MD 355 North Corridor Advisory Committee Meeting #4 Summary
September 1, 2015 from 6:00 to 9:00 PM
Upcounty Regional Services Center
12900 Middlebrook Road, Suite 1300
Germantown, MD 20874

Attendees:

Members	
Robert F. Cowdrey	Goke Taiwo
Cherian Eapen	John Francis Torti
Era Pandya	Helen Triolo
David A. Rosenbaum	Ronald C. Welke
Peter L. Shaw	Paul Yanoshik
Apologies	
Paula Bienenfeld	Dayssi Morera
Jerry Callistein	Mark Pace
Dennis Cain	Tom Savoie
Nallathamby Devasahayam	Margaret Schoap
Stephen Hendrickson	Gail H. Sherman
Peter Henry	Andrew Williamson
Kathie Hulley	Kam F. Yee
Richard Lindstrom	Joel Yesley
James Martin	
Staff	
SHA – Jamaica Arnold	MTA – Kyle Nembhard
Montgomery County Planning – Tom Autrey	Montgomery County DOT – Rafael Olarte
Lead Facilitator – Andrew Bing	Facilitator – Mary Raulerson
Montgomery County DOT – Joana Conklin	MTA – Jacquelyn Seneschal
Facilitation Staff – Liz Gordon	SHA Consultant PM– Alvaro Sifuentes
MTA – Rick Kiegel	CAC South Facilitator – Yolanda Takesian
SHA Traffic Consultant – Scott Holcomb	Montgomery County DOT – Darcy Buckley
SHA Ridership Consultant – Amir Shahpar	SHA Traffic Consultant – Daniel Worke
Public	
Jonathan Simon	

Handouts

Handouts provided to CAC Members included:
- Summary from CAC Meeting #3
- Agenda for CAC Meeting # 4
- Presentation for CAC Meeting #4
- Frequently Asked Questions
- Technical handouts showing traffic operations information

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

Introductions

Mary Raulerson opened the meeting and reviewed the agenda indicating that tonight's meeting would focus on the information that was provided during Meeting #3 with more details and explanation of the assumptions and basis for the models and methodologies. These will be used to compare and understand the tradeoffs of different alternatives as the next step in the study. She reiterated that this meeting was optional for CAC members, so attendance was expected to be lower than previous meetings. Given the type of information being presented members should ask clarifying questions along the way, but, where possible, save in depth questions for designated question and answer opportunities set aside after each presentation topic.

Background

Scott Holcomb opened with a review of topics covered at previous meetings, along with a summary of the feedback received from CAC members, which informed the content for this meeting, including:
- Provide more background of where data comes from and how it is processed
- Review the history of traffic volumes in the MD 355 corridor
- Discuss the data inputs to the modeling process, including land use
- Review the transportation network assumptions
- Explain the model processes, outputs, and analysis results in more detail
- Provide more understanding of data pertaining to trip patterns (i.e. thru trips, average trip lengths, etc.)

Existing and Historical Traffic Volumes

Traffic data presented at CAC meeting #3 prompted a desire for more detailed information, and this presentation provided that, focusing on the following topics:
- Sources of traffic data and Maryland State Highway Administration (SHA) methodology
- Existing traffic volumes on MD 355
- Comparisons to historic traffic volumes on MD 355

Sources of traffic count data:

- SHA's Traffic Monitoring System.
- Manual traffic counts at select intersections conducted for 13 hours (6 AM to 7 PM)
- Automated (tube) counts conducted for 48 hours.
- SHA's Traffic Trends publication is used to convert 13 and 48 hour counts into Average Annual Daily Traffic (AADT) estimates.

Maps presented used weighted lines to compare traffic volumes along the corridor. The heaviest volumes in the North corridor were near Rockville. The directionality of the traffic increases toward the north end of the corridor; the direction of the traffic is more equally split in the area of the Beltway.

Traffic volumes on the corridor appear to have remained relatively stagnant over time. There was a decrease in traffic volumes during 2007-2008, but that trend is beginning to reverse. This trend can also be seen in other areas of the state and nationwide. The official volumes developed for this study will be the traffic volumes used for all further analysis in the study.

Question (Q): [Regarding AM peak traffic operations for a segment that was described as "from Rockville to Clarksburg"] Is the directionality for the AM peak movement correct?
   Response (R): Rockville and Clarksburg just designate the segment; they don't describe direction, just location. The heavier movement in the AM is southbound.

Comment (C): Ongoing construction could draw traffic off of Little Seneca Parkway.

Q: Have you tried to convert various traffic projections to a per-lane calculation, in order to help assess feasibility of using a lane for BRT? A single volume measurement for road section doesn't show the true impacts.
   R: Once we do traffic operations analysis for alternatives, the number of lanes will be taken into account.

Q: Why are you just zeroing in on a single peak hour for many intersections, since different intersections will have a different "worst case" peak?
   R: The single hour was a generalization for communication purposes and is the single worst hour for the corridor in general. Later analysis will consider what would happen in other cases if it is determined that it is needed to properly evaluate the BRT options.

Regional Travel Demand Model and Forecasts

Amir Shahpar's travel demand forecasting presentation focused on:
- Travel demand forecasting overview
- Explanation of the four step model
- Overview of the Metropolitan Washington Council of Governments Regional Travel Demand Model
- The model's input and assumptions
- The model's outputs

Travel demand forecasting for the MD 355 project utilized computer modeling that predicts travel patterns, traffic volumes, and transit ridership based on changes to land use and the transportation network. Actual data has been used to determine if the model is producing valid results that are consistent with the actual data. The study area for the MD 355 project includes 127 of Montgomery County's 375 Transportation Analysis Zones (TAZs), which are the smallest area for which the model will report results.
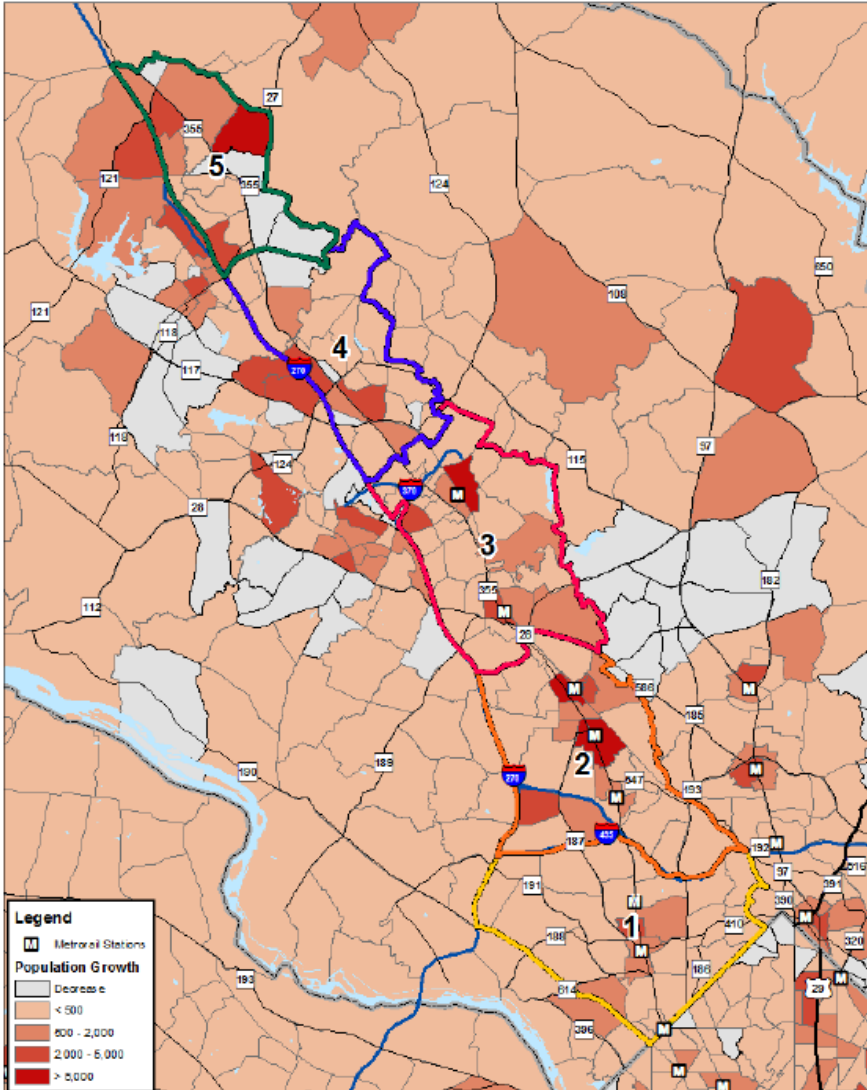
The industry standard (for the Washington region) Four Step Model uses its inputs to predict:
- Trip generation: The number of trips that will occur in the study area
- Trip distribution: Where the trips begin and end
- Mode Choice: Which travel mode will be used to complete each trip
- Trip Assignment: Which route will be used to complete each trip

The model inputs used to make these predictions are:
- Definitions of Transportation Analysis Zones (TAZs)
- Population growth predictions for 2040
- Employment growth predictions for 2040
- Anticipated Future Transportation networks, including:
  - Highway system
  - Transit system

The study area was organized into 5 geographical districts (shown below) to understand how different parts of the study area are anticipated to change over time and how this could affect transit ridership.

Each district is comprised of multiple TAZs. The job amounts and growth rates within the districts and the overall study area are:

District	2014	2040	Growth	Percent Growth
1	94,500	114,100	17,600	20.1%
2	84,600	122,100	37,500	46.7%
3	61,300	78,700	17,400	36.3%
4	30,600	39,500	8,900	13.4%
5	9,800	14,800	5,000	19.4%
Study Area Total	282,800	369,200	86,300	28.0%
County Total	528,000	738,800	210,000	39.8%

The population amounts and growth rates within the study area are:

District	2014	2040	Growth	Percent Growth
1	87,900	101,800	13,900	15.9%
2	80,200	122,700	42,500	53.0%
3	48,000	68,000	20,000	41.5%
4	66,000	76,200	10,200	15.5%
5	26,000	40,600	14,600	56.2%
Study Area Total	308,100	409,300	101,200	32.9%
County Total	1,011,000	1,213,000	202,000	20.0%

In terms of the absolute amount of increase in both jobs and employment, District 2 which is located around the White Flint area, has the biggest forecasted changes. In terms of percentage growth, Districts 3 and 5 around Rockville and Germantown/Clarksburg also are expected to have significant growth in residential units.

The model output predictions will include:
- Trip productions and attractions
- Trip origins and destinations
- Number of trips taken by each mode
- Roadway volumes by time period
- Total daily ridership on the BRT Alternatives
  - Boardings and Alightings by Stop
  - Mode of Access at Stations
  - Park-and-Ride Use
- Passenger loads on transit lines
- New Transit Trips/Change in transit mode share

Different kinds of trips occur in the study area. Trips that either begin OR end in the study area, trips that do not begin or end in the study area, but simply pass through the study area, and trips that occur entirely within the study area.

Trips to/from the study area from areas outside of the study area in 2040 are predicted to predominantly have their opposite end in either DC (178,900 trips, 38% accomplished by transit), Frederick County (59,900 daily trips, 4% accomplished by transit), West Montgomery County (437,700 trips, 7% accomplished by transit), and East Montgomery County (390,900, 8% accomplished by transit). The percent of trips generated within study area that are going to a destination also within the study area is 33%. The percent of trips generated within the study area that are going to a destination outside the study area is 67%.

In order to understand trips that both begin and end in the study area, the study area was broken into five districts. Trips were then analyzed according to which districts were the origins and which were the destinations. This analysis revealed the prevalence of shorter trips using the MD 355 corridor (though longer trips are predicted to grow by 2040). The model also predicted that non-commute trips are a major market for future trips along the corridor, and that a large percentage of trips are associated with District 2 around White Flint.

Trips that pass through the study area come from many different areas, and pass through the study area in each direction. The method used to study the origins/destinations of these trips was designating screen lines or cut lines, where the model will output the origin, destination, etc. for every trip predicted to pass the screen line. One important takeaway from this analysis is that MD 355 and I-270 serve different travel markets; longer trips are better served by I-270 than MD 355. For example, travel from Clarksburg to Bethesda takes 66% longer on MD 355 during the morning peak.

Q: What are 'I" and "J" on the model graphic?
   R: I designates Origins, J designated Destinations.

Q: Regarding screen lines: why did you validate using screen lines that capture east/west travel?
   R: The slide just showed a sample of the screen lines. There are also many screen lines that run perpendicular to the corridor.

Q: The long term development plans from the County Planning Commission influences the future traffic – what's the track record of those predictions?
   R: This model uses Round 8.3 socio-economic forecasts (land use) from the MWCOG. MWCOG, in coordination with local governments, keeps updating those forecasts based on the accuracy of previous predictions. When this region moved from a Round 7 model to a Round 8 model, this indicated that there was a major land use update from previous County development predictions.

Q: Who makes policy decisions to adjust balance of land use types to one another?
   R: The County submits that information to the MWCOG. However, MWCOG pays attention, to assess how realistic the County's estimates were.
   Response from Tom Autrey: As for policy regarding balance of land uses, this is part of the master plan process of local governments. Project staff members for various projects try to touch base with County planners to stay updated on these things.

Q: Will population and job projection for district one be revised once Bethesda CBD and Westbard plans are adopted?
   Response from T. Autrey: Changes from those two plans would be submitted for the next model. These projects are also going on in parallel.

Q: Why is the growth much lower in region 4 than its neighbors?

R: It's not actually very slow growth in the scheme of things; it's just that districts 3 and 5 have incredibly fast development because of projects like White Flint and development planned in Clarksburg.

Q: On slide 39, you said you had travel time and ridership data available for each of the Ride On routes? Can you make it available?
R: Yes. We can get those to you (CAC member directed to email facilitator for this information).

Q: Is the BRT being planned in the wrong direction? It appears that the cross county trips are by far the largest fraction of trips.
R: The land area contributing those trips is comparatively huge. So the large arrows are slightly misleading.

Q: Slides 44, 45, and 46 all have the same numbers, just different arrows?
R: The arrows are weighted to show the distribution of trips between routes, and between modes.

Q: What network is included in the 2040 no build?
R: The CCT and the Purple Line are included, but the MD 355 BRT is not.

Q: At some point do you move from daily trips to peak hour analysis for transit trips?
R: Yes, we do. We get outputs in four time periods and aggregate them for a daily number.

Q: Do you simply measure transit demand based on supply only, or based on peoples' desire to use transit instead of drive? Is it an availability question, or a preference question?
R: The model specifies a utility function in order to guess peoples' mode choice. Factors are built into the model to take into account convenience, cost, transfers, etc. Then the model tries to predict which option a traveler will choose. The different alternatives developed will get fed into this analytical tool to predict how heavily various alternatives will be utilized.

Q: Were the cut lines shown based on 2040 projections, and the 2040 network? The Purple Line and CCT have been assumed to be built?
R: Yes, the analysis using the cut lines is based on the 2040 highway and transit network. This map doesn't show all of the future assumed transit lines in order to avoid cluttering the map. The 2040 transit network is assumed to have been built.

Q: Does the data show that MD 355 South is more justified for BRT?
R: We can't come to that conclusion until the BRT is modeled and different operations plans and alignments are tested. Those questions will be looked at and answered during the analysis of Build alternatives.

2040 No Build Traffic Volumes

The outputs from the 2040 MWCOG traffic model are analyzed/post processed and used in the operational analyses for the study. The post processing is conducted according to the methodology found in NCHRP Report

765 to convert model outputs to more detailed intersection volumes that can be used in traffic operations analysis to compare Build Alternatives to No Build conditions.

Traffic Operations Analysis

Daniel Worke presented the traffic operations analysis information. The data sources that are used for traffic analysis are as recent as possible and include:

- Existing traffic volumes from counts and forecasted 2040 volumes from the travel demand model
- Signal timings
- Transit travel time
- Transit boarding and alighting
- Field observations to calibrate models

Traffic operations analysis for the MD 355 project uses Synchro/Sim Traffic 9.0 and VISSIM 7.0 operational analysis software. Synchro/SimTraffic is used in this project for macro-scale analyses, and VISSIM is used for micro-scale simulation. Synchro reports intersection level operations in terms of delay, queuing and volume to capacity ratios. SimTraffic provides measures of travel time and queuing along the highway network.

VISSIM is better able to predict complex situations such as the introduction of BRT. It can model effects that will take place upstream and downstream from a study intersection, as well as model the dynamic interaction of cars and trucks with bicyclists, pedestrians, and transit. VISSIM's advantages include its ability to deliver a more refined analysis of Build alternatives that includes operations predictions for all modes including transit and pedestrians.

The outputs of these programs include:

- Vehicle delay by intersection or approach (Synchro/HCM)
- Car travel times from one study intersection to another as well as queues (Sim Traffic and VISSIM)
- Transit travel times and reliability measures (VISSIM)
- Pedestrian delays (VISSIM – determined around station areas)

These outputs can show change over time, be used to compare the future alternative scenarios and identify potential issues with alternatives. All traffic analysis is validated against observed conditions.

Q: Once the Watkins Mill Road interchange is completed, wouldn't that alleviate congestion near Gaithersburg?
   R: That project may shift the MD 355 demand, but it doesn't reduce it. The new interchange at Watkins Mill Road is included in the future transportation network.

Q: Then why isn't it shown?
   R: It's not shown on the map, but it's in the model network.

C: I'd like to see the build network actually on a map, because it's confusing when it's not on the map.
    R: OK. We can pull it out of the model.

Q: For CCT, green time extensions were looked at instead of Transit Signal Priority. Has a decision been made to use TSP (transit signal prioritization) on 355?
    R: No. I'm simply describing the capabilities of the software.
    Response Rick Kiegel regarding CCT: There is actually some TSP happening, but there's no signal preemption being considered.
    Response from Joana Conklin: On Veirs Mill Road, we've looked at some of these options.
    R: TSP is different than signal preemption that is used by emergency vehicles and has been found to be effective in other parts of the country.

Q: Is slide 72 an example of 2015 operations?
    R: It's just an example, showing what we can get out of this tool, once we're trying to compare alternatives.

Q: This is based on HCM delay based analysis. But the County uses critical lane volume analysis. Wouldn't you report that?
    R: For SHA projects, we don't use CLV. But we know that Montgomery County uses it, so we have it, to report.

Q: Will you take into account if conditions are too bad at a given intersection?
    R: The travel demand model that generates the traffic volumes for the operations model takes into account the likely congestion/delay when predicting choice of mode/route for travelers.

Q: The County currently understands where the problem intersections are. They have similar models to identify and remedy those, I presume?
    R: We're using the County's model, but then built this project's on top of that.
    T. Autrey Response: Once they get into the Build alternatives, you might start seeing changes at the intersection level. Their model gets "further in the weeds"

Q: Which model is better?
    R: They should be pretty similar. Traffic volumes might be slightly different, but they should have similar results. The differences between them are mostly the level of detail in which they drill down - VISSIM is a better tool to model complex operations that include things like BRT.

Crash History

The source for crash data for the MD 355 study is the Maryland State Police; a three year period (2011-2013) is reviewed for crash safety analysis, per federal requirements. In order to determine if a portion of the MD 355 corridor has a high crash rate, data are compared to average State Highway crash rates. In addition to being a safety issue, crash rates negatively impact travel time reliability.

- Approximately 1900 crashes were recorded along the study corridor from 2011-2013, including five fatal crashes.
- Pedestrian crashes are of particular concern because transit stops are high pedestrian activity areas.

o Four corridor sections had high pedestrian crash rates: Great Seneca Creek to I-370 (13 pedestrian crashes), I-370 to MD 28 (15 pedestrian crashes), Cedar Lane to Woodmont Avenue (8 pedestrian crashes), and Woodmont Avenue to MD 410 (8 pedestrian crashes)

Q: Have crashes gone up or down over the last ten years?
  R: Our analysis only covered three years. We didn't see any particular trend.

Q: Did intersection traffic counts include pedestrians and bikes?
  R: Yes, and that will be an important input in the VISSIM model.

Q: There's essentially a daily crash on 270 north of 121 or 109 and that shifts a lot of traffic to MD 355. Have you looked at the effect of this on MD 355?
  R: Not specifically. You could do this with the travel demand model by removing lanes and seeing where traffic diverts to.
  C: Look into that as part of your crash data analysis. See the effect on MD 355.
  Request: Can I get a detailed map of the figures on slides 54 and 55?

Additional Q & A and Next Steps

Mary Raulerson thanked the CAC members for their time and interest in the technical details of the analysis. She reminded folks that the meeting had been video-taped and would be posted on the website so that other CAC members could be informed of the details as they would like. Alvaro Sifuentes and Mary Raulerson described upcoming next steps including an as yet unscheduled future CAC meeting (likely in November) and public meetings (likely in the Spring of next year), and the use of the tools and methodologies described in this meeting to conduct the technical analysis of alternatives that are currently being developed.

Q: As far as next steps: it's fair to say that you haven't gotten too far into the analysis and you will during the next steps to see what the effects of using a lane for BRT and other choices will be?
  R: Yes. Testing the alternatives will be the order of the next phase. We will apply these tools and models discussed tonight to the typical sections presented last time; those will be built into alternatives.

Q: When's the next meeting?
  R: We're anticipating November. We want it to be before the public meeting, which will be in the spring.

Q: Will you test partial scenarios, like applying a given scenario just to Zone 1, Zone 1 and 2, etc.? What about different combinations?
  R: Yes. That iterative process will be our job over the next few months. We will also test different headways, operating plans, etc.

Q: Are you involved with the MD 355 South meeting? What's their collective concern? How did that interaction go?

R: We met with them last night. They had lots of detailed questions on the model and the assumptions going into the model. They had the same set of questions, but wanted more clarity on the difference between various analytical tools.

Response from J. Conklin: We produce detailed meeting notes and post them on our website. You're welcome to look at those and see the slight differences in concerns, etc.

Q: I got an email regarding a September 24th task force hearing. I testified at the other two, but got no notification about this one.

Response from J. Conklin: The meeting has been postponed to the 30th. There's a report forthcoming from the task force, and the hearing is to hear input on the report.

Q: How does someone sign up to testify?

Response from J. Conklin: It will be open a week or two before the hearing. There's a separate website for the transit task force where you can get the information.

Q: Is it too premature to discuss funding options, or has it been discussed in the past?

Response from J. Conklin: That's a primary focus that the transit task force is working on. It's the sole focus of one of the two sub-groups of the task force. It's a big part of the transit authority proposal.

Q: Since BRT is going to be more frequent on MD 355, are you looking into increasing frequency on bus lines that cross it, to take into account the increased capacity.

R: Short answer, yes. Some of the lines that duplicate the BRT would be turned into feeder lines. The "alternatives" will include changes to the background bus network.