Highlights of the TPB Travel Forecasting Subcommittee Meeting
Held on January 18, 2008

Item 1: Approval of November 16, 2007 Meeting Highlights

The highlights were approved as written.

Item 2: Proposed FY 2009 UPWP for Network Development, Models Development, Travel Surveys, Cordon Counts

Jim Hogan, Mike Clifford, and Bob Griffiths distributed a copy of the *Preliminary Budget and Outline for FY 2009 Unified Planning Work Program (UPWP).* Mr. Hogan began the presentation with a brief outline of the proposed network development, models development, and cordon counts work programs. The proposed network program activities are the standard set involving updating of base year transit and highway networks, then building forecast year networks for FY2010-2015 TIP and Plan Conformity. The consultant contract to enhance network coding procedures and better manage both highway and transit networks will be continued in FY 2009.

Having completed the development of a nested logit mode choice model as well as new truck models, the FY2009 models development effort will focus on the following activities:

- Continuing sensitivity testing and evaluation of the Version 2.3 travel demand model that was released in draft during the latter part of FY2008, with refinements to be made as necessary;
- Continuing the TPB's ongoing scan of best modeling practices across the U.S. through use of a consultant task order contract;
- Retaining a consultant to facilitate the development of advanced travel forecasting methods (tour based / activity based), allowing TPB to incrementally phase in these new methods;
- Developing calibration files from the new Household Travel Survey, Metrorail Survey, and regional on-board bus survey for use in models development;
- Refreshing the existing airport travel demand forecasts using the latest air passenger survey and continuing to monitor approaches for a more formal airport access demand model, incorporating mode choice; and
- Continuing participation on a national MPO panel established to recommend practices in travel demand modeling.

The proposed cordon counts work program activities will be to conduct, in spring of 2009, the Central Employment Area Cordon Count. Mr. Hogan noted that WMATA had always collected the Metrorail and Metrobus data needed for this effort. A key member of WMATA's staff responsible for this activity has now retired, and assurances are being sought from WMATA that a replacement would be named to manage this effort such that

continuity is maintained in Spring 2009. WMATA staff responded that they will look into this and get back to TPB staff.

Mr. Clifford discussed the congestion monitoring and analysis work program that will:

- Analyze peak period aerial survey data collected during FY2008; compare findings with similar surveys conducted since Spring 1993 and present the findings in a final report;
- Conduct off-peak and PM peak period arterial highway travel time survey, analyze data and prepare a final report documenting the findings; and
- Using volunteer drivers from state and local government agencies, augment the traditional arterial congestion monitoring program by collecting data on additional routes.

He also briefed the subcommittee on plans for air quality conformity and emissions analysis projects during FY2009, as well as activities involving the SIP update, and the COG Climate Change Steering Committee.

Mr. Griffiths briefly discussed the concluding activities involving the Household Travel Survey during FY2009:

- Completing the processing, editing, geocoding and tabulation of data collected;
- Developing and applying survey weighting factors to expand survey results to population totals for the TPB modeled area;
- Analyzing results of the non-respondent follow-up survey and GPS add-on components of the HTS to determine the need for adjustment factors to account for non-response bias and vehicle trip under-reporting;
- Validating survey results with the Census American Community Survey, the 2007 WMATA rail passenger survey, the 2008 Regional Bus Survey, WMATA and local jurisdiction transit ridership statistics, HPMS estimates of vehicle travel, Regional Data Clearinghouse traffic volume estimates and other available data sources;
- Developing and applying trip linking procedures to the 2007 Regional Household Travel Survey and preparing a final factored survey trip file with technical documentation;
- Coordinating the processing and factoring of the 2007 Regional Household Travel Survey with Baltimore Metropolitan Council staff; and
- Preparing a technical report documenting the results and processing of the 2007 Regional Household Travel Survey.

He also touched on the work program for the Regional Transportation Data Clearinghouse for FY2009, emphasizing the need to get quality traffic counts into the database in support of model validation activities.

Chairman Rawlings asked for the process to comment on the draft UPWP. Staff responded that the best approach was to comment through corresponding representatives on the TPB Technical Committee which will receive a more complete narrative of the UPWP at the February 1 meeting.

Item 3: Final Version 2.2 Travel Demand Model Documentation

Ron Milone distributed a draft report documenting the Version 2.2 travel model to the Subcommittee. The main body of the Version 2.2 documentation includes three sections addressing the model specification, model validation, and the application of the model. There are also several appendices attached to the report, including model summaries, program scripts, batch file listings, and flowcharts of the process. Mr. Milone stated that the Version 2.2 model has been formally adopted as the regional modeling process given that the TPB has approved staff's recent air quality conformity work (based on the 2007 CLRP and FY 2008-2013 TIP). The model supersedes the Version 2.1D#50 model which has been in use since November 2004.

Mr. Milone explained that the key features of Version 2.2 include a newly developed commercial vehicle model, revised external traffic forecasts, and revised volume-delay functions (VDFs) in the traffic assignment step. The revised VDFs include the use of a queuing delay function. The Version 2.2 model was released in draft one year ago (January 19, 2007) and has undergone numerous modifications since that time. A number of sensitivity tests of the model were undertaken during the spring and summer of 2007 with the oversight of the TFS.

The application of the Version 2.2 model in the TPB's most recent conformity work marks the first time that the model has been used in a regional study. The specific years modeled were 2002, 2008-2010, 2020, and 2030. The 2010 simulation includes HOT lanes on the Virginia portion of the Capital Beltway. The HOT lane system in Virginia is expanded in the 2020 and 2030 networks, including I-395/I-95 HOT lanes. The ICC in Maryland operates as a managed-toll facility in the 2020 and 2030 networks. Mr. Milone added that the regional core transit constraint is imposed in the 2020 and 2030 simulations (the transit travel to and though the regional core is constrained to 2010 levels).

The TPB is in receipt of numerous requests for the Version 2.2 model. Although TPB is comfortable with regional results produced by the Version 2.2 model, Mr. Milone stated that a review of model results at the corridor level (in particular, with respect to HOT lane corridors) has indicated need for refinement. TPB prefers to follow through with this investigation, and perhaps to implement additional changes to the model, before it is released for general use. The TPB intends to release the model in a few weeks and to issue an updated Version 2.2 report. Mr. Kirby added that simulating HOT lanes has proven to be a challenge given the scope and complexity of the proposed facility. The HOT facility affects trip distribution as well as mode choice and traffic assignment. More time will be required to assess the reasonability of the HOT lane results at a finer level of analysis. The regional results produced in recent conformity work are not expected to change substantively.

A TFS member asked if the simulation allowed one to distinguish 2-occupant HOVs and 3+occupant HOVs on the HOT lane facility. Mr. Milone stated that auto trip tables used in the traffic assignment are loaded on the basis of occupancy. Mr. Kirby added that HOV 3+ travelers will use the facility at no cost while single occupant and 2-occupant vehicles will be required to pay. The estimated toll levels are expected to vary substantially by segment.

Item 4: Briefing on the Regional Congestion Management Process and Its Relationship to Travel Forecasting Program Activities

Andrew Meese spoke to a PowerPoint presentation on the Congestion Management Process (CMP), and to a package of materials provided in the mailout prior to the meeting. The mailout package contained an Internet Web printout of the CMP component of the Constrained Long-Range Plan (CLRP), approved by the TPB on January 16, 2007, and excerpts from the February 14, 2007 Federal Final Rule addressing CMP, as background to the CMP discussion.

The CMP is a federal requirement in metropolitan transportation planning, updating the Congestion Management System (CMS) required under ISTEA. The new Federal Regulations emphasize the "process" part of the CMP, as opposed to a stand-alone system. In addition, any Single-Occupant Vehicle (SOV) capacity increasing project should show that congestion management has been considered.

The initial track of the CMP was to develop the CMP components of the CLRP, completed in December 2007, and included in the mailout package. A second track is the development of a CMP Technical Report, which is expected to be completed by the June 30 end of the fiscal year.

The oversight committee for the CMP is the Technical Committee, in order to cover the breadth of CMP components. The Travel Management Subcommittee has been active in CMP strategy development and documentation. A number of other programs, including Travel Forecasting, Commuter Connections, and MOITS are providing input into the CMP as well.

The four major components of the CMP include: monitoring and evaluating transportation system performance; defining and analyzing strategies; implementing and assessing strategies, and compiling project-specific information.

- Monitoring: The freeway monitoring program, arterial monitoring program, and Data Clearinghouse program, will provide important data for the CMP.

- Analyzing Strategies: A qualitative list of CMP strategies was under development, similar to the Transportation Emissions Reduction Measures (TERMs) for air quality. This is a way of identifying CMP strategies in the region and what type of impacts they may have.

- Implementing Strategies: Currently the regional Commuter Connections Program is the primary activity in which strategies are implemented and their impacts are evaluated after implementation.

- SOV Project-Specific Information: CMP documentation forms, filled out by agencies within the Call for Projects process, are used to develop annual updates to CLRP and TIP listings.

Mr. Meese referenced a map from the 2006 CLRP of the top 10 congested locations in the region, and projects or studies that are ongoing at that location. This type of map is something that is envisioned for the CMP Technical Report.

A number of shared interests between the CMP and the Travel Forecasting Subcommittee were noted. There is a shared interest in monitoring and compiling new sources of data, such as probe data. Forecasts, as advised by the Travel Forecasting Subcommittee, are the main sources of information on future levels and locations of congestion. There is a shared interest in how performance measures are defined and reported. Also, there are emerging discussions on how regional-level systems analysis relates to location-specific or corridor-specific analysis. Overall, it was envisioned to continue coordinating the CMP and Travel Forecasting programs to address these requirements. Updates will be provided to the Subcommittee as needed.

Mr. Meese introduced Ms. Melanie Wellman, who has been working with him on the CMP.

Comments and Questions:

Mr. Roisman of VHB asked if COG/TPB staff are comfortable with the level of probe data to consider it further. Mr. Meese responded that a new I-95 Corridor Coalition contract was now beginning the next phase of the probe data systems. The most recent previous activity in the area was a prototype covering the Baltimore metropolitan area. Once this next phase is up and running, the potential of probe data can be considered.

So far, probe-sourced real-time data quality has been most promising on freeways (where there are often already other good sources of data), and, unfortunately, not as good on arterials (where previously it was hoped that probes would provide real-time information not otherwise available for such roads). Also, recent probe data collection efforts have focused on global positioning system (GPS) information collected from fleets (e.g., trucks and taxis); cell phone tracking information was no longer being made available in the U.S. by cell phone companies due to privacy and other concerns.

Item 5: Draft Findings of the FY 2007 Arterial Highway Congestion Monitoring Program

Daivamani Sivasailam presented the findings of the FY 2007 Arterial Highway Congestion Monitoring Program. The presentation included information on the level of congestion at the route level and link level observed on the highways monitored. He also discussed observed bottleneck locations, and locations where there were improvements to congestion when compared to previous surveys. The report also included changes over time to the system which was prepared by comparing results of the 2001, and 2004 surveys. Mr. Milone asked if staff has considered including hourly volume counts for the routes surveyed. Mr. Sivasailam responded that this has not been considered in the past, but staff will discuss this issue internally and investigate the feasibility in terms of cost, and time. Chairman Rawlings asked how the monitored routes were selected and Mr. Sivasailam responded that the initial set of the routes in the monitoring program were arterial highways in the National Highway System with a few exceptions. Mr. Griffiths asked how many days worth of data were used to estimate the bottlenecks, to which Mr. Sivasailam responded that every route was surveyed only for one day but with four probe vehicles. Every hour in the day has a minimum of three data points.

Item 6: Update on the Household Travel Survey

Bob Griffiths announced that, as of January, 80% of the interviews from our respondents had been collected. 8,000 households have been recruited thus far and 7,000 households have been retrieved after their travel day. NuStats has a good quality control process, so the data staff have received is pretty clean. The contractor generally withholds the bad records to research and rework them to hopefully turn them into good records.

As of the third quarter, staff has begun the Non-Response Follow-up Survey (NRFS). First quarter data shows that we are getting hard to reach households by using a mailing address approach rather than just RDD. About 45% of households do not have a listed, land-based phone number matched to their address so the only way to reach them is by mail. Of the non-listed phone number group, 35% are cell phone-only households, and of these, about half live in two-plus unit buildings (either apartment or condo). These cell phone-only households tend to be younger and have somewhat lower incomes. By contrast, only 19% of households with land lines occupy two-plus unit buildings. 45% of the households without standard land lines are renters as opposed to home-owners, which contrasts with only 12% of those with landlines being renters. 12 percent of the households without land lines are zero-car households and only 6% of households with land lines do not own a car. The personal characteristics of households with or without landlines are very different. Households without land lines have a daily trip rate of 5 while those with land lines have a daily trip rate of 4. Staff is very pleased with the results, particularly for households without listed phone numbers, and the incentive has been instrumental in getting that level of participation of groups missed in the past.

Staff will be processing the data heavily throughout 2008 and hope to have data files ready in order for staff to begin the calibration of models by this time in 2009. Part of the data processing will be to do comparisons with the 1994 survey where possible and appropriate. For instance, staff will be able to look at dwelling type and the trip rates for households by different dwelling type.

The 7,000 completed households mentioned above do not include Howard, Anne Arundel, and Carroll Counties in Maryland since they have been taken over by BMC with their add-on. The expected target is 9,500 completed households without those counties and about 11,000 households including them.

A question was posed about whether there is sufficient data in the HTS to look at households living in TOD, or high density, mixed use communities, who are using alternative modes of transportation to get around. Mr. Griffiths responded that there should be rich examples of data about these communities because the design of the survey is to over-sample areas that are more mixed use and have higher densities. This time, in addition to the jurisdictions of Arlington, Alexandria, and the District of Columbia, staff has gone out into the suburban jurisdictions of Fairfax, Montgomery, and Prince George's Counties in order to pick up the areas within those counties that match the inner jurisdictions in terms of density. As the end of the survey nears, staff are determining how much of the resources will be spent on the consultant and are looking at opportunities to go into specific areas and do some additional samples if necessary. Staff will look at places such as Haymarket, U Street, and Tyson's Corner and make sure that we have enough samples to be able to say something about those areas. Additionally, Arlington did a 100 household add-on to the survey to look at the new developments along Columbia Pike, Rosslyn-Ballston corridor, and Shirlington to see what the people moving to the new condos and apartments are doing in their daily travel.

It was suggested that a panel study could be useful to see how respondent's travel behavior changes when they move to a different community. Unfortunately, putting that kind of survey into practice has proven difficult when it has been implemented because the surveys tend to be smaller and the changes tend to be minor among respondents and attrition is a problem. Portland abandoned their panel after 10 years because the changes were not enough to be able to use with their model. Guy Rousseau of Atlanta Regional Council did a 2-day travel diary for the Atlanta region. He would have preferred a one day diary because of the respondent fatigue. It is a trade-off between quality and quantity of data. Staff has not yet received all the data from the consultant, so not all control checks have been run. Staff is expecting a big delivery next week and will work on checking the data. Some of the data is a little too clean, for instance, the maximum trip time is 2 hours which is not expected in this region. When asked, the consultant responded that they are researching any trips longer than 2 hours to make sure they are reasonable. The contractor is aware of the congestion in this region and will not delete data despite long commutes beyond 2 hours. They also look for impossibly high trip speeds to find out what is wrong. At our next meeting, staff will share some of the control checks.

For the first quarter (which is completely delivered), staff has data for everybody in each sampled household. The contractor works this way even though the RFP only requires half the household members to be completed. If you will only accept households that are 100%, then the contractors will throw out households if they get one refusal and move on to the next household. Staff would rather keep working the household because we don't want to lose the larger households. Currently, the contractor is following the protocols, and as they close out the work and complete those larger households, they will deliver that additional data to us.

The activity based data will require some research to determine how best to use it. One advantage is that the questionnaire and the data collected is similar to what Atlanta did in 2001, so staff can benefit from their experience.

Quality controls on the geocoding are being handled in-house in conjunction with the contractor. Staff is cleaning address information and running it through an automated process against the Navteq database. Then individual locations that do not successfully geocode are examined to try and figure out why they did not code. Reasons involve errors in the address such as misspellings or incomplete information. The online mapping services such as Mapquest are very helpful along with the internet as a general tool to finding the correct address for specific destinations when the respondent did not provide the information – or enough information. By the time the geocoded locations are returned to the contractor the overall coded rate is around 97%, although that includes some trip ends that are out of the area, which will be coded to state and county. We will be working with the contractor to make sure everything goes back together seamlessly since BMC is also geocoding their portion of the survey. The geocoding results should be better than in the past.

Item 7: Traffic Counts and Regional Transportation Data Clearinghouse

Martha Kile gave a presentation concerning the traffic data that will be available in the version of the Regional Transportation Data Clearinghouse that is currently under development. Ms. Kile reviewed previous versions of the clearinghouse: prior to 2001 printed reports were used to populate volumes, volumes were recorded on several links, only AADT was included, the traffic volume file contained all years and link descriptive information, and the clearinghouse was distributed as an ArcView 3.2 project.

In the new version of the clearinghouse volumes since 2001 are populated only for the link on which the volume was taken. Staff used digital files indicating counting station location and matched each count station to the corresponding clearinghouse link using both spatial and attribute analysis. Staff also identified links that should be treated differently including multiple stations assigned to one link and facilities that report multiple parallel volumes. Both AADT and AAWDT were included where available, starting in 2005. The count type code now indicates both the source and vintage of count. The new application is being developed in ArcGIS which allows several tables to be linked, allowing descriptive information and traffic volumes to be stored separately.

Smoothing and averaging for mapping is no longer in the main data file which eliminates confusion of which volumes to use.

The new clearinghouse application will include the ability to query detailed volumes. Hourly directional volumes taken at standard counting locations are available for 2001-2006 from MD SHA and VDOT and for 2004-2005 from DDOT. Supplemental counts are available in some locations and for limited time periods. These include short term or turning movement counts from VDOT Northern Virginia, MD SHA, Montgomery County, and DDOT.

The ArcGIS clearinghouse application uses up-to-date GIS software that relies on a relational database. The application has a menu that allows for traffic volume queries by route, by year, and by Project-ID. The user can choose to view AADT, AAWDT or detailed volumes. The goals of this update to the clearinghouse were to make traffic volume data more accessible, more accurate, and more meaningful. Ms. Kile asked for people to let her know if they know of sources for additional traffic counts or if they have a need for additional functionality.

Mr. Milone noted that classification data would also be very useful in the clearinghouse. Mr. Hogan commented that metadata would be desirable so that more information about the nature of traffic counts is known. Ms. Kile responded that each annualized volume has a code that indicates the source of the volumes. A description can also be included for each file containing special counts that is linked as part of the "detailed volume" query. Mr. Griffiths reiterated that the clearinghouse only populates AADT and AAWDT with volumes that are reported as annualized volumes by states or local jurisdictions. Detailed and turning movement volumes are available only with a detailed volume query that links back to the raw data.

Ms. Kile added that there are three types of volumes available in the clearinghouse:

1) Annualized volumes (AADT and AAWDT);
2) Detailed hourly directional volumes for specific dates;
3) Special Counts – turning movement and other special counts in which the clearinghouse application would link to the source file.

Mr. Griffiths added that the clearinghouse addresses different count types that are available: continuous counts, current year short term annualized counts, and short term annualized counts growth factored from previous years. Some of the onus is on the analyst to know what types of counts he/she is looking at.

Ms. Howard asked if the station point files would be included as part of the clearinghouse application. Ms. Kile said that they would consider that suggestion.

Mr. Shapiro of VHB suggested that one third of all traffic counts are wrong. He asked what TPB was going to do for quality assurance. He said that even permanent stations have had volume estimates that are not correct. Ms. Kile responded that they are not second guessing the volumes that are reported by the states. This is a clearinghouse of

the volumes that are available. TPB is only making it available in one place to make it accessible to people. TPB staff can do a trend analysis to make sure that the volumes make sense over time, but they will not be checking each volume. Mr. Shapiro suggested that TPB consider some method of validation. Looking upstream and downstream can reveal errors that can make a large difference.

Mr. Griffiths added that an addition to the work program this year is the development of a metropolitan HPMS sample. As part of this process, staff will be going back to the raw counts and coming up with factors to better estimate volumes for particular links. Most HPMS systems are statewide. The factors take into account all roads of a particular type in the entire state. With this new system, staff will be able to look at just the Washington region and will be able to look back over time and flag counts that do not look right. This will enable staff to then go back and revise estimates.

Ms. Yuanjun Li of M-NCPPC-Montgomery noted that BMC has a web-based system. She suggested that TPB link to the BMC system. She also asked if the volumes are directional. Ms. Kile responded that staff does not have directional volumes for AADT and AAWDT. The hourly volumes that are returned from the detailed volume query are directional. Ms. Li suggested that the TPB application use time periods – AM/PM and off peak. Ms Kile responded that staff could develop time periods and show the detailed data that way instead of hourly. Ms. Li suggested that there should be a code indicating where the volume came from. Ms Kile responded that the CT code for each volume gives the source and the history of each volume. Mr. Griffiths added that staff could add a comment field which could be populated for suspect links that have been researched.

Item 8: Adjourn

Chairman Rawlings turned the subcommittee chairmanship over to Mr. David Kline, Fairfax County Department of Transportation. Mr. Kline in turn presented Mr. Rawlings with a plaque expressing the TPB's appreciation for his service as chair of the TPB Travel Forecasting Subcommittee during the past year.

The meeting was adjourned at 11:58 AM.

COG/TPB Travel Forecasting Subcommittee
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Meeting of January 18, 2008

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