

Metropolitan Washington Council of Governments  
**National Capital Region Transportation Planning Board**

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**Meeting Highlights**  
**Travel Forecasting Subcommittee**

Friday, January 23, 2009

9:30 AM to 11:45 AM

This document summarizes the Travel Forecasting Subcommittee (TFS) meeting held on January 23, 2009 at COG. The TFS reports to the Technical Committee, which, in turn, reports to the National Capital Region Transportation Planning Board (TPB). A list of the meeting attendees can be found at the end of the highlights. The meeting was chaired by David Kline, Fairfax Co. and the new chair for 2009 was announced at the end of the meeting (See Item 5, below).

**Item 1: Approval of highlights from the November 21, 2008 meeting**

The highlights were approved as written.

**Item 2: TPB models development status report**

Ron Milone presented this item and distributed a copy of his presentation slides entitled, “TPB Models Development Status Report.” He briefly discussed the major areas of work since the last meeting, including the cleaning and logic checking of the COG/TPB 2007/8 household travel survey; the development of a new zoning system (approximately 3,700 TAZs); the project to use GIS to improve the way travel demand forecasting networks are developed and maintained; and approaches for reducing the model run times of the Version 2.3 travel model, which is currently run on the 2,191-TAZ system, but will eventually be run on the 3,700-TAZ system.

In terms of reducing model run times, four major approaches were identified: 1) faster hardware; 2) new traffic assignment algorithms under development by Citilabs; 3) decreasing the number of speed feedback iterations; and 4) using distributed processing, via what is known as Cube Cluster, so that processing loads are distributed concurrently over multiple processors or cores within processors.

One of the difficulties in relying on faster hardware to reduce model run times is the trend in the computer industry of decreasing emphasis on processor speed and increasing emphasis on multi-processor and multi-core architecture. Similarly, we have learned from experience that one cannot simply look at the nominal processor speed when trying to choose the best computer for minimizing model run times. As for new traffic assignment algorithms, Citilabs has given us the latest “alpha” version of their software (5.1.0 alpha), which implements two new link-based approaches for solving user equilibrium traffic assignment using the Frank-Wolfe algorithm: FW conjugate and FW bi-conjugate. Citilabs staff has shown improved performance with these two algorithms when applied to a Washington, D.C. test case. However, TPB staff, when first trying the new software, was unable to match existing results for our current model, so TPB testing has been suspended while Citilabs looks into the discrepancy.

Decreasing the number of speed feedback iterations looks promising (e.g., moving from the current six to three or four, depending on whether it is a peak or off-peak assignment), but we need to conduct further investigations at a level of detail below that of the region. As for

distributed processing, there are two types: intra-step distributed processing (IDP) and multi-step distributed processing (MDP). TPB staff has conducted tests with only IDP and shown that running IDP with four processors can result in a 50% time savings in the traffic assignment step, which is the most time-consuming step of the model run (itself accounting for about 50% of model run time). Thus, using IDP alone, TPB staff has shown a reduction in model run time of about 25% (e.g., 18.5 hours becomes 13.6 hours) on a computer using four processors. The next step is to try MDP, with the hope that model run times could be further reduced.

A subcommittee member asked what highway speeds are used to support the initial (or “pump-prime”) iteration. The TPB model uses a speed lookup table (non-directional peak and off-peak speeds), which varies by facility type and TAZ. The speeds were formulated from a pre-existing AM peak and off-peak loaded-links file. One member suggested that two iterations of speed feedback may, in fact, suffice. Two iterations might be considered to be sufficient after reviewing VMT summaries by iteration. However, the HBW transit trips summarized by iteration are shown to require four iterations before reaching equilibrium. Another subcommittee member commented that “off-peak” purposes may require fewer speed-feedback iterations than the “peak” purpose.

A comment was made that link-level differences should be reviewed before deciding on the number of speed feedback iterations to cut. Another comment was made that link-level differences between scenarios are also important to consider. For example, “build” and “no-build” scenario link loads should be compared for reasonability when testing different speed feedback iterations. Mr. Milone commented that, when trying to determine the number of speed feedback iterations that is “sufficient,” the results may be influenced by the level of convergence reached in the traffic assignment step (this needs to be studied).

A subcommittee member was concerned that the implementation of Cube Cluster might overly complicate the execution of the region model by local agencies. He was concerned that the model may be operable on TPB computers, but not operable on the computers of outside agencies. Mr. Milone stated that TPB does not want the DP capability to further complicate an already complex process. TPB plans to deploy the DP capability in a way that is as flexible and transparent as possible.

### **Item 3: FY 2010 Unified Planning Work Program (UPWP): Network Development, Models Development, Travel Surveys, Cordon Counts, and Congestion Monitoring**

The TFS is the oversight committee for the following programs described in the UPWP: Network Development, Models Development, Cordon Counts, Congestion Monitoring, the Household Travel Survey, and the Regional Transportation Data Clearinghouse. This agenda item was presented by the three team leaders who manage these work programs: Jim Hogan, Bob Griffiths, and Mike Clifford. TPB staff handed out an item entitled “Item 13, Information, Review of outline and preliminary budget for FY 2010 UPWP” which will be item #13 on the upcoming TPB meeting on January 28 (In most months, the TPB meeting precedes the TFS meeting. In this month, due to a change in the date of the TPB meeting, the TPB meeting was scheduled to follow the TFS meeting). The total UPWP budget for FY 2010 is \$10.9 million, of which \$1.6 million is unspent money from previous years. Thus, the new money is about \$9.3

million. This budget assumes an 11% drop in Federal Highway Administration (FHWA) funding from the Virginia Department of Transportation (VDOT) and the District of Columbia Department of Transportation (DDOT) for next year. The Maryland Department of Transportation (MDOT) has already made a similar reduction. It is possible that the 11% will get restored, but, for the time being, TPB staff is being conservative and assuming the reduction will occur. It so happens that the 11% reduction in funding is approximately equal to the \$1.6 million unspent moneys from previous years, so the FY 2010 budget is very close to that from FY 2009. Although the total budget for FY 2010 is similar to that of FY 2009, when one looks at individual programs within the budget, one can see both increases and decreases. These program-specific changes in budget were described by the three team leaders.

According to Mr. Hogan, in terms of Network Development, there has been no change in funding compared to last fiscal year (about \$770 K). Major activities include coding networks for 2002, 2005, 2007, and approximately four forecast years. Additionally, we will be moving to a new zone system with about 3,700 TAZs (up from 2,191). Not only will we be coding networks with more zones, we are going to try using a new GIS-based network development and management tool, developed by a consultant, to make the workflow more manageable. Similarly, in Models Development, it is proposed that the budget will remain the same as last year (about \$1.1 M). Major activities will include calibration/validation of the Version 2.3 travel model (with nested logit mode choice) on the new zone system; sensitivity testing of the Version 2.3 travel model; continuing the scan of best modeling practices across the U.S.; exploring, via a consultant contract, advanced travel forecasting methods, such as tour-based or activity-based models; and updating the air passenger trip tables used by the travel model, via the latest air passenger survey.

As for Cordon Counts, which fall under Travel Monitoring, the FY 2010 budget is \$230 K, which will fund the program only as a part-time effort. The major product is a report on the spring 2009 Central Employment Area Cordon Count (formerly the Metro Core Cordon). The actual amount needed to fund the normal schedule of activities is about double what has been budgeted for FY 2010. We were supposed to collect data for a regional HOV monitoring project, but that has been suspended, due to lack of funds. If future additional funding becomes available, it should be placed in the Cordon Count program to fund the regional HOV monitoring project. The nature of the cordon count program has always been that we collect data in the spring (i.e., the second half of the fiscal year), and then we analyze the data and write the report in the fall (i.e., the first half of the next fiscal year). So, when the project is fully funded, there are two different activities: data collection and report writing. The \$230 K is for analyzing the data and writing a report on the Central Employment Area Cordon Count, which will be conducted in the latter half of FY 2009 (spring 2009).

A subcommittee member made the suggestion that, under Network Development, when developing the new networks for the 3,700-TAZ system, it would be good to coordinate efforts with state and local governments. TPB staff concurred. A member asked about the transit counts that are an important part of the Central Employment Area Cordon Count. Historically, there has been a bifurcation of duties: TPB staff counted persons traveling across the cordon in automobiles and WMATA counted the persons traveling in transit vehicles, both bus and rail. The WMATA data has typically been collected with pencil and paper. After data collection,

WMATA typically delivers the paper-based count to TPB. TPB staff then key punches the data, combines it with the automobile counts, analyzes the complete data set, and writes the report. Given that 1) some key people in WMATA's count program have recently retired and 2) WMATA's current budget is quite tight, there was concern about how the transit data would be collected in the spring of 2009. TPB staff made clear that the WMATA has always been responsible for the transit counts and that TPB does not have the funding to conduct transit counts, without receiving additional funding. TPB staff indicated that there is a current dialog between TPB and WMATA on this very issue and that it should be resolved soon. A member asked what the horizon year would be for the network development work. TPB staff responded that our plan is to use 2040 for the horizon year, but that may have to be modified in the future (e.g., Baltimore is using 2035).

Mr. Griffiths presented the next set of items from the UPWP. It is anticipated that the FY 2010 funding for the household travel survey will go from \$500 K to \$350 K (a \$150 K reduction), since most of the processing is now complete. \$100 K of the money freed up from the household travel survey project has been moved into GIS technical support, which, in FY 2010, will be funded at \$549 K. One of the major activities in GIS technical support is implementing the new GIS procedures and protocol for developing and managing the travel demand forecasting networks. Some of this work has had to be deferred in the previous fiscal year due to work on developing the new 3,700-TAZ zoning system. The FY 2010 budget for the regional transportation data clearinghouse will remain at the same level as it was for FY 2009.

Mr. Clifford presented the next item. The FY 2010 budget for Congestion Monitoring and Analysis is planned to decrease from \$521 K to \$350 K (a \$171 K reduction). This work area normally covers monitoring both arterial roads and freeways. The reduction is due to the fact that there is no freeway monitoring project in the FY 2010 work program. Freeway monitoring is conducted using aerial surveillance from a low-flying aircraft.

The next step for the proposed 2010 UPWP is that it will be presented to the TPB at its meeting January 28. Then TPB staff will work on adding more narrative to the abbreviated version of the UPWP that was shown to the subcommittee today.

#### **Item 4: Results from the Household Travel Survey**

This item was presented by Bob Griffiths and Clara Reschovsky. Mr. Griffiths started by stating that the bulk of the survey review work was completed this week. Remaining activities include error checking and data cleaning. Mr. Griffiths presented some initial results from the survey and discussed some of the procedures for conducting the survey, such as the address-based sample and the way that some households received remuneration to encourage participation. The major trend in the survey data is that the transit mode share is going up, mainly at the expense of carpooling, which is dropping. Ms. Reschovsky made a presentation about the error checking and data cleaning of the survey, concluding with a list of "lessons learned." She passed out copies of her presentation slides and also a copy of the household travel survey instrument.

A member asked how the travel days were assigned to survey participants. TPB staff indicated that the assignment was done on a random basis, but only for weekdays, not weekend days. A member asked when outside agencies will be able to get the four survey data files (i.e., person

file, household file, vehicle file, and trip files). TPB staff said that the survey data files would be first released internally at COG to Ron Milone and the rest of the models development group, who would review the survey data for a couple of months. Subject to the findings of this internal review, outside agencies would likely have access to the data sometime in the late spring of 2009. A member asked about the amount of telecommuting that was observed in the survey. TPB staff said that 25% of the survey respondents said that they were eligible to telecommute. Although the survey does ask about telecommuting behavior, TPB staff had not prepared a tabulation on this phenomenon for today's meeting. Nonetheless, staff said the rate of telecommuting was around 15 to 20 percent.

#### **Item 5: Announcement of new TFS chair**

Mr. Kline announced that the next chair of the TFS would be Wendy Jia, from the Washington Metropolitan Area Transit Authority (WMATA). Ms. Jia presented a certificate of appreciation to Mr. Kline and thanked him for his service to the subcommittee as chair over the past year.

#### **Item 6: Adjournment**

The meeting adjourned at 11:45 AM. The next meeting of the TFS is scheduled for March 20, 2009 at 9:30 AM

### **Meeting attendees**

Arpita Chatterjee, Fairfax County DOT  
John (Jay) Evans, Cambridge Systematics, Inc.  
Pramoda Gode, Cambridge Systematics, Inc.  
Dan Goldfarb, Cambridge Systematics, Inc.  
Bahram Jamei, Virginia DOT, No. Va. Office  
Eric Jenkins, M-NCPPC, Prince George's County  
Wendy Jia, WMATA  
Dial S. Keju, Frederick County  
David Kline, Fairfax County  
Yuanjun Li, M-NCPPC, Montgomery County  
Subrat Mahapatra, Maryland State Highway Admin.  
Bill Mann, Virginia DOT, No. Va. Office  
Jaak Pedak, Fairfax County DOT  
Mark Rawlings, District of Columbia DOT  
Dan Stevens, Fairfax County DOT

**TPB staff in attendance**

Tim Canan  
Mike Clifford  
Joe Davis  
Karin Foster  
Toni Giardini  
Wanda Hamlin  
Jim Hogan

Hamid Humeida  
Ron Kirby  
Ron Milone  
Mark Moran  
Jinchul (JC) Park  
Jane Posey  
Clara Reschovsky

Meseret Seifu  
Daivamani Sivasailam  
(Siva)  
Robert Snead  
Dusan Vuksan  
Feng Xie

Postscript: On February 27, Jim Hogan retired from COG after 36 years of service. Effective March 2, Ron Milone is the acting team leader for models development and network development. Similarly, Mark Moran is now the COG staff liaison for the TFS.

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These highlights were written by Mark Moran.