Meeting Highlights
Travel Forecasting Subcommittee
Friday, May 22, 2009
9:30 AM to 12:00 noon

This document summarizes the Travel Forecasting Subcommittee (TFS) meeting held on May 22, 2009 at COG. A list of the meeting attendees can be found at the end of the highlights. The meeting was chaired by Wendy Jia, Washington Metropolitan Area Transit Authority (WMATA).

1   Introductions and approval of meeting highlights from the March 20, 2009 meeting

The highlights were approved as written.

2   Status report on surveys

This item was presented by Clara Reschovsky and Bob Griffiths. Ms. Reschovsky began with a presentation and a hand out entitled "2007/2008 Household Travel Survey: Presentation of Findings on Walk and Bike Travel." In her presentation, she discussed the sampling plan, characteristics of the survey interview, and edit checks for bike and walk trips. She discussed the change in commuting modal shares at the regional level, 1994 vs. 2007/2008: Walk trips dropped slightly (from 3.0% to 2.7%), but bike trips went up slightly (from 0.7% to 1.0%). She also discussed the change in mode shares for walk and bike at the jurisdiction level for commuting (work) trips. DC had the largest share of walk commute trips (around 12%), though this number had dropped slightly from the value seen in 1994 (13%). Coming in at number two and number three were Arlington (5.7%) and Alexandria (4.8%).

Ms. Reschovsky then went over the same information (regional and jurisdiction-level) for all trip purposes combined, not just work alone. In this case, at the regional level, drive alone (actually auto driver) shows a decline, from 63% in 1994 to 57% in 2007/2008. By contrast, several other modes showed increases: auto passenger (from 18% in 1994 to 23.6% in 2007/2008), transit (from 5.5% in 1994 to 6.1% in 2007/2008), and walk (from 7.7% in 1994 to 8.5% in 2007/2008). Biking was staying about the same: 0.5% in 1994 and 2007/2008. Ms. Reschovsky also went over trip length by travel mode and total daily trips by trip purpose.

A subcommittee member wanted to know the difference between the three purposes of "work," "journey to work," and "work related." TPB staff gave the following definitions: Work: Primary purpose is going to work, with no intermediate stops. Journey to work: Primary purpose is going to work, but the person makes an intermediate stop (e.g., to pick up coffee, go to the dry cleaners, or drop kids off to school). Work related: A work trip, but where the destination is not one's normal work place, such as attending a meeting or visiting a client. By contrast, Census does not distinguish between work trips with intermediate stops and those without.

Another member asked how the survey data, particularly for modal shares, compared with the Census Transportation Planning Package (CTPP) data. TPB staff explained that they have not

really compared with CTPP data, since the latest CTPP data is now almost ten years old (the latest CTPP data is for the year 2000). Instead, TPB staff has compared it with the American Community Survey (ACS) data (3-year tabulation of 2005, 2006, and 2007). Staff went on to say that the 2007/2008 Household Travel Survey (HTS) data seems to compare well with the ACS data, although the ACS data does not yet provide information about trips ("flows") from jurisdiction to jurisdiction. Another TPB staff member mentioned that the biggest difference between the COG HTS data and the Census commuting data (either the 2000 CTPP and/or the 2005-2007 ACS data) is that the COG HTS shows considerably fewer carpool trips and more transit trips than the Census commuting data. This could be largely due to the way the two surveys pose the question. On the COG HTS, the question is "What did you do on your travel survey day?" By contrast, the Census/ACS question is "What did you normally do last week?" The TPB staff member pointed out that the Census/ACS does not ask if you carpooled; it asks, "What was your travel mode?" Then Census determines if you were in a private automobile. If so, Census asks how many people were with you. TPB staff indicated that we have a lot of "served passenger" trips in this region (e.g., parents, on their way to work, dropping their kids off at school). Depending how they answered the Census question, the auto occupancy might include the dropped off students, even though they were along for only a short portion of the total work trip. Also, using the COG mode-coding conventions, if someone uses transit for any portion of their trip, the trip is a transit trip. So, for example, if you were to drive 10 miles to a Metrorail park-and-ride lot and then use Metrorail for 3 miles, that trip is still classified as a Metrorail (and thus transit) trip. By contrast, the Census instructions ask what you did for the longest part of your trip (e.g., auto)? A final, related question was whether the 2007/2008 HTS picked up people who were "sluggers" (i.e., ad hoc, informal carpoolers). TPB staff said that the sluggers are, in fact, captured in the HTS, but many of these trips were classified as Metrorail trips, since the person slugged (carpooled) to the Pentagon and then took Metrorail a few stops to their final work location.

A subcommittee member asked whether there were any HTS tabulations for the Regional Activity Centers. TPB staff said, that, as a matter of fact, a presentation on that topic was done just two days earlier for the TPB (Item #10: 2007/2008 TPB Household Travel Survey: Major Findings for Regional Activity Centers/Clusters, May 20, 2009). Later in the meeting, TPB staff brought down copies of the TPB presentation, which can also be found here (http://www.mwcog.org/committee/committee/archives.asp?COMMITTEE_ID=15), and distributed them to the meeting attendees. A subcommittee member asked when the HTS survey data would be available to the public. TPB staff responded that it should be available in early July (TPB staff is working on documentation now). Lastly, a subcommittee member asked about the effect of telecommuting on travel behavior. TPB staff indicated that it had been determined in an earlier study that telecommuting results in a 5% reduction in daily commuting trips. Also, 7% of the households work only from home.

Next, Mr. Griffiths gave a presentation and hand out entitled "2008 Regional Bus Survey: Preliminary Results." According to the preliminary findings, the expanded on-board survey ridership total is 644,500 weekday trips (unlinked), of which about 454,900 are on Metrobus. He presented a number of findings, such as jurisdiction of residence, mode of access, purpose of the trip, and how the fare was paid. Regarding fare payment, Mr. Griffiths pointed out that the survey was done in May and June of 2008, which was before the elimination of paper rail-to-bus

transfers. In terms of fare payment, the "other" category included student discount and tokens. As would be expected, people in the survey (bus riders) were less likely to own a car or multiple cars than the general population.

As for the current status of the regional bus survey, TPB staff has developed the preliminary factors and has asked the members of the Regional Bus Subcommittee (RBS) to review the factored data. TPB staff expect the RBS to finish its review by the end of May. TPB staff will then pass the weighted survey file back to the contractor who will then prepare the final report. Mr. Griffiths mentioned that the quality of the bus survey data varied by route, due, in part, to low response rates, particularly in northern Montgomery County. There were some bus trips that were part of the sample plan, but were not surveyed. Also, the time-of-day distribution of data was not ideal. Originally, we had hoped to use the bus survey as a check on data obtained from the 2007/2008 COG HTS. However, we are now thinking that the reverse will be true, namely, that we will use the HTS to adjust the bus survey. Mr. Griffiths noted, however, that the WMATA-portion of the survey, which is used for subsidy allocation purposes, was the best in terms of data quality.

A member of the subcommittee asked whether TPB planned to re-survey some of the bus routes that were undersampled, such as northern Montgomery County. TPB staff responded that it would not be possible to re-sample Montgomery County Ride-On this fiscal year, but it is something we may be able to entertain next year. A subcommittee member asked when the regional bus survey data would be available to the public. TPB staff responded that it should be available around September. This same member asked if TPB staff could provide the number of bus routes surveyed in each jurisdiction. TPB staff responded that that was presented in an earlier presentation to the TFS, which can be found on the TFS home page.

3   Status report on development of the Version 2.3 travel model

This item was presented by Ron Milone and Mark Moran. The presentation and hand out were entitled "Status report on development of the Ver. 2.3 travel model." Mr. Milone began the presentation by giving a brief status report of some of the key activities related to developing the Version 2.3 travel model with nested-logit mode choice and the new zone system, e.g.,

- Round 7.2 Cooperative Forecasts on the current (2,191) TAZ system;
- 2007/2008 Household Travel Survey;
- Development of the new (ca. 3,700) TAZ system;
- Approaches for reducing model run times;
- New (year-2007) ground counts, released as part of the Regional Transportation Data Clearinghouse (discussed in the next agenda item);
- Conflating the highway network to the NAVTEQ street centerline data;
- Proposed network node numbering conventions on the new TAZ system;
- GIS application to streamline how we code and maintain our transportation networks.

Mr. Milone also presented a timeline for developing the Version 2.3 travel model on the new zone system. The ultimate goal is to have the model read for use for the 2010 update of the CLRP, which will begin in January 2010 and continue through the summer of 2010. This timeline is an update of the timeline that has been presented at the last few TFS meetings. There has been some slippage in some of the tasks at the top of the timeline, but TPB staff still hopes to

make the 2010 deadline. Beginning in FY 2006, the TPB has had a task-order consulting contract to scan the best practices in travel demand forecasting across the U.S. The current consultant is Cambridge Systematics, Inc. Mr. Milone discussed the two latest tasks for CS: 1) Improving the regional model's sensitivity to land use policy (e.g., smart growth, transit oriented development) vis-à-vis the new TAZ system and 2) Recommendations for feedback convergence methods.

Mr. Moran discussed the latest work done by TPB staff in using distributed processing (DP), via Cube Cluster, to speed up travel model runs. In previous meetings, TPB staff had discussed using one of the two types of distributed processing (intra-step distributed processing, or IDP) to speed up a test case for the highway assignment step. Since the last TFS meeting in March, TPB staff has used the second type of distributed processing (multi-step distributed processing, or MDP) to run a test case where two nested-logit mode choice model runs run simultaneously. If the results from these two tests are extrapolated to a full travel model run, it is estimated that there could be about a 35% reduction in run time for the Version 2.3 travel model (from 18.5 hours to 12.1 hours). Mr. Moran then presented an example of code/script that runs the two mode choice model runs, one without DP and one with DP. Mr. Moran concluded with the next steps for distributed processing work, which included applying what has been learned about IDP and MDP to the full travel model run, to see whether the predicted time savings actually materialize.

Mr. Milone then discussed the topic of node renumbering in the upcoming transportation networks. The new TAZ system will cause us to rethink the node numbering conventions that have been used for many years at COG. Because the current node numbering conventions were developed many years ago, they have been updated numerous times and have, in some cases, become unwieldy (hence the need for updating the numbering conventions). A second major reason for updating the node numbering conventions is that the highest TAZ number (ca. 3,700) will now be greater than the minimum existing highway number (ca. 3,000), which is not generally allowed by most travel demand software modeling packages. Mr. Milone conclude with some "next steps," including preparing the year-end documentation, finalizing the new TAZ system, developing new highway/transit networks that match the new zone system, logic checking of the HTS, and calibration work in the fall.

A subcommittee member asked whether the 1,253 unused zones specified in Mr. Milone's presentation would be enough for project planning work. TPB staff felt that, for a regional model, this number of unused zones would be enough (the current number of unused zones is 172 in the 2,191-TAZ system). Another member asked whether the upcoming air quality conformity work that is being conducted right now (i.e., the 2009 CLRP and the FY 2010-2015 TIP) would be evaluated with Round 7.2 or 7.2a of the Cooperative Forecasts. TPB staff plans to proceed with the Round 7.2 data for conformity, with the analysis being completed in July and then forwarded to the feds for their approval. Pending TPB approval of the network amendments in June, conformity work will be rerun over the summer with Round 7.2a and the associated network changes. TPB would then probably give the feds another CLRP to approve in September, since the Purple Line will need to be in the CLRP if it is to get federal funding.

4   Regional Transportation Data Clearinghouse

Martha Kile made a presentation entitled "Regional Transportation Data Clearinghouse Traffic Viewer." The clearinghouse is based on the COG master highway network (2007 year), so that the counts that are in the clearinghouse can be used for comparison with outputs from the travel model. The traffic viewer allows one to access the count data via both a map interface and a text box of counts. The clearinghouse includes both annualized traffic volumes/counts and hourly directional volumes/counts. The annualized volumes include average annual daily traffic (AADT) for the years 2001-2007 and average annual weekday traffic (AAWT) for the years 2005-2007. AAWT data, which is what comes out of the travel model, is available for Maryland and Virginia (but not DC). The hourly volumes are those that have been collected on a single day, i.e., they have not been seasonally adjusted. For the hourly volumes, you must pick a date (a year and month). If users would like to do something different, let us know, and we will try to incorporate your request. Ms. Kile mentioned that the counts now include a count code that gives information about what type of count was conducted, whether it was conducted in the year of interest (or a prior year), or even if it was an actual count at all (e.g., an uncounted manual estimate). She said that the application will be available on the COG FTP site in the next two weeks. Users would download the application to their local hard drive, at which point they could open it in ArcMap. Alternatively, if you do not have ArcGIS, the data is in a Microsoft Access database, so you can get at the data via other means. At the July TFS meeting, there will be a demonstration of the full clearinghouse, including additional data not shown today, such as data from arterial travel time surveys, transit data, and possibly vehicle classification data.

A member of the subcommittee asked, when selecting hourly counts, can one select either a) a given year and then all months (as opposed to a specific month) or b) a given month and then all years. TPB staff responded that, right now, the application is set up to allow only one combination, i.e., one year and one month. She added that if that is a capability that you want, let us know and we will do our best to incorporate it. Another person asked about permanent count stations, and wondered whether there was a way in the clearinghouse to tell whether a permanent count station was broken for some period of time. TPB staff responded that the only way to do that with the current application is to look at the record count. A member asked whether there were any vehicle classification counts in the clearinghouse. TPB staff responded that, right now, we do not have any classification counts in the clearinghouse, but, we would be happy to add them if you let us know what would be useful to you. We have some vehicle classification counts, but have not put them in the clearinghouse. A member asked what the source of the AADT and AAWT data was. TPB staff said that they are from VDOT, MDSHA, DDOT, and FHWA. Elaborating on this subject, a subcommittee member from MDSHA said that SHA divides their counts into three main areas: program counts, permanent counts, and special counts, adding that the program counts are used for the HPMS segments. TPB staff added that the clearinghouse includes only two of the three count types: permanent counts and program counts. The representative from MDSHA felt that these special counts could be very useful to users of the clearinghouse. A member asked what survey data and transit data would be added to the clearinghouse for the July TFS presentation. TPB staff said that transit ridership data would be added and the survey data would include the arterial travel time survey data. A member asked whether the count data in the clearinghouse was broken out for HOV facilities by HOV lanes and general purpose lanes. TPB staff said that the counts are not broken out, so one would find a total across both the HOV lanes and the general purpose lanes, adding that TPB

staff has the separate HOV counts, but have not added them to the clearinghouse network because, in the past, people wanted the total count, not the separated count. So the total count across both lane types is assigned to the general purpose links.

5   Conflating the regional highway network to NAVTEQ street segments

Ms. Kile presented this item. Her presentation was entitled "Network Conflation." In the context of GIS, conflation is the act of merging two data sets into one. A typical example, involving networks, would be the case where you have two networks: one with good attribute values, but poor spatial accuracy and another with good spatial accuracy, but limited attribute values. The result is a network with both good spatial accuracy and a good set of link attributes. In the COG/TPB case, the spatially accurate network is the NAVTEQ street centerline database, a subscription-based data set to which COG currently subscribes, that represents road segments with their actual shape. Similarly, the attribute-rich network is the master highway network, which is the basis for many of the highway networks that are used in travel demand modeling work at COG/TPB. Ms. Kile went over the history of travel demand modeling networks and GIS, as they have been developed at COG/TPB. She also discussed the benefits of having the more spatially accurate highway networks, such as the ability to match our networks to aerial photographs and to GIS data sets, such as the new TAZs. She mentioned that the work is being done by four analysts at COG, using editing and checking tools developed in house by Yew Yuan. The modeled region was divided into groups of counties, with each analyst working on a group of counties. The work was also divided into freeways and other road types (arterials and collectors). The other road types were conflated first and that work is basically complete. As for work remaining, we need to conflate the freeways, including ramps, and check problems that were identified in the earlier work for "other road" types.

Relating back to the previous presentation, a member asked whether the counts in the clearinghouse are directional (e.g., northbound and southbound separate vs. combined into one count). TPB staff indicated that only the hourly counts are directional, not the annualized volumes. A member asked whether TPB staff will be adding new centroid connectors to modeling networks. TPB staff responded that many of the existing centroid connectors were developed in the MINUTP era, where we needed to economize on the number of connectors. Hence, there were often fewer connectors than would be optimal. TPB staff intends to address this issue when developing the new highway networks that will go with the new TAZ system. A member asked whether the state and local governments could review the new networks (and centroid connectors) that TPB develops. TPB staff concurred with that suggestion. Another member recommended that, when adding new centroid connectors, there should be a set of rules to guide the staff doing the work.

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

Various members of the subcommittee each took a turn describing current modeling work that is being conducted. Jay Evans mentioned that Cambridge Systematics is working with the Virginia Department of Rail and Public Transportation (VDRPT), using the Version 2.2 travel model with the AECOM/WMATA post-process nested-logit mode choice model. This may be one of the first examples of pairing those two particular models, though the AECOM/WMATA post-process mode choice model has already been used with the Version 2.1D model. In order to get

the Version 2.2 travel model to work with the AECOM/WMATA post-process mode choice model, CS took care of some issues with the fare programs. Dan Goldfarb (CS) mentioned work being done for Fairfax County, testing various land use and network scenarios for Tysons Corner. According to Mr. Goldfarb, Fairfax County starts with the COG/TPB model, but then uses it on a more detailed highway network. One challenge is that Fairfax Co. uses intersection delay, instead of a speed/capacity table. So, CS had to re-code all centroid connectors that were coded into intersections, and re-code them so that they connected in the middle of road segments. Among other things, Subrat Mahapatra (MDSHA) talked about the I-270 project planning study: A public hearing is expected in mid June and MDSHA hopes to start work on the FEIS the summer after that.

Bahram Jamei (VDOT) mentioned that three weeks ago, the FHWA TMIP program put out a solicitation for RFPs to cooperate with local agencies. Mr. Jamei put forward two proposals. The first was to have a research institute at the University of Virginia perform a comparison of a four-step and a TB/AB model for Leesburg. The second was submitted with Virginia Tech., with the goal of getting assistance with value pricing, using the Leesburg four-step travel model. By June 4, Mr. Jamei should know whether either proposal was accepted. Bill Mann (VDOT) talked about a modeling project that VDOT is doing related to the Base Realignment and Closure (BRAC) process. Given the fact that BRAC will bring about 17,000 jobs into the I-95/I-395 corridor, the Fairfax Co. Board of Supervisors has asked all the land owners in the southern part of the county to submit suggestions for changes to the comprehensive plan. Information has come in for 30 to 40 individual sites. VDOT's task is to find out the cumulative effect of all these proposed changes on the road network.

Yuanjun Li (M-NCPPC, Montgomery County) said that Montgomery County is using the regional travel model (Version 2.1D) for work in the area of the county growth policy and the county's mobility improvements. She said that they do a lot of sub-area assignments and that they get a lot of requests for time-of-day modeled outputs, even though the regional model is not validated to time of day (just to an average weekday). The county is often interested in the PM peak period volumes, due, in part, to the fact that the previous travel mode, Travel 2, was calibrated and validated to the PM peak period. Sometimes the state of Maryland even wants peak hour volumes, not simply peak period. She wondered whether Montgomery Co. should do a peak-hour assignment or simply use a peak-hour factor to convert peak period volumes to peak hour volumes. A staff member from VDOT proposed that maybe TPB should begin calibrating the model to time-of-day data. TPB staff mentioned that it is tough finding all the time-of-day data that would be needed to calibrate the model as proposed. This concern was also echoed by a consultant at the meeting.

Jaak Pedak (Fairfax County DOT) also spoke about the difficulty of providing peak-hour volumes from a model that produces daily volumes. He proposed that maybe at one of the upcoming TFS meetings, Fairfax Co. could talk about work it has done relating to the effects of BRAC. Dial S. Keju (Frederick County) mentioned that his county is focused on revision of the comprehensive plan and is using the Version 2.2 travel model to support this effort. Wendy Jia (WMATA) said that WMATA has been working with AECOM, which just finished development of an interface that uses Cube/TP+ to get Metrorail ridership link estimation. The previous process was much more manually driven. The process begins with origin/destination

data that comes from the fare gates. With the new interface, the O/D data is read from the database. Next a Cube/TP+ script runs in the background and creates an estimate of the peak-hour or peak-period volumes on Metrorail system. WMATA hopes to use this new software to estimate link volumes for the upcoming cordon count. Gregg Steverson (Prince William County DOT) said that Prince William Co. is updating its comprehensive plan now. The issue of peak-hour volumes versus daily volumes come up all the time and is a tough one to grapple with. He said that they cannot use the travel model to get this peak-hour information, so they use ACS, Synchro, or one of the other microsimulation packages. Jay Evans said that this is an important point, i.e., how you use the travel model. Since the model has been calibrated and validated to daily conditions, that is how it should be used. Then, you can do supplemental counts for project planning, and these can be used to post process one of the daily assignments. He added that there is a temptation to use the peak-period assignments, but that is not proper use of the model.

Jeff Bruggeman (AECOM Consult, Inc.) talked about the work that AECOM is doing as part of the White House Area Transportation Study (WHATS). Feng Liu (Michael Baker Corp.) discussed using the TPB travel model for Prince William Co. (Version 2.1 travel model with the AECOM/WMATA post-process nested-logit mode choice model) and Loudoun Co. (Version 2.3 travel model). Finally, Phil Shapiro (Shapiro Transportation Consulting) discussed work he is doing with WMATA, as part of the bus priority corridor networks (PCN), using a pivot-point technique, and with AMPO to evaluate how well activity-based models are working.

7   Other business

Wendy Jia suggested that TPB staff publicize the data clearinghouse presentation for the July meeting of the TFS since she felt many jurisdictions would be interested in this project, even if they do not run travel demand models.

8   Adjournment

The meeting adjourned at abut 12:15 PM. The next meeting of the TFS is scheduled for July 17, 2009 at 9:30 AM.

Meeting attendees

Jeff Bruggeman (AECOM Consult, Inc.)
Arpita Chatterjee (Fairfax Co. DOT)
John (Jay) Evans (Cambridge Systematics, Inc.)
Dan Goldfarb (Cambridge Systematics, Inc.)
Manish Jain (AECOM Consult, Inc.)
Bahram Jamei (Virginia DOT, No. Va. Office)
Eric Jenkins (M-NCPPC, Prince George's County)
Wendy Jia (WMATA)
Dial S. Keju (Frederick County)
Yuanjun Li (M-NCPPC, Montgomery County)
Feng Liu (Michael Baker Corp.)
Subrat Mahapatra (Maryland State Highway Admin. -- MDSHA)
Bill Mann (Virginia DOT, No. Va. Office)
Jaak Pedak (Fairfax County DOT)
Mark Rawlings (District DOT)
Phil Shapiro (Shapiro Transportation Consulting -- STC)
Gregg Steverson (Prince William County DOT)

TPB staff in attendance

Tim Canan	Martha Kile	Doug Sawyer (intern)
Joe Davis	Ron Milone	Robert Snead
Charles Grier	Mark Moran	Feng Xie
Bob Griffiths	Wenjing Pu	Yew Yuan
Wanda Hamlin	Clara Reschovsky	C. Patrick Zilliacus

These highlights were written by Mark Moran.