

Highlights of the TPB Travel Forecasting Subcommittee Meeting Held on May 21, 2004

Bill Mann of Virginia Department of Transportation chaired this meeting.

Item 1: Approval of March 19, 2004 Meeting Highlights

The highlights were approved as written.

Item 2: TRB Committee Second Letter Report and TPB Staff Comments

Ron Kirby distributed a handout entitled "Briefing on Transportation Research Board Review of TPB Modeling Procedures and TPB Staff Comments". He began his presentation with a brief overview of the TRB Committee review process. He explained that COG/TPB staff drafted a letter to the TRB Committee to provide the views of TPB staff on certain key aspects of the second letter report.

Mr. Kirby explained that the TRB Committee identified six topics which offer potential improvement. These topics include:

- Improving model validation;
- Truck and commercial vehicle travel;
- Bus network characterization;
- Use of adjustment factors;
- Speed feedback incorporating mode choice; and
- Traffic speed and volume estimation for air pollution emissions estimation.

Mr. Kirby further explained that there will be a review of the proposed work program activities for the TPB models development program for FY2004-2008 in light of the completed TRB review and available planning funds. COG staff will provide recommendations to the TPB on refinements to the FY2005 UPWP and on future work programs.

In closing, Mr. Kirby stated that the TRB review process was a very productive and valuable undertaking. Some refinements to the Version 2.1 C model recommended by the TRB Committee are being incorporated into the Version 2.1 D model to be used for conformity analysis for the 2004 CLRP and FY2005-2009 TIP. Other refinements will be incorporated into future versions of the TPB model as time and resources permit. Lastly, the TRB review has helped stimulate the U.S. Department of Transportation to fund TRB to conduct a national synthesis of travel demand modeling practice, and to support other short-term workshops on specific topics.

Questions & Comments

Bahram Jamei asked if TRB will publish a primary report. Ron Kirby replied no. The TRB Committee published two letter reports dated September 2003 and May 2004 and will not publish a primary report.

Michael Replogle stated that he appreciated the work staff has done to address issues raised by the TRB Committee. The TRB Committee's second letter report provides good information on where we are today with the state of modeling practice. He added that issues of time-of-day, peak spreading and pricing are central issues in the public policy decision arena and there are some

critical challenges posed in using the current travel models to evaluate the questions being asked. The TRB Committee's reports help retain a clearer picture of what the model can and cannot do. He added that the TRB Committee did not address non-motorized transportation and pedestrian friendliness. He urged that the TRB Committee's report is not the 'be all – end all' statement on all the issues that really need to be addressed. This new analysis reinforces concerns raised about the TPB model when it is compared to the AM and PM traffic counts entering and exiting the core of the Washington, DC region. These comparisons have been off by 20 to 40 percent in both 1994 and 2000. There are serious misestimates of observed directional peak and non peak traffic counts which suggests that the estimation of travel time by auto and transit travel time in the base year calibration is seriously off. To have errors of that magnitude be the basis for calibrating the model suggests real caution is needed as this model is applied to future forecasts. He also commented that there is a very robust time-of-day traffic count database available that was developed by Montgomery County. The database is composed of MSHA's eighteen permanent count stations, intersection turning movements and count data compiled into a time of day directional count database for Montgomery County, along with data from other jurisdictions. He commented that there was an analysis for permanent count station time-of-day data in the Version 2.1C model, and it did provide some useful indicators of the model performance on a directional basis for AM and PM peak. The Version 2.1C model validation data showed that there were some important problems that need to be addressed. Mr. Replogle asked that some analysis be presented on the Version 2.1D data as soon as possible.

Ron Kirby commented that an email was sent out to solicit traffic count data from local jurisdictions. That email along with a memorandum was written by Michael Freeman of COG staff, and if TFS members have local data in addition to the HPMS that may be appropriate for use in the model update, they should contact Michael Freeman.

Item 3: Review of a Proposed Technical Adjustment to the Base Year and Forecast Employment for Certain Jurisdictions in the TPB Modeled Area

Bob Griffiths distributed a memorandum entitled, *Travel Model Employment Data Adjustment Factors*. He informed the subcommittee that at the April 2, 2004 TPB Technical Committee meeting staff presented an analysis comparing recently released 2000 Census Transportation Planning Package (CTPP-2000) at-place worker tabulations with Cooperative Forecasting Round 6.4 Base Year Estimates for 2000 by jurisdiction. This analysis showed systematic jurisdictional differences in Round 6.4 base year employment estimates relative to independently derived CTPP 2000 estimates. The primary reason for these systematic differences was that jurisdictions in the Baltimore region and several other Maryland jurisdictions use BEA-based employment data to develop their base year employment estimates and jurisdictions in the Washington region mostly used ESA-202 and decennial Census data to develop their base year employment estimates.

The systematic jurisdictional differences in base year 2000 employment estimates identified in this analysis were on the order of 20% or more. Staff explained that these differences arose primarily from the different data sources used and the way in which these different data sources defined and measured employment. Because these systematic differences could significantly skew the pattern of trip origins and destinations generated by the travel demand forecasting models used by the TPB, staff recommended that a technical adjustment be made to the employment data when running these transportation models. The members of the Technical Committee agreed that a technical adjustment to account for these systematic differences was needed, but asked staff to come back at the next meeting with a specific recommendation on how this technical adjustment should be made.

In the last few weeks, staff has refined the analysis and comparison of CTPP 2000 derived at-place employment estimates with the Cooperative Forecasting Round 6.4 Base Year Estimates for 2000 and extended this analysis to all jurisdictions in the TPB modeled region. The refinement of this analysis included the use of jurisdiction-specific multiple-job holding rates derived from COG/TPB Household Travel surveys and the addition of a number of jobs held per multiple job-holder factor. Based on this analysis, staff recommends that the CTPP-derived Travel Model Employment Data Adjustment Factors be used in running the regional travel demand forecasting model to account for systematic differences in the way employment is defined by the data sources used by different jurisdictions in developing their employment estimates and forecasts. This recommendation is made for the following reasons:

- The CTPP 2000 data provides a consistent, unbiased data source across all jurisdictions in DC, MD, VA and WV;
- The CTPP 2000-derived employment data provides estimates of at-place employment for a common reference point in time (the week before the Census) and ensures an inherent consistency between base year population, household, worker and job estimates. All other employment data sources are subject to at least some level of double counting;
- The CTPP 2000-derived employment data, with the multiple job holding adjustment, provides a good estimate of self-employment and at home employment that is not available from wage and salary employment statistics, but is not subject to the potential overstatement of the number of self-employed proprietors for a specific reference point that is inherent in the BEA methodology;
- On average, the CTPP 2000-derived employment estimates are slightly higher than the 2000 base year estimates based on the ESA-202 data and decennial census data, but lower than those based on the BEA methodology;
- Montgomery County's 1997 Census Update Survey validates COG/TPB Household Travel Surveys estimate of the multiple job holding rate and the CPS-derived estimate of jobs per multiple job-holder;
- Use of CTPP-derived base year employment estimates for travel model validation and simulation is accepted practice at most large MPOs in regions with a population of 1 million or more; and
- Use of the CTPP-derived employment data adjustment factors may reduce and lessen the need for K-factors in the TPB's Version 2.1 D travel demand forecasting model.

Mr. Griffiths concluded that it is recommended that the CTPP-derived Travel Model Employment Data Adjustment Factors be applied as scalars across all transportation analysis zones (TAZs), employment types and forecast years within a jurisdiction when running the regional travel demand model. This recommendation is made because the technical adjustment factors to be incorporated into the TPB's travel modeling procedures are to account for differences in the way employment is defined and measured by the different data sources used by various jurisdictions. TPB staff will work with COG's Cooperative Forecasting Subcommittee and the Planning Directors' Technical Advisory Committee during the next year to examine ways in which these technical adjustment factors may be refined and applied differentially by TAZ and employment type within a jurisdiction.

Questions and Comments

Bill Mann referenced table 2 of the handout. He asked if the Round 6.4 Total Employment numbers for 2000 were adjusted. Bob Griffiths replied that an adjustment factor was applied to the base year employment estimate.

Howard Chang suggested that COG staff attach a disclaimer on the adjustment factor that was applied to the base year and forecast year employment estimates. He also expressed concern about the discrepancies of reporting accurate employment totals in Maryland. Bob Griffiths reiterated that an adjustment was needed for a systematic difference in data sources.

Michael Replogle raised an issue about the consistency of how employment estimates are developed and treated. He added that there needs to be a common definition on how these adjustment factors are applied to reflect a more uniform practice for how base year employment is defined.

Jun Villoria commented that land use forecasting is probably as difficult as traffic forecasting. He asked if there will be a program in the future to model land use and transport together. Ron Kirby replied that there is a process that joins land use and transportation through coordination and consultation between the TPB and COG's Metropolitan Development Policy Committee.

Michael Replogle asked were differentials in the unemployment rate at the time of the Census taken into account. Bob Griffiths replied that the unemployment rate for 2000 was built into the statistics that were used to estimate employment for the future years. The Census does not estimate the annual fluctuation of the unemployment cycle.

Bob Moore asked when should these adjustment factors be used. Bob Griffiths replied that staff recommends that these factors be incorporated into the modeling process.

Item 4: Version 2.1 D Model (Update since 3/19/2004)

Ron Milone distributed a handout entitled "Status of the TPB Version 2.1D Regional Travel Model". He explained that work on the Version 2.1D model has been progressing but has not yet been finalized. At the last (March 19) TFS meeting the Version 2.1D model (draft #16) incorporated a number of improvements including an improved sensitivity to highway pricing, modified speed and capacity parameters, a revised volume delay function, and a reduction in the K-factor adjustments. At present, Mr. Milone stated that the current V2.1D model (draft #18) now utilizes the newly issued Round 6.4 Land Use Forecasts along with CTPP-based employment adjustments described by Mr. Griffiths. The new land use files include changes for the calibration and validation years (1994 and 2000, respectively). The refined land use data has afforded staff the opportunity to reduce K-factors used in trip distribution yet further. Mr. Milone underscored the importance of accurate land use inputs to the model. Mr. Milone presented the performance results of the draft 18 model for the years 1994 and 2000.

The Version 2.1 D model remains in draft as of May 21, 2004. Staff will continue to work on improving the highway assignment procedures and will also investigate linking bus speeds with highway speeds. Alternative model structures may also be tested. Copies of the draft model will be available upon written request.

Questions and Comments

Ron Kirby commented that simulated PM period Metro Core Cordon and the Capital Beltway Cordon trip crossings tended to be quite high in relation to observed figures. This could indicate that the model is limited in its ability to address peak spreading at specific locations in the region. Michael Replogle commented that traffic peaking tends to be sharper in the outer areas and flatter in the inner, higher density, mixed use areas. Jim Hogan commented that some of the observed

Beltway auto crossings are actually auto-access transit trips. It's impossible to easily distinguish auto trips from transit-related auto trips.

Mona Sutton asked when the final Version 2.1 D model will be available. Ron Kirby commented that the Version 2.1 D model #18 is close to the version that will support this year's conformity and the Regional Mobility and Accessibility Study. There may still be significant changes to the Version 2.1 D model #18 later this calendar year.

Michael Replogle requested an explanation of how the model was improved to deal with tolling and time-of-day issues given the challenges that are acknowledged with respect to time-of-day distribution. He asked how good is this tool to evaluate HOT lanes in Northern Virginia and express toll lanes in Maryland. Ron Kirby replied that staff is not currently doing any HOT lanes production work. There are some ideas under review about how to address HOT lanes, and staff will be prepared to deal with these issues when necessary.

Caijun Luo commented on long term modeling improvements. He asked when will this model incorporate bus rapid transit. Ron Milone commented that bus rapid transit is of great interest; however, it is not an immediate focus.

Item 5: Around the Table – Update on Regional Studies

This item was deferred until the next meeting.

The next TFS meeting will be held on July 23, 2004.

**COG/TPB Travel Forecasting Subcommittee
Sign-In Sheet
Meeting of May 21, 2004**

Name	Agency/Affiliation	Telephone Number	Email
Bill Mann	VDOT	703 3832211	
RON MILONE	COG/TPB	202 9623283	rmilone@mwcog.org
RON KIRBY	COG/TPB	202 962-3310	rkirby@mwcog.org
Jim Hean	COG/TPB		
MARK MORAN	COG/TPB	202-962-3392	mmoran@mwcog.org
Paul Gilliam	BMC	410-732-0800 ext 855	pgilliam@baltimore.org
David Kline	Fairfax County	703-324-1457	david.kline@fairfaxcounty.gov
BOB MACRE	HNTB	703 824-5100	RLMACRE@HNTB.COM
Bahram Jamei	VDOT-NOVA	703-383-2214	Bahram.Jamei@virginia.gov
Jun Villoria	TransCore	703-813-3248	jun.villoria@transcore.com
Yuanjun Li	M-NCPPC	301-495-4519	Yuanjun.Li@mncppc-mc.org
KAMEEL HOLMES	MDOT-SHA	410-545-5648	kholmes@sha.state.md.us
MONA SUTTON	MDOT-SHA	410-545-5643	msutton@sha.state.md.us
MIKE CLIFFORD	COG/TPB	202-962-3312	mclifford@mwcog.org
Lin Jhs	MNC DPE #6	301 957 3681	ELJHS@MNCITL.COM
Amy Horner	SHAW	202.736.8529	ahorner@Sidley.com
Dick Pratt	RHPC	301-933-0400	rhpratt@his.com
Howard Chang	Tzi-County Council	301-870-2520	hchang@tccsmd.org
Caijun Luo	Fairfax County	703-324-1179	Caijun.Luo@FairfaxCounty.gov
Aaron Overman	AECOM CONSULT	703-645-6860	aaron.overman@aecomconsult.com
Jinchul (JC) Park	COG/DTP	202-962-3320	jpark@mwcog.org
RYAN HARRIS	CAMBRIDGE SYSTEMICS	301-347-0100	RHARRIS@CAMSYS.COM
Hamid O. Humeida	COG/DTP	202-962-3326	HHUMEIDA@mwcog.org
William Bacon	COG/ TPB DTP	202-962-3235	wbacon@mwcog.org
Tony Hofmann	Baker	410-424-2400	thofmann@mbakercorp.com
Dan Goldfrid	BMS-SC	301-582-8433	dgoldfrid@BMSG.co-
Lorenzo Bryant	MD MTA	410-767-3754	lbryant@mta.maryland.com
Harry Sanders	Action Committee for Transit	301-587-1323	sandersh@verizon.net
MeScret Seifu	COG/TPB	202-962-3372	mseifu@mwcog.org
Jane Posey	COG/TPB	202962-3331	Jane.Posey
E.Toni GIARDINI	COG/TPB	(202)962-3317	
DUSAN VUKSAN	COG/TPB	(202)962-3279	dvuksan@mwcog.org

Michael Freeman COG/TPB

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**COG/TPB Travel Forecasting Subcommittee
Sign-In Sheet
Meeting of May 21, 2004**

Name	Agency/Affiliation	Telephone Number	Email
Patrick Mann	City of Alexandria	703.838.4666	pat.mann@alexandria.va.gov
Michael Rogley	Environmental Defense	202.387.3500	mrogley@ed.org
TOM HARRINGTON	WMATA	202-962-2294	tKharrington@wmata.com
ROBERT SNEAD	COG/TPB	202-962-3324	RSNEAD@MUSIC.COG
RICK CANZALES	Prince William Co.	(703) 792-5985	RCANZALES@PWCOV.GOV
Ross Griffiths	COG/TPB	202-962-3280	resg@musicog.org
Wanda Hamlin	COG	202 962 5017	whamlin@musicog.org
Joe Davis	COG	202 962 3337	