Transportation Impact Study Technical Working Group (TISTWG)
Wednesday, March 1, 2017 Meeting #21
MRO Auditorium
1:30-3:30 PM

Agenda

1) Introductions (15 min)
2) LATR Guidelines Review (60 min)
    a) Tracked changes to 2/14 version (attached PDF document)
    b) Comments/response matrix (attached PDF document)
3) Other comments/concerns re: SSP / LATR process (15 minutes)
4) Related initiatives (15 min)
    a) White Oak Science Gateway
    b) SHA TIS Guidelines
    c) TDM/TMAg review status
5) Next steps and tentative meetings schedule (15 min)

Prepared by Renaissance Planning Group
February 24, 2017

LATR Guidelines

March 1, 2017 Review Draft

(noting changes from February 14 review draft)

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Contents

Local Area Transportation Review Guidelines

I. Executive Summary

The Local Area Transportation Review and Policy Area Transportation Review Guidelines were updated by the Planning Board on May 13, 2010, June 17, 2011 and February 9, 2012. The Local Area Transportation Review and Transportation Policy Area Review Guidelines were updated by the Planning Board on January 24, 2013.

On November 15, 2016 the County Council adopted changes to the Subdivision Staging Policy eliminating the Transportation Policy Area Review as an area-wide test for transportation adequacy. The Planning Board approved these revised Guidelines to incorporate the Council's action on March 30, 2017. This document reflects that action.

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These Local Area Transportation Review (LATR) Guidelines are to be used for preparation and review of transportation impact studies for development in Montgomery County. This document should be used by transportation engineers, planners, public agency reviewers, and community members participating in the development review process.

These Guidelines specify the more context-sensitive and multi-modal procedures and analysis methods reflected in the 2016-2020 Subdivision Staging Policy as they relate to the determination of adequacy of local intersection performance in the context of the development review process. These Guidelines contain many new ideas that essentially rethink how the County approaches the evaluation of local transportation system performance. The following highlights key changes, each of which is reflected in this document.

- Recognizing that there is not a "one size fits all" set of rules that applies Countywide but rather that the expectations for transportation system adequacy and the types of appropriate mitigation need to be applied in a context-sensitive manner.
- Organizing policy areas into four groups (i.e., Red, Orange, Green and Yellow) that recognize current land use patterns, the prevalence of modes of travel other than the single occupant vehicle, and the planning vision for different parts of the County.
- Updating vehicle trip generation rates and developing person-trip generation rates that reflect the diversity of land use patterns and travel behavior across the County.
- Creating an ability to adjust trip generation rates based on reduced parking where such reductions are supported by the zoning code.

- Creating a new system for evaluating local area transportation conditions that emphasizes the application of delay-based measures that reflect the experience of travelers, rather than focusing on Critical Lane Volume.
- Expanding LATR to include a set of multi-modal (i.e., bicycle, pedestrian and transit) transportation tests beyond those that focus on motor vehicle travel.

In summary, these Guidelines provide for the application of a more robust and multi-modal set of local transportation system performance evaluation procedures. The Subdivision Staging Policy recommends that the County further evolve over time by the incremental implementation of proportional cost-sharing (pro-rata) share transportation districts, in addition to those established in White Flint and White Oak. In areas where such pro-rata share districts are established, development will proceed conditioned on the payment of a fee to the County commensurate with the applicant's proportion of the cost of a Unified Mobility Program[1] (UMP). In this context, the components of the UMP and the fee per peak hour vehicle (or person) trip will be established by Council resolution after a public hearing.

[1] A Unified Mobility Program reflects a selected set of master-planned transportation projects (including the associated costs of design, land acquisition, construction and site improvements and utility relocation) needed to achieve LATR adequacy at the master plan planning horizon.

II. Introduction

A. LATR PRINCIPLES

Section 50-35(k) of the County Code directs the Montgomery County Planning Board to find that public facilities will be adequate to serve proposed development. This Adequate Public Facilities (APF) finding requires forecasting travel demand generated by proposed development and comparing it to the capacity of existing and programmed roads and transit. An applicant for proposed development must show that adequate transportation facilities will be in place within a specified period of time. Alternatively, the applicant must provide those facilities or make a Traffic Mitigation Payment toward area-wide transportation needs. These guidelines show the methodology for determining adequacy, specify mitigation for projected traffic generated by proposed development projects, and describe how Traffic Mitigation Payments are determined.

There is a set of multi-modal tests (applied to auto, transit, bike and pedestrian travel) for determining transportation adequacy — the Local Area Transportation Review (LATR). These tests, described in the subsequent sections of these Guidelines, are required by the 2016-2020 Subdivision Staging Policy adopted by the County Council on November 15, 2016.

These Guidelines explain the methodology for documenting and analyzing the likely impact of proposed development on intersection performance. The criteria in these Guidelines determine whether a development can satisfy the requirements for transportation adequacy. Following the standards of the Subdivision Staging Policy, the Planning Board must not approve a development if local area transportation conditions are deemed inadequate. The Planning Department staff's review and the Planning Board's decision is based on existing and programmed roads, available and programmed mass transportation, and physical improvements or trip mitigation measures to be provided by the applicant.

B. APPLICABILITY

LATR is applied to development projects that will generate at least 50 total weekday peak hour person trips. Projects that generate fewer than 50 total weekday peak hour person trips must prepare a transportation study exemption statement describing the basis for any exemption from LATR.

The LATR test is applied by policy area (see Map 1). Detailed maps, with streets shown, are provided in the 2016-2020 Subdivision Staging Policy Resolution 18-671 found here (see pages 27-67):

http://www.montgomerycountymd.gov/COUNCIL/Resources/Files/res/2016/20161115_18-671.pdf

LATR compliance is not required for developments in the White Flint Policy Area if applicants

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www.montgomeryplanning.org/research/growth_policy/subdivision_staging_policy/2012/documents/SSPappendix5.pdf. ¶

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agree to participate in the White Flint Special Taxing District for transportation infrastructure improvements in lieu of satisfying the transportation APF tests for LATR. Similarly, LATR compliance is not required for developments in the White Oak Policy Area if applicants pay mitigation payments specified by the White Oak Local Area Transportation Improvement Program for transportation infrastructure improvements in lieu of satisfying the transportation APF tests for LATR.

LATR mitigation and/or payments are not required for public facility project mandatory referrals, in which the Planning Board's comments are advisory. Mandatory referrals are often unique uses, such as schools or other public services, and their traffic review follows Mandatory Referral Guidelines, which requires a pedestrian and bicycle safety statement, pedestrian and vehicular circulation plan, and a transportation study exemption statement or transportation study as applicable.

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C. HOW TO USE THESE GUIDELINES

These Guidelines are to be used by applicants to prepare traffic studies for Planning Board approval and by staff when reviewing those studies.

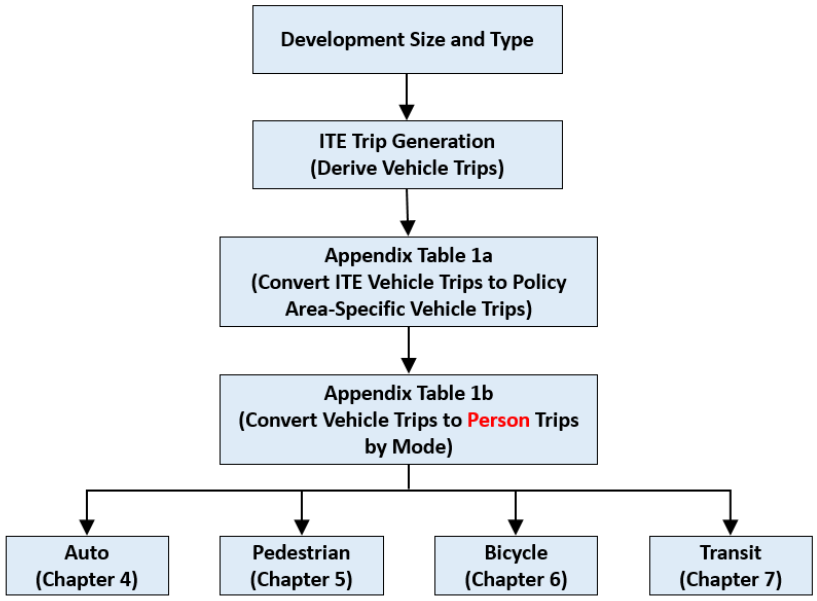
The following chart illustrates the steps needed to arrive at a recommendation for approval of the transportation test for the Adequate Public Facilities Ordinance. These Guidelines describe the information needed from the applicant to determine the answer at each step of the process and the considerations staff must evaluate when reviewing the document.

Project applications requiring LATR studies:

- preliminary plan (as part of a subdivision application)
- site plans not requiring subdivision
- special exception and zoning cases before the Board of Appeals and County Council

These Guidelines may also apply to building permit review cases requiring an APF finding as applicable under County Code Section 8-31, though in some cases (e.g., less than 12 months vacancy, no increase in square footage, fewer than 50 new weekday peak hour person trips) the APF test may be approved administratively by Planning Department staff.

Figure 1: Montgomery County Local Area Transportation Review Process



When a proposed development is projected by the LATR process to contribute to inadequate transportation conditions, the applicant should consult with Planning Department staff, the Montgomery County Department of Transportation (MCDOT), the Maryland State Highway Administration (SHA), and neighboring jurisdictions (when applicable) as appropriate to develop

recommendations that can mitigate the project's impact and thereby gain Planning Board approval. A description and prioritization of these mitigation approaches is provided in Section II. F of these Guidelines.

The Guideline procedures outlined in this document are intended to provide a snapshot of estimated future traffic conditions for proposed development. These procedures are not intended to establish delay-free travel conditions.

D. RELATIONSHIP TO GUIDING DOCUMENTS

These Guidelines focus on the timing or staging of development in combination with transportation-related public facilities and comes into play primarily during the regulatory process. The County's General Plan, as amended by approved and adopted master, sector and functional plans, determines the amount, pattern, location, and type of development within the County. The master planning process is aspirational, creating a long-term vision for our communities. These Guidelines have a more focused, shorter term view. Their purpose is to evaluate individual proposals for development, determining if the County's transportation network has sufficient capacity to accommodate the additional demand.

County master plans identify where growth is appropriate and at what levels or densities this growth should occur. They provide a vision for the future of the County – from the very conceptual level with the General Plan to much more detailed recommendations with small area plans. For each master plan, some high-level analysis is done regarding infrastructure needed to accommodate the vision outlined in the master plan. This analysis utilizes methods and procedures described in these Guidelines to determine the balance between land use and transportation capacity at the master planning horizon and may result in recommended capital improvements that could be implemented by either the public sector or the private sector.

Local Area Transportation Review must at all times be consistent with the standards and staging mechanisms of adopted master and sector plans.

The Capital Improvements Program (CIP) and the Consolidated Transportation Program (CTP) are the vehicles through which the County and State respectively increase the capacity of public transportation facilities to support existing development and future growth. For the Local Area Transportation Review procedures described in these Guidelines, the programmed transportation projects to be considered are those fully funded for construction in the first 6 years of the current approved Capital Improvements Program, the State's Consolidated Transportation Program, or any municipal capital improvements program.

These Guidelines are also recognized as the standard for reports to the Board of Appeals and Hearing Examiner for special exception and zoning cases, respectively.

E. POLICY AREA DEFINITIONS

For the purposes of these Guidelines, County policy areas are organized into four (4) categories described as follows and depicted in the map below:

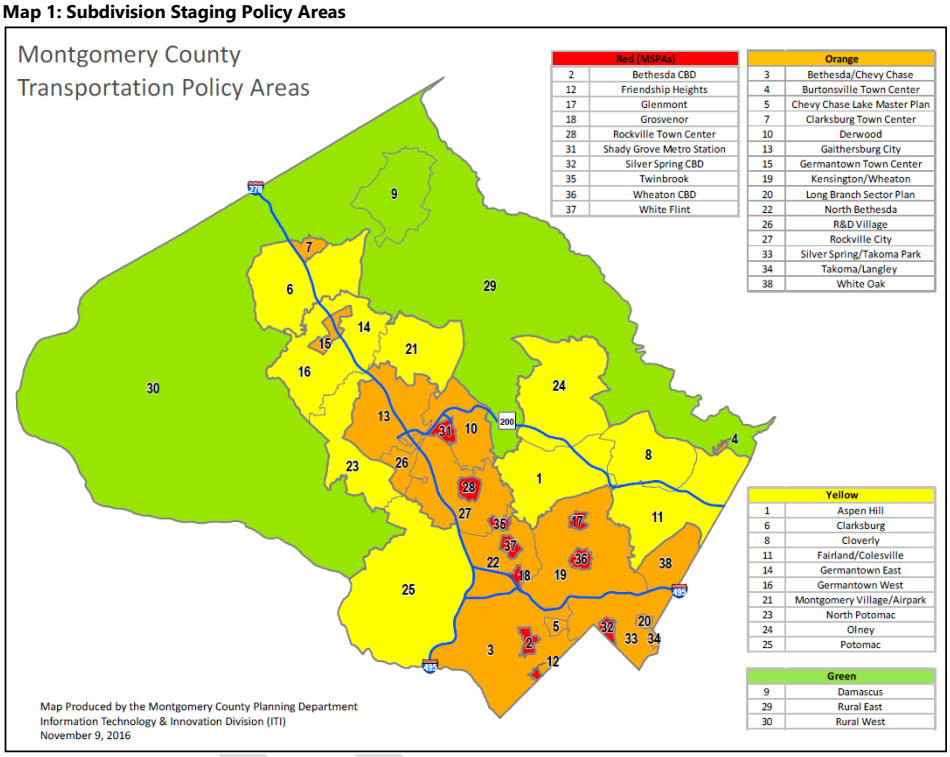
- Red (MSPAs): Down County Central Business Districts and Metro Station Policy Areas characterized by high-density development and the availability of premium transit service (i.e., Metrorail/MARC).

- Orange: Corridor cities, town centers, and emerging Transit-Oriented Development (TOD) areas where premium transit service (i.e., Corridor Cities Transitway, Purple Line/Bus Rapid Transit) is planned.

- Yellow: Lower density areas of the County characterized by mainly residential neighborhoods with community-serving commercial areas.

- Green: The County's agricultural reserve and rural areas.

Map 1: Subdivision Staging Policy Areas



F. MITIGATION PRIORITIES

These Guidelines prioritize the application of modal mitigation approaches as follows:

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

A mitigation approach may be elevated in the priority list if it is explicitly identified in an area master plan or sector plan.

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 as described below.

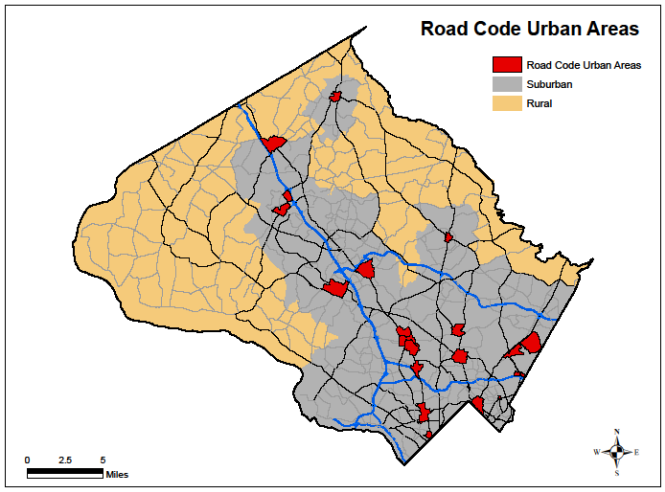
The consideration of land use context in defining appropriate transportation solutions extends beyond the Policy Area geography. For example, the implementation of transportation facilities is governed by Section 49 of the County Code, also known as the "Road Code." As with Policy Areas, the Road Code also defines portions of the County as urban, suburban or rural, and these definitions are also adopted by County resolution (while being more finely-grained than the Policy Area definitions).

The RCUAs, such as the Olney Town Center or Damascus Town Center, reflect nuances within a Policy Area where the land use is expected to generate a higher proportion of walking and bicycling. Accordingly, there should be slower speed limits, wider sidewalks and similar design elements associated with a walkable town center. The County has also designated BPPAs that are locations where the enhancement of bicycle and pedestrian traffic is a priority. Maps depicting the boundaries of RCUAs and BPPAs are provided as Map 2 and Map 3, respectively.

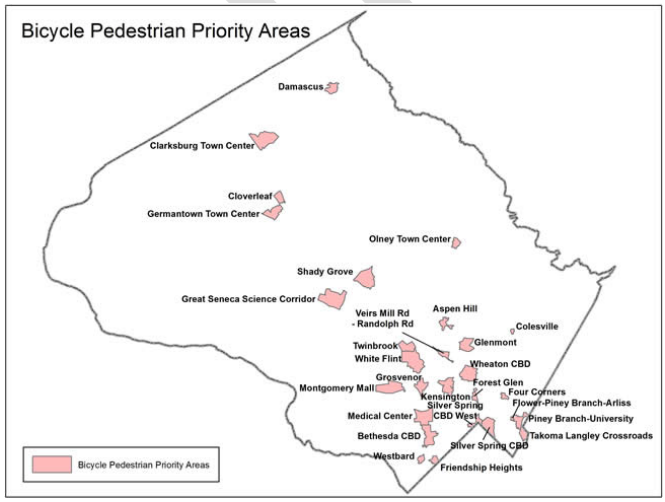
These RCUA and BPPA designations describe places within the County where the rights-of-way are busiest; not only due to the concentration of pedestrian activity, but also due to smaller parcels with multiple connections to utility lines, more closely spaced driveways and intersections, and more overlapping activities for capital improvements and maintenance within both public and private realms.

The identification and implementation of transportation solutions in these RCUAs and BPPAs therefore tend to be the most complex. It is more efficient in these areas for the public sector to implement transportation solutions in a coordinated fashion. Therefore, in RCUAs and BPPAs where an applicant needs to mitigate an LATR impact, a mitigation payment in lieu of construction will be allowed in cases where construction of needed mitigation requires coordination among multiple projects or acquisition of offsite right-of-way, or results in a disproportionate cost burden for the applicant, rather than held out as only a measure of last resort.

Map 2: Montgomery County Rode Code Urban Areas



Map 3: Montgomery County Bicycle Pedestrian Priority Areas



G. DEFINITIONS OF MODAL ADEQUACY

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 and non-motorized quality of service is prioritized in areas where higher pedestrian and bicyclist volumes are expected. For each type of modal analysis that may be required, these Guidelines define the basis for the definition of adequacy (i.e., the 2010 Edition of the Highway Capacity Manual). Applicants are encouraged to use state of the practice software tools to conduct adequacy analyses and may propose clarifications as warranted as part of an LATR transportation study scoping.

Motor vehicle adequacy is defined by the intersection level of service standards by policy area depicted in Table 2. For intersections located within Red or Orange policy areas, the Highway Capacity Manual operational (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 intersections 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.

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

- Fix (or fund) Americans 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). This ensurance can be achieved by considering means to reduce crosswalk distances and demonstrating a practical approach to signal timing. The applicant is responsible for identifying a revised signal timing concept for consideration but is not required to obtain MCDOT or SHA approval, nor is the operating agency required to implement it.

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 trips 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 the purposes of defining background, total future, and total future with mitigation conditions for multimodal intersection analysis:

- Total future conditions for auto traffic must incorporate existing traffic plus traffic generated by background development and site development.
- Total future conditions for transit must incorporate existing conditions plus reasonably assumed changes associated with any improvements in the 6-year capital program (such as the Purple Line)
- Total future conditions for bicycles and pedestrians are typically defined as having demand equal to existing conditions.

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III. LATR Study Submission

A. SCHEDULING PROCESS

If an applicant is uncertain whether a transportation study is required, a transportation study exemption statement must be filed as a part of an applicant's development submittal. The transportation study exemption statement must show that the number of peak hour **person** trips generated by the project's proposed land use is fewer than 50 trips.

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Planning Department staff will review the initial transportation study exemption statement and determine if a transportation study is necessary.

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If a transportation study is necessary, Planning Department staff has 15 working days to develop a study scope after receiving a written request and working with the applicant. As part of the scope, staff will supply the applicant with information on approved but unbuilt developments, relevant pending applications, nearby intersections to study, trip distribution and traffic assignment guidelines, and other information required to complete the study.

When determined to be complete and adequate, the applicant can return the study with the complete development application. Planning Department staff has 15 working days to let the applicant know if the study is complete and adequate.

Two copies of the transportation study must be submitted with the development application. Once Planning Department staff confirms that the transportation study is complete and adequate, 13 copies must be submitted within five working days of notification, along with a PDF copy for inclusion in the application file and available for public view via the Planning Department website's Development Activity Information Center (DAIC).

B. SCOPING PROCESS

Applicants should use the following general criteria and analytical techniques to demonstrate the expected impact on public roadway intersections by the proposed development. The analysis should consider existing traffic, background traffic generated by developments approved and not yet built, and projected traffic generated by the applicant's project. Planning Department staff may require that traffic from nearby pending applications is included in the transportation study if those applications are likely to be approved by the Planning Board before the subject application's projected Planning Board hearing date. Otherwise, the transportation study would have to be updated to include the pending applications that were approved between the transportation study's scoping and the Planning Board hearing date. Transportation studies should also reflect any transportation improvements that will be made

by nearby projects.

These Guidelines expand upon the application of the state-of-the-practice in traffic analysis tools to provide measures that are more readily correlated with traveler experience than the Critical Lane Volume (CLV) approach. In so doing, these Guidelines also introduce three new quantitative measures of adequacy for pedestrians, bicyclists, and transit. These proposed adequacy measures are described in subsequent sections of this document. Other multimodal elements of the LATR process, notably the requirement for all LATR studies to incorporate a qualitative pedestrian-bicycle impact statement, are retained. LATR for each mode of travel must be completed for any subdivision that would generate a significant number of at least 50 peak-hour person trips by that mode.

These Guidelines prescribe the use of context-sensitive trip generation and mode split analyses to determine the need for an LATR Study (as contrasted with a transportation study exemption Statement) and the need for quantitative analysis of each of the four modes of travel. The LATR process utilizes the most recently published vehicle trip generation rates in the Institute of Transportation Engineers (ITE) Trip Generation Manual in concert with context-sensitive trip generation adjustment factors associated with each policy area to define site vehicle driver, vehicle passenger, transit, and non-motorized person trips, using information provided in Appendices 1A and 1B. Table 1 below describes the application of this using a hypothetical 100,000 GSF office building in the Germantown East Policy Area:

Table 1. LATR Guidelines Appendix References for Trip Generation

Appendix	Title/Purpose	Primary Use	Example Case
Table 1A	ITE Vehicle Trip Rate Adjustment Factors	Adjust ITE estimate of site-generated vehicle trips	Using the average rates from pages 1260 and 1261 of the 9th Edition of Trip Generation and Table 1A, the site is estimated to generate 156*0.95=148 AM peak hour vehicle trips and 149*0.95=142 PM peak hour vehicle trips.
Table 1B	Mode Split Assumptions by Policy Area	Identify which modes require quantitative analysis.	The number of person trips exceeds the threshold of 50 so that a quantitative auto analysis is required. The number of transit trips (148 * 1.8% / 72.1% = 4) is less than the threshold of 50 so that a quantitative transit analysis is not required. The number of non-motorized trips (148 * 5.0% / 72.1% = 10) plus the number of transit trips (4,

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			from above) totals 14, or less than the threshold of 50 so that quantitative pedestrian or bicycle analyses are not required.

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Once the context-sensitive number of person-trips generated by mode is established, certain sites may be eligible to conduct further mode shifts through the consideration of trip generation characteristics of retail land uses, transit proximity, parking management, and Transportation Demand Management (TDM) as noted in the following paragraphs.

Ancillary Retail

The ITE vehicle trip generation rates, and the policy area factors in Appendices 1A and 1B, address retail site driveway traffic. In most cases, a significant amount of driveway traffic is "pass-by" or "diverted link" traffic; in other words, few of those vehicles are making a separate trip solely to or from the retail land use. The ITE trip generation processes are adept at addressing this characteristic of mixed use development for vehicle trips, but not so robust in considering trips made by other modes (particularly in the most urban settings when some of those trips may be made to or from other uses in the same building and may not even requiring traveling outdoors).

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ITE vehicle trip generation rates typically presume a stand-alone retail building with customer parking provided on-site, a characteristic common throughout the County except in more urban areas. Where retail uses are incorporated as an ancillary use within a mixed use building, these Guidelines presume no new person trips are generated where a nominal amount of ancillary ground floor retail exists in a mixed use building that is predominantly residential or office. The presumption that no new person trips are generated applies for up to 15,000 GSF of retail space in a building that has least 90% of its FAR devoted to non-retail uses as long as no parking spaces for retail customers are included in the site plan. For sites located within Parking Lot Districts (PLD), an applicant proposing ground floor retail with parking requirements achieved through participation in the PLD may assume 2.0 peak hour vehicle trips, 1.0 peak hour pedestrian trips, and 1.0 peak hour transit trips for each 1,000 gross square feet of retail space during the PM peak period, with AM peak period rates equal to 25% of PM peak period rates.

Transit Proximity

Based on table S-2 in the 2005 WMATA Development Related Ridership Survey report, sites located outside a Red Policy Area but located within 1,000' of an existing for fully funded for

construction light-rail transit (LRT) or bus-rapid transit (BRT) station may shift additional trips from auto driver to transit patron based on the actual walking distance from the site's main entrance to the transit station, with a value of:

- 1 percentage point of mode share for every 50 feet closer than 1,000 feet for office development
- 1 percentage point of mode share for every 100 feet closer than 1,000 feet for residential development.

Parking Management

Research indicates that there is a correlation between parking supply and vehicle trip generation, particularly when applied in a supportive parking-pricing environment with alternative transportation options. Applicants may adjust vehicle trip generation rates if, per Section 59.6.2.4 of the County Code, they propose parking ratios lower than the baseline minimums that include specific supportive actions identified to reduce parking demand. No additional actions other than those needed to satisfy Section 59.6.2.4 are required to make this trip generation adjustment.

For residential uses, each 2 percent reduction in parking below the minimum number of spaces yields a 1 percent reduction in vehicle trip generation rates for that use. This relationship is based on the equation in Table 2-9 of the Transportation Research Board's TCRP Report 128, "Effects of TOD on Housing, Parking, and Travel". Applying this equation to a prototypical TOD site with 10 DU/acre, a ratio of 1 parking space per dwelling unit would yield 0.24 peak hour vehicle trips and a ratio of 0.5 parking spaces per dwelling units would yield 0.18 peak hour vehicle trips (in other words, a 50% reduction in parking yields a 25% reduction in vehicle trips).

For office uses, each 3 percent reduction in parking below the minimum number of spaces yields a 1 percent reduction in vehicle trip generation rates for that use. This relationship is based on the relationships shown in Figure 6-9 of a 2004 report by Lund, Cervero, and Wilson for Caltrans "Travel Characteristics of Transit Oriented Development in California", which shows that in a transit/TDM rich environment a similar reduction from 1.0 to 0.5 parking spaces at an office site could be expected to increase transit mode share from 41% to 50% (which for simplicity sake is assumed to equal a reduction in auto mode share from 59% to 50%). In other words, in this case a reduction of 50% of parking spaces reduces auto trips by about 15%, or roughly a 3:1 ratio.

Traffic Mitigation Agreements (TMAgs)

Applicants wishing to further reduce vehicular impacts through Transportation Demand Management programs may propose additional TDM programs and services whose effectiveness will be negotiated with M-NCPPC staff, pivoting from the context-sensitive trip generation rates already incorporated above and with binding elements to be included in a Traffic Mitigation Agreement (TMAg).

Transportation Study Exemption Statement

Projects that are projected to generate less than 50 new weekday peak hour person trips for LATR may need to submit only a transportation study exemption statement. This statement must demonstrate the conditions that justify the exemption.

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Information to be included in a transportation study exemption statement includes:

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- development project location—Planning Area and policy area
- proposed nonresidential square footage
- proposed number of dwelling units (single-family or multifamily)
- proposed land uses (as defined by the Department of Permitting Services)
- estimated number of new and total peak hour trips generated by the proposed land uses
- rationale for exemption

If the project is not exempt, the applicant must prepare a transportation study. Depending on the project size, uses, and location, the contents of a transportation study will vary. The applicant and Planning Department staff, in a meeting or through correspondence, will establish a scope for the study using the elements described below. (For zoning and special exception cases, Planning Department staff may consult with the Hearing Examiner, and initiate a meeting with the applicant and interested groups or individuals to establish the scope of the traffic analysis.)

C. CONTENTS REQUIRED FOR COMPLETENESS

i. Adequacy Determination

A transportation study must consider adequacy of the following elements:

1. Quantitative auto analysis (if the 50 person trip threshold is exceeded)
2. Quantitative transit analysis (if the 50 transit trip threshold is exceeded)
3. Quantitative pedestrian or bicycle analysis (if the 50 non-motorized trip threshold is exceeded)

For each modal adequacy consideration required, 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, supported by the analytic processes and information described in the

subsequent chapters of these Guidelines.

ii. Pedestrian and Bicycle Impact Statement

To ensure safe and efficient pedestrian and bicycle access and circulation to and within the site, each transportation study, regardless of pedestrian and bicycle trip generation, must include a Pedestrian and Bicycle Impact Statement that describes:

- pedestrian and bicycle counts at each intersection: pedestrian counts will be recorded at each leg of the intersection; bicycle counts will be recorded as turn movements
- any capital or operating modifications required to maximize safe pedestrian and bicyclist access to the site and surrounding area
- inventory map of existing and proposed sidewalks, off-road shared-use paths, and bikeways near the site noting whether these facilities are generally consistent with the County's Road Code design standards for sidewalk, path, landscape panel width, and street trees
- existing and proposed bikeshare stations in the vicinity of the site
- existing and proposed bus stops, shelters, benches, and other amenities including real time transit information in the vicinity of the site
- pedestrian and bicycle accommodations at nearby intersections, including crosswalks, countdown pedestrian signals (CPS), push buttons, median refuges, and ADA-compliant ramps and accessible pedestrian signals (APS)
- information on bus route numbers, service frequency, and end destinations of bus routes
- in CBDs and MSPAs, recognition of peak pedestrian and bicycle activity periods
- the presence of existing streetlighting in the vicinity of the site.

Applicants should consult with Planning Department staff to determine the scope of the items referenced above.

iii. TDM Strategy Statement

If an applicant is proposing trip reduction measures, the study must include:

- a description of proposed Traffic Mitigation Agreement (TMAg) elements that will be entered into by the Planning Board, the Board of Appeals (if applicable) and MCDOT. The description must include, at a minimum, the following elements:
  - the vehicle trip reduction goals, including the specific number of peak hour vehicles to be reduced in both the weekday morning and evening peak periods
  - the TMAgs actions and a quantitative assessment of how they will achieve the required vehicle trip reduction goal
  - the required duration of the TMAg, whether the TMAg will be enforced based on the provision of specified actions (regardless of outcome), the measured outcome (regardless of actions provided), or a combination of both
  - the measures to be used in enforcement
  - the suggested method of monitoring

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- a security instrument to fund the continuation of the traffic mitigation program for its remaining term if the applicant defaults
- the penalties if the vehicle trip reduction goals are not met.

- written statements from both MCDOT and Planning Department staffs concurring with the proposed approach to traffic mitigation.

D. Review Process

Planning Department staff evaluates traffic studies considering the following elements, described here to ensure consistent review by staff and to provide applicants additional information about how their studies will be analyzed.

To warrant an LATR transportation study, a proposed development must have a measurable transportation impact on a local area. Measurable transportation impact is defined as a development that generates 50 or more total (i.e., new, pass-by, and diverted) weekday peak hour **person** trips in the morning (6:30 a.m. to 9:30 a.m.) and/or evening (4:00 p.m. to 7:00 p.m.) peak periods. If the proposal generates an increase of fewer than 50 person trips, a transportation study exemption statement is required instead of an LATR transportation study.

To determine if a development will generate 50 or more new peak hour weekday **person** trips, Planning Department staff uses the following criteria:

- For retail development, pass-by and diverted trips are included in establishing the 50-**person** trip threshold for a transportation study and later, for designing site access and circulation. The fact that pass-by and diverted trips are already on the network is reflected in evaluating delay or CLV measurement.

- Planning Department staff shall exercise their professional judgment in consultation with the applicant in determining the appropriate land area to consider. Parcels that will be separated by unbuilt roadways remain "land at one location" but parcels separated by business district streets, arterial roadways, major highways, or freeways may cease to be "land at one location" even if still in common ownership.

In certain circumstances, Planning Department staff may, in consultation with the applicant, require analysis of traffic conditions during a different three-hour weekday peak period for example, 6:00 a.m. to 9:00 a.m. (versus the standard 6:30 a.m. to 9:30 a.m.) or 3:30 p.m. to 6:30 p.m. (versus the standard 4:00 p.m. to 7:00 p.m.), to reflect the site's location or trip-generation characteristics, existing conditions, or conditions affecting background or total future conditions traffic. For example, a school where classes end before the start of the evening peak period may warrant analysis of an earlier peak period.

For some specialized land uses, trip-generation rates may not be available. In such cases, Planning Department staff may request that determining rates be a part of the transportation

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study, most likely by collecting existing driveway counts at similar land uses. If special rates are to be used, staff must approve them prior to submission of the transportation study.

An applicant shall not avoid the intent of this requirement by submitting piecemeal applications or approval requests. However, an applicant may submit a plan of subdivision for less than 50 peak hour person trips if agreeing in writing that, upon filing future applications, the applicant will comply with the requirements of these Guidelines when the total number of site-generated peak hour person trips at one location has reached 50 or more. Then, a transportation study will be required to evaluate the impact of the total number of site-generated trips in accordance with the Guidelines.

The County Council establishes congestion standards throughout the County (stated in terms of delay levels), which depend on the character of development and the availability of transit options. These standards are developed by policy area and adopted in the Subdivision Staging Policy (see Map 1). Planning Department staff maintains an inventory of intersection traffic data based on traffic counts collected by MCDOT, SHA, and private traffic consultants to provide applicants with a preliminary assessment of conditions in the vicinity of a proposed development.

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IV. Roadway System Adequacy

A. ANALYSIS PROCEDURES AND TOOLS

1. Vehicular Delay

Each policy area has a particular congestion standard for intersections, which is applied to meet the LATR test. These standards and mitigation requirements are adopted by the County Council and specified in these Guidelines, which are updated as needed to reflect industry standards, local traffic conditions, and Council action. The policy area congestion standards are fixed; they do not change based on the location of the study site. Intersections on the boundary of two policy areas are judged by the congestion standard of the policy area which allows a greater level of congestion.

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 2 shows the intersection level of service standards by policy area. For intersections located within Red or Orange policy areas, the Highway Capacity Manual (HCM) delay-based level of service standard applies to all signalized study intersections. For intersections located within Yellow or Green policy areas, the Critical Lane Volume (CLV) level of standard applies to signalized study intersections with a CLV of 1,350 or less and the Highway Capacity Manual delay-based level of service standard applies to signalized study intersections with a CLV of more than 1,350. The steps reflected in this process are depicted in Figure 2 below.

For stop or yield-controlled intersections, the delay standard applies to the average vehicle delay calculated by the HCM for controlled movements with the inclusion of zero seconds of delay for vehicles that do not stop or yield. For instance a stop-controlled intersection with 100 vehicles each experiencing 60 seconds of delay and 1,000 mainline vehicles without delay, the average vehicular delay is (1,000*0+100*60)/1100=5.4 seconds per vehicle.

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Figure 2

Local Area Transportation Review (LATR) Process: Roadway System Adequacy Draft

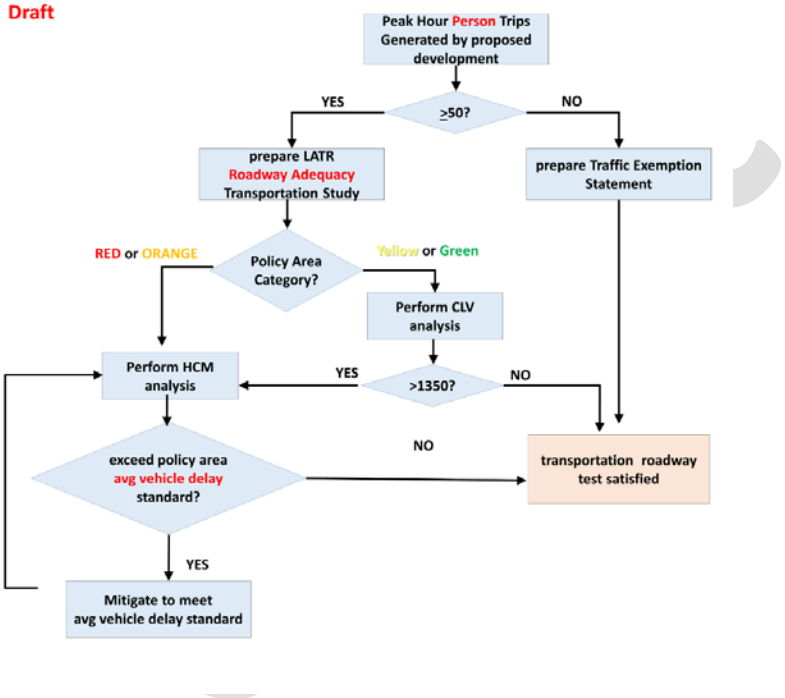

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Table 2: Subdivision Staging Policy Intersection Congestion Standards

Policy Area	HCM Average Vehicle Delay Standard (seconds/vehicle)	Critical Lane Volume Congestion Equivalent	HCM Volume-to-Capacity Equivalent
29 Rural East 30 Rural West	41	1350	0.84
9 Damascus	48	1400	0.88
6 Clarksburg 14 Germantown East 16 Germantown West 13 Gaithersburg City 21 Montgomery Village/Airpark	51	1425	0.89
8 Cloverly 23 North Potomac 25 Potomac 24 Olney 26 R&D Village	55	1450	0.91
10 Derwood 1 Aspen Hill 11 Fairland/Colesville	59	1475	0.92
7 Clarksburg Town Center 15 Germantown Town Center 27 Rockville City	63	1500	0.94
4 Burtonsville Town Center 22 North Bethesda	71	1550	0.97
3 Bethesda/Chevy Chase 5 Chevy Chase Lake 19 Kensington/Wheaton 20 Long Branch 33 Silver Spring/Takoma Park 34 Takoma/Langley 38 White Oak	80	1600	1.00
2 Bethesda CBD 32 Silver Spring CBD 36 Wheaton CBD 12 Friendship Heights CBD 37 White Flint 35 Twinbrook 18 Grosvenor 17 Glenmont 28 Rockville Town Center 31 Shady Grove	120	1800	1.13

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These Guidelines describe operational analyses for intersections using delay-based performance standards to either reduce average peak hour delay per vehicle below the policy area delay standard identified in the SSP or maintain build condition average delay per vehicle below the total future (consisting of existing traffic plus traffic generated by approved but unbuilt development) average delay. These Guidelines describe whether the intersection analysis performance is to be made for an individual intersection or requires a network analysis to address closely spaced intersections operating in tandem. If an individual intersection is analyzed, the vehicular delay threshold applies to the intersection as a whole, not to individual approaches or turning movements in the intersection. Similarly, if a network of multiple intersections is analyzed, the vehicular delay threshold applies to the network as a whole, not to individual intersections within the network. The focus on average delay is intended to help facilitate a focus on management and operations strategies; as the County builds out its roadway network the emphasis is less on constructing additional automobile capacity and more on finding more efficient means for operating the current network to accommodate changing travel demands through techniques such as signal timing, signing and marking, and vehicle progression.

The derivation of the policy area average vehicular delay thresholds applies a Level of Service (LOS) equivalency between Critical Lane Volume (CLV) and delay, using LOS/delay thresholds in the Highway Capacity Manual shown in Table 3.

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Table 3. Equivalency Between CLV, LOS, and Average Vehicle Delay

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HCM LOS Threshold / Boundary	Corresponding Average Vehicle Delay per HCM (seconds)	Corresponding CLV Value
A / B	10	1000
B / C	20	1150
C / D	35	1300
D / E	55	1450
E / F	80	1600
n/a	120	1800

2. CLV Intersection Analysis Method

An intersection's ability to carry traffic can be expressed as CLV, the level of congestion at critical locations with conflicting vehicle movements, usually an intersection. Current CLV standards for each policy area are based on achieving approximately equivalent combined transportation roadway and transit levels of service in all areas of the County (see Map 1). Greater vehicular traffic congestion is permitted in policy areas with greater transit accessibility and use.

For a transportation study, the existing, background, and site-generated traffic for identified intersections should be measured against intersection capacity using the critical lane volume method. The analysis should be carried out for the peak hour of both the weekday morning and evening peak periods and should use traffic data for non-holiday weekdays and other non-typical occurrences.

The CLV method is generally accepted by most Maryland public agencies including SHA, MCDOT, the Cities of Rockville, Gaithersburg, Takoma Park, and M-NCPPC Planning Department. The methodology will fit most intersection configurations and can be easily varied for special situations and unusual conditions.

While some assumptions, for example lane use factors (see Step 3 below), may vary between jurisdictions and agencies, the general CLV methodology is consistent. An excellent reference source is SHA's web site: http://marylandroads.com/Index.aspx?PageId=461.

The CLV method can be used at signalized or unsignalized intersections. For unsignalized intersections, a two-phase operation should be assumed. The traffic volumes should be those approaching the intersection as determined in each step of the transportation study (existing, existing plus background, and existing plus background plus site).

Applicants should use the following steps to determine the congestion level of an intersection with a simple two-phase signal operation.

Step 1: Determine the signal phasing, number of lanes, and the total volume of entering turning movements on all intersection approaches and the traffic movements permitted in each lane.

Step 2: Subtract from the total approach volume any right-turn volume that operates continuously throughout the signal cycle (a free-flow right-turn bypass). Also, subtract the left-turn volume if it has an exclusive lane. An exclusive turning lane must be long enough to store all of the turning vehicles in a typical signal cycle without overflowing into the adjacent through lanes. Otherwise, none or only percentage of the turning volume may be subtracted from the total approach volume.

Step 3: Determine the maximum volume per lane for each approach by multiplying the volume calculated in Step 2 by the appropriate lane-use factor selected from Table 4. (Note: Do not count lanes established for exclusive use such as right- or left-turn storage lanes. The lane use factor for a single exclusive use lane is 1.00. Consult with Planning Department staff and MCDOT regarding any overlap signal phasing.)

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Table 4: Montgomery County Lane Use Factors

Number of Approach Lanes	Lane Use Factor*
1	1.00
2	0.53
3	0.37
4	0.30
5	0.25

* Based on local observed data and the 2010 Edition of the *Highway Capacity Manual*

Step 4: Select the maximum volume per lane in one direction (e.g., northbound) and add it to the opposing (e.g., southbound) left turn volume.

Step 5: Repeat Step 4 by selecting the maximum volume per lane in the opposite direction (e.g., southbound) and the opposing (e.g., northbound) left-turn volume.

Step 6: The higher total of Step 4 or Step 5 is the critical volume for phase one (e.g., north-south).

Step 7: Repeat Steps 4 through 6 for phase two (e.g., east-west).

Step 8: Sum the critical lane volumes for the two phases to determine the CLV for the intersection. At some intersections, two opposing flows may move on separate phases. For these cases, each opposing phase becomes a part of the intersection's CLV (see Table 5).

An example of a CLV calculation for a hypothetical intersection is provided in Table 5 and depicted in Figure 3 below.

Table 5: Critical Lane Volume Calculations

direction from the	lane approach volume		critical lane use factor		approach volume		opposing lefts		lane volume per approach
north	775[1]	x	0.53	=	411	+	200	=	611
south	800[2]	x	0.53	=	424	+	175	=	599
	500	x	1.00	=	500	+	175	=	675[5]
east	700[3]	x	0.53	=	371	+	100	=	471
west	750[4]	x	0.53	=	398	+	150	=	548[5]

[1] Approach volumes are the sum of through, right, and left turn movements in two lanes.
[2] For a heavy right turn, evaluate worst of rights in one lane or through and rights in two lanes
[3] Approach volumes are the sum of through and right turn movements in two lanes.
[4] Approach volumes are through only because of free right and separate left.
[5] Intersection Critical Lane Volume = higher sum = 675 + 548 = 1,223.

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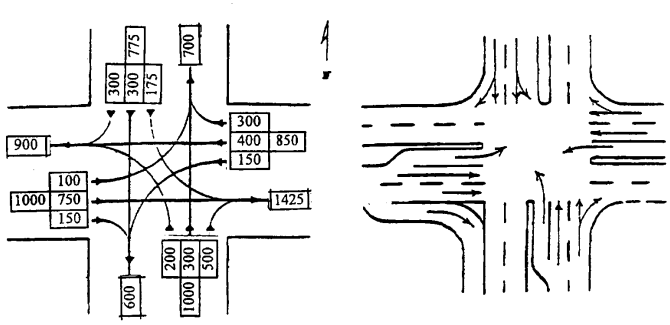
Figure 3: Example Intersection Turning Movements and Lane Configurations



TURNING MOVEMENT VOLUMES **LANE CONFIGURATIONS**

The following conditions should be observed where applicable.

- Right turn overlaps can be assumed where an exclusive right turn lane exists, except in cases when an approach is signed for a "no turn on red" condition.
- The CLV for five-leg intersections should be addressed according to the individual signal phases identified in the field.
- In cases where existing pedestrian crossing time criteria are not met, applicants must inform MCDOT, request that they revise the signal timing, and include this in the pedestrian statement.
- Crossing distances are to be measured from the curb to the edge of the far travel lane (not curb to curb).
- "Desired times" are to be determined by dividing the crossing distance by 3.5 ft/sec and then subtracting the total clearance time for that associated phase, as per the Manual on Uniform Traffic Control Devices.
- The CLV calculation for roundabouts should calculate the sum of the approach flow and circulating flows, as defined by the Highway Capacity Manual, for each approach and comparing the highest sum to the LATR standards.

3. Isolated Intersection Delay

For study intersections with a CLV over 1350, vehicular delay is considered where the intersection operations can fairly be assessed independent of upstream or downstream traffic flow conditions. In such cases, the adequacy of the transportation system for intersections is based on the correlation between intersection level of service and vehicular delay as described in the *2010 Highway Capacity Manual* and shown in Table 2. Adequacy is achieved when the average intersection vehicle delay in the total future with mitigation condition does not exceed

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either the congestion standard shown in Table 2 or the average intersection vehicle delay in the background condition, whichever is higher.

4. Network Delay

For study intersections where the average intersection vehicle delay in any scenario is greater than 80 seconds and either:

(a) the intersection is located on a congested roadway with a travel time index greater than 2.0 as documented by monitoring reports[2] or
(b) the intersection is located in close proximity, within 600 feet, of another traffic signal

a more robust network operations analysis approach should be applied using micro-simulation tools (such as Synchro, SimTraffic, CORSIM and VISSIM). Additional guidance on micro-simulation parameters is available from Planning Department staff.

B. DETERMINING BACKGROUND AND TOTAL FUTURE CONDITIONS

Applicants should use the following general criteria and analytical techniques to demonstrate the expected impact on public roadway intersections by the proposed development. The analysis should consider existing traffic, background traffic generated by developments approved and not yet built, and projected traffic generated by the applicant's project. Planning Department staff may require that traffic from nearby pending applications is included in the transportation study if those applications are likely to be approved by the Planning Board before the subject application's projected Planning Board hearing date. Otherwise, the transportation study would have to be updated to include the pending applications that were approved between the transportation study's scoping and the Planning Board hearing date. Traffic studies should also reflect any traffic improvements that will be made by nearby projects.

Intersections

The number of intersections included will be based on the projected trips generated by the development under consideration. As shown in Table 4, the number of signalized intersections and significant non-signalized intersections in each direction is based on the maximum number of new weekday peak hour vehicle trips generated by the proposed land uses, unless Planning Department staff in consultation with MCDOT, SHA, and municipalities if appropriate, finds that special circumstances warrant a more limited study.

Planning Department staff, in cooperation with the applicant, will use judgment and experience

[2] Relevant monitoring reports include the latest edition of the MWCOG Congestion Management Report, MDSHA State Highway Mobility Report and the Montgomery County Mobility Assessment Report. Applicants should consult with Planning Department staff regarding the appropriate reference to use.

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in deciding the significant intersections to be studied. For example, the ramps and termini of future interchanges will be treated as signalized intersections. The County's central business districts (CBDs) and Metro Station Policy Areas (MSPAs) have more closely-spaced intersections. Accordingly, not every signalized intersection should be studied and as a result, the study may cover a larger area. Site access driveways are not included in the first ring of intersections.

Table 4: Intersections to be Included in a Transportation study

Weekday Peak Hour Site Trips	Minimum Number of Intersections in Each Direction
< 249	1
250 – 749	2
750 – 1,249	3
1,250 – 1,749	4
1,750 – 2,249	5
2,250 – 2,749	6
>2,750	7

The term "each direction" applies to every study intersection. For example, in a hypothetical grid, the first ring from the site access point or off site PLD garage, if applicable, would include four intersections. The second ring would include not only the next four intersections along the streets serving the site, but also the four intersections with cross streets encountered in the first ring. As the number of intersections in each direction grows linearly from one to five, the number of total study area intersections grows at a greater rate.

When determining the intersections to be studied, Planning Department staff will also consider:

- geographic boundaries such as rivers, major streams, parks, interstate routes, railroads
- political boundaries, although intersections located within the Cities of Rockville and Gaithersburg, where the Planning Board does not have subdivision authority, will be included in the transportation study and the studies will be shared with nearby incorporated cities[3]
- contiguous land under common ownership
- the extent of diverted and pass-by trips
- the functional classification of roadways, for example six-lane major highway.

If a site located generates a number of peak hour vehicle trips that is projected to increase the critical lane volume through an intersection by fewer than five CLV and the applicant is required to improve another intersection for the same project and/or is participating in a traffic mitigation program, that intersection does not need to be analyzed in the transportation study, even if it would otherwise be identified as appropriate to study. CLV analyses must be submitted in addition to any necessary HCM delay analyses to demonstrate applicability if this paragraph is intended to be applied to the transportation study.

Applicants may develop a trip distribution and assignment pattern before the study scoping process and work with Planning Department staff to determine which intersections don't require full study. This process will be documented in the scoping correspondence.

[3] In such cases, the coordination of any new proposed intersection improvements shall be in accordance with the memorandum of understanding provided in Appendix 3.

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C. CONTENTS REQUIRED FOR COMPLETENESS

A vehicular transportation study must consider the following elements:

1. Average vehicle delay or CLV at intersections[4]
2. Approved but unbuilt development
3. Existing intersection turning movement counts
4. Trip generation, directional distribution, and trip assignment
5. Mode split assumptions
6. CIP and CTP improvements
7. Circulation and Safety for High Transportation impact venues, including gap analysis
8. Land use and size
9. Queuing/delay analysis (if applicable)
10. Pedestrian and bicycle impacts
11. Improvement and mitigation options
12. Traffic mitigation agreement (if needed)

Elements 1 through 4 are described below.

1. Average Vehicle Delay or CLV at Intersections

See the discussion above provided in Section IV.A.

2. Approved but Unbuilt Development

As a general guideline, background traffic from approved but unbuilt developments will be in the same geographic area as the intersections to be studied if that background development is estimated to contribute at least 5 CLV. If the background traffic is generated from a large, staged development, the transportation study and its review will also be staged. As noted above, background traffic data should also include effective trip mitigation programs or uncompleted physical improvements that have been required of nearby developments. In appropriate cases, Planning Department staff may require that traffic from nearby unapproved applications or constructed buildings with unusually high vacancy rates also be included in the transportation study.

[4] For intersections located within policy areas categorized as Red or Orange, Highway Capacity Manual (HCM) delay-based intersection level of service standard applies to all study intersections. For intersections located within policy areas categorized as Yellow or Green, the Critical Lane Volume (CLV) level of service standard applies to study intersections with a CLV of 1,350 or less and the HCM delay-based intersection level-of-service standard applies to study intersections with a CLV of more than 1,350.

3. Existing Intersection Turning Movement Counts

Generally, intersection turning movement counts less than one year old when a transportation study is submitted are acceptable. Traffic counts should not be conducted:

- on a Monday or Friday
- during summer months or when public schools are not in session
- on federal, state, or county holidays
- on the day before or after federal holidays
- during the last two weeks of December and the first week of January or when a major incident or event results in significantly different traffic volumes and patterns
- when weather or other conditions have disrupted normal daily traffic.
- When federal, state, or county governments have options to telework due to weather conditions

For special circumstances such as summer camps, non-summer or summer traffic counts, whichever is higher, will be used in the study.

Review staff will compare traffic counts against independent sources including older traffic counts at the same location or nearby locations to review new traffic counts for reasonableness and may require a location be re-counted if a notable discrepancy exists among sources.

4. Trip Generation, Directional Distribution, Directional Split, and Trip Assignment

Trip Generation

Trips projected to be generated by the proposed development and background traffic should be determined in accordance with the latest edition of Institute of Transportation Engineers (ITE) Trip Generation Manual and the Trip Generation Handbook. Guidance for calculating trip equations or rates, as well as whether to use rates or equations, from land uses or zoning classifications can be obtained from these documents, as can guidance regarding pass-by, diverted, and internal trip capture rates.

The trip generation results derived from the ITE documents are adjusted using context-sensitive adjustment factors provided in Appendix Table 1A. Developments that generate less than five peak hour background vehicle trips (i.e., subdivisions of four or fewer single-family detached houses) are not generally included unless located at a critical analyzed intersection, since tracking those trips is not pragmatic.

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Planning Department staff is authorized to make minor technical changes to Appendix Tables 1A and 1B to reflect new information or to correct errors. Applicants should check with staff to ensure they are using the latest version of this Appendix.

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In some cases, adjusting the trips from the trip generation rates and equations in the Appendix may be appropriate. For example, the effect of pass by and diverted trips for retail, including fast food restaurants, child day care centers, and automobile filling stations; and the total trips from mixed uses such as office and retail will be considered on a case-by-case basis, using the best available information. Deviations may also be appropriate for a particular site. Appropriate rates for these sites could be based on traffic counts of comparable facilities on vehicles both entering and leaving those sites, preferably in the County, and will be considered by staff.

Directional Distribution

Planning Department staff provides applicants with guidance pertaining to the directional distribution of background and site traffic generated by office and residential uses from the latest edition of the Trip Distribution and Traffic Assignment Guidelines (see Appendix 2). The distribution of trips entering and leaving the proposed development will be determined based on the relative location of other traffic generators, including background development, employment centers, commercial centers, regional or area shopping centers, transportation terminals, or other trip table information provided by staff. For land uses not covered in the Appendix, distribution should be developed in consultation with Planning Department staff.

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Directional Split

The directional split is the percentage of the trips entering and leaving the site during the peak hour and the direction in which those trips are traveling. Refer to the latest edition of ITE's Trip Generation Manual for directional split guidance.

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Trip Assignment

Trip assignment is an estimate of the impact of future traffic on the nearby road network. It tends to be less accurate farther from the origin or destination of travel. The assignment factors shall be determined in consultation with Planning Department staff and applied to the generated trips. The resulting volumes will be assigned to the nearby road network. Generated trips, background traffic, and existing traffic will be combined to determine the adequacy of transportation facilities. Trip assignment will be extended to the nearest major intersection, or intersections, in consultation with Planning Department staff.

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If trip assignment affects an intersection with a CLV of 2,000 or average vehicle delay of 150 seconds, diverting estimated traffic to alternate routes may be considered. Diversions will be

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based on feasible alternatives and should create a balance that reflects the project's traffic impacts on both primary and alternate routes, and without excessively burdening local residential streets. Impacts on primary and alternate intersections must be mitigated in accordance with the policy area congestion standards. Staff, in consultation with the applicant, SHA, and MCDOT, will resolve these cases individually before presentation to the Planning Board.

D. MITIGATION OBJECTIVES AND APPROACHES

See the discussion provided in **Section II.F Mitigation Priorities**.

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.

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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.

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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, bike riders, and bus patrons. Periodic monitoring may or may not be required of non-auto transportation facilities.

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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.

Sidewalks, Bike Paths, Pedestrian Refuge Islands, Accessible or Countdown Pedestrian Signals, and Curb Ramps

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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:

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- 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
- 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 Countywide Bikeways Functional Master Plan, or in the applicable master or sector plan. The Plan prioritizes bikeways by activity center, for example Metro stations, CBDs, downtowns, park trails, etc.

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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.

V. Pedestrian System Adequacy

A. ANALYSIS PROCEDURES AND TOOLS

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

- Fix (or fund) Americans 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). This ensurance can be achieved by considering means to reduce crosswalk distances and demonstrating a practical approach to signal timing. The applicant is responsible for identifying a revised signal timing concept for consideration but is not required to obtain MCDOT or SHA approval, nor is the operating agency required to implement it.

Each of these elements of pedestrian system adequacy is depicted in Figure 4 and described below.

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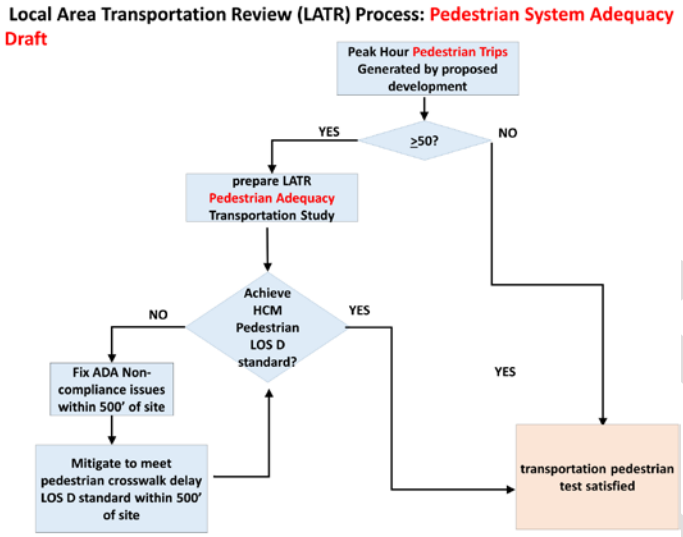

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ADA Compliance

In the context of a pedestrian transportation study, ADA non-compliance issues identified within 500' of a development site boundary as part of a quantitative pedestrian analysis must be fixed or funded by the applicant.

The best way to determine if a curb ramp is accessible is to survey it to determine the extent to which it complies with ADA accessibility requirements. Instruction on how to conduct these surveys are provided in the ADA Tool Kit[6]. This Tool Kit includes instructions on how to survey curb ramps for compliance with the ADA Standards and a Curb Ramps survey form for use in conducting your surveys. The instructions, which are located in Appendix 1 of the ADA Tool Kit, are keyed to the Curb Ramps survey form, which is located in Appendix 2 of the ADA Tool Kit and provides an explanation of how to obtain the information needed to answer each question on the survey form. The instructions will also include photographs and illustrations showing how and where to take measurements. The Curb Ramps survey form and instructions will help applicants identify the most common accessibility problems with curb ramps, but they will not

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[6] https://www.ada.gov/pcatoolkit/toolkitmain.htm

necessarily identify all problems.

Pedestrian Crosswalk Delay

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.

The adequacy standards for pedestrians apply to crosswalks at study area intersections for sites that generate at least 50 non-motorized trips. The basis for this recommendation is the Highway Capacity Manual approach to defining crosswalk performance. Chapter 18 of the 2010 Highway Capacity Manual takes the concept of intersection performance for pedestrians to a more detailed level, combining crosswalk performance and delay into a unitless value that translates to LOS. Given the level of complexity with intersection signal timing and phasing in the areas of the County likely to generate significant pedestrian trips requiring analysis and constituent concerns about the unitless values associated with the CLV approach to vehicle performance, the approach to defining adequacy considers pedestrian delay only.

Regardless of the number of site generated pedestrian trips, improvements considered at any signalized intersection in a Road Code Urban Area (RCUA) or Bicycle Pedestrian Priority Area (BPPA) must not cause the total amount of pedestrian travel time (waiting for a signalized crossing and completing that crossing) to increase from the background (also called "total future") condition.

The methodology for evaluating pedestrians at signalized intersections is described in the 2010 HCM beginning on Chapter 18 Page 59. It includes a series of steps and several equations. Specifically, Step 2 starting on page 65 describes the procedure for evaluating the performance of a crosswalk.

B. DETERMINING BACKGROUND AND TOTAL FUTURE CONDITIONS

The determination of pedestrian signalized crosswalk delay depends on the existing pedestrian volumes at the intersection and the average delay per pedestrian following 2000 HCM procedures for background and total future conditions. In short, the existing pedestrian delay at each crosswalk assumes random arrivals and is therefore equal to half the duration of the time between the end of one signal cycle's walk phase and the beginning of the next cycle walk phase. The average delay per pedestrian for the intersection is the average of all crosswalks, weighted by volume. Given the analytic challenges associated with pedestrian distribution and path assignments, the existing pedestrian volumes suffice as demand values for all intersection

conditions unless the applicant chooses to work with M-NCPPC to make explicit assumptions (as might be the case where the logical pedestrian path between the development site and a nearby destination such as a transit station or retail center would be meaningful in considering adequacy. The standard of pedestrian adequacy is an average signal delay of less than 40 seconds per pedestrian, or no worse than the background (or total future) conditions.

C. MITIGATION OBJECTIVES AND APPROACHES

For pedestrian delay, mitigation is required to achieve either the 40 seconds per delay per pedestrian or no more delay than in the background (or total future) condition. Expected types of mitigation include signal phasing or timing changes to increase the amount of green time provided to pedestrian crossings (thereby reducing the number of pedestrians queued at the start of the walk signal and the duration of their wait). The applicant is responsible for identifying a revised signal timing concept for consideration but is not required to obtain MCDOT or SHA approval, nor is the operating agency required to implement it.

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VI. Bicycle System Adequacy

A. ANALYSIS PROCEDURES AND TOOLS

The adequacy standards for bicyclists are designed to be synchronized with the development and implementation of the Bicycle Master Plan. The concept of Level of Traffic Stress for bicyclists elegantly evaluates network connectivity for bicyclists, recognizing that different roadways will be, or can be redesigned to be, comfortable for bicyclists of varying skill levels and that not all roadways will necessarily accommodate all levels of bicyclists with a high degree of comfort. By considering a network approach to bicycling, an appropriate level of accommodation for bicyclists can be established. The LTS process is still in development in Montgomery County and the Department is not aware that is has yet been applied by any jurisdiction in a truly regulatory application as an adequacy standard. The standard for bicycle

system adequacy is to be able to travel via LTS-2 (low levels of traffic stress) routes to destinations within 750 feet of a development site boundary if that development site generates at least 50 peak hour non-motorized trips (including transit access trips) and is likely to include a significant bicycling population as indicated by ¼ mile proximity to an educational institution or an existing or planned bikeshare station. This process is depicted in Figure 5 below.

More information on the LTS approach can be found here:

http://www.mcatlas.org/bikestress/

Figure 5:

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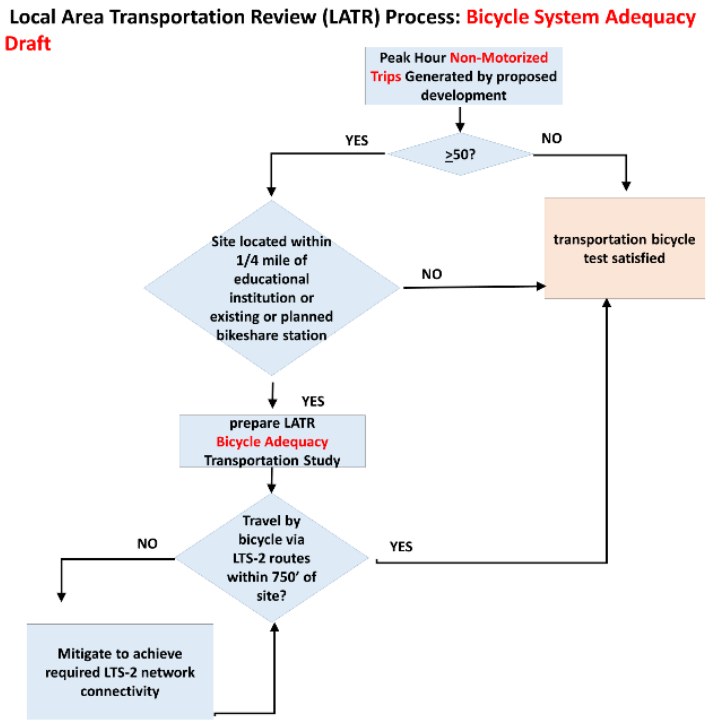

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B. DETERMINING BACKGROUND AND TOTAL FUTURE CONDITIONS

The assessment of bicycle Level of Traffic Stress does not require identifying or forecasting any bicycle travel demand beyond the extent of defining the need for a bicycle system adequacy determination. The assessment of adequacy is made fully on the degree to which the site is connected to a low Level of Traffic Stress network based on existing conditions and bicycle system improvements funded for construction within the six-year CIP or CTP.

C. MITIGATION OBJECTIVES AND APPROACHES

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 else implement or fund a master-planned improvement that provides an equivalent improvement in LTS.

VII. Transit System Adequacy

A. ANALYSIS PROCEDURES AND TOOLS

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 at that station for each route. 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. This process is depicted in Figure 6 below.

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The adequacy standard for transit riders considers the capacity of bus transit service in the vicinity of the site. This definition reflects the concern that while the County has focused on addressing transportation system capacity concerns by incentivizing modal shifts from autos to transit, some transit routes are now themselves congested and need to be considered for adequacy. The proposed standard is LOS D for peak load conditions on buses during the weekday peak hour and is based on a quality of service measure from the Second Edition of the *Transit Capacity and Quality of Service Manual* (TCQSM) (see Table above) which is generally considered a comfortable standee load for the purposes of transit facility design. As is the case with the proposed pedestrian adequacy standard, the most recent (Third) edition of the TCQSM has combined several independent quality of service measures into a single transit score that is more complex and unitless and therefore more difficult both to measure and to understand. The basic concept of peak load factors with the thresholds and commentary from the Second Edition has been retained as Exhibit 5-16 in the Third Edition but without the LOS designation.

Transit Capacity and Quality of Service Manual—2nd Edition

Exhibit 3-26
Fixed-Route Passenger Load LOS

LOS	Load Factor (p/seat)	Standing Passenger Area (ft^2/p)	(m^2/p)	Comments
A	0.00-0.50	>10.8†	>1.00†	No passenger need sit next to another
B	0.51-0.75	8.2-10.8†	0.76-1.00†	Passengers can choose where to sit
C	0.76-1.00	5.5-8.1†	0.51-0.75†	All passengers can sit
D	*1.01-1.25**	3.9-5.4	0.36-0.50	Comfortable standee load for design
E	*1.26-1.50**	2.2-3.8	0.20-0.35	Maximum schedule load
F	*>1.50**	<2.2	<0.20	Crush load

*Approximate value for comparison, for vehicles designed to have most passengers seated. LOS is based on area.
†Used for vehicles designed to have most passengers standing.

B. DETERMINING BACKGROUND AND TOTAL FUTURE CONDITIONS

In the context of the LATR approach, an application for any site generating 50 peak hour transit users is required to consider the following elements of transit system adequacy:

- Identify bus stops within 1,000 feet of the site boundary and inventory the number of riders that board, alight, and remain on the bus for all buses serving each stop during

the LATR AM and PM peak periods. Development sites within 1,000' of a Metrorail station are exempt from Section VI as the transit patrons are likely to have a significant orientation toward Metrorail rather than buses.

- Calculate the peak hour passenger load for each route based on the buses that serve the route and the higher of the passenger loads for buses arriving or departing at each station and gauge the passengers per seat (in the peak direction) against the TCQSM standard of less than 1.25 persons/seat.

This measure is designed to reflect transit capacity for local area conditions where the County has a role in addressing transit system adequacy associated with local development. Therefore, the focus is on the bus system (whether operated by the Washington Metropolitan Area Transit Authority (WMATA) or the Montgomery County Ride-On) as contrasted with the more regional focus of Metrorail or MARC system capacity (similar to the fact that LATR for autos does not consider freeway conditions). It also focuses on the "peak load" from a temporal perspective, but only regarding the bus while at the local stop, as contrasted with the more common transit system planning practice of considering the "peak load point". This is because it is likely that for longer routes, particularly within the WMATA system the peak load point may be miles from a development site (for instance, the experience of the Y2 between Wheaton and Silver Spring is not germane to the local effect of a development along the Y2 in Olney).

C. MITIGATION OBJECTIVES AND APPROACHES

An adverse effect would be a bus route with a peak load above 1.25 at the subject station and mitigation would include provisions for capital improvements to reduce that peak load below 1.25 (or the background condition if already higher than 1.25). Mitigation would need to be developed in close coordination with M-NCPPC staff and the transit system operators using simplified calculations. As an example, consider a case with a bus route running on 30-minute headways. In the peak hour, two buses running in the peak direction of transit commuter flow, each with 40 seats, provide 80 seats of capacity serving the stop and carry 70 passengers for a peak load of 0.875. The site generates 60 transit passengers with 75 percent (or 45 passengers) traveling in the peak direction. The total passenger load is increased to 115 and the peak load factor increases to 115/80 = 1.44. To reduce the peak load to 1.25, there would need to be 92 seats if capacity, which would equal another 0.3 of a bus. The applicant would work with the interagency staff to define capital improvements with the same functional or cost value of 0.3 of an additional bus.

Figure 6:

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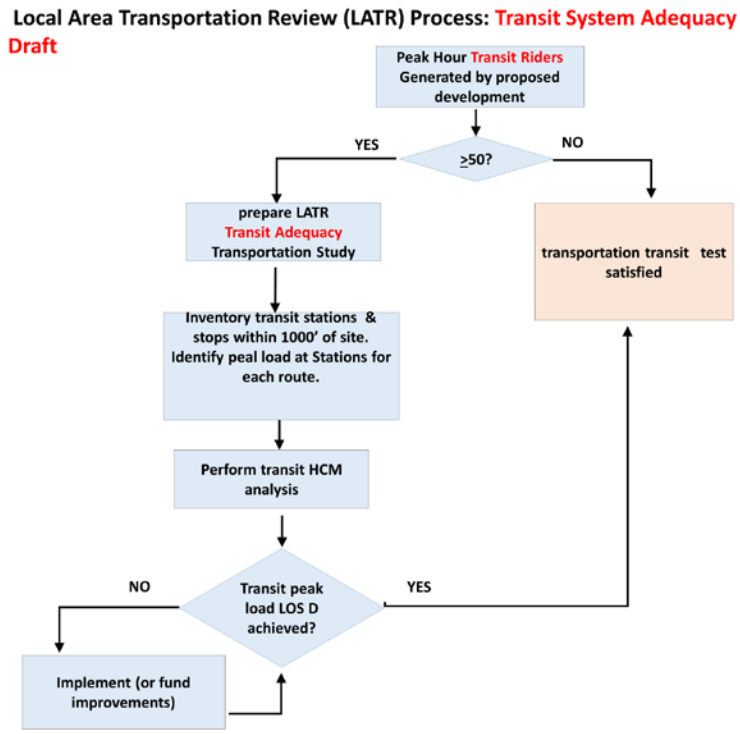

VIII. Appendices

TABLES 1A AND 1B DISTRIBUTED AS SEPARATE PDF FILES IN 1/27/17 E-MAIL

VEHICLE TRIP DISTRIBUTION

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GLOSSARY

Background conditions: Conditions based on the addition of traffic generated by existing conditions plus any auto traffic generated by substantially vacant or approved but unbuilt development.

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Bicycle trip: Trip by a single individual entering or leaving a study site by bicycling to/from their destination.

BPPA: Abbreviation for Bicyclist-Pedestrian Priority Area, designated by the Maryland Department of Transportation.

https://www.montgomerycountymd.gov/dot-dte/projects/BicycleandPedestrianPriorityAreas/index.html

CLV: Abbreviation for Critical Lane Volume, an intersection capacity analysis tool described in Transportation Research Circular 212 published by TRB

Existing conditions: Transportation system conditions based on recent observations.

ITE: Abbreviation for Institute of Transportation Engineers

LATR peak periods: 6:30 – 9:30 AM and 4:00 – 7:00 PM on typical non-holiday weekdays when school is in session

LOS: Abbreviation for Level of Service, a qualitative measure of transportation system performance described in the HCM.

LTS: Abbreviation for Level of Traffic Stress, a qualitative measure of bicyclist comfort developed by the Mineta Transportation Institute and applied by the Montgomery County Planning Department in developing the Countywide Bikeways Functional Master Plan.

HCM: Abbreviation for Highway Capacity Manual and used to denote the suite of products published by TRB. The citation may be followed by a term defining the HCM edition (i.e., HCM 2000, HCM 2010, HCM 6)

Methodology memoranda: Description of interpretations of LATR Guidelines maintained as living documents by Montgomery County Planning Department as a resource for subsequent scoping meetings.

MWCOG: Abbreviation for Metropolitan Washington Council of Governments, regional planning agency that developed the regional household travel survey and travel demand model relationships applied in the person-trip generation approach in Appendix Tables 1A and 1B and develop the region's Congestion Management Process which is referenced as an available source for identifying congested arterials.

New trips: Site trips (including pass-by and diverted link) generated by a site, considering only those net additional trips proposed by the current application.

Non-motorized trip: Trip by a single individual entering or leaving a study site by either walking or bicycling to/from their destination (see also: bicycle trip, pedestrian trip)

Pedestrian trip: Trip by a single individual entering or leaving a study site by walking to/from their destination (see also: bicycle trip, non-motorized trip)

Person trip: Trip by a single individual entering or leaving a study site regardless of the mode of travel.

RCUA: Abbreviation for Road Code Urban Area, designated by the County Council in Chapter 49 of the Montgomery County Code: http://www.montgomeryplanning.org/transportation/highways/RoadCode.shtm

TMAg: Abbreviation for Traffic Mitigation Agreement, a legal document for implementing TDM activites as described in Section 42-A of the County Code.

Total trips: Site trips (including pass-by and diverted link) generated by a site, including existing or previously approved uses on the site (see "new trips")

Total future conditions: Conditions based on the sum of auto trips from background conditions plus development site-generated traffic, prior to mitigation for any findings of inadequacu.

Total future with mitigation conditions: Conditions based on the total future conditions plus mitigation for any findings of inadequacy

Transit trip: Trip by a single individual entering or leaving a study site for whom the predominant mode of travel to/from the site will be via transit. The Subdivision Staging Policy and LATR Guidelines presume that these trips will travel between the site and a transit station/stop as a non-motorized trip.

TDM: Abbreviation for Transportation Demand Management (also known as travel demand management), a term describing a set of actions to reduce crowding by actions and strategies that shift demand by mode and/or time of day away from crowded facilities and services.

TRB: Abbreviation for the Transportation Research Board of the National Academy of Sciences, Engineering, and Medicine.

Trip Generation Handbook: Recommended practice for application of the Trip Generation Manual published by ITE (3rd Edition published as draft 2014 and final version pending as of early 2017).

Trip Generation Manual: Repository of vehicle trip generation rates published by ITE (9th Edition, published 2012 and 10th Edition pending as of early 2017) that form initial starting point for person-trip estimates in Appendix Tables 1A and 1B. Suggested starting point for equivalencies between Trip Generation Manual and land uses in Appendix Tables 1A and 1B include:

- Port/Terminal (Land uses 000-099): Use site-specific rates reflecting site-specific intermodal tripmaking characteristics
- Industrial (Land uses 100-199): Use Other category
- Residential (Land uses 200-299): Use Residential category
- Lodging (Land uses 300-399): Use Residential category
- Recreational (Land uses 400-499): Use Retail category
- Institutional (Land uses 500-599): Use site-specific rates reflecting customized TDM programs (including but not limited to school buses)
- Medical (Land uses 600-699): Use Retail category

- Office (Land uses 700-799): Use Office category
- Retail (Land uses 800-899): Use Retail category
- Services (Land uses 900-999): Use Retail category
- Site-specific assumptions for both vehicle trips and mode split may be proposed for any use.

Vehicle trip: Trip by a single vehicle entering or leaving a study site. For the purposes of LATR trip generation, vehicle trips are assumed to be equivalent to auto driver trips.

Source of Copies

The Maryland-National Capital Park and Planning Commission
8787 Georgia Avenue
Silver Spring, MD 20910-3760

Online at: www.mc-mncppc.org/transportation/index.shtm

SUMMARY TABLE OF COMMENTS AND RESPONSES PERTAINING TO DRAFT LATR GUIDELINES
Prepared for March 1, 2017 TISTWG Meeting Discussion

Relevant references include:

- Resolution 18-671: 2016-2020 Subdivision Staging Policy

http://www.montgomerycountymd.gov/COUNCIL/Resources/Files/res/2016/20161115_18-671.pdf

- Council staff 11/14/16 memorandum/packet for final vote; shows track changes made at Council to Board's proposed SSP.

http://montgomerycountymd.granicus.com/MetaViewer.php?view_id=136&clip_id=12463&meta_id=128449

Color coding is used to denote response types:

Comment requires further discussion or relates to formatting changes yet to be developed pending substantive rulemaking
Explanation provided but no change to LATR Guidelines needed (some of these responses handled offline…)
Response incorporated into 3/1/17 review copy of LATR Guidelines

Table 1. Summary of responses

Topic/ Relevant Section	Comment	Response
II-G	Purple Line (or other transit) operations should not be part of background conditions analysis	Remove "operations" from description
II-G	Note that there may be circumstances where increased bicycle and pedestrian demand may be important to future conditions	In general, the Guidelines proposes that it is not practical to forecast pedestrian, bicyclist, and transit volumes in the same fashion as for traffic volumes for the following reasons: • The mode shares for each are substantially lower than for auto • The travelshed for impacts is much smaller (i.e., background developments for auto may be more than a mile away depending on size of development and the expectation that auto travelsheds will overlap with compounding effects; in the same case, walk/bike and walk-to-transit travelsheds will not overlap.

Topic/ Relevant Section	Comment	Response
		• The ability for dispersal for walk/bike trips is much higher (i.e., trips less than a block in length are common for walk or walk-to-transit, not for auto; pedestrian trips are more likely to stray from formal paths both within and between blocks than auto trips). • Finally, the pedestrian and bicycle effects are nonetheless defined conservatively; even though the impact of additional ped/bike trips is not considered at each sidewalk/crosswalk/bike link, the net number of ped/bike adequacy analysis locations is much greater than if the ped/bike trips were dispersed throughout the network and only locations with significant increase in ped/bike volume were analyzed. There may be occasions where a site does have a particular relationship to an offsite destination (particularly in the case of transit stations) where quantitative analysis will help define site relationship to the transportation system. The term "typically" has been added to the description of ped/bike total future volumes to clarify.
II-G and V-A	Add text in Section V-C regarding "ensure LOS D" for pedestrians to clarify that applicants only need to demonstrate LOS satisfaction, not have it implemented	Changes made.
III-B	Correct trip generation example to reflect numerical changes created by revision to Germantown East policy area boundary	Change made.
III-B	Ancillary retail trip generation rates for mixed use developments with Parking Lot Districts who choose to pay the PLD fee rather than provide on-site parking and therefore cannot demonstrate their lack of retail customer parking provision needed to qualify for the reduced trip generation rates should be put into a table.	No change made; rationale is that these cases are rare enough that presentation as a table directs more attention to the topic than warranted.

Topic/ Relevant Section	Comment	Response
III-B	Clarify that tripgen reduction for transit proximity applies to either existing or funded LRT/BRT stations	Change made.
III-B	Transit proximity reduction seems to double-count proximity to transit since new tripgen rates already reflect transit; if these sites have reduced rates, all other areas beyond 1,000' should have increased rates	The guidelines approach is a pragmatic estimate of transit proximity benefit. First, the greatest transit proximity benefits are in Red policy areas, where this transit proximity reduction does not apply. Second, in Orange policy areas (and occasionally in Yellow policy areas) the policy areas are large enough and the development focus near transit small enough that a meaningful change in trip generation near transit will not significantly effect average rates elsewhere in the policy area. (A rough analogy: a retailer may decide to put a certain item on sale, but doesn't raise all other prices commensurately to maintain a precise revenue stream).
III-B	Parking management trip reduction appears excessive as literature cited relies on extremely rich transit environment and applicants should be required to take additional action besides limiting parking to claim credit for reduced vehicle trip generation rates.	Per zoning code, parking management trip reduction is only applicable in Reduced Parking Areas: A designated area defined by a property's zoning and location, including any property not in a Parking Lot District, and 1. in a CR, CRT, LSC, EOF, or equivalent Floating zone, or 2. in a CRN, NR, GR, or equivalent Floating zone that is within 1 mile of a transit station or stop, as defined by Transit Proximity. 2004 Lund/Cervero study indicated that the effect of limited parking spaces was fairly constant regardless of whether TOD was served by 25 buses/hour or 400 buses/hour.
III-C	Clarify type and extent of information required in ped/bike impact statement, particularly regarding streetlighting inventory (site plan will include lighting requirements for site; inventory/needs not part of off-site transportation impacts)	Changes made.
III-D	Clarify status of existing/new and pass-by/diverted trips in defining thresholds	Changes made to confirm intent of Table 2 below.

Topic/ Relevant Section	Comment	Response
IV-A	Clarify how average delay per vehicle standards apply to unsignalized intersections.	Example provided.
IV-A	Add CLV equivalencies to Table 2 for all policy areas to facilitate SHA review of local APFO satisfaction	Change made.
IV-A	Change network delay trigger reference from CLV to intersection delay	Change made.
IV-A	Change network delay trigger to add Planning Board suggestion for CLV of 1450 and site increases intersection CLV by 10	Not directly applicable because CLV no longer required where CLVs are greater than 1450. In preparation for Council worksessions, Planning staff and MCDOT staff concurred that while some guidance on network delay was advisable, the conditions should not be too complex or precise and that judgment would be required at time of study scoping.
IV-B	Correct number of intersections in defining study scope "rings" as new rather than existing	Change made.
IV-B	Note that staff may choose to require more intersections than listed in Table 4.	Not needed as Table 4 lists a "minimum" requirement.
IV-B	Clarify applicability of "Adams amendment" relating to no need to improve a second intersection with <5 CLV impact if other improvements are required	Change made to clarify that this element of the SSP is applicable countywide, but that CLV analyses would be needed to document applicability even though not otherwise required.
IV-B	Clarify use of ITE trip generation guidance for defining rates and/or equations and directional split	Changes made.
IV-C	Multiple intersection counts should be required of applicants to address reliability	Text added in 1/31 version to note that staff may require additional counts when there is notable discrepancies amongst sources. Otherwise, requiring multiple observations as a matter of course is not standard practice in any jurisdiction primarily as it creates unnecessary confusion about the basis for existing conditions (Highest? Lowest? Average? Of total volume? By turning movement?). Reliability is addressed in part by reference to MWCOG/M-

Topic/ Relevant Section	Comment	Response
		NCPPC monitoring reports in considering average system performance over time as one element of system adequacy.
IV-C	Peak hour of intersection should be based on hour with highest CLV, not hour with highest volume.	Generally, the two hours are either coincident or differences between the two are minor. CLV only applicable for low-congestion intersections.
IV-D	Clarify status of non-auto facilities regarding master plan facility eligibility	Note regarding prohibition of master planned improvements removed based on consensus of meeting attendees and lack of clarity/source for language in prior Guidelines.
IV-D	Concern that SSP removed requirement to mitigate 150% of the impact	SSP removed requirement to mitigate 150% of the CLV impact.
VI-C	Bicycle LTS impact area should be linked to extent of school proximity where MCPS school bus service is not provided.	LTS impact area is defined in SSP.
VI-C	Confirm that bicycle mitigation can include funding improvements	Change made.
VII-B	Address the fact that development sites near Metrorail will likely have a majority of transit patrons walking to Metrorail rather than to buses.	Change made to exempt sites within 1,000' of Metrorail stations from Section VII as their transit patrons could be assumed to walk to Metrorail.

Table 2. Decision Matrix Relating to the Total Number of Vehicle Trips or Person Trips

- Total trips includes all site trips (including pass-by and diverted link) generated by a site, including existing or previously approved uses on the site
- New trips includes all site trips (including pass-by and diverted link) generated by a site, considering only those net additional trips proposed by the current application.

Case	2012-2016	2012-2016	2016-2020	Proposed
	SSP	LATR Guidelines	SSP	LATR Guidelines
Need for a quantitative analysis	Silent	Total vehicle	Silent	New person
Definition for 75% completion and 12 years old	New	New	New	New person, but since this is now a subset of the "new person" definition for need for a quantitative analysis, the LATR Guidelines paragraph is deleted.
Number of intersections to be studied	New vehicle	New vehicle	New vehicle	New vehicle

The key is that the SSP language re: existing/new was not changed; the topic was not part of the Council discussion. Because the SSP historically referenced "new" trips in the derivation of the number of intersections to be studied and the legacy 75%/12 year sites, it was consistent with the expectation/history that the quantitative analysis threshold included existing trips for "all land at one location". This history made sense when there was substantial greenfield development in the County and it was relatively practical for many applications to avoid the intent of the APFO by submitting piecemeal development applications.