



TPB TRAVEL FORECASTING SUBCOMMITTEE

HIGHLIGHTS OF THE NOVEMBER 17, 2017 MEETING

Meeting time & location: 9:30 AM to 12:00 noon, Metropolitan Washington Council of Governments

MEETING ATTENDEES

MEMBERS, ALTERNATES, AND PARTICIPANTS

- Robert Berger (BMC)
- Melissa Chow (WMATA)
- Charles Freeman (Frederick Co. Planning)
- Robert Griffiths (COG staff consultant)
- David Kline (Fairfax DOT)
- Li Li (Whitman, Requardt & Assoc.)
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Feng Liu (Cambridge Systematics)
- George Phillips (Prince William Co.)
- Harun Rashid (NVTA)
- Amir Shahpar (VDOT)
- Christine Sherman (Arlington Co. DES)
- Weihao Yin (AECOM)

COG STAFF

- Tim Canan
- Anant Choudhary
- Joe Davis
- Wanda Hamlin
- Ken Joh
- Arianna Koudounas
- James Li
- Ron Milone
- Mark Moran
- Ray Ngo
- Jinchul (JC) Park
- Rich Roisman
- Meseret Seifu
- Dusan Vuksan
- Feng Xie
- Jim Yin

* An asterisk indicates that the person attended the meeting remotely via WebEx. We are not aware of anyone attending this meeting remotely.

This meeting of the Travel Forecasting Subcommittee (TFS) was chaired by Ms. Chow.

1. INTRODUCTIONS AND APPROVAL OF MEETING HIGHLIGHTS FROM THE SEPT. 22 MEETING

The highlights of the September 22, 2017 meeting of the TFS were approved without change.

2. STATUS REPORT ON CONSULTANT-ASSISTED PROJECT TO IMPROVE THE COG/TPB TRAVEL DEMAND FORECASTING MODEL

This item consisted of two presentations. Copies of the presentation slides were distributed for both presentations.

ITEM #2A: VERSION 2.5 TRAVEL DEMAND MODEL DEVELOPMENT: A STATUS REPORT

Mr. Milone presented the first part of this item, focusing on staff's recent Version 2.5 travel model development activities. As background, he informed the subcommittee that the TPB had approved the air quality conformity analysis of the 2016 CLRP ("out-of-cycle") amendments, as well as the Plan itself, on October 18. The planning assumptions and technical methods used to support the latest air quality conformity analysis are now, therefore, officially approved, including the latest travel demand model known as the TPB regional travel demand model, Version 2.3.70. This model is very similar to the former Ver. 2.3.66 model, but it includes a few technical refinements. The new model and inputs and relevant documentation will be available upon request by the end of the calendar year.

Mr. Milone reviewed the distinguishing features of the Version 2.5 model, which is a developmental model developed by a consultant in FY 17, and informed the group that TPB staff has successfully executed the model for years 2014 and 2020. He also stated that the latest modeling work was executed with a single highway and transit network link file input. Previous modeling work was executed with separate (but related) input files for highway and transit network building. This is the type of work that needs to be undertaken before the Ver. 2.5 model could be production ready. Staff is working to prepare transit network documentation to support the Public Transport (PT)-based modeling that is now used within the Version 2.5 model. Staff has also been working to ensure that model trips from the mode choice process are more thoroughly reported.

Mr. Milone observed that the number of linked 2014 transit trips produced by the Ver. 2.5 model is 9% less than the linked transit trips produced by the Ver. 2.3.66 model, and is about 11% less than linked transit trips reflected in the observed trip file, a blended file containing data from the 2007/08 Household Travel Survey (HTS), the Geo-Focused HTS files and available transit on-board surveys. TPB staff is attempting to reconcile these differences. Mr. Liu responded that the difference in linked trips is attributed to the approach Cambridge Systematics, Inc. (CS) used to arrive at validation targets for the mode choice model of the Ver. 2.5 model. The number of linked "observed" trips used for the 2014 validation of the model were derived from observed unlinked trips (or boardings). Mr. Liu stated that this approach made the best use of available observed data and it ensured that the modeled trips assigned to the transit network would more closely agree with observed boardings. Mr. Milone noted that TPB staff will need to be able to explain why such differences exist between the two models. He also stated that it is important for the TFS to be aware of this difference. Mr. Milone added that the difference in linked transit trips produced by both models appears to decrease in magnitude for the 2020 forecast (The Ver. 2.5 2020 linked transit trips are about 5% less than those of the Ver. 2.3.66 model).

Mr. Milone also stated that staff is exploring ways to reduce the running time of the Ver. 2.5 model, which is currently almost twice that of the existing Ver. 2.3.66 model. This work is ongoing.

Mr. Shahpar mentioned that ramp configurations for the I-66 HOT lanes have changed and he was interested in making sure that the latest network coding was reflected in the next update to the long-range plan. Mr. Milone advised Mr. Shahpar to send the latest information to Jane Posey as soon as possible. Another meeting participant asked if the Ver. 2.5 model was envisioned to be the next production model after the Ver. 2.3 series of models. Mr. Milone said that the Ver. 2.5 model is envisioned to be the next production model, although it is still being tested and evaluated. During the next air quality conformity analysis (i.e., the quadrennial update), the Ver. 2.5 model will be tested alongside with the currently adopted (latest) Ver. 2.3 model and evaluated.

ITEM #2B: NEXT-GENERATION TRAVEL DEMAND FORECASTING MODEL FOR THE TPB: CURRENT PLANS FOR DEVELOPMENT

Mr. Moran presented the current TPB staff plans for developing the next-generation (NextGen) TPB regional travel demand forecasting model. TPB's current travel demand model is a trip-based, aggregate, four-step travel demand model. The production-use version of this model is the Ver. 2.3.70 model. As noted by Mr. Milone earlier, the model was implicitly adopted by the TPB in October, when the TPB 1) found that the latest version of the long-range transportation plan conformed with the Clean Air Act Amendments of 1990; and 2) approved the latest version of the long-range plan. Also, as noted by Mr. Milone, there is also a developmental version of the trip-based model, known as Ver. 2.5, which was developed in FY 17 by the on-call consultant, Cambridge Systematics, Inc. (CS), and is currently being tested by TPB staff to determine its suitability for use as a production model.

In 2015, CS developed a strategic plan for improving the TPB regional travel demand model. The plan included three phases over a seven-year period:

- Phase 1: Update the existing, trip-based model (FY 16-17)
- Phase 2: Develop an activity-based model (ABM) with existing data (FY 18-20)
- Phase 3: Develop a new ABM with new data (FY 21-22).

Time-wise, Phase 1 is complete. Work-wise, Phase 1 is partially complete: CS delivered a revised, proposed model (Ver. 2.5) by the end of FY 17, but testing, which is being done by TPB staff, is still on-going.

TPB staff proposed two changes to the strategic plan:

- Originally, Phase 2 was to have started FY 18 (July 2017). Now, due to testing of the Ver. 2.5 model, there will be about a 6-month delay for the start of Phase 2.
- For Phases 2 and 3 of the plan, TPB staff is replacing the term "ABM" with "Next Generation" (NextGen) model.

TPB staff is certainly open to the idea that the NextGen model will be an ABM, but is also open to other modeling structures. After TPB staff issues a request for proposals (RFP), the consultant would need to propose the best model, given the constraints of time, budget, and modeling requirements listed in the RFP. Mr. Moran's presentation also included a rough timeline, expected budget, potential investigations that could be part of the project, and a preliminary list of some possible model needs and requirements. Under next steps, Mr. Moran noted that TPB staff plans to develop a

proposed RFP that would be shared with the TFS in early January and discussed at the Jan. 19 TFS meeting.

Mr. Shahpar noted that he believed that Prince George's County is developing an activity-based model. Mr. Kline noted that, in the discussion about model needs and requirements, trip generation was not included. He asked whether that meant that TPB staff was satisfied with the trip generation step of the model. Mr. Moran said that the list of needs and requirements was not meant to be an exhaustive list, so the omission of trip generation from that list did not mean that staff was completely satisfied with the trip generation stage. Mr. Moran asked that TFS members review the proposed RFP that the TPB staff intends to send to the TFS in early January, and, if one notices an item that they think should be on the list, please let us know, so that the list can be updated. Mr. Kline also asked whether then NextGen model improvement project is limited to the \$900k that was mentioned in the presentation. Mr. Milone said not necessarily, but it is the amount that is currently proposed.

Ms. Yuanjun Li thought that it might be best to add a dynamic traffic assignment (DTA) model to the travel model (as opposed to starting with the ABM), since she thought this would require less data and effort. She also recommended that TPB staff might want to examine the current household travel survey to make sure that it is designed to provide the needed data for future model updates, such as an ABM. She also recommended that the NextGen model be able to model vehicle fleet mixes that include connected/autonomous vehicles (CAVs). Mr. Moran noted that CAVs were one of the items in the list of needs and requirements. Regarding moving to DTA before ABM, Mr. Moran noted that our peer MPOs are not doing that. They tend to be developing and implementing ABMs first, presumably planning to move forward with DTA at a later stage. He noted that the two major drawbacks to moving forward with regional DTA are the long model run times and the large amount of highway network data (e.g., intersection details, intersection controls) that need to be collected and maintained to feed a DTA model.

Mr. Shahpar noted that, once the NextGen model is developed, external parties, such as state DOTs and consultants, will have to decide whether to use it or to continue to use the existing trip-based model. He asked whether TPB staff wants external parties to use the new NextGen model soon after its development. Mr. Moran noted that there would be a period where TPB staff maintained and supported both models, but, from the TPB staff perspective, the goal would be to have a limited period where the trip-based model was maintained and supported.

Mr. Kline noted that the NextGen model would entail significant funding for consultants, and he asked whether TPB staff envisioned also increasing the size of the TPB staff. Or, alternatively, would the model improvement effort include a plan for what staff skills are needed to run and support the new model? Mr. Moran and Mr. Milone noted that there are no plans to increase the size of the TPB staff, but then noted that the RFP should have a component to recommend needed skills (and possible training) that would ensure that the TPB staff could adequately run and maintain the new model.

Ms. Sherman noted that Phase 2 of the strategic plan recommends developing a new model built with existing data. She asked what is the advantage of enhancing the model without enhancing the data used for estimate and calibrate the model. Mr. Moran noted that that was a very good question, and added that the RFP could be structured such that the consultant is required to answer that question. He added that it is important to decide how much is spent on data collection versus model estimation, implementation, and calibration. Mr. Vuksan noted that one advantage of developing a

new model, such as an ABM, before collecting new data, is that one would then have two models (trip-based and ABM), which could be run side by side, to make comparisons.

3. 2017-2018 REGIONAL TRAVEL SURVEY STATUS REPORT

Dr. Joh presented this item and distributed copies of his presentation slides. He provided an update on the 2017-2018 Regional Travel Survey, a once-in-a-decade household travel survey for the National Capital Region that launched on October 3, 2017. He presented a brief overview of the survey methodology, including data collection method, mail recruitment protocol, and sampling plan. Dr. Joh gave a review of the recruitment and completion rates to date and described survey outreach and media activities.

Mr. Milone asked how the survey will handle households who do not complete the travel diary, and whether those households will be contacted to encourage completion of the survey. Dr. Joh responded that not all households will complete the survey due to some households dropping out, but reminder postcards will be sent to promote participation. Mr. Griffiths added that reminder emails will be sent to recruited households to encourage households to complete the travel diary on their assigned travel date, but households will have ten days to complete the travel diary after the travel date.

Mr. Milone also asked whether the survey data being collected during the 12-month survey period will be processed and quality checked while data collection is ongoing. Dr. Joh replied that the survey contractor is providing interim data deliverables monthly to allow for quality checks and data processing during the duration of the survey. Mr. Griffiths added that while data cleanup can be conducted during data collection, data weighting will not be possible until after the survey has concluded.

Ms. Yuanjun Li commented that the household income question tends to garner fewer responses, which Mr. Griffiths concurred. He added that the survey includes a detailed income question followed by a broad income question, and data would be imputed for missing responses to the household income question based on responses to other questions. Ms. Li also asked whether the travel days would include weekdays and weekends, Mr. Griffiths responded that travel days exclude weekends and holidays. Ms. Li asked if the survey would be available in Spanish particularly in low response areas, Mr. Griffiths confirmed yes. Mr. Griffiths also reaffirmed Dr. Joh's point in his presentation about outreach to large apartment complexes in areas with low response rates.

Dr. Joh also mentioned that MWCOG will be coordinating with the Baltimore Metropolitan Council (BMC) in developing the sampling plan for the three BMC counties that overlap with the TPB modeled area (Anne Arundel, Carroll, and Howard Counties). Mr. Berger mentioned that BMC has contracted with Westat for the Maryland Household Travel Survey, which will launch in February 2018 and aim for 7,500 completed households.

4. ANNOUNCEMENT OF NEW CHAIR FOR 2018

The chair of the TFS rotates on a calendar-year basis between Maryland, the District of Columbia, Virginia, and WMATA. The current chair, Ms. Chow, represents WMATA, so the next chair should represent Maryland. Although, the term of the chair continues through the end of the calendar year (December 31), since the November TFS meeting is typically our last scheduled meeting of the year, we typically announce the new chair, and thank the outgoing chair, at the November meeting. Mr. Moran first thanked the outgoing chair, Ms. Chow, and presented her with a certificate of appreciation, which was signed by Brigit Newton, the chair of the TPB. Next, Mr. Moran announced the new chair for 2018: Yuanjun Li, a Planner Coordinator and the lead transportation modeler at the

Montgomery County Planning Department (MCPD), Maryland-National Capital Park and Planning Commission (M-NCPPC). Ms. Li has 26 years of experience in transportation modeling and has been attending TFS meetings since 1997.

5. ROUNDTABLE DISCUSSION OF CURRENT MODEL EFFORTS AROUND THE REGION

Mr. Freeman stated that Frederick Co. was developing a local travel demand model derived from the COG Version 2.3 model. The Frederick Co. model would have more detail within Frederick Co. and less detail beyond the county. Mr. Phillips stated that Prince William Co. is using its local travel model to update its comprehensive plan. The work should be done over the next 18 months, with the help of Bill Allen. Mr. Kline mentioned that Fairfax Co. had updated the Tysons transportation plan a while ago, adding that the county is now implementing that plan. For example, the county is conducting alternatives analyses and conceptual design along Route 123 near the Beltway. The land use was already determined, so implementation would focus on adding grid streets. The county is using both its Consolidated Traffic Impact Analyses (CTIA) model, which functions like a traffic impact analysis model, and its county-level travel model. The detailed information from the CTIA analysis would be fed into the county model. Ms. Sherman stated that Arlington Co. is working on a re-circulation plan for Rosslyn redevelopment. In the future, the county may wish to present the work to the TFS. Ms. Yuanjun Li mentioned that the Montgomery County was in the process of developing a network management GIS tool, which would be similar to the tool used by TPB staff. Ms. Li Li reported that Maryland SHA was working on developing a statewide geodatabase containing both highway and transit network information. Mr. Liu reported that CS recently completed the Virginia statewide travel model, which is a trip-based model. For Maryland, the statewide model is an ABM, which is still being validated to the year 2015.

6. TRANSPORTATION RESEARCH BOARD 97TH ANNUAL MEETING: PRE-MEETING DISCUSSION

The Transportation Research Board (TRB) will hold its 97th Annual Meeting from January 7-11, 2018 in Washington, D.C. The meeting is expected to attract more than 13,000 transportation professionals from around the world, including many from this region. The purpose of this item was to allow TFS members the opportunity to discuss their planned participation at this meeting, including planned presentations, papers, sessions of interest, and participation with TRB standing committees.

Mr. Roisman mentioned that he is a co-author on a paper that is being presented at a lectern session. The session is entitled, "Strategies and barriers in effective bus lane implementation and management."

Ms. Yuanjun Li mentioned that at Session 730 (Tuesday, 6 PM), there will be a presentation about a new survey methodology that makes use of smartphones. Mr. Moran failed to mention it at the meeting, but Cambridge Systematics, Inc. will be presenting a paper about work that the firm had done as part of developing the Ver. 2.5 travel model: "Practical framework to incorporate value-of-time heterogeneity in an aggregate travel model" (author: Jason Lemp). Also, Mr. Moran is serving his sixth year on the TRB standing committee Transportation Demand Forecasting (ADB40).

A similar, but lengthier, discussion is planned for the January 19 TFS meeting, which follows the TRB Annual Meeting.

7. NEXT MEETING DATE AND OTHER BUSINESS

The next scheduled meeting of the TFS is Friday, January 19, 2018 from 9:30 AM to 12:00 noon. There was no other business. The meeting adjourned around noon.

*** The meeting highlights were prepared by Jim Yin, Mark Moran, and Ron Milone ***