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# Highlights of the November 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 1/23/15

## Meeting attendees

- Melissa Chow (WMATA)
- Shweta Dixit (Loudoun Co. DTCL)
- John (Jay) Evans (Cambridge Systematics)
- Dan Goldfarb (VHB)
- Wendy Jia (WMATA)
- Robert Josef (VDOT)
- Dial J. Keju (Frederick Co.)
- Li Li (Whitman, Requardt & Assoc.)
- Feng Liu (Cambridge Systematics)
- Daniel Reese (FAMPO)
- Dan Stevens (Fairfax County DOT)
- Jiaxin Tong (Kimley-Horn & Assoc.)
- Yao Yu (UDC)
- Ryan Westrom (DDOT)

## COG/TPB staff in attendance

- William Bacon
- Elena Constantine
- Anant Choudhary
- Wanda Hamlin
- Charlene Howard
- Hamid Humeida
- Nicole McCall
- Ron Milone
- Jessica Mirr
- Mark Moran
- Dzung Ngo
- Jinchul (JC) Park
- Jane Posey
- Wenjing Pu
- Clara Reschovsky
- Rich Roisman
- Meseret Seifu
- Daivamani Sivasailam
- Daniel Son
- Daniel Sonenklar
- Dusan Vuksan
- Jim Yin

The meeting was chaired by Dial Keju.

### **1. Introductions and approval of highlights from the September 19 meeting**

After introductions, the highlights from the September 19, 2014 meeting of the Travel Forecasting Subcommittee (TFS) were approved without change.

### **2. Briefing on the development of a GIS-based mapping application for CLRP projects**

Charlene Howard explained and showed the functionality of the interactive web/GIS-based map developed by staff to visualize and find information about major projects in the Constrained Long-Range Transportation Plan (CLRP). She noted that the map also includes some useful descriptive information of

the projects, such as photographs, documents, and links to the CLRP project database. She said that users would be able to create their own data maps and welcomed any feedbacks on the application.

Regarding the cost shown in the initial pop-up window of a project on the map, Rich Roisman asked whether this value included the total cost of all the “child” projects. Ms. Howard said that that was correct. Mr. Keju asked if staff has a plan to build a mobile map application. Ms. Howard responded there was no current plan to do so. Mr. Keju questioned whether the map covered the funded and unfunded bike path projects. Ms. Howard replied those projects are not included in the map, and explained that those are covered in a different web page (for the Bicycle and Pedestrian Plan). Ron Milone commented on the usefulness of the map and asked whether one could access it via the COG website. Ms. Howard said that since the map is still considered a draft, is not currently linked directly to the COG website. She noted that after the map becomes final, incorporating any feedback from users, it would be linked to the COG website. Robert Josef asked about the format of the project data to be submitted for the map. Ms. Howard suggested agencies interested in providing data provide as much information as possible, and noted that the data from the map was extracted from the GIS database used in COG/TPB travel model. She mentioned that staff was considering building an imbedded web map interface within the database, allowing users to draw the project scope. Dusan Vuksan asked whether there were any plans to integrate the CLRP projects map with the Regional Transportation Data Clearinghouse map. Ms. Howard said that this could be considered in the future.

### **3. Use of MOVES mobile emissions model at COG**

Jinchul Park presented the modeling process and the application of the MOVES2010a mobile emissions model used to analyze the 2014 Financially Constrained Long-Range Transportation Plan (CLRP) and FY 2015-2020 Transportation Improvement Program (TIP) for the Washington, D.C. metropolitan area. He stated that the 2015 CLRP & FY 2015-2020 TIP conformity would be conducted using MOVES2010a, with the expected completion in the fall of 2015. He also noted that the 2013 PM2.5 Maintenance Plan would be updated using MOVES2014. He said COG staff is testing MOVES2014, which was released in both July and October of 2014.

Regarding the table on slide 6, Mr. Milone asked whether the trip table inputs from travel model were at the link level. Mr. Park confirmed that link-level data were used. Mr. Milone questioned how VMT was processed and used in MOVES. Mr. Park explained that annual VMT was prepared by county for six HPMS vehicle types. Annual VMT is then converted to daily VMT. Mr. Milone asked about the format of the MOVES outputs. Mr. Park answered that the output generated by MySQL can be exported to comma-separated variable (CSV) format and then opened in Excel. Regarding scenario analyses, Wendy Jia asked how the transit trips affect the mobile emissions calculations. For example, slide 5 does not explicitly mention transit travel (only passenger vehicles, commercial vehicles, and trucks). Elena Constantine explained that increases in transit travel that result in reductions in auto travel are reflected in VMT and VHT estimates from the travel demand model, which is then the input to the MOVES model. Mr. Josef asked about how the VMT fractions by hour are extracted from the regional travel model and at which geographic level. Mr. Park said that the fractions are developed using a post processor that disaggregates time period link volumes from the regional model into hourly volumes. The hourly link

volumes are developed by modeled vehicle types. Dzung Ngo and Mr. Milone asked the source of data regarding vehicle population and age distribution of the vehicle fleet for the future scenarios. Mr. Park noted that these two topics are discussed in Appendix D of the latest air quality conformity documentation. Ms. Constantine responded that the former is projected by factoring and the latter, with MOVES2010a, is kept the same, and with MOVES2014, is forecasted based on historical data.

#### **4. Performance analysis of the 2014 CLRP**

Daniel Sonenklar presented a performance analysis of the 2014 CLRP, i.e., changes in travel demand and travel conditions from 2015 to 2040, such as mode share, trips by mode and congestion in the region resulting from rising population and employment. He stated that in the 25-year period, VMT per capita is predicted to decline about 2%, daily auto trips are predicted to increase by 17%, truck trips by 22%, and transit trips by 32%. He showed that the accessibility to jobs (i.e., the number of jobs within a 45-minute commute) would increase by 27% for transit, but only by 1% for autos. All air quality conformity requirements are predicted to be met throughout the planning horizon.

Regarding the mode shares shown on slide 9, Ryan Westrom asked whether walking to transit is considered a walk trip or a transit trip. Mr. Moran responded that walking to transit is considered part of a transit trip. Mr. Westrom was surprised that the share of transit trips (19%) was less than the share of walk and bike trips (26%) in the regional core. Mr. Roisman reminded the subcommittee that these figures were for all trip purposes, not just work trips. Mr. Moran asked about the definition of the high capacity transit in slide 11. Mr. Sonenklar replied that it includes heavy rail (commuter rail and Metrorail), light rail, street car and BRT. Mr. Milone noted the challenge that will come with large increases in transit trips: Although slide 8 shows a 372,000 increase in transit person trips from 2015 to 2040, transit operators are concerned whether the transit system will be able to accommodate the new demand. Unfortunately, transit assignment in the current model is unconstrained, which is the state of the practice for transit assignment in the U.S., but is also the opposite of the highway assignment process, which is constrained. The only real constraint that is represented in the current model is the Metrorail constraint for trips traveling to and through the regional core (shown on slide 16), which is represented as trip table adjustment to account for the fact that WMATA acknowledges that it does not have sufficient resources to increase Metrorail capacity to and through the regional core. Regarding accessibility to jobs by automobile and transit, Jay Evans noted that the 45-minute travel time threshold used by COG is a common one, but also suggested that staff may want to consider using a longer commute threshold, given the long transit travel times that are experience in this region.

#### **5. Stress testing of COG travel model server**

Mr. Moran and Mr. Ngo presented findings from a series of street tests designed to determine the maximum number of concurrent model runs that could be conducted on a COG server that has 32 virtual cores. They noted that a software fix received from Citilabs to address the issue did not seem to help. The major finding was that, under the current software, concurrent model runs launched by two or more users logged into the same server are not stable. Concurrent model runs can be conducted only by a single user, who may run four or fewer concurrent model runs. COG/TPB staff has shared the findings with both Citilabs and Esri, and is awaiting any further developments.

Mr. Josef asked whether the Version 2.3.57 travel model is the current, production-use model, and whether it is available to be requested by outside parties. Staff confirmed that it is the current model, and recommended that he follow the procedure posted on the data request website (<http://www.mwcog.org/transportation/activities/models/datarequests.asp>). Regarding the inability to do concurrent runs by multiple users, Mr. Moran shared that was aware of one other (non-COG) user of Citilabs software who had faced the same problem. Ms. Howard asked whether the case where one user was able to run concurrent model runs without a 45-minute offset in start times included the automated transit walkshed process. Mr. Ngo responded that the only way to get such a test to work was to turn off the automated walkshed process (if this walkshed process is desired, a 45-minute offset must be used). Mr. Vuksan commented that having 45-minute offset between mode run start times does not seem too burdensome, but he felt the more challenging limitation was the fact that multiple users cannot launch concurrent model runs on the same server. Ms. Howard suggested a test using different users who are logged on using the same account (in our tests, each user used his/her own log-in credentials), since this should be similar to the case of running concurrent runs by one user. Mr. Josef asked, when requesting the travel model, should he also request the Citilabs' software fix. Staff said that since the fix is not helpful, it will not be sent as part of the model transmittal.

## **6. Schedule for the 2015 CLRP/FY 2015-2020 TIP**

Jane Posey announced that the TPB approved the 2014 Financially Constrained Long-Range Transportation Plan (CLRP) and the FY 2015-2020 Transportation Improvement Program (TIP) in October. The model and associated data are available to those who request is using the protocol specified on the COG website. As for the 2015 CLRP, the current deadline for project input submission is December 12. She emphasized that analysis of the 2015 CLRP is scheduled to finish in October 2015, instead of July, which was the case previously, since the later date will give the TPB more time to review the analysis.

Mr. Milone noted that it appeared that the CLRP is being updated (from 2014 to 2015), but that the TIP is not being updated, and he asked for clarification. Ms. Posey responded that, although the new TIP will have the same nominal dates as the current TIP (FY 2015-2020), the new TIP will, nonetheless, have updates, such as the costs of projects. She said that the TIP document that is on the website now is a snapshot, and noted that this document, along with conformity analysis and state TIPs, are sent to the US DOT for approval.

## **7. Status report on the consultant-assisted project for development of the COG/TPB travel demand model**

Mr. Moran mentioned that there were currently two authorized task orders (Task Order 15.1: Attend relevant meetings and respond to ad-hoc requests; and Task Order 15.3: Review of transit modeling with regard to FTA guidance) and one task order that is under development (Task Order 15.2: Develop a strategic plan for models development). He then discussed some of the details of Task Order 15.3 and 15.2. Under the COG/TPB staff proposal for the models development strategic plan, Cambridge Systematics, Inc. (CS) would solicit input from both COG/TPB staff and external stakeholders who use

the regional travel model. Mr. Moran said that staff would continue testing AECOM's proposed modeling enhancements. He also said that staff plans to propose one or more FY 15 task orders when the budget for Task Order 15.2 has been set.

Mr. Milone asked CS about the progress of the Baltimore Metropolitan Council (BMC) activity-based model (ABM). Feng Liu shared that this is the second year of a three-year effort. CS and BMC are currently working on model estimation, which is planned to be done in the spring of 2015. The next step, model validation, would likely take three months to complete. Mr. Milone asked which year is used for the model calibration. Mr. Liu said that there are different calibration years: 2010 (since a lot of data is from 2010), 2012 (considered the base year), and 2007/2008 (which corresponds to the years when the household travel survey was conducted by COG and BMC). Mr. Jia asked about the schedule for the strategic plan (Task Order 15.2). Mr. Moran said that he envisions a multi-year strategic plan (e.g., seven-year plan). Mr. Evans said that he thought the plan was to have the strategic plan written by the end of FY 2015. Ms. Jia asked whether the plan will include the phasing of each proposed improvement. Mr. Moran and Mr. Evans responded that that was the plan. Ms. Jia also asked if the plan was to sit down with the modeling staff from the various stakeholder agencies to obtain information about their needs and experiences with the model. Staff consented, adding that such meetings could occur both at the TFS meetings and other special meetings. Ms. Jia also recommended that COG/TPB staff notify the stakeholders when the relevant TFS meetings were about to occur, so that stakeholders would be sure to attend these meetings. Mr. Milone agreed and noted that there will always need to be a compromise between the region-level needs of the model and the local-level needs of the local governments. Mr. Evans noted that the task order has yet to be scoped, but, nonetheless, he could envision having some special stakeholder outreach meetings.

## **8. Ongoing analysis of AirSage O-D cellular data for the TPB modeled area**

Mr. Milone presented some findings of non-resident travel, including external and through travel, from an ongoing analysis of cellular O-D data purchased from AirSage in June 2014. He highlighted that 1) the observed AirSage external (E-I) trip patterns are much more concentrated at the periphery of the study area than is the case for the estimated data coming from the COG model; 2) trip lengths calibrated to the AirSage patterns will be less than those of the existing modeled trip lengths; 3) the AirSage non-resident trip patterns appear reasonable when the external trip patterns are under evaluation. Mr. Milone said that staff would continue working on the use of the data for models development.

Regarding slide 10, Mr. Westrom noted that several district names in the table appear multiple times (e.g., the National Mall appears three times), and wondered whether staff considered aggregating contiguous districts, which might affect which districts appear to have the most non-resident trips. Mr. Milone said that staff would consider making such aggregation. Regarding slide 9, which showed AirSage internal non-resident productions, Mr. Evans wondered whether the clustering of non-resident trips near the edges of the region might have to do with the way that AirSage defines non-residents. For example, someone from the Baltimore area could be coming into the modeled area every so often to shop at Arundel Mills shopping mall or gamble at the Maryland Live casino. This could affect future purchases of data and the buffer areas specified to collect non-resident travel entering our region. Mr.

Milone said that the definition of the buffer areas could have a large effect on what is included, but geocoding precision is also an issue. At any rate, the AirSage data might classify some local people as non-residents. Regarding slide 12 (“Comparison of External-to-Internal Trip Attractions”), Mr. Roisman re-emphasized the idea that the specification of the external buffers are key to AirSage’s ability to pick up the trips coming into the modeled area. Taking about the differences shown on slide 12 between the AirSage and COG model data, Mr. Roisman pointed out that cell phone coverage is much poorer at the edges of the modeled region, which may affect the data collected by the two cell phone companies that work with AirSage. Mr. Josef asked whether one could tell if two trips were chained by following an individual signal in the AirSage data. Mr. Milone replied that that is not possible, since the AirSage data includes only aggregate O-D trip flows. He added that if the signal stays still for more than 5 minutes, AirSage considers the trip to have ended. Mr. Evans added that although AirSage could potentially have the disaggregate data, they share only the aggregate data. Mr. Westrom suggested that AirSage could experiment with changing the five-minute threshold used to determine when a trip ends (e.g., a longer threshold).

## **9. Announcement of new chair for 2015**

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 the current chair, Mr. Keju, represents Maryland, the upcoming chair should be a representative from DC. Since this was the last meeting of the calendar year for the TFS, Mr. Moran thanked the outgoing chair and presented him with a certificate of appreciation, signed by the chair of the TPB. Mr. Moran then announced that the new chair would be Mr. Westrom, from DDOT.

## **10. Round-table discussion about current projects and activities in the region**

Ms. Jia said that WMATA had received funding for a process to assess the impact of CLRP transit expansion projects on Metrorail and Metrobus, particularly on the system’s core capacity and terminal stations where multiple modes converge. The kick-off meeting attended by corridor planners and engineers from all jurisdictions took place on November 20. She offered that the group’s findings could be brought to the TFS at a future date. Mr. Roisman asked whether WMATA received consultant assistance on the project. Ms. Jia said yes, WMATA is using AECOM to perform this work. Mr. Milone asked about another WMATA project to analyze the effect of land use developments, represented at parcel level, on WMATA station capacity. Ms. Jia said that, two year ago, someone from DC’s planning department shared a database with WMATA, which includes planned development, parcel level, around stations in DC. Ms. Jia added that, last year, WMATA presented to their board a new performance measure method to track developments, populations and employment around Metrorail stations to better serve the community, including possible infrastructure investments. WMATA then proposed a project to build the database including short-term developments around stations to provide better planning information. She said the contract has already been awarded to a consultant. Mr. Milone understood that the project would include both existing and needed capacity, and the changes that might be needed. Ms. Jia said the first step is to collect data and build the database, which may help to

assess potential impacts at particular stations. She also mentioned another project to analyze passengers flow through stations, both in the core and the whole system, and whether land use and ridership can identify which segments are the most productive of stations, which, in turn, could support funding decisions.

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

The next scheduled meeting of the TFS is Friday, January 23, 2015 from 9:30 AM to 12:00 noon. The meeting adjourned around 12:15 PM.

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