National Capital Region
Transportation Planning Board

Approved
As of 11/15/19

TPB TRAVEL FORECASTING SUBCOMMITTEE

HIGHLIGHTS OF THE SEPTEMBER 20, 2019 MEETING

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

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MEETING ATTENDEES

MEMBERS, ALTERNATES, AND PARTICIPANTS

- Jonathan Avner (Whitman, Requardt & Assoc.)
- Charles Baber (BMC)
- Kevin Chai (Fairfax Co. DOT)
- Melissa Chow (WMATA) *
- Zuxuan Deng (DDOT)
- Michael Eichler (WMATA)
- Nazneen Ferdous (Jacobs) *
- Sepehr Ghader (University of Maryland)
- Dan Goldfarb (NVTC) *
- Eric Graye (M-NCPPC, Montgomery Co.)
- Manish Jain (Transurban) *
- Kyeongsu Kim (Connetics Transportation) *
- David Kline (Fairfax County DOT)
- Li Li (Whitman, Requardt & Assoc.) *
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Sabya Mishra (Consultant for MDOT-SHA)
- Srikanth Neelisetty (Transurban) *
- Tim Padgett (Kimley-Horn & Assoc.) *
- Krishna Patnam (AECOM) *
- George Phillips (Prince William Co. DOT)
- Mark Radovic (Consultant for MDOT-SHA)
- Harun Rashid (NVTA)
- Amir Shahpar (VDOT)
- Lisa Shemer (MDOT-SHA)
- Christine Sherman (Arlington Co. DES)
- Chris Simons (Citilabs) *
- Howard Slavin (Caliper) *
- Malcolm Watson (Fairfax County DOT) *
- Gabe Yu (Cambridge Systematics) *

COG STAFF

- William Bacon
- Tim Canan
- Anant Choudhary
- Gail Crichlow *
- Joe Davis
- Greg Grant
- Charlene Howard
- Ken Joh
- Sanghyeon Ko
- James Li *
- Nicole McCall
- Mark Moran
- Ray Ngo
- Wanda Owens
- Jinchul (JC) Park
- Jane Posey
- Daniel Son
- Dusan Vuksan
- Feng Xie
- Jim Yin

* 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 July 19, 2019 meeting of the TFS were approved without changes.

2. STATUS REPORT ON TPB'S TRAVEL DEMAND FORECASTING MODEL DEVELOPMENT ACTIVITIES

A. GEN2/VER. 2.3 MODEL STATUS REPORT

This item was presented by Mr. Ngo and Mr. Xie, who spoke from a set of presentation slides, which were distributed to the subcommittee and posted on the TFS website after the meeting.

Mr. Ngo provided a status report on the TPB's Generation-2 (Gen2) series of models, both the production-use models (e.g., Ver. 2.3.75 and Ver. 2.3.78) and the developmental models (e.g., Ver. 2.4 and Ver. 2.5). He stated that staff had made updates to the Ver. 2.3 Model regarding 1) the ability to replicate commuter rail ridership and 2) the treatment of external auto trips in trip distribution. Mr. Ngo said that the next step would be merging these two refinements into a consolidated model version, likely called Version 2.4. He noted that staff plans to conduct a re-calibration of the new model. There were no questions for Mr. Ngo.

Mr. Xie presented recent work on updating the calibration and validation targets for commuter rail as part of the Gen2/Version 2.3 Model development efforts to better simulate commuter rail ridership. He discussed the discrepancies that staff had noticed in the observed commuter rail data during a recent investigation into why commuter rail ridership was being underestimated by the model. He then presented the processing errors that had been found in the on-board survey data and the corresponding fixes that were used. Mr. Xie also presented the updated calibration and validation targets for commuter rail resulting from the fixes. At the end of the presentation, he outlined the next steps regarding re-calibration and re-validation of the Version 2.3 Model with updated commuter rail targets.

Following the presentation, Dr. Deng asked about the percentage of commuter rail trips. Mr. Xie answered that in 2014, commuter rail trips accounted for only 4% of all transit trips. Mr. Vuksan also mentioned that the percentage relative to all person trips would be even lower.

B. GEN3 MODEL STATUS REPORT

This item was presented by Mr. Moran, who spoke from a set of presentation slides, which were distributed to the subcommittee. Mr. Moran stated that the goal of this project is to seek consultant assistance on the development of the National Capital Region Transportation Planning Board's (TPB's) next-generation travel demand forecasting model, known as the Generation-3 or Gen3 Model. The services that COG is seeking include model estimation, calibration, validation, sensitivity testing, documentation, and training – resulting in a final model application package that is useable by TPB staff and metropolitan Washington modeling stakeholders. The project is to last three years and has a budget of $900,000. Multiple proposals were received from qualified vendors. A Technical Selection Committee (TSC) was formed, including representatives from the District of Columbia, Maryland, Virginia, WMATA, and COG/TPB staff.

The TSC reviewed consultant proposals and scored each proposal according to established guidelines (July). Initial scoring resulted in a short list of potential vendors. Vendor interviews were held in late August and early September. Following the interviews, the TSC re-scored the vendor proposals, considering both the vendor proposals and the vendor interviews. The second scoring resulted in a preferred vendor. The selected vendor will be announced by COG's Contracting Office,

after all necessary contracting steps have been undertaken. The start of the contract is expected in October. [Editor's note: Contract start is now expected in November.] There were no questions.

3. 2017-18 COG/TPB REGIONAL TRAVEL SURVEY: STATUS REPORT

This item was presented by Dr. Joh, who spoke from a set of presentation slides, which were distributed to the subcommittee. He provided an update on the 2017-2018 Regional Travel Survey (RTS), a once-in-a-decade household travel survey for the National Capital Region. He provided an overview of the RTS files and shared preliminary findings of select indicators from the RTS. Dr. Joh also outlined the next steps in the remaining data processing tasks and invited the subcommittee to provide input on future RTS tabulations.

Ms. Yuanjun Li asked whether the data in the presentation is from the previous household travel survey (2007/08) or the 2017/18 RTS (Slide 6). Dr. Joh responded that the data is mainly from the 2017/18 RTS. Mr. Eichler commented that there was a large shift in the percentage of 5+ person households and 1 person households since 2007/2008, which may suggest something is going on regionally or with the data (Slide 6). Dr. Joh agreed that it was a large shift but said there could be several explanations in the data that may account for the shift. Mr. Ngo asked whether the percentages can be shown summing vertically in the table (Slide 10), not just horizontally. Dr. Joh said yes that could be done. Mr. Moran asked whether the percentage of taxi use can be shown in the table (Slide 10). Dr. Joh responded that the table does not include all travel modes, but it does include ride-hailing. An attendee asked whether home delivery was calculated one time, two times, or three times a week. Dr. Joh responded that it was based on whether the home received a delivery and not the frequency. Mr. Ngo said the number seemed low because it means two thirds of homes did not have home delivery. Mr. Graye said that at any given day, one third of people receive home delivery and Dr. Joh and Mr. Vuksan said that it is calculated by average weekday. Mr. Ngo agreed that it is a large number.

Mr. Eichler said, from a transit perspective, he would want to know more about the 44.5 percent of persons who did not report taking any transit (slide 10) and correlating that with their home and work locations to find out who they are, what choices they are making, and how competitive the transit option is in terms of cost and travel time. He said he would want to know the locations for the transit market and asked if he could get a subset of this data. Dr. Joh agreed that it would be an interesting question to investigate further. Mr. Phillips asked if the survey considered the impact of fuel prices on transit ridership. Dr. Joh responded that the survey asked about whether out of pocket costs were incurred for parking and tolls, but it did not ask for specific amounts paid for gas or tolls.

Ms. Yuanjun Li noted that the younger generation make fewer trips so it would be interesting to see how lifestyle changes impact shopping trips and how these impact travel patterns. Dr. Joh said it is an interesting investigation for research and there is much attention on trip patterns for younger people. Ms. Li also said that it would be interesting to see how equity issues affect travel behavior. Dr. Joh responded that COG/TPB will likely examine equity dimensions in the future using COG's Equity Emphasis Areas (EEAs).

Regarding slide 6, Mr. Eichler said that he would be interested to see more details regarding people living in households with five or more persons, such as who is living in these houses (e.g., young people living in large groups or multi-generational families). Dr. Joh agreed with him. Mr. Xie asked if the survey could be compared with the CTPP data because consultants in the past have stated that the CTPP data better reflect the travel patterns of commute trips in this region. Dr. Joh said that the CTPP data will be compared with the RTS data. An attendee asked what the sample size was for the survey. Dr. Joh responded that it is a sample of about 16,000 households. An attendee asked when the survey data would be available for public access. Dr. Joh said that the survey data will be released to the public after the data files are cleaned and edited, probably in the middle of 2020

(end of FY 2020). Mr. Canan added that the public release data file will not contain personally identifiable information.

4. BIG DATA EVALUATION PROJECT

This item was presented by Mr. Canan, who spoke from a set of presentation slides, which were distributed to the subcommittee. He presented an overview of The Big Data Evaluation project, which will entail an independent consultant evaluation of Big Data and its use and limitations in regional travel and mobility analyses and modeling. In general, the scope of the project calls for the consultant to: (1) convene a Study Work Group and prepare a work plan; (2) develop an understanding of TPB programmatic requirements and analytical/modeling processes; (3) review the state of the practice of Big Data use and applications by other MPOs and planning agencies; (4) conduct an independent evaluation of Big Data sources for their potential in supporting TPB staff in meeting its requirements/needs; (5) recommend options and considerations for acquiring Big Data; and (6) prepare a final report documenting the outcome of the analysis. Mr. Canan provided a series of key questions that the study will address, as well as key research considerations that have been preliminarily identified. These considerations are grouped into seven (7) general categories: Travel Demand Forecasting/Modeling (TDFM), TNCs, Travel Demand Management (TDM), Connected Autonomous Vehicles (CAVs), Traffic Counts, System Performance/Congestion Management, and "Other Research." The project will be carried out through the UPWP core program during FY 2020. Kimley-Horn, a planning and design firm, was selected to conduct the evaluation.

Following the presentation, Mr. Eichler asked about the status of cell phone trace signals and how they might be applied in this study and how privacy issues might be considered. Mr. Canan explained that essentially it will be up to the consultant to understand what Big Data sources exist that handle these elements and that the recommendations should account for these limitations and potential uses. In citing a recent conversation with a Big Data provider, Mr. Canan illustrated how origin/destination (O/D) data can now be derived from smartphone use records and these datasets can be combined with other geographically-based datasets such as Census or land use records to better describe O/D trips and who is making them. He explained that there appears to be a great deal of potential in using such data but also explained there are inherent risks due to the broad set of assumptions that must be made to build these datasets and the lack of ability of an agency to control the methodologies and assumptions contained within the "black box" of big datasets.

5. MARYLAND STATEWIDE TRANSPORTATION MODEL (MSTM), LATEST DEVELOPMENTS

This item was presented by Ms. Shemer, Mr. Radovic, Mr. Ghader, Mr. Avner, and Mr. Mishra who spoke from a set of presentation slides. Ms. Shemer began the presentation, discussing how the MDOT-SHA's Travel Forecasting and Analysis Division (TFAD) interacts with various programs, agencies, and technical tools (slides 1-5). Next, in slides 6-8, Mr. Radovic discussed the Maryland Statewide Transportation Model that is formulated as a trip-based model (MSTM-TBM). He also discussed NCHRP/SHRP2 awards and other research (slide 9). Next, Mr. Avner discussed multi-resolution zones and networks, which leveraged multi-scale data from MDOT and partner models. Mr. Avner presented some details of zonal and network database structures, with examples and further plans for development (slides 10-19). Next, Mr. Mishra discussed statewide freight models based on a SHRP2/C20 research grant. Mr. Ghader discussed a long-distance passenger model. He also discussed MSTM, Ver. 2, an activity-based model (ABM) that is undergoing testing. The presentation concluded with a discussion of upcoming MDOT-SHA initiatives (slide 36, Mr. Avner) and research between MDOT-SHA and the University of Maryland (slide 37, Ms. Shemer).

Mr. Moran asked whether there was any documentation on the new data model (slide 12) used for the transportation networks described in the presentation. Mr. Avner answered that such documentation is on the to-do list. Regarding slide 18 ("Management via a graphical user interface"),

Mr. Moran asked what type of geodatabase is being used to manage the networks. Mr. Avner said that they are using an Esri Personal Geodatabase right now, which means that only one person can make edits at once. He noted that they would like to investigate moving to a more enterprise solution. Regarding slide 14 ("Sample Scalable Platform: Zone Structure"), Mr. Ngo asked whether SHA has experienced problems with nesting zone systems, e.g., moving from MPO Zones to Census Blocks. Mr. Avner said that the goal is to have the zone systems nest with each other, but there are sometimes cases where the nesting does not work.

Regarding slide 25 ("MSTM-ABM: Future C20 Implementations"), Mr. Rashid asked whether the MSTM-ABM considers online sales and delivery trucks. Mr. Mishra said that that has not been included in the model yet. Instead, they have researched the impact of ports or big employment facilities in the region. Regarding slide 36, Mr. Moran asked if SHA plans to continue to use the MSTM-TBM after the MSTM-ABM is brought into production use. Mr. Avner answered that the current plan is to keep both the trip-based and activity-based models for a while.

6. ROUNDTABLE DISCUSSION OF CURRENT MODELING EFFORTS AROUND THE REGION

Ms. Sherman noted that Arlington County is developing a simplified tour-based model with Citilabs. As part of the project, Arlington developed a new TAZ system with 425 zones, which previously had 141 zones. Also, a year-2018 roadway network was developed using true shape display, along with a bike network. Arlington is also collecting data about school enrollment that will be used by the model. It is expected to have a working model completed by late spring or summer. Mr. Moran invited Arlington Co. to present on this work at a future TFS meeting. Mr. Rashid mentioned modeling work being done by AECOM regarding travel impacts for the nine member jurisdictions, to identify the relationship between revenues and benefits.

7. OTHER BUSINESS

There was no other business.

8. ADJOURN

The meeting adjourned around 12:05 P.M. The next meeting is scheduled for Friday, November 15, 2019 at 9:30 A.M.