



Item Name: 2020-2024 Subdivision Staging Policy (SSP): Transportation Element Initiatives



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Description

A key element of the 2020-2024 Subdivision Staging Policy (SSP), scheduled for County Council adoption this coming November, is the pursuit of two initiatives that pertain to the transportation element of the policy:

- (1) **Vision Zero Integration into Local Area Transportation Review:** The refinement of the Local Area Transportation Review (LATR) process to better reflect the travel safety goals and objectives of the County’s Vision Zero Action Plan and
- (2) **Policy Area Level Transportation Review Process for Master Plans/Sector Plans -** The reintroduction of an areawide (i.e., policy area-level or corridor-level) transportation adequacy review process to support the evaluation of long-range master plans/sector plans. **It is important to note that the proposed transportation adequacy review process is not proposed for application in support of subdivision review.**

The Transportation Impact Study Technical Working Group (TISTWG) was assembled to assist Department staff, working in collaboration with the Fehr & Peers DC/Toole Design consulting team, with the evaluation of alternative approaches and development of recommendations pertaining to these initiatives. The TISTWG consists of key stakeholders in the LATR process, including staff representing the Planning Department, Montgomery County Department of Transportation (MCDOT), Maryland State Highway Administration (MDSHA) and representatives of civic groups and the private development community.

The activities of the TISTWG are documented on the Department’s website:

<https://montgomeryplanning.org/planning/transportation/latr-guidelines/working-group/>

The roster of TISTWG members is included in **Attachment A**. The TISTWG is, by design, a diverse advisory group. Consensus is desired and pursued, but unanimity is not expected.

The following paragraphs (and referenced Attachments and hotlinks) provide background information supporting the rationale for undertaking the initiatives described above.

Vision Zero Integration Into Local Area Transportation Review

This initiative consists of a review and proposed revisions of the County's currently adopted LATR process applied in support of the review and execution of transportation impact studies (TISs) for new subdivision applications and the evaluation of the transportation adequacy of long-range master plans/sector plans. This effort includes the development of recommendations pertaining to:

Using alternative transportation system performance metrics to measure local traffic impacts of new subdivision applications that are more supportive of the objectives of the County's Vision Zero Action Plan. Potential metrics include those derived from crash data and those pertaining to pedestrian and bicyclist level of comfort and exposure to traffic.

- **Modifying current procedures for evaluating the adequacy of transportation facilities** to accommodate new subdivision development in manner that is more supportive of the County's Vision Zero Action Plan.

The concept of level of service (LOS) as reflected in the County's current LATR process has been used by traffic and transportation engineers for over 50 years to describe operating conditions for automobile travel on existing or planned roads. In this context, LOS is measured using average vehicle delay at an intersection. It is expressed as a letter grade, ranging from LOS A to LOS F, where LOS A represents completely free-flow conditions, LOS E represents capacity conditions, and LOS F represents over-capacity conditions with considerable delay as described in the table below.

Equivalency Between LOS and Average Vehicle Delay

HCM ¹ LOS Threshold/ Boundary	Corresponding Average Vehicle Delay per HCM (seconds)	Description
A / B	10	Operations with very slight delay, with no approach phase fully utilized.
B / C	20	Operations with slight delay, with occasional full utilization of approach phase.
C / D	35	Operations with moderate delay. Individual cycle failures begin to appear.
D / E	55	Operations with heavier, but frequently tolerable delay. Many vehicles stop, and individual cycle failures are noticeable.
E / F	80	Operations with very high delays and congestion volumes vary widely depending on downstream queue conditions.

¹ The **Highway Capacity Manual (HCM)** is a publication of the [Transportation Research Board](#) of the [National Academies of Science](#) in the [United States](#). It contains concepts, guidelines, and computational procedures for [computing](#) the capacity and quality of service of various highway facilities, including [freeways](#), [highways](#), [arterial roads](#), [roundabouts](#), [signalized](#) and [unsignalized intersections](#), rural [highways](#), and the effects of [mass transit](#), [pedestrians](#), and [bicycles](#) on the performance of these systems

n/a	120	Operations with extremely high delays and congestion volumes vary widely depending on downstream queue conditions.
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This report-card grading is based on a driver’s perspective and the notion that delay is to be minimized. The grading ignores intersection performance from the perspective of other users such as people who walk, people who bicycle and people that take transit. Further, LOS grades below LOS E also represent a low level of utilization, which normally would constitute a poor rating for public infrastructure. Many jurisdictions have adopted policies to maintain LOS D or better conditions during peak hours, based on guidance from *A Policy on Geometric Design of Highways and Streets* (American Association of State Highway and Transportation Officials 2011) and other sources.

LOS can be a very useful and effective metric for designing infrastructure and understanding the consequences to *automobile traffic* of planning and design decisions. However, that is generally the extent of its utility. It does not help to inform about other factors that are important such as the availability of and access to other modes of travel and **potential impacts to safety for all road users resulting from increased vehicular speeds and infrastructure design that prioritizes motor vehicle travel**. Vision Zero seeks to provide safe and efficient travel for all travel modes and the LOS metric does not consider operations or conditions for other modes of travel, including walking, bicycling and transit use.

Reintroduction of a Policy Area Level Transportation Review Process for Master Plans/Sector Plans

This initiative explores the applicability of alternative metrics and procedures that could be used as a potential replacement for the current LATR-based approach specified in the adopted 2016-2020 SSP that is applied to determine the transportation adequacy of master plans.

Ideally, every master plan should have a balance between its proposed land use and its proposed transportation network and services. For more than two decades the County has defined this "balance" as what is needed to meet the current adequate public facilities (APF) requirements as described in the SSP. Achieving this balance in a master plan is not an academic exercise: if a plan is not balanced, then at some point in the future a proposed master-planned development will be unable to proceed because it will have no means to meet the APF requirements.

A major outcome of the adopted 2016-2020 SSP was the elimination of the policy area level transportation adequacy test. The Local Area Transportation Review (LATR) transportation adequacy test was retained and updated in the 2016-2020 SSP to reflect traffic congestion standards for signalized intersections in Montgomery County policy areas based on volume/capacity ratio (using the Highway Capacity Manual method), which translates to an average vehicle delay measured in seconds/vehicle (s/v) and equivalent level of service (LOS) for automobile travel.

To determine whether or not a master plan is in balance, the County Council applies the LATR transportation adequacy test in the context of a long-range planning horizon (typically 20 to 25 years into the future). This test (as described in the Vision Zero integration into LATR discussion provided above) evaluates the traffic generated by the buildout of master planned development in combination with a transportation network that assumes certain intersection improvements. This analysis methodology has utility when used to evaluate local transportation adequacy for a subdivision application in a Capital Improvement Program (CIP) planning horizon context (i.e., 5-6 years into the future). However, the utility of this approach raises some concerns when used to evaluate transportation adequacy for master plans/sector plans in the context of a long-range planning horizon, including:

- **No Consideration of Areawide Effects** – The current HCM-based LATR analysis process is limited to the evaluation of the local signalized intersection roadway network within a master study area to assess the adequacy of the master planned transportation system to accommodate master plan recommended land use development. However, this process does not provide insight related to understanding the implications of master plan recommendations in a broader areawide context. Conventional intersection-based analysis also typically emphasizes the additive nature of automobile trips generated by land use development; however, well-planned land use development also has the potential to change trip distribution patterns, to shorten trips, and to shift the mode of travel by providing new destination options in closer proximity.
- **Limited Confidence in Analysis Results** – The application of the HCM intersection delay analysis process is appropriate in the context of a CIP planning horizon (5-6 years) when traffic signal phasing and signal timing operations parameters used as key analysis inputs can be generally assumed with confidence rather than in a long-term master plan planning horizon (20-25 years) when assumptions pertaining to these parameters are far more speculative. As a result, the confidence associated with projecting accurate estimates of intersection delay in the context of a long-term master plan planning horizon is limited.

The focus of this initiative is a study to identify and evaluate an areawide-level transportation adequacy process or master plans/sector plans for consideration by the Department. Unlike earlier versions of policy area transportation review adequacy processes used by the Department, **this process is intended to apply strictly to master plans/sector plans** and would **not** be applied to subdivision applications. To the extent possible, this process should address the issues cited above and employ analysis metrics that explicitly reflect the contribution of the County's planned BRT system to achieving land use/transportation balance in the context of a long-range master planning horizon. A potential starting point for this effort is the proposed policy area transportation review process described on pages 21-24 in the *2016 Planning Board Draft Subdivision Staging Policy Report* (<https://montgomeryplanning.org/wp-content/uploads/2016/12/SSP-PBD-Master-Correction.pdf>).

Largely due to the County Council's desire to "streamline" the subdivision development review process, two (2) key outcomes of the 2016-2020 SSP resulted:

- The policy area-level Transportation Policy Area (TPAR) transportation adequacy test was eliminated and
- The policy area-level transportation adequacy test proposed in the *2016 Planning Board Draft Subdivision Staging Policy Report* as a replacement to TPAR was not adopted.

Summary

This briefing (and ensuing discussion) will provide a forum for the Planning Board to understand the status of the two initiatives described above and provide feedback to staff. In addition, a brief update regarding the remaining SSP Update transportation element schedule will be provided.

A set of **preliminary draft recommendations** pertaining to the initiatives described above, informed by input from the TISTWG coupled with a review of practices in jurisdictions, is described below.

Vision Zero Integration Into Local Area Transportation Review: Draft Preliminary Recommendations

Vision Zero Resources

Since adopting the Vision Zero Action Plan, the County has undertaken a number of Vision Zero related initiatives. These initiatives should be leveraged and incorporated into the LATR process. Some of these initiatives have been completed and adopted while others are ongoing and could be incorporated in the future. Some of these initiatives are listed below:

- Bicycle Master Plan – adopted
- Pedestrian Master Plan – ongoing
- High Injury Network – completed
- Systemic Safety Analysis: Predictive Safety Performance Functions – ongoing
- Bicycle Level of Traffic Stress – completed
- Pedestrian Level of Comfort – ongoing
- Vision Zero Crash Reduction Toolkit – ongoing
- Complete Streets Design Guide – ongoing

Recommendation

The frontage roads of new development should be designed to account for all identified elements from applicable planning documents such as Master Plans and Area Plans. The resources listed above, in particular the Bicycle Level of Traffic Stress and Pedestrian Level of Comfort are only useful if the models are built on data that accurately reflects the conditions for bicyclists and pedestrians. In the context of performing a TIS for any development project the transportation consultant should check the accuracy of the bicycle and pedestrian network attributes in the County's database relative to the observed existing conditions. The consultant should identify any inaccurate network attributes and any attributes that will be updated in accordance with the development "as built" plans and report this information to Department staff to update the County's databases accordingly.

Mitigation Priorities

Mitigation strategies to increase capacity or reduce delay for motor vehicles may be counter to the Vision Zero principles. Increases in speed or increasing motor vehicle capacity through roadway widening, signal phasing or timing changes may increase hazards for pedestrians, bicyclists, and drivers. It is critical that any capacity-based mitigation strategy does not negatively impact the safety of any roadway user. The current *LATR Guidelines* prioritize the application of modal mitigation approaches as follows when projected traffic generated from proposed projects exceeds the applicable policy area congestion standard:

- *Transportation demand management (TDM) approaches to reduce vehicular demand.*
- *Pedestrian or bicycle improvements.*
- *Transit facility or service improvements.*

- *Intersection operational improvements.*
- *Roadway capacity improvements.*

In Road Code Urban Areas (RCUAs) and Bicycle Pedestrian Priority Areas (BPPAs), adjustment of the prioritization of mitigation approaches listed above may be made to allow for mitigation payment in lieu of construction.

Recommendation

Mitigation strategies designed to improve travel safety conditions should be prioritized. The **revised** list of mitigation priorities, listed below, should be used to prioritize the application of modal mitigation approaches in the context of the subdivision review process:

- **Crash mitigation strategies to achieve Vision Zero, identified in the Vision Zero Crash Reduction Toolkit.**
- Transportation demand management (TDM) approaches to reduce vehicular demand.
- Pedestrian or bicycle improvements including those identified in the Pedestrian Master Plan and Bicycle Master Plan.
- Transit facility or service improvements.
- Intersection operational improvements.
- Roadway capacity improvements.

Development Review Committee

Upon completion of a development application, the Development Review Committee (DRC), comprised of representatives from public agencies and utilities discuss the application with planning staff and provides comments on the development application. Planning staff then prepare recommendations that are presented to the Planning Board as part of the public hearing on the proposed site plan.

Recommendation

With the additional focus on Vision Zero Principles in the development review process, the Development Review Committee should have a specific Vision Zero representative to review the development application and Vision Zero elements of the LATR transportation impact study and make recommendations regarding how to incorporate the conclusions and safety recommendations of the LATR transportation impact study.

Transportation Impact Study Approach

A key step in support of identifying an approach for enhancing the integrating of Vision Zero goals and objectives into the LATR process was the conduct of a literature review of similar efforts by other jurisdictions (See Attachment B.) and the identification of two alternative transportation impact study approaches based on findings derived from the literature review.

Alternative Recommendation 1: Introduce a Vision Zero Impact Statement for all LATR studies pertaining to subdivisions that would generate 50 or more peak-hour person trips.

To ensure development is executed in a way that better aligns with Vision Zero principles, all LATR studies must include a Vision Zero Impact Statement that describes:

- Any segment of the high injury network located on the development frontage.
- Crash analysis for the development frontage.
- An evaluation of the required sight distance for all access points.
- Identification of conflict points for drivers, bicyclists, and pedestrians and a qualitative assessment of the safety of the conflict.
- A speed study including posted, operating, design, and target speeds.
- Any capital or operational modifications required to maximize safe access to the site and surrounding area, particularly from the Vision Zero Crash Reduction Toolkit.

In addition, mitigation recommendations from the capacity-based adequacy determination must address the needs identified in the Vision Zero Impact Statement and Pedestrian and Bicycle Impact Statement. A goal of the requirements listed immediately above is to ensure Vision Zero resources accurately reflect conditions on the development frontage.

Alternative Recommendation 2: For LATR studies generating 50 or more peak-hour weekday person trips, couple current multi-modal transportation adequacy tests with options that can be implemented over time utilizing Vision Zero-related tools and resources currently available and under development.

Because the various modes of the transportation system are not isolated, adequacy tests are required if the development produces greater than 50 peak-hour weekday person trips. The motor vehicle system test is required if the site generates at least 50 peak-hour person trips. The pedestrian, bicycle, and transit system tests are required if the given mode generates at least 5 peak-hour trips by that mode, with an exception for the ADA component of the pedestrian system test which is required if the site generates 50 or more peak-hour pedestrian trips.

Motor Vehicle System

Motor vehicle system adequacy is defined through a Vision Zero test as well as a capacity test. A safety performance function (SPF) is an equation used to predict the average number of crashes per year at a location as a function of exposure and roadway or intersection characteristics. Development has the potential to impact the factors which influence the SPF. The County is developing a Predictive Safety Analysis Methodology for estimating and deploying predictive SPFs. After the County develops this resource, the motor vehicle system adequacy should be defined as no increase to the estimated number of crashes based on predictive SPFs for the build conditions at each of the study intersections. This method should factor in generated site trips as well as changes to the transportation network and public space. If the number of expected crashes are found to increase with the development traffic, safety mitigation must be applied in order to reduce the number of expected crashes at each study intersection to predevelopment levels. The developer should make a fair share contribution to mitigation at study intersections that are not direct access points to the development.

The process and final recommendation for utilizing the SPF methodology in the Vision Zero test should be refined and described in greater detail after the Predictive Safety Analysis has been completed. Until the SPF methodology can be applied as the safety test to measure the motor vehicle system adequacy, Crash Modification Factors (CMF)

should be used to determine the system adequacy. No mitigation to address capacity at any study intersections should have a CMF greater than 1.0 per the Crash Modification Factor Clearinghouse.

Maintaining the adequacy measurement from the current LATR Guidelines, motor vehicle adequacy in terms of capacity is defined by the intersection level of service standards by policy area. For intersections located within Red or Orange policy areas, the Highway Capacity Manual operational (delay-based) level of service standard applies to all study intersections². For intersections located within Yellow or Green policy areas, the critical lane volume (CLV) level of service standard applies to study intersections with a CLV of 1,350 or less. The Highway Capacity Manual delay-based level of service standard applies to study intersections with a CLV of more than 1,350. Capacity mitigation must not negatively impact the results of the safety test.

Pedestrian System

The standard for pedestrian system adequacy, **which should be applied to any site generating at least 5 pedestrian peak-hour trips (including trips to transit)**, is the ability to travel via somewhat comfortable or very comfortable routes based on the Pedestrian Level of Comfort (PLOC) to destinations within 500 feet of a development site boundary or transit stops within 1,000 feet of the development site boundary. If current conditions are not adequate, the applicant must construct up to 1,000 feet of improvements to achieve adequacy from the site frontage. Specific improvements to be constructed should be identified in consultation with staff. Additionally, at any site generating at least 50 pedestrian peak-hour trips (including transit) there should be no American with Disabilities Act (ADA) noncompliance issues within a 500-foot radius of site boundaries.

As part of the Pedestrian Master Plan, the entire county will be scored using the PLOC methodology. If the PLOC has not yet been calculated in the area of the proposed development there should be no identified gaps in pedestrian access routes within a 500-foot radius of site boundaries and to transit stops within 1,000 feet of the development site boundary, per the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way.

The pedestrian adequacy test should also include a review of existing street lighting along roadways or paths from the development to destinations within 500 feet of development site boundary or to transit stops within 1,000 feet of development site boundary. The streetlight field review shall include a field inventory of existing streetlight and pedestrian scale fixtures with current spacing and general location of luminaire noted (utility pole mounted, stand-alone pole mount, or pedestrian scale). All longitudinal spacing or intersection locations which do not meet Montgomery County DOT standards should be noted. Please note this inventory is not intended to a full lighting study with measurement of illuminance levels but will identify missing lighting locations at intersections as well as longitudinal spacing deficiencies as per Montgomery County DOT Streetlight standards.

Bicycle System

Maintaining the adequacy measurement from the current LATR Guidelines, bicycle system adequacy is defined as providing a low level of traffic stress (LTS) for bicyclists. **This test should be applied to any site generating at least 5 bicycle peak-hour trips.** If current connections are not adequate, the applicant must construct up to 750

² Although all intersections in Red and Orange policy areas are subject to HCM analysis, intersections analyzed as part of a corridor will reflect the average delay of the entire corridor rather than the subject intersection in isolation.

feet of sidepaths, separated bike lanes, or trails that create or extend a low level of traffic stress up to 750 feet from the site frontage. In consultation with staff, the improvements to be constructed will be prioritized based on the Bicycle Master Plan priority tiers.

Transit System

Access to transit stops has been added to the pedestrian system adequacy test. **The capacity-based adequacy test for the transit system has been maintained from the current LATR Guidelines but should be applied to any site generating at least 5 peak-hour transit trips.** The standard for transit system adequacy is defined as providing a peak load of LOS D for bus transit service routes (1.25 transit riders per seat) during the peak period (in the peak direction). The applicant must inventory bus routes at stations/stops within 1,000 feet of the site and identify the peak load for each route at that station. The applicant must coordinate with the transit service provider to identify and implement (or fund) improvements that would be needed to address conditions worse than LOS D due to additional patrons generated by the development.

Reintroduction of an Areawide Transportation Adequacy Review Process for Master Plan Evaluation: Draft Preliminary Recommendations

The alternative areawide transportation adequacy review approaches considered as a potential replacement of the current LATR-based approach used for the evaluation of the transportation adequacy of master plans are summarized in the table below.

Metric	MODES				Analysis	Scale
	Auto	Transit	Bike	Walk	Policy Area	Corridor
1. Accessibility						
Accessibility	✓	✓	✓	(✓)	✓	
2. Mobility & Environment						
Person Throughput	✓	✓				✓
Travel Times	✓	✓			✓	
VMT per Capita	✓				✓	
Non-Auto Driver Mode Share	✓	✓			✓	

Information pertaining to each metric, including its definition, application rationale and proposed adequacy threshold (if identified at this point) is summarized below.

Auto and Transit Accessibility – Policy Area Level

What? Number of jobs accessible within 45 minutes by auto (or transit)

How? Travel/4 Model results

Where? Traffic Analysis Zone level

Population-weighted average to County or Policy Area

Why? Indicates accessibility to destinations

Can demonstrate accessibility tradeoff of new destination options, increased density of development, increased congestion, and transportation network changes

Threshold Recommendation: Described below.

What? Number of jobs accessible within 45 minutes greater than existing value.

Auto: 1,159,950 jobs on average

Transit: 134,160 jobs on average

Where? Population-weighted County average

Why? As the number of jobs in the region grows, there will be more opportunities for each county resident to access more jobs. With increasing congestion, some policy areas will have slightly decreased job accessibility; as long as these policy areas already have above-average access to jobs, the net effect of adding more residents to those policy areas is to increase average jobs accessibility.

Encourages development in more accessible locations.

Low-Stress Bike Accessibility – Policy Area Level

- What?** Percentage of potential bicycle trips able to be made on a low-stress bicycling network.
("appropriate for most adults" or "appropriate for most children")
Consistent with approach for Objective 2.1 of Bicycle Master Plan – "Countywide Connectivity"
- How?** ArcMap GIS script network analysis
Bicycle Master Plan Bike Stress Map (County Only)
Bicycle trip length decay function
Hard barrier at higher-stress facilities (consider adjusting?)
- Where?** Census Block Group level
Countywide % of potential bicycle trips
- Why?** Indicates bike accessibility to destinations in Montgomery County
Proxy for safe segment and crossing connectivity

Threshold Recommendation: To be determined.

Comfortable Walk Accessibility – Policy Area Level

- What?** Percentage of potential pedestrian trips able to be made on a comfortable pedestrian network
("very comfortable" or "somewhat comfortable")
- How?** Similar to Bicycle Master Plan approach; methodology to be developed
Pedestrian Level of Comfort Map (under development)
Hard barrier at uncomfortable facilities (consider adjusting?)
- Where?** Block Combination level (limited coverage)
Countywide % of potential pedestrian trips
- Why?** Indicates walk accessibility to destinations in County
Proxy for safe segment and crossing connectivity

Threshold Recommendation: To be determined.

Person Throughput – Corridor Level

- What?** Number of people passing through the corridor by auto and transit
- How?** Travel/4 model results
*Consider updating with detailed ops/capacity analysis for key projects
- Where?** Corridor level (segments along corridor)
- Why?** Indicates passengers served
*With ops/capacity analysis, could also provide intersection delay information

Threshold Recommendation: Not recommended.

Outside dense, urban environments, person throughput on buses is likely to be lower than person throughput in SOVs; however, there may be other justifications for improved transit infrastructure, such as providing other viable mobility options for travelers, reducing traveler out-of-pocket cost, etc.

Auto and Transit Travel Times – Policy Area Level

- What?** Average travel time per trip (all trips)
Average of trip origins and destinations
Calculated by mode (transit separate from auto)
- How?** Travel/4 Model + custom script
- Where?** Traffic Analysis Zone level
Population-weighted average to Policy Area or County
- Why?** Indicates total amount of time spent traveling per trip
Travel time more intuitive measure of burden than intersection delay

Threshold Recommendation: Described below.

- What?** Average travel time per trip (all trips) less than future baseline
19 minutes for Auto
52 minutes for Transit
- Where?** Population-weighted average to County
- Why?** Changes in a Policy Area affect travel times not only for that policy area but for much of the County. Congestion may increase, but effects on travel times for individual trips may be offset by changes to trip distribution patterns and shorter trip distances afforded by new destination options in closer proximity.

Vehicle Miles Traveled (VMT) per Capita – Policy Area Level

- What?** Daily miles traveled per “service population”
“service population” = population + total employment
- How?** Travel/4 Model + custom script
50% of origin VMT + 50% of destination VMT
- Where?** Traffic Analysis Zone level
Service Population-weighted average to Policy Area or County
- Why?** Indicates total amount of driving per person

Threshold Recommendation: Described below.

- What?** Daily vehicle miles traveled per “service population” less than future baseline (12.4 VMT per capita)
“service population” = population + total employment
- Where?** Service Population-weighted County average

Why? Changes in a Policy Area affect vehicle miles traveled not only for that policy area but for other parts of the County as well. VMT per capita will reflect changes in trip distribution patterns, trip lengths, shifts in mode of travel due to changing destination options.

Non-Auto Driver Mode Share (NADMS) – Policy Area Level

What? % of non-auto driver trips (HOV + transit + nonmotorized)

How? Travel/4 Model results + custom script
Includes origin and destination trip ends

Where? Traffic Analysis Zone level
Population-weighted average to Policy Area or County

Why? Indicates use of non-auto modal options

Threshold Recommendation: Described below.

What? % of non-auto driver trips greater than future baseline
46% NADMS for all trip purposes

Where? Population-weighted County average

Why? Indicates use of non-auto modal options for all trips. Changes in a policy area affect mode choice decisions not only for that policy area but for other parts of the County as well.

Attachments:

- Attachment A: TISTWG Roster
- Attachment B: LATR Literature Review Summary and Alternative Approaches memorandum

Attachment A

2019 Transportation Impact Study Technical Working Group (TISTWG) Roster

Public Agency Staff:

Agency

Name

Montgomery County Planning Department

Jason Sartori
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Scott Holcomb
Derek Gunn

Civic Representatives:

Organization

Name

Greater Colesville Civic Association

Daniel Wilhelm

**Montgomery Civic Federation/
Woodmoor-Pinecrest Citizens Association**

Harriet Quinn

Transportation Consultants/Building Industry Representatives:

Organization

Name

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Shahriar Etemadi

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Nick Driban

The Traffic Group

Carl Wilson
Greg Cook

Wells & Associates, Inc.

Nancy Randall

Lerch, Early & Brewer, Chtd.

Steven Robins
Stacy Silber

Shulman Rodgers

Timothy Dugan

MEMORANDUM

Attachment B

November 22, 2019

To: Eric Graye
Organization: Montgomery County Planning Department
From: Toole Design
Project: Subdivision Staging Policy Update

Re: Literature Review Summary and Alternative Approaches

The purpose of this memorandum is to document the findings of the literature review related to incorporating Vision Zero into Montgomery County's Local Area Transportation Review process, and identify two alternative transportation impact study approaches based on findings from the literature review and input from the Transportation Impact Study Technical Working Group.

Literature Review Summary

The following is a summary of the literature review related to incorporating Vision Zero into the Local Area Transportation Review (LATR) process as part of Montgomery County's Subdivision Staging Policy (SSP) Update. The project team has reviewed efforts related to this topic from cities and counties around the United States.

Throughout this literature review, the project team has assessed the Vision Zero programs in over two dozen cities and counties around the United States, with a particular focus on efforts to incorporate Vision Zero into the transportation impact study or development review processes. While communities across the nation have taken the Vision Zero pledge, they typically focus on redesigning existing streets to be safer, as opposed to how design standards can be applied to new development or how new development can impact the design of existing streets.

This focus may have to do with most Vision Zero adoptees being central cities that are built out. These communities are less likely to have greenfield development areas (or even large-scale redevelopment areas) than suburban or rural places. As a result, Montgomery County is something of an outlier among Vision Zero adherents, and has the potential to become an example for other suburban or urban-suburban communities of how Vision Zero can be incorporated into the transportation impact study or development review process.

Montgomery County's Vision Zero Action Plan

In 2017, Montgomery County became one of the first county governments in the United States to develop a Vision Zero plan. For over a decade prior, the county had worked to make its streets safer for all users, resulting in a 37% decrease in severe collisions between 2012 and 2016. However, the Action Plan notes that a simultaneous 58% increase in fatal traffic collisions has led to a renewed effort to eliminate traffic deaths entirely.

The resulting Vision Zero Action Plan has several goals aimed at increasing traffic safety and focusing on communities and corridors where the risk of traffic collisions is greatest:

- To reduce severe and fatal traffic collisions 70% by 2024, and entirely by 2030
- To focus engineering improvements on the “High Injury Network,” 20 road segments that have a disproportionate amount of the county’s traffic collisions
- To prioritize its resources on improving traffic safety in historically disadvantaged communities

The plan includes 41 action items, each of which fall into five key action areas: including Engineering, Enforcement, Education and Training, Traffic Incident Management, and Law, Policy, and Advocacy. Vision Zero requires a data-driven approach to identifying trends that can contribute to traffic collisions, and as a result, the county is committed to closely tracking the Action Plan’s effectiveness. Some of the largest accomplishments in the two years since the plan’s inception have been the adoption of a Complete Streets policy, which is currently underway; retiming pedestrian traffic signals to give people more time to cross the street; expanding the county’s Safe Routes to School program; and providing a Vision Zero Feedback Map for public input.

Vision Zero programs around the United States

As part of the literature review, the project team reviewed the Vision Zero policies and associated planning efforts in 31 cities and counties across the United States:

- | | | |
|------------------|---------------------------|-----------------------|
| ▪ Alexandria, VA | ▪ Eugene, OR | ▪ Philadelphia, PA |
| ▪ Arlington, VA | ▪ Fairfax County, VA | ▪ Portland, OR |
| ▪ Austin, TX | ▪ Fort Lauderdale, FL | ▪ Sacramento, CA |
| ▪ Bellevue, WA | ▪ Frederick County, MD | ▪ San Antonio, TX |
| ▪ Bethlehem, PA | ▪ Fremont, CA | ▪ San Francisco, CA |
| ▪ Boston, MA | ▪ Hillsborough County, FL | ▪ San Jose, CA |
| ▪ Cambridge, MA | ▪ Howard County, MD | ▪ San Luis Obispo, CA |
| ▪ Charleston, SC | ▪ Los Angeles, CA | ▪ Seattle, WA |
| ▪ Chicago, IL | ▪ Macon, GA | ▪ Washington, DC |
| ▪ Columbia, MO | ▪ New York, NY | |
| ▪ Denver, CO | ▪ Oakland, CA | |

Of the communities reviewed, the majority have established Vision Zero policies, but have not directly tied them to transportation system performance. Many communities indirectly include Vision Zero goals in a requirement to study active transportation modes, or to tie impact fees to Complete Streets or active transportation projects. While a community’s development review process may not explicitly mention Vision Zero, it may incentivize or require pedestrian- or bicycle-friendly design that aligns with Vision Zero’s goals.

There are several metrics that communities use to assess Vision Zero-related transportation impacts, which could be applicable to Montgomery County’s development review and LATR processes, many of which are already incorporated to an extent or in specific cases. They include:

- On-site data collection, such as intercept surveys, that provide fine-grained information on how occupants and visitors to a site travel there, as well as the effectiveness of available infrastructure or educational programming. On-site data collection allows for more accurate information, as ITE trip generation estimates are both relatively opaque and not reflective of a given place.
- Crash data near the site of a proposed development, including pedestrians, bicyclists, and drivers. Safety-related data is typically available and may be geocoded to specific locations, allowing an assessment of the area immediately around a development that could be impacted.
- Measuring the impact of a development by “person-trips” instead of vehicle trips, which acknowledges that site occupants or visitors may travel there by different modes.

- Longitudinal surveys that measure how mode share changes at a site or within a district over time, demonstrating the effectiveness of transportation demand management programs.

Additionally, the County could explore incorporating Vision Zero into the existing TDM (transportation demand management) requirement for large developments, one component of which is an educational campaign where occupants or visitors learn about available travel options or incentives. This is an opportunity to introduce Vision Zero education, and to use subsequent data collection efforts to measure its effectiveness.

Case Studies

The following are five cities and one county/state whose Vision Zero and development review efforts may be considered examples for Montgomery County:

Washington, DC

The District of Columbia made Vision Zero its official policy in 2015, when it passed the Vision Zero Action Plan. Today, the DC Office of Planning incorporates Vision Zero design into its development site review process, with guidelines for site access, loading, and the arrangement of the public realm. Applicants required to perform a traffic impact study for their projects must complete a Scoping Form with 33 questions, many of which relate to Vision Zero. They must provide person trip generation estimates (as opposed to vehicle trips), assess the condition and completeness of the sidewalk and bicycle network, investigate the condition of nearby transit stops, and identify the site's proximity to high-crash intersections and blocks. This approach bears some resemblance to Montgomery County's development approval process, particularly its emphasis on reducing auto use near transit via lower parking requirements and could be applicable to the County.

Philadelphia, PA

Philadelphia's Vision Zero Action Plan dates to 2017. Since then, the city has rolled out a Complete Streets Project Review Checklist that incorporates Vision Zero design recommendations. The checklist requires project applicants to provide (or demonstrate the presence of) frequent pedestrian crossings (every 300 to 500 feet), to identify the number of potential conflicts between different travel modes, and the presence of "high priority" bicycle design treatments and "appropriate" speeds and lane widths in and around their site – and to make changes where possible. The city does not charge transportation impact fees or require traffic studies as part of site review. This checklist is the primary way that Vision Zero policies take effect in the planning process and ensures that pedestrian- and bicycle-oriented design is the priority in new development, not accommodating an increase in driving as is often the result of traffic impact studies.

Sacramento, CA

Sacramento introduced its Vision Zero Action Plan in 2018, but the introduction of Vision Zero-aligned development review began with a study of impact fees two years earlier, which appears to be ongoing. The city is considering whether to tie transportation impact fees to Complete Streets projects in targeted areas. Transportation officials identified approximately 74 miles of streets with a high rate of crashes, and have produced a list of pedestrian, bicycle, and transit projects in those areas, including redesigning intersections to be safer for people on foot and providing transit signal priority. 19% of the funds from impact fees would be set aside for Bus Rapid Transit projects. Developers applying to build projects in those areas would pay a higher share of the cost for safety mitigation based on the number of projected new vehicle trips. This approach of charging higher impact fees based on traffic conditions in that area bears some resemblance to Montgomery County's impact fee structure, with different rates for Red, Yellow, and Green policy areas, but with additional targeting to ensure that development throughout the city goes to pay for priority safety projects that ultimately benefit everyone.

Oakland, CA

Oakland has not officially taken the Vision Zero pledge but has adopted policies that align with Vision Zero goals. The city requires an extensive transportation impact study for new development proposals, including analysis of nearby sidewalk conditions, the potential increase in VMT (vehicle miles traveled), and the number of pedestrian, bicycle, and vehicle collisions within the past five years at nearby intersections. The traffic modeling applicants are required to use reflects a variety of travel modes, including trips generated by mode using locally developed mode splits adjustment factors as well as a multimodal site analysis which includes site access, circulation, and potential design features, reducing the likelihood that the impact study will recommend auto-centric changes such as road widening. Applicants are asked to use ITE Trip Generation Estimates, which are then adjusted with city-provided formulas to generate pedestrian, bicycle, and transit mode shares. Together, these metrics serve to emphasize pedestrian and bicycle safety, while encouraging applicants to accommodate non-automotive travel modes. The city requires applicants to identify potential safety improvements at intersections near the site using the FHWA Crash Modification Factor Clearinghouse.

San Francisco, CA

In October 2019 the City of San Francisco updated their Transportation Impact Analysis Guidelines. In San Francisco, the Environmental Planning Division with the Planning Department review projects for potential impacts on the environment in accordance with the California Environmental Quality Act (CEQA). In conjunction with this update the City created a new tool to determine a development's environmental impacts based on estimated number, type and common destinations of new trips that people using various modes would take to and from a new development site. In addition to the tool for trip generation, the guidelines establish significance criteria for which a project would have significant impact, for various modes. In addition to those listed below the guidelines also give significance criteria for emergency access, loading, driving hazards, construction, and vehicular parking.

Walking/Accessibility:

1. Creates potentially hazardous conditions for people walking; or
2. Interferes with accessibility of people walking to and from the project site, and adjoining areas.

Bicycling:

1. Creates potentially hazardous conditions for people bicycling; or
2. Interferes with accessibility of people bicycling to and from the project site, and adjoining areas.

Public Transit:

1. Substantially delay public transit; or
2. Creates potentially hazardous conditions for public transit operations.

Vehicle Miles Traveled/Induced Automobile Demand:

1. Causes substantial additional vehicle miles traveled; or
2. Substantially induces additional automobile travel by increasing physical roadway capacity in congested areas (i.e. by adding new mixed flow travel lanes) or by adding new roadways to the network.

Virginia Department of Transportation (VDOT)

In response to questions raised by the Transportation Impact Study Technical Working Group (TISTWG), the project team reviewed how nearby counties address Vision Zero in their development review guidelines. Fairfax County follows the VDOT Traffic Impact Study Regulations which requires a roadway safety inventory study to include such elements as, but not limited to, speed limit, existing warning signs, pavement and shoulder type, pavement and shoulder width, intersection sight distances, and safe horizontal curve speeds.

Alternative Transportation Impact Study Approaches

Basis for Alternative Approaches

In the Vision Zero Action Plan, the County states “going forward, Montgomery County is committed to a safe systems approach to build infrastructure that provides safe passage for all road users.” In conjunction with this commitment, the Action Plan calls out several Vision Zero Principles, some of which could be incorporated into the topic of LATR and transportation impact studies. These Vision Zero principles include:

- Transportation–related deaths and severe injuries are preventable and unacceptable.
- Human life takes priority over mobility and other objectives of the road system. The road system should be safe for all users, for all modes of transportation, in all communities, and for people of all ages and abilities.
- Policies at all levels of government need to align, making safety the highest priority for roadways.

Adequate Public Facilities

The current version of the SSP and LATR Guidelines define modal system adequacy as stated below:

“To achieve an approximately equivalent transportation level of service in all areas of the County, greater vehicular traffic congestion is permitted in policy areas with greater transit accessibility and usage. For motor vehicle adequacy, Table 1 shows the intersection congestion standards by policy area. For intersections located within Red or Orange policy areas, the Highway Capacity Manual delay-based level of service standard applies to all study intersections. For intersections located within Yellow or Green policy areas, the Critical Lane Volume (CLV) level of service standard applies to study intersection with a CLV of 1,350 or less and the Highway Capacity Manual delay-based level of service standard applies to study intersections with a CLV of more than 1,350.

Pedestrian system adequacy is defined as providing level of service (LOS) D capacity or better in any crosswalk. Any site that generates more than 50 pedestrian peak hour trips (including trips to transit) must:

- *Fix (or fund) American with Disabilities Act (ADA) non-compliance issues within a 500’ radius of site boundaries, and*
- *Ensure LOS D for crosswalk pedestrian delay (or no more delay than existing) at LATR study intersections within 500’ of site boundaries or within a Road Code Urban Area/Bicycle Pedestrian Priority Area (RCUA/BPPA)*

Regardless of the development size and location, if an intersection operational analysis is triggered for any intersections within a RCUA/BPPA, mitigation must not increase average pedestrian crossing time at the intersection.

Bicycle system adequacy is defined as providing a low Level of Traffic Stress (LTS) for bicyclists. For any proposed development generating at least 50 peak hour non-motorized trips and located within a quarter mile of an educational institution or existing/planned bikeshare station, the applicant must make improvements needed to provide low Level of Traffic Stress (LTS-2) conditions that link the site to or otherwise extend an LTS-2 facility within 750 feet of a development site boundary or implement a master-planned improvement that provides an equivalent improvement in LTS.

Transit system adequacy for LATR is defined as providing a peak load of LOS D for bus transit service routes (1.25 transit riders per seat) during the peak period (in the peak direction). For any development generating at least 50 peak hour transit riders the applicant must inventory bus routes at stations/stops within 1,000 feet of the site and identify the peak load for each route at that station. The applicant must coordinate with the transit service

provider to identify and implement (or fund) improvements that would be needed to address conditions worse than LOS D due to additional patrons generated by the development.”

For each modal adequacy consideration required in the current LATR Guidelines, the study must make a statement that the proposed development, with any required mitigation, will result in a finding of adequate operations for that mode.

These definitions of modal system adequacy are primarily capacity-based and do not address the principles of Vision Zero that the County has adopted. In accordance with Vision Zero, system adequacy should be defined in relation to Vision Zero before system adequacy is defined in relation to capacity.

Recommendation

Per the principles and goals of Vision Zero, transportation system adequacy is defined as zero severe and fatal collisions on County roadways. It is necessary to acknowledge that under this definition, any number of severe or fatal crashes on roads in the county makes the transportation system inadequate. Despite this, we can bring the system closer to adequacy, and development projects have the ability to contribute to the adequacy of the transportation system.

Vision Zero Resources

Since adopting the Vision Zero Action Plan, the County has undertaken a number of Vision Zero related initiatives. These initiatives should be leveraged and incorporated into the LATR process. Some of these initiatives have been completed and adopted while others are ongoing and could be incorporated in the future. Some of these initiatives are listed below:

- Bicycle Master Plan – adopted
- Pedestrian Master Plan – ongoing
- High Injury Network – completed
- Systemic Safety Analysis: Predictive Safety Performance Functions – ongoing
- Bicycle Level of Traffic Stress – completed
- Pedestrian Level of Comfort – ongoing
- Vision Zero Crash Reduction Toolkit – ongoing
- Complete Streets Design Guide – ongoing

Recommendation

The frontage roads of new development should be designed to account for all identified elements from applicable planning documents such as Master Plans and Area Plans. The resources listed above, in particular the Bicycle Level of Traffic Stress and Pedestrian Level of Comfort are only useful if the models are built on data that accurately reflects the conditions for bicyclists and pedestrians. Any development project should check the accuracy of the bicycle and pedestrian network attributes in the county database compared to the existing conditions and update any relevant attributes in accordance with the development “as built” plans.

Alternative 1

The first alternative TIS approach is to incorporate a Vision Zero Impact Statement to the existing LATR Guidelines, similar to the Pedestrian and Bicycle Impact Statement.

Recommendation

To ensure development is executed in a way that aligns with Vision Zero principles, all LATR studies (required for any subdivision that would generate at least 50 peak-hour person trips) must include a Vision Zero Impact Statement that describes:

- Any segment of the high injury network located on the development frontage.
- Crash analysis for the development frontage. Crash data may be gathered from crash data published by the County. The dataset provides general information about each collision and details of all traffic collisions occurring on county and local roadways within Montgomery County, as collected via the Automated Crash Reporting System (ACRS) of the Maryland State Police, and reported by the Montgomery County Police, Gaithersburg Police, Rockville Police, or the Maryland-National Capital Park Police.
- An evaluation of the available and required sight distance and sight triangles for all access points calculated according to the latest version of the American Association of State and Highway Transportation Officials' A Policy on the Geometric Design of Highways and Streets (AASHTO Green Book).
- Identification of conflict points for drivers, bicyclists, and pedestrians at all intersections and crosswalks and a qualitative assessment of the safety of the conflict. The identification should include illustrations such as those in the FHWA Signalized Intersections: Informational Guide, with examples shown in Figures 1-2. The identification should specify crossing, merge, and diverge conflict types.
- A speed study including posted, operating, design, and inferred design speeds.
- Any capital or operational modifications required to maximize safe access to the site and surrounding area, particularly from the Vision Zero Toolkit.

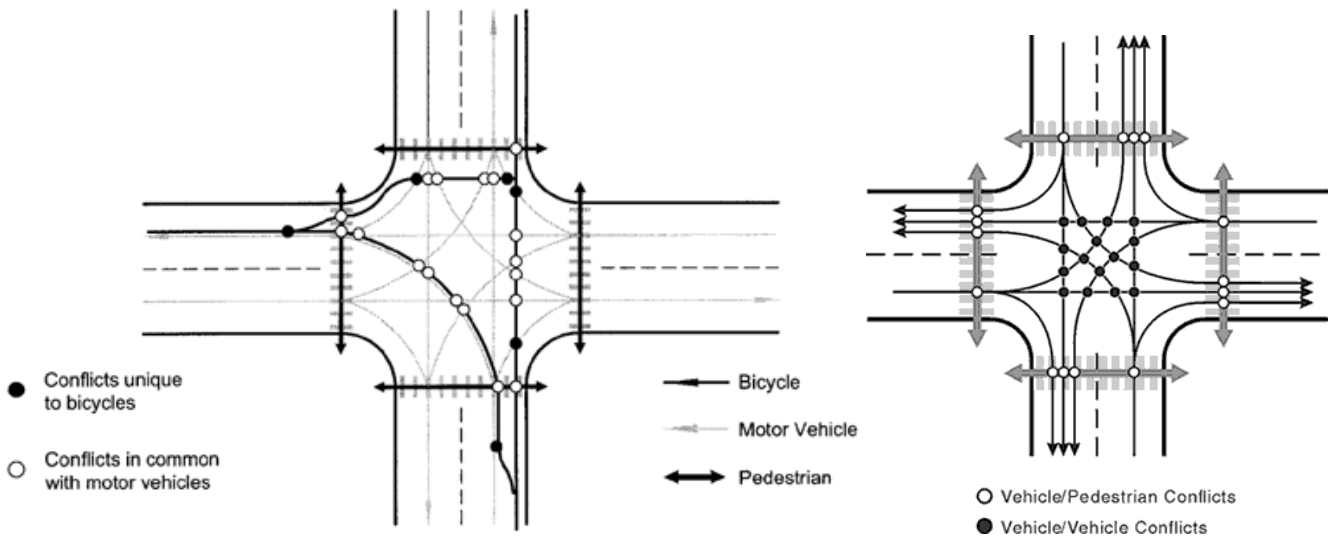


Figure 1: Bicyclist and Pedestrian conflicts at signalized intersections (Image source: FHWA-HRT-04-091)

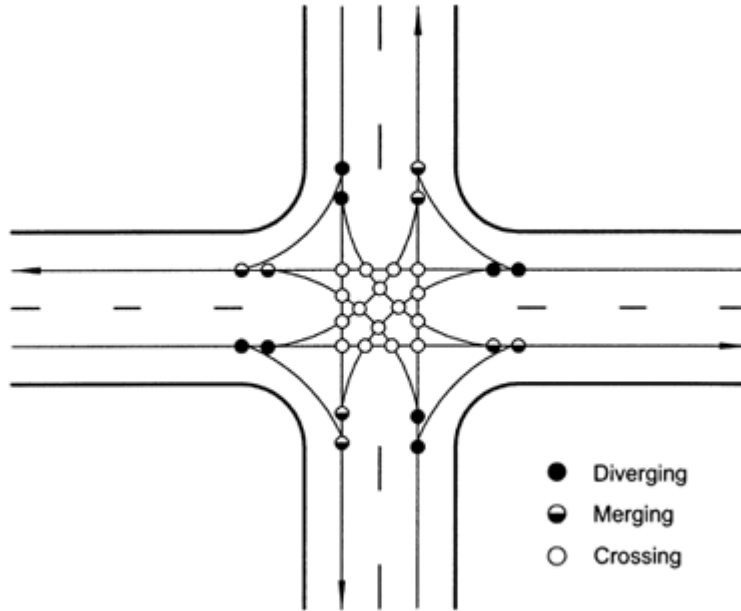


Figure 2: Illustration of conflict points for a four-leg signalized intersection (Image source: FHWA-HRT-04-091)

Mitigation Priorities

Mitigation strategies to increase capacity or reduce delay for motor vehicles may be counter to the Vision Zero principles listed above. Increasing motor vehicle capacity through roadway widening, signal phasing or timing changes, or increases in speed may increase hazards for pedestrians, bicyclists, and drivers. It is critical that any capacity-based mitigation strategy does not negatively impact the safety of any roadway user. The current LATR Guidelines prioritize the application of modal mitigation approaches as follows when projected traffic generated from proposed projects exceeds the applicable policy area congestion standard:

- *Transportation demand management (TDM) approaches to reduce vehicular demand.*
- *Pedestrian or bicycle improvements.*
- *Transit facility or service improvements.*
- *Intersection operational improvements.*
- *Roadway capacity improvements.*

In Road Code Urban Areas (RCUAs) and Bicycle Pedestrian Priority Areas (BPPAs), adjustment of the prioritization of mitigation approaches listed above may be made to allow for mitigation payment in lieu of construction

The sections below are also stated in the LATR Guidelines:

To maintain an equivalent level of service for both auto and non-auto modes of travel, the Planning Board may permit an applicant to provide fewer roadway improvements or less traffic mitigation in exchange for providing non-auto transportation facilities that will enhance pedestrian safety or encourage non-auto mode choices.

Such facilities must be implemented to reduce the congestion levels at intersections that exceed the congestion standard and where an improvement need has been identified. Trip distribution and assignment assumptions in the LATR Transportation Study are key factors in determining local intersection impacts and the level of trip mitigation required.

In determining the adequacy of improvements, the Planning Board must balance the environmental and community impacts of reducing congestion as well as the safe and efficient accommodation of pedestrians, bicyclists and bus patrons. Periodic monitoring may or may not be required of non-auto transportation facilities.

Non-auto facilities to mitigate congestion may include bikeshare stations (in county-designated expansion areas), sidewalks, bike paths, Super Shelters, bus shelters and benches, bike racks and lockers, and static or real-time transit information signs, described in more detail below.

These features must be constructed off-site (i.e. across center line of adjacent roadway, outside of extension of lot lines) and should provide safe access from the proposed or existing development to any of the following uses:

- *Rail or bus transit stations or stops;*
- *Public facilities (school, library, park, post office, etc.);*
- *Recreation centers;*
- *Retail centers that employ 20 or more persons at any time;*
- *Housing developments of 27 or more single-family detached units;*
- *Office centers that employ 100 or more persons;*
- *Existing sidewalks or bike paths and;*
- *Adjacent private amenity space (sitting area, theater, community center).*

Accessible pedestrian signals (for the visually impaired), retrofitting existing traffic signals with countdown lights and reconstructing existing substandard curb ramps (to current ADA guidelines) should be allowed as optional facilities.

These features must be within one-quarter mile of the edge of the proposed development and must be located off-site. Staff will determine the eligibility of off-site improvements. For transit stations or stops, the frequency of transit service must be at intervals of 20 minutes or less during the weekday morning and evening peak periods. Appropriate new bikeway segments can be found in the Bicycle Master Plan or in the applicable master or sector plan. The Bicycle Master Plan prioritizes bikeways by activity center; for example: Metro stations, CBDs, downtowns, park trails, etc.

The monetized value of the non-auto facilities is \$16,000 per vehicle trip, up to a maximum of 100 vehicle trips. For instance, the provision of a \$160,000 capital project can be used to reduce a site's trip generation by 10 vehicle trips.

As stated above, per the County's commitment to Vision Zero, mitigation strategies to meet the congestion standards must not decrease safety for any roadway user.

Recommendation

The revised list of mitigation priorities, listed below, should be used to prioritize the application of modal mitigation approaches:

- Crash mitigation strategies to achieve Vision Zero, identified in the Vision Zero Toolkit.
- Transportation demand management (TDM) approaches to reduce vehicular demand.
- Pedestrian or bicycle improvements.
- Transit facility or service improvements.
- Intersection operational improvements.
- Roadway capacity improvements.

No improvements should be installed that have a crash modification factor (CMF) greater than 1.0, per the CMF Clearinghouse.

Alternative 2

The second alternative TIS approach is to replace or revise the capacity-based adequacy definitions and measurements identified in the current LATR Guidelines. This alternative includes one option which could be implemented today with measurements that make use of existing resources. As the County continues developing their Vision Zero resources, more measurements will be available in the future and an additional option for this alternative has been identified that would make use of those resources.

Recommendation

Because the various modes of the transportation system are not isolated, all multi-modal tests are required if the development produces greater than 50 peak-hour weekday person trips.

Motor Vehicle System

A safety performance function (SPF) is an equation used to predict the average number of crashes per year at a location as a function of exposure and roadway or intersection characteristics. Development has the potential to impact the factors which influence the SPF. The County has developed a methodology for estimating and deploying predictive SPFs. As the County continues to develop this resource, the motor vehicle system adequacy should be defined as reducing the estimated number of crashes based on predictive SPFs for the build conditions. This method should factor in generated site trips as well as changes to the transportation network and public space.

Until the SPF methodology can be applied to measure the motor vehicle system adequacy, conflict points should be used to determine the system adequacy. The first step should be the identification of conflict points for drivers, bicyclists, and pedestrians at all intersections and crosswalks using illustrations. Based on the turning movements the volumes at each of the conflict points should be recorded. The total number of potential conflicts that occur under free conditions (when yielding is required) should not increase. The total number of potential conflicts should be calculated as the sum of the volume (vehicle, bicycle, pedestrian) of each movement for each conflict point. While the development may add trips through an intersection, protected phasing, removal of RTOR, provision of an LPI or other conflict reduction measures can ensure the number of conflicts does not increase.

Pedestrian System

The standard for pedestrian system adequacy is the ability to travel via somewhat comfortable or very comfortable routes based on the Pedestrian Level of Comfort (PLOC) to destinations within 500 feet of a development site boundary or within the distance to the nearest signalized intersections located beyond a 500-foot radius of site boundaries. Additionally, there should be no American with Disabilities Act (ADA) noncompliance issues within a 500-foot radius of site boundaries or within the distance to the nearest signalized intersections located beyond a 500-foot radius of site boundaries.

As part of the Pedestrian Master Plan, the entire county will be scored using the PLOC methodology. If the PLOC has not yet been calculated in the area of the proposed development there should be no gaps in pedestrian access routes within a 500-foot radius of site boundaries or within the distance to the nearest signalized intersections located beyond a 500-foot radius of site boundaries, per the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way.

Bicycle System

Maintaining the adequacy measurement from the current LATR Guidelines, bicycle system adequacy is defined as providing a low level of traffic stress (LTS) for bicyclists. The applicant must make improvements needed to provide low level of traffic stress (LTS-2) conditions that link the site to or otherwise extend an LTS-2 facility within 750 feet of a development site boundary.

Transit System

The standard for transit system adequacy is defined in terms of accessing transit stops within 1,000 feet of the site. In addition to the requirements for the pedestrian system adequacy and bicycle system adequacy, all transit stops within 1,000 feet of the site must be accessible through a somewhat comfortable or very comfortable pedestrian route and an LTS-2 bicycle route. If the PLOC has not yet been calculated in the area of the proposed development, there should be no gaps in pedestrian pathways to transit stops within 1,000 feet of the site.

Conclusion

By adopting one of the alternative TIS approaches outlined above, Montgomery County could be a trailblazer among counties and cities by explicitly incorporating Vision Zero into the development review process. Whether applied as an addition to the current process, or through newly defined modal adequacy measures the County has the potential to prioritize safety and ensure new development in the County does the same. As the County further develops their Vision Zero resources, the case for adopting new and revised measures of modal adequacy will become even stronger.