Meeting Summary
US 29 North Corridor Advisory Committee (CAC) Meeting #4
September 8, 2015, 6:00 p.m. – 9:00 p.m.
East County Regional Services Center
3300 Briggs Chaney Rd. Silver Spring, MD 20904

Corridor Advisory Committee (CAC) Members			
Erik Amick		Matthew Koch	X
Carole Ann Barth	X	Peter Myo Khin	X
John Bowers	X	Rob Richardson	
Brian Downie	X	Mike Rosenberg	
Oladipo Famuyiwa		Ian Swain	
Johnathan M. Genn		Joseph Tahan	
Latisha Johnson		Eric Wolvovsky	X
Bernadine Karns	X		
Maryland DOT Staff			
SHA Project Manager – Jamaica Arnold		**Lead Project Facilitator** – Andrew Bing	
SHA Representative – Tessa Young		**Facilitator** – Alan Straus	
SHA Representative – Carole Delion		**Facilitator Assistant** – Lauren Garrett	
MTA Project Manager – Jackie Seneschal		**Consultant Engineer** – Melanie Earnest	
MTA Representative – Kyle Nembhard		**Consultant Engineer** – Lindsey Ulizio	
Consultant Project Manager – Brian Lange		**Consultant Engineer** – Feng Liu	
		Consultant Engineer – Dilya Askoroff	
County Staff			
County Project Manager – Joana Conklin			
County Project Engineer – Rafael Olarte		**County Representative** – Darcy Buckley	
County Representative – Phil Shapiro		**MNCPPC Representative** – Larry Cole	
Public			
Harriett Quinn		James Zepp	

Handouts

Handouts to add to CAC Members' study binders were distributed, which included the following:
- Meeting #3 Summary
- Meeting #4 Agenda
- Meeting #4 PowerPoint
- Meeting#4 Frequently Asked Questions

Meeting materials will be posted on the project website: *www.montgomerycountymd.gov/rts.*

Introductions

The purpose of this meeting is intended to be an informational session to cover in detail the origin and uses of the regional travel demand model and the corresponding analyses associated with traffic operations, ridership, and crash data. It was also noted that this meeting and future CAC meetings will be videotaped and posted to the county RTS website.

Background

Carole Delion initiated the presentation which, she explained, would cover detailed explanations of the technical information associated with travel demand, ridership forecasting, and traffic operations analyses.

Question: Will you talk about other methodology or other models in comparison to Metropolitan Washington Council of Governments (MWCOG) model?

- o **Answer:** We will cover the MWCOG model in greater detail later in the presentation. While we acknowledge that there are other forecasting methodologies and models, we will only focus on the MWCOG model being used for this study.

Question: For similar NEPA and environmental studies, do practitioners of the environmental work look at volumes of traffic?

- o **Answer:** The MWCOG model has long been used for the regional air quality conformity determination analysis, including estimates of air pollutant emissions based on traffic volumes, speeds and other data. So yes, we do look at traffic volumes as part of the model and forecasting analysis.

Question: We have seen a lot of information on forecasting, but not much about the actual transit systems and how their system operations are analyzed.

- o **Answer:** We will get into that in greater detail later in tonight's presentation when we discuss ridership.

Forecasting

Forecasts utilize computerized mathematical models that provide measurable and comparable data output, such as travel patterns, traffic volumes, and transit ridership. These output values are used by planners, engineers, and decision-makers to document and make decisions on potential transportation improvements. The project is currently at the point where the study area calibration and validation of the forecasting model for transit and highway is being finalized.

Question: What is the CLRP?

- o **Answer:** The CLRP is the Financially Constrained Long Range Plan for the National Capital Region, and it includes the regionally significant capital improvement projects and operations and maintenance projects in the region over the next twenty five years. In our forecasting efforts we include all projects included in the CLRP located directly along the corridor that are presently funded for design and construction and assume they will be in place as part of the future no-build analysis.

Four Step Model

The four step travel demand forecasting model encompasses trip generation, trip distribution, mode choice, and trip assignment. The latest MWCOG/TPB model is a four step model, with the iterative feedback run of major components until it reaches an acceptable level of convergence. The model has been calibrated and validated to the observed data in the base year, and will be used for forecasting in the future year.

Question: Does that mean different initialization data is used each time? Does it take into account time?

- o **Answer:** The model recognizes that changes need to be made during each run to reach an appropriate equilibrium or "convergence". Time is not an input that the team modifies; the only inputs that may be altered are related to the existing roadway configurations and functions.

Question: Are you trying to get the model to replicate data that is used in the field? You are calibrating the model so it represents existing conditions. Is this what you are referring to when you mean convergence?

o **Answer:** Yes, the model has been calibrated and validated to represent the existing conditions. In the initial iteration, the model is run in a sequential way with the results of the earlier steps such as trip generation and distribution are used as inputs to the later steps such as mode choice and traffic assignments, and in the later iterations, the results from the later steps were fed back to the earlier steps such as trip distribution. This feedback iteration process incorporates the interaction effects of major components, e.g., the effects of congestion on travel patterns and mode choice, to ensure the acceptable convergence of travel behavior at the regional level.

Question: How does your model deal with multi-segment trips, like parents who drop kids off at school, then go to gas station, then to work? Does this model capture each of those trips? Are you overstating the number of trips if you're counting 1 trip as 2?

o **Answer:** This model does not deal with trip linkage; it does deal with each segment of the trip. The model defines each segment by trip purposes, e.g., home-based-other for a trip with one end at the home and the other end at a non-home location. The model being used for this study is not counting 1 trip as 2. This model is not overstating the number of trips; rather the way the trip is defined is different.

Question: Is it accurate to say that the travel demand can be overestimated depending on the model?

o **Answer:** The travel demand estimated from the model can deviate from the observed conditions, with overestimation or underestimation depending on the validation results. As a state of practice, a validated model with an acceptable range of deviations from the observed condition is usually used for evaluating build alternatives and no build alternatives in the future.

Question: Economic ebb and flow is not captured by the model. This is a limitation if you are only doing one forecast and not multiple scenarios. The future will not be the same under all scenarios. Are the models truly adequate for the decades of time being forecasted?

o **Answer:** The models are not intended to be precise predictors of the future; and because we have limited time and resources we cannot model the nearly infinite number of possible external factors that could lead to various changes in transportation in the area. We can apply known and accepted general patterns, though. We know from current and historical data that this corridor experiences traffic demand volumes that exceed its capacity and we can reasonably expect that with anticipated growth and planned changes in land uses, enhancements to the corridor should be evaluated.

Question: We know that travel demand is fluid and we know that people decide to change paths based on how traffic looks. Is there any modeling of uncertainty of people's route choices? Is there any feedback from the mode shares?

o **Answer:** The example of people changing paths represents a dynamic change in travel and could have a multitude of inputs and outputs. Because we are limited in time and resources, we are not modeling for all incidents or occurrences that could affect reliability. We are trying to look at an average weekday day of what happens on the roadway.

Question: We may have a parameter based on how things interact – when you do the mode share distribution is there any interaction built into the model?

o **Answer**: What we have in place is known as a feedback procedure. In the initial iteration, the model is run in a sequential way with the results of the earlier steps such as trip generation and distribution are used as inputs to the later steps such as mode choice and traffic assignments, and in the later iterations, the results from the later steps were fed back to the earlier steps such as trip distribution. This feedback iteration process incorporates the interaction effects of major components, e.g., the effects of congestion on travel patterns and mode choice, to ensure the acceptable convergence of travel behavior at the regional level. When we introduce a new transportation improvement (like BRTs or major highway projects), travel patterns may change and modal shifts may happen, which will affect route choice and traffic assignments. The

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congestion results will change accordingly and affect traveler behavior and choices until a point of convergence in the transportation system.

Question: Are one of the outputs of the model confidence bound? I think it would do a lot to address concerns from the CAC.

o   **Answer:** The model can be run with a range of assumptions to account for the uncertainty in the input data and the model, providing a range of forecasts.

MWCOG Model

The MWCOG regional demand model was used in the forecasting process. The documentation of the model and its data can be viewed on their website: www.mwcog.org. The latest officially adopted regional model Version 2.3.57 was used.

Question: What is the timeframe being used? Years of data? What is the historic data? The margin of error factors can be large for the smaller areas of the data that is used. Modeling and assumptions must be cautious to reduce the margin of error.

o   **Answer:** Data of different sources and timeframe have been used in developing the MWCOG model, such as Census data from 2010, Household Travel Survey 2007/2008, Metrorail transit on-board surveys, and traffic counts data. Some of these data were used for calibration and validation at the regional and county level, while others were used to evaluate the model performance at the screenline and cutline locations. Traffic counts data are available at select individual locations of a highway. .

Question: Is the screenline used as a test?

o   **Answer:** Yes it's used to establish base points for calibration and verification purposes.

Question: A slide listed that Ride-On provided bus data, but unless WMATA data and MTA bus data is also being included the model would clearly understated.

o   **Answer:** All bus services along the corridor are included, such as WMATA, MTA and Ride-On buses.

Model Inputs

Model inputs for the study area were presented. The study area represents the area from which data will be pulled for analysis. It does not cut or remove roadways or zones outside of the study area. It is selected to buffer the corridor without expanding out so far that the results will be too insignificant to notice. Transportation analysis zones (TAZs), Land Uses, Population, and Socio-economic data are other forms of inputs used in the model.

Question: Do you have data for existing patterns and modes for the trips?

o   **Answer:** Yes we do, and existing travel patterns and modal choices have been summarized in the Purpose and Needs documentation.

Question: The 3rd bullet on slide 31 (306,000) is that a daily number? It looks like you're importing more trips than exporting. Does that include through trips?

o   **Answer:** Yes, that number reflects what is expected for an average weekday, however, it doesn't include through trips. That is covered on slide 34, which is 30,000 through trips.

Comment: Development projections are broad-based goals the county hopes can be achieved. Plans are always defined by the most optimistic and aspirational implementation possibilities. Ultimately it is unknown how much will be built residential or how much is commercial. These crucial pieces of forecasting demand are variable and could overstate the future demand because the drivers of need (land use and growth) are assumed to be at the very highest possible level.

Comment: I've read several instances where these models are overly optimistic and in the first few years ridership doesn't happen. However, after a number of years the ridership has grown and even exceeds the

initial demand forecasts. An example is the Orange Line BRT in Los Angeles. While some estimates are highballed, there are many real world examples where being overly optimistic is a good thing when we're talking about making such large investments in the future.

Question: The TAZ area doesn't include I-95. Much of the proposed White Oak development is closer to I-95 instead of US 29. Do we include assumptions that areas closer to I-95 are going there, and not to US 29?

o   **Answer:** The I-95 is part of the MWCOG modeling domain, and it is integral to the model network. The Study Area boundary only serves to summarize results (not simulation) of the relevant TAZ areas for this study. We don't lose any trips or vehicles, we only choose to focus on those on or directly adjacent to our corridor.

Question: Do the external trips (i.e., trips in and out of the study area) include all modes including bus, metro, and driving?

o   **Answer:** Yes, it includes all current modes.

Traffic Operations

To establish the base data for the traffic operations analysis, SHA obtained traffic counts from 2012 – 2014 (cars, trucks, and pedestrians) from the Maryland State Highway Administration's Traffic Monitoring System (TMS). Current signal timing data was obtained from Montgomery County's Division of Traffic Engineering and Operations, which were also verified by field visits. Regional Integrated Transportation Information System (RITIS) data is used for validation of the model (i.e., to ensure that the model accurately represents true conditions today).

Question: Are you using Synchro to do certain levels of analysis then using VISSIM?

o   **Answer:** Yes - Synchro and VISSIM were both calibrated to existing conditions. Synchro is used to obtain optimized signal timings and to screen the build alternatives to identify which should proceed to VISSIM analysis. VISSIM is a more robust model with greater capabilities (e.g. modeling transit services); however, developing a VISSIM model is more time-consuming.

Question: Why are truck percentages important?

o   **Answer:** In addition to their larger size, driver behaviors for trucks are different than those of car drivers. Additionally, trucks take longer to accelerate from a stop condition – for example, the gap between vehicles leaving a signal is likely to be greater with trucks. Trucks are another input used by VISSIM to accurately reflect the existing traffic conditions.

Question: Are the MTA bus ridership numbers available?

o   **Answer:** Yes, they are available and will be provided, once complete.

Question: Are weekends being included in traffic averages?

o   **Answer:** No, the data currently is representative of average weekday travel, with specific focus on Tuesday, Wednesday, and Thursday. Average Daily Traffic (ADT) volumes for all days of the week were developed but the AM and PM midweek peak hours are used in the VISSIM model.

Question: Did the model predict backups at the beltway?

o   **Answer:** Yes, the model does predict backups at the beltway, and we will discuss those results later on during this presentation.

Question: There are fleets of school buses north of the beltway that are unique to this area. Are they included in the traffic volumes?

o   **Answer**: Depending upon the time of day that the buses are on the roadway, they may or may not be fully included. If they are present during the portion of the weekday AM and PM peak hours modeled, then yes they are included.

Question: What does Federal highway approved travel time mean?

o **Answer:** It means modeled travel times need to be within 10% of the true travel times that were obtained from either real-world field-collected data and/or RITIS.

Question: What are pedestrian delays?

o **Answer**: It is how long a pedestrian is waiting at a crosswalk before being able to cross.

Question: I'm assuming free flow speed is not the speed limit?

o **Answer:** Correct, free flow speed is not just the speed limit. There is a calculation supported by federal and state standards that is used to determine what the free flow speed is.

Comment: In looking at the graph on slide 50, it could be a very interesting talking point. The graphic is telling us that once you get below Sligo Creek Parkway that you don't know how long it is going to take you to get to Fenton Street. One day it might be quick and another day you might just be sitting there. The advantage of BRT is that it would make it a little bit more regular and could bring in the confidence bounds. This could be used for decision makers and other CAC members.

Question: Was the Purple Line included?

o **Answer:** It is accounted for in the future no-build traffic volumes but it is not currently included in the VISSIM model because it is outside the limits of the model

Question: Did you include the other grade separated interchange intersection projects (i.e., Tech Road, Greencastle, and Stewart Lane)?

o **Answer:** No, those were not included because they are not currently funded for design and/or construction. Only funded projects, like Fairland/Musgrove, were included.

Comment: I'm surprised to see the peak northbound. I drive south in the afternoon and notice there is congestion in Montgomery County from Blackburn Road north because the number of lanes are reduced from 3 lanes to 2 lanes.

Question: These colors are for the levels of service between the intersections. I assume the future no build does not include the BRT.

o **Answer:** Yes –the link level of service is shown and does not include the BRT but it does include proposed Metro improvements for the mid and long term.

Question: Are there evaluation measures for the level of service and travel time?

o **Answer:** The evaluation measures were discussed on slide 51; intersection and approach delays and level of service, intersection-to-intersection travel times, weave, diverge, and merge densities, pedestrian delays at crosswalks and number of vehicles that were not served within the network.

Crash Data

Crash data along the corridor is obtained from the Maryland State Police reports for the limits of the study area from 2011 to 2013 (i.e., three years of data). Crash data is important because it can negatively impact the reliability of travel times and it can be used to identify potentially high crash location so that improvements to address safety concerns can be incorporated into design.

Question: Did you look at the time of day of the crashes? Drunk drivers at 1 am will have less of an impact on traffic than a person confused when driving in one of the reversible lanes during the peak hours.

o **Answer:** Yes, crash data broken down into time of day and possible cause, including suspected drug and alcohol use, is available.

Question: Are all crashes on US 29 covered by State Police or Montgomery County Police?

o **Answer:** Maryland State Police keeps records for all crashes along US 29. The county would also have the crash reports for crashes at a county level. The county data is shared and incorporated into the State's data.

Question: Spring Street to MD 193 has 182 crashes reported, which is not that different from 200 crashes recorded from MD 97 to Spring Street, which has been identified as having a high crash rate. I ask because this area includes the reversible lanes and it's a fairly significant chunk of the segment.

- **Answer:** The crash rate comparison is a calculation that takes into account more than just the number of incidents that occurred over the number of miles. Specific characteristics, like traffic volumes, all factor in to how segments are defined and compared across the state.

Question: How does the state determine high crash segments? Also when something is identified as a high crash segment does that trigger a certain study or improvement?

- **Answer:** Yes, a high crash segment is noted here because we wanted to show that segment as having a crash rate above the statewide average for similar facilities. When a segment is above the statewide average, it becomes a candidate safety improvement and put on the list to be improved. We are trying to improve roadway safety.

Question: Spring Street and MD 193 has about a mile and a half that isn't reversible. Can the reversible lane section be broken out of the crash by mile calculation? If the reversible lane section is considered separately, it might be considered a high crash segment.

- **Answer:** Yes, we can provide the crash data for the reversible lane section separately.

Question: Can the area of MD 193 – to Lockwood Drive be looked at further? The curve there and speed seems to be the culprit for so many accidents. Would the State look at putting up a barrier there?

- **Answer:** Yes, we can look into that.

Additional Question and Answer Session

Comment: Slides 31 and 33 where trips per day are mentioned, I believe a lot of people are going east, west, and north. We need to focus on getting the traffic off the local roads.

- **Response:** Screenlines and validation points can be provided for review. We do capture the movements east, west, and north, and we can share more details about those movements as part of our documentation.

Question: Prior studies on US 29 highlight three major traffic flows (north to south, getting on and off beltway, and people who are cutting through). Take us through how the interactions of the beltway and cut through movements have been taken into account. If any one of those three traffic flows is interrupted, we could face a problem.

- **Answer:** Slide 19 addresses the validation screen line for these movements. It also addresses interactions and how traffic is moving from one section to another. The network distributes the trips per the 4-step model and trips adjust to get to the destination using the optimal route.

Question: Can the model predict the traffic going from one section to another if a section is congested? I don't think major traffic flows along US 29 are likely to use the BRT depending on where they are headed.

- **Answer:** If it is unattractive for a user to use BRT, meaning it doesn't make logical sense for them to use the service for their trip, the model will account for that.

Question: How many of the trips on the corridor are headed to the beltway? The most useful information for us is how many people are headed specifically to the beltway. It would be very useful to have data now that we can compare to the 1990 report.

- **Answer:** Yes, the information can be obtained based on the further analysis of the model results.

Question: The data is cut in half by the beltway and volumes coming off and on the beltway. Why is consistent information along the corridor not being presented? Those people using the beltway would not be using the BRT they are solely using the beltway to get to work. The other BRT corridors (i.e., MD 355 and MD 586) are being presented with this information why aren't we getting the same information?

- o **Answer:** The draft document will contain this specific traffic information but for tonight's presentation we felt that we were beyond that level of basic information; all the volume information can be provided in a graphic just like was done for the other corridor studies.

Comment: We are making an assumption that may only be 90% valid, which is that people using the beltway will not use the BRT. But if the BRT system is built partially to the grid system, some people will be able to get to Wheaton or Rockville using the BRT.

- o **Response:** The network effect is great, but each corridor is being modeled as an independent utility. We won't be able to fully capture the effect of BRT on the region until we have more information on potential build conditions.

Comment: I serve on the County-Wide Task Force which helps identify financing for this project. We are currently looking at 2.2 billion dollars in construction for the BRTs. One of the cost saving measures being considered is to cut the numbers of BRT buses in half.

- o **Response:** In terms of assumptions a benefit to cost analysis is being scoped to be completed to determine the most useful application of funding for the BRT systems.

Question: When is the New Hampshire Ave. study starting?

- o **Answer:** The County is working on identifying that information and will share it with the public once they have reached a decision.

Next Steps

Alan will communicate with the group via email with the next meeting date once it has been determined. Alan will also provide responses to questions that require follow up from the project team.

Following review by the internal project team, the meeting summary will be circulated to the members for feedback before being finalized and posted online.