**TREDIS Macro Documentation**

These revised TREDIS procedures are simplified in that they no longer report values for each county-TOD period combination. Rather, all values are reported for the entire 7-county area and are summed into daily values for input into TREDIS. These procedures to develop TREDIS inputs are run entirely within Emme. *As of March 1, 2019, these macros are updated to work with zone17.*

## To submit the TREDIS macros

The macros require that a full trip-based model run has been completed. It is not necessary for transit assignments to have been completed. Submit the procedures at the Emme Prompt with the following command: ~<TREDIS\_macros\1\_create\_tredis\_data.mac <*argument 1*> <*argument 2*>

Where:

* Argument 1 is the 3-digit modeling scenario number (200=2015, 300=2020, 400=2025, 500=2030, and 600=2040).
* Argument 2 is the modeling zone that has been identified as the centroid for the Market Access calculations. This must be determined before the TREDIS macros can be run. Per EDRG, Market Access is an employer-centric measure, so the selected centroid should represent an important employment center that will be affected by the project.
* e.g. "~<TREDIS\_macros\1\_create\_tredis\_data.mac 200 94"

## TREDIS macro outputs

The macros create two subfolders within the TREDIS\_macros folder:

* Output – three output files are created:
  + Tredis\_input\_data\_scen<*3-digit scenario*>.csv – this contains the annualized auto, truck and transit values (trips, VMT, VHT, PMT, PHT, etc.) that TREDIS requires.
  + Tredis\_market\_access\_data\_scen<*3-digit scenario*>\_centroid<*zone*>.csv – this contains all of the Market Access values TREDIS requires.
  + QC\_VMT\_PMT\_review\_scen<*3-digit scenario*>.csv – this contains some statistics to compare against a standard model run to verify the TREDIS procedures are working properly. *These data are not used by TREDIS*.
* Report – contains a number of reports generated at various steps in the overall process. These are for troubleshooting and verifying individual steps work correctly.

## TREDIS macro processing

The following outlines the major processing steps of the macros.

* 1\_create\_tredis\_data.mac – Wrapper macro that controls all processing.
  + Echoes the input arguments on the screen and prompts the user to proceed.
  + Verifies the emmebank has enough space for all temporary attributes; otherwise the user is instructed on what to do.
  + Creates the output folders.
  + Creates standard transit assignment scenarios if they do not exist.
  + Calls the other macros to complete all data processing.
  + Deletes all temporary scenarios and matrices to return the emmebank to its starting condition.
* 2\_tredis\_tod\_demand.mac – Creates the time-of-day (TOD) auto and truck demand matrices used by the following macro.
* 3\_tredis\_highway\_assignment\_data.mac – Uses path analysis to determine TOD statistics for autos and trucks.
  + Calculates VMT, congested VMT, VHT, tolls and trip-type fractions for each of the TREDIS modes.
  + Accumulates TOD values into daily totals.
* 4\_tredis\_transit\_assignment\_data.mac – obtains the transit assignment results used to develop data for TREDIS model.
  + Calls macro *4a\_transit\_asmt\_setup.mac* to setup the transit assignments.
    - Transit demand matrices are created for three separate assignments: Work, Non-Work (Home-Other + Non-Home) and Home-Other only.
  + Calls macro *4b\_transit\_assignment .mac* to run the assignments.
    - Three separate transit assignments are completed. To maintain consistency of results between the multipath assignments, the Non-Home statistics are calculated as the difference between the Non-Work assignment and the Home-Other-only assignment.
    - Assignment parameters are consistent with c16q3 model setup.
  + Calculates transit statistics for TREDIS.
* 5\_tredis\_market\_access.mac – Calculates market access data for TREDIS. Market access thresholds and terminal zones are stored in the registers in the first section of the macro.
  + Calculates the Population within 40 Minutes of Market Access Centroid (i.e., Local Market Size).
  + Calculates Employment within 180 Minutes of Market Access Centroid (i.e., Regional Market Size).
  + Calculates Average Drive Time from all Businesses in the study area to Terminals – this is intended to be an average value across all businesses in study area so the transposed HBW attractions are used as demand to terminals.
  + Daily person-trip tables are used to determine Auto/Rail/Bus shares between each zonal interchange.
  + *Note: population and employment origin/destination matrices were created by Database\tg\sas\cntl\prepare\_iom\_inputs.sas when the Trip Generation model procedures were run.*
* 6\_write\_tredis\_data.mac – Writes data to output .csv files.
  + Calls *6a\_write\_final\_file.py* to write the final version of the TREDIS data input file. This script also annualizes the VMT values to get around the issue of Emme registers not supporting values of 10,000,000,000 or higher (and to avoid the use of engineering notation).