Highlights of the TPB Travel Forecasting Subcommittee Meeting
Held on Friday, January 23, 2004

Bill Mann of Virginia Department of Transportation chaired this meeting.

Item 1. Approval of November 21, 2003 Meeting Highlights

The highlights were approved as written.

Item 2. Status Report on Transportation Research Board (TRB) Review of TPB Travel Demand Modeling

Jim Hogan informed the subcommittee that TRB requested a "no cost" extension of their contract until the end of May 2004. The second letter report is anticipated to be available at the end of April 2004. He explained that TPB staff prepared additional information on certain committee observations and on future plans for model upgrades and data collection which was e-mailed to the TRB Committee on December 24, 2003. The TRB Committee will utilize this additional information in preparing its second and final letter report. He also noted that the second letter report from the TRB Committee will not have a direct impact on the proposed FY2005 UPWP that the TPB approves in March 2004. Ron Kirby added that the TRB Committee's second letter report will focus on TPB's future work program and might lead to amendments to the FY2005 UPWP after it is adopted in March 2004.

Item 3. Review of Proposed Work Elements for the TPB Models Development Program to Address Concerns Raised by the TRB Committee First Letter Report and to Advance the State of Modeling practice in the Metropolitan Washington Region (Dec. 24, 2003 transmittal to the TRB Committee)

Ron Milone distributed a copy of the *Descriptions of Proposed Work Elements for the TPB Models Development Program to Address Concerns Raised by the TRB Committee First Letter Report and to Advance the State of Modeling Practice in the Metropolitan Washington Region*. He explained that an appendix was also transmitted on December 24, 2003 to the TRB Committee documenting research that TPB staff has completed. The appendix included:

1. Appendix A – Regional travel forecasting models: A survey of the modeling practice at 11 medium-sized Metropolitan Planning Organizations in the U.S.
2. Appendix B – Highway and Transit Validation
   - Maryland Inter County Connector (ICC) Corridor – Base Year 2000 Validation Using Version 2.1 Travel Demand Model.
   - October 7, 2003 letter from Thomas Harrington (Washington Metropolitan Area Transit Authority) to Ronald Kirby, regarding comments on TRB review of MWCOG travel demand modeling procedures.
3. Appendix C – Executive Summaries of two reports from the Baltimore region:
   - Development of Commercial Vehicle Travel Model.
   - Development of Truck Models.
4. Appendix D – Use of Adjustment Factors in the Version 2.1C Model.
5. Appendix E – Staff summary of running the Version 2.1C Model with Additional Iterations.
6. Appendix F – A review of the airport choice and ground access mode choice models.
7. Appendix G – Questions on Planned New Regional Household Travel Survey for TRB Committee.

He briefly discussed the TPB's model development program. TPB's model development program is built along 5 'tracks' corresponding to application (short-term improvements), methods development (or long-term improvements), research, data collection, and maintenance. Application improvements are associated with TPB's currently adopted travel model known as the Version 2.1/TP+ Release C. The work program description focuses most intensively on applications track activities. The activities include sensitivity tests, validation checks, and enhancements that could potentially lead to parameter adjustments and/or structural modifications to the Version 2.1 C model. Mr. Milone reviewed some of the work elements in greater detail. He explained that the work performed in the ICC corridor illustrates that significant improvements

can be realized in the regional model's 'goodness of fit' statistics such as estimated-to-observed travel volumes, when more detailed validation procedures are executed. To illustrate this point, staff computed regional root mean squared error (RMSE) statistics to assess the overall impact of these corridor validation refinements. The overall regional percent RMSE improves from 52% in the original model to 47% with the model validated for the ICC corridor.

Bob Griffiths briefly discussed activities in Track 4 (data collection). These activities are designed to support further refinement and development of COG/TPB travel forecasting models. They include:

- Regional Household Travel Survey;
- Auto External Survey;
- Analysis of Census Journey to Work Data; and
- Regional Transportation Data Clearinghouse.

Questions & Comments

Bill Mann asked if RMSE improved in Virginia as a result of the work done in the ICC corridor. Mike Clifford responded that some of the updates affected the entire region, not just the ICC corridor. As part of the SIP work, research was done on speeds and capacities for the post processor. This work was on-going while staff finalized the Version 2.1 C model. The updates were not available for testing in the demand model at that time. Ron Kirby added that staff is working towards a Version 2.1D model which will incorporate improvements from the ICC study, along with other improvements reflecting comments by the TRB Committee. Ron Milone added that after the ICC validation work, it is evident that performance improved in Montgomery County and neighboring counties as well.

Eric Graye asked if the incremental refinements of the Version 2.1C model (i.e. Version 2.1D, Version 2.1E, Version 2.1F, etc…) would be released to outside users in accordance with the multi-year staging of models development activities (Figure 1 of *Descriptions of Proposed Work Elements for the TPB Models Development Program to Address Concerns Raised by the TRB Committee First Letter Report and to Advance the State of Modeling Practice in the Metropolitan Washington Region.)* Ron Milone replied that as soon as the refined model is adopted by the TPB, it will be released to outside users via COG's website.

Bill Mann asked if the zone system would be changed next year. Jim Hogan replied no, although staff will start the process of migrating to a new zone system. The last effort to update the zone system took two years.

Bob Moore asked if transit modeling and network enhancements will be included in the Version 2.1D model. Ron Kirby replied yes.

David Kline asked if TPB staff intends to add 'full transit networks' onto the Version 2.1D model CD. Ron Milone responded that you have the ability to build transit networks with the current Version 2.1C model CD. Primary mode choice transit networks are available and have been since the Version 2.0 model.

Caijun Luo asked if park-and-ride lots were available on the Version 2.1C model CD. Jim Hogan replied that park-and-ride and mode of arrival are sub-modeling issues. Park-and-ride links in the primary mode choice network are used to hook up every zone in the region by auto-connect and/or walk-connect access. That is not the same as getting a more detailed park-and-ride assignment. Detailed transit information is not estimated in the primary model. The addition of transit sub-models will result in more detailed transit information (e.g., Metrorail-related trips).

Michael Replogle commented that the short term assignments are to try to refine the calibration of the Version 2.1C model. He asked if a newly refined model was available for distribution. Ron Kirby reiterated that the Version 2.1C model is the current version of the model that is available. Refinements to that model are underway.

Michael Replogle also commented that since the model has been used for production runs for forecasting, wouldn't it be prudent to make that model available to the TFS members now in order to assure that there is time for adequate public oversight over the modeling process that has been questioned by the National Academies of Science? Ron Kirby responded that the Version 2.1D model is not just for the ICC study. As

we refine this model and make improvements, it will become the regional model, but as of now the regional model is Version 2.1C and it is accessible to everyone. Subsequent versions of the model will go out to the public as new results are available.

Michael Replogle reiterated that the best way for serious progress is full disclosure of the model in a timely manner. Validation is very difficult for the members of the Tech Committee to evaluate in absence of the full release of base year modeling validation. He asked the TFS to adopt a more informal method of disclosing the model. Ron Kirby replied that TPB has received a formal request from Michael Replogle's group on this issue, and a formal response under the signature of the chairman of the TPB will be sent shortly.

Michael Replogle commented that the Longitudinal Panel Survey data has never been used in actually improving the model in the region. Other regions have used similar surveys and similar sample sizes to do modeling. Has this group had a discussion about what information can be taken from the Longitudinal Panel Survey and particularly how that might help us in this region to improve the Version 2.1C model or the Version 2.1D model in a much more timely fashion. Bob Griffiths replied that data has been collected to make further enhancements to the model. Without having CTPP data or detailed 'filler' information (i.e. households and person characteristics) you have to be very careful on how you 'weight' the Longitudinal Panel Survey data. Michael Replogle also commented that other regions have used the Longitudinal Panel Survey to calibrate and specify policy rich and policy sensitive models that are based less on use of K factors and adjustment factors in areas of fine tuning. He questioned the models development work program and said that there was no specific move to an activity based or tour based model. Ron Kirby disagreed, and specifically referenced "Item 2.B Tour Based and Activity Based Models" from the *Descriptions of Proposed Work Elements for the TPB Models Development Program to Address Concerns Raised by the TRB Committee First Letter Report and to Advance the State of Modeling Practice in the Metropolitan Washington Region.*

Item 4. Proposed FY2005 UPWP Elements in Models Development, Network Development, and Travel Surveys

Jim Hogan and Bob Griffiths distributed a copy of the *Proposed FY2005 UPWP Work Elements in Network Development, Models Development, and Travel Surveys.* Mr. Hogan began the presentation with a brief outline of the proposed network development and models development work programs. The proposed network development work program activities are:

- Development of TP+ highway and transit networks in Version 2.1 model format using information gathered electronically and/or in paper format;
- Compilation of the latest available transit route and schedule information in the peak and off-peak formats required for the travel demand models. A set of TP+ networks for highway and transit will be coded from this information depicting current year conditions; and
- Build FY2006-2011 TIP and Plan Conformity networks for analysis years 2006, 2015, 2025 and 2030.

The proposed models development work program activities are:

- Complete the migration of Version 2.1 travel demand transit sub-models to the new TP+ software platform;
- Continued participation on a national AMPO Subcommittee established to review and discuss practices in travel demand modeling;
- Continue development of a more formal airport access demand model, incorporating mode choice;
- Implement recommendations of the panel review of the TPB travel demand modeling process conducted by the Transportation Research Board (TRB) of the National Academies;
- Continue to review best practice in travel demand modeling through participation in the Travel Model Improvement Program (TMIP), TRB, and literature reviews; and
- Provide documentation for all products from the models development program.

Bob Griffiths briefly discussed the travel surveys work program which will consist of:

1. Household Travel Survey
    - Provide data, documentation, and technical support to users of 1998-2003 Longitudinal Household Travel Survey data files. Update user documentation as required;
    - Complete design of large sample methodologically enhanced activity-based regional household travel survey; and
    - Begin data collection for methodologically enhanced activity-based regional household travel survey, if additional funding can be identified.
2. Census Journey to Work Analysis
    - Tabulate and analyze Census Transportation Planning Package (CTPP) 2000 TAZ-to-TAZ worker flow data by means of transportation, income, vehicle availability and travel time;
    - Build TAZ-level data file for travel model validation and refinements efforts by applying appropriate Home-Based-Work (HBW) conversion factors to the CTPP 2000 TAZ-to-TAZ worker flow data;
    - Review and suggest refinements to the current 2191 TAZ area system using the CTPP 2000 data tabulations and analyses; and
    - Prepare a technical report summarizing major findings of the CTPP 2000 Journey to Work analysis.

Mike Clifford commented that modeling for an eight-hour zone nonattainment boundary will be a requirement, and after April 2004 we will have one year to do conformity. If conformity is not completed, the plan will lapse.

Bill Mann asked how much of the budget goes to staff and how much goes to consultants. Ron Kirby replied that there is a more detailed table in the UPWP defining budgets for staff and consultants.

Item 5. Update on the Household Travel Survey

Current plans are to conduct a major new regional household travel survey in the spring and fall of 2005. It is anticipated that this survey will be very similar to the 1994 COG/TPB Household Travel Survey and designed to support further refinement and validation of the COG/TPB Version 2.1 four-step travel forecasting model. Data collection for the 2005 COG/TPB Survey is planned to occur in two phases. The first data collection phase is to be conducted in May and June of 2005 and the second phase in September and October.

A completed sample size of 2,500 households would be obtained in each survey data collection phase for a total sample size of about 5,000 households. This sample will be stratified by major jurisdiction with the total number of sample allocated to each jurisdiction roughly proportional to each jurisdiction's relative share of regional households. Slight exceptions to this proportional allocation of survey samples will be in the District of Columbia and in lower density outlying semi-rural jurisdictions.

A Computer-Assisted Telephone Interviewing (CATI) survey methodology is planned for the 2005 Household Travel Survey. Random digit dialing techniques (RAD) will be used to develop a geographically stratified telephone sample of households to be contacted. The CATI travel survey methodology planned for the 2005 COG/TPB Household Survey is very similar to that used in the 1994 COG/TPB Household Survey, the 1998-2003 COG/TPB Longitudinal Household Travel Surveys, and the 2001 National Household Travel Survey (NTHS).

Item 6. Discussion of Possible Merging of Travel Forecasting Subcommittee and Travel Monitoring Subcommittee

Daivamani Sivasailam distributed a memorandum entitled *Possible Merger of the Travel Monitoring and Travel Forecasting Subcommittee Activities*. He explained that the Travel Monitoring Subcommittee of the TPB Technical Committee provides oversight of two main areas of the travel monitoring program which

are the cordon count program and the congestion monitoring program. Its membership is comprised of state and local traffic engineers, planners and some consultants.

The cordon count program includes the metro core, volumes on radial facilities crossing the beltway (i.e., the beltway cordon), and regional HOV monitoring. During any one year, only one study is conducted and reported. The congestion monitoring program consists of the freeway off-peak period congestion study repeated every five years, and the arterial highway congestion monitoring project which takes three years to complete one full round.

The Travel Monitoring Subcommittee has not met in over a year due to lack of more than one agenda item for any one meeting. The review of subcommittee work activities has been conducted by mail/e-mail. Since most of the data collected by the travel monitoring program is used extensively in models development, staff had an internal discussion and came to the conclusion that oversight of the activities could be provided by the TFS. At the maximum the TFS agenda will increase by two or three items in a year. This idea was discussed at the January Technical Committee meeting and the members were favorable to the idea. If this proposal is acceptable, the merger would take place in FY2005 starting July 1, 2004.

Bill Mann commented that merging the two subcommittees would be a good idea.

Tom Harrington asked if there were other subcommittees that could be merged with the TFS. TPB Staff replied no.

Bill Mann asked subcommittee members around the table to provide an update on regional studies. Representatives from Fairfax County, Virginia Department of Transportation, Maryland State Highway Administration, and Washington Metropolitan Area Transit Authority provided subcommittee members updates on ongoing and planned regional studies projects.

The next TFS meeting will be held on March 19, 2004.