National Capital Region
Transportation Planning Board

TPB TRAVEL FORECASTING SUBCOMMITTEE

HIGHLIGHTS OF THE MARCH 15, 2019 MEETING

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

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MEETING ATTENDEES

MEMBERS, ALTERNATES, AND PARTICIPANTS

- Jim Bunch (Sabra & Associates)
- Xiao Cui (HNTB)
- Zuxuan Deng (DDOT)
- Jay Evans (Cambridge Systematics)
- Nazneen Ferdous (Jacobs)
- Dan Goldfarb (NVTC)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Manish Jain (Transurban) *
- Naveen Juvva (StreetLight Data)
- Kyeongsu Kim (Connetics Transportation)
- Feng Liu (Cambridge Systematics) *
- Ronald Milone (Contractor)
- Srikanth Neelisetty (Transurban)
- Tim Padgett (Kimley-Horn & Assoc.) *

- Krishna Patnam (AECOM) *
- Mark Radovic (Consultant for MD-SHA) *
- Harun Rashid (NVTA)
- Alex Rixey (Fehr & Peers DC)
- David Roden (AECOM) *
- Rich Roisman (Arlington Co. DES)
- Amir Shahpar (VDOT)
- Monika Shepard (StreetLight Data)
- Christine Sherman (Arlington Co. DES)
- Chris Simons (Citilabs) *
- Aichong Sun (AECOM)
- Jiaxin Tong (Kimley-Horn & Assoc.)
- Jongsun Won (PTV)
- Jianyang Zheng (MD SHA) *

COG STAFF

- Joe Davis
- Greg Grant
- Charlene Howard
- Ken Joh
- Martha Kile
- Sanghyeon Ko
- James Li *

- Jessica Mirr
- Abdurahman (Abdul) Mohammed
- Mark Moran
- Ray Ngo
- Wanda Owens
- Jinchul (JC) Park

- Jane Posey
- Meseret Seifu
- Daniel Son
- Dusan Vuksan
- Feng Xie
- Jim Yin
- C. Patrick Zilliacus

* An asterisk indicates that the person attended the meeting remotely via WebEx.

This meeting of the Travel Forecasting Subcommittee (TFS) was chaired by Dr. Zuxuan Deng

1. INTRODUCTIONS AND APPROVAL OF MEETING HIGHLIGHTS FROM THE PREVIOUS MEETING

The highlights of the November 30, 2018 meeting of the TFS were approved with one change: One of the names on the list of attendees was included by mistake, so it was removed.

2. PRODUCTION-USE TPB TRAVEL DEMAND FORECASTING MODEL

A. Network Documentation

This item was presented by Ms. Seifu, who spoke from a set of presentation slides, which were distributed to the subcommittee. She informed the subcommittee that staff had completed a draft report describing the transportation networks supporting the 2018 Air Quality Conformity Analysis of the Visualize 2045 long-range plan and the FY 2019-2024 TIP. The report is a regular work product that is furnished by staff to document network coding conventions and specifications. The report is available on the COG TFS web site and staff invites the TFS members to provide review and comment over the next 30 days. The transportation network files documented in this report were developed in accordance with the currently adopted Ver. 2.3.75 Travel Model. Ms. Seifu reviewed the report outline and highlighted selected policy details that are assumed in the Visualize 2045 plan networks. It is notable that this set of networks includes, for the first time, a horizon year of 2045.

A member asked if project IDs (state/local project references used in TIP/Plan documents) were included as explicit variables within the highway and transit network files. Staff noted that project IDs are, in fact, included. Ms. Seifu indicated that the network report includes an attachment (Attachment B) that lists all projects and associated project IDs that are assumed in the highway and transit networks.

Mr. Shahpar observed that the year-2019, eastbound, AM-period, I-66 inside-the-Beltway, end-to-end tolls and toll rates appeared excessively low. Staff members pointed out that the time-period toll rates are developed on a segment-by-segment basis, not link by link. The toll-setting process estimates toll rates on road segments (which are made up of multiple links) such that reasonable congested traffic speeds are obtained on those segments (where the speed is a function of the estimated volume). Since each toll segment is made up of many road links, the regional travel demand model cannot be expected to provide accurate link-level volumes for every freeway segment in the system. Staff understands that, while some selected toll rates may be lower than what is found operationally, the overall range of toll values resulting from the toll-setting process is reasonable and is suitable for regional planning purposes. In the case of project planning studies, which are below the scale of regional studies, staff recommends that these types of details be re-examined, to ensure that they are reasonable.

B. Re-Validation of TPB's Version 2.3 Travel Demand Model to Year-2014 Conditions

This item was presented by Mr. Xie, who spoke from a set of presentation slides and a memo, both of which were made available to the subcommittee on the TFS website. Staff presented the results of the recent re-validation of TPB's Ver. 2.3 Travel Demand Model to year-2014 conditions. Staff started the presentation by introducing the background and explaining the motives behind this re-validation. Staff then focused on discussing the main results from highway and transit validation tests, benchmarking and sensitivity testing. Staff concluded that the performance of TPB's Ver. 2.3 Model remains to be reliable at an acceptable level for regional planning purposes, and that TPB staff will continue to use it for air quality conformity determination and other regional planning studies until the Ver. 2.5 Model or Gen-3 Model comes into production.

David Roden, AECOM, asked if changes had been made to the travel demand model due to this re-validation. TPB staff answered that no changes were made to the model at this time, since that was outside the scope of the present effort. However, staff noted that, in the future, it is hoped that the model will be updated based on this or subsequent validation work.

C.   Possible Future Updates

Mr. Ngo, who spoke from a set of presentation slides, which were distributed to the subcommittee, discussed several tests that were recently conducted with the TPB's adopted, production-use, travel demand forecasting model, the Ver. 2.3.75 Model. First, he informed the subcommittee that, although the TPB staff typically runs the travel model on computer servers, recent testing shows that the model can also be run on a regular computer workstation running Windows 10. Next, Mr. Ngo discussed five possible updates that could be made to the Ver. 2.3.75 Model this year. He informed the subcommittee that one update recently made to Ver. 2.3.75 was related to the change of ArcGIS engines in latest versions of Cube. Mr. Ngo said that the latest release of Cube (Cube 6.4.4) could not be used to run the model due to a software bug in Cube. However, at Citilabs' suggestion, TPB staff testing running the TPB model using Cube 6.4.5 Beta and the model ran without incident. Furthermore, the switch from Cube 6.4.1 to Cube 6.4.5 yielded a 5% model runtime reduction, with no change in model output (results). Mr. Ngo reported that staff was working on four remaining possible updates, only one of which would alter the model results.

Mr. Shahpar noted that ArcGIS 10.3.1 seems to show negative node numbers on some of the links/nodes found in shapefiles that are exported by Cube 6.4.1 from a network file with a NET extension. He asked if TPB staff could help debug this issue. Mr. Ngo said that staff would work with him to investigate this issue (TPB staff was later able to resolve the issue).

Mr. Tong asked whether model results change when the model run is conducted on a server running Windows Server 2008 or Windows Server 2012. Mr. Ngo confirmed that the model outputs are the same under both operating systems.

3.   DEVELOPMENTAL TPB TRAVEL DEMAND FORECASTING MODELS

A.   A. Gen2/Ver. 2.5: Status Report

Mr. Milone, who is currently serving as a private contractor to COG, distributed paper copies of his presentation slides to the subcommittee. He reminded the group that the Ver. 2.5 Model has been in testing for well over one year and had been developed as a possible replacement for the currently adopted Ver. 2.3 Travel Model. Staff is not yet confident that the Ver. 2.5 Model is ready to be used in production but is nonetheless working to refine and evaluate the model on several fronts: Implementing refinements to the model, evaluating the model's performance, streamlining the application process, and documenting various aspects of the model. While the deployment of the Ver. 2.5 Model has been taken longer than expected, staff wants to ensure that the new model is up to the task and superior to the existing model. The most recent refinements to the model have included corrections to modeled inputs and minor changes to the external trip distribution process, as described to the subcommittee in prior meetings. Mr. Milone presented a high-level, year-2014 summary of validation results from the latest developmental model version (Ver. 2.5.11). The results indicated that the Ver 2.5 highway performance is generally quite comparable to, if not better than, the currently adopted Ver 2.3 model (Ver. 2.3.75). Staff has noted, however, that the model appears to under-predict non-Metrorail-related transit modes. As work is ongoing, staff will report back on its progress in May.

Mr. Bunch asked if the Ver. 2.5 Model could be made available for use in a project planning study involving an evaluation of a BRT system. Mr. Milone noted that TPB staff has a policy of not

transmitting developmental travel models.[1] Even if that policy were not in effect, Mr. Milone felt that the Ver 2.5 Model is not ready for project planning use. Mr. Bunch also asked if the LineSum transit summary routine is operable with the Ver. 2.5 Model. Mr. Milone noted that LineSum does work with, and is currently used within, the Ver. 2.5 Model application.

Mr. Roden asked if the Ver. 2,5 Model will reflect the recent downturn in Metrorail ridership that has been observed since 2014. Mr. Milone stated that some of the current factors believed to be driving the downturn in Metrorail ridership -- for example, service disruptions relating to repair work/maintenance issues and the growing attractiveness of Transportation Network Companies, or TNCs, as an alternative to transit use -- are not addressed by the Ver. 2.5 Model but might be incorporated into the upcoming Gen3 Model. He suggested that post-processing may be one approach to incorporate these forecasting needs.

Mr. Shahpar observed that the validation summaries shared by Mr. Milone indicate that commuter rail is under-predicted. He voiced concerns that the under-prediction might unfairly bias the local evaluation of the commuter rail mode. Mr. Milone acknowledged Mr. Shahpar's concern and agreed that the predicted transit ridership, at the sub-mode level, will require additional work and refinements.

B.   Gen3 Model: Status Report

This item was presented by Mr. Moran, who noted that TPB staff is continuing to prepare the scope of work for the Request for Proposals (RFP) to obtain consultant assistance with developing the Gen3 Model. Mr. Moran noted that there had been delays in the process, so the RFP is not yet ready for advertisement. He apologized for the delays and said that he hoped the RFP would be released soon. There were no questions.

4.   STATUS REPORT ON THE 2017-18 COG/TPB REGIONAL TRAVEL SURVEY

Dr. Joh presented this item and distributed presentation slides to the subcommittee. 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 and concluded on December 31, 2018. He provided a recap of the survey and reported the final recruitment and completion rates. Dr. Joh also outlined the data processing tasks and the survey schedule.

An attendee asked whether the RTS dataset will be used for updates to the COG travel demand model. Mr. Moran responded that it will be used for re-estimating, recalibrating, and revalidating the Generation-4 Model and possibly the Generation-3 Model, if it is available in time.

Mr. Milone commented that given the number of completed households and trips recorded in the survey, the average trip rate should be about 7.5 trips per household. Some of these trips will be external trips or will be linked out during the data processing so the actual trip rate will be closer to 7 trips per household, which will be a notable decline in trip rates from the last survey. Dr. Joh concurred with Mr. Milone's observation. Ms. Sherman asked whether group quarters are included in the survey. Dr. Joh responded no. Mr. Shahpar commented that the decline in trip rates is consistent with ITE trip generation rates that VDOT is currently studying.

5.   REGIONAL TRANSPORTATION DATA CLEARINGHOUSE (RTDC) UPDATES

Ms. Howard presented this item and spoke from a set of presentation slides, which were distributed to the subcommittee. She provided a brief overview of the updates made to the Regional Transportation Data Clearinghouse OpenData page and Viewer. Ms. Howard presented the monthly average weekday transit ridership dataset (FY 2018) updates, which included ridership data

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[1] "Data Requests," *Metropolitan Washington Council of Governments, Transportation, Modeling*, January 31, 2019, https://www.mwcog.org/transportation/data-and-tools/modeling/data-requests/.

provided by transit operators in the TPB planning area. Not all transit operators within the TPB planning area provided data for this update. Ms. Howard also presented updates for the vehicle miles traveled (VMT) datasets, which includes the total VMT, local and non-local VMT, total cumulative growth, as well as the local and non-local cumulative growth for the jurisdictions in the TPB modeled area. These datasets were updated to include year-2017 values. The updated automated bicycle and pedestrian counts datasets, which include the 2018 monthly and daily totals, were also presented to the subcommittee. The final dataset update for the Regional Transportation Data Clearinghouse presented by Ms. Howard was the vehicle electric charging stations for the TPB commuter shed (January 2019). Ms. Howard also presented updates now available in the tools in the RTDC Viewer. Transit summary charts, VMT total cumulative growth, pedestrian & bicycle counts, and the detailed bike and pedestrian tool have also been updated. Finally, Ms. Howard discussed planned updates, including traffic counts, aviation data, the RTDC Data Viewer, and additional transit datasets.

Following the presentation, Ms. Howard was asked if the Hourly Counts update would include vehicle classification information. TPB staff said that since the Hourly Counts datasets are very large, they are processed to include only the measured volumes of vehicles and do not include the classification. TPB staff added that, if this is something the individual is looking for, they can contact Martha Kile (mkile@mwcog.org) with specific questions on the Hourly and Classification Counts datasets.

6. 2017 WASHINGTON-BALTIMORE REGIONAL AIR PASSENGERS SURVEY: GEOGRAPHIC FINDINGS

Mr. Mohammed briefed the committee on the Washington-Baltimore Regional Air Passenger Survey 2017 Geographic Findings Report. He noted that the report will be finalized later this month after it is reviewed by the Aviation Technical Subcommittee. He highlighted key trends relating to how - and in what frequency and volume - locally originating air passengers travel to the region's three major commercial airports. The presentation featured analyses on modes of access, trip originations by type, as well as travel purpose. Mr. Mohammed explained the process of geo-coding local originating air passenger trip records to both Transportation Analysis Zones (TAZs) and Aviation Analysis Zones (AAZs). Mr. Mohammed showed the geographic distribution of air passenger trips by originations (home and non-home), mode of access, resident status, airport preference, trip purpose (work and non-work), and income by airport. He further informed the subcommittee that the geo-coded survey will be used to develop average weekday air passenger trip tables by mode of access, trip origination, and time-of-day by airport, which will be used as an input to the travel demand model.

7. MULTIMODAL ALTERNATIVES ANALYSIS OF THE ROSSLYN AREA OF ARLINGTON, USING THE COG/TPB TRAVEL MODEL AND OTHER TOOLS

This item was presented by Ms. Sherman and Mr. Tong, who spoke from a set of presentation slides, which were distributed to the subcommittee. Ms. Sherman began the presentation, covering the first two sections of the presentation: 1) Introduction; and 2) Travel & Growth Patterns. The impetus for this work came from the Rosslyn Sector plan, which was adopted in 2015. The vision was to provide balance among all travel modes in the Rosslyn area of Arlington Co. The study assesses a variety of multimodal activities such as reincorporating street space, enhancing bicycle and pedestrian friendly infrastructure, as well as assessing the potential of converting some arterial roads, such as Lynn Street and Fort Meyer Drive, from one way to two way. In the second part of the presentation, Ms. Sherman discussed commuting patterns in Rosslyn, including the mode shares, both from and to Rosslyn (slides 10 and 11). She noted that 80% of peak period vehicle trips in/through Rosslyn are through trips.

Mr. Tong covered the next two sections of the presentation: 3) Data & Methodology; and 4) Application. In terms of data, the study made use of traffic counts, origin-destination data from StreetLight Data, and travel times from Google's time/distance application programming interface (API). The study also made use of the COG/TPB Travel Model (Ver. 2.3.70). On slide 27, Mr. Tong noted what the COG/TPB Model does well, but also noted areas where the study team had wished there was better data.

Ron Milone noted that Rosslyn has a very diverse population and asked how that affected the study. Ms. Sherman noted that older residents were interested in wider sidewalks, which could help provide separation from electric scooters. By contrast, the biking community was concerned about not having enough street space for bicycles. Mr. Milone asked whether vehicle ownership was lower in Rosslyn. Ms. Sherman indicated that there was a mix of both households with few vehicles and other households with multiple vehicles. Mr. Zilliacus stated that since Rosslyn has a lot of inner-city bus service, and he wondered what provisions are being made for use of curb space. Ms. Sherman said that curb space management is one of the many challenges in the Rosslyn area. She noted that many of Rosslyn's parking spaces are off-peak parking.

8. ROUNDTABLE DISCUSSION OF CURRENT MODELING EFFORTS AROUND THE REGION

Given the limited time, there was no roundtable discussion for this meeting.

9. OTHER BUSINESS

Mr. Vuksan noted that COG is hosting a training course, from May 7 to 9, on transit ridership forecasting using the FTA STOPS software package. Due to high demand for the course, he encouraged the registered training participants who will not be able to attend to notify the National Transit Institute course organizers as soon as possible, thereby enabling NTI to fill the open slots with potential participants who are currently on the wait list.

Mr. Moran noted that people who would like to request any technical data from COG/TPB staff, such as a travel model, transportation networks, or land use data, should make use of COG's "Data Requests" webpage (https://www.mwcog.org/transportation/data-and-tools/modeling/data-requests/). He noted that this page has recently been updated to include a form that should be filled out to provide TPB staff with the information needed to service your request.

Ms. Kile informed the subcommittee that the Census Bureau has announced that it will no longer create summaries by Census TAZs. Starting in 2020, the smallest geography that the Census Bureau will use for summaries will be the Census block group. Jurisdictions will be responsible for delineating the Census tracks and block groups. Ms. Kile provided an update on recent work with the local jurisdictions that are participating in the Participant Statistical Areas Program (PSAP).

Mr. Xie and Mr. Ngo talked about their recent experience with both the Google Distance Matrix API and VDOT's StreetLight Data account.

10. ADJOURN

The next meeting is scheduled for Friday, May 17, 2019 from 9:30 AM to 12:00 noon [**Editor's note:** As of early May, the plan is to start the May 17 meeting at 10:00 AM, which will allow extra time in the morning for people who are participating in Bike-To-Work Day]. The meeting adjourned around noon.