
National Capital Region Transportation Planning Board

Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290

Travel Forecasting Subcommittee Meeting Highlights

Friday, July 22, 2011, 9:30 AM to 12:00 PM

Meeting attendees

- Dan Goldfarb (Cambridge Systematics)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Jamie Henson (DDOT)
- Manish Jain (AECOM Consult, Inc.)
- Bahram Jamei (Virginia DOT)
- C. Y. Jeng (Gallop Corporation)
- Eric Jenkins (M-NCPPC, Prince George's Co.)
- David Kline (Fairfax County DOT)
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Subrat Mahapatra (MD SHA)
- David Roden (AECOM Consult, Inc.)
- Phil Shapiro (STC)

COG/TPB staff in attendance

- William Bacon
- Joe Davis
- Yu Gao
- Bob Griffiths
- Charlene Howard
- Martha Kile
- Mary Martchouk
- Ron Milone
- Mark Moran
- Jane Posey
- Wenjing Pu
- Rich Roisman
- Meseret Seifu
- Daniel Son
- Dusan Vuksan
- Feng Xie
- Jim Yin

The meeting was chaired by Jamie Henson of DDOT.

1. Introductions and approval of highlights from the previous meeting

The highlights from the May 20, 2011 meeting of the Travel Forecasting Subcommittee (TFS) were approved without any changes.

2. TPB Version 2.3 travel model on the 3,722-TAZ area system: Status report and sensitivity tests

This item was presented by Ron Milone and Mark Moran of TPB staff. They distributed a copy of the slides to the attendees. Mr. Milone discussed the model activities since the May 20 TFS meeting, which included making minor refinements to model scripts, performing sensitivity tests, updating model documentation, and preparing Version 2.3 inputs for Air Quality Conformity. More specifically, updates to the model included increasing the number of highway assignment user equilibrium iterations to 300, decreasing the night peaking factor from 0.35 to 0.15, replacing AEMS.exe with a newer version, adding intrastep distributed processing (IDP) to the fare and transit skim scripts, making minor network corrections, and correcting the CTPP adjustment that is applied to the Round 8.0 land use. Next, Mr.

Milone discussed the results of the Version 2.3.27 validation summaries, which were very similar to Version 2.3.17 summaries presented at the April TFS meeting.

Mr. Moran described the sensitivity tests that were performed by TPB staff so far and highlighted some of the key modeled changes. The tests and results are described briefly below.

- 1) System (modifying the highway or transit network)
 - a. Restrict capacity: Closed Memorial Bridge to auto use.
Observed a large decrease (100%) in vehicle trips where Memorial Bridge used to be and moderate increases in vehicle trips on the three neighboring bridges (Theodore Roosevelt, 14th St., and Key). Auto drivers to the District decreased by about 3,000 trips, while transit increased by about 1,600 trips.
 - b. Add capacity: Added a lane to the American Legion Bridge in each direction.
Volume increased on the bridge and neighboring Beltway links. Volume decreased on the east side of the Beltway in Prince George's County. V/C ratio and speeds improved as a result of additional capacity.
 - c. Increased (doubled) transit frequency on WMATA X2 route that runs along H St. corridor.
Transit trips within DC increased, while the regional VMT declined slightly.
- 2) Policy (modifying costs of the system)
 - a. Raised the "base fare" of the Metrorail tariff by 25 cents.
Metrorail-only trips decreased by 3.19% while trips in the "All Bus" category increased by 2.56%.
 - b. Doubled the tolls on the Dulles Toll Road Main Plaza and ramps.
Volume on the Dulles Toll Road Main Plaza decreased by about 18,000 vehicles in each direction. Volume increased on Route 7 and Lewinsville Rd., which are alternate routes to the Dulles Toll Road. Regional VMT declined by about 126,500 (0.08%).
- 3) Land use
 - a. Select an area-type "3" TAZ in Fairfax (TAZ 1817) and increase the number of HHs in the zone such that it becomes an area type "2" zone.
Non-motorized zonal trip productions increased from 7.57% to 9.35% and attractions increased from 4.03% to 6.19%.
 - b. Select an area-type "3" TAZ in Fairfax (TAZ 1817) and increase the number of both HHs and jobs in the zone such that it becomes an area type "1" zone.
Non-motorized zonal trip productions increased from 7.57% to 9.98% and attractions increased from 4.03% to 7.24%.
 - c. Assign 2040 demand to 2007 network. Regional VMT increased by 38,886,000 (24.8%) while the regional vehicle trips increased by 5,604,000 (36.5%). VMT per capita decreased from 26.2 to 22.7.
- 4) Convergence criteria
 - a. Executed American Legion Bridge scenario (1b) with relative gap set at 10^{-4} .
Volume on the bridge increased similar to case 1b. Volume shifted from the Eastern side of the Beltway to I-295. Overall, the network appeared more converged.

Mr. Moran pointed out that the model's response to all the sensitivity tests was generally acceptable to staff in terms of the direction and magnitude of change. The convergence test results indicated a noticeable degree of noise, consistent with the level of convergence currently specified in the Version

2.3 traffic assignment process (10^{-3}). This level of convergence is acceptable for a regional analysis, but may be insufficient for more detailed project planning work.

Mr. Milone concluded the presentation by mentioning that Version 2.3 model is still in beta release and will not be finalized until November. However, Version 2.3.27 can be obtained at this time through the formal request process. The model documentation is being continuously updated and will soon be released. Mr. Milone also added that the transit constraint through the regional core has been added to the model and the mobile emissions post processor is in progress. Note that the transit constraint was not included in the 2.3.27 model that has already been released to some external users, but will be used in the air quality conformity work that is currently underway by TPB staff.

A subcommittee attendee inquired whether staff executed the sensitivity tests with the full model (with speed feedback) or with only the final highway assignment process. Mr. Moran responded that the full model was executed for each test. The attendee made an observation that the changes in traffic volumes including noise may be a result of trip re-distribution in the speed feedback iteration. He suggested that it may be useful to obtain the final trip tables and only run the highway assignment to different levels of convergence. This would isolate the direct effects of the different convergence criteria. Staff and will consider this comment in future sensitivity testing work.

Another subcommittee member inquired whether the TPB has tested the air quality conformity runs with different convergence levels. No such tests have been investigated thus far by TPB staff. However, staff has determined that regional VMT does not change substantially at higher levels of convergence. The subcommittee member then suggested that the model should be validated to the 2010 counts which have recently been released. Staff agrees that the model should be continuously validated as newer data becomes available.

Another subcommittee attendee mentioned that WMATA is going to implement “pseudo-transfers” (i.e., allowing Metrorail riders the opportunity to exit the system and walk between proximate stations of different lines without extra charge) as a means of relieving congestion at “core” transfer stations. The attendee suggested it is necessary to consider this new operating policy particularly with respect to the transit constraint procedure that is built into the TPB’s travel model. Staff agrees that these new types of transfers should be considered in path-building.

3. Assistance on travel demand model development and application

First, Mr. Moran gave a brief background regarding the contract, “Assistance on travel demand model development and application,” which is also sometimes referred to as the “Scan of Best Modeling Practice.” It’s a year-long contract with up to \$150,000 available per year and can be renewed for up to 2 years. VHB was the first consulting company that held the contract followed by Cambridge Systematics. In FY 2011, Cambridge Systematics completed three tasks including:

- Task 11- Transit Assignment for the Version 2.3 Travel Model
- Task 12- Consideration of Available Commercial Travel Demand Software Packages
- Task 13- Review of Version 2.3 Travel Model Methods, Scripts, and Potential Enhancements

They have presented their findings at the May TFS meeting and have delivered final reports, which can be found on the TFS webpage.

For this fiscal year, an RFQ was issued and five firms responded including AECOM, Cambridge Systematics, DCI, Louis Berger, and Symmetra Design. The winning bid is expected to be announced in a few weeks.

4. National Capital Regional Congestion Report (Draft) – A Congestion Management Process (CMP) “Dashboard”

This item was presented by Wenjing Pu of TPB staff who distributed a copy of his slides and the report to the attendees. The goal of the report is to provide congestion information in an easy-to-understand format on a quarterly basis and compare system performance across different years. Mr. Pu began by listing the sources of speed, volume, and incident data, which are used to evaluate congestion around the region. These include INRIX, Transportation Technology and Innovation Demonstration (TTID) program, Maryland Traffic Monitoring System (TMS), RITIS, and MATOC. Then, Mr. Pu discussed some of the congestion metrics that were included in the report, namely:

- Percentages of freeway lane-miles by congestion level for the AM and PM peaks for the fourth quarter of 2010;
- The share of different types of highway incidents; and
- The average monthly freeway delay per traveler (approximately 7.6 hours or \$141).

Next, Mr. Pu compared the percentages of congested freeway lane-miles for 2008, 2009, and 2010, noting the regional decrease in freeway congestion in 2010. Unlike freeways, a three-year comparison of the arterial system performance revealed slight deterioration in the fourth quarter of 2010 compared to 2009. Mr. Pu also showed locations of the ten most severe freeway bottlenecks, based on daily hours of congestion, and the ten most unreliable freeway segments, based on the buffer time index. Mr. Pu reviewed technical details and issues associated with combining different sources of data and calculating the various congestion metrics. Lastly, Mr. Pu showed maps with the available freeway and arterial data purchased from INRIX, Inc. in FY-2011 (for data year 2010).

A subcommittee attendee inquired how the calculated hours of delay compare to the Texas Transportation Institute’s (TTI) number, which is calculated for 100 urban areas on an annual basis. Mr. Pu responded that the number of hours of congestion that was calculated in the report is higher than the TTI’s because TTI’s calculation includes delay on all the roads while this report includes only freeways. Another subcommittee attendee clarified whether the percentage of congested freeway lane miles accounts for traffic in both directions. Mr. Pu confirmed that the information is for both directions. Another member suggested using vehicle hours traveled (VHT) instead of the percentage of congested freeways.

A subcommittee member asked how the list of the top 10 bottleneck in this report compared to the bottlenecks identified by the INRIX National Traffic Scorecard. Mr. Pu said that he has not done a comparison, but he expects the lists to be similar. Mr. Griffiths suggested making more travel time contours in order to better communicate the congestion information to a less technical audience. For example, he proposed calculating travel times from other jurisdictions to the DC core. Mr. Pu agreed with this suggestion. Mr. Griffiths also inquired about how the congestion level is calculated if the

volume data is missing because of sensor malfunction. Mr. Pu replied that the volume information is not obtained from a single detector but is rather aggregated from a series of them. Thus, if one detector fails, this data will be omitted and the volume will be based only on the readings from other detectors.

5. Delineation of Census Transportation Planning Products (CTPP) TAZs for the Washington, D.C. area: Status report

This item was presented by Martha Kile of TPB staff. Ms. Kile reminded the attendees that the reason that the TPB is working on creating the CTPP TAZs is to ensure that the Census data summaries that are delivered are on a zone system that is similar to the TPB TAZ system. Ms. Kile stated that the work delineating the census TAZs is now complete. The result is a system of 1940 TAZs of which 1281 are the same as TAZs in the 3,722 system. Ms. Kile also mentioned that the CTPP TAZs were further aggregated to create 185 TADs. The TADs do not cross jurisdictional boundaries and conform to the activity center boundaries. She concluded her presentation by informing the committee that the TAZs have been submitted to the Census Bureau and the first set of data should become available in about a year.

A subcommittee attendee inquired whether the conversion tables from census blocks to TAZs are available. Ms. Kile replied that the data can be obtained by sending a request to the TPB. Mr. Milone inquired whether the same transportation data will be available from the ACS as from the Census Long Form before. Rich Roisman responded that it will be similar, but some data will be suppressed in the cross-classification tables because of a smaller sample size. The univariate tables will be the same as before.

6. Other business

There was no other business. The next proposed meeting of the TFS is Friday, September 23, 2011 from 9:30 AM to 12:00 noon. The meeting adjourned at about 11:50 AM.

The highlights were written by Mary Martchouk.