

Staff Draft
May 2008

Montgomery County, Maryland Highway Mobility Report

Maryland-National Capital Park and Planning Commission
Montgomery County Department of Park and Planning



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I. EXECUTIVE SUMMARY

Staff Recommendations

Staff recommends that the Planning Board support two actions regarding the Staff Draft of the 2008 Highway Mobility Report:

- Transmit the 2008 Highway Mobility Report (HMR) to the County Council, to provide background information for the consideration of recommended modifications to the State's Consolidated Transportation Program (CTP) priorities, and
- Adopt the FY 2009 Policy Area Mobility Review (PAMR) mitigation requirements, effective July 1, 2008.

Staff has tentatively scheduled the review of recommended modifications to the State's CTP for June 12, 2008.

Key Findings

- About one in seven intersections in Montgomery County has congestion levels that are worse than their current Growth Policy standards.
- About two-thirds of the County's policy areas have overall arterial and transit mobility characteristics that require new development to mitigate some or all of their vehicle trips according to current Growth Policy requirements.
- Congestion trend lines from 2004 through 2012 show that in general, the provision of transportation facilities and services is just keeping pace with development, so that the level of congestion is remaining at undesirable levels in many areas of the County.
- Currently, congestion is generally most severe in down-county areas. Areas requiring the greatest levels of developer participation under the FY 2009 Policy Area Mobility Review (PAMR), however, are in the northern half of the I-270 corridor from Rockville to Clarksburg, due to this area's:
 - More stringent arterial mobility standards,
 - Sizeable pipeline growth (about two-thirds of the County's total pipeline jobs and housing units), and
 - Relatively low proportion of master planned transportation system improvements ready for implementation in the next four years.
- For FY 2009, staff finds that four policy areas: Germantown East, Gaithersburg City, Montgomery Village/Airpark and North Potomac, require full mitigation and eleven policy areas require partial mitigation.

The following corridors continue to experience the most significant levels of congestion and should be targeted for congestion-relief:

- Rockville Pike/Frederick Rd (MD 355)
 - From the Bethesda CBD to West Cedar La
 - From Chestnut Ave/Walker Ave to Montgomery Village Ave (MD 124)
 - From Middlebrook Rd to Brink Rd
 - Georgia Ave (MD 97)
 - From the Silver Spring CBD to the Capital Beltway (I-495)
 - From Veirs Mill Rd (MD 586) to Randolph Rd
 - Connecticut Ave (MD 185) to Olney-Sandy Spring Rd (MD 108)
 - Norbeck Rd/First St (MD 28)
 - From the Veirs Mill Rd (MD 586) to Georgia Ave (MD 97)
 - Columbia Pike (US 29)
 - Stewart La/Milestone Dr to Fairland Rd
 - Connecticut Ave (MD 185)
 - From Western Ave (D.C. Line) to the Capital Beltway (I-495)
- Continued investment in a wide range of State and County transportation infrastructure improvements, as well as development-related improvements, is needed to help reduce congestion in nearly all areas of the County:
- Improvements at two of the “ten most congested intersections” listed in the 2006 Highway Mobility Report have reduced congestion levels by more than 15%,
 - Two of the intersections in this year’s “ten most congested intersections” list are candidates for improvements as part of the National Naval Medical Center BRAC mitigation program, and
 - Two of the intersections in this year’s “ten most congested intersections” list located along MD 28 are forecasted to experience traffic reduction upon completion of the Intercounty Connector.

Highlights

The Highway Mobility Report (HMR) was not assembled in 2007, as it was superseded by the Annual Growth Policy (AGP) reform work that was performed for the greater part of the year. As a result, there have been a few notable changes in the observed locations of both existing and future congestion when compared to those seen in the 2006 HMR.

This report contains updated Critical Lane Volume (CLV) data for a number of intersections that were identified as congested in the previous report. The updated CLV data for a number of these intersections was found to be consistent with the data presented in previous reports. This data helps to further validate the long-standing issues with congestion experienced at various locations. This report also contains an expanded set of GPS-based arterial travel time/speed samples for a number of major highways and arterials in the County. Expanded coverage in 2007 better enabled staff to identify a number of congested corridors, as well as the relationship between the traffic flow conditions and CLVs at various intersections along these corridors.

Despite the fact that a number of the locations discussed in this report have been chronically congested over the past four years, ongoing infrastructure improvements (i.e. intersection improvements, grade-separations, and road widenings) continue to help reduce congestion levels along various corridors in the County. In addition, there are a number of planned infrastructure improvements associated with some of the congested locations identified in this report. The identification of solutions for these chronically congested corridors must be multimodal, including potential Bus Rapid Transit (BRT) treatments.

Staff found that 14% of the signalized intersections sampled for this report had CLVs that exceeded their Local Area Transportation Review (LATR) standard. Of the intersections that were found to be congested this year, 41% of these intersections were also found to be congested in both the 2005 and 2006 reports. These findings indicate a pattern of recurring congestion at these locations. Therefore, staff feels that these locations should be targeted for congestion relief via State and County capital improvements, as well as developer-funded improvements as warranted. A number of these intersections are located along some of the County's major north-south corridors, and have chronically experienced severe levels of congestions. In addition, some of these intersections are located in areas that have experienced significant levels of growth and development over the past few years.

The GPS-based travel time and speed data samples acquired during the spring of 2007 provide a broad spatial coverage of traffic conditions on most of the State highways located in the County. The samples were collected during the PM peak period (4-7 PM) and during the evening off-peak. Samples were not collected during the AM peak period as was done in prior years. The evening off-peak samples were collected in order to observe the more free-flowing travel times and speeds for analysis requirements related to last year's Growth Policy reform initiative. Analysis of these samples helps to further document the long-standing issues with reduced mobility along various roadway sections.

Sampled sections of Wisconsin Ave/Rockville Pike/Frederick Rd (MD 355), Georgia Ave (MD 97), Norbeck Rd (MD 28), Spencerville Rd/Sandy Spring Rd (MD 198) Columbia Pike/Colesville Rd (US 29), and Connecticut Ave (MD 185) yielded results that show long travel time durations, slow average speeds, and significant amounts of delay along lengths of these roadways. Additionally, a significant number of samples yielded a consistent pattern of congested conditions located along major roads, which traverse various policy area boundaries. These roadways essentially function as constricted gateways, carrying high traffic volumes to and from adjacent policy areas. The samples also yielded results that indicated significant delays at some major intersections (i.e. Georgia Ave/Norbeck Rd). These findings help to reinforce the need for additional capacity in the vicinity of the some policy area boundaries, as well as at some spot locations and/or major intersections.

The results of the travel demand model run conducted for this report conclude that under the anticipated transportation network for the year 2012, both vehicle-miles traveled (VMT) and vehicle-hours travel (VHT) are forecasted to increase by 12.3% and 16.1% respectively by the horizon year (2012) relative to the year 2005 model run results. The model results further indicate that the larger increases in VMT and VHT will occur on the freeway facilities. However, the non-freeway facilities are forecasted to have a higher percentage of congested lane-miles. Despite these increases in VMT and VHT, the countywide average volume-to-capacity (V/C) ratio is anticipated to increase by only 3.9% to 0.79 during the PM peak period. These results provide some indication that the planned network capacity for the year 2012 is anticipated to generally keep pace with future traffic growth resulting from planned development throughout the County and surrounding areas. The infrastructure expected to be in place by 2012, however, will not result in acceptable levels of transportation, as indicated by the fact that most of the County's policy areas will still require private-sector mitigation under the FY 2009 Policy Area Mobility Review standards.

Changes to the Report

This report also includes an update on the Policy Area Mobility Review (PAMR) analysis results, which were developed as part of the 2007 Annual Growth Policy (AGP) reform. The PAMR analysis requires the use of a future-year travel demand model to assess the levels of relative mobility on arterial roadways compared to transit mobility, which taken together represents the measure of performance used in this analysis. The year 2012 model run contained in this report serves as a follow-up to the 2011 model run that was conducted for the PAMR analysis in 2007, that resulted in the finding of two policy areas (Germantown East, and Gaithersburg City) to be “adequate with full trip mitigation required” from a relative mobility standpoint. The PAMR analysis update contained in this report further investigates these findings.

II. BACKGROUND

Purpose

The purpose of this report is to provide an annual update on the status of congestion in Montgomery County. This report serves as a follow-up to the 2006 Highway Mobility Report (HMR). This report contains information on historical, current, and future traffic congestion trends and patterns, which is to be used by the Planning Board and County Council to comment on this year's State Consolidated Transportation Program (CTP) project priorities. In addition, this report includes an update on the Policy Area Mobility Review (PAMR) analysis results, which were developed as part of the 2007 Annual Growth Policy (AGP) reform.

Performance Measurements

This report describes the status of congestion on the County's major highway and arterials. For this reason, two key performance measurements were used to report on current congestion:

- (1) Critical Lane Volumes (CLVs), and
- (2) GPS-based Arterial Travel Times and Speeds

Observed Critical Lane Volumes (CLVs): The Department's Intersection Analysis Database contains the essential data needed to calculate and identify levels of congestion at signalized intersections throughout the County. This measure of congestion is calculated mathematically using the following variables for a particular intersection: (a) throughput and conflicting movement traffic volume data, (b) geometric configuration information, and (c) traffic signal phasing specifications. Furthermore, this calculation uses the lane configuration and lane use factors for each of the intersection's approach legs to determine the north/south and east/west peak direction flow of traffic, which are also referred to as the "critical movements". The signal phasing then specifies whether or not the approach traffic on a specific leg of the intersection moves independently from the traffic approaching from the opposite direction. This information is used to determine whether or not a potential turning movement (i.e. left turn) conflict exists. These conflicting movements are taken into consideration for the purpose of calculating the intersection's CLV.

Observed Travel Times and Speeds: In the spring of 2007, roughly 85% of the County's major State highways (excluding roads located in the rural policy areas) were surveyed via GPS-equipped probe vehicles in order to obtain PM peak-period travel time and speed samples. This type of data has been collected for the Department since 2004 for congestion monitoring purposes, but in smaller, less extensive sets of samples. This data continues to be a useful resource in terms of measuring levels of congestion along some of the County's most heavily traveled routes and corridors. More specifically, this data is used to represent the degree of mobility observed along various roadway sections, also referred to as "arterial mobility". Moreover, arterial mobility is determined by

comparing the congested travel time along a particular roadway to the uncongested travel time – hence the need to also observe non-peak period travel times and speeds. However, to economize on the sampling requirements, the latter half of the data collection only sampled during the PM peak period. That decision was made with the expectation of using calculated travel times, associated with the posted speed limits along a roadway, to represent the values of uncongested travel time.

This report also describes the levels of future congestion anticipated on the County's transportation network for the year 2012. This particular measure of congestion relies on the results of the Department's TRAVEL/3 model. The two performance measurements yielded from this year's model run are:

- (1) Year 2012 Volume-to-Capacity (V/C) Ratios, and
- (2) Policy Area Mobility Review adequacy, based on Relative Transit Mobility and Relative Arterial Mobility forecasts as defined in the Growth Policy.

Year 2012 Forecasted V/C Ratios and Relative Mobility: For the purpose of this report, the Department's TRAVEL/3 model was utilized to generate a traffic forecast for the year 2012. This model run required the use of land use/development assumptions for the County, which reflects the existing base plus pipeline of approved development as of January 1, 2008. In addition, the model utilized regional land use estimates (outside of the County) for the year 2012, which are based on MWCOG's Round 7.1 cooperative land use forecast. The model also required the use of an anticipated transportation network for the year 2012, consisting of all projects that are considered to either: (a) fully-funded within the first four years of the current County Capital Improvement Program (CIP) and the State Consolidated Transportation Program (CTP), or (b) required by private sector development in the pipeline of approved development. The results of this model run were compared to the year 2005 model -run results for analysis purposes.

The performance measurements used in this report to describe the current-day congestion levels in the County do not assign an adequacy determination to the freeway facilities. The majority of the County's freeway system continues to undergo long-range project planning at the Maryland Department of Transportation (MDOT). The Intercounty Connector (ICC), which recently began construction, is anticipated to be completed by the year 2012. The I-270 / US 15 Multi-Modal Study and the Capital Beltway (I-495) Western Mobility Study are the two major initiatives aimed at reducing congestion and improving mobility on the freeway network. In addition, the I-270 corridor was recently selected as a "pioneer site" under the U.S. Department of Transportation's (USDOT) current Integrated Corridor Management (ICM) Systems initiative, as it has been identified as one of the nation's busiest urban corridors. Under this five-year initiative, the Maryland Department of Transportation (MDOT), the Washington Metropolitan Area Transit Authority (WMATA), and the County Department of Public Works and Transportation (DPWT) will be developing strategies to help manage congestion for this corridor. More detailed information on this initiative can be found at:

<http://www.its.dot.gov/icms>

Data Sources and Reliability Issues

The data stored in the Department's intersection analysis database provides the framework for the discussion on Critical Lane Volumes (CLVs) at signalized intersections, as a measure of performance. A majority of the CLV data stored in the database was derived either from turning movement count data acquired from SHA, or data collected by consultants for traffic study purposes as required by the Department's LATR guidelines. SHA collects intersection turning movement counts in 13-hour (6:00 am - 7:00pm) intervals, while the Department requires consultants to submit 6-hour (6:30 am - 9:30 am, 4:00 pm - 7:00pm) turning movement counts for LATR purposes. It is also worth noting that the Department periodically receives and utilizes turning movement count data collected and provided by DPWT, which are conducted as part of the County's Transportation Demand Management (TDM) program. These counts tend to vary in duration from 4-hours (7:00 am - 9:00 am, 4:00 pm - 6:00 pm) to 6-hours (7:00 am - 9:00 am, 11:00 am - 1:00 pm, 4:00 pm - 6:00 pm).

The GPS-based travel time and speed survey data discussed in this report was collected during the spring of 2007, in support of the development of the Policy Area Mobility Review (PAMR) analysis. Roughly 85% of the County's major highways and arterials (excluding those located in the rural policy areas) were sampled during the PM peak period (4-7pm). In addition, a small set of roadways were sampled during the off-peak (7-9 pm) in order to obtain the uncongested travel times and speeds along those corridors for comparison purposes. The majority of the major routes and corridors surveyed were driven multiple times in each direction during the peak period. In most cases, the reliability of the times and speeds recorded was greatly enhanced via the consistency of the results seen in the samples along various corridors. In a few cases, a limited number of samples or non-recurring congestion created by traffic incidents may have reduced the degree of reliability for some of the results.

In late 2006, the Department transitioned from the former TRAVEL/2 model to the new TRAVEL/3 model, which employs the Metropolitan Washington Council of Governments (MWCOG) modeling process. The TRAVEL/3 model was first used as an application in support of the MD 355/I-270 Corridor Study, which was conducted during the latter part of 2006. The TRAVEL/3 model was also applied in the establishment of the Policy Area Mobility Review test developed during 2007. The model is used to conduct both long and short-range travel forecasts. Similar to the TRAVEL/2, the model utilizes forecasted land use data as a key input to estimate future traffic to be generated on the County's transportation system

Future Data Sources

In early 2006, the Department began coordinating with the University of Maryland - Center for Advanced Transportation Technology Laboratory (UMD-CATT Lab) on the transfer of the Department's former DASH (Data Acquisition Software and Hardware) system traffic data for archiving and analysis purposes. The University's archiving efforts eventually evolved to become to the Regional Integrated Transportation

Information System (RITIS) program. The RITIS program aims to improve transportation efficiency, safety, and security through the integration of existing transit and transportation system management data for the Washington D.C. metropolitan area. As a stakeholder in the project consortium, the Department will have access to various types of transportation data to be used for planning purposes as the data becomes available. Staff will continue to coordinate with UMD as the program develops for future data acquisition purposes.