



## TPB TRAVEL FORECASTING SUBCOMMITTEE

### HIGHLIGHTS OF THE NOVEMBER 20, 2015 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

- Carlos Carrion (University of Maryland)
- Melissa Chow (WMATA)
- Shweta Dixit (Loudoun Co. DTCl)
- John (Jay) Evans (Cambridge Systematics)
- Dan Goldfarb (NVTC)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Wendy Jia (WMATA)
- Bob Josef (VDOT)
- Chetan Joshi (PTV Group)
- Jaesup Lee (M-NCPPC, Montgomery Co.)
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Feng Liu (Cambridge Systematics)
- Prasad Pulaguntla (Arlington Co. DES)\*
- Alex Rixey (Fehr & Peers)
- Shaleen Srivastava (PTV Group)
- Jiaxin Tong (Kimley-Horn & Assoc.)
- Ryan Westrom (DDOT)
- Jongsun Won (PTV Group)
- Lei Zhang (University of Maryland)

#### COG STAFF

- Anant Choudhary
- Joe Davis
- Wanda Hamlin
- Charlene Howard
- Hamid Humeida
- Eulalie Gower-Lucas
- Andrew Meese
- Ron Milone
- Jessica Mirr
- Mark Moran
- Dzung Ngo
- Jinchul (JC) Park
- Jane Posey
- Wenjing Pu
- Rich Roisman
- Jon Schermann
- Meseret Seifu
- Daniel Son
- Kanti Srikanth
- Dusan Vuksan
- Feng Xie

\* Attended the meeting remotely (via WebEx or teleconference).

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This meeting of the Travel Forecasting Subcommittee (TFS) was chaired by Mr. Westrom.

## **1. INTRODUCTIONS AND APPROVAL OF MEETING HIGHLIGHTS FROM THE SEPTEMBER 28, 2015 MEETING**

After introductions, the highlights from the September 28, 2015 meeting of the TFS were approved without change.

## **2. STATUS REPORT ON COG/TPB'S TRAVEL DEMAND MODELING IMPROVEMENT EFFORTS**

Mr. Evans briefed the subcommittee on the status of the COG/TPB's consultant-assistance project on models development, and he distributed copies of his presentation slides. His presentation focused on work that had been done collaboratively between TPB staff and Cambridge Systematics, Inc. (CS) in FY 15 and FY 16, including developing a short-term implementation plan, which listed planned updates to the existing trip-based model to be implemented in FY 16 & 17 as part of Phase 1 of the strategic plan. The strategic plan had been presented to the TFS at its last meeting in September. The short-term plan was transmitted by COG/TPB staff to the TFS on November 13.<sup>1</sup> Mr. Evans discussed the proposed updates in the short-term implementation plan, which he grouped into four proposed task orders: 1) Task Order 16.2: Advice and Testing; 2) Task Order 16.3: Managed Lanes; 3) Task Order 16.4: Non-Motorized Model Enhancement; and 4) Task Order 16.5: Mode Choice Model Enhancement. Mr. Evans indicated that the next steps would be for COG/TPB staff to review the proposed task orders and for the TFS to provide review of and comment on the short-term implementation plan.

Regarding slide 10 ("Task Order 16.2 – Advice and Testing"), Mr. Westrom asked what data the parcel-level development database would include. Mr. Evans said that it would depend on the use of the database. Mr. Evans and Mr. Liu indicated that the parcel-level database used in the ABM development in Baltimore, which includes different land use type codes and building types, could be a useful reference. Ms. Jia raised a concern about the efforts that jurisdictions would have to make to forecast land use and maintain their local parcel-level database. Mr. Liu said that the database prepared for the model would include only the base year, not the forecast year. But he indicated that forecasting land use data at the parcel-level is already a practice used by local jurisdictions in the Baltimore and Washington, D.C. regions. The parcel-level data is then summed up to the TAZ level before it is given to COG for use in the Cooperative Forecasts. Although there would be collaboration between COG/TPB staff and local planners, COG/TPB staff would not be the ones to update parcel-level databases. Mr. Liu said that future parcel-level data can be forecast by using scenario planning tools, which is a practice currently used in Maryland. Ms. Howard noted that the local jurisdictions in Maryland, D.C., and Virginia have very up-to-date land use parcel data, since it is based on tax records.

Regarding the managed lane modeling tasks in slide 11, Mr. Josef expressed concern about getting traffic count data on the I-95 and I-495 HOT lanes, given the fact that the operator, Transurban, has not been very forthcoming with count data in the past. Mr. Milone also acknowledged the challenge of getting operational data from the HOT-lane operator, but he noted that Transurban has recently sent COG/TPB staff some aggregate toll and count information. Mr. Milone noted that the

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<sup>1</sup> Jay Evans to Mark Moran, "Short-Term Trip-Based Model Strategy Implementation Plan," Memorandum, (November 11, 2015), <https://www.mwcog.org/uploads/committee-documents/aFxfV1pZ20151113130402.pdf>.

Transurban website (<https://www.expresslanes.com/on-the-road>) does provide some real-time toll rate information. Mr. Goldfarb asked Mr. Josef about collecting data from cameras. Mr. Josef noted that VDOT had had traffic counting equipment on the HOV lanes, but, when Transurban took control of the facility, Transurban removed the equipment. Mr. Goldfarb asked whether the terms of the agreement between VDOT and Transurban allowed VDOT to use counting equipment just beyond the limits of the HOT lanes. Mr. Josef said he was not certain.

Regarding slide 13 (“Task Order 16.5 – Mode Choice Model Enhancement”), Ms. Jia asked whether the pedestrian environment factor (PEF), recommended by the previous consultant, AECOM, would be taken into account in improving the mode choice model. Mr. Evans noted that the PEF concept has been around for a while and noted that the specific type of PEF proposed by AECOM, based on the density of Census blocks, is only one of the possible approaches. However, instead of simply using the TAZ-level PEF proposed by AECOM, CS prefers developing its own built-environment variable using the geographic information from the parcel-level database.

Ms. Jia asked which agencies have used differential weights on in-vehicle travel time in path-building to reflect the differences between transit sub-modes. Mr. Liu said CS is testing this idea in Baltimore for the development of its ABM. Mr. Liu also noted that the differential weight concept is also used in FTA’s STOPS. Specifically, FTA allows the use of different discounts of in-vehicle travel time for distinct modes. For instance, a 15% discount will be applied to BRT and a higher discount will be used for LRT. He said that the use of differential weight factors in project application is not yet a common practice, even though FTA is allowing it. CS has implemented the method in some planning projects, such as a New Start project in the area of Raleigh, Durham, and Chapel Hill, NC. Discussing a similar concept in practice, Mr. Evans added that FTA’s STOPS model allows the use of different factors for different modes, including one called the “visibility factor.” The visibility factor will be around 0.25, depending on the number of lanes, for a Small Start’s BRT project, but it will be around 1.0 for an LRT project. The idea is that different modes might have different un-included attributes, and some of those attributes might vary based on how long you use the mode(s). Mr. Evans said that CS and COG/TPB staff are at the stage of researching various modeling methods. Ms. Li recommended that CS review the work done by Portland Metro in the area of PEFs. Mr. Evans said that CS had done a research paper on the practice of non-motorized regional modeling,<sup>2</sup> but he also noted that he was keenly interested in reviewing what new discoveries have been made. Mr. Lee asked whether non-motorized networks, would be integrated into the networks used in the regional travel demand model, especially in the CBD area. Mr. Evans said that the non-motorized GIS database preparation would be a part of Task Order 16.2 (Advice and Testing).

Regarding slide 8, Ms. Jia noted that she was happy to see that COG plans to add transit screenlines. Ms. Jia asked whether any of the proposed updates address improving time-of-day modeling for transit. She indicated that she would like to see parity between the transit assignment and traffic assignment in terms of time-of-day assignment. Mr. Evans noted that he was trying to think through all the implications of such a change (such as the increase in the number of transit networks that one would need to code). Both Mr. Evans and Mr. Liu thought that some of these issues could be explored in the mode choice improvement task order. For example, Mr. Evans noted that one of the current simplifications in mode choice is that it is assumed that home-based work (HBW) trips occur in the peak period and all other trip purposes occur in the off-peak period. Mr. Vuksan asked how

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<sup>2</sup> Feng Liu, John E. (Jay) Evans, and Thomas Rossi, “Recent Practices in Regional Modeling of Non-Motorized Travel,” in *TRB Annual Meeting Compendium of Papers Website, Submitted for Publication And/or Presentation* (Transportation Research Board 91st Annual Meeting, January 22-26, 2012, Washington, D.C.: Transportation Research Board of the National Academies, 2012).

common it is for large MPOs to model daily transit trips by peak and off-peak (P/A format) versus time-of-day transit trips (O/D format). Mr. Liu said that it is not common to model transit trips by time-of-day. He said that the most common practice is to model transit by peak and off-peak periods (P/A format). However, Mr. Liu said that the COG practice of using only HBW trips in the peak and all other trips in the off peak is not common; the more common practice is to have all trip purposes represented in both the peak and off peak periods. Mr. Milone was concerned about the effort needed to move from coding two transit networks (peak and off-peak) to four different time-of-day transit networks (AM peak, midday, PM peak, and evening/night). Mr. Moran stated that the COG/TPB model has five trip purposes, where four are assumed to use the off-peak period travel times and one (HBW) is assumed to use the peak-period travel times. This means the model has five mode choice models. He noted that the AECOM/Wmata approach assumes three trip purposes and each trip purpose has peak and off-peak components, which results in six mode choice models. Mr. Milone said that it is important to keep in mind resource limitations and the time schedule. Mr. Evans recommended going forward with the development of the proposed task orders and considering the Wmata input as the task orders are developed. Mr. Goldfarb asked whether there would be time to comment on the short-term implementation plan. Mr. Milone said that the comment window would be 30 days from the date when the memo was distributed (November 13). Mr. Evans welcomed any feedback to contribute to the proposed task orders. Mr. Westrom suggested Ms. Jia send her comments to COG/TPB staff and CS during the comment window. Ms. Jia asked when the short-term implementation plan would be presented to the Technical Committee. Mr. Moran said that COG/TPB staff would present the strategic plan and short-term implementation plan to the Technical Committee at its December 4 meeting. He also noted that CS and COG/TPB staff could make changes to the short-term implementation plan through the end of the comment period, which would end on Dec. 13.

### **3. INTEGRATED, PERSONALIZED, REAL-TIME, TRAVELER INFORMATION AND INCENTIVE TECHNOLOGY (IPRETI)**

Mr. Zhang briefed the subcommittee on iPreTii, a project to develop technology to deliver personalized, real-time travel information to users and incentivize energy-efficient travel. He distributed copies of his presentation slides. The Department of Energy (DOE) has awarded \$5 million to the University of Maryland to conduct Phase I of the project. This two-year phase is to develop the technology of the project. Mr. Zhang said that Phase II, budgeted at \$30 million, probably would be awarded in the next two years. After two years of working on Phase II, he would expect the tool to be used in applications. Mr. Zhang said that the project team is trying to add even more partners to its team, either private or public sector. He said that a smartphone application built with an incentive structure would have the ability to track, predict and recommend travel behaviors in real time. Mr. Moran asked whether the application would also deal with transit traffic. Mr. Zhang said that it would. Mr. Milone asked whether the project would end up being a commercial product. Mr. Zhang said that in order to get approval for Phase II, DOE would require that the project be conducted by a company that has a business plan to make profit or to attract interest from venture capitalists or government agencies. He said the team would like to receive feedback from the TFS on potential features or issues with the technology of the project. The project's study area includes the entire TPB modeled area and Baltimore region, having a total population of about 8 million. He noted that both roadway and transit networks are included in the model. Regarding the System Model, shown in slide 8, Mr. Milone suggested adding the "do not travel" option as one of the recommendations by the System Model to change the behavior of users when major events happen.

Mr. Zhang said that the Stanford team is working on the trip cancellation scenario and the option likely would be added in Phase II.

Mr. Westrom asked whether only one among five teams working on Phase I would be selected by DOE to get funding for Phase II. Mr. Zhang indicated that that is up to the DOE, but he thought that DOE might choose at least two teams. Mr. Evans noted that there is anecdotal evidence that some apps, such as Waze or Google Maps, move people off of congested routes en masse, which could cause issues on alternate routes. Mr. Evans asked whether the University of Maryland team would look into some of these concerns. Mr. Zhang replied that this is one of the reasons why DOE decided to seek government involvement in the project. Mr. Zhang indicated that the team would use the Amazon cloud server system to store and run the model.

#### **4. DEVELOPING A PLAN OF UNFUNDED PRIORITY PROJECTS FOR INCLUSION IN THE TPB'S LONG-RANGE TRANSPORTATION PLAN**

Mr. Swanson discussed a proposed work program for the Unfunded Capital Needs Working Group to reframe the way that long-range planning is done by the TPB. It is a series of activities over the next three years that would expand the long-range plan beyond simply a constrained long-range plan. He distributed copies of four items: 1) a draft work plan; 2) a timeline/Gantt chart for the project; 3) a memo from Andrew Austin, dated September 15, 2015; and 4) copies of his presentation slides. He discussed some of the background, including the federal requirements for developing a constrained long-range transportation plan (CLRP) and recent dissatisfaction expressed by the TPB about the fact that the region spends billions of dollars on transportation, but congestion is predicted to get worse. He described a vision of developing a series of regional transportation scenarios, one of which would be the CLRP. The new scenarios would be 1) a “no build” scenario, which would show the benefits of the CLRP over doing nothing; 2) an “all build” scenario, which would be the CLRP plus the entire inventory of identified unfunded transportation projects; and 3) an intermediary scenario between the CLRP and the “all build” scenario, which would be the CLRP plus only a subset of the identified unfunded transportation projects, specifically those projects that the region could identify as being the highest priority. This third scenario, which could be called a “vision scenario” or an “unfunded priorities” scenario, would be a regional transportation plan that is similar to what other regions are developing. Mr. Swanson proposed that it might be possible to develop all three of the new scenarios, along with the CLRP, in time for the next major update of the CLRP in 2018. He noted that the full inventory of unfunded projects, which included about 500 combined road and transit projects and more than 500 bike and pedestrian projects, has been coded into an online GIS-based map. The inventory list was provided by local jurisdictions. He noted that the Unfunded Capital Needs Working Group had met three times and, based on their input, there would be a few small changes made to the draft work plan. Mr. Swanson said TPB staff had already started developing a model network representing the “All-Build”/full-inventory scenario, and said that the subcommittee would be updated on progress in the future.

Mr. Milone asked about the number of projects in various categories. Mr. Swanson said that about 500 projects are solely road and transit projects out of a total of over 1000 projects listed in the plan. Ms. Posey noted that a number of bicycle projects in the District affecting roads potentially could be counted as road projects as well. Noting that the work program will use COG/TPB travel model for the assessment, Mr. Roisman thought that there could be good synergy between the proposed work program and the strategic plan for the travel demand model. He then asked whether John's process would make use of alternative land use forecasts. Mr. Swanson said although land use is a key input to the forecasting process, the current plan is not to change land use forecasts; instead, the transportation scenarios would make use of whatever the land use forecasts are at the

given time. Mr. Evans asked whether TPB members expressed any concern that COG/TPB would be put in the position of judging the priority of the projects submitted by the local jurisdictions. Mr. Swanson said that the process would be carried out carefully. He noted that TPB staff would stress to state and local governments that new TPB is not meant to upend the local/state process, but to enhance it by taking a regional perspective. Mr. Swanson said that the goal of developing the vision scenario would be to identify regionally significant transportation projects that the region could “get behind” and support. There was a discussion about similarities and differences between the proposed new TPB process and the planning process used in Northern Virginia (TransAction 2040). Mr. Westrom noted that a large part of the CLRP expenditures are for operations and maintenance (O & M). He asked whether the No-Build scenario includes O & M. Mr. Swanson responded that this scenario would include O & M, which would mean that, financially, it includes a large part of the CLRP. Mr. Swanson clarified that the No-Build scenario would mean no new transportation capacity. Mr. Westrom suggested that a note be added to the figure to explain some of these assumptions. Mr. Vuksan noted that, mechanically, the No-Build scenario consists of using a year-2017 network with 2040 land use.

## **5. ANNOUNCEMENT OF NEW CHAIR FOR 2016**

Mr. Moran said that the chair of the TFS rotates on a calendar-year basis between four entities: Maryland, the District of Columbia, Virginia, and WMATA. Since this was the last meeting of the calendar year for the TFS, Mr. Moran thanked Mr. Westrom of DDOT, the current chair, and presented him with a certificate of appreciation, signed by the chair of the TPB. Mr. Moran then announced that the new chair for 2016 would be Mr. Josef, representing VDOT. Mr. Josef introduced himself and expressed his pleasure to serve as the chair of the TFS for the upcoming year.

## **6. ROUNDTABLE DISCUSSION ABOUT CURRENT MODELING PROJECTS IN THE REGION**

Mr. Goldfarb noted that NVTC is finishing a major milestone of the projected ridership demand and cost estimates of the Route 7 Corridor Transit Study (<http://www.envisionroute7.com>), which was presented at a November meeting. He said that the next phase, conducted in the spring, would come up with a preferred alternative, which would then be carried forward with the jurisdictions.

Mr. Josef said that VDOT has used the COG/TPB travel model to conduct some model runs for the House Bill 2 of 2014 (HB2) Project (<http://www.virginiahb2.org>). This project uses a technique to score transportation projects based on person throughput and select the right projects for funding. VDOT has run the highway assignment of build and no-build scenarios using a traffic assignment with a fixed trip table and has compared the results, which includes vehicle-hours traveled (VHT). He said that he had mixed feelings about using the model to test some of the projects, but he noted that the VDOT Central Office was satisfied with the results.

## **7. NEXT MEETING DATE AND ADJOURNMENT**

The next scheduled meeting of the TFS is Friday, January 22, 2016 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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