MONTGOMERY COUNTY SUMMARY
OF THE
WHITE FLINT TRAFFIC STUDY

This Summary pertains to a discussion of the Traffic Study resulting from a request made by the Maryland State Highway Administration (MD SHA) to the Montgomery County Department of Transportation (MCDOT) and the traffic study commissioned by the White Flint Partnership related to the same sector plan area. All assumptions are based upon a full build-out of all the approved density in the plan over at 30 year period.

Conclusion

The results of the two traffic analyses discussed should be viewed as two planning tools for the review of traffic conditions within the White Flint Sector Plan roadway network as it is estimated to develop in the future. The conditions reviewed through the studies represent a worst case analysis of the potential traffic conditions, developed based on traditional Local Area Review procedures.

Based on the two studies conducted, it can be concluded that the roadway network within the White Flint Sector Plan area can accommodate the full build-out, based on the Policy Area standards established by the County Council. Ongoing monitoring programs of the highway network and Traffic Demand Management programs will each be critical elements of the long term success of the White Flint Sector Plan. Future traffic and highway conditions can adapt to the traffic demands through a series of physical mitigation improvements, changes in the actual TDM characteristics both inside and outside the Planning Area, and possible changes in the actual development configuration and density of White Flint as it evolves in the future.

Background

In April, 2010 the Montgomery County Council approved the White Flint Sector Plan, which included several transportation improvements that would be provided by both the County and the individual developers. Several of these improvements would be financed by a new White Flint District transportation tax levied on properties. As a result of the forward funding of some of the transportation improvements and the urban nature of the plan, the County Council exempted development projects from the process of Local Area Traffic Review (LATR) and Policy Area Mobility Review (PAMR) which typically required the developers to perform traffic impact studies (TIS) as part of their development approval process. When development requires access to a state road(s) the Project Developer must obtain an access permit from the State Highway Administration (SHA) before having the authority for the development to access the state roads. Often, SHA relies on the traffic impact studies performed as part of these local area reviews, and without that requirement from the County, SHA had no mechanism to understand the impacts and mitigation needs on the state roads.

In order to satisfy state policy, but to avoid having to require a traffic impact study from each development that accessed a state road, SHA requested that MCDOT provide an overall traffic impact analysis to serve as a planning tool in evaluating both the near and long term needs of the state highway network as development occurs within the Sector Plan area. Stantec

(formerly Greenhorne and O'Mara) was retained by the Montgomery County Department of Transportation (MCDOT) to provide Traffic Impact Analysis services for the White Flint Transportation Project located in Montgomery County, Maryland, to satisfy the State's request.

Purpose and Findings of the Study

The purpose of this study is to evaluate the potential traffic impacts associated with the development plan outlined in the White Flint Sector Plan, approved April 2010 by the Montgomery County Council, on the highway network. MD SHA requested this study from MCDOT to serve as a planning tool in evaluating both the near and long term needs of the network as development occurs within the Sector Plan area over the next 30 years.

It is important to note that prior to the study being performed by Stantec, the Maryland-National Capital Park and Planning Commission (M-NCPPC) Planning Staff performed a traffic analysis as part of their master plan development process. That study reviewed the traffic based on certain standard assumptions regarding absorption of development, land use splits, directional distribution, trip generational characteristics, and through trip growth rates.

The Stantec traffic study is an operational review of traffic conditions within the Sector Plan area, while the Planning Staff study is an overall planning study; but both are intended as planning tools to be used as potential long term traffic projections that are projected over a 30 year or more period of time.

As noted within the M-NCPPC Sector Plan documents, the White Flint Sector Plan covers over 430 acres and is bounded by the CSX tracks to the east, Montrose Parkway to the north, Old Georgetown Road to the west and White Flint Mall to the south. The total build-out envisioned for the Sector Plan could potentially add 17.6 million square feet of new development, staged in three phases. It should be noted that in many cases existing developments, such as Mid Pike Plaza and White Flint Mall, will be demolished and replaced by the new development so there will be some neutralizing of the impact that the increased density has on the Sector Plan area. Each phase has an associated non-auto driver mode share requirement and an identified required series of improvements to the transportation network, including but not limited to highway, pedestrian, and streetscapes. Specific mode share splits and network upgrades are detailed within the analysis section for each specific phase.

The Stantec traffic study followed the typical format of a Local Area Traffic Review Study (LATR) in that it reviewed traffic conditions in layers beginning with existing conditions, added background traffic (in this case approved pipeline development, which means including any projects approved prior to the new Sector Plan, such as LCOR's large development at the White Flint Metro Station) and then reviewed the incremental impact of the Sector Plan development in two phases; at corresponding design years of 2022 (12 years after the Sector Plan approval) and 2042 (32 years after the Sector Plan approval). It is important to note that at the request of SHA, Stantec also added a factor for traffic growth each year on the major arterials, which compounded over the 30+ years does reflect a significant amount of additional new traffic. While MCDOT agreed to include this growth factor in the Stantec study, it has not been a reality experienced over the past ten years on Rockville Pike.

Stantec, MCDOT, M-NCPPC, and MD SHA worked together to establish the scope of the study. The actual study area for the project was expanded beyond the defined bounds of the Sector Planning area to ensure that the analysis identifies and addresses not only the direct impacts within the Sector Planning Area but also those roadways and intersections on the perimeter, that will be impacted by development activity within the Sector Plan. That scope expansion was the result of concerns raised by MD SHA about the impact of sector development on traffic travelling through the Sector Plan area.

The study area for the traffic analysis includes 40 intersections in and around the White Flint Sector Plan area. Intersection capacity analysis was conducted using the Critical Lane Volume Technique, (CLV) and Synchro[1] Highway Capacity Manual methodologies (HCM). The results of the capacity analyses are summarized in the main body of the report focusing on the CLV results. The HCM results, as calculated in the SYNCHRO analysis are included in the applicable appendix for each study period.

As noted, the Sector Plan calls for several changes to the existing roadway network. These changes will provide for a more efficient grid network, with short block lengths for pedestrians and more choices for vehicular movements. The planned changes include the realignment of Executive Blvd and MD 187 (Old Georgetown Road), the extension of Hoya Street south to MD 187, the construction of Montrose Parkway East, the construction of Main/Market Street between MD 187 and MD 355 (Rockville Pike), and the extension of Nebel Street south and east to MD 355.

Concurrent with the Stantec Study being commissioned by MCDOT, a group of Project Developers from the White Flint Sector Plan area; organized as the White Flint Partnership, commissioned the engineering firm of STV[2], to perform a more complex traffic analysis using the VISSIM modeling tool which includes more of the internal block roadways and access points, allowing for traffic to flow on a larger network of streets. In the VISSIM model, traffic traveling within the White Flint area is allowed to flow more freely onto business streets, rather than relying as heavily on arterial roads. In order to analyze the future condition with the planned network improvements and utilize the VISSIM model, an origin destination (O-D) study was provided by STV, Inc. as part of their analysis for the White Flint Partnership. This O-D percentage information was combined with Stantec / MD SHA volume data to produce base regional through traffic volumes which were used in both the Stantec and the STV traffic studies. Both the Stantec and STV studies used the same annual growth factor assigned by MD SHA to the key north-south and east-west corridors to account for projected development outside the sector plan area.

The Stantec study includes a White Flint development trip component which is based on several factors that are defined in the White Flint Sector Plan. A key factor of the development trip component is often referred to as “mode splits” or the Non Auto Driver Modal Split (NADMS), which in lay terms means the percentage of people coming and going from White Flint at peak traffic hours by some means other than a single passenger vehicle, ie: transit, carpools, biking, walking, etc.

[1] Software for traffic management and control

[2] STV has in the past been and is currently under contract with the County as a Consultant.

For the 2022 traffic estimates, a NADMS of 34% was used, and at full build-out in the 2042 estimate, a NADMS of 50% was used for commercial properties and 51% for residential properties, consistent with the approved White Flint Sector Plan. Through MCDOT and the North Bethesda Traffic Management District, several traffic demand management (TDM) tools are already in place and MCDOT is in the process of developing a TDM program for White Flint with the purpose to detail current modal splits, evaluate the effectiveness of current programs, and develop and enhance future programs to meet and exceed the goals of the Sector Plan.

For purposes of the Stantec study it is assumed that the NADMS percentages set forth in the Sector Plan are achieved. The Stantec study then assigned the auto driver trips to the roadway network as planned for each scenario. The assignments were based on the distribution outlined by M-NCPPC in the Sector Plan traffic section. The Stantec study determined that traffic volumes assuming full build out of the Sector Plan development, at 2042, would have fifteen intersections operating above acceptable policy area thresholds during at least one peak hour at their present configurations. Ten of those fifteen intersections are projected to exceed their policy area threshold by more than ten percent. Five of those projected unacceptable intersections are located within the White Flint Sector Plan area.

Physical mitigation opportunities that would increase the capacity of the intersections have already been identified for the five intersections in the White Flint Policy area that exceed the threshold by greater than ten percent. If future monitoring of traffic conditions in this area indicate that congestion levels are approaching those forecast for full build out, these mitigation measures, along with other traffic demand management tools, can be employed to address the capacity needs.

Let it be noted that in no event has a Sector or Master Plan ever achieved full build-out, and this Study is using the same methods that have been in use for years, to predict 30 years into the future. Transportation systems and users' reliance on them will continue to evolve with technology and innovation, and land use patterns and travel habits rapidly change both transportation and workplace behaviors. The CLV and HCM methodologies were requested as a tool to assist MD SHA in evaluating future needs based on anticipated traffic volumes.

As a walkable area with higher density and an urban transportation network, the County Council established a requirement for a Biennial Monitoring Report to be developed by the Planning Board which must be presented to the Council every other year to help inform the Capital Improvement Project budget process. The report is prepared to assess traffic, development approvals, provision of public facilities and amenities, CIP projects, and effects of the plan on the Subdivision Staging Policy and will be shared with the State Highway Administration as another tool in their evaluation process. The first Biennial Report was presented to Council in September 2013 and the second is scheduled to be presented in the Fall of 2015.

As a further monitoring and management tool, MD SHA and MCDOT are in the process of developing a Memorandum of Understanding (MOU) with consultation from the Planning Board. That MOU is intended to provide a guideline for the County and State to use in monitoring traffic and safety measures to provide tools for the Agencies to adjust and manage resources that will address issues that may arise.

Additional Study

In addition to HCM and CLV methodologies conducted by Stantec, at the request of the White Flint Partnership, the STV firm has conducted a separate study of the White Flint Sector Plan area using the VISSIM[3] model. STV shared the resulting information with Stantec for comparison.

STV's VISSIM model was developed using the same base through traffic, growth rates, and trip generation information as Stantec's model, and included both the AM and PM peak hours of the 2042 scenario. The two models differ in that VISSIM's model trip assignments make use of more of the internal block roadways, access points, and intersections shown in the White Flint Sector Plan, many of which have to be built by developers as individual properties are developed. Together these roads form a street grid that allows traffic to diffuse throughout the entire Sector Plan area rather than being funneled onto existing arterial roads, as happens today. Traffic traveling within the White Flint area is assigned more aggressively to the local business level roadways and the STV model assumes some signalized full movement intersections that were not assumed by the Stantec study. According to the STV traffic impact study based on the VISSIM analysis, all intersections operate at or above the Level of Service E, which is an acceptable threshold level, during the AM and PM peak hours under all future condition scenarios.

Limitations and Assumptions

Regardless of the method of analysis chosen, it is important to recognize the limitations associated with conducting an operational traffic analysis, on such a large network, spanning a long range planning period, in this case in excess of 30 years. These limitations and assumptions, which each in their own right can dramatically impact the results of the analysis include:

Growth Rates on the main corridors - The growth rate on the main roadways is based on the assumption that land use patterns and commuting travel habits remain relatively the same as past trends, and through traffic in this area will continue to grow however, with additional ridership on both the Metro and future bus service expansion, such as the proposed Bus Rapid Transit service on MD 355, some models have shown a decrease in area through trips. While there is substantial regional planned development in this area, it is not a foregone conclusion that the background traffic will increase in this area as projected. Nor is it a foregone conclusion that the full sector plan area will develop at any time during the next 30 years as permitted under the sector plan. Traditionally sector plans do not achieve full growth and development during the allotted time period.

Trip Generation Characteristics are assumed to be constant - It is also possible that standard Institute of Traffic Engineers (ITE) trip generation rates as applied in these studies can / will change in the future. Additionally, no separate reductions were taken from the trip generation calculations to account for internal trips within individual developments, or within the Sector Plan Area. All trips remaining after the NADMS reduction were assumed to end or begin

[3] VISSIM is a microscopic multi-modal traffic flow simulation software used for traffic analysis, forecasting, signal optimization and traffic impact.

outside the study area, which may overestimate the trips on the main roadways and may change as the Sector Plan develops.

Development Build-out - The development quantities and trip generation used in this area for these studies assumes full build out will occur in a relatively short time frame given the volume of development contemplated under the increased density. Current estimates of market absorption rate as performed for Montgomery County TDM planning efforts indicate that the Sector Plan area is unlikely to reach the plan cap by 2042, which will change assumptions on which the trip generations were based.

Read the full Stantec study.

Go to the White Flint Partnership website to read the STV study.