

Travel Forecasting Subcommittee Meeting Highlights

Friday September 18, 2009, 9:30 AM to 12:00 noon

Meeting attendees

- Arpita Chatterjee (Fairfax Co. DOT)
- John (Jay) Evans (Cambridge Systematics, Inc.)
- Brian Gardner (FHWA/HEPP)
- Bahram Jamei (Virginia DOT)
- Eric Jenkins (M-NCPPC, Prince George's County)
- Wendy Jia (WMATA)
- Dial J. Keju (Frederick County)
- David Kline (Fairfax County DOT)
- Yuanjun Li (M-NCPPC, Montgomery County)
- Subrat Mahapatra (MDSHA)
- Bill Mann (Virginia DOT)
- Jaak Pedak (Fairfax County DOT)
- Maggie Qi (VHB)
- Dan Stevens (Fairfax County DOT)

COG/TPB staff in attendance

- William Bacon
- Joe Davis
- Charles Grier
- Bob Griffiths
- Wanda Hamlin
- Charlene Howard
- Hamid Humeida
- Ron Kirby
- Mary Martchouk
- Ron Milone
- Mark Moran
- Jinchul (JC) Park
- Jane Posey
- Wenjing Pu
- Clara Reschovsky
- Meseret Seifu
- Daivamani Sivasailam (Siva)
- Robert Snead
- Daniel Son
- Dusan Vuksan
- Feng Xie

The meeting was chaired by Wendy Jia of WMATA.

1. Introductions and approval of meeting highlights

The highlights from the July 17 meeting of the Travel Forecasting Subcommittee (TFS) were approved with one minor change. A subcommittee member thought that the sentence on page 2 beginning "For example, if a new smart growth development.." was confusing the way it was written. TPB staff agreed to revise the sentence to try to make it clearer.

2. Scan of best practices in travel demand forecasting: Beginning of review period for five FY 2008 reports from Cambridge Systematics

It was noted that there was a typo in the title of this item. The item should have referred to the FY "2009" reports, not the FY "2008" reports. Ron Milone (COG/TPB) presented this item. Cambridge

Systematics, Inc. (CS) is on retainer with TPB to perform a scan of the best practices in travel demand modeling in the U.S. In FY 2009, CS produced five reports for TPB: 1) Fuel Prices in Travel Models; 2) Recommended Approach to Near-Term Model Enhancements; 3) Framework for Before-and-After Study of HOV Network Effects Due to New HOT Lanes; 4) Improving the Model's Sensitivity to Land Use Policies and Non-Motorized Travel; and 5) Recommendations on Feedback Convergence Methods. CS made PowerPoint presentations to the TFS on November 21, 2008 (reports 1-3) and on July 17, 2009 (reports 4 and 5). TPB staff has received all five reports and, as of today, the five reports, combined into one large draft report, were made available to the TFS. Subcommittee members were encouraged to review the reports and provide comments to Ron Milone in the next 30 days. Paper copies of the draft FY 2009 report were distributed at the meeting and an electronic copy was also made available on the TFS web page (www.mwcog.org/transportation/committee/committee/default.asp?COMMITTEE_ID=43).

3. Status report on surveys: 2007/2008 Household Travel Survey and 2008 Bus Survey

This item was presented by Bob Griffiths (COG/TPB). Mr. Griffiths mentioned that the survey processing has taken longer than expected. The survey data is grouped into four files. Three of the four files are complete (household, vehicle, and person), but the trip file is still being worked on (it's 99% complete). Although the sample was over a 12-month period, it actually took 14 months to administer. The samples were divided into four quarters and the heaviest sampling occurred in the second and third quarters, both of which occurred in 2007. In this survey, a household was not considered complete unless we had an interview for every household member. By contrast, in the 1994 survey, if we had at least half of the household members, it was considered complete. The newer, tighter constraint is generally good, but it can introduce some biases against larger households (which can result in an overrepresentation of smaller households, which can be addressed in the survey weighting). Like in past surveys, some values (about 1 to 2 percent) had to be imputed. The most common variables needing imputation were household income and age of the individual. Mr. Griffiths then discussed issues related to survey weighting and survey processing. Mr. Griffiths concluded by saying that he expects to have the HTS trip file finished sometime before the next TFS meeting.

Questions and comments: A member asked how children were handled in the survey. In this survey, at the recommendation of NuStats, all people were included, from age zero on up. In past surveys, only household members five and older were surveyed. In both cases, an adult would answer the survey questions for the child, up to the age of 15, the maximum age where a proxy was allowed. The rationale behind this change was that even very young children have their own travel needs (e.g., going to preschool) that should be reflected.

A TPB staff member commented that, when comparing the 2007 Household Travel Survey with the Round 7.2a Cooperative Forecasts, there are many cases where the number of households by jurisdiction in the 2007 survey is lower than that found in the Round 7.2a forecasts, even though the Round 7.2a forecast number are for the year 2005. The member hoped that these decreases would be

reflected in the Round 8.0 forecasts. Mr. Griffiths agreed and said that the 2010 numbers would be going down.

One subcommittee member asked whether the “school” trip purpose includes just grades K to 12 or also college and university. Mr. Griffiths responded that it included all school trips, but on the person file, you have the level of school coded (e.g., child care, elementary, secondary, university). Another member of the subcommittee asked whether the COG/TPB travel model would be recalibrated based on the information in the HTS concerning internal-to-external (IX) trips and (XI) external-to-internal trips. He mentioned the parts of the modeled area around Baltimore as of particular interest. TPB staff indicated that it would make sense to take a look at this model (i.e., the internal-to-external trip extraction model, which occurs as part of trip generation).

4. Development of land activity data on the new zone system, including, potentially, new area types

This item was presented by both Mr. Milone and Mr. Griffiths of COG/TPB staff. Mr. Milone mentioned that one of the challenges for TPB staff is that, although we have a new 3,722-TAZ zone system, the latest land activity forecasts (Round 7.2a of the Cooperative Forecasts) are not yet developed for the new zone system. By contrast, the Round 8.0 land activity forecasts will be developed for the new zone system. However, Round 8.0 is not likely to be ready until the end of January 2010 (at the earliest), and calibration work needs to be well underway at that point. Consequently, to develop calibration files on the new TAZ system, TPB staff will need to come up with some way to convert the Round 7.2a land activity data on the existing (2,191-TAZ) system to the new (3,722-TAZ) system. The simplest approach would be to use an area-based proration scheme, which makes the implicit assumption that land activity is uniformly distributed through each zone. However, COG/TPB staff have proposed two enhancements to the area-based proration approach, which were described in the meeting by Mr. Griffiths. First, from the household travel survey work, we have household counts by postal carrier routes, and these postal carrier routes are smaller than TAZs, in most cases. So, we will be able to take the centroid locations of these postal carrier routes, map those to the new zone system, and come up with a household estimate for the new zone system. Second, we have purchased Dun & Bradstreet employment files for 2005, 2007, and 2008. The employment establishments are being geocoded to both current and new zone systems. This would allow us to get proportions in each zone based on the actual locations of the business establishments, as opposed to simply using an area-based proration. The Cooperative Forecasting group had also asked for this data to help them produce the land activity forecasts on the new zone system.

A member of the subcommittee mentioned that all of the local jurisdictions in Virginia have zones that are smaller than the COG TAZs and added that they are doing land activity forecasts for those smaller zones. The member asked why COG could not simply get these forecasts from the locals? TPB staff responded that 1) these local area forecasts are developed for various purposes and are not always compatible with the forecasts used for regional purposes, and 2) sometimes there is a disconnect between the land use planners and the transportation planners, even within the same organization. Consequently, it can be hard to get them to agree on a set of forecasts that will be used. TPB staff

finished by adding that all of the local governments are working on developing the new forecasts on the newer zone system, but that the work is not finished.

5. Status report on network development and the project to use a GIS application to improve network development and maintenance

This item was presented by Charlene Howard and Bobby Snead (COG/TPB). Mr. Snead began by giving some background about two current projects. The first was a project to improve the way TPB's transportation networks are managed and maintained. A consultant, Daniel Consultants, Inc. (DCI) was selected and worked with TPB staff in FY 2008 and 2009. DCI developed an ArcGIS tool that would allow TPB to store and maintain both highway and transit networks using the ArcGIS geodatabase format. The second project was an effort to conflate TPB's master highway network to the NAVTEQ street database, which would result in attribute-rich highway networks with improved geometry and spatial resolution. Several TPB staff have been working over the summer to complete this network conflation project.

Next, Ms. Howard gave a presentation about these two network projects, beginning with DCI database/application, which she said is now being called "TPBMAN." This name was derived from the name used by the previous application used by TPB staff to maintain the master highway network, which was often called "MAN" for Master Any-year Network. The goals of the TPBMAN project were the following:

- Edit and maintain both highway & transit networks
- Support multiple concurrent users
- Improve & streamline existing network development procedures

This was accomplished by DCI by creating an ArcGIS application that implements the ESRI geodatabase model for network datasets. Another goal, which came later, was to incorporate the new 3,722-TAZ zone system. The DCI application includes a "COGTools" toolbar for network editing. Additionally, DCI has created documentation (user's guide, administrative guide, and a final executive summary report) for the new application. The DCI work was done over two phases, one for each of the two fiscal years (FY 2008 and FY 2009). The focus of phase 1 was the highway networks. The focus of phase 2 was the transit networks, which were not part of the legacy master highway network MAN. One difference in the way TPBMAN handles highway and transit networks is that while highway networks can be specified for any year between the base year and the out/horizon year, transit networks are stored for only certain discrete years (e.g., 2010, 2020, 2030). Although phase 2 ended on June 30, 2009, there are still some outstanding issues that remain, such as application testing and debugging. TPB is currently working with DCI to resolve these remaining issues.

Ms. Howard then discussed other network projects, including the conflation of the master network, updating the geodatabase with projects contained in the 2009 CLRP and FY 2010-2015 TIP, and renumbering the master network (which is needed due to the new zone system).

A member of the subcommittee asked when the new network tools would be available for use by other agencies. Ms. Howard felt that it might be put into production use at COG within the next few weeks

and thought that it might be ready for public release by the end of the year. On the issue of networks, zones and centroid connectors, a subcommittee member said that the state and local governments would like to see the new centroid connectors in draft form, so that comments could be provided to TPB staff. TPB staff concurred that the state and local governments will be given the opportunity to review proposed centroid connectors. A member from Maryland recommended that, when conducting the aforementioned work, TPB staff should consult with the state GIS databases, adding that perhaps the COG GIS could be linked with these state databases. Then whatever changes are made to the state databases, such as updated traffic counts, could easily be brought into the COG GIS databases. TPB staff concurred that such linking is would be beneficial and will consider this in future work.

6. Developing the Ver. 2.3 travel model on the new zone system: Timeline and plans for calibration

Mr. Milone discussed plans for developing the Version 2.3 travel model on the new zone system. These plans take into consideration the recent recommendations from CS regarding recommendations for updating the travel model (discussed in item 2). Mr. Milone mentioned the model enhancements that are already present in the Version 2.3 model on the *current* zone system (e.g., nested-logit mode choice, updated truck models, and transit assignment capability) and then discussed the features that are being considered for the recalibrated Version 2.3 model on the *new* zone system (e.g. including non-motorized travel in trip generation for all purposes, revising the definition of area type, including a Pedestrian Environment Factor [PEF] in mode choice and/or path building). The goal completion date for the recalibrated Version 2.3 travel model on the new zone system is August 2010. This means that the 2010 Plan update and the upcoming air quality conformity determination (for the 2010 CLRP and the FY 2011-2016 TIP, which would occur from January through July of 2010), would have to use the Version 2.2 travel model on the existing 2,191-zone area system. Nonetheless, when the 2010 CLRP update work is conducted, we will have to move the out/horizon year from 2030 to 2040, due to the rule that the long-range plan must cover at least 25 years.

On the recalibration of the Version 2.3 model, Mr. Milone mentioned that we will be looking at the existing count data to see if it would allow us to do a validation of the time-of-day highway assignment, instead of simply validating to the total weekday counts, as has been the practice in the past. We still plan to validate highway assignment at the screenline level, but would consider using an enhanced set of screenlines that were recommended by VHB to TPB a couple of years ago. On the subject of external travel, a subcommittee member mentioned the I-95 Corridor Coalition Model, which covers 14 states and asked whether TPB staff felt that this might be a useful source of information about through trips and external travel. TPB staff thanked the member for the suggestion. This same member also mentioned a national travel model that CS is working on and a freight analysis framework, both of which could give information about long-distance travel and through trips. The representative from CS mentioned that he did not have detailed information on these efforts, but added that he could check with his colleagues as a follow-up.

A member asked about what software will be used for the COG/TPB Version 2.3 travel model (e.g., TP+, Voyager). Mr. Milone responded that we have converted all scripts from TP+ (ver. 4.1) to Voyager (ver.

5.0.3). We are also moving to the latest version of Cube Base (ver. 5.0.3), which includes the tighter integration with ArcGIS, via the embedded ArcGIS engine runtime libraries. We have looked into the use of Cube Application Manager, but, at this time, we are still using the batch-file approach to apply the travel model.

7. Draft Findings from the FY 2009 Enhanced Arterial Highway Travel Time/Speed Study

This item, which is part of the congestion management program, was presented by Daivamani Sivasailam (Siva). The purpose of this study was to identify the location, severity and extent of congestion on the major arterial highway routes in the region. This program, which began in 2000, includes monitoring 57 major arterial highway routes totaling 429 miles. Each route gets re-monitored every three years. The program was enhanced in FY 2009 such that it would include an additional 65 miles of routes, although only 26 of these miles were added in FY 2009 (the rest would come in future years). In terms of methodology, four cars were equipped with Global Positioning System (GPS) receivers and pocket PCs, allowing one to record travel time and speed data on each route between 1 PM to 8 PM on weekdays covering the PM peak period and the off-peak period.

A member asked how many days of runs are made for each route. Mr. Sivasailam responded that each route is monitored on only one day, but within each hour, there are a minimum of four runs. In some cases, due to a major traffic incident or an equipment malfunction, the travel time runs are stopped and rescheduled for another day. Another member asked whether TPB has compared the results of this study with the data coming from Skycomp and INRIX. Mr. Sivasailam said that there had not yet been a comparison with the Skycomp data. As far as INRIX is concerned, TPB staff felt that the INRIX data was weak for arterials (it is best for freeways). The advantage, however, with INRIX data is it is multiple days (year round). A TPB staff member suggested that perhaps TPB staff could, in a future study of this nature, select a few routes to conduct over a multiple-day period to see how much day-to-day variation there is. Another member mentioned that you can see real-time speed information on various roads by using various internet mapping sites, such as Google Maps and Bing. The member asked whether TPB staff has compared the results of the arterial highway travel time study with the real-time information on these sites. Mr. Sivasailam responded that we have not done this since these sites do not provide archived speed data. TPB staff said that the real-time link speed information on these internet mapping sites often comes from proprietary data and methods. Mr. Griffiths said that the freeway data came from a company called Mobility Technology, which was bought by NAVTEQ, which was then bought by Google. It relies mainly on microwave sensors to detect traffic speeds.

A member asked how much the recession affected the traffic speeds (one would expect a reduction in traffic and an improvement in speeds). Mr. Sivasailam responded that we did not see a system-wide change in speed that could be attributable to the recession.

8. Round-table discussion: An opportunity for subcommittee members to share current activities of interest

Ms. Jia mentioned the idea, which was broached at the May TFS meeting, that perhaps VDOT and Fairfax Co. DOT could put together a joint presentation about modeling work they had done to support the Base Realignment and Closure (BRAC) process. She asked whether VDOT and Fairfax Co. would still be interested in making such a presentation at a future TFS meeting. Bill Mann and David Kline said they would look into doing that.

There was a discussion about obtaining transit route and schedule data from WMATA, with one possible source being the new open Google Transit Feed Specification (GTFS), which is available for download on WMATA's web site (http://www.wmata.com/rider_tools/developer_resources.cfm).

Ms. Jia also mentioned that WMATA has been working on assigning real-time rail passenger O/D data on to rail links. She said that WMATA has produced some preliminary plots and offered that she could make a presentation on that work if it interests the subcommittee. TPB staff indicated that it would be interested in learning more about this work. Ms. Jia offered to make a presentation to the TFS in November, if there is sufficient time on the agenda.

A member asked about the SIP schedule for the release of EPA's new mobile emissions model, MOVES. Mr. Milone suggested that Mike Clifford (COG/TPB) would be the best person to comment on that (however, Mr. Clifford was not at the meeting).

9. Other business

Ms. Jia asked TPB staff what the status was on the cordon counts this year. Mr. Griffiths said that he knew his staff is working on them now. There were some delays this year due to rainy weather. He mentioned that he would have to get back to Ms. Jia on the actual schedule.

The next proposed meeting of the TFS is Friday, November 20 from 9:30 AM to 12:00 noon. The meeting adjourned at 12:00 noon.

These highlights were written by Mark Moran.