**Full Trip-Based Travel Demand Model Run Steps**

(For use with version C20Q2 or later)

**Model Data Preparation**

1. Run Trip Generation Model.
   * Run Population Synthesis (or interpolate values to create TG input files).
   * Update TG\_INPUT.TXT for model run.
     + Always run with MODE\_CHOICE = .TRUE. (this creates MCHW\_HH.TXT – a file of zonal HH auto ownership proportions used by Mode Choice).
   * Run ***trip\_gen.bat* (module 1)**.
     + Calls *activate\_python\_env.bat* to activate or create Python environment in Database\env with packages listed in requirements.txt. Install packages by adding the package name on a new line.

**Model Run Steps**

1. Submit useful\_macros\cleanup.for.rerun <3-digit scenario>: Deletes extraneous scenarios, matrices, and report files.
2. Submit prep\_macros\build\_tod\_transit <3-digit scenario> <transit network code>: Creates the transit network from the batchin files.
   * The transit network code entered should be **zero** (only the AM Peak and Midday skimming networks will be built).
   * ~t2 variable must be changed to the location of the files.
   * Calls *prep\_macros\build\_transit\_error\_check.bat* to verify successful batchin file import.
3. Submit useful\_macros\delete.initial.batchin.scenarios <3-digit scenario>: Removes any remaining highway network scenarios, leaving only transit.
4. Submit ***prep\_macros\create\_DISTR\_M01.bat***to create scenario network-specific DISTR and M01 files.
   * User is prompted to enter 3-digit scenario number and verify it.
     + *Note: The geoprocessing procedures require an ArcGIS Desktop Advanced license. Must be logged in or select ‘Keep me logged in’ checkbox if using ArcGIS Pro.*
     + Calls *activate\_python\_env.bat* with arcpy argument to search for and activate ArcGIS Python environment
     + Calls *prep\_macros\distr\_m01\_data.mac* to punch transit network attributes and store files in prep\_macros\temp\.
     + Calls *prep\_macros\create\_distr\_m01\_files.sas* to process the Emme network data and format files for spatial analysis.
     + Calls *prep\_macros\distr\_m01\_spatial\_analysis.py* to perform all spatial analyses (using ArcGIS tools).
     + Calls *prep\_macros\create\_distr\_m01\_files.sas* to write DISTR and M01 files.
     + All temporary files used for the analysis are written to prep\_macros\temp\, which is deleted are the end of the processing.
     + Two shapefiles must be present in Database\data\distr\:
       1. A shapefile of the current zone system (including a SQMI field).
       2. A shapefile of the current subzone system centroids (including a ZONE field).
5. Submit prep\_macros\initialize.scenarios <3-digit scenario>: Builds time-of-day highway networks.
   * ~t2 variable must be changed to the location of the batchin files.
   * Calls *prep\_macros\call\Ftime.Capacity* to calculate link capacity.
   * Calls *prep\_macros\call\Arterial.Delay* to calculate intersection delay.
6. Run ***trip\_gen.bat* (module 2)**.
   * Update growth factor in macros identified, as needed.
   * User is prompted to enter 3-digit scenario number.
   * Calls *useful\_macros\cleanup.for.rerun* – performs cleanup plus sets values for scalar matrices and creates matrices from three zone files in Database\data\:
     + 1. zcentroid\_sqmi.txt (zone sqmi [mo])
       2. zcentroid\_xcoord.txt (zone x-coordinate [mo])
       3. zcentroid\_ycoord.txt (zone y-coordinate [md])
   * Calls *prep\_macros\import.tg.results* – imports P-A files into emmebank.
   * Calls *prep\_macros\free.skim.mac* – creates uncongested highway time/distance matrices.
   * Calls *prep\_macros\distribute.trucks* – creates truck trip matrices.
     + ~r104 variable must be changed to appropriate growth factor: 1% per year from 2000 base.
   * Calls *prep\_macros\distribute.poes* – creates external trip matrices.
     + ~r5 variable must be changed to appropriate growth factor: 1% per year from 2000 base.
   * Calls *prep\_macros\airport.tg* – sets airport work attractions.
     + ~r10 variable must be changed to appropriate growth factor: 1% per year from 2000 base.
7. Submit ***Submit\_Full\_Regional\_Model.bat*** to start model.
   * Change 3-digit scenario number if necessary.
   * User is queried whether they want to save all interim class-specific path files. This option allows the modeler to delete path files that will most likely not be needed for analysis and save 3+ GB of storage space. Regardless of which option is selected, the path files from the final global model iteration are **always** saved.
     + If No is selected, only the path files from the final model iteration are retained to allow for emissions analysis and other path analyses.
     + If Yes is selected, the path files from all of the global model iterations are retained.
   * Calls *activate\_python\_env.bat* to activate or create Python environment in Database\env with packages listed in requirements.txt. Install packages by adding the package name on a new line.

**Model Run Post-Processing**

1. Create MOVES Model Input Data
   * Submit post\_macros\punch.moves.data.mac <3-digit scenario> to create data files for processing.
     + Calls *post\_macros\final\_run\_statistics.mac <3-digit scenario>* to create a variety of summary information.
     + Calls *post\_macros\run\_vmt\_statistics.mac <3-digit scenario>* to create a summary of VMT values by district and facility type.
   * Run ***post\_macros\create.MOVES.input.file.sas*** to create final MOVES data file.
     + Update project, run and year variables prior to running.

**To Run a Transit Assignment following the full TOD Model Run**

Three macros are included in the Database\transit\_asmt\_macros\:

1. Submit transit\_stats.v2.mac <3-digit scenario>: This serves as a wrapper macro to run all transit assignment procedures. After calling the two macros listed below, two files of transit assignment results are created (one for HW transit trips and one for non-work transit trips).
   * Calls *transit\_asmt\_setup.v2.mac <3-digit scenario>* – prepares separate work and non-work transit demand matrices using work and non-work station index files so trips can be assigned to their respective networks.
   * Calls *assign\_transit.v2.mac <3-digit scenario>* – performs the transit assignments: work trips on the AM peak network and non-work trips on the Midday network. This was used for 2015 model validation so it contains line weights and a few other variations from the transit skimming procedures, which are noted in the macro. A set of control files for Metra and CTA rail lines are stored in \cntl and are used to apply the line weights.

**To Run a Select Link Analysis following the full TOD Model Run**

Follow the instructions provided in Database\select\_link\_analysis\.

**To Create a TREDIS input file following the full TOD Model Run**

Follow the instructions provided in Database\TREDIS\_macros\.