loads, final travel times and highway assignment results.

The total volume is stored in the V1_1 field and the final travel time is stored in the TIME_1 field. Voyager adds some calculated fields such as VHT_1 (vehicle hours traveled), VC_1 (volume to capacity), and CSPD_1 (congested speed).



Final Transit Report (Final TRN Report.PRN)

This is the print report from the transit assignment run. It contains line loadings and related information about the transit assignment including stop level loadings by line.

```
Whitehouse Group
-------------------------------------
REPORT LINES  UserClass=1
Name          Mode  Op Stp Cr Distance     Time      Pass  PassDist   PassHr
-----------------------------------------------------------------------------
M1L10            1   0  18  -    12.82    23.85    109.23    497.00    16.48 1 AUM OB
M1L11            1   0  20  -    12.82    23.79    342.87  1,660.28    59.12 1 AUM IB
M1L20            1   0  26  -     7.68    13.80    696.94  2,829.15    85.92 2 Eastdale Mall OB
M1L21            1   0  29  -     9.33    17.47    991.15  4,707.92   148.29 2 Eastdale Mall IB
M1L30            1   0  25  -     7.76    15.34     17.37     38.33     1.38 3 Montgomery Commons OB
M1L31            1   0  24  -     7.72    15.23     14.02     49.05     1.82 3 Montgomery Commons IB
M1L40            1   0  22  -     5.85    11.81     85.16    198.68     7.00 4 Boylston OB
M1L41            1   0  23  -     5.74    11.74    328.02  1,037.20    36.17 4 Boylston IB
M1L50            1   0  23  -     5.82    12.86    381.96    962.75    35.62 5 Montgomery Mall OB
M1L51            1   0  21  -     6.52    15.39    499.25  1,835.64    70.92 5 Montgomery Mall IB
M1L60            1   0   9  -     5.00     7.29     26.29     51.28     1.26 6 Southlawn OB
M1L61            1   0  11  -     6.56     9.50    132.98    579.23    14.13 6 Southlawn IB
M1L70            1   0   6  -     6.85    11.96    107.96    308.65    10.23 7 Maxwell OB
M1L71            1   0   9  -     7.20    12.79    113.55    362.87    12.06 7 Maxwell IB
M1L80            1   0  18  -     6.84    13.10    208.04    848.09    27.55 8 Gunter Annex OB
M1L81            1   0  18  -     8.15    15.59    200.59    814.91    26.83 8 Gunter Annex IB
M1L90            1   0   3  -     1.71     2.66      6.94      7.70     0.21 9 Virginia Loop Road OB
M1L91            1   0  10  -     6.55    12.66     17.46     44.05     1.44 9 Virginia Loop Road IB
M1L100           1   0  30  -     8.26    18.23    526.01  1,488.52    55.60 10 South Court Street OB
M1L101           1   0  22  -     3.95     8.85    470.12  1,100.32    42.22 10 South Court Street IB
M1L110           1   0  15  -     3.89     8.93     37.04     61.97     2.40 11 Ridgecrest OB
M1L111           1   0   8  -     7.25    12.74     52.98    258.72     6.84 11 Ridgecrest IB
M1L120           1   0   6  -     2.19     3.19     27.06     22.27     0.55 12 Smiley Court Gibbs Village West OB
M1L121           1   0  12  -     6.31    11.11     53.18    164.62     5.03 12 Smiley Court Gibbs Village West IN
M1L122           1   0  26  -     3.95     8.39    441.61  1,034.37    37.20 12 Smiley Court Gibbs Village East OB
M1L123           1   0  27  -     3.81     8.00    296.74    530.81    19.04 12 Smiley Court Gibbs Village East IB
M1L130           1   0  20  -     1.76     3.81    260.96    169.57     6.14 13 Cramton Bowl
M1L140           1   0  22  -     2.76     6.00    168.38    153.27     5.51 14 Lightning Route GOLD
M1L142           1   0  22  -     2.38     5.31    182.58    134.60     4.87 14 Lightning Route GREEN
M1L150           1   0  18  -     3.40     7.76      4.29      1.38     0.05 15 Allendale Road OB
M1L151           1   0  23  -     4.60    10.13     16.01     37.05     1.35 15 Allendale Road IB
M1L160           1   0  31  -     9.91    22.04     50.31     69.15     2.53 16 Twin Oaks OB
M1L161           1   0  31  -     9.92    21.89     72.03    256.03     9.41 16 Twin Oaks IB
-----------------------------------------------------------------------------------------------------------B
Total                             205.26   403.19  6,939.08 22,315.39   755.18
□Page 352  (VOYAGER PUBLIC TRANSPORT)
Whitehouse Group
```

Congested Travel Time Skims (FCGSKIM.MAT)

This is a Cube Voyager binary format file that contains the congested path skims for travel time, distance and terminal time. It is used during the model run but is also a final output.

*1 TIME | 2 TIMELESSPEN | 3 TERMTIME | 4 TOTALTIME | 5 DISTANCE

	Sum	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	3610445.50	5804.72	5833.48	5785.54	5772.47	5746.57	5747.43	5758.93	5747.03	5725.75	5734.86	5775.51	5674.75	5676.33	5974.62	5863.41	5876.79	5950.58
1	5737.01	0.00	0.42	0.59	0.68	0.81	1.36	1.50	1.83	1.53	1.13	0.60	1.16	1.99	3.09	2.01	1.32	1.02
2	5757.09	0.42	0.00	0.84	0.93	1.06	1.61	1.75	1.80	1.50	1.10	0.57	1.13	1.96	3.42	2.29	1.65	1.38
3	5725.66	0.57	0.82	0.00	0.27	0.40	0.89	1.03	1.44	1.15	0.84	0.85	1.13	1.65	2.70	1.58	0.93	0.98
4	5706.35	0.68	0.89	0.27	0.00	0.25	0.79	0.93	1.29	1.00	0.69	0.80	0.98	1.50	2.56	1.47	0.79	1.13
5	5688.50	0.81	1.02	0.40	0.25	0.00	0.46	0.60	1.16	0.87	0.74	0.93	1.11	1.37	2.21	1.10	0.72	1.40
6	5719.11	1.28	1.53	0.89	0.79	0.46	0.00	0.14	1.01	0.72	1.05	1.47	1.65	1.44	1.82	0.66	0.87	1.58
7	5740.54	1.46	1.71	1.07	0.97	0.64	0.14	0.00	0.91	0.90	1.23	1.65	1.83	1.62	1.66	0.49	1.05	1.75
8	5706.73	1.72	1.69	1.33	1.18	1.05	0.74	0.73	0.00	0.20	0.94	1.45	1.22	0.70	2.40	1.24	1.66	2.34
9	5669.87	1.53	1.50	1.15	1.00	0.87	0.72	0.80	0.20	0.00	0.29	1.19	0.96	0.44	2.51	1.35	1.47	2.15
10	5669.18	1.31	1.28	0.93	0.78	0.65	1.06	1.20	0.87	0.29	0.00	0.82	0.59	0.75	2.91	1.75	1.25	1.93
11	5806.24	0.94	0.91	0.57	0.66	0.79	1.34	1.48	1.41	1.11	0.71	0.00	1.00	1.57	3.15	2.03	1.38	1.58
12	5627.53	1.38	1.35	1.01	1.10	1.21	1.76	1.87	1.24	0.99	0.64	0.57	0.00	1.11	3.58	2.42	1.81	2.02
13	5616.30	2.14	2.10	1.76	1.63	1.50	1.28	1.26	0.63	0.44	0.82	1.33	0.84	0.00	2.97	1.81	2.10	2.77
14	5922.95	3.19	3.47	2.82	2.70	2.36	1.95	1.80	2.59	2.71	3.02	3.45	3.62	3.29	0.00	1.63	2.09	2.84
15	5816.76	1.94	2.21	1.57	1.45	1.09	0.64	0.49	1.28	1.40	1.73	2.15	2.33	1.98	1.82	0.00	1.09	1.84
16	5770.61	1.28	1.56	0.91	0.79	0.69	0.83	1.01	1.73	1.44	1.31	1.54	1.72	1.94	2.24	1.39	0.00	0.93
17	5838.75	1.01	1.39	0.99	1.13	1.42	1.56	1.74	2.45	2.16	1.88	1.51	2.07	2.66	2.97	2.11	1.19	0.00
18	5729.66	1.26	1.68	0.89	0.91	0.74	0.30	0.48	1.35	1.05	1.38	1.75	1.94	1.77	1.81	0.87	0.93	1.03
19	5776.61	1.68	1.93	1.29	1.19	0.86	0.46	0.17	0.95	1.10	1.43	1.85	2.03	1.66	1.67	0.32	1.24	1.95
20	5808.67	0.42	0.70	1.02	1.11	1.24	1.68	1.86	2.26	1.95	1.56	1.03	1.58	2.41	3.09	2.24	1.31	0.86
21	5749.88	0.71	0.84	1.30	1.40	1.53	1.97	2.15	2.55	2.24	1.85	1.32	1.72	2.57	3.38	2.53	1.60	1.15
22	5759.69	1.00	0.96	1.58	1.67	1.80	2.26	2.44	2.64	2.33	1.94	1.41	1.71	2.56	3.91	2.83	2.14	1.71
23	5789.11	1.24	1.03	1.66	1.75	1.88	2.43	2.57	2.71	2.41	2.01	1.48	1.69	2.64	4.22	3.11	2.44	2.02
24	5751.01	1.52	1.31	1.94	2.03	2.16	2.71	2.85	2.26	2.02	1.68	1.54	0.47	1.76	4.50	3.39	2.72	2.30
25	5739.80	1.04	0.51	1.31	1.40	1.53	2.08	2.22	1.90	1.65	1.31	0.96	0.87	1.78	3.89	2.77	2.12	1.90

Parcel Based Land Use Editor

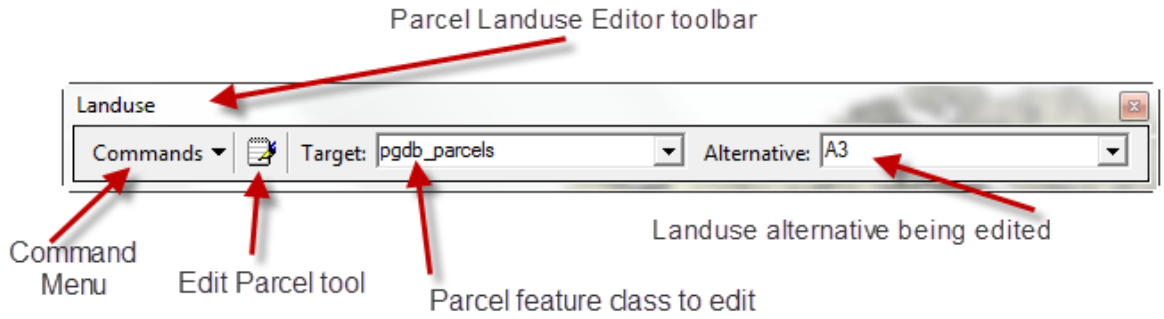
This application is designed to assist in the creation and management of land use policy alternatives for the Montgomery Integrated Transportation/ Land Use Model based upon a standard polygon parcel feature class. The application supports generalized zoning attribute changes specific to each model alternative, no changes to parcel boundary lines or other spatial edits are supported. In other words, a given parcel's policy can be changed from one land use type (i.e.. 'Heavy Industry') to another type (i.e. 'Residential') but the parcel could not be subdivided into two parcels in an alternative using this toolbar. The tool itself does not modify the original data parcel data in any way. If such changes are required, they can be accomplished using the polygon editor toolbox already included with ArcMap.

Many of the tasks you may wish to accomplish with the parcel feature and edited land use will require the use of standard ArcMap functionality, possibly in combination with this tool. For instance, to create a map showing the various land use categories for a specific alternative you would use the "Populate LC_ALTS Temporary Field" to modify the LC_ALTS attribute of the selected parcel feature class and then use the ArcMap functionality to symbolize the parcel feature class based on the LC_ALTS field. The map created would be one way to verify that a given alternative contains all of the intended changes.

Another task implemented via normal ArcMap techniques would be to add the LU_ALTS table to the map (this is automatically done when a new parcel feature class is selected via the tool) and add a definition query to limit the table to a single alternative. The table (or several) could then be joined to the parcel feature to compare alternatives.

Overview

The application consists of a new toolbar within ArcMap, called "***Landuse***". The toolbar/application looks like this:



The toolbar behaves just like other toolbars in ArcMap. It can be moved around, or docked. There are four areas of the toolbar that perform the various functions needed by the application. These will be discussed below.

Target

The toolbar application automatically detects changes in the current map's table of contents (i.e. the GIS files opened in ArcMap). Any time a new feature class (personal geodatabase or shapefile) are added or deleted from the table of contents, the feature class is examined to determine if it contains two fields; LAND_CLASS and LC_ALTS. If both of these fields are found, the feature class is assumed to represent parcels. The ***Target*** list is then updated to add (or delete as applicable) to the editable layers found in the ***Target*** list.

The property appraiser parcel number field (PARCEL_NO) is used as **the key field** when creating and managing alternatives. This means that if two (or more) polygon shapes in the parcel file share the same parcel number then a change to the land use type of one of those shapes will also change the land use type of the other shapes.

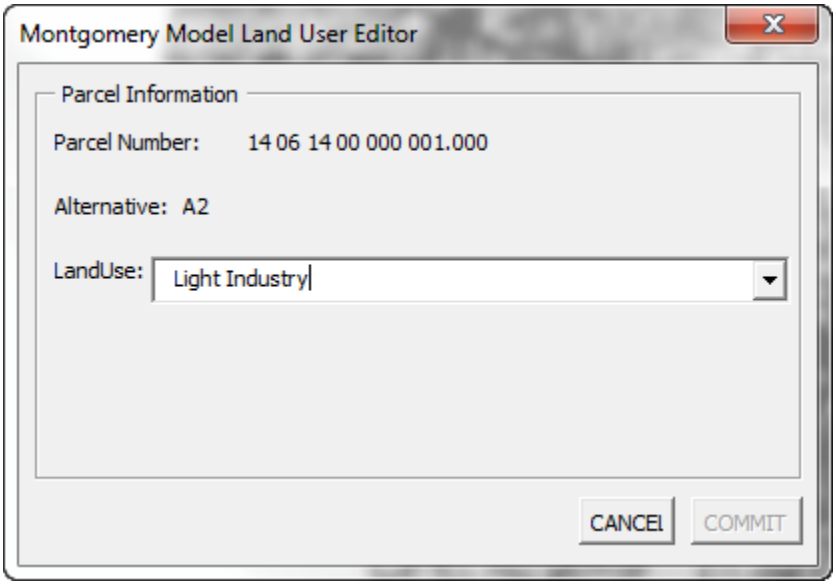
Alternative

Each parcel feature will have a table associated with it that will contain all of the alternatives based upon that base map. Each record in this table will have one land use code for each parcel number that is changed in a given alternative. If the parcel feature is a shape file then the table will be a dBase file stored in the same directory. In this case one directory can only be used to hold a single parcel shape file. If the parcel feature is a personal geodatabase then the table will be stored within that geodatabase.

This ***Alternative*** list is updated every time the selected target is changed. It will initially reflect only those alternatives which currently have records stored in the alternatives table for that parcel feature. New alternatives can be added to the list by typing the name of the desired alternative in the ***Alternative*** list box and hitting the 'Enter' key.

Edit Parcel tool

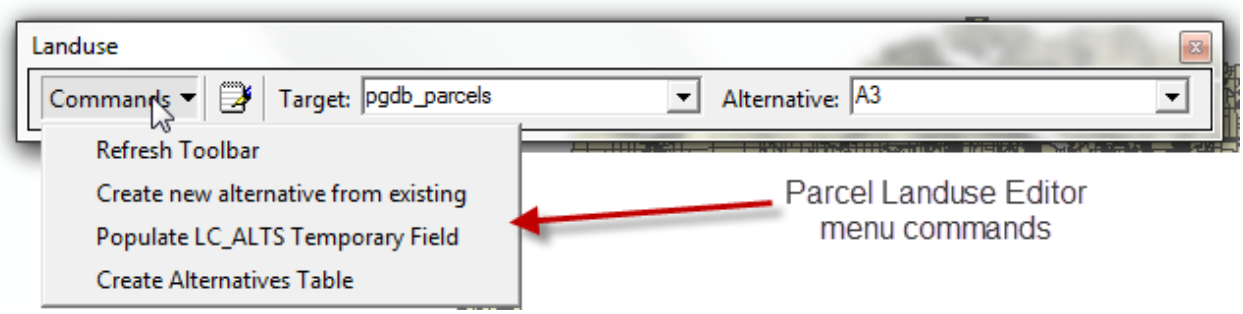
This is the tool used to select a parcel and change its associated land use policy attribute for an alternative. This tool is only valid if both a target parcel feature and an alternative are selected from their respective lists. Once the tool is selected the targeted parcel can be selected on the map. This will open a dialog box that will display the following dialog box:



The ***LandUse*** drop down list can be used to select any one of the land use codes used in the study area. The change is not committed to the data table until the ***COMMIT*** button is clicked. The ***COMMIT*** button will only become enabled when the initial land use code is changed. If the ***CANCEL*** button is selected the change will be aborted, no change saved.

Commands

There are four menu driven commands available with the application. They are shown in the image below:



Refresh Toolbar

Due to the way ArcMap stores and how often it refreshes data it is possible that changes in the current maps table of contents may not always be reflected in the ***Target*** list or possibly that the ***Alternative*** list may not reflect the correct values for the selected parcel feature. This should be an unusual occurrence, but if it occurs then this command can be used to force a refresh of the values in these lists in a way similar to a screen refresh.

Create new alternative from existing

This command provides the ability to create a duplicate of an existing alternative to serve as the basis for incremental changes. As an example, if alternative 'A1' has 1000 parcel land use changes when

compared to the original parcel land use and alternative 'A2' has most of the same changes as 'A1' with a few exceptions. This tool allows the creation of 'A2' by duplicating all of the changes in 'A1' and only requiring the use of the parcel edit tool to make the changes that represent the differences between the two alternatives.

The currently selected parcel feature and alternative will serve as the base. When the command is executed the user will be prompted to enter the name of the new alternative. This will initialize the new alternative by duplicating the selected alternative's changes. The user can then add additional changes that make the new alternative different using the ***"Edit Parcel Tool"***.

Populate LC_ALTS Temporary Field

In order to facilitate mapping or other analysis of an alternative, this tool will populate the ***LC_ALTS*** field in the selected parcel feature with the land use codes for the selected alternative. This operation reads the base scenario's land use policies, the policy changes associated with a specific alternative and then merges the two databases together to create the ***LC_ALTS*** field. Once the calculations are complete (it may take a few minutes to complete depending on the speed of the computer) the parcel feature can be thematically mapped via the ***LC_ALTS*** field or other subsequent analyses can be performed.

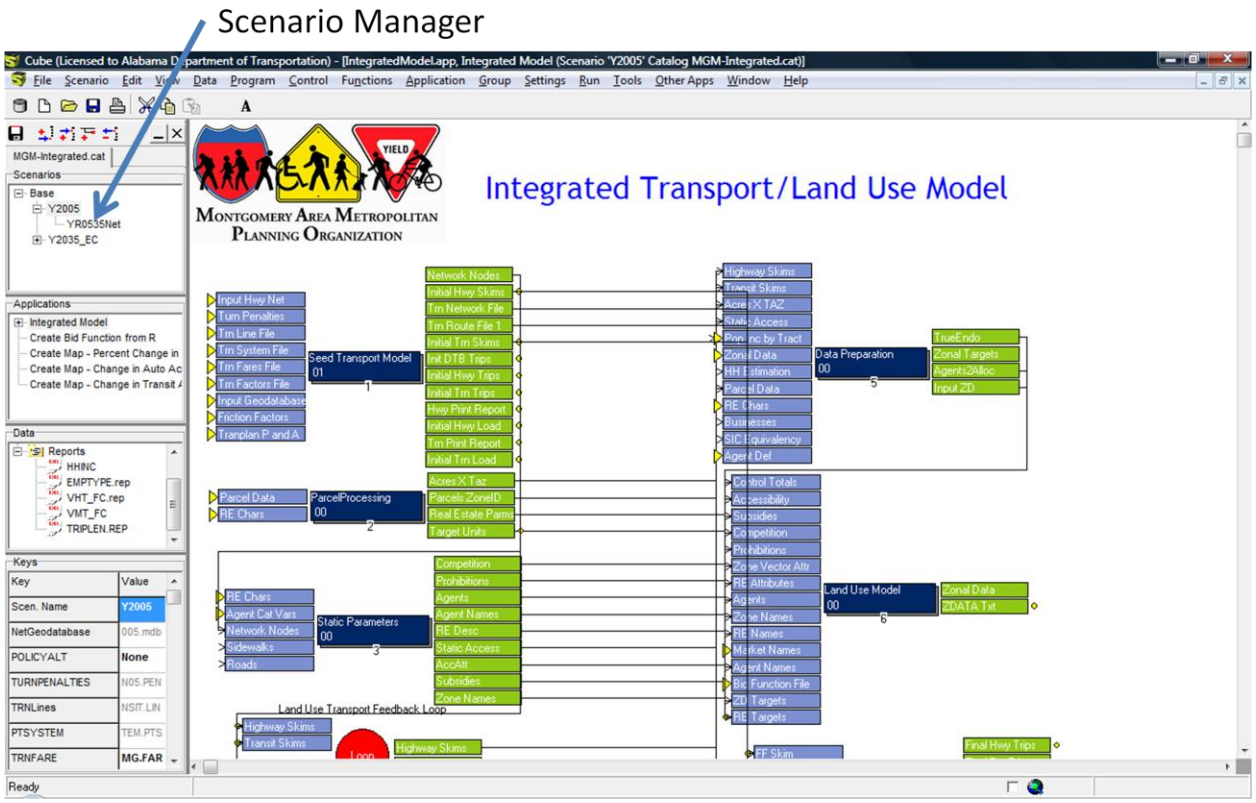
Create Alternatives Table

The application requires that an alternatives table exist for each parcel feature. This command will create such a table, if it does not already exist and is only used once for each GIS parcel database. The command will generate a warning if the user attempts to execute it for a parcel feature that already has an alternatives table associated with it.

Creating Scenarios

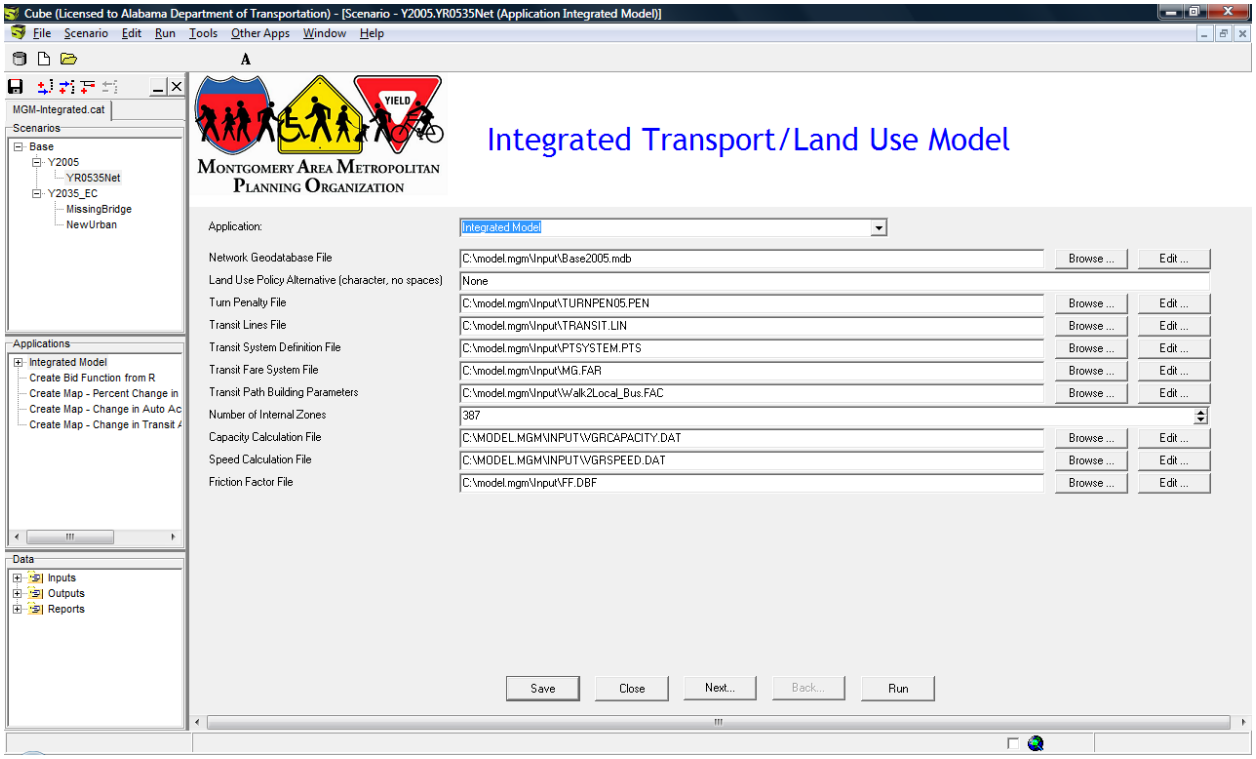
Scenario Manager

Creating scenarios is the addition of one or more differences between model inputs to measure the likely effect of changes to transportation or land use on one another. Cube's "Appliers" mode is designed to facilitate the creation of alternatives through the use of the Scenario Manager.

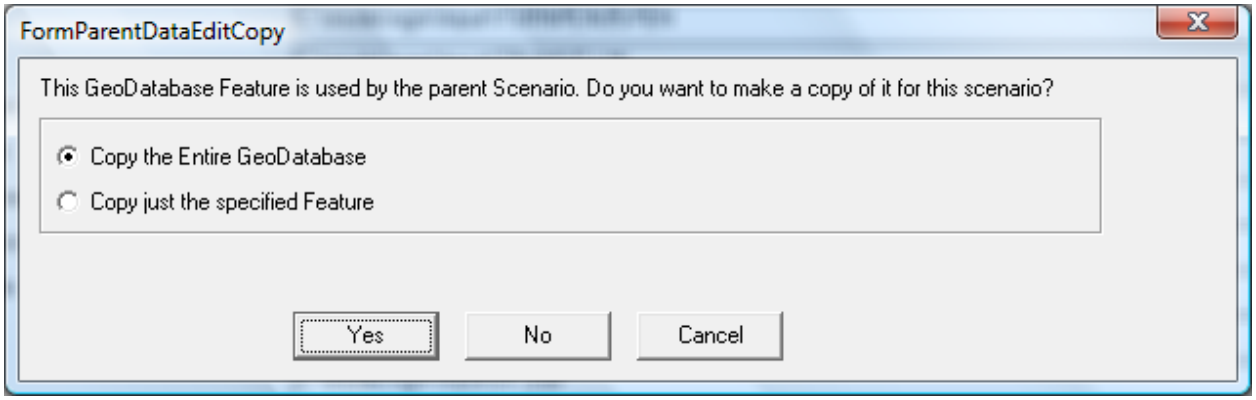


In Scenario Manager, the user can right click on an existing scenario to add a "relative" scenario to it. There, only the input file(s) that are different are edited and stored specifically to that alternative. After the model has been run, final output files are stored in the scenario's output directory (with the same name as the alternative).

When the catalog is in Appliers mode, the menu system will change to allow users direct access to editing the inputs of a scenario.

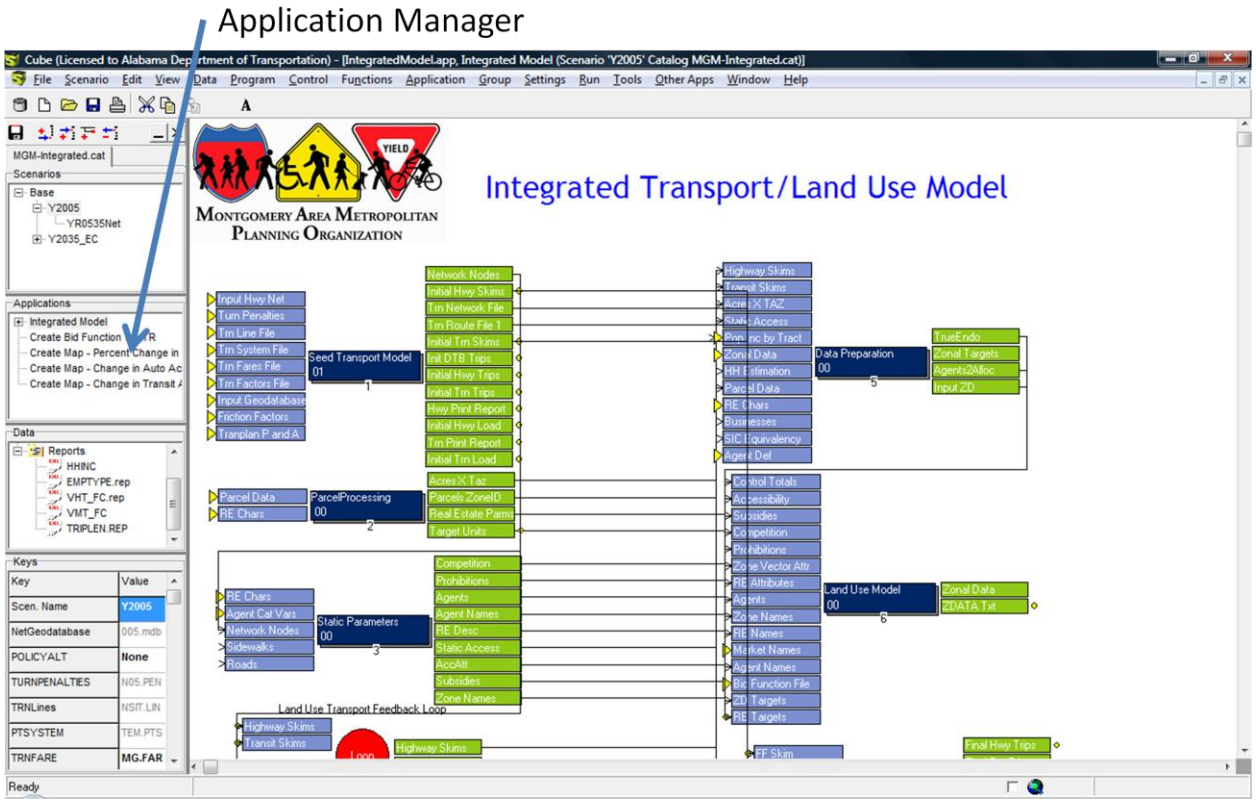


If the input is shared with a "parent" scenario, the user will be prompted to ask if the changes should be made to the parent as well or if a new file should be created for this specific scenario.



Application Manager

Application manager is the tool that allows the user to select specific applications to run.



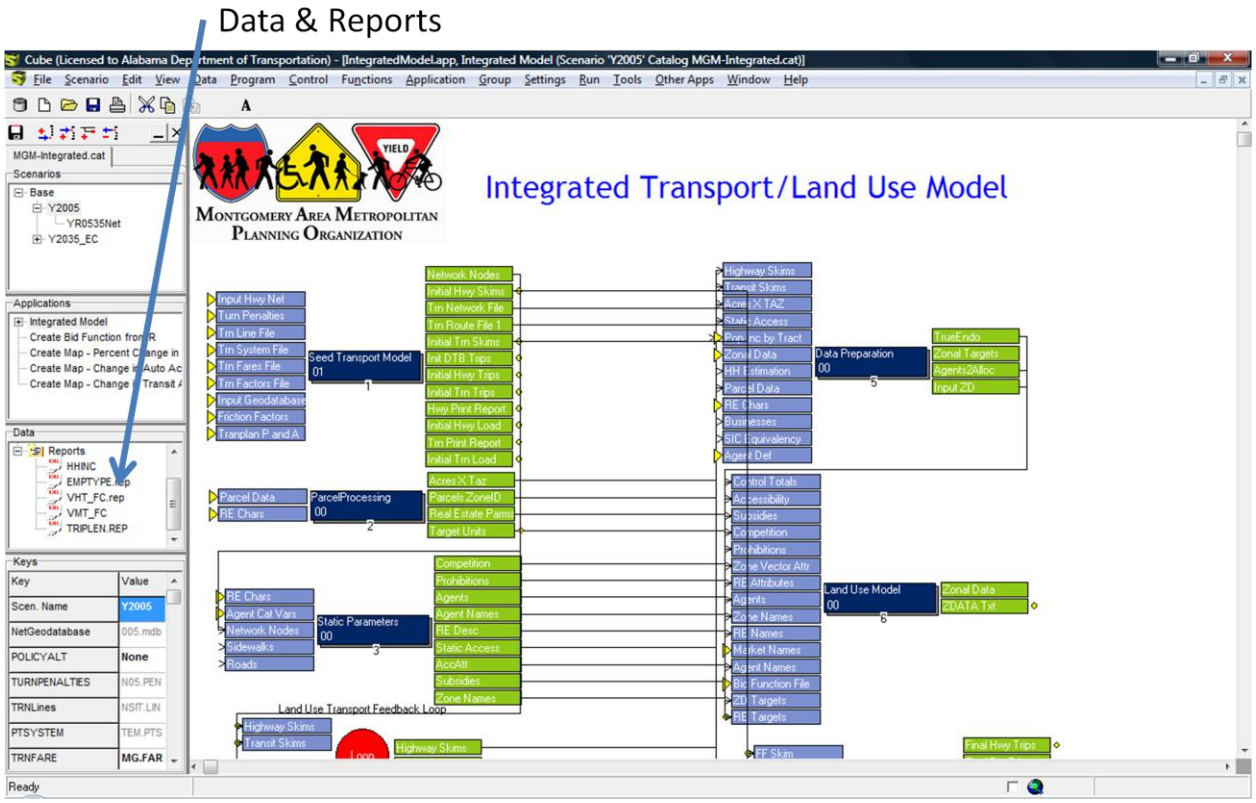
In the Application Manager in the Montgomery model, there are 5 distinct applications. The integrated model is the full model. The other four (4) applications are utilities that help with specific functions. The Create Bid Function from R application translates R formatted coefficient estimates into Cube Land required formats. This will typically only be used during validation.

The Create Map applications take the outputs from a previously run scenario and compare them with the results from this scenario then launch ArcMAP to display the results. These can only be run on machines with ArcMAP installed.

Note that when the catalog is in “Appliers” mode, a drop down menu will appear in the scenario manager allowing the user to select the specific application they would like to run.

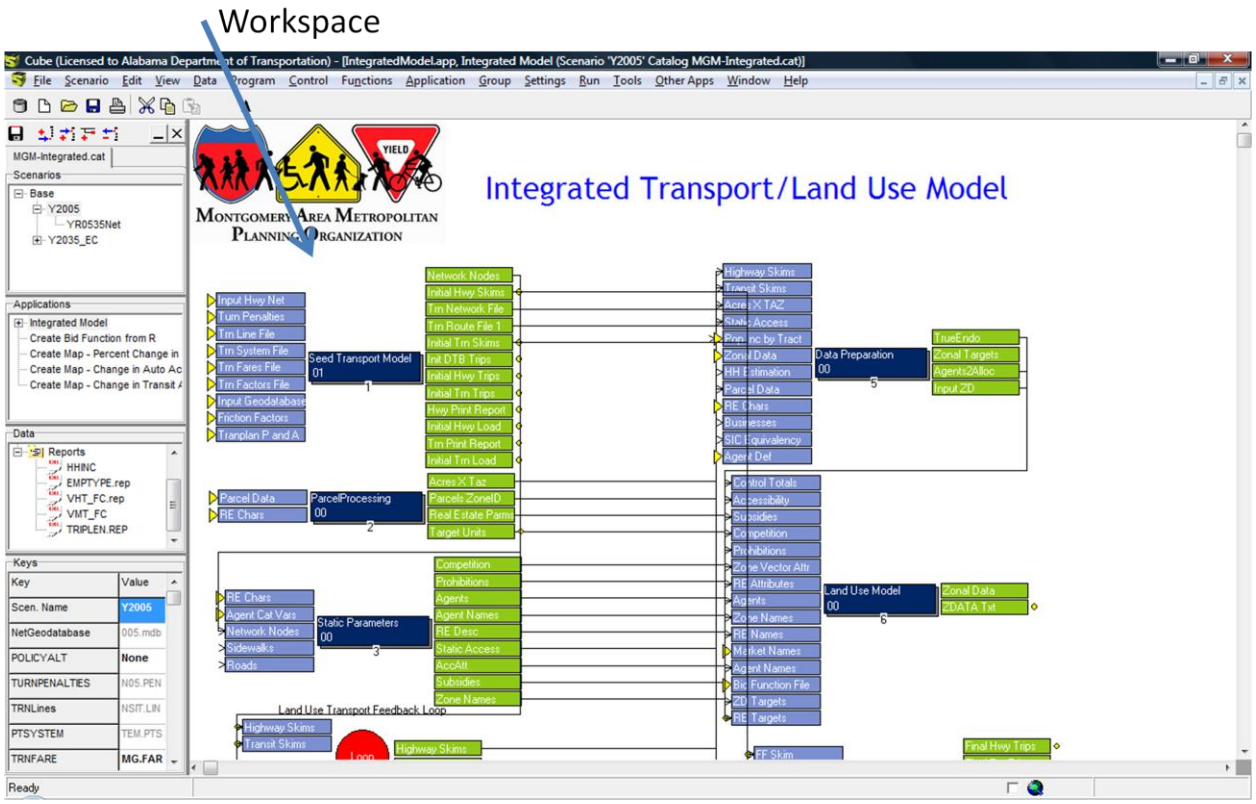
Data Manager

The data and reports pane is used to select, view and compare various model outputs. For most reports scenarios can be compared to see what differences the changes between two alternatives made in select outputs.

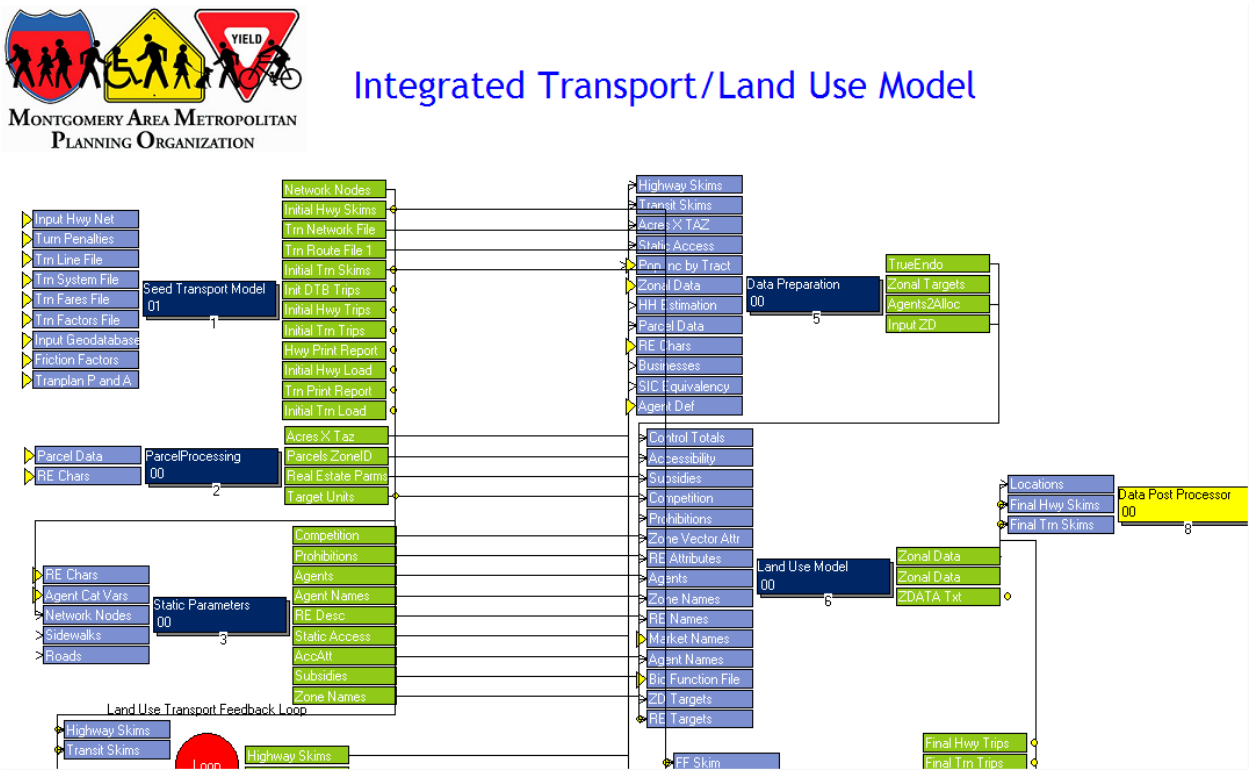


Workspace

The final section of the Cube interface that most users will work with is the workspace. The workspace allows for network editing, database editing, flow chart review and selection of various inputs, outputs and scripts (developer mode only).



Process Flow

The Montgomery Integrated Model executes a logic flow as follows:

- First, the standard transportation model is executed for a given year/alternative
- Next, items that do not change during the run are processed (such as the location of interchanges, roadways, parcel sizes, etc.)
- The model enters a feedback loop
    - Variables that do change during the run are updated (such as accessibility to certain populations)
    - The land use model is executed.
    - Output data are converted to the Alabama Trip Generation model's required format
    - The transportation model is executed (including trip generation).
    - Congested travel times are fed back to land use accessibility calculations.
- When convergence or a maximum number of iterations is achieved, the model then executes post-process reporting.