

Questions & Answers from the TBRPM V9.0 Training Workshop

Q1. Can/will you address regional vs local commercial employment and service employment, and when to use one vs the other?

A1. In the current TBRPM V9.0, the commercial and service employment are no longer separated into regional employment and local employment. There is only one set of trip rates used for commercial employment and only one set of trip rates used for service employment.

Q2. Aside from State Plane-based data, why haven't we turned toward WGS 1984 geographic coordinate system to depict the links? Transit uses WGS 1984 given that trips can pass through more than one region/state.

A2. In the current TBRPM V9.0, the highway and transit networks use "NAD_1983_StatePlane_Florida_West_FIPS_0902_Feet" projected coordinate system. The State Plane system is highly accurate within its zone because it uses a Cartesian coordinated system. In addition, it also allows for plane (ignoring the curvature of the earth) surveying methods which simplifies calculations.

Q3. Do the "True Shape" link distances get copied into the FSUTMS stick network files?

A3. Yes. The link distances stored in the base shapefile of a scenario are copied to the FSUTMS Cube network through the build network from shapefile tool. When displaying a Cube network, the "True Shape" display function in the Cube Base network window needs to be enabled to show the network in the shapefile form.

Q4. What is the location of a scenario network shapefile?

A4. The highway network shapefiles are stored in the "*Scenario*\Input" folder using the same name as the input network. For example, for the 2015 base year scenario, the highway network Base_15A.net has a matching shapefile stored as "...\\Year_2015_Base\Input\Base_15A.shp".

Q5. If we add a new road in the model, do we also need to add that road in the "True Shape" shapefile? Or if we split a link, should we make a similar change in the "True Shape" shapefile?

A5. The original scenario networks for the model were edited and created from the ArcGIS network shapefiles. Small edits for a scenario test don't necessarily need to be made in the shapefile. If a series of edits are needed for scenario tests, the user may need to consider making the changes in ArcGIS first to get the true shape and measurements from GIS.

If we edit the highway network (add a new link or split a link) in the Cube network, we could add that road in the "True Shape" file as well to ensure consistency between the Cube network and the "True Shape" shapefile. If you make the change in the Cube network and then export the network as a Shapefile, the connection from shapefile to link is broken and the new links are display as straight link. By making the change in the Shapefile and then building the Cube network using the Shapefile the "True Shape" relationships from the network to the shapefile are maintained.

Q6. What is the difference between the highway loaded network files with and without '_keep'?

A6. With each model release, the input files for each scenario are included in the package so that the users can run the scenarios. In addition, an original loaded highway network is included for users who only need the loaded networks and do not wish to run the model. The included

original loaded highway network is renamed as (“HWYLOAD_DAILY_AYY_keep.net”), using the word “keep”, to avoid subsequent model runs from overwriting the file. This also allows the end user to compare their loaded network results to the original run for FDOT to ensure consistency between the models runs.

Q7. Is the Daily Assignment file the sum of the time-of-day files, or is it created through a separate assignment step?

A7. Yes, the Daily Assignment is a sum of the period assignments. In TBRPM V9.0, the highway assignment module will assign the traffic onto each of the AM, MD, PM, and EV period networks first, and then a final process sums these time-of-day files to generate the Daily assignment results. All period loaded results are also kept on this file.

Q8. Why is my “File\Tools\Build Network from Shape...” function greyed out?

A8. Please check your ArcGIS engine version with the compatibility of the Cube Voyager version installed. One issue we have found is if a new ArcGIS engine version is installed, even if it’s compatible with the Cube version being used, Cube usually needs to be reinstalled again to recognize the new ArcGIS version. Without this compatibility check, certain functions in Cube can be greyed out.

Cube Version	Compatible ArcGIS Version
6.4.1	9.3 to 10.3.1
6.4.2	9.3 to 10.4
6.4.3	9.3 to 10.5
6.4.4	9.3 to 10.6
6.4.5	9.3 to 10.6

Q9. When splitting a link and creating a new node why do we have to use a node number under 10,000 for the transit node split option to pop up? When I used the default 21,xxx number that didn't pop up.

A9. First, in creating a new node in the network using the Cube network editor, we must use only node numbers available on the network. Since the TBRPM is a regional model, node groups have been designated for use by county, shown in the table below. This is for organization purposes, but some model scripts do refer to these node groups. Sticking to these groups would be the preferred way for choosing the next node to use for a county.

Node Number Range	Used for
1 – 5000	TAZ Centroid and External Stations
5001 – 10000	Highway nodes for Hillsborough County
10001 – 14000	Highway nodes for Pinellas County
14001 – 16000	Highway nodes for Pasco County
16001 – 17000	Highway nodes for Hernando County
17001 – 18000	Highway nodes for Citrus County
18001 – 20000	Highway nodes for Manatee County
20001 – 25000	Nodes for transit use

When you split a link, the transit node split option pop-up window will open only if (1) the transit lines have been read into the network transit layer and (2) there are transit line(s) operating on the link being split. This pop-up window, however, is not related the new node number chosen.

Q10. Must we use ArcGIS to prepare/edit network shapefile? Can other GIS software be used to create shapefiles?

A10. Any GIS-based software can be used to prepare/edit the network shapefile as long as they adhere to the same standards for shapefiles that can be read by Cube.

Q11. How do you execute the select-zone assignment, or the select-group of TAZ's assignment? Are there limitations on the number of zones or the length of script designating a group of TAZ's?

A11. The select-zone and/or select-link analysis can be turned on in the Scenario Editing Window when you double-click the scenario. Check the box to enable select-zone or select-link analysis. If both boxes are checked only the Select Zone call will be made. Enter input zone numbers as needed, using commas “,” to include multiple zones and use dash “-” to include consecutive zones. Enter input link numbers as needed with a “-” between the A-node and B-node of the link and use a star “*” to include both direction of the designated link(s). If multiple links are used, such as a two-way link, all of the selected volumes are added together in the final results. Cube has a 300-character limit for an input key. Runtimes for many selected links can be expected to take much longer than a normal assignment.

<input type="checkbox"/> Do you want to run selected zone assignment?	
Selected Zone (1,2,4-6)	1,3,5,7,9
<input type="checkbox"/> Do you want to run a Select Link assignment?	
Selected Links (L=9712-9719)	L=6219-9025*

Q12. Can we pick the modules we want to run?

A12. Yes, you can choose to run only one module or a group of modules. The original model setup is set to make complete model runs. Changing the modules that run or their order can have undetermined results. Within the select module application group you want to run, click “Run” and check “Run Current Group Only” to run just the selected modules in the application group. With a full scenario run, the user can also choose to restart the model anywhere on the main flowchart window.

Q13. The gravity model and the highway assignment have a maximum number of iterations in order to achieve equilibrium. What is that figure?

A13. The gravity model default setting for the maximum number of iterations is set to 50 iterations and 199 iterations are used for the highway assignment default iterations. These settings are stored as the keys “ATITER” and “ITER”, respectively.

Q14. How does the transit model differ from FHWA's STOPS model? Is there any move to include STOPS procedures to FSUTMS?

A14. The transit network travel times in FSUTMS are based on the highway travel times and the frequency of the service is based on the headways listed in the schedules. The highway trips and transit trips “compete” with each other based on the travel times and costs. This calculation

takes place in the mode choice portion of the model. Changes in the transit service levels effect the number of trips on the highway network and vice versa.

STOPS was developed to analyze transit projects only. There is no “competition” between highway and transit trips. Only the transit travel patterns are analyzed and the travel patterns in the study area are obtained from Census data, while General Transit Feed Specification (GTFS) files and their timetables are used to obtain the travel times from stop to stop. The user provides the travel timetables of the new service. The STOPS model has been calibrated using data from a variety of fixed guideways systems which allows for the model to calibrate itself using the current conditions within a study area.

The Florida Statewide Model Task Force Transit Committee did look into the possibility of incorporating the GTFS route structure into the current model structure. However, it was determined that that the process would be quite cumbersome.

Q15. What purpose does the “copy and data prep” application group serve?

A15. The “Copy and Data Prep” application group serves as an internal method to copy input files from a scenario input folder to the Cube folder for processing and to start the Cube Cluster management. When creating a new scenario, it’s left up to the user to copy the desired input folders and files to the new scenario folder, update the path and related for the scenario in the scenario manager, and use/update the input files with the desired alternative year and letter.

Q16. Do you need to select the numbers of clusters in the Scenario window if you use Cube Voyager Cluster, or does it automatically use the max?

A16. The TBRPM will automatically use the number or processors of the computer to start as many cluster processes as possible. This can be altered in the script if the user wishes. The model was validated and tested on PCs with 8 cores which give a reasonable runtime. PCs with fewer cores will take longer to run the scenarios.

Q17. What are the biggest differences between TBPRM V9.0 and V8.2/V8.2a?

A17. The biggest difference between TBRPM V9.0 and V8.2/V8.2a are the scenario years and the Cost Affordable Plans they represent. TBRPM V9.0 has an updated base year 2015 from the 2010 base year in V8.2, 2024 Existing + Committed, 2035 Interim Cost Affordable, and 2045 Cost Affordable. The land use socioeconomic data and highway and transit networks are updated as well. For Pasco County, additional TAZ splits were applied in the V9.0 to include 24 additional TAZs.

Q18. Where can we see the conversion from ZDATA to trips (1 DU = how many trips)?

A18. The conversion from ZDATA to number of trips can be found in the Trip Generation HTML Report, under the “Production Equation” and the “Attraction Equation” sections.

Q19. Is there a way to get a transit line to automatically reconnect if you add a node on a link that a transit line crosses or do you have to make sure to manually adjust the transit script files so that the model doesn’t crash in the transit step?

A19. Yes. Before editing the highway network, read the transit line files into the transit layer. Then if any transit lines are operating on the highway links being edited, Cube will ask if you want to accommodate the transit changes as well.

- Q20. Is there a way to zoom out more on the application manager screen to see the full flow chart? It appears to be zoomed in really far.**
- A20. The view of the application manager screen can be adjusted by adjusting the monitor's resolution. Unfortunately, the view cannot be zoomed-in/zoomed-out like other software. The box sizes and fonts on the flowchart can also be adjusted, but unfortunately if your PC resolution and size are different from the original PC of the model setup it can be difficult get them to look the same. Also, the original PC flowchart setup, for this same reason, does not encompass the entire flowchart either.
- Q21. Can the numbers and/or reports from the HTML Report be exported?**
- A21. Yes. The tables from the HTML Reports can be copied and pasted to any other software, such as Excel, by highlighting, copy & pasting the desired cells. Also, for each of the tables on the HTML page, there is generally a text file version in the Output folder.
- Q22. When you add a new link (or copy and paste one), does it automatically update the length and time?**
- A22. Yes. When adding a new link in Cube, the length of the new link (attribute "DISTANCE") will be automatically calculated and updated, but it is the straight-line distance, no curves. The travel time of the new link will be updated by model scripts when running the model by the Highway module.
- Q23. Is it ok to modify ZDATA1 and ZDATA2 data as part of a sub-area validation effort if it seems that the data is unreasonable? Or do we need to stick with what is in the model (i.e. what was approved by the Agencies)? Should we coordinate with FDOT before changing the numbers?**
- A23. Yes, the numbers can be changed. However, changes are typically made to the future years in order to analyze the impact of new or changes in development. Changes to the base year data files, should be coordinated the local agencies and/or FDOT.
- Q24. In the network builder, the total cost is time plus toll. Where is the value of time coded (and also the toll)? What script files?**
- A24. The "TOTALCOST" is time plus toll time equivalent for each link. The travel time information is stored in the "TIME" attribute. The toll information is stored in the "TOLLCOST" attribute. Please refer to the User's Procedural Guide and the Cheat Sheet for more detailed information about this calculation.
- Q25. Can you show how changes would be made to the Friction factors in order to make adjustments?**
- A25. Typically, the Friction Factors are not adjusted. They are part of the calibration/validation process and they reflect the trip length as they were observed through survey data on the network. Changes to these factors should be discussed with FDOT. The friction factors information is stored in the "...\BASE\FF_ALL.dbf" file.
- Q26. Can you enter a link AADT value and force the model to converge to that number?**
- A26. Link AADT values are part of the input into the base year scenario. The count data is used in the calibration/validation process to measure the accuracy of the assignment. We want the model to be sensitive to changes in the network and data. Forcing the model to reflect a certain count

would eliminate the flexibility/predictability of the model. The only place where we create the assignment based on the count data is at the external stations.

Q27. Do we use the gravity model for the trip distribution? If so, do we have any plans to shift to a Destination choice model?

A27. Currently TBRPM V9.0 uses the gravity model for trip distribution. At this point we will be analyzing the household survey data and determining what processes should be changed and/or updated.

Q28. Why am I getting an error on the PCWALK step when running the model?

A28. The PCWALK step needs to access the GIS database and generate transit access connectors using ArcGIS and Python. Please check the key "PYTHON_LOC" (Where is the Python script executable installed?) and make sure it reflects the correct ArcGIS version and Python version installed on the computer. In Cube, click "Help → About" to view the Cube and ArcGIS versions installed.