
National Capital Region Transportation Planning Board

Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290

Highlights of the January 25, 2013 meeting of the Travel Forecasting Subcommittee

Held at the Metropolitan Washington Council of Governments, from 9:30 AM to 12:00 PM

Status of highlights: Approved 3/22/13

Meeting attendees

- Bahram Jamei (Virginia DOT)
- Eric Jenkins (M-NCPPC, Prince George's Co.)
- Wendy Jia (WMATA)
- David Kline (Fairfax County DOT)
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Feng Liu (Cambridge Systematics)
- David Roden (AECOM)
- Phil Shapiro (STC)
- Dan Stevens (Fairfax County DOT)

COG/TPB staff in attendance

- William Bacon
- Elena Constantine
- Bob Griffiths
- Hamid Humeida
- Nicole McCall
- Ron Milone
- Mark Moran
- Jinchul (JC) Park
- Jane Posey
- Wenjing Pu
- Clara Reschovsky
- Rich Roisman
- Meseret Seifu
- Dusan Vuksan
- Jim Yin

The meeting was chaired by Wendy Jia of WMATA.

1. Welcome new chair. Introductions and approval of meeting highlights from the previous meeting

Mark Moran of TPB staff introduced and welcomed the new chair of the Travel Forecasting Subcommittee (TFS) for 2013: Wendy Jia of WMATA. Mr. Moran explained that the chair rotates on an annual basis between four entities (the District of Columbia, Maryland, Virginia, and WMATA), adding that it was now WMATA's turn. WMATA last held the chair in 2009, and Ms. Jia had also served as the chair at that time. The highlights from the November 30 meeting of the TFS were approved without change.

On a side note, Mr. Moran informed the subcommittee that TPB staff member Mary Martchouk was no longer with COG, since she had recently accepted a new job at a consulting firm in Toronto, Canada. Mr. Moran expressed his gratitude for the work that Mary had done in The Models Development program at COG over the past three years, and wished her well in her new job.

2. Regional Air Quality Conformity Analysis of the 2013 Constrained Long Range Plan (CLRP)

This item was presented by Jane Posey of TPB staff. Ms. Posey provided an overview of the Air Quality Conformity process and the upcoming conformity analysis of the 2013 CLRP. Ms. Posey indicated that air pollution is categorized into four types of emissions: point sources, mobile sources, area sources, and non-road sources. The air quality conformity process, undertaken by TPB staff each year, addresses the mobile source category. Ms. Posey reviewed specific projects coded in the highway and transit networks, and the technical approach that will be used in the upcoming Air Quality Conformity Analysis of the 2013 CLRP & FY 2013-2018 TIP. She indicated that the new EPA mobile emissions model, MOVES 2010a, will be used for the first time this year. The MOVES model replaces the MOBILE emissions model which has been used for many years. This year's air quality analysis will also involve updated land activity forecasts: COG Round 8.2 Cooperative Forecasts. One major change in the Round 8.2 land use data, relative to the existing Round 8.1 land use, is increased housing forecasts for the Tysons Corner area. The analysis years are 2015, 2017, 2020, 2025, 2030, and 2040. Ms. Posey indicated that the 2013 CLRP & FY 2013-2018 TIP project inputs and scope of work are currently released for public comment and are scheduled for possible approval by TPB at its February 20 meeting. The Air Quality Conformity Analysis will be complete in July and draft documentation of the "MOVES 2010a" mobile emissions model and input data will be available.

A subcommittee member asked what was meant by the term "Ozone season". Ms. Posey responded that it is a time of year that occurs in summer, between May-September, when ozone pollution is high, due to elevated ground temperatures (ozone pollution is calculated for a summer condition instead of an average annual condition). A subcommittee member inquired whether there has ever been a case where land use data changed after the air quality analysis work was underway. Ms. Posey responded it happened once during the Intercounty Connector (ICC) study. TPB staff added that once the air quality analysis modeling work begins, the land use data will change only if it is found not to conform to the plan. The COG Board will approve and adopt the land use forecasts, concurrent with the TPB's approval of the air quality conformity determination of the region's long-range transportation plan. TPB staff added that, if any modification is done to the land use forecast data, it is indicated by adding a letter after the land use round number (e.g., Round 8.1 becomes Round 8.1a).

3. Status report on the Version 2.3 Travel Model

This item was presented by Mr. Moran. The focus of this presentation was on the three latest developmental versions ("builds") of the regional travel demand model, i.e., Build 47, Build 48, and Build 49 of the TPB Version 2.3 Travel Model. Mr. Moran contrasted these three model versions with the current production version of the regional travel demand model (Build 39 of the TPB Version 2.3 Travel Model, a.k.a. Version 2.3.39), which was used in the most recent air quality conformity work done at COG, in the fall of 2012. The updates incorporated in Build 47, including a 30% reduction in model run time, were the focus of a presentation at the 11/30/12 TFS meeting. Build 48 featured more consistent naming conventions for model output files and a new batch file that moves temporary output files to a scratch folder, allowing one to easily delete them, which reduces the size of model outputs from about 26 GB per scenario to about 9 GB per scenario. Build 49 updated the batch file used to move "temp"

files, such that report files for earlier speed feedback iterations are no longer considered temporary, and, thus, are retained in the output folder. Build 49 also included a change whereby the error checking code in the batch file used to run the mode choice application program (AEMS) was removed, since, on some hardware, this code was causing the model to stop running, even though the mode choice step was running without error. Mr. Moran noted that TPB staff is currently running tests of Build 49, on both the travel model server and on a test computer (virtual machine) with only four cores. These tests may result in further model adjustments.

A meeting attendee suggested that it might also be useful if text (TXT) file and TAB files could also be retained in the output folder, i.e., not moved to the scratch/“temp” folder (similar to what was being done for report files). Mr. Moran indicated that such a change could easily be done. Another meeting attendee, citing the TPB staff claim, made on slide 3, that the modeled results have not changed in the latest “builds” of the travel model, asked about two cases where he felt the model was, in fact, giving different results. First, since the Version 2.3.48 Travel Model was transmitted with Round 8.1 of the Cooperative Forecasts and the Version 2.3.38 Travel Model was transmitted with Round 8.0a of the Cooperative Forecasts, would not these two models give different results? TPB staff replied that, if the two models are given the same inputs, then they will produce the same outputs. Furthermore, the base model referenced in the presentation was 2.3.39, not 2.3.38, and 2.3.39 was transmitted with Round 8.1 land use data. Second, the attendee asked whether the change in the way that light-rail transit (LRT) is handled (Build 47), when calculating percent walk to transit would change model results. TPB staff responded that there would be no change for the base year (2007), but there would be changes for future years that contained new LRT routes, particularly in cases where the LRT routes were far from existing transit service. Since the percent-walk-to-transit values are a model input, this is a second example of how changes to the model inputs will affect the model outputs. Further details about the new treatment of LRT can be found in a recent memo¹ and should be incorporated in the user’s guide when it is updated.

4. Status report on the year-2010 validation of the Version 2.3 Travel Model

TPB staff member Ron Milone presented this item. A handout detailing staff’s most recent validation activities and findings was distributed. Mr. Milone reviewed the model performance findings that were presented in November. He also reminded the subcommittee that a few performance issues were identified for further study, including an over-estimation of traffic crossing the Potomac River and an over-estimation of VMT in the District, the City of Alexandria and Loudoun County. Since November, the following activities were undertaken:

- Zonal land activity and model output metrics were plotted and reviewed for reasonability.
- Model outputs were compared with information from the recently collected Geographically-Focused Household Travel Survey (GFHTS) data.

¹ Mark S. Moran to Ronald Milone, “Use of Zonal Percent-walk-to-transit Values in Mode Choice to Determine Transit-access Markets: General Discussion and Treatment in the Version 2.3 Travel Model” Memorandum, November 14, 2012.

- Several sensitivity tests of the Version 2.3 model were executed to investigate potential ways in which the identified performance issues might be effectively addressed.

The zonal plots did not indicate any obvious problems relating to the performance of the regional travel model, but staff found the plotting to be useful for the purposes of quality control.

Mr. Milone provided some background on the GFHTS data, noting that, during the spring of 2010 and the fall of 2011, TPB staff collected socio-economic and travel data from households in ten “focused” areas of the region, as a follow-up to the regional household survey that was collected in 2007/2008. Local planners have asked TPB staff to proceed with this type of data collection in order to better understand travel behavior at the neighborhood level, for locations that vary by density, physical characteristics, and available transportation options. Mr. Milone added that TPB staff presented preliminary results of the GFHTS to the TPB last May, including demographic and modal distributions associated with each focus area. Staff felt that the GFHTS distributions might prove useful in validating modeled outputs for localized areas.

TPB staff identified TAZ groups that comprised each focus area so that 2010 modeled outputs could be directly compared with observed data. Special attention was given to the comparison of estimated and observed non-motorized shares in each focus area. TPB staff hypothesized that the model’s apparent over-estimation of VMT in the District may be attributed, in part, to an under-estimation of non-motorized travel. He noted that the model does not account for the recent influx of younger residents to the District, who are more inclined to choose walking and biking as viable options. Staff found that the model uniformly under-estimated the share of non-motorized travel in nine of the ten focus areas to varying degrees. For example, in the Logan Circle area in the District, the model predicted about a 50% non-motorized share for Home-Based Travel as opposed to 65% share that was observed. This result, of course, implied that auto and transit shares were marginally over-estimated by the model.

TPB staff investigated two basic types of sensitivity testing. First, explored were bridge penalties (or the imposition of an addition time burden on all vehicles crossing the Potomac River). This test was explored as a means of improving the over-estimation of Potomac River crossings (The use of bridge penalties is quite common for metropolitan areas with a major physical barrier such as a river). A 15-minute penalty was tested on all bridges between, and including, the Capital Beltway bridges. Another test involved the use of a 12-minute penalty on the above bridges, plus the bridges connecting Frederick County and Loudoun County. A third test involved a doubling of non-work, non-motorized travel in high density areas of the region, as a means of: 1) reducing vehicle miles simulated in the District and 2: achieving a closer comparison with modeled and GFHTS-based non-motorized shares. Mr. Milone indicated that all tests were exploratory and were effective at achieving desired outcomes, but more work is needed. Staff currently plans to complete model refinements over the next few weeks.

A meeting attendee noted that increasing non-motorized trips would improve both the VMT performance as well as the transit performance, as the existing model slightly over estimates transit trips. The attendee also inquired as to when the non-motorized adjustment would be integrated into the regional model. The final adjustments will be implemented in the model in time for the upcoming

conformity cycle. The adjusted model will not be available until the air quality conformity determination using the new model is approved, presumably in the fall of 2013.

A subcommittee member asked how well the focused survey areas compared to the equivalent zonal delineations. Mr. Milone replied that, although the surveyed areas and zonal areas were not directly equivalent, he felt comfortable that the areas were close enough for the purposes of comparing estimated and observed market shares. Bob Griffiths added that the land activity data collected in the GFHTS may not be directly comparable to the currently adopted Round 8.1 land activity.

5. 2012 Metrorail Passenger Survey

This item was presented by Matthew Zych of WMATA and Clara Reschovsky of TPB staff. Mr. Zych reviewed the methodology and key findings of the survey and offered the following observations:

- The main purpose of the survey is to get updated information about ridership by jurisdiction of residence, for use in Metrorail's subsidy allocation. Demographic, travel, and access data are also collected for system planning, operations analyses, and compliance with Title VI of the Civil Rights Act of 1964.
- The sampling frame consisted of total daily Metrorail boardings, stratified by station and time-of-day periods. The data collection extended for six weeks from April 13 to May 25, 2012. The survey records (68,353) were factored to the average daily ridership (739,324). The survey response rate was 23%, compared to 25% for the previous survey, conducted in 2007. The margin of error was +/- 0.5% system wide, 5% at jurisdiction level and +/- 10% at the station level.
- Average weekday daily boardings increased by 3% (from 717,754 in 2007 to 739,324 in 2012).
- Surveys on Friday late-nights and on Saturdays are new additions to the Metrorail survey, for planning purpose and Title VI compliance.
- From 2007 to 2012, evening ridership grew 9%, whereas total peak ridership grew only 1-2%. Walk access trips increased by 15% and bike trips increased by 54%.
- The next rail survey is planned for 2015.

A TPB staff member asked, "What is the Metrorail ridership that WMATA uses controls to?" Mr. Zych stated that WMATA controls to the ridership at the station on the date that the station was surveyed. The TPB staff member expressed concern that that six-week survey period would include an abnormally high level of tourist trips, due, for example, to the Cherry Blossom Festival. However, WMATA staff indicated that the ridership during that six-week period should be quite representative of "typical weekday" during the entire year, since the six-week period occurred after the Cherry Blossom Festival. Additionally, WMATA staff added that they did not survey the Navy Yard-Ballpark Station during a Washington Nationals baseball game. Ms. Jia added that, although May is considered a typical month for ridership, a four-week period is simply not long enough to collect all the data, so some data collection was done in the latter part of April (but post Cherry Blossom Festival). A TPB staff member asked, "What was the item non-response for the income question?" Mr. Zych responded that about 93% answered the question, i.e., about 7% non response. The TPB staff indicated that, for regional household travel surveys, the item non-response rate for the household income question is typically 10

to 15%. There was a discussion regarding the decrease of park-and-ride & bus ridership. Mr. Zych pointed out that the drop was supported by other data sources such as the revenue data for parking facilities and the drop in bus ridership during 2008 & 2009. Other reasons suggested by subcommittee members included: economic factors, changes in transit benefit regulations, and parking capacity constraints. A TPB staff member inquired about the percent of Metrorail trips made by persons who do not live DC, Maryland or Virginia. Mr. Zych responded: about 2.5%. A TPB staff member pointed out that the increase in shuttle access trips in Alexandria was likely due to the new, free King Street shuttle (a bus branded as a trolley).

Ms. Reschovsky reviewed the procedure used to geocode the home address of all survey respondents (68,353) into the COG 3,722-TAZ area system. TPB staff used a NAVTEQ streets map for geocoding and was able to automatically match about 80% of the survey records. Allocation procedures were used to geocode 1,148 records with incomplete addresses. The results of the geocoding were shown in maps depicting Metrorail usage by residence TAZ.

A subcommittee member asked about the availability of the raw survey data. WMATA and TPB staff agreed that the raw data with addresses cannot be released to jurisdictions, but, in the past, a screened data set, containing TAZs, but not actual addresses, has typically been made available to jurisdictions, provided they make a formal request for it. A WMATA staff member asked how useful the data would be to TPB staff for model calibration and/or validation. TPB staff indicated that, since the survey did not capture the access mode to transit (only the access mode to Metrorail), the data will be mainly used for validation, not calibration. A member asked when the next major COG household travel survey would be conducted. TPB staff responded that it would likely occur in 2015 or beyond.

6. Round-table discussion

David Roden (AECOM) mentioned that AECOM is under contract with Prince George's County, Maryland to upgrade the Prince George's Co. travel model (which is implemented in TransCAD) with the Version 2.3 Travel Model data sets for areas outside of Prince George's Co. Ultimately, this upgrade will also include updates to the mode choice model. Mr. Roden mentioned that they have also developed a transit sketch planning tool for Prince George's Co.

David Kline (Fairfax County DOT) discussed some of the Tysons-area changes occurring associated with the upcoming opening of the Metrorail Silver Line in Fairfax County. He said that there have been a number of redevelopments associated with improving circulation in the Tysons area. The comprehensive plan was updated a couple of years ago and this necessitated a look at whether additional right-of-way was needed in the area. There was a traffic circulation study about a year ago. Mr. Kline mentioned that the county is about to update the county travel model to be more aligned with the TPB Version 2.3 Travel Model. He added that Fairfax Co. has used the Version 2.2 Travel Model for a long time, but it is now time to change. Fairfax is making use of several consultants, e.g., Cambridge Systematics, PB, and AECOM. One challenge is merging the travel demand model with the more detailed analysis needs. Mr. Kline hoped that the county travel model would be updated over the next 6 to 12 months.

Mr. Milone asked if any data is being collected about usage of the I-495 Express (HOT) Lanes, which has opened in November. Bahram Jamei said that traffic on the Express Lanes has been generally light (about 23,000 trips on a daily basis) – and hence the tolls have been low, but the facility is still quite new, so demand will likely build over time. But, Mr. Jamei stressed that the data is not being collected by VDOT – it is being collected by Transurban. One member thought that a lot of the traffic data collected by private road operators is considered “privileged.” There was a discussion about whether VDOT could get the traffic data from Transurban. One member surmised that there must be an agreement between the two entities, since revenue would be exchanged between them, based on HOV3+ usage, and so there would be a need for auditing.

7. Other business

The next proposed meeting of the TFS is Friday, March 22, 2013 from 9:30 AM to 12:00 noon. The meeting adjourned around noon.

*** The meeting highlights were prepared by Ron Milone, Mark Moran, Hamid Humeida, and Meseret Seifu ***