

**Highlights of the TPB Travel Forecasting Subcommittee Meeting
Held on March 23, 2007**

Item 1: Approval of January 19, 2007 Meeting Highlights

The highlights were approved as written.

Item 2: Version 2.2 Travel Demand Model Sensitivity Analysis

Ron Milone distributed a copy of his slides entitled “Version 2.2 Travel Demand Model Sensitivity Analysis”. The Version 2.2 model was released at the January TFS meeting and is proposed for use in the upcoming Air Quality Conformity cycle. Mr. Milone stated no formal comments have been received by TPB thus far.

Primary enhancements of the Version 2.2 model include an explicit commercial vehicle model, a reduction in the assumed growth of traffic at external traffic stations, a revised traffic assignment methodology, and updated demographic models. He added that the model had a reduced number of model adjustments, along with other improvements and enhancements. Model runs were supported by the currently adopted Round 7.0a Cooperative Forecasts.

Mr. Milone stated that four tests of the Version 2.2 model were executed for the year 2030, based on varying the highway system (CLRP vs. CLRP with expanded freeway capacity) and the external traffic assumption (previous/high level of external traffic vs. the revised/moderated level of external traffic). The ‘expanded’ freeway capacity was substantial, about 512 lane miles of added freeway capacity to the CLRP (just a hypothetical scenario). The specific model run numbers are shown below.

	Original/High External Traffic	Revised/Lowered External Traffic
2030 CLRP	Run 1	Run 2
2030 CLRP with Expanded Capacity	Run 3	Run 4

As expected the lowest modeled VMT (199.8 million) resulted from Run #2 which reflected the least travel demand coupled with the least amount of road capacity. The highest VMT (218.1 million) resulted from Run #3 which reflected the most travel demand coupled with the highest amount of roadway capacity. The VMT resulting from runs 1 and 4 fell in between these levels (211 million and 206 million, respectively), again, as one would expect. Mr. Milone shared highway speed and screenline comparisons of the tests, which produced reasonable results.

Mr. Milone said the TPB would continue with additional tests of the Version 2.2 model and encouraged input from TFS members. Results of the additional model tests would be shared with the group in May.

Questions and Comments

Mr. Shapiro suggested dynamic validation as part of the additional sensitivity runs. Dynamic validation involves the removal of an important link in the highway network, such as a river crossing, for a base year. This technique has been used in other areas to assess models behavior to network changes, in isolation. He also asked if the external growth between years 2000 and 2030 follows the same curve for actual external growth between years 1990 and 2000. Mr.

Milone replied that the rate of growth reflected in the revised external forecasts will slow between 2000 and 2030. The Round 7.0a Cooperative Forecasts indicate diminishing growth.

Mr. Shapiro also asked if there is a relationship between external trips and employment. Most of the people who travel to the Washington region from outside do so for commuting only, and the proportion of external travel for work, perhaps, should be increasing over time. He suggested that increasing the share of external commuters might better address the balance of future jobs and households in the region. Mr. Milone replied that the share of external work travel to total external travel is currently held constant, based on observed external auto survey information.

Mr. Kirby commented that employment growth requires some degree of household growth. There must be consistency between the two. Recent discussions with the planning directors suggests that housing forecasts are too low and, perhaps, the job forecasts are too high in their current forecasts. There may be some changes in Round 7.1 to mitigate this problem. The notion that an unlimited supply of commuters from outside of the region will keep pouring in to achieve job – household balance is not sound.

Item 3: Status Report on the Enhanced Arterial Highway Congestion Monitoring Program

Daivamani Sivasailam distributed a copy of his slides entitled “Status Report on the Expanded Arterial Highway Congestion Monitoring Program”. The existing arterial highway congestion monitoring program has been in existence for eight years. The program monitors congestion on the arterial highways that are a part of the national highway system. The objective of the new program is to have a more comprehensive coverage of the highway system and a better representation of travel conditions primarily using volunteer drivers. Data will be collected on all commuting days regardless of weather and/or incidents and will be collected between origin and destination on all facility types including collector, arterial and freeway travel.

Six key tasks shape the monitoring program. They include:

1. Establish facilities to be monitored.
2. Develop approach to provide coverage of facilities to be monitored
3. Finalize hardware/software for data collection, protocols, training in the use of equipment, data collection, equipment return, data transfer and analysis.
4. Recruit volunteers from Commuter Connections Network database along with state and local government employees.
5. Initiate data collection pilot program
6. Review pilot program experience this fiscal year and develop details for the full program to be conducted next year.

In the coming months, the pilot program will be initiated and lessons learned and recommendation for the full program implementation will be reported to the committee.

Questions and Comments

Ms. Ratcliff asked if HOV lanes are included in this study. Mr. Sivasailam replied yes.

Mr. Shapiro commented that there is an interesting piece of data derived from this. There is always a question of how many people crossing the core cordon are actually going through the core cordon. To get a better sample a different approach would be the use of HOT lanes and EZ passes. Putting EZ Pass readers at different locations will allow you to determine travel times as

well as origin and destination. Mr. Sivasailam agreed with this approach and with Virginia joining the EZ Pass program the region can collect good data if sufficient numbers of EZ Pass readers are placed strategically.

Item 4: 2006 Central Employment Core Cordon Count Report

Patrick Zilliacus presented a copy of his slides entitled “2006 Central Employment Core Cordon Count”. He explained that the cordon line is a series of stations around the downtown area of the District of Columbia and Arlington County, Virginia. These one day counts (including the central Potomac River crossings) are collected from 5:00 a.m. to 10:00 a.m. inbound and from 3:00 p.m. to 8:00 p.m. outbound. Metrorail, Metrobus, Downtown Circulator, Fairfax Connector, DASH, ART, MARC, VRE, and commuter bus data are collected as well.

Mr. Zilliacus briefly discussed preliminary findings of the cordon count. They included:

- Continued decline in car-pooling,
- Little change in single-occupant vehicles,
- Slight increase in transit patronage, and
- Little change in vehicular traffic crossing the cordon line.

The Central Potomac River Bridge Crossing count is supplemental to the cordon count. Bridges were counted in both directions during both a.m. and p.m. periods as was done in 2002. Mr. Zilliacus stated that comments to the report are welcomed and should be submitted by March 30, 2007. The report is available online at www.mwcog.org.

Questions and Comments

Mr. Mann commented that this report suggests that VMT has been flat for the last fifteen years across the cordon line and into the District. Mr. Zilliacus replied that VMT going in and out of the District has not changed a whole lot. Every street in the District was not measured; however, “downtown” Arlington is included in the core cordon.

Mr. Mann also questioned if households have been flat for the last fifteen years in the core cordon. Mr. Zilliacus replied that households were not surveyed as a part of this study.

Mr. Shapiro commented that the proportion of households to jobs in this region may have risen significantly in the last 10 years. The District may have a higher percentage of people walking to work than New York City, and that is going to affect the number of people crossing the cordon. Another thing you need to look at is that it is relatively flat for that 3-hour period because capacity has been reached in most of the corridors. It is difficult for additional people and/or vehicles to get into the core during the 3-hour peak. It might be an interesting observation to look at how many people are entering and leaving the core over the five-hour period and see if that has changed over time.

Mr. Griffiths suggested that for the next round of core cordon counts, the cordon line should be expanded further into parts of Northern Virginia because the current study is not capturing the growth in Ballston. Mr. Zilliacus stated that the core cordon line could be changed with input from this committee. There is value in maintaining the original core cordon for time series comparisons while moving to an expanded core cordon in future.

Mr. Mann asked if Figure 1 can be broken out by state. Mr. Zilliacus replied it would be easy for recent years, but going back to 1975 would be a challenge. Mr. Mann commented that data starting from 1990 would be sufficient.

Item 5: Update on Household Travel Survey

Mr. Griffith stated that the HTS began the last week of January. Several meetings were conducted with BMC and they proposed extending the HTS survey area to include Baltimore County, Baltimore City and Harford County. They also proposed conducting 1500 travel interviews in the second quarter of the HTS. They plan to deploy GPS add-ons to 400 households. Since the biggest cost with using the GPS add-on is sending and retrieving the units to and from the households, they suggested obtaining two to three days worth of GPS data rather than just one which will be a huge benefit. MDDOT has also requested an additional 400 GPS add-on deployments in Montgomery County, Prince George's County, Frederick County and Charles County. That work will also be done in the second quarter of this calendar year. Arlington County has requested an additional 100 household interviews along the Columbia Pike corridor. WMATA plans to conduct the Metrorail survey in the spring. That data will be geocoded to COG/TPB's current TAZ.

Item 6: Progress on Developing a Nested Logit Mode Choice Model

Mark Moran distributed a copy of his slides entitled "Status of Nested Logit Mode Choice Model Implementation". He gave a brief overview of the presentation which included model structure (existing and proposed); research regarding the application of nested logit models by MPOs; and the incorporation of the AECOM NL mode choice model into the speed feedback loop of the TPB travel model. He stated that the structure of the current mode choice model is a sequential multinomial logit (MNL) which includes five modes. The structure of the new mode choice model, the nested logit (NL), includes fifteen modes.

Mr. Moran briefly discussed three different ways to apply the NL mode choice model with respect to the COG/TPB travel model:

1. Apply NL mode choice model as a post process step. This structure has been used in several project planning studies.
2. Apply NL mode choice model as part of the COG/TPB travel model. This structure is being implemented by COG/TPB staff. The NL mode choice model is placed inside the speed feedback loop.
3. Apply NL mode choice model both as part of the speed feedback loop and as a post process. This structure is being proposed by COG/TPB staff for FTA Summit work (fixed trip tables).

Mr. Moran explained that the purpose of the 2005 TRB review of modeling practice at MPOs in the U.S. was to determine the state of the practice in travel modeling. 381 MPOs were surveyed and 72% of large MPOs use a NL mode choice model for home-based work (HBW) trips. 94% of large MPOs assign transit trips and many feed back highway and transit times. Note that the COG/TPB Version 2.1 and 2.2 models feed back both peak and off-peak highway and transit times to trip distribution and mode choice. Peak period transit accessibility is fed back to demographic submodels. He stressed that the question to ask is how commonly are NL mode choice and speed feedback used together in the same model.

Vanasse Hangen Brustlin, Inc (VHB) was hired as a consultant for COG/TPB to review NL mode choice models and speed feedback at 12 MPOs deemed to be peers of COG/TPB. A summary of their research is as follows:

- There is a wide variation in the application of NL mode choice models in a speed feedback loop.
- There is also a wide variation in the issues and problems identified.
- Of the 12 MPOs identified by VHB as COG/TPB peers:
 - 10 are using NL mode choice (2 are using multinomial logit, MNL)
 - 9 are using NL mode choice with speed feedback (but only 6 feedback both highway and transit. Two feedback highway only).
- Therefore, although NL mode choice is the norm for large MPOs, only half of the peer MPOs surveyed are doing what COG/TPB is trying to do (i.e. NL mode choice with feedback of both highway and transit skims).

Mr. Moran stated that the NL mode choice model is not calibrated and the results are not final. In a speed feedback context, the mode choice model affects all other steps of the model. The pattern of modal trip changes between iterations is what is important, not the final results. In conclusion, the NL mode choice model can be implemented mechanically into the regional model; however performance is still being investigated. NL mode choice outputs change through iterations of the speed feedback loop. There is oscillation with reasonable convergence at the regional level. The NL output compares well with the existing MNL mode choice model output, but there appears to be an overestimation of car occupancy. However, the final calibration has not been completed.

In the near future staff plans to:

- Continue to examine and summarize the output from the Version 2.2 travel model with NL mode choice in speed feedback loop;
- Address overestimation of car occupancy either before and/or after mode choice calibration;
- Calibrate NL mode choice model and test in speed feedback;
- Streamline model code (if time permits); and
- Summarize results of final calibrated model.

Question and Comments

Ms. Ratcliff asked why 2002 data was used for the Nested Logit model instead of the 2000 data. Mr. Moran replied that AECOM used a combination of WMATA's 2002 Metrorail Survey and 2000 Metrobus Survey (this data was factored up to 2002) to calibrate their initial work. 2002 data was also used to include Metrorail's expanded green line.

Ms. Li asked if the AECOM structure of the model was changed. Mr. Moran replied the structure is the same, but different coefficients were used.

The next meeting of the TFS is scheduled for May 18, 2007.

COG/TPB Travel Forecasting Subcommittee

Sign-In Sheet

Meeting of March 23, 2007

Name	Agency/Affiliation	Telephone Number	Email
MARK Rawlings	DDOT	(202) 671-2234	MARK.RAWLINGS@DC.GOV
Ron Milone	COG/TPB	(202) 962-3283	rmilone@mwcof.org
JIM HOGAN	COG/TPB		
Wanda Hamlin	COG/TPB	(202) 962-3217	whamlin@mwcof.org
ROBERT SNEAD	COG/TPB	(202) 962-3324	RSNEAD@MWCOF.ORG
JOE DAVIS	COG/TPB	(202) 962-3337	
Phil Shapiro	VHB	(301) 562-9433	PShapiro@VHB.COM
Jeff Bruggeman	AECOM	301-282-5601	Jeffrey.Bruggeman@aecomconsult.com
MANISH JAIN	AECOM	703-682-5071	MANISH.JAIN@AECOM.COM
Yuanjun Li	MNCPPE - Montgomery Co.	301-485-4579	Yuanjun.Li@mncppe-mc.org
Elingbete Harper	for PB	919-656-6991	eaharper@earthlink.net
Diane Ratcliff	MTA	410.767.3771	dratcliff@mta.maryland.com
Hamid O. Humeida	COG/TPB	202-962-3325	HHUMEIDA@MWCOF.ORG
DUSAN VUKSAN	COG/TPB	202-962-3279	dvuksan@mwcof.org
Clara Reschovsky	COG/TPB	202 962 3332	creschovsky@mwcof.org
Meseret Seifu	COG/TPB	202 962 3372	mseifu@mwcof.org
JAAK PEDAK	FARMER DOT	703-324-1171	jaak.pedak@farmercounty.gov
Cal Bauer-Anderson	Environ. Def	202-572-3410	cbauer-anderson@ed.org
G. Toa GIARDINI	COG/TPB	202-962-3317	
Jim CHANDLER	Town of LEESBURG.	703-737-7920	JCHANDLER@LEESBURGVA.GOV
Jinchiul (JC) Park	COG/OTF	202-962-3320	jpark@mwcof.org
Greg Goodwin	COG/HSPS	(202) 962-3274	ggoodwin@mwcof.org
William Bacon	COG/OTF	202-962-3235	wbacon@mwcof.org
Jane Posey	COG/TPB	202 962-3331	jposey@mwcof.org
Tony Hofmann	Baker	410-689-3400	ahofmann@mbakercorp.com
Laura McWetman	Cambridge Systematics	301-347-0100	lmcwetman@camsys.com
HAROLD FOSTER	MNCPPE/PG	301-952-4947	Harold.Foster@ppd-mncppe.org
MIKE CLIFFORD	COG/TPB	202-962-3312	mclifford@mwcof.org
RON KIRBY	COG/TPB	202-962-3310	rkirby@mwcof.org
Bahram Jamei	VDOT - NOVA	703-383-2214	Bahram.Jamei@VDOT.Virginia.gov
Bill Mann		383-2211	BILL.MANN@VDOT.VIRGINIA.GOV
BAB GRIFFITHS	COG/TPB	202-962-3280	bsg@mwcof.org

