APPROVED
9/23/16

National Capital Region
Transportation Planning Board

TPB TRAVEL FORECASTING SUBCOMMITTEE

HIGHLIGHTS OF THE JULY 22, 2016 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

- Robert Brown (Loudoun Co.) *
- Melissa Chow (WMATA) *
- John (Jay) Evans (Cambridge Systematics)
- Dan Goldfarb (NVTC)
- Eric Graye (M-NCPPC, Montgomery Co.)
- Eric Ho (Gallop Corporation) *
- Eric Jenkins (M-NCPPC, Prince George's Co.)
- Bob Josef (VDOT) *
- David Kline (Fairfax County DOT)
- Jaesup Lee (M-NCPPC, Montgomery Co.)
- Li Li (Whitman, Requardt & Assoc.) *
- Yuanjun Li (M-NCPPC, Montgomery Co.)
- Feng Liu (Cambridge Systematics)
- Subrat Mahapatra (MD SHA)
- Matthew Ridgway (Fehr & Peers DC)
- David Roden (AECOM)
- Tom Rossi (Cambridge Systematics) *
- Sonali Soneji (VRE) *

COG STAFF

- William Bacon
- Anant Choudhary
- Erin Morrow
- Ron Milone
- Mark Moran
- Dzung Ngo
- Jinchul (JC) Park
- Jane Posey
- Rich Roisman
- Meseret Seifu
- Dusan Vuksan
- Feng Xie
- Jim Yin

* Attended the meeting remotely via WebEx/teleconference

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

1. INTRODUCTIONS AND APPROVAL OF MEETING HIGHLIGHTS FROM THE MAY 20 MEETING

After introductions, the highlights from the May 20, 2016 meeting of the TFS were approved without change.

2. NEW COG WEBSITE: TFS AND TRAVEL DEMAND MODELING ASSOCIATED WEBPAGES

The official launch of the new COG website was on July 19. Mr. Ngo presented some new features of the new website, particularly those pertaining to the TFS. Mr. Ngo said that the transition to the new site was still in progress, so staff would continue updating some incomplete sections of the website.

Ms. Li asked whether COG's new website would provide quick links to access other related webpages, including the Regional Transportation Data Clearinghouse (RTDC) webpage. Mr. Ngo said that some quick links can be found under the Data & Tools page, and staff would be able to add more quick links, such as to the RTDC, in the future.

Mr. Vuksan asked whether the RTDC could be found in the Maps & GIS section. Mr. Ngo said that he was not sure [Note: The RTDC can, in fact, be found in the Maps & GIS section].

Mr. Lee asked whether the contents of the website on a mobile device and a computer would be the same. Mr. Ngo said that it should be. Mr. Lee noted that, on his smartphone, when viewing the Modeling section, he could not view the same sub-topics as he saw on his PC. Mr. Ngo said that staff was still working on parts of the new website and those quick links should be visible to mobile devices soon.

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

This presentation comprised two parts: 1) Mr. Milone gave a status report on the work conducted by COG/TPB staff as part of Task Order 16.2, "Advice and Testing," with an emphasis on enhancing non-resident travel in the model; 2) Mr. Evans and Mr. Liu gave a status report on work conducted by consultant staff under Task Orders 16.2 – 16.5.

Mr. Milone said that June 30th was the end of the fiscal year, so it is now time to wrap up documenting the work done in FY 2016. The focus of his presentation was on the progress of COG/TPB staff in enhancing non-resident trip modeling using cellular O-D data (AirSage). Mr. Milone said that staff would continue working on the enhancements together with other related updates of Task Order 16.2.

Mr. Josef asked whether the model including all the enhancements by the end of FY 17 would be called Version 2.5, as suggested in the strategic plan. Mr. Milone said that he was not sure what the official name of the new version would be. He noted that Version 2.3.66, which is being used for the air quality conformity analysis of the 2016 CLRP, is a minor refinement of the Version 2.3.57a model. Mr. Moran said that the name "Version 2.5" was used in Phase I of the strategic plan simply as a placeholder to refer to enhancements to the trip-based model. The actual model version name would be decided in the future.

Regarding sub-markets of non-resident travelers in slide 6, Ms. Li asked whether college students are included in Group Quarters population (GQ). Mr. Milone noted that though college students are

one component of the GQ total in the Cooperative Forecasts, the current model does not make use of the GQ information. So, according to Mr. Milone, one of the goals of the non-resident enhancement is better reflect the effect that GQ have on trip making. Mr. Li also noted the lack of a separate school trip purpose in the model. Mr. Milone said that HTS generally does not seem to detect school trips well. Mr. Evans commented that GQ members often travel by walking.

Regarding the percentages in slides 11 and 19, Mr. Mahapatra asked how the non-resident trips were determined. Mr. Milone said that the AirSage data that COG used represents average weekdays in April 2014, which means it excludes Mondays and Fridays. So the AirSage data that COG purchased is a compilation of cellular movements, which AirSage has collected and weighted to Census data. Mr. Milone said that the HBW percentage is high due to the analytical methods that AirSage used to determine the purpose of the trip. Staff said AirSage imputes whether a cell phone is non-resident or not based on the location where the cell phone "sleeps" (i.e., spends a significant portion of time at night).

Mr. Lee commented that it would be helpful to generate routes and modes of the trips from AirSage data. Mr. Moran said that AirSage data only contains origin and destination, not mode and route.

Next, Mr. Evans and Mr. Moran announced that the FY16 draft report by Cambridge Systematics would be uploaded to the TFS webpage in the afternoon, as is the normal practice with meeting materials. At that point, the draft report, which is a collection of memoranda, will be available for the normal 30-day review and comment period. Mr. Evans noted that the current report omits write-ups for two tasks under Task Order 16.2: Task #9, Revise Bus Speed Linkage to Highway Speeds, and Task #13, Develop Census and Household Travel Survey Database.

Next, Mr. Liu discussed various recommendations on CS's tasks of Task Order 16.2, including recommendations for developing a parcel-level database and a non-motorized GIS database.

Regarding modified BPR functions in slide 6, Mr. Milone asked whether the curves proposed would be appropriate for cases where composite time (i.e., time and cost) are used. Mr. Liu said they would.

Regarding slide 10, Mr. Moran asked whether "block level" referred to street block or Census block. Mr. Liu said that it is Census block.

Next, Mr. Evans summarized the recommended approach on Task Order 16.3, Managed Lane Modeling, which was presented at the May TFS meeting. Next, Mr. Liu presented the short-term and long-term recommendations on Task Order 16.4, Non-Motorized Model Enhancement. Finally, Mr. Evans discussed the summary of Task Order 16.5, Mode Choice Model Enhancement. The discussion included recommendations on data needs, modeling methods, model estimation, calibration, and validation.

Regarding including non-traditional transit attributes in path building and transit assignment (slide 24), Mr. Milone commented that reliability is an important, but challenging, attribute to work with. Mr. Evans said that the solution could be finding a way to relate the reliability to other variable(s) that model can produce, such as congestion.

Regarding slide 25, Mr. Milone asked what was meant by local, street-level data. Mr. Liu said that the data includes a more detailed highway network for the region. Mr. Liu gave the example of using intersection density as a variable that could be incorporated into the mode choice model. He said that the detailed network would not be used to do path building.

Ms. Li suggested that adding more local streets could improve transit route coding, which, right now, sometimes relies on using transit-only links where there is no highway link in the underlying highway

network. Mr. Roden noted that the goal of the more refined street-level network recommended by CS was to help model walk access and egress better.

Mr. Roden asked whether a multimodal transit assignment is being considered. Mr. Evans said that it is, explaining that the choice of transit submode might be made in assignment rather than mode choice.

Regarding slide 24, Mr. Vuksan asked how the transit skim feedback works under the proposed mode choice enhancement. Mr. Liu said that it would be done in the transit assignment. Mr. Evans said that one could feed transit skims back to mode choice, but it will likely be done in the transit assignment, and only for Metrorail, as an initial step. He noted that the issue of the current model is that Metrorail is too attractive since it is allowed to carry too many trips. The use of PT's crowding capabilities could be used to solve this problem. Mr. Moran noted that the first priority is to transition from TRNBUILD to PT; the second priority, which may not be doable in the next nine months, is to investigate the use of PT's ability to model crowding on transit.

Mr. Milone asked whether the enhancement will maintain the single-path transit assignment. Mr. Evans said that he thought that the multi-path assignment would be required to move to the multi-modal transit assignment discussed earlier.

Mr. Lee commented that transit path building and assignment, in contrast to the case for highway, offers limited routes for travelers to choose from, so congestion on transit would not affect the mode decision as much as it would on highway. Mr. Evans said the enhancement could be extended to non-traditional transit attributes. He noted that some O-D pairs in the region do not have multiple transit alternatives, so travelers have to choose either a congested transit path or a path on a non-transit mode.

Mr. Milone asked whether the Federal Transit Administration (FTA) would have any concerns about the use of multi-path transit assignments. Mr. Evans felt that FTA was not really fixated on the choice between single-pathing and multi-pathing, since more and more planning agencies are now using FTA's STOPS model. Mr. Rossi concurred.

Mr. Roden asked whether the drive-to-transit versus walk-to-transit decision will be in mode choice or path choice. Mr. Rossi said that they are separated alternatives in mode choice model.

Mr. Lee asked about some of the challenges to developing parcel-level or block-level datasets. There was a general discussion about the pros and cons of using datasets based on Census blocks or land parcels.

4. 2017-2018 REGIONAL HOUSEHOLD TRAVEL SURVEY

Mr. Roisman presented the first update on the 2017-2018 regional household travel survey, including the survey design, scope of work, and current project status. He said that staff had

received six proposals from consultants vying to win the contract. Mr. Roisman said that he would update TFS on the status of the survey at future TFS meetings. No action is required from TFS.

Mr. Roden asked whether the GPS data logger component of the survey would be done for only one day. Mr. Roisman said that that is the current plan, but it might be changed depending on the recommendation from the selected contractor.

Mr. Jenkins asked whether the new survey would use the same format as the last survey (2007/2008). Mr. Roisman said that that was correct, but there could be some changes, for example to account for new modes that did not exist in 2007, such as Uber or Lyft.

Mr. Jenkins asked whether income information would be collected. Mr. Roisman said that it would be, even though it has a low response rate.

Mr. Jenkins asked how the GPS add-on component of the HTS would work. Mr. Roisman said one of the reasons for doing a survey pre-test is to determine 1) which GPS technology to use (e.g., personal smartphone or a GPS data logger provided by COG) and 2) what share of the sample would use one. He noted that there are some regions that conduct a 100% sample with GPS data loggers, but the added cost generally results in lower sample sizes (e.g. 4-5 thousand vs. the 11 thousand households that were part of the 2007/2008 survey). He noted one of the weakness with using GPS tracking is the inability to follow travelers in underground areas, such as underground segments of the Metrorail system.

Ms. Li expressed the concern about the difference between surveys focused on behavior on a specific day (e.g., the HTS) versus those focused on a typical day (e.g., Census). Mr. Roisman said that there are advantages to both types of surveys.

Ms. Li asked whether the TFS can add questions and share comments on the survey. Mr. Roisman said that a steering committee will have the primary responsibility for designing the survey, but he noted that the TFS is the oversight committee for the survey (FY 17 UPWP), so the TFS will provided opportunities for review and comment.

Mr. Graye asked how the survey schedule would be affected if the SafeTrack plan gets delayed. Mr. Roisman said that schedule would be re-evaluated if there is a delay in the current SafeTrack schedule. Mr. Evans noted that the limited availability of GPS data loggers could also affect the timing of the survey. He also felt that the limited availability of GPS data loggers could be one of the reasons why it is rare to see a survey using a 100% sample for GPS data loggers.

5. VDOT'S PROJECT PRIORITIZATION PROCESS IN NORTHERN VIRGINIA USING TRANSIMS AND THE COG/TPB TRAVEL MODEL

Recent legislation in Virginia (e.g., HB 599 of 2012 and SMART SCALE, formerly known as HB 2 of 2014) has resulted in using a travel demand forecasting model to evaluate and prioritize transportation projects for programming and funding purposes. Mr. Roden provided a status report on the latest work done by AECOM in support of HB 599 work and SMART SCALE.

Regarding slide 6, Mr. Moran asked whether the multi-modal Dynamic Traffic Assignment (DTA) is a part of TRANSIMS. Mr. Roden said it is correct.

Mr. Milone asked about the computers used to run the model. Mr. Roden said that AECOM conducted the runs on their 64-thread/processor server, but the model can be run on a personal

computer as well. He noted that many processes require only an 8-10 processor machine, but the run time may be longer. Optimally, 10 processors are required to run a TRANSIMS iteration.

Regarding slide 6, Mr. Vuksan asked whether the "without projects" scenario was the same for all the model runs. Mr. Roden said that it was.

Mr. Vuksan asked how long it takes to conduct a model run for each transportation project analyzed. Mr. Roden noted that the model comprises multiple levels, i.e., the region, Northern Virginia, and the individual impact areas, which are subareas of the project. Transit project are typically bigger than highway projects. He said that it would normally take around two days to do both the "with project" and "without project" analyses.

Regarding slide 8, Mr. Milone noted that a traveler might not use the same transit path for both the outbound and return trip. Mr. Roden said that the model would not allow that, even though it could happen in reality. A trip-based model does not ensure the same path consistency.

Regarding slide 11, Mr. Moran asked whether the constraining of demand for park-and-ride lots is a part of the multi-modal DTA. Mr. Roden said it is.

Regarding the trip-based gap by time of day in slide 13, Mr. Moran asked whether it is the relative gap. Mr. Roden said that the DTA process includes five gap convergence criteria as shown in slide 14. By contrast, static assignment typically deals with only link travel time gap, of which one metric is relative gap. Mr. Roden said that the gap in slide 13 relates to the total trip travel time, which is easier to converge than link gap because the traffic routes and volumes on the link change, but the travel times do not change much.

Regarding slide 14, Mr. Roisman asked whether the model considers parking capacity for both transit park-n-ride lots and also auto trips that use a parking lot. Mr. Roden said that the model can consider both of these, but, for the current project, the focus has been on only the former, since we know the parking lot capacity of transit PNR lots, but not all parking lots.

Regarding slide 14, which shows a box labeled "Census JTW," Mr. Evans asked whether the work trip table is being replaced by the Census journey-to-work trip table. Mr. Roden said that they are not replacing the work trip table, but, instead, are performing some selective refinements of it where we found large differences, primarily for long-distance trips, such as VRE trips.

Regarding trip travel time convergence, Mr. Liu asked whether the DTA process is making use of an O-D-based convergence method, as is sometimes used for a static equilibrium process. Mr. Roden said that they are different mathematically.

Mr. Lee asked how the model was calibrated and validated. Mr. Roden said that the results of the model are compared to those of the COG/TPB model. Regarding the time-of-day distribution in 15-minute periods, traffic counts and INRIX speed data were used to validate the model at key facilities, such as major freeways. Mr. Milone noted that the goal of the tool was to evaluate projects in a relative sense.

Regarding slide 23, Mr. Lee asked how "safety" and "environmental quality" could be quantified. Mr. Roden said this work is being done by CS. Mr. Evans said that there is a manual that provides the assumptions. Mr. Roisman noted that safety accounts for only 10% of the performance index used in Northern Virginia, but he noted that that this percentage could be higher for other parts of Virginia.

Mr. Milone asked whether the results of the Metrorail alternatives were based on defined impact areas. Mr. Roden said it was. Mr. Milone commented that there could be other effects outside of the impact areas, and asked whether those effects were taken into account. Mr. Roden said that the

impact areas were designed to be large enough to cover about 95% of the impacted area. However, downtown DC is always included for transit projects, due to the fact that so many transit trips are destined to DC.

In terms of traffic assignment convergence and reducing gap measures, Mr. Milone asked whether it was based on the impact area. Mr. Roden said it was. He noted that the gap criteria are different at each level: region, NOVA, or project area.

Mr. Vuksan commented on the challenges of building a complex project evaluation model, and asked whether a tool such as the FTA STOPS model was used to check model results. Mr. Roden said that STOPS was not used, but noted that his team did check for reasonableness of results.

6. NEXT MEETING DATE AND OTHER BUSINESS

The next scheduled meeting of the TFS is Friday, September 23, 2016 from 9:30 AM to 12:00 noon. There was no other business. The meeting adjourned around noon.

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

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