



TPB TRAVEL FORECASTING SUBCOMMITTEE

HIGHLIGHTS OF THE JULY 20, 2018 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

- Bill Allen (Citilabs) *
- Jim Bunch (Sabra & Associates, Inc.)
- Yohan Chang (Connetics Transportation Group)
- Zuxuan Deng (DDOT)
- Kwasi Donkor (Fehr & Peers) *
- Paul Gilliam (Vision Engineering & Planning)
- Dan Goldfarb (NVTC)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Naveen Juvva (Streetlight Data)
- Kyeongsu Kim (Connetics Transportation Group)
- David Kline (Fairfax DOT)
- Jaesup Lee (M-NCPPC, Montgomery Co.)
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Feng Liu (Cambridge Systematics)
- Srikanth Neelisetty (Transurban)
- Krishna Patnam (AECOM)
- Prasad Pulaguntla (Arlington Co. DES) *
- Harun Rashid (NVTA)
- Amir Shahpar (VDOT)
- Christine Sherman (Arlington Co. DES)
- Jacob Smith (Arlington Co. DES)
- Aichong Sun (AECOM)
- Jiaxin Tong (Kimley-Horn)
- Catherine Vanderwaart (WMATA)

COG STAFF

- William Bacon
- Anant Choudhary
- Joe Davis
- Ken Joh
- James Li
- Andrew Meese *
- Ron Milone
- Mark Moran
- Ray Ngo
- Jane Posey
- Meseret Seifu
- 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 Ms. Yuanjun Li.

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

The highlights of the May 18, 2018 meeting of the TFS were approved without change.

2. STATUS REPORT ON THE AIR QUALITY CONFORMITY ANALYSIS OF VISUALIZE 2045, THE TPB'S LONG-RANGE TRANSPORTATION PLAN (LRTP)

Mr. Vuksan presented this item and spoke from a set of presentation slides, which were distributed to the subcommittee. He provided a brief status report on the air quality conformity (AQC) analysis of Visualize 2045. Mr. Vuksan indicated that the analysis, using a new version of the Ver. 2.3 travel model and an updated set of inputs, is currently under way. He noted that the AQC scope of work had been modified in May to reflect new air quality conformity requirements (e.g., the addition of analysis year 2021) and new financial information from WMATA (i.e., the removal of Metrorail constraint to/through the regional core, and thus, the elimination of the analysis year 2020). Mr. Vuksan noted that the TPB is expected to approve the analysis and the plan in October 2018, and that the new travel demand model and model inputs related to Visualize 2045 are expected to be available for release in December 2018.

3. STATUS REPORT ON THE VER 2.5 TRAVEL MODEL DEVELOPMENT AND EVALUATION

Mr. Milone presented this item and distributed presentation slides to the subcommittee. His status report focused on the most recent development activities regarding the Ver. 2.5 model, including its background, history, features, performance, and sensitivity test findings. The Ver. 2.5 travel demand model has been under review by TPB staff for the past 12 months and it currently remains a developmental model. He reminded the subcommittee that the Ver. 2.5 model will not be brought into production until several conditions are met:

- The Ver. 2.5 model should validate as well as, if not better than, the existing Ver. 2.3 model;
- The Ver. 2.5 model needs to respond logically, rationally and reasonably to altered system and policy assumptions;
- The time required to apply the Ver. 2.5 model should be comparable to (ideally, less than) the existing Ver. 2.3 model;
- The Ver. 2.5 model must be well documented.

Mr. Milone explained that staff has been examining a few variants of the Ver. 2.5 model, including preparing associated performance summaries. Staff has established that the Ver. 2.5 model performance, as assessed by jurisdictional VMT, link-level percentage Root-Mean Square Error (RMSE), screenline crossings and regional transit boardings, is currently inferior to that of the existing Ver. 2.3 model, but still within a reasonable margin for a process that is in development. Mr. Milone pointed out a few notable performance issues that were detected with the Ver. 2.5 model. For example, staff noted a substantial over-estimation of VMT for the City of Alexandria and an over-estimation of traffic volumes crossing the Potomac River. More investigation into these issues are warranted in the staff's view.

Mr. Milone presented and discussed the results of five sensitivity tests conducted by staff. The tests investigated the Ver. 2.5 model's response to:

- A change in urban form (intersection density) variables for a specific TAZ
- Highway capacity increases and decreases on specific bridge facilities
- Increasing the frequency of a specific urban bus line
- A global increase in Metrorail fares

The results of the five sensitivity tests appeared generally reasonable and acceptable in the staff's view. More testing with respect to how the model responds to highway pricing changes is planned. Staff also plans to explore further refinements that might improve the model's overall performance.

Mr. Moran suggested that the observed over-estimation of VMT in Alexandria may be the result of improper jurisdictional link coding on the southern portion of the Capital Beltway. Mr. Milone stated that jurisdictional link coding in the Alexandria area was examined and refined several years ago. He agreed that jurisdictional link codes should be re-checked.

Mr. Goldfarb asked if the transit fare scenario accounted for the federal employee-based transit subsidy program, which grants a sizable transit fare discount to many federal employees. Mr. Milone stated that the transit fare subsidy is not reflected in the model, since it is difficult to reflect such changes in aggregate trip-based models. Mr. Goldfarb also asked if staff plans to assess the Ver. 2.5 model's response to parking cost changes. Mr. Milone stated that this type of testing would be undertaken.

Mr. Allen asked if there is any possibility that staff may abandon some of the refinements included in the Ver. 2.5 travel demand model and thereby return to Ver. 2.3-based procedures. Mr. Milone said that the option to revert to existing procedures is always an available option.

4. STATUS REPORT ON DEVELOPING THE TPB'S GENERATION-3 TRAVEL DEMAND FORECASTING MODEL

Mr. Moran presented this item and spoke from a set of presentation slides, which were distributed to the subcommittee. He first discussed the project timeline for developing the TPB's Generation-3 (Gen3) regional travel demand forecasting model, noting that project has four main steps:

- Request for Information (RFI): To gather information
- Request for Proposals (RFP): To select a vendor to develop the model
- Vendor selection & development of contract
- Develop Gen3 model

The RFI advertisement ended on July 12. In response to the RFI, there were seven formal proposals (from vendors) and one informal proposal (from a non-vendor). TPB staff is mindful that the RFI process required respondents to voluntarily undertake professional work without payment and we were pleased to receive what appears to be a fair amount of thoughtful and insightful feedback. Mr. Moran thanked those who submitted a response to the RFI, noting that the information supplied should help improve the model specification for the upcoming RFP. Of the formal responses, two were from software vendors and five were from consulting firms. Under the original plans, TPB staff had two weeks to review the RFI responses. However, **given the large number of responses, the review period has been expanded to four weeks.** Staff will follow up with vendors as necessary.

Mr. Moran noted the following next steps, including approximate dates:

- TPB staff review of vendor responses: August 2018
- RFP advertisement: October
- Vendor selection: October to November
- Start of contact: December

There were no questions or comments.

5. 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. He provided an update on the recruitment and completion rates to date. Dr. Joh also gave an update of the sampling plan and discussed the Hispanic and Latino outreach for the survey.

An attendee asked how the survey was performing in low-income areas. Dr. Joh responded that low-income households are a difficult demographic group to reach and that some of the low-income areas, such as the District of Columbia east of the Anacostia River, and parts of Prince George's and Prince William Counties, have relatively low response rates, while other low-income areas have had better than expected response rates. Dr. Joh said that the Hispanic outreach should help improve response rates in some low-income areas. Mr. Milone commented that the TPB is interested in environmental justice analysis issues and low-income, minority, and/or larger households have traditionally been underrepresented in these types of surveys.

An attendee asked what the overall cost or budget for the travel survey is, and the average cost per response. Dr. Joh responded that the overall budget for the travel survey is \$2 million, and the average cost per completed household is approximately \$130-150. He noted that the cost per completed household includes the cost of mailing survey materials to households who do not respond to the survey.

An attendee asked, out of all responses received from the survey, how many are valid responses. Dr. Joh responded that completed responses should be valid since the survey requires all questions to be answered and all household members to complete the travel diary. The attendee also asked whether the entire survey is rejected if the responses do not make sense. Dr. Joh responded that the raw survey data needs to be cleaned and imputed to ensure that trip patterns make sense.

Ms. Li commented that she received an invitation for the Maryland Travel Survey by MDOT, and provided some observations about her experience with the survey.

6. BRIEFING ON THE TPB'S DRAFT 2018 CONGESTION MANAGEMENT PROCESS (CMP) TECHNICAL REPORT

Mr. Sivasailam and Mr. Li presented this item and distributed presentation slides to the subcommittee. Mr. Sivasailam discussed the federal laws and regulations which govern the CMP, how the CMP addresses them, and how the CMP is integrated into Visualize 2045, the TPB's long-range transportation plan. Mr. Li discussed some of the details included in the report and the appendix. He presented several figures including the top-10 bottlenecks and congestion locations on major commuter routes in the region. He also discussed the schedule, including when comments are due and when the report will be accepted by the TPB Technical Committee as final.

One of the questions asked by a participant was whether the data reflected annual daily traffic or annual weekday traffic. Mr. Li responded that the data was annual weekday traffic. A second question was whether person trips were recorded. TPB staff noted that the probe data is limited to travel time and speeds of vehicles. A participant asked whether the CMP data for arterial highways was by direction. Mr. Li responded that, for the region-level analysis at the daily level, direction was not an issue. However, he noted, when a peak-period analysis is performed, the direction of travel is used.

7. USE OF BIG DATA FOR PROJECT PLANNING AT THE VIRGINIA DEPARTMENT OF TRANSPORTATION

Mr. Shahpar presented this item and spoke from a set of presentation slides. He provided an overview of how the Virginia Department of Transportation (VDOT) uses big data to enhance transportation analyses and to identify transportation needs. VDOT is pushing for the use of big data to support their decision-making process and to make decisions based on more reliable and accurate data. In doing so, VDOT hopes to ensure that the agency makes good use of tax-payer monies. VDOT has used big data to support decision making in several studies, including Transform 66, VTrans2040 (Virginia's long-range multimodal transportation plan), TransAction 2040, Smart Scale, and VDOT 511. Mr. Shahpar presented several examples of VDOT's use of big data, including the use of Streetlight Data for corridor studies, corridor improvements, validating travel times from the travel demand model, an origin-destination analysis of the Horner Road park-and-ride parking lot, and congestion studies (such as a Chain Bridge Road corridor study). He also mentioned a recently released TRB report about cell-phone data.¹

Mr. Milone asked how Streetlight Data determines both the home and work location of people using mobile devices. Mr. Juvva said that they use a 100-meter grid that covers the U.S. Every mobile device is tied to one of those grid cells, based on the movement patterns of the device over time. Streetlight Data then identifies up to five cells with a non-zero probability of being either the work or home location. He noted that the mobile phone data is anonymized, so there is no information about the name or address tied to the device. Regarding slide 15 ("Develop Future Volume – Northstar Boulevard"), Mr. Gilliam wanted to know why VDOT was interested in estimating the future-year volume on this road without considering other planned neighboring road projects. Mr. Shahpar explained that there was less certainty that some of the other projects would have funding to be built in the planned opening year of the planned Northstar Boulevard, so it was decided that an estimate of future-year traffic should be made without the other planned, but less certain, projects.

Mr. Rashid mentioned that NVRTA has been using Streetlight Data, via VDOT's sharing agreement, and said that they had found some cases where there seemed to be a mismatch between the vehicle volumes shown in Streetlight Data and the observed traffic counts (AADT). Mr. Juvva noted that the Streetlight Data is based on a subset of mobile devices, thus it can pick up total vehicle volumes. Thus, Streetlight Data provides a relative measure of the flow from one origin to a destination. Mr. Li noted that he had used Streetlight Data for testing purposes and wondered whether there is double counting between the GPS-based data and the location-based services (LBS) data. Mr. Juvva noted that there is some double counting, but, based on internal testing, there is not very much.

8. LESSONS LEARNED FROM THE 7TH TRB INNOVATIONS IN TRAVEL MODELING CONFERENCE

Mr. Moran presented this item and spoke from a set of presentation slides, which were distributed to the subcommittee. The 7th Transportation Research Board (TRB) Innovations in Travel Modeling Conference was held in Atlanta, Georgia from June 24-27, 2018. This conference series first began in 2006, has been held every two years since then, and is intended to bridge the gap between research and practice. The conference website² includes a program that has links to many of the conference presentations. Mr. Moran said he saw three major themes at the conference:

- Connected and autonomous vehicles (CAVs)
- Transportation network companies (TNCs)/ride hailing services, such as Uber and Lyft

¹ Kimon Proussaloglou et al., "NCHRP Research Report 868: Cell Phone Location Data for Travel Behavior Analysis, NCHRP Project 08-95," (TRB Webinar, August 2, 2018).

² <http://onlinepubs.trb.org/onlinepubs/conferences/2018/ITM/Program.pdf>

- Big data/data-driven modeling

Mr. Moran's presentation slides covered some of his lessons learned/findings from the conference. Regarding slide 11 ("Findings: TNCs"), Ms. Vanderwaart noted that the new DC law that increased taxes on TNCs also required TNCs to provide to the DC government trip counts with X-Y coordinates (New York requires the same disclosure). Hopefully, the DC government will share the information with regional agencies that could benefit from the information. Mr. Moran noted that, in the case of San Francisco, the California Public Utilities Commission (CPUC) regulates TNCs and requires data reporting by TNCs, but his understanding was that CPUC will not share these data with local jurisdictions and the public. After Mr. Moran's presentation, Ms. Li, another conference attendee, shared some of her lessons learned from the conference.

9. ROUNDTABLE DISCUSSION OF CURRENT MODELING EFFORTS AROUND THE REGION

Due to time restrictions, the roundtable discussion was cancelled from the agenda.

10. NEXT MEETING DATE AND OTHER BUSINESS

The next scheduled meeting of the TFS is Friday, September 21, 2018 from 9:30 AM to 12:00 noon. Mr. Moran announced that the documentation of the transportation networks used as inputs to the travel model has recently been updated.³ Mr. Moran also announced that Tim Canan, COG/TPB staff, is working on developing a study, in FY 19, to analyze and understand transportation network company (TNC) influence and demand in the Washington region. Lastly, Mr. Milone announced that he will be retiring from COG in October 2018. The meeting adjourned around noon.

*** The meeting highlights were prepared by Joe Davis, Mark Moran, and Ron Milone ***

³ "Highway and Transit Networks from the VDOT and MDOT Off-Cycle Amendment to the 2016 CLRP (TPB Version 2.3.70 Travel Model)," Draft Report (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, June 15, 2018), <https://www.mwcog.org/transportation/data-and-tools/modeling/model-documentation/>.