# Combined Model Process

Coded Networks
(roadway + transit)

NFR Trip Generation
Through Trip Distribution
(NFR Zones only)

DRCOG Trip Generation
Through Trip Distribution
(DRCOG Zones only)

BiRegional
Trip Table

NFR
Internal-Internal
Trip Tables

DRCOG
Internal-Internal
Trip Tables

DRCOG
Network
Processing

Combined
Trip Tables

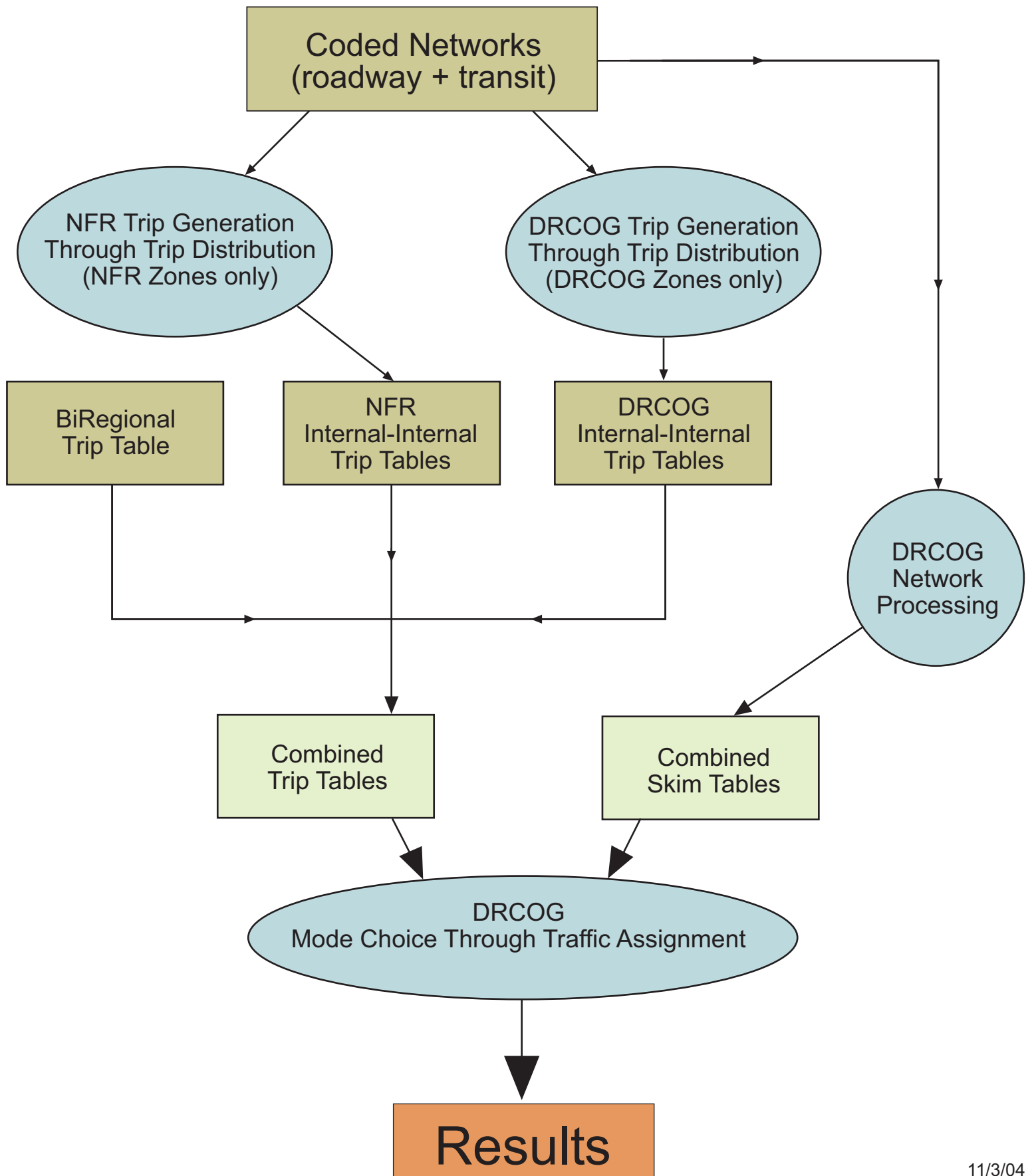Combined
Skim Tables

DRCOG
Mode Choice Through Traffic Assignment

Results

# Sequence of N. I-25 Combined Model Operational Steps

**Prepare Base Hwy Geo File** for conversion to NFR format for Step 2– After all edits to the network are finalized, perform the following steps:

1. Check line layer connectivity.
    a. Select all nodes within general study area or within area that was modified.
    b. Make line layer active.
    c. Go to Tools – Map Editing – Check Line Layer Connectivity.
    d. Node Selection = selection set.
    e. Threshold = 50 feet (or thereabout).
2. **FRONTAGE ROADS –** If any frontage roads were added or modified, check to make sure that all frontage road links have a value of 7 in the field NFR_FT.
3. Fill **NFR_AB_Lanes** with all values from LaneAB and fill **NFR_BA_Lanes** with all values from LaneBA.
4. Make sure all cells in fields **NFR_AT** and **NFR_JURIS_NO** have a value. For links outside the NFR region, fill AT with 1 and Juris_No with 4. For links within the NFR region, look at nearby links to determine the appropriate values to fill into these fields.

Perform **Step 1** of the Combined Model:

1. Copy the base folder (D:\DRCOG_NI25_BaseModelFolders\2030Model\2030DRCOG_ NI25_Step1_BaseFiles) and paste under C:\drcog\runs\. Rename folder.
2. Copy hwy geo files, transit route files, and transit base files to run folder.
3. In GISDK, perform "Modify Routes" to point routes to correct transitbase.dbd.
4. Recompile the Step1 resource code. As of May 17, 2005, this file is located on the TCAD machine. D:\GISDK Code_NI25\ DRCOG_NI25_ResourceCode\version90_CBCurrent\ **Drcog_version90_Step1_MrktSegcommentedout_020505.rsc**

**In TransCAD 4.7:**

5. Go to Tools – Add-ins – DRCOG Model.
6. Hit the Scenario button and select a scenario (2030_NI25_Step1).
7. Point to run directory.
8. Under Initialization Contents, point TCAD to the hwy geo file, routes file and transitbase file. All other files should be good.
9. Under Trip Gen Contents, point TCAD to the correct zone bin file (likely to be zone01mtest.bin). Also, input appropriate **MODELING FORECAST YEAR!!!**
10. Under Speed Bal & Report Contents, input **3** for speed bal iterations.
11. **RUN ALL STEPS**

**NOTE: THE 2030 ZONE BIN FILE NAME WAS CHANGED TO "ZONE01MTEST.BIN" BECAUSE OF AN ERROR IN THE CODE.**

**Network Conversion:** This step converts the geo file database from DRCOG compatible to NFR compatible by renaming the field names. Perform the following steps:

1. Copy the hwy geo file (from the Step 1 folder OR from the original location) to C:\NI25EISNetTransFolder (on the TCAD machine).
2. Rename the network as "NI25Model_2030.dbd." To do this go to Tools-Geographic Utilities-Geographic Files.
3. In TransCAD **4.7**, open the Add-In "NI25 EIS Network Operations."
4. Click the "Translate Network" button.
5. Rename the network as its appropriate name (include a description of the model alternative in the name to help file management). Ex: "2030Toll_Step2"
6. Open the dataview of the geo file and rename the field "SCRL" as "NFR_SCRL."

Perform **Step 2** of the Combined Model:

1. Copy the base folder (TCAD machine C:\NFR Model_NI25EIS\2030BaseInputsFolder) and paste under same path and rename folder "2030 <run name> Inputs."
2. Copy the network from NI25EISNetTransFolder to the run folder.
3. Open the NFR Menu (from GISDK) in TransCAD **4.5** and <u>recompile the rsc code IF necessary</u>. The rsc code, "nfr100.rsc," should be dated 1/31/05 or later and is located in TCAD machine C:\Program Files\TransCAD\NFRMPO\rsc folder.
4. Open the NFR Menu and open the Model Dialog Box.
5. Choose the appropriate scenario, or create one.
6. Point the Inputs to the run folder under C:\NFR Model_NI25EIS\...
7. Create folder under the "Output" folder. Tag it as Iteration #1 in the name. This is your output folder for the first iteration.
8. Go to each file input and check to see that all files "exist."
9. No output files should exist.
10. Run all steps AND check box to create summary report.


Perform **Step 2 Speed Balancing** of the Combined Model:

1. Open the summary text file from the Iteration #1 output folder and scroll to "Entire Model Loaded Speed Summary" (approximately line 3200).
2. Compare these speeds to the speeds in the linklookup.dbf file (or to the last iteration's model summary output).
3. If speeds are all within 0.1 mph or thereabout, consider speed balancing complete and proceed to Step 3. If not, continue speed balancing procedure.
4. Open the Link Lookup spreadsheet (TCAD machine C:\NFR Model_NI25EIS\linklookup_speedbal\LinkLookup.xls). Go to the "Tables" tab.
5. Copy the AM Peak and the Off-Peak Speeds from the summary to a blank space to the right of the data in the Tables tab of the spreadsheet.
6. Select the column of cells with the data in the spreadsheet.
7. Go to Data-Text to Columns.
8. Select Fixed Width. Click Next.
9. Check to make sure speeds are separated appropriately. Click Next.
10. Column format is "General." Click Finish.

11. Copy Peak & Off-Peak speeds and paste into the appropriate speed table.
12. Go to the dbf tab of the spreadsheet.
13. "Save as" a dbf file in the inputs folder and name the file "LinkLookup_It<#>" to indicate which iteration this lookup file belongs to.
14. Create another output file under "Output," with an iteration number listed at the end of the file's name.
15. In TransCAD **4.5**, restart the NFR model making sure to point the model to the updated linklookup file and to the new output folder.
16. Repeat steps.


Prepare files for **Step 3** of the Combined Model (copy files to Macro directories in C:\NI25MatrixOperations) and run Step 3:

1. Copy DST_COM.MTX, DST_HBW.MTX, and DST_NWK.MTX from the DRCOG Run-Step 1 to C:\NI25MatrixOperations\Step1_2_Inputs (Erase previous run files if they exist).
2. Copy DST_PERSONPA.MTX and mod_Other.MTX (mod_OtherTemp.mtx if NOT running step 5 of the NFR run) from the NFR Run-Step 2 to C:\NI25MatrixOperations\Step1_2_Inputs (Erase previous run files if they exist).
3. Leave all Fixed Files as is (Do not erase).
4. In TransCAD 4.7, go to Add In's and open the "NI25 EIS Matrix Operations" dialog box.
5. **Step 3a – Combine MPO Matrices:** Hit the "Combine MPO Matrices" button. The output files (DST_HBW.mtx & DST_NWK.mtx) will be placed in the Step1_2_Outputs folder.
6. **Step 3b – Matrix Grower:**
   a. Outputs from this step are stored in the Step3b_MG_Output folder. Move any pre-existing output files from this folder into the backup folder so that there are NO OUTPUT FILES in the folder.
   b. Go to the desktop of the TransCAD machine and open **Matrix Grower**. All input and output settings should be good. Simply start the matrix grower by hitting "Go."
7. **Step 3c – Import Bins:** Back in TransCAD 4.7, hit the "Import Bins to Matrix" button.
8. **Step 3d – Create Bi-Regional Matrices:**

    a. Final outputs are stored in the "**Matrix Outputs**" folder. Make sure any pre-existing output files were moved from this folder to their proper location.

    b. In TransCAD 4.7, hit the "Create Bi-Regional Matrices" button.

    c. Output files created should be DST_NWK.mtx, DST_HBW.mtx, DST_COM.mtx, & DST_EE.mtx.

    d. Create a new folder within this output folder that describes the model run – move the output files into this new folder.

**Step 4:** This step has already been completed. The results are static and do not change from run to run.

**Prepare Base Hwy Geo File** for conversion to **Step5a5b** with Step 1 and Step 2 speeds:

**NOTE: IT IS VERY EASY TO FILL IN THE WRONG SPEED DATA IN THIS STEP. FOLLOW DIRECTIONS CAREFULLY!**

**FOR ALL HIGHWAY RUNS:**

1. Copy the base folder (D:\DRCOG_NI25_BaseModelFolders\2030Model\2030DRCOG_ NI25_Step5a5b_**Highway** _BaseFiles) and paste under C:\drcog\runs\.  Rename folder with the new run name.
2. Copy the base combined hwy geo files from the Step1 run folder or from the original folder (they should be the same).
3. Open the geo file in TransCAD.
4. Open the dataview.
5. Open the Flow**AM**.bin file from **Step 2** folder.
6. Join the bin files by ID's.
7. Select by Condition for "MAX_Time > 0".
8. Look at map -- verify that almost all NFR links ARE selected.
9. Fill PK_Links.AB_AM_Speed with AB_Speed.
10. Fill PK_Links.BA_AM_Speed with BA_Speed.
11. Close the joined dataview and the FlowAM.bin file. **KEEP THE SELECTION SET.**

12. Repeat the steps for Flow**OP**.bin:
13. Open the Flow**OP**.bin file from **Step 2** folder.
14. Join the bin files by ID's.
15. Fill PK_Links.AB_**MD**_Speed with AB_Speed.
16. Fill PK_Links.BA_**MD**_Speed with BA_Speed.
17. Close the joined dataview and the FlowAM.bin file.

18. Go to the map and use the selection tool to select all DRCOG links and most of the overlap region. Verify that almost all NFR links are NOT selected.
19. Open the HighwayDB**pk**.bin file from **Step 1** folder.
20. Join the bin files by ID's.
21. Fill PK_Links.AB_AM_Speed with HighwayDBpk.AB_AM_Speed.
22. Fill PK_Links.BA_AM_Speed with HighwayDBpk.BA_AM_Speed.

23. Repeat the steps for HighwayDB**op**.bin:
24. Open the HighwayDB**op**.bin file from **Step 1** folder.
25. Join the bin files by ID's.
26. Fill PK_Links.AB_**MD**_Speed with HighwayDBop.AB_**MD**_Speed.
27. Fill PK_Links.BA_**MD**_Speed with HighwayDBop.BA_**MD**_Speed.

### FOR TRANSIT RUNS WITH THE 2030 NoAct_Transit.dbd AS HIGHWAY FILE:

1. Copy the base folder (D:\DRCOG_NI25_BaseModelFolders\2030Model\2030DRCOG_NI25_Step5a5b_**Transit**_BaseFiles) and paste under C:\drcog\runs\. Rename folder with the new run name.
2. Copy the "2030 NoAct_Transit.dbd" combined hwy geo files from the 2030_TransitAlt1B_Step5a5b run folder on the R: drive. This geo file will already have the correct NFR speeds (since nothing in the highway network changed during Step2 of the model).
3. Proceed to fill in the DRCOG link speeds according to the methodology outlined above.

Perform **Step 5a5b** of the Combined Model:

1. Copy the transit route files and transit base files to run folder (NOT THE HWY BASE FILES! These were copied above.). The transit files are from the Step1 folder OR the original folder (2030 Final Combined Networks).
2. Copy in PA Balan.bin and .dcb from Step 1 output folder.
3. Copy to the run folder 4 matrix files from TCAD machine (C:\NI25MatrixOperations\Matrix_Outputs\). The files are DST_HBW.mtx, DST_NWK.mtx, DST_EE.mtx & DST_COM.mtx.
4. In GISDK, perform "Modify Routes" to point routes to correct transitbase.dbd.
5. Recompile the Step5a5b resource code. As of May 17, 2005, this file is located on the D: drive of the TCAD machine. D:\GISDK Code_NI25\DRCOG_NI25_ResourceCode\version90_CBCurrent\ **Drcog_version90_steps5a5b_MrktSegcommentedout.rsc**.
6. Select Scenario.
7. Point to run directory.
8. Under Initialization Contents, point TCAD to the hwy geo file, routes file and transitbase file. All other files should be good.
9. Run all steps **EXCEPT** for Trip Generation, Trip Distribution, and the Speed Balance Stage under the Speed Bal & Report Step.

Model Run Steps

**Step 1.** Run DRCOG model through trip distribution to produce trip tables by purpose

| Input Files |
| --- |
| o Combined network *.dbd |
| o standard DRCOG input files |
| **Output Files** |
| o dst_hbw.mtx |
| o dst_nwk.mtx |
| o dst_com.mtx |
| o dst_ee.mtx |

**Step 2.** Run NFR model through trip distribution to produce trip tables by purpose

| Input Files |
| --- |
| o Combined network *.dbd |
| o standard NFR input files (amended to reflect relevant changes for combined network) |
| **Output Files** |
| o dst_personpa.mtx |

**Step 3.** Combine trip tables

   a. Disaggregate the NFR HBW trip table to 3 income groups
      o Reference the NFR 5 income stratification of households
      o Collapse to 3 income groupings:
         ▪ NFR Low is assigned to Low
         ▪ NFR Low-Medium, Medium, and Medium-High are assigned to Medium
         ▪ NFR High is assigned to High
      o Determine the distribution (by percent) of the three household income groups for each zone
      o Apply each income groups percentage to each row of the NFR HBW trip table to obtain HBW trip tables by the three income groups

| Input Files |
|---|
| o   _sociodata.dbf |
| o   dst_personpa.mtx, table HBW |
| **Output Files** |
| o   Intermediate matrix file with low, medium, and high income tables |

b.   Aggregate NFR non-work trip tables
   o   Combine the NFR HBS, HBO, and HBU trip tables together to form a HBO trip table
   o   Combine the NFR WBO and OBO trip tables to form a NHB trip table

| Input Files |
|---|
| o   dst_personpa.mtx, tables HBS, HBO, HBU, OBO, WBO |
| **Output Files** |
| o   Intermediate matrix file with HNW and NHB tables |

c.   Combine NFR, DRCOG, and bi-regional trip tables together, to form single tables for HBW, HBO, NHB, IE, and EE

| Input Files |
|---|
| o   DST_HBW.MTX,  DST_NWK.MTX, DST_COM.MTX, BR_dst_com.mtx, BR_dst_ee.mtx, BR_dst_hbw.mtx, and BR_dst_nwk.mtx |
| o   dst_personpa.mtx |
| **Output Files** |
| o   DST_HBW.MTX,  DST_NWK.MTX, DST_COM.MTX, and DST_EE.MTX |

**Step 4.** Prepare DRCOG input files to run with a combined network format.  This step is performed once, and is not repeated for subsequent runs.

| Input Files |
| --- |
| o   NI25EIS_2000.dbd |
| o   A01op.dbd |
| o   A01pk.dbd |
| o   ParkingInputs.bin |
| o   Intra_TB.bin |
| o   Taz2660.dbd |
| o   Smooth05mi.bin |
| o   Zone01mtest.bin |
| o   Resource code *.rsc |
| **Output Files** |
| o   NI25EIS_2000.dbd |
| o   A01op.dbd |
| o   A01pk.dbd |
| o   ParkingInputs.bin |
| o   Intra_TB.bin |
| o   Taz2660.dbd |
| o   Smooth05mi.bin |
| o   Zone01mtest.bin |
| o   Resource code *.rsc |

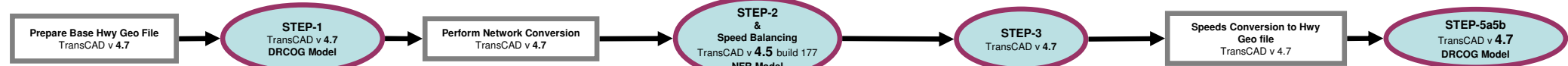**Step 5.**  Run DRCOG model through to assignment

   a.  Run DRCOG model steps of network pre-processing and skimming

   b.  Run DRCOG model steps of mode choice, time-of-day, and assignment.

# Operation Time of a Combined Model Run

| | Step of Model Process | Staff Time (hours) | Computer processing time (hours) | Total Cumulative Time (hours) |
|---|---|---|---|---|
| ☑ | Receive defined highway alternative | | | |
| ☐ | Code highway network | 6 | | 6 |
| ☐ | Create GIS layer | 1 | | 7 |
| ☐ | Review by project team | 8 | | 15 |
| ☐ | Final coding | 2 | | 17 |
| ☐ | Final Review by project team | 2 | | 19 |
| ☐ | DRCOG area: Run DRCOG model with speed balancing | 4 | 40 | 63 |
| ☐ | NFRMPO area: Run NFR model with speed balancing | 4 | 4 | 63[1] |
| ☐ | Combine Trip Tables | 1 | 1 | 64 |
| ☐ | Build 2030 Bi-Regional Trip Table | 4 | 4 | 72 |
| ☐ | Run Combined Model | 2 | 10 | 84 |
| ☐ | Create GIS layer | 1 | | 85 |
| ☐ | Interpretation and Analysis | | | |

R:\_transportation\071609\Model   Development\model\model   development\Model   Run   Time.docJ:\_Transportation\071609.400\model\model development\Model Run Time.doc September 13, 2007

[1] Time not accrued because can be run concurrently with above process

**Prepare Base Hwy Geo File**
TransCAD v **4.7**

**STEP-1**
TransCAD v **4.7**
**DRCOG Model**

**Perform Network Conversion**
TransCAD v **4.7**

**STEP-2**
&
**Speed Balancing**
TransCAD v **4.5** build 177
**NFR Model**

**STEP-3**
TransCAD v **4.7**

**Speeds Conversion to Hwy Geo file**
TransCAD v **4.7**

**STEP-5a5b**
TransCAD v **4.7**
**DRCOG Model**

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**Prepare Base Hwy Geo File** for Conversion to NFR format for Step 2. After all edits to the network are finalized, perform the following steps:

- ■ **Check line layer connectivity.** Select all nodes within general study area or within area that was modified.
- • Make line layer active.
- • Go to Tools – Map Editing – Check Line Layer Connectivity.
- • Node Selection = selection set.
- • Threshold = 50 feet (or thereabout).

- ■ **FRONTAGE ROADS** – If any frontage roads were added or modified, check to make sure that all frontage road links have a value of 7 in the field NFR_FT.

- ■ **Fill NFR_AB_Lanes** with all values from LaneAB and fill **NFR_BA_Lanes** with all values from LaneBA.

- ■ Make sure all cells in fields **NFR_AT** and **NFR_JURIS_NO** have a value. For links outside the NFR region, fill AT with 1 and Juris_No with 4. For links within the NFR region, look at nearby links to determine the appropriate values to fill into these fields

> **These three steps are for STPE-2, so that it wont crash during step2 run**

**NOTE:**
- •Check the drive space before you run any model
- •Use the correct resource code, and correct TransCAD version
- •Recompile resource code wherever necessary.
- •Modify routes and point it to the correct route system and Transitbase files in the run folder

**Recompile:**
R:\_transportation\071609\DEIS\RSC codes for DEIS runs071206
- •v94_Step1_BH_ElementAdded.rsc
- •v94_Step5a5b_BH_ElementAdded.rsc
NFR rsc files are in TransCAD machines C:\NFR Model_NI25EIS\rsc_files\NI25 rsc file_013105
(4 rsc files for NFR Model)

**If routes files does not reference to correct transitbse then do this**
**Modify Routes:** with immediate Execution in TransCAD – Tools - Addins – GISDK
R:\_transportation\Transportation Travel Demand Forecasting\GISDK Code\ModifyRoutes\ModifyRoutes.txt
ModifyRouteSystem("C:\drcog\runs\<RUN FOLDER NAME HERE>\\2030_FT_BRT.rts",
{{"Geography","C:\drcog\runs\<RUN FOLDER NAME HERE>\\TransitBase.dbd", "TRN_LINKS"}})

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**STEP-1:**

1. Copy the base folder (copy one of the model runs step1 folder from R:\_transportation\071609\DEIS\Runs folder)
2. Copy hwy **geo** files from Hwy NoAction folder for Hwy runs or from Transit NoAction folder for Transit runs,
3. Copy transit route files, and transit base files to run folder replace if exists. (if you made any changes to these files then you replace it otherwise its just fine. The basefiles folder has these files anyways)
4. In GISDK, perform "Modify Routes" to point routes to correct transitbase.dbd.
5. Recompile the Step1 resource code. As of June, 2007, this file is located on R:\_transportation\071609\DEIS\RSC codes for DEIS runs071206

**In TransCAD 4.7: tools-Addins-DRCOG Model** and 2030_NI25_Step1 Scenario.
1. Point to run directory.
2. Under Initialization Contents, point TCAD to the hwy geo file, routes file and transitbase file. All other files should be good.
3. Under Trip Gen Contents, point TCAD to the correct zone bin file (likely to be zone01mtest.bin). Also, **input appropriate MODELING FORECAST YEAR!!!**
4. Under Speed Bal & Report Contents, speed balancing is 6 iterations

5. **RUN ALL STEPS**
**It gives warning message hit OK.**

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**Perform Network Conversion** to NFR format for Step 2 by performing the following steps:

- • Copy the hwy geo file (from the Step 1 folder OR from the original location) to C:\NI25EISNetTransFolder (on the TCAD machine).
- • Rename the network as "NI25Model_2030.dbd." To do this go to Tools-Geographic Utilities-Geographic Files.
- • In TransCAD **4.7**, open the Add-In "NI25 EIS Network Operations."
- • Click the "Translate Network" button.
- • Rename the network as its appropriate name (include a description of the model alternative in the name to help file management). Ex: "2030Toll_Step2"
- • Open the dataview of the geo file and rename the field "SCRL" as "NFR_SCRL."

**If model crashes for some reason, check these:**
- • Make Sure FT has values
- • ZONE values need to be updated in mode layer

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**Perform Step 2 of the Combined Model:**
- • Copy the base folder (TCAD machine C:\NFR Model_NI25EIS\2030BaseInputsFolder) and paste under same path and rename folder "2030 <run name> Inputs."
- • Copy the network from NI25EISNetTransFolder to the run folder.
- • **Add NFR Menu to the TransCAD menu:** To do that go to tools-Addins-NFR Model Menu in TransCAD **4.5** recompile the rsc code IF necessary. The rsc code, "nfr100.rsc," should be dated 1/31/05 or later and is located in TCAD machine C:\Program Files\TransCAD\NFRMPO\rsc folder\For NI25.
- • Open the NFR Menu and open the Model Dialog Box. Double-click to choose the appropriate scenario, or create one. **(NI25 2030 model)**
- • Point the Inputs to the run folder under C:\NFR Model_NI25EIS\...
- • Create folder under the "Output" folder. Tag it as Iteration #1 in the name. This is your output folder for the first iteration.
- • Go to each file input and check to see that all files "exist." Direct the **geo** file and **linklookup** files from run folder. All output files should should be missing.
- • Run all steps (uncheck stop after each step) AND check box to create report when done, hit OK and hit Prepare network button.

**Speed Balancing after Step-2:** Approximately 4 – iterations
- • Open the summary text file from the Iteration #1 output folder and scroll to "Entire Model Loaded Speed Summary" (approximately line 3200).
- • Compare these speeds to the speeds in the linklookup.dbf file (or to the last iteration's model summary output).
- • If speeds are all within 0.1 mph or thereabout, consider speed balancing complete and proceed to Step 3. If not, continue speed balancing procedure.
- • Open the Link Lookup spreadsheet (TCAD machine C:\NFR Model_NI25EIS\linklookup_speedball\). Go to the "Tables" tab.
- • Copy the AM Peak and the Off-Peak Speeds from the summary to a blank space to the right of the data in the Tables tab of the spreadsheet.
- • Select the column of cells with the data in the spreadsheet.
- • Go to Data-Text to Columns. Select Fixed Width. Click Next. Check to make sure speeds are separated appropriately. Click Next. Column format is "General." Click Finish.
- • Copy Peak & Off-Peak speeds and paste into the appropriate speed table.
- • Go to the dbf tab of the spreadsheet.
- • "Save as" a dbf file in the inputs folder and name the file "LinkLookup_It<#>" to indicate which iteration this lookup file belongs to. Excel gives two warnings hit OK and YES
- • Create another output folder under "Output," with an iteration number listed at the end of the file's name.
- • In TransCAD **4.5**, restart the NFR model **make sure to point the model to the updated linklookup.dbf file** and to the **new output folder**.
- • Now repeat Step-2 process. (follow the same process for each iteration)

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**STEP-3:**

**1.** Copy
**DST_COM.MTX,**
**DST_HBW.MTX,** and
**DST_NWK.MTX**
from the DRCOG Run-**Step 1** to C:\NI25MatrixOperations\Step1_2_Inputs (Erase previous run files if they exist).

**2.** Copy
**DST_PERSONPA.MTX** and
**mod_Other.MTX**
(mod_OtherTemp.mtx if NOT running step 5 of the NFR run) from the NFR Run-**Step 2** to C:\NI25MatrixOperations\Step1_2_Inputs (Erase previous run files if they exist).
Leave all Fixed Files as is (Do not erase).

In TransCAD 4.7, go to Add In's and open the "NI25 EIS Matrix Operations" dialog box.

**1. Step 3a** – **Combine MPO Matrices:** Hit the "Combine MPO Matrices" button. The output files (DST_HBW.mtx & DST_NWK.mtx) will be placed in the Step1_2_Outputs folder.

**2. Step 3b** – **Matrix Grower:** Outputs from this step are stored in the Step3b_MG_Output folder. Move any pre-existing output files from this folder into the backup folder so that there are NO OUTPUT FILES in the folder. Go to the desktop of the TransCAD machine and open **Matrix Grower.** All input and output settings should be good. Simply start the matrix grower.

**3. Step 3c** – **Import Bins:** Back in TransCAD 4.7, hit the "Import Bins to Matrix" button.

**4. Step 3d** – **Create Bi-Regional Matrices:**
5. Final outputs are stored in the "**Matrix Outputs**" folder. Make sure any pre-existing output files were moved from this folder to their proper location.
6. In TransCAD 4.7, hit the "Create Bi-Regional Matrices" button.
7. Output files created should be DST_NWK.mtx, DST_HBW.mtx, DST_COM.mtx, & DST_EE.mtx.
8. Create a new folder within this output folder that describes the model run – move the output files into this new folder.

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**Speeds Conversion:**

**NOTE: IT IS VERY EASY TO FILL IN THE WRONG SPEED DATA IN THIS STEP. FOLLOW DIRECTIONS CAREFULLY!**
*FOR ALL HIGHWAY RUNS:*
- • Copy the base folder (copy one of the model runs step5a5b folder from R:\_transportation\071609\DEIS\Runs\ folder ) and paste under C:\drcog\runs\. Rename folder with the new run name.
- • Copy the base combined hwy geo files from the Step1 run folder or from the original folder (they should be the same).
- • Open the geo file in TransCAD.
- • Open the dataview.
- • Open the Flow**AM**.bin file from **Step 2** folder.
- • Join the bin files by ID's.
- **KEEP IN SELECTION**
- • Select by Condition for "MAX_Time > 0".
- • Look at map -- verify that almost all NFR links ARE selected.
- **KEEP IN SELECTION**
- • Fill PK_Links.AB_AM_Speed with AB_Speed.
- • Fill PK_Links.BA_AM_Speed with BA_Speed.
- • Close the joined dataview and the FlowAM.bin file.
- **KEEP THE SELECTION SET.**
- • Repeat the steps for FlowOP.bin:
- • Open the FlowOP.bin file from **Step 2** folder.
- • Join the bin files by ID's.
- **KEEP IN SELECTION**
- • Fill PK_Links.AB_**MD**_Speed with AB_Speed.
- • Fill PK_Links.BA_**MD**_Speed with BA_Speed.
- • Close the joined dataview and the FlowOP.bin file.
- • Go to the map and use the selection tool to select all DRCOG links and most of the overlap region. Verify that almost all NFR links are NOT selected.
- • Open the HighwayDB**pk**.bin file from **Step 1** folder.
- • Join the bin files by ID's.
- **KEEP IN SELECTION**
- • Fill PK_Links.AB_AM_Speed with HighwayDBpk.AB_AM_Speed.
- • Fill PK_Links.BA_AM_Speed with HighwayDBpk.BA_AM_Speed.
- • Repeat the steps for HighwayDBop.bin:
- • Open the HighwayDB**op**.bin file from **Step 1** folder.
- • Join the bin files by ID's.
- **KEEP IN SELECTION**
- • Fill PK_Links.AB_**MD**_Speed with HighwayDBop.AB_MD_Speed.
- • Fill PK_Links.BA_**MD**_Speed with HighwayDBop.BA_**MD**_S

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**STEP-5a5b:**

Perform **Step 5a5b** of the Combined Model:

1. Copy the transit route files and transit base files to run folder (NOT THE HWY BASE FILES! These were copied during the speeds conversion process). The transit files are from the Step1 run folder OR from the original folder (2030 Final Combined Networks).
2. Copy in PA Balan.bin and .dcb from Step 1 output folder.
3. Copy to the run folder 4 matrix files from TCAD machine (C:\NI25MatrixOperations\Matrix_Outputs). The files are DST_HBW.mtx, DST_NWK.mtx, DST_EE.mtx & DST_COM.mtx.
4. In GISDK, perform "Modify Routes" to point routes to correct transitbase.dbd. If necessary
5. Recompile the Step5a5b resource code. As of June 2007, this file is located on: R:\_transportation\071609\DEIS\RSC codes for DEIS runs071206

- • Go to Tools-Addins- and select DRCOG Model.
- • Select Scenario. (Eg: 2030_ NI25_Step5a5b)
- • Point to run directory.
- • Under Initialization Contents, point TCAD to the hwy geo file, routes file and transitbase file. All other files should be good.
- • Run all steps EXCEPT for Trip Generation, Trip Distribution, and the Speed Balance Stage under the Speed Bal & Report Step.
- • Hit the initialization button, it gives a warning message, hit ok. That's it.

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# North I-25 Combined Model Statistics

|  | Year 2000 NFR Model | Year 2001 DRCOG Model | Year 2001 Combined Model |
|---|---|---|---|
| Number of Links | 4,064 | 16,912 | 20,975 |
| Number of Zones | 815 | 2,664 | 3,479 |
| Number of Cells per Trip Table | 0.7 million | 7.1 million | 12.1 million |
| Distance North to South | 60 Miles | 80 Miles | 125 Miles |
| Distance East to West | 40 Miles | 60 Miles | 60 Miles |
| Area of Model (Internal Zones Only) | 1100 Sq. Mi. | 3500 Sq. Mi. | 4500 Sq. Mi. |
| # of Files per Run | 100 | 400 | 400 |
| Computer Memory per Model Run | 0.3 GB | 8.0 GB | 13.4 GB |
| Running Time | 0.5 hrs | 7 hrs | 14 hrs |

Note:   Model runs were performed on a Pentium 4 processor with a 3.20 GHz CPU and 1 GB of RAM.

R:\_transportation\071609\Model Development\model\model development\TFWG Model Statistics_110404.doc

Combine the outputs from Step 1, Step 2, and the Bi-Regional tables to be used in Step 3.

Run both DRCOG and NFR models through Trip Distribution using the Combined Network File but with only the DRCOG or NFR Zones and Link Attributes accordingly. This step results in the matrix files combined in step 2

**STEP 3**
**NI25 EIS Matrix Operations Macro**

**Resource Code and Read me file:**D:\DRCOG_NI25_MarixOpsCode_ReadMe

**Outputs:** dst_hbw.mtx, dst_nwk.mtx, dst_com, and dst_ee.

**STEP 1**
**DRCOG model - Transcad4.7**
Run model through trip distribution using the combined network with only the DRCOG zones and link attributes.

**Combined network for this step:**J:\_Transportation\071609.400\model\model development\2001 model\Routes_Files\C&B_Combined_geo&rts_step1

**Run Directory Files:**D:\DRCOG_NI25_RunFiles\Step1_Files

**Resource Code:**D:\DRCOG_NI25_ResourceCode

**Outputs:** dst_hbw.mtx and dst_nwk.mtx that will be combined with NFR's dst_personpa.mtx

Bi-regional matrix files

Dst_hbw.mtx
Low income
Medium income
High income

Dst_nwk.mtx
HNW
NHB

Dst_hbw.mtx
Low income
Medium income
High income

Dst_hbw.mtx
Low income
Medium income
High income

Dst_nwk.mtx
HNW
NHB
IE

Dst_nwk.mtx
HNW
NHB
IE

**STEP 2**
**NFR model - Transcad 4.5**
Run model through trip distribution using the combined network with only the NFR zones and link attributes..

1.  Changed the DRCOG specific link attributes to have a DRCOG_ and took off the NFR_ portion of the NFR specific attributes in the link table
2.  Changed the DRCOG specific node attributes to have a DRCOG_ and took off the NFR_ portion of the NFR specific attributes in the node table
3.  Changed the Sociodata.dbf file.  Changed the zone numbers to 2665 to 3479.
4.  Changed the EETrips.dbf file.  Changed the zone numbers to 2665 to 3479.
5.  Edited KFAC.mtx for new zones.
6.  Edited TurnPenalties.mtx for new zones.

All of these changes to NFR input files should not have to change for a repeat of this step.

**Combined network for this step:**J:\_Transportation\071609.400\model\model development\2001 model\Routes_Files\C&B_Combined_geo&rts_step2

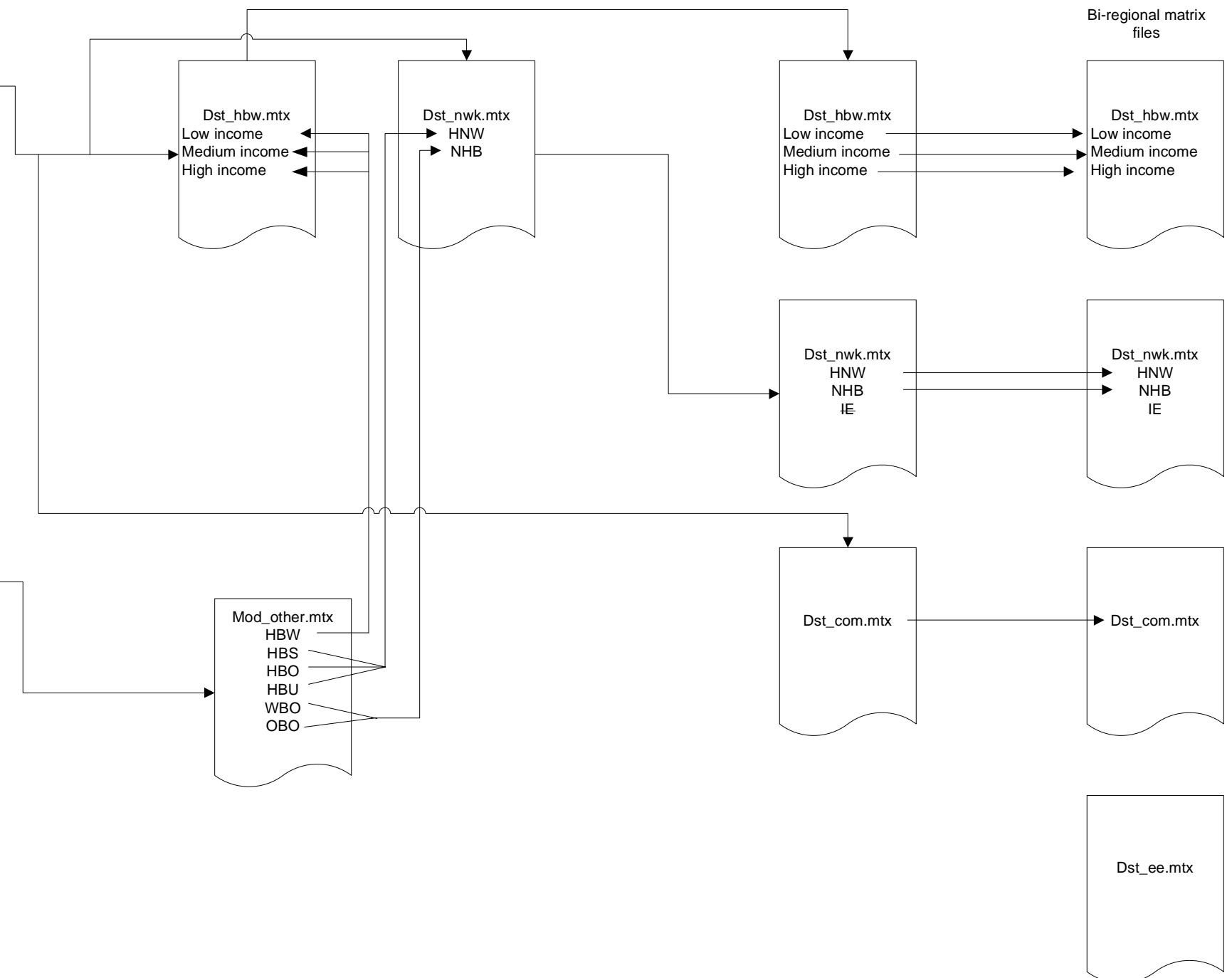**Run Directory Files:**D:\DRCOG_NI25_RunFiles\Step2_Files

**Resource Code:**D:\DRCOG_NI25_ResourceCode

**Outputs:** dst_personpa.mtx that will be combined with DRCOG's dst_hbw.mtx and dst_nwk.mtx

Mod_other.mtx
HBW
HBS
HBO
HBU
WBO
OBO

Dst_com.mtx

Dst_com.mtx

Dst_ee.mtx

**Step 4**
Prepare the DRCOG files for Step 5a and 5b to run with the combined network for DRCOG and the NFR. This process should not have to be repeated for future runs.

Run the DRCOG model with the combined network for DRCOG and the NFR.

---

**NI25EIS_2000.dbd**
1.  Add the NFR rows in the link attributes table over to the DRCOG columns
2.  Use Mapping rules to add new NFR data
3. Change all type 1's that have 0's to 0.01 and change all DIST's of 0 to 0.01

**Located in:**J:\_Transportation\071609.400\ model\model development\2001 model\ Routes_Files\C&B_Combined_geo&rts_step3

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**Zone01mtest.bin**
1.  Add NFR rows and Use Mapping rules to add new NFR data

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

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**STEP 5a**
**DRCOG model - Transcad4.7**
Run model through Initialization and DB Processing using the combined network with both the DRCOG and NFR zones and link attributes..

**Combined network for this step:**J:\_Transportation\071609.400\model\model development\2001 model\Routes_Files\C&B_Combined_geo&rts_step3

**Run Directory Files:**de1-14bmn41\DRCOG_NI25_RunFiles\Step3_Files

**Resource Code:**de1-14bmn41\DRCOG_NI25_ResourceCode

**Notes:** Use resource code modification for NFR zones\Market Segment file.

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**ParkingInputs.bin**
1.  Add NFR rows and add new NFR data

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

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**Intra_TB.bin**
1.  Add NFR rows

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

---

**STEP 5b**
**DRCOG model - Transcad4.7**
Run model from Modal Splits through Speed Balance using the combined network with both the DRCOG and NFR zones and link attributes, and the ombined matrixes form Step C.

**Combined network for this step:**J:\_Transportation\071609.400\model\model development\2001 model\Routes_Files\C&B_Combined_geo&rts_step3

**Run Directory Files:**de1-14bmn41\DRCOG_NI25_RunFiles\Step3_Files

**Resource Code:**de1-14bmn41\DRCOG_NI25_ResourceCode

**Notes:** Use resource code modification for NFR zones\Market Segment file, and copy the New_MarketSeg.mtx file from de1-14bmn41\DRCOG_NI25_RunFiles\Step3_Files

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**A01op.dbd**
1.  Change all 0's to 0.01's

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

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**A01pk.dbd**
1.  Change all 0's to 0.01's

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

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**Current Resource code**
1.  change lines of code that refer to 2664 to 3479
2.  comment out code to create a new market_seg.mtx file because model bug.

D:\DRCOG_NI25_ResourceCode

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**Taz2660.dbd**
1.  Created new TAZ file for NI25 EIS.

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

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**smooth05mi.bin**
1.  Add NFR data

**Located in:**D:\DRCOG_NI25_RunFiles\ Step3_Files

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