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## National Capital Region Transportation Planning Board

Metropolitan Washington Council of Governments

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290

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# Highlights of the March 21, 2014 meeting of the Travel Forecasting Subcommittee

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Held at the Metropolitan Washington Council of Governments, from 9:30 AM to 12:00 PM

Status of highlights: Approved on 5/23/14

## Meeting attendees

- Dan Goldfarb (VHB)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Dial J. Keju (Frederick Co.)
- David Kline (Fairfax County DOT)
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Feng Liu (Cambridge Systematics)
- Krishna Patnam (AECOM)
- Amir Shahpar (AECOM)
- Dan Stevens (Fairfax County DOT)
- Stuart Whitaker (Whitaker Associates)

## COG/TPB staff in attendance

- William Bacon
- Wanda Hamlin
- Charlene Howard
- Nicole McCall
- Ron Milone
- Mark Moran
- Dzung Ngo
- Jinchul (JC) Park
- Jane Posey
- Clara Reschovsky
- Jon Schermann
- Meseret Seifu
- Dusan Vuksan
- Feng Xie
- Jim Yin

The meeting was chaired by Dial Keju of Frederick County, Maryland.

## 1. Introductions and approval of meeting highlights from the January 24 meeting

The highlights from the January 24, 2014 meeting of the Travel Forecasting Subcommittee (TFS) were approved without change.

## 2. COG/TPB transportation network documentation: Status report

COG/TPB staff member Ron Milone presented this item. At the last meeting, Mr. Milone had informed the subcommittee that the network documentation was not yet ready, but would be distributed within a week or two. On February 14, the draft report was released to the TFS via an e-mailed web link. The e-mail also invited TFS members to comment on the report within 30 days. TPB staff received no comments from subcommittee members, but still saw fit to implement a few additional changes to the draft report. The final report is now dated March 18. (Mr. Milone distributed report copies to the subcommittee). Mark Moran stated that an electronic copy of the report will also be posted on the TFS website. Mr. Moran added that those interested obtaining technical modeling data should focus on three main webpages: 1) the TFS webpage, 2) the "model documentation," page, which includes current and older model documentation, and 3) the "data requests" page, which provides the procedure for

requesting copies of the regional model or other similar datasets. No questions were asked of Mr. Milone.

### **3. Consultant-assisted project for development of the TPB travel model: Status report**

This item was presented by Krishna Patnam and Amir Shahpar of AECOM, who distributed a copy of their presentation. This presentation covered the three main task orders for FY 2014:

- Task Order 11: Cube-based procedure to calculate zonal percent-walk-to-transit values (presented by Mr. Patnam)
- Task Order 12: Traffic assignment improvements (presented by Mr. Patnam)
- Task Order 13: Mode choice and transit modeling, including migration to PT path builder (presented by Mr. Shahpar)

The percent of each zone that is within walking distance to transit is an important input to the travel model. COG/TPB staff has asked AECOM to develop a way to calculate these zonal walk percentages within the model application stream as opposed to the existing “off-line” ArcGIS-based procedure. AECOM is proposing an application method that involves a combination of Cube Voyager scripts and ArcPy scripts. Mr. Patnam briefly discussed details about the proposed method. AECOM has finished, tested, and delivered the application and draft documentation to COG/TPB staff, which has begun internal testing the proposed process. During the overview, he mentioned that the process has been integrated into the travel model and could be optionally executed as part of the model stream. The total run times for 2010 and 2040 scenarios are 30-35 minutes and 40-45 minutes, respectively, which are a bit longer than the existing procedures. The ArcPy outputs compare well with the existing ArcGIS-based outputs except for some TAZs that are associated with water bodies. These differences are under investigation.

Mr. Milone asked if the application provided summary walk area statistics at the regional or jurisdictional level. Mr. Patnam said the current process does not provide such summary reports, but added it could be done using the Python language. Mr. Moran asked whether run times were affected by the number of CPU cores in the computer. Mr. Patnam explained that the ArcPy buffering process cannot reliably be multi-threaded using the ArcGIS runtime version because the ArcPy process gets “locked” or becomes un-responsive when more than one instance of buffering is initiated, so the run times are only dependent on the CPU speed and are not a function of the number of cores in the computer. Regarding slide 8, Mr. Milone asked whether the two columns of information for Metrorail included light rail as well as Metrorail, as per the new conventions about walk percentages. Mr. Patnam confirmed that it did.

The goal of Task Order 12 was to improve HOV modeling and HOT-lane modeling in the regional model. As discussed in previous presentations, Mr. Patnam stated that the current plan was to incorporate both toll setting and toll choice into the highway assignment process. AECOM’s proposed approach for HOT-lane modeling involves a series of diversion curves to apportion vehicles among tolled and non-tolled facilities during the traffic assignment process. The curves will be based on log-normal value of time

(VOT) distributions that are tailored to each user class in the assignment process. AECOM is proposing to utilize 24 distributions (six user-classes by four time-of-day periods).

Mr. Shahpar presented on the migration of both the mode choice application program (from AEMS to ModeChoice) and the transit path-building software (from TRNBUILD to Public Transport, or PT). Regarding the migration of mode choice application programs, Mr. Shahpar mentioned that the new program (ModeChoice) runs faster and is easier to maintain. He also pointed out that the ModeChoice control file has a more user-friendly format in comparison with that of the AEMS program. Mr. Shahpar indicated that the ModeChoice application has been executed using pre-existing inputs to the AEMS model. AECOM has determined that the outputs yielded by both programs were identical.

Regarding the migration of transit path-building software, Mr. Shahpar described both the overall objectives and some of the details, such as the proposed mode codes for access, egress and transfer legs. Mr. Shahpar discussed some of the options for PT mode codes that are being considered by both AECOM and COG/TPB staff. He also illustrated the difference in paths resulting from the TRNBUILD program versus those resulting from PT. More testing will be required in order to better explain why these differences exist.

Mr. Milone felt that it would be good to validate the paths to observed data, such as WMATA's on-board rail survey, but he noted that a single path construct may fall short in cases where path options exist (for example some users will opt to use the "virtual tunnel" between Farragut West and Farragut North Stations while others will opt to transfer at the Metro Center Station). Mr. Shahpar suggested that faregate data may be used to ascertain the use of the "virtual tunnel link" between the Farragut West and Farragut North Metrorail stations. Mr. Moran noted that PT will facilitate path checking since PT, unlike TRNBUILD, allows one to view paths on the screen. Also, PT allows for multiple paths between an origin and a destination, whereas TRNBUILD allows only a single, best path. Mr. Patnam and Mr. Shahpar concluded the presentation by discussing the next steps.

Mr. Moran discussed the re-bidding of the task-order, consultant assistance contract for FY 2015, and distributed copies of his presentation. He provided a background of the project, which started in FY 2006, and provided information about the two main phases of the process: developing the RFP and developing the contract. Mr. Moran mentioned that the contract limit would likely be \$200K for FY 2015 FY and then revert to \$150K for subsequent years. He said that the goal was to have a signed contract by July 1, 2014. No questions were asked.

#### **4. Air quality conformity determination of the 2014 CLRP and FY 2015-2020 TIP: Scope of work, schedule, and description of inputs**

This item was presented by Jane Posey, who distributed copies of both her presentation and the scope of work for the air quality conformity assessment. Ms. Posey explained that the air quality conformity analysis begins in the fall when COG/TPB staff asks the implementing agencies for information about transportation projects that will be incorporated into the transportation networks used by the travel demand model. She then described significant additions and changes to the 2014 CLRP. She noted that there is a memorandum listing detailed coding assumptions associated with transit projects in the CLRP.

Mr. Patnam asked whether the memorandum listing detailed transit projects could be posted online. Ms. Posey stated that the memorandum is not yet posted on the TFS web page, but will be posted at a future point in time.

Next, Ms. Posey discussed the scope of work for the air quality conformity analysis and pointed out key features of the scope:

- The MOVES 2010a model will be used to develop mobile emission rates;
- The criteria pollutants will include VOC, NO<sub>x</sub>, CO and PM<sub>2.5</sub>;
- The travel forecasts will be developed with the Version 2.3.52 (or derivative) model;
- Land activity inputs will be developed from the Round 8.3 of the Cooperative Forecasts, which were approved by the COG Board earlier this month; and
- The analysis years will be 2015, 2017, 2020, 2025, 2030, and 2040.

She stated that both the network inputs and the scope of work are currently out for public comment, and the TPB is likely to approve the project submissions in April. After the travel demand model is run, the results will be presented to the TPB in September, and adoption of the air quality conformity assessment is anticipated to occur in October.

Mr. Milone asked whether there would likely be any more schedule delays. Ms. Posey thought that there would not be any more slippage in the schedule this year (the initial slippage was due to funding issues), since the CLRP and air quality conformity assessment has to go to FHWA, which has its own public comment schedule to maintain. She added that if the TPB process resulted in delays past February 2015, COG would be in a lapse and would risk not getting its federal transportation funding.

## **5. Development of exogenous travel inputs for the travel model**

The presentation was given by Mr. Milone, and handouts of his presentation were distributed to the subcommittee. Exogenous travel inputs are travel markets that are not explicitly estimated by the travel model, but rather, are prepared as an input to the travel model. Examples include both non-resident travel (such as external-to-internal travel, through travel, visitor/tourist travel) and resident travel that is not well represented in the household travel survey (such as airport auto passenger travel). He added that these travel markets need to be accounted for to ensure that the estimated VMT from the regional travel demand model will match observed VMT. Mr. Milone reviewed details on the current development process for exogenous travel forecasts:

- External and Through Trips: Base-year traffic counts are established at each external station and future-year counts are estimated based on expected growth rates. The base- and future-year counts are apportioned by vehicle type, movement type (external-to-internal, through), and trip purpose base on observed shares. Through trip forecasts are developed using a Fratar process that utilizes a base-year “seed” pattern for auto and truck trips. Transit external-to-internal trips are not currently addressed in the travel model.
- Airport Trips: Base-year auto driver trips to each of the three regional commercial airports are summarized from the latest Air Passenger Survey. The base-year trip table is “grown” through

time using Federal Aviation Administration (FAA) operations forecasts at the airport trip end and land activity growth at the non-airport trip-end. (The airport growth “controls” the forecasted trip table total). Transit travel at each airport is currently not forecasted.

- Miscellaneous (Visitor/Tourist, Taxi, and School) Trips: Base-year auto driver trips are taken from historical surveyed information. The patterns are factored/“grown” through time based on land activity growth. Transit travel is not currently addressed. The existing surveyed patterns are quite dated and TPB is currently considering how updated miscellaneous trip data might be collected.

Mr. Milone stated that the above exogenous inputs will be updated for the next round of conformity work after the Round 8.3 land activity is released and processed. Mr. Shahpar noted that most of the exogenous travel markets appear to be auto-related, not transit related. Mr. Milone agreed that the focus of the exogenous travel markets is on auto-related travel. TPB staff plans to consider external-to-internal transit trips in the future. He also indicated that auto-access transit trips, while estimated in the existing mode choice step, are not assigned to highway network in the existing traffic assignment step. David Kline asked whether COG/TPB staff was interested in including the auto-access transit trips in highway assignment. Mr. Milone said that staff is interested and is actively discussing the matter with AECOM. Regarding travel to the three commercial airports, Mr. Patnam asked if COG/TPB staff plans to do anything differently, given the upcoming Metrorail access to Dulles Airport (via the Silver Line) and the new access roads being planned to the west of Dulles Airport. Mr. Milone said that airport passenger transit trips are not currently addressed by the existing travel model and so the currently estimated Silver Line ridership will be under-estimated by the model. This is an area that needs improvement.

David Kline requested that COG/TPB staff prepare a summary of the differences between Round 8.3 and Round 8.2 land activity data by the next (May) TFS meeting. Mr. Milone said that staff will provide such a comparison. Ms. Li asked which year is the base year for the model. Mr. Milone responded that 2010 is the base year for the model, and would be the base year for land activity forecasts. He also thought that year-2005 data would also be included as part of the Round 8.3 land activity forecasts, but said the 2005 data would be developed from a previous land activity round.

## **6. Round-table discussion**

No members offered any updates about current projects or activities.

## **7. Next meeting date and other business**

The next scheduled meeting of the TFS is Friday, May 23, 2014 from 9:30 AM to 12:00 noon.

Mr. Moran announced that the TRB Innovations in Travel Modeling (ITM) Conference would be held from April 27-30, 2014, in Baltimore, Maryland, and he encouraged subcommittee members to participate in the event.

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