National Capital Region
Transportation Planning Board

TPB TRAVEL FORECASTING SUBCOMMITTEE

HIGHLIGHTS OF THE JANUARY 27, 2017 MEETING

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

MEETING ATTENDEES

MEMBERS, ALTERNATES, AND PARTICIPANTS

- Anjuli Bakhru (Fehr & Peers DC) *
- Stephen Buckley (WSP | Parsons Brinckerhoff)
- Melissa Chow (WMATA)
- John (Jay) Evans (Cambridge Systematics)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Manish Jain (Transurban)
- Eric Jenkins (Loudoun Co. DTCI)
- Kevin Johnson (Fehr & Peers) *
- Bob Josef (VDOT) *
- David Kline (Fairfax County DOT)
- Yuanjun Li (M-NCPPC, Montgomery Co.)

- Will Lisska (Fehr & Peers) *
- Feng Liu (Cambridge Systematics)
- Lou Mosurak (Loudoun Co. DTCI)
- Krishna Patnam (AECOM) *
- Harun Rashid (NVTA)
- Matthew Ridgway (Fehr & Peers DC)
- Alex Rixey (Fehr & Peers DC)
- Amir Shahpar (AECOM)
- Jiaxin Tong (Kimley-Horn & Assoc.)
- Lihe Wang (Transurban)
- Jongsun Won (PTV Group)

COG STAFF

- William Bacon
- Wanda Hamlin
- Charlene Howard
- Ken Joh
- Arianna Koudounas

- Ron Milone
- Jessica Mirr
- Mark Moran
- Dzung Ngo
- Rich Roisman

- Dusan Vuksan
- Feng Xie
- Jim Yin

* Attended the meeting remotely via WebEx/teleconference

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

1. INTRODUCTIONS AND APPROVAL OF MEETING HIGHLIGHTS FROM THE SEPTEMBER 23 MEETING

After introductions, the highlights from the November 18, 2016 meeting of the TFS were approved without change.

2. PROPOSED FY 2018 UPWP ACTIVITIES: MOBILE EMISSIONS PLANNING AND TRAVEL FORECASTING

This presentation comprised two parts: First, Mr. Milone briefed the subcommittee on the two main work activities under his purview: 1) Mobile Emissions Planning and 2) Travel Forecasting. The TFS is the oversight committee for Travel Forecasting, but not for Mobile Emissions Planning, which is overseen by both the Technical Committee and the Metropolitan Washington Air Quality Committee (MWAQC). Second, Mr. Roisman briefed subcommittee on the Travel Monitoring and Data work activity, which includes four components: 1) household travel survey, 2) travel monitoring counts/studies,[1] 3) the regional transportation data clearinghouse, and 4) GIS technical support for all planning activities. The first two are overseen by the TFS and the last two are overseen by the Technical Committee. Mr. Roisman also manages the Continuous Airport System Planning (CASP) program, but this was not discussed, since it is overseen by the Aviation Technical Subcommittee.

Regarding Mr. Milone's presentation, he said that the proposed funding for the FY 2018 UPWP would not be much different from the past. Mr. Milone noted that the COG/TPB Version 2.3.66 model would likely remain the adopted forecasting process for the next two years.

Mr. Rashid asked for a description of COGTOOLS (slide 8). Mr. Milone said that COGTOOLS is a GIS-based graphical user interface (GUI) that allows one to interact with the multi-year geodatabase containing all the highway and transit network elements.

3. STATUS REPORT ON COG/TPB'S TRAVEL DEMAND MODELING IMPROVEMENT EFFORTS

This presentation was about Task Order 17.2 (short-term model improvements to the current TPB regional trip-based travel demand model). The presentation comprised two parts: First, Mr. Moran briefed the subcommittee on work conducted by COG/TPB staff. Second, Mr. Evans presented a status report on work performed by the consultant team on this task order.

Regarding COG/TPB staff work on Task Order 17.2, Mr. Moran said that staff had sent most of the requested datasets to Cambridge Systematics (CS) and would soon send out the dataset for one additional request from CS.

Mr. Jenkins asked whether the survey datasets transmitted to CS would be available for local jurisdictions. Mr. Moran said they would, upon request via email.

Regarding the Version 2.5 travel model that Mr. Jenkins had asked about during Mr. Milone's presentation, Mr. Moran explained that Version 2.5 is just a placeholder name for the updated trip-based model that will include the three major enhancements. Mr. Jenkins asked whether the Version

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[1] Formerly known as Cordon Counts/HOV Monitoring.

2.5 model would be an activity-based model (ABM). Mr. Moran said that it would still be a trip-based model, and that the strategic plan says the development of the ABM will start in 2018.

Regarding CS's presentation, Mr. Evans presented the work plan, the model estimation data development, and some elements of the model updates that CS was working on, which cover three main areas: non-motorized modes, mode choice, and manage-lane modeling.

Mr. Milone asked which software CS staff had used to handle the survey re-weighting, which was discussed on slides 4 and 5. Mr. Evans thought that CS staff had used R for the task. Mr. Milone asked whether the code would be part of the deliverable. Mr. Evans said it would be.

Ms. Li asked whether the structure or the number of modes of the mode choice procedure would be changed. Mr. Evans said that the plan was to develop a less complicated transit nest in the mode choice model, which is also called a flattened mode choice model. The plan is that prediction of transit sub-modes would occur in the transit assignment. The rationale is that the flattened mode choice model would have a better ability to represent the diversity of transit options and would do at least as good as the current structure. Mr. Milone added that WMATA advocated for the ability of the COG/TPB model to better address the transit sub-modes, such as the distinction between light rail and streetcar. To do so, a model would likely have to consider the amenities of each sub-mode, such as reliability and cleanliness.

Mr. Graye asked whether BRT would be one of the sub-modes in developing the model. Mr. Milone said it would be. Mr. Evans clarified that BRT would not be separately coded in the mode choice model, but one could code a BRT route and have the transit assignment assign the mode to the appropriate path. Mr. Evans suggested that one option would be applying some travel time weights in the skim path-building process and assignment process to favor premium modes, as is seen in observed data.

Ms. Li commented that additional surveys might be necessary for the calibration and validation of the developing model, which includes more modes. Mr. Milone acknowledged the limited observed data to calibrate and validate the model. He said that judgement on amenities and some available research could be used to support the tasks. Mr. Evans added that some information coming from the Federal Transit Administration's (FTA's) STOPS model, such as visibility factors as a proxy for product quality, could be used as an analog for what CS plans to do with the transit assignment. Mr. Evans said that CS would work on the updates within the limitations of the currently available surveys. Future surveys could ask more questions. Mr. Evans added that one should be careful when treating reliability as an inherent element of the product since it's tricky to predict the reliability of a mode in the future. He said that the ability to do so would need to consider different factors when doing scenario planning or investment planning. CS does not have plans to incorporate reliability into the upcoming model.

Mr. Li asked how CS came up with values of time (VOTs). Mr. Liu said that the VOTs to be used in the COG/TPB model are borrowed from the five-segmentation VOTs in the Baltimore ABM model. CS used a survey to come up with those VOTs. The use of these VOTs would also be dependent on the model calibration and validation in the TPB modeled area.

Mr. Jain asked for more information about the re-weighting of the travel surveys. Mr. Liu said that the calibration year is 2007, so the intent was to re-weight the multiple surveys being combined into one survey dataset such that we match the regional control totals of the 2007/2008 Household Travel Survey.

Mr. Jain asked whether the re-estimation would revisit the coefficients in the mode choice model or trip rates. Mr. Evans said that CS would not revisit the trip rates, but the non-motorized model

coming after the trip generation model could impact the trip generation in some zones because the non-motorized portion could change as the result of implementing the model.

Mr. Ridgway noted that DDOT has just developed a new trip generation tool, based on data from residential and retail sites, that has both person-trip generation and mode spits. Next, Mr. Ridgway asked whether the mode choice model updates would include transportation network companies (TNCs), e.g., Uber, Lyft. Mr. Evans said that CS would not be including TNCs in the mode choice model, in part because these modes did not exist in the calibration year (2007).

Mr. Rashid asked whether non-motorized trips will be assigned to the network. Mr. Evans said that they would not.

Mr. Vuksan noted that the current TPB model requires multiple runs of traffic assignment to deal with high-occupancy/toll (HOT) lanes, both for toll estimation, and also for model application, which requires two runs, a base and final run. He asked whether the managed-lanes update would still require two model runs. Mr. Evans said that the goal is to require only one model run to save on model run time.

4. 2017-2018 REGIONAL HOUSEHOLD TRAVEL SURVEY: STATUS REPORT #4

Dr. Joh discussed the survey questionnaire, survey sampling plan, and the updated project schedule. Dr. Joh said that COG staff had met with the survey contractor to discuss and finalize the survey questionnaire and print material. He said that the main survey would be planned to start in July 2017, which is in line with the latest update on WMATA SafeTrack Surges to be finished in May and June 2017.

Regarding the 12 months of travel dates in the main survey, Ms. Li asked whether the survey respondents would be the same. Staff said they would be different (i.e., this is not a panel survey).

Mr. Milone recommended the survey instrument be shared with the TFS subcommittee once it is finalized. Dr. Joh said that it could be shared.

5. TPB REGIONAL TRANSPORTATION DATA CLEARINGHOUSE

Ms. Howard briefed the subcommittee on updates to the Regional Transportation Data Clearinghouse (RTDC) and the draft timeline for RTDC data updates in calendar year 2017. Two data sets were updated: 1) truck restrictions and 2) regional boundaries. Five new data sets were added: 1) 2016 CLRP Amendment map package; 2) Capital Bikeshare locations; 3) Electric vehicle charging stations; 4) District of Columbia Bicycle Counts in 2015 and 2016; and 5) Historical Highway Performance Monitoring System (HPMS) data for the 2011 – 2013 period.

Regarding the Capital Bikeshare locations, Mr. Ngo asked whether the locations are in D.C. only or in the whole region. Ms. Howard said it is regional.

Regarding traffic counts to be updated in May, Mr. Milone asked whether it is the 2015 data. Ms. Howard concurred. Mr. Milone asked whether the GIS staff could provide a schedule of upcoming updates. Staff said that it can be provided.

Mr. Graye asked which agencies collected the bicycle counts. Ms. Howard said that the data in DC had been collected on behalf of DDOT, and TPB staff was in the process of preparing a similar dataset for VDOT. She noted that TPB staff would like to have MDOT counts as well. Mr. Graye said that he would contact TPB staff regarding the MDOT bike counts.

Regarding the Metrorail ridership, Ms. Li asked whether the data is for the average weekday. Ms. Howard said that it is the average weekday ridership, per time period, and per month.

Mr. Vuksan asked whether the Round 9.0 Cooperative Forecasts are available in the RTDC. Ms. Howard said that it is. She noted that the draft land use forecast data could be available in the RTDC in September for comments only, but it is unclear at this time whether staff will do that. After its approval by TPB in November, the final data would be made available to the public.

Regarding the Washington-Baltimore Regional Air Passenger Survey (APS) and 2012 Metrorail Passenger Survey, Mr. Moran asked what level of aggregation is used. Ms. Howard and Mr. Roisman responded that, for the 2011 and 2013 APS, the RTDC provides total enplanements by aviation analysis zone (AAZ). Mr. Roisman said that the 2012 Metrorail Passenger Survey data would also be provided in an aggregate form. Ms. Howard added that the Metrorail Passenger Survey also includes PDF attachments to provide more information at the station level, such as income, race, and travel time. Mr. Roisman said that staff offers researchers a public-use version of the APS that has confidential information suppressed.

Mr. Ngo asked whether the Capital Bikeshare locations data include information regarding when each docking station came into operation. Ms. Howard said that there is, in fact, an "install date" field, but it is blank. TPB staff noted that Capital Bikeshare does provide quarterly datasets on usage of the Capital Bikeshare system, but the size of these files is very large.

Mr. Rashid asked whether the RTDC provide metadata. Ms. Howard said that when you search the RTDC for a data set, you will also find a link next to the data with the metadata.

Mr. Milone asked whether the bicycle counts include pedestrians. Ms. Howard said that they are bike counts only. Ms. Howard and Mr. Roisman said the data in Virginia by VDOT used video detector technology to count bikes and pedestrians.

6. AUTONOMOUS VEHICLE BEHAVIOR TESTING WITH THE COG/TPB MODEL

Mr. Rixey, who attended the meeting in person, gave a brief introduction, before Mr. Johnson and Mr. Lisska, who attended the meeting remotely, conducted the main presentation. First, Mr. Johnson described the background and general assumptions that Fehr & Peers made for the sensitivity tests with regional travel demand models to reflect what might happen as a large proportion of autonomous vehicles (AVs) enter the vehicle fleet. Second, Mr. Lisska discussed the test results using the COG/TPB travel demand model and compared these results to those from other regional travel demand models. He concluded that the results found with the COG/TPB model were mostly in the range of the results from the tests with other regional travel demand models. Last, Mr. Ridgway concluded the presentation by saying that the next step would be to compare the AV effects on urban and suburban areas of the model and to see the effects of AVs in the shorter term, such as in the next 10 years.

Mr. Milone commented that the Washington area is different from many of the areas included in the Fehr and Peers testing: it has heavy congestion; it has fixed-guideway transit that is very competitive transit modes; and there is much reliance on transit. Slide 21 showed that an increase in auto availability in the COG model would result in an increase in transit trips of 3.5%. Although this result at first seems counterintuitive, Mr. Milone had an explanation for this finding: He noted that, for this test, all households were given access to at least one vehicle, which means that formerly zero-vehicle households now had one vehicle available. In our model trip generation is a function of auto availability: when auto availability goes up, trip generation goes up. Since most zero-vehicle households are located in transit-rich areas and since you are disproportionately increasing trip

generation rates in areas around existing transit service, this will result in an increase in total transit trips (in this case, the model estimates a 3.5% increase in transit trips). Mr. Milone commented that one of the main shortcomings of the study is that the study did not address the fact that the decision to own an autonomous vehicle is a long-term decision, and this decision is related to another long-term decision: residential location. But most conventional travel models do not address the choice of residential location.

Mr. Meese asked how the study addresses freight mobility, freight AVs and their interactions with non-freight AVs. Mr. Johnson said although this study does not address these issues, Fehr & Peers staff would start looking into these issues later this year. He noted that there had been limited research on autonomous freight vehicles.

Ms. Li commented on some of the policy challenges of AVs, such as insurance. Mr. Lisska said that Test 8 (not shown in the slides) would consider vehicle operating costs, which are extremely difficult to model. Mr. Evans commented that ABMs could potentially help us understand which type of vehicle is used. He mentioned that Southeast Florida had invested some effort in adapting its ABM to handle some of the future mobility questions, including the mix of the vehicle fleet.

Mr. Moran asked which models among the seven tested are ABMs. Mr. Lisska and Johnson said that only two of the seven were ABMs (Puget Sound Regional Council and the Atlanta Regional Commission). He added that the Bay Area Model, a trip-based model, does not include a speed feedback loop.

7. NEXT MEETING DATE AND OTHER BUSINESS

Ms. Chow announced that WMATA had started Silver Line's phase II of forecasting.

The next scheduled meeting of the TFS is Friday, March 17, 2017 from 9:30 AM to 12:00 noon. The meeting adjourned around noon.

*** The meeting highlights were prepared by Dzung Ngo, Mark Moran, and Ron Milone ***

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