Montgomery Planning

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

LATR Guidelines

Local Area Transportation Review Guidelines

June 2025

Abstract

Local Area Transportation Review (LATR) Guidelines

This document guides the preparation and review of transportation adequacy assessments for developments in Montgomery County. The LATR Guidelines serve as a key reference for transportation engineers, planners, public agency reviewers, and community members involved in the development review process.

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Source of Copies

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Executive Summary

On November 12, 2024, the County Council adopted changes to the Growth and Infrastructure Policy (GIP). The Planning Board adopted the revised Local Area Transportation Review (LATR) Guidelines on June 5, 2025. This document reflects that action.

The LATR Guidelines implement transportation adequacy tests, as required by the County's GIP. These guidelines specify documentation and analysis to quantify the proposed development's impact on the surrounding transportation network, assess the network's adequacy, and determine mitigation measures when required.

The LATR Guidelines serve as a key reference for transportation engineers, planners, public agency reviewers, and community members involved in the development review process. Applicants should use this document when preparing development applications and transportation analyses for submission to the Montgomery County Planning Board. Similarly, public agency staff should use these guidelines during the review of such applications and analyses.

Recent updates to the GIP have shifted its focus away from strategies aimed at reducing motor vehicle congestion. Instead, updates have advanced tactics that enhance the safety and convenience of walking, biking, and transit. This shift aligns with the county's overarching goal of concentrating development in areas with accessible jobs, services, and infrastructure, while simultaneously enhancing and expanding multimodal transportation infrastructure to support this growth. This approach aims to foster a more walkable, bikeable, and transit-oriented environment, reducing reliance on private vehicle use.

The 2024-2028 GIP and the accompanying updated guidelines further solidify this trajectory by refining the tools and ensuring alignment with the county's established priorities and goals.

Key changes reflected in this document include:

- Updating policy area boundaries and designations to support the county's goals.
- Changing the threshold for requiring a LATR Study. The updated policy requires a study for a proposed development generating 30 or more net new peak-hour weekday motor vehicle trips, unless otherwise exempt.
- Establishing a 50 or more net new peak-hour weekday motor vehicle trip LATR Study threshold for daycare uses.
- Exempting development projects that meet the definition of a Mixed-Income Housing Community in Sec. 59.3.3.4a of the Zoning Code from the requirement to complete an LATR Study.
- Extending the bioscience LATR exemption for another four years, so it applies to applications filed before January 1, 2029, and removing the three-year time limit to file a building permit.

- Refining the Vision Zero Statement to focus on managing speed for safety.
- Simplifying the Non-Motor Vehicle Adequacy Test; the test, which has five components, replaces the individual pedestrian, bicycle, and bus transit systems tests.
- Exempting all Downtowns from Motor Vehicle Adequacy tests. Red Policy Areas remain exempt.
- Updating Intersection Delay Standards to reflect changes to policy area boundaries and designations.
- Revising the LATR Proportionality Guide, which determines a guiding upper limit for the cost of off-site transportation mitigation improvements.

Overview of the LATR Guidelines

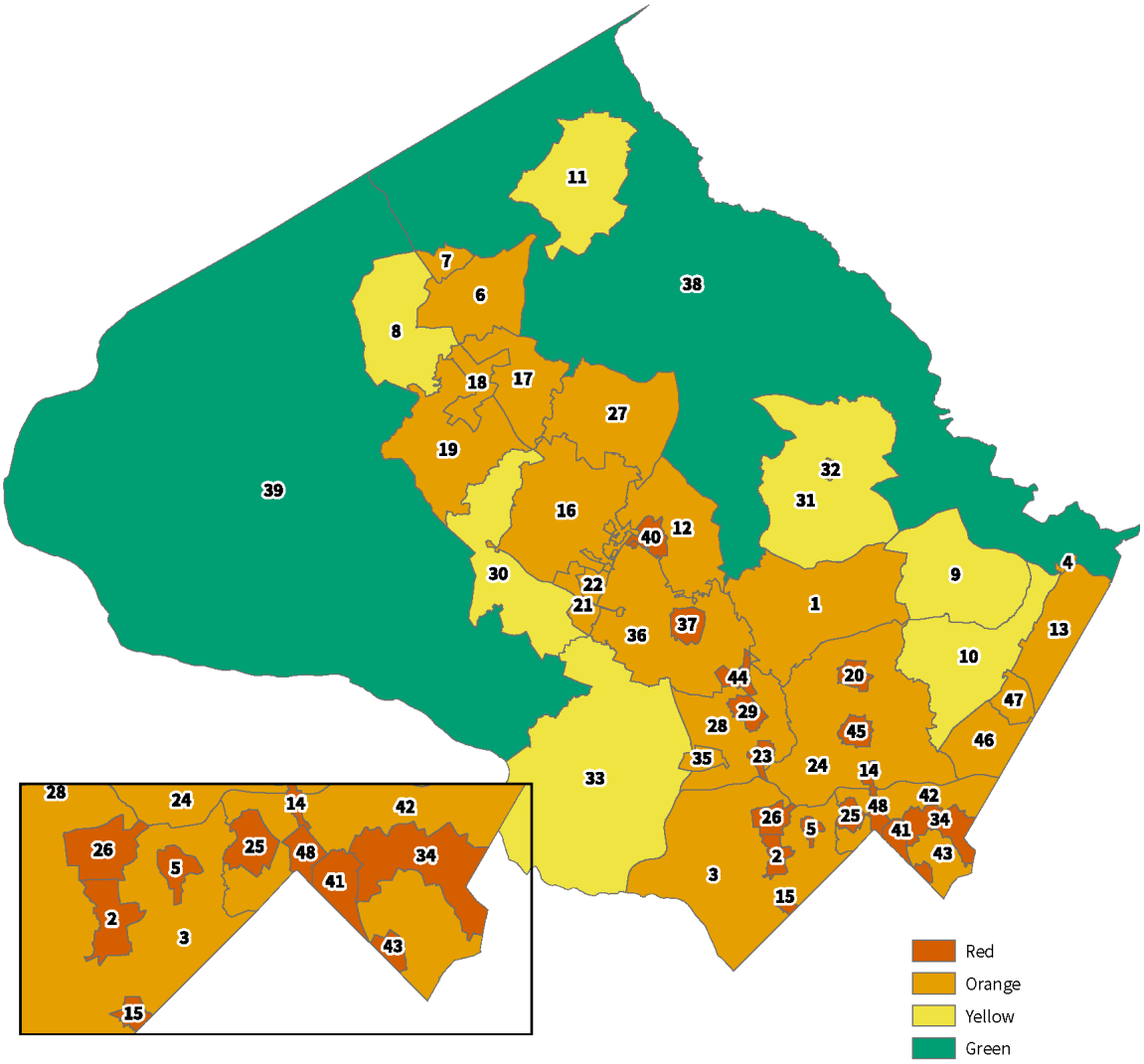
- **Chapter 1: Introduction** describes the principles of the LATR process and the applicability of the LATR Guidelines. It describes the policy area classifications and lists exemptions from the LATR Study requirement.
- **Chapter 2: Transportation Adequacy Process** summarizes the transportation adequacy process and gives instructions on completing the *Transportation Adequacy Form*. It also has detailed guidance on estimating the proposed development's motor vehicle trips.
- **Chapter 3: LATR Study Requirements** contains instructions for conducting an LATR Study, including the Vision Zero Statement, Non-Motor Vehicle Analysis, and Motor Vehicle Analysis.
- **Chapter 4: Mitigation** explains mitigation requirements, provides instructions for calculating the proportional cost of mitigation ("Proportionality Guide"), and describes how to prioritize mitigation strategies.
- **Chapter 5: Additional Guidance** has information on amendments and minimizing piecemeal development.

Document History

The Planning Board updated the LATR and Policy Area Mobility Review (PAMR) Guidelines on May 13, 2010; June 17, 2011; and February 9, 2012. The Planning Board updated the LATR and Transportation Policy Area Review (TPAR) Guidelines on January 24, 2013.

On November 15, 2016, the County Council adopted changes to the Subdivision Staging Policy, eliminating the TPAR as an area-wide test for transportation adequacy. The Planning Board approved the revised and renamed Local Area Transportation Review (LATR) Guidelines on April 20, 2017. The Planning Board subsequently updated the Guidelines on May 25, 2017; September 28, 2017; July 1, 2021; March 3, 2022; June 22, 2023; and March 7, 2024.

Figure 1. Transportation Policy Areas



Red Policy Areas

2 Bethesda CBD
5 Chevy Chase Lake
14 Forest Glen
15 Friendship Heights
20 Glenmont
23 Grosvenor
25 Lyttonsville
26 Medical Center
29 North Bethesda Metro Station
34 Purple Line East
37 Rockville Town Center
40 Shady Grove
41 Silver Spring CBD
43 Takoma
44 Twinbrook
45 Wheaton
48 Woodside

Orange Policy Areas

1 Aspen Hill
3 Bethesda/Chevy Chase
4 Burtonsville Town Center
6 Clarksburg East
7 Clarksburg Town Center
12 Derwood
13 Fairland/Briggs Chaney
16 Gaithersburg
17 Germantown East
18 Germantown Town Center
19 Germantown West
21 Great Seneca Communities
22 Great Seneca Life Sciences Center
24 Kensington/Wheaton
27 Montgomery Village / Airpark
28 North Bethesda
32 Olney Town Center
35 Rock Spring
36 Rockville City
42 Silver Spring/Takoma Park
46 White Oak
47 White Oak Downtown

Yellow Policy Areas

8 Clarksburg West
9 Cloverly
10 Colesville
11 Damascus
30 North Potomac
31 Olney
33 Potomac

Green Policy Areas

38 Rural East
39 Rural West

Chapter 1. Introduction

A. Principles of Local Area Transportation Review

Chapter 50 of the County Code states that the Planning Board can only approve a development application if public facilities will adequately support it. To administer the Adequate Public Facilities (APF) regulation, the County Council uses its Growth and Infrastructure Policy (GIP). This policy sets measurable service levels and parameters for mitigation to enable development to proceed.

The Planning Board makes transportation adequacy findings through the Local Area Transportation Review (LATR) process. This process evaluates the area surrounding a proposed development and forecasts the development's impact on transportation facilities. It then determines whether and how the development applicant will mitigate inadequate transportation infrastructure. Development applicants must show that the surrounding facilities are adequate or correct inadequate infrastructure to an extent proportional with its impact, either by providing or paying for needed facilities.

The LATR Guidelines detail the specific documentation and analysis required to demonstrate transportation adequacy for proposed developments that require an APF finding.

A proposed development expected to generate at least 30 total net new weekday peak-hour vehicle trips and not otherwise exempt must complete an LATR Study. Exempt projects, including those generating fewer than 30 total net new peak-hour weekday motor vehicle trips, must complete an LATR Study Exemption Statement describing the basis for exemption.

The LATR Study determines transportation adequacy for both motor vehicle and non-motor vehicle travel. Making an adequacy determination involves both assessing the condition of public infrastructure and predicting future demand from the proposed development. The 2024–2028 GIP, adopted by the County Council on November 12, 2024, sets the LATR Study requirements.

Montgomery Planning's review and the Planning Board's decisions are based on existing and programmed transportation infrastructure and proposed mitigation measures (physical improvements or payments) made by the Applicant. An LATR Study must reasonably and appropriately reflect the impact of the proposed subdivision or project after considering all approved development and programmed transportation projects.

Note that other elements of the regulatory process—including site layout design, site access, and internal site travel circulation features—also determine development approval conditions related to transportation. Montgomery Planning evaluates these elements based on design standards independent of LATR.

B. Applicability

These guidelines apply to any application for a preliminary plan, site plan, building permit, or other application that requires a finding of Adequate Public Facilities (APF) accepted on or after January 1, 2025. If an Applicant has a pending but unapproved preliminary or site plan application as of January 1, 2025, and completes the required analysis before approval, they can opt to use these guidelines rather than the previous version.

Applicants should use this document when preparing development applications and transportation analyses for submission to the Montgomery County Planning Board. Similarly, public agency staff should refer to these guidelines during the review of such applications and analyses.

An Applicant must submit a *Transportation Adequacy Form* to Montgomery Planning staff prior to filing a development application for any project that requires an APF finding.

Application Types

Project applications that require APF findings include:

- Preliminary plans (as part of a subdivision application) and amendments.
- Site plans not requiring subdivision.
- Public facility projects subject to Mandatory Referral.
- APF Review at Building Permit.[1]

These guidelines also apply to:

- Conditional use and zoning cases before the Board of Appeals and County Council.
- Limited Map Amendments.

C. Policy Areas

The county is divided into policy areas and each policy area is assigned a color for transportation purposes, as shown n Figure 1. In many cases, transportation policy areas have the same boundaries as planning areas, sector plan areas, or master plan analysis (or special study) areas. The 2024–2028 Growth and Infrastructure Policy resolution and Montgomery Planning's interactive map provide detailed policy area maps. The GIP classifies each policy area as Red, Orange, Yellow or Green based on the following policy area definitions:

- **Red:** Metro station policy areas and Purple Line station policy areas.

[1] See the Montgomery County Code Sec. 8-31(b) and the Code of Montgomery County Regulations (COMCOR) 50.10.01.10D

- **Orange:** Corridor-Focused Growth Areas.
- **Yellow:** Lower-density residential neighborhoods with community serving commercial areas.
- **Green:** The county's Agricultural Reserve and Country areas.

D. Exemptions from LATR

The 2024–2028 GIP provides full or partial exemptions from specific LATR Study requirements for certain land uses and policy areas. To use an exemption, the Applicant must complete an LATR Study Exemption Statement (Part C of the *Transportation Adequacy Form*). Trip Generation estimates (see Part 2.B1) are required to be completed as part of the *Transportation Adequacy Form*, even for exemptions.

D1. Standard Threshold

Any proposed development that generates fewer than 30 net new peak-hour weekday motor vehicle trips is exempt from the requirement to complete an LATR Study.

D2. Daycare Use Threshold

Any proposed daycare use that generates fewer than 50 net new peak-hour weekday motor vehicle trips is exempt from the requirement to complete an LATR Study.

For daycares that are part of a mixed-use development, the trips generated by a daycare will note be included in the overall trip generation calculation or the Proportionality Guide if the daycare use generates fewer than 50 net new peak-hour weekday motor vehicle trips.

D3. Temporary Suspension for Bioscience Facilities

Any proposed development or a portion of a proposed development where the primary use is for bioscience facilities, as defined in County Code Sec. 52-39, is exempt from the requirement to complete an LATR Study. If a proposed development includes both bioscience and non-bioscience uses, only the portions specifically designated as bioscience facilities are exempt from the LATR Study requirement. This provision covers all preliminary plan, site plan, and building permit applications approved between January 1, 2021, and January 1, 2029.
Mixed Income Housing Communities

Any proposed development that meets the definition of a Mixed Income Housing Community (MIHC), as set forth by Sec. 59.3.3.4a of the Montgomery County Zoning Ordinance, is exempt from the requirement to complete an LATR Study.

This includes proposed developments reviewed under the MIHC Plan process (59.7.3.7) as well as those that satisfy the requirements set forth under Sec. 59.3.3.4, electing to be reviewed under the normal preliminary or site plan regulatory review.

D4. North Bethesda Metro Station Policy Area

Any proposed development in the North Bethesda Metro Station Policy Area (formerly known as the White Flint Metro Station Policy Area) is exempt from the requirement to complete an LATR Study. However, an LATR Study for any nearby development outside of the policy area must consider trip generation from within the policy area as a background condition.

D5. White Oak Local Area Transportation Improvements Program (LATIP) Area

Any proposed development in the White Oak Local Area Transportation Improvement Program (LATIP) Policy Area is exempt from the requirement to complete an LATR Study. The Applicant must make the mitigation payment specified by the White Oak LATIP for transportation infrastructure improvements instead of satisfying the transportation APF tests for LATR (see **Appendix 5**).

D6. Potomac Policy Area

Any proposed development in the Potomac Policy Area is exempt from the requirement to complete an LATR Study, except for those that add motor vehicle trips to the intersections listed below.

- Montrose Road at Seven Locks Road
- Democracy Boulevard at Seven Locks Road
- Tuckerman Lane at Seven Locks Road
- Democracy Boulevard at Westlake Drive
- Westlake Drive at Westlake Terrace
- Westlake Drive at Tuckerman Lane
- Bradley Boulevard at Seven Locks Road
- River Road at Bradley Boulevard
- River Road at Piney Meetinghouse Road
- River Road at Falls Road
- Falls Road at Democracy Boulevard
- River Road at Seven Locks Road

D7. Automobile-Related Uses in the Cherry Hill Employment Area

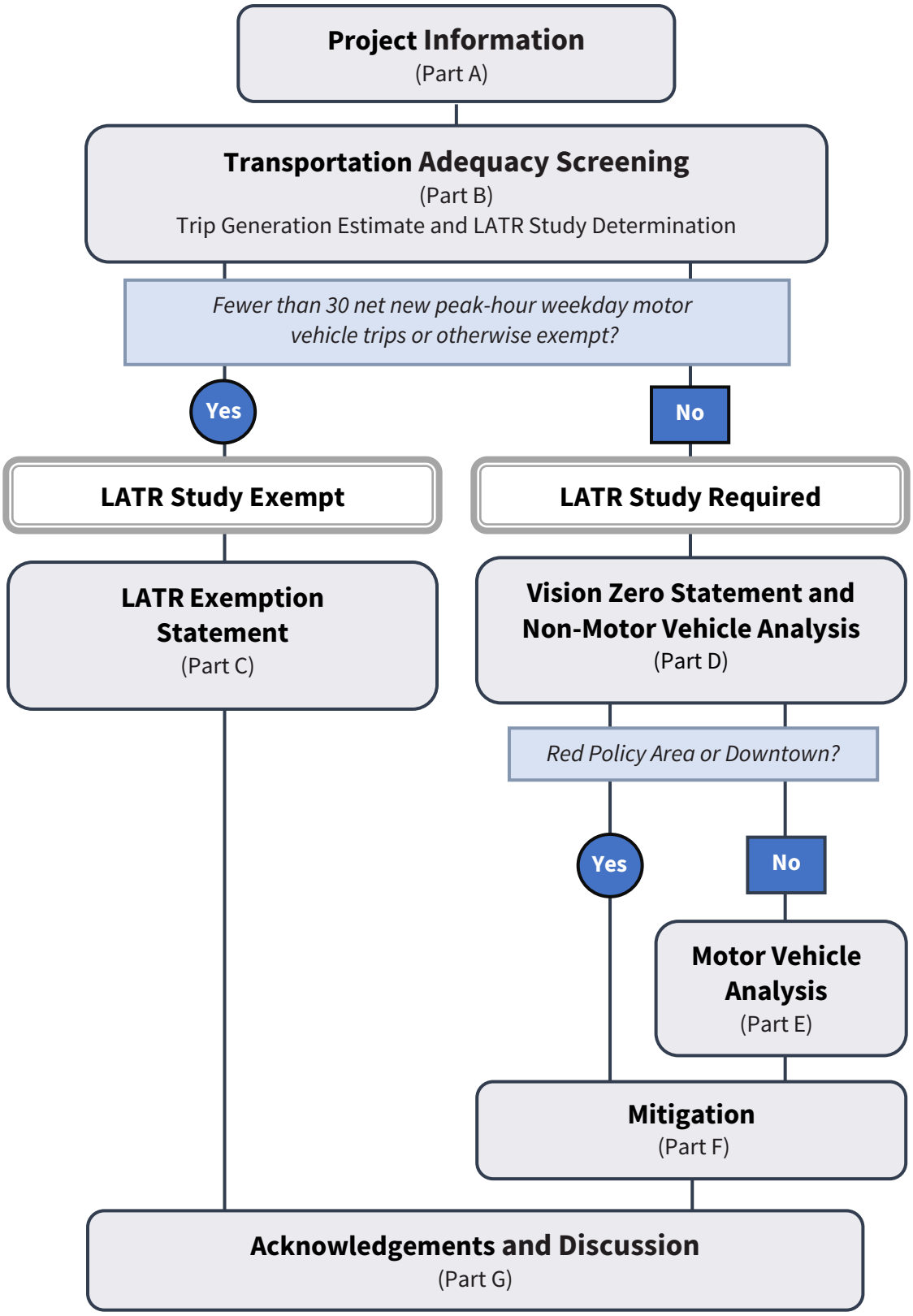
For any property in the Cherry Hill Employment Area with automobile repair, service, sales, parking, storage, or related office uses, an LATR Study is not required. This provision applies to any application for a preliminary plan of subdivision, site plan, or building permit approved before July 26, 2016.

E. Relationship to Guiding Documents

These guidelines focus on the timing or staging of development in combination with transportation-related public facilities and are primarily relevant during the regulatory process. Montgomery County's General Plan, *Thrive Montgomery 2050*, 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. The LATR Guidelines have a more focused, shorter-term view. Their purpose is to evaluate individual proposals for development to determine if the county's transportation network, including all modes of transportation, achieves adequate capacity, quality and safety in the surrounding area.

The Capital Improvements Program (CIP) and the Consolidated Transportation Program (CTP) are how the county and state respectively increase the capacity and quality of public transportation facilities to support existing development and future growth. For the LATR procedures described in these guidelines, the programmed conditions considered include projects fully funded for construction in the County or State budget in the next 6 years and conditioned developer projects.

Figure 2. Transportation Adequacy Form



Chapter 2. Transportation Adequacy Process

The first step in the Local Area Transportation Review (LATR) Process is to complete the *Transportation Adequacy Form* (**Figure 2)** to determine the type and extent of transportation analysis needed. This chapter provides guidance on completing the form, which is available on Montgomery Planning's Transportation Development Review webpage.

Applicants must submit a *Transportation Adequacy Form* to Montgomery Planning staff for review and approval prior to filing a development application for any project that requires an Adequate Public Facilities (APF) finding. Email the completed form to transportation.review@montgomeryplanning.org.

Forms are required to be submitted for review by Friday at 12pm on the week of scheduled Development Review Committee (DRC) meetings. While there is no relationship between the form and the DRC meeting, this schedule allows for a consistent review process and scheduled for the reviewing agencies. The DRC schedule can be found at https://montgomeryplanning.org/development/development-review/

Adequacy forms will be reviewed on a two-week schedule with Montgomery Planning and partner agencies providing feedback within 15 business days of the Friday submission date. Large and/or complex projects may require additional time and/or may warrant a meeting. For zoning and/or conditional use cases, Planning staff may consult with the Hearing Examiner.

The *Transportation Adequacy Form* must be approved by agencies applicable to the project context, including Montgomery Planning, the Montgomery County Department of Transportation (MCDOT), and the State Highway Administration (SHA), and/or the Local Jurisdiction, prior to initiating an LATR Study or submitting a development application. It is the responsibility of the Applicant to obtain approval, demonstrated via the signature of the relevant agency representatives.

Upon receiving form approval, the Applicant has 12 months to submit a complete development application. If the Applicant goes beyond this 12-month window without submitting a development application, the Applicant must re-submit the form and obtain a new approval. Furthermore, if the development proposal undergoes significant alterations following the form's approval, the Applicant must amend and re-submit the form and obtain a new approval.

A. Project Information (Part A)

The Applicant must provide the requested information in Part A of the *Transportation Adequacy Form*. Transportation Policy Area names and color designations, as well as the Complete Street Area Types, are available on Montgomery Planning's GIP map.

- **Project Description:** Outline the project's key details, including a description of the planned development program. This should cover land use, unit count, square footage, project phasing, and applicable zoning/subdivision regulations.
- **Existing Use & Prior Approval:** Outline the current uses of the site, including land use categories, unit count or square footage, site activities, construction year, and any other pertinent details. Note any prior approvals or proposals.
- **Site Access**: Describe the proposed site access points for all modes. Show curb cut locations (proposed and existing), access controls (e.g., right-in/out, signalized), connections between parcels, internal movement, private roads, parking/loading areas, and other site access details. Include maps or graphics as an attachment.

B. Transportation Adequacy Screening (Part B)

The Applicant must provide the requested information in Part B of the *Transportation Adequacy Form.* This section describes how to estimate trip generation and determine if the project requires an LATR Study. Trip generation estimates are required for all proposed developments, regardless of whether they are exempt from the LATR Study requirement due to their land use or location.

B1. Trip Generation Estimates

Trip estimation helps assess a proposed development's impact on the transportation network. The Applicant must:

- Provide motor vehicle trip estimates categorized by land use and development phase for the weekday AM and PM peaks and the daily total.
- Complete the summary table within the form, and include an attachment outlining the method, calculations, and supporting data. This attachment should clearly reference sources, including the Institute of Transportation Engineers (ITE) average trip rates, land use codes, and TripGen software version. It must also include and identify policy area adjustment factors and supported trip reductions.

For developments of five or fewer single-family dwellings without additional land uses, trip generation estimates are not mandatory. In such cases, the assumption is that the development will generate fewer than 30 net new weekday peak-hour vehicle trips.

To calculate trip generation rates, follow the steps below.

1. Select Time Periods

Provide motor vehicle trip estimates categorized by land use and development phase for the weekday AM and PM peaks and the daily total.

a. Peak Hour

Peak hour rates are typically derived from a three-hour peak period. The standard weekday commuter AM and PM peak periods are 6:30–9:30 a.m. and 4:00–7:00 p.m. An adjusted three-hour weekday peak period (such as 30 minutes earlier or later) may best reflect the site-specific conditions, such as location, trip-generation characteristics, existing conditions, or background and future conditions. For example, a school where classes end before the start of the evening peak period may warrant analysis of an afternoon peak period.

b. Daily Total

Daily total trips are the average number of vehicle trips to and from the proposed development during a 24-hour period on a typical weekday.

2. Calculate Proposed Trips

Proposed trips are motor vehicle trips generated by a site after any applicable trip reductions. They are calculated by establishing a trip rate, taking appropriate reductions (e.g., pass-by and diverted link trips, etc.), and applying the Policy Area Adjustment Factor. Calculate proposed trips for the proposed development for each time period (e.g., AM and PM weekday peak-hour and daily trips).

a. Establish Trip Rates

Calculate trip generation estimates by using the trip equation or rate in the most recent version of ITE Trip Generation Manual or another source agreed upon with Planning Staff. Specify and justify the equations or rates used to calculate trips. Refer to the *ITE Trip Generation Manual* for additional guidance on selecting rates.

If ITE lacks a supported daily trip rate for a proposed land use, the Applicant may calculate daily weekday trips by dividing the average of the AM and PM peak-hour weekday trips by 0.12.

Projects with unique travel behavior, such as a school or daycare, or a specialized land use that does not easily fit with the ITE's category definitions should use an alternate source or method, such as trip counts at sites with similar characteristics. With Planning staff approval, the

Applicant may conduct the counts as part of the LATR Study. Planning staff must approve the special rates before the Applicant submits the study.

For daycares that are part of a mixed-use development, the trips generated by a daycare will not be included in the overall trip generation calculation if the daycare use generates fewer than 50 net new peak-hour weekday motor vehicle trips.

b. Apply Trip Reductions

Certain sites may be eligible for further trip reduction through the consideration of internal capture, pass-by and diverted trips, parking management, and transportation demand management (TDM).

Internal Trip Capture

The internal trip capture reduction accounts for trips that people make within a single development without leaving the area. It can apply to proposed developments with multiple buildings, destinations, or land uses within the same site.

- These guidelines assume that a small amount of ground-floor retail in a mostly residential or office mixed-use building will not generate additional trips. This assumption applies to up to 15,000 gross square feet of retail space in buildings with at least 90 percent of their floor area ratio (FAR) devoted to non-retail uses and no parking spaces for retail customers in the site plan.
- In parking lot districts (PLDs), ground-floor retail proposals meeting parking needs via PLD participation can use a PM peak vehicle trip estimate of 2.0 per 1,000 gross square feet of retail space; AM peak rates are 25% of PM rates.
- Planning staff will consider other internal capture reductions on a site-specific basis.

Pass-by and Diverted Link Trips

The pass-by and diverted trips reduction accounts for trips that are already on the road, making a brief stop at the proposed development. These trips may not be as impactful as a separate trip solely to or from the proposed development. Planning staff will consider this reduction on a site specific basis.

Parking Supply

The parking supply reduction accounts for the correlation between parking supply and vehicle trip generation, particularly when applied in a managed and priced-parking environment with alternative transportation options. Applicants may use this reduction for

residential and office uses when proposing parking ratios lower than the baseline minimums, along with other supportive actions reduce parking demand per Zoning Ordinance Sec. 59.6.2.4.

- **Residential Uses**: Each 2% reduction in parking below the minimum number of spaces yields a 1% reduction in vehicle trip generation rates for that use.
- **Office Uses**: Each 3% reduction in parking below the minimum number of spaces yields a 1% reduction in vehicle trip generation rates for that use.

Daily Trip Reductions

Trip reductions such as pass-by trips can be applied to daily trip generation in addition to AM and PM peak hour trip generation. However, Planning staff must be consulted and agree to the rationale for reductions to daily trips.

c. Apply Trip Adjustment Factor

After calculating the AM and PM weekday peak-hour and daily total trips, apply a policy area-specific Trip Adjustment Factor. **Appendix 1** provides the Trip Adjustment Factors by policy area and land use type (residential, office, retail, and other). The factors reflect the prevalent travel behavior and land use characteristics of the policy area.

3. Calculate Existing Use (Trip Credits)

After calculating proposed trips, calculate trips for an eligible existing or former use using the same steps or a similar approved method. Report the existing use trips by land use for weekday AM and PM peaks and the daily total. (Refer to **Chapter 5.B2: Trip Credits** for information on eligible existing or former uses.)

4. Establish Net New Trips

To calculate "net new" trips for the proposed development, subtract eligible existing or former use's trips from the proposed use's trips. Provide the net new motor vehicle trips by land use for weekday AM and PM peaks and the daily total. Report the "maximum" net new motor vehicle trips, which is the greater of the AM and PM peak-hour trips.

B2. LATR Study Determination

After calculating the estimated net new trips, the next step is to determine if the proposed development is exempt from the LATR Study or if an LATR Study is

required. Check the appropriate box(es) on the *Transportation Adequacy Form* and follow the directions to the next applicable section.

LATR Study Exempt

An LATR Study is not required ("LATR Study Exempt") if a proposed development meets any of the following conditions:

- The proposed development generates fewer than 30 net new peak-hour weekday motor vehicle trips in both the AM and PM peak hours.
- For daycare use, the proposed development generates fewer than 50 net new peak-hour weekday motor vehicle trips in both the AM and PM peak hours.
- The proposed development qualifies for an exemption listed in **Chapter 1.D.**

LATR Study Required

An LATR Study is required if a proposed development meets all the following conditions:

- The proposed development generates 30 or more net new peak-hour weekday motor vehicle trips in either the AM or PM peak hour.
- For daycare use, the proposed development generates 50 or more net new peak-hour weekday motor vehicle trips in either the AM or PM peak hour.
- The proposed development does not qualify any of the exemptions listed in **Chapter 1.D**.

If an LATR Study is required, it must include a Vision Zero Statement and Non-Motor Vehicle Analysis. The LATR Study must also include Motor Vehicle Analysis, unless the proposed development is in a Red Policy Area or a Downtown Complete Streets Design Guide Area Type.

C. LATR Study Exemption Statement (Part C)

If a proposed development is exempt from the LATR Study requirement, complete Part C of *Transportation Adequacy Form.* Select the reason(s) for the LATR Study exemption and provide a brief statement that explains how the development meets the requirements for the selected exemption(s). If a development qualifies for multiple exemptions, select all that apply and explain the reasoning for each.

D. LATR Study Required—Vision Zero and Non-Motor Vehicle Analysis (Part D)

If an LATR Study is required, the Applicant must complete Part D of *Transportation Adequacy Form*. The purpose of Part D is to determine the LATR Study's parameters and the extent of data collection and analysis. The completed LATR Study must comply with all requirements in the LATR Guidelines. Chapter 3 provides detailed guidance on conducting the LATR Study.

- **Vision Zero Statement:** Propose locations for speed studies. The maximum number of required speed studies is based on the maximum net new weekday peak-hour motor vehicle trips. (Refer to Table 1 in Chapter 3.A.)
- **Non-Motor Vehicle Analysis:** Select the study area network distance based on the maximum net new weekday peak-hour motor vehicle trips. Include maps that show the site, the network-distance study area, and a buffer from the property boundary equal to the listed network distance. (Refer to Table 2 and Figure 3 in Chapter 3.B1)
- **Programmed Transportation Projects:** List all programmed roadway, transit, bicycle, and pedestrian projects within a ¼-mile buffer of the property boundary. Programmed conditions include projects fully funded for construction in the County or State budget in the next 6 years and conditioned developer projects. **(**Refer to Montgomery Planning's Transportation Commitments Map for information.)

E. LATR Study Required—Motor Vehicle Analysis (Part E)

If an LATR Study with Motor Vehicle Analysis is required, the Applicant must complete Part E of *Transportation Adequacy Form* to define the parameters of the data collection and analysis. (Refer to Chapter 3.C for detailed guidance on conducting the analysis.)

- **Study Intersections:** Identify the proposed intersections for the study. Applicants must study a minimum number of significant signalized and non-signalized intersections. The number of required intersections is based on net new weekday peak-hour motor vehicle trips. Refer to Table 7 in Chapter 3.C2.
- **Software Requirement:** Choose the software for this study and describe the proposed method and analysis for specific intersections.

- **Multi-modal Intersection Counts:** Counts must be collected no more than 12 months prior to the LATR Study's acceptance. Indicate if counts will be new or existing and list the locations and dates for any existing counts.
- **Trip Distribution:** Determine trip distribution percentages using **Appendix 2**. Provide sources and justification for any proposed changes to listed distributions. For projects that require a Transportation Management Plan, such as schools, show distributions at intersections and at site driveways and garage entrances. Include a map and table as an attachment.
- **Pipeline Developments:** List all approved but unbuilt developments or concurrently pending applications near the study area. Include project name, plan number, land uses, and densities. See Montgomery Planning's Development Pipeline webpage for info.
- **Additional Analysis:** Indicate any expected site-specific analysis, including the analysis type, location, and software type. MCDOT and SHA may require additional analysis, including queuing, signal warrant, weaving, merge, and crash analysis. Agency staff may request additional analysis after the Applicant submits the LATR Study.

F. Mitigation (Part F)

If an LATR Study is required, the Applicant must complete Part F. The purpose of Part F is to highlight Montgomery Planning's approach to mitigation and to identify the project's Proportionality Guide amount, which represents a guiding upper limit for the cost of mitigation. Any mitigation strategies discussed at this stage and included in the *Transportation Adequacy Form* are non-binding until formally evaluated in the LATR Study and committed to as a condition of a development approval. **Chapter 4** provides instructions for calculating the Proportionality Guide amount and prioritizing mitigation strategies.

- **Proportionality Guide Amount:** Calculate the estimated Proportionality Guide Amount using the instructions in **Chapter 4.A**. This is for informational purposes only and is subject to change.
- **Cost Estimation Tool Version:** Note the current or expected version of the Cost Estimation Tool. The current version of the tool is listed on Montgomery Planning's Transportation Development Review webpage, and the tool is updated biannually on July 1 in odd-numbered calendar years.
- **Potential Mitigation Strategies (Optional):** Describe any potential mitigations under consideration or master-planned within the study

boundary. This is an opportunity to share initial ideas about appropriate mitigation and receive feedback from Planning staff. This is for informational purposes only and subject to change. The completed LATR Study must detail all proposed mitigations.

G. Acknowledgements and Topics for Discussion

In the last section of the form, the Applicant must check the box acknowledging the policies listed in this form and described in the *LATR Guidelines*. This section also provides the Applicant an opportunity to describe any additional assumptions, unusual circumstances, or other topics for discussion not covered by the form.

Chapter 3. LATR Study Requirements

An Applicant may initiate an LATR Study after obtaining Planning staff's approval of the *Transportation Adequacy Form* (See **Chapter 2**).

This chapter outlines the required content for the LATR Study, the methodology for conducting adequacy assessment, and the procedures for study submission and review.

An LATR Study has the following primary sections:

- LATR Vision Zero Statement.
- Non-Motor Vehicle Adequacy Assessment.
- Motor Vehicle Adequacy Assessment, if applicable.
- Proposed Mitigation (Refer to **Chapter 4** for additional guidance).

A. Vision Zero Statement

An LATR study must assess roadway speeds and suggest safety solutions in a Vision Zero Statement. This section describes the components of the Vision Zero Statement.

A1. Conduct Speed Studies

An Applicant may be required to conduct speed studies within a certain distance from the site frontage. The maximum number of required speed studies is based on net new weekday peak-hour motor vehicle trips (**Table 1**).

Planning staff, in collaboration with MCDOT, will determine locations, with a priority to filling gaps in the county's speed study inventory. If there are no gaps in the inventory, Planning staff may accept relevant studies completed within the past three years.

Conduct speed studies:

- For 48 hours.
- Mid-week (Tuesday, Wednesday, or Thursday) when school is in session.
- In dry conditions.
- At least 200 feet from the nearest intersection, where feasible.

Table 1: LATR Speed Studies: Maximum Number Required

Net New Peak-Hour Weekday Motor Vehicle Trips	Distance from Site Frontage	Max. Number of Speed Studies
30-64	250'	1
65-124	400'	2
125-224	500'	3
225+	600'	4

A2. Report Findings

For each speed study, the Applicant must document:

- **Observed Speeds:** The 50th and 85th percentile speed for each day and direction.
- **10-mile per hour (mph) Pace:** The range of speed at which most cars are traveling.

A3. Suggest Safety Countermeasures

If the observed 85th percentile speed for any day or direction exceeds the posted speed by 20% or more, summarize speed management improvements that could reduce speeds along the roadway. For example, a roadway with a 25-mph posted speed limit warrants traffic calming if the observed 85th percentile speed exceeds 30 mph. Consult Montgomery Planning's Vision Zero Community Toolkit and other examples of effective solutions to address safety problems.

B. Non-Motor Vehicle Analysis

An LATR study must include an assessment of non-motor vehicle adequacy. The extent of the assessment is determined by the number of net new peak-hour weekday motor vehicle trips generated by the project.

B1. Adequacy Standards

Non-Motor Vehicle Adequacy has five components with the following standards:

- **Pedestrian Level of Comfort (PLOC):** "Somewhat Comfortable" (PLOC-2) or "Very Comfortable" (PLOC-1) score.
- **Illuminance:** MCDOT streetlight and illuminance standards.
- **ADA Compliance:** The Americans with Disabilities Act (ADA) standards.
- **Bicycle:** Low Level of Traffic Stress (LTS-2) or Very Low Level of Traffic Stress (LTS 1).
- **Bus Transit:** ADA-accessible bus shelter and amenities per MCDOT guidelines.

The LATR Study must assess **existing and programmed conditions** within a specified **network distance** beyond the site frontage (see **Table 2**). Planning staff must confirm the study area for each component of Non-Motor Vehicle Adequacy.

- **Programmed conditions** include projects fully funded for construction in the County or State budget in the next 6 years and conditioned developer projects.

- **The network distance study area** extends in every direction from all points on the site frontage.
    - It encompasses planned and existing roads, intersections, street centerlines, sidewalks, paths, and other existing and planned connections.
    - It includes roadways designated as highways, boulevards, connectors, and streets.
    - It excludes Neighborhood Streets, Neighborhood Yield Streets, Rustic Roads, and Exceptional Rustic Roads, as well as intersections with Controlled Major Highways and Freeways, and their ramps.
    - The study area may be extended to the nearest intersection or other logical terminus, as determined by Planning staff.

The Applicant must provide a:

- Summary of existing and programmed conditions for each component.
- Maps depicting the project site (see **Figure 3** for an example) and:
    - Any non-motor vehicle deficiencies, marked with a numeric identifier.
    - Any programmed conditions, labeled or marked with a numeric identifier.
    - The network distance study area for each component.
    - A buffer from the property boundary equal to the network distance in **Table 2**.
- Table with rows corresponding to the deficiencies in the map, and columns that include the information shown in **Table 3**. For cost estimation, refer to **Chapter 4.**

Table 2: Non-Motor Vehicle Adequacy Network Distance Study Area

Net New Peak-Hour Weekday Motor Vehicle Trips	ADA Compliance	Pedestrian Level of Comfort (PLOC)	Illuminance	Bicycle	Transit
30–64	125’	250’	250’	400’	500’
65–124	200’	400’	400’	750’	1000’
125–224	250’	500’	500’	900’	1300’
225 or more	300’	600’	600’	1000’	1500’

Figure 3: Example of a Non-Motor Vehicle Adequacy Map

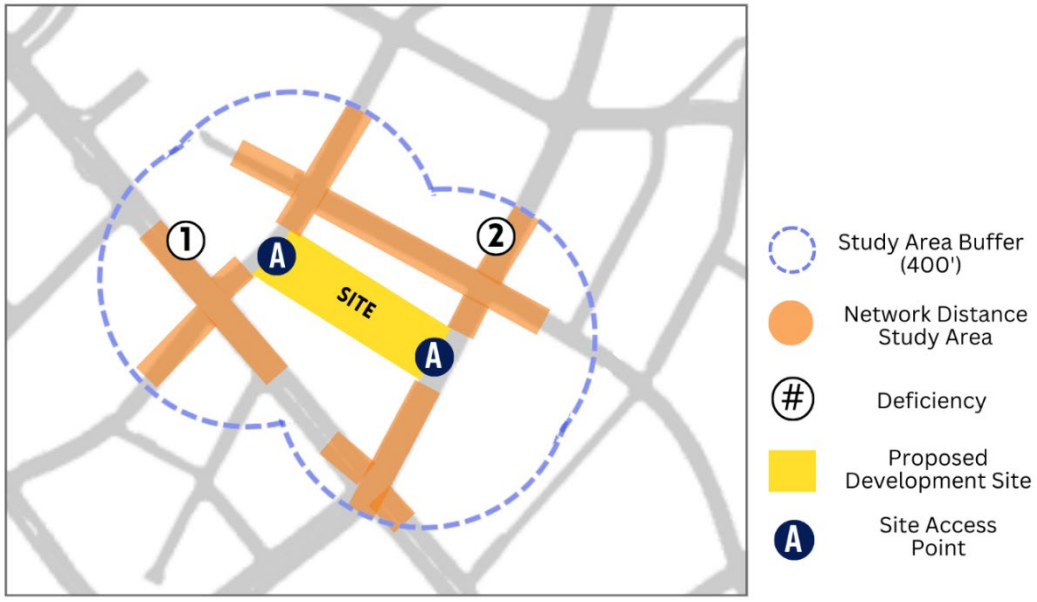


Table 3: Example Non-Motor Vehicle Adequacy Table

ID	Location Description	Deficiency and Type	Proposed Mitigation	Linear Feet (if applicable)	Feasible to Implement (Yes or No)	Notes on Feasibility (ROW with plat #, etc.)	Estimated Mitigation Cost
1	Avenue A (east side) between Street A and Street B	PLOC No sidewalk	Add Sidewalk (6 ft) and street buffer (6 ft)	300 ft	Yes	ROW available, Plat #10000	$86,100

B2. Analysis Components

The Non-Motor Vehicle Adequacy analysis has five required components for which the Applicant must evaluate existing and programmed conditions within the study area specified in **Table 2.**

1. Pedestrian Level of Comfort (PLOC) Adequacy

Adequacy for Pedestrian Level of Comfort (PLOC) is defined as providing "Somewhat Comfortable" (PLOC-2) or "Very Comfortable" (PLOC-1) conditions.

PLOC captures how comfortable it is to walk and roll along pathways in Montgomery County. The scoring of each pedestrian network segment considers aspects of the pedestrian experience, such as pathway width,

buffer width between pathways and roads, posted speed limits, on-street parking or separated bike lanes, and other conditions. Montgomery Planning's Transportation Development Review webpage provides the scoring system.

The Applicant must also field-verify existing conditions and validate the information in the Montgomery Planning's Pedestrian Level of Comfort map. Planning staff will provide the Applicant with a unique website link for the validation application once the *Transportation Adequacy Form* is approved.

2. Illuminance Adequacy

Illuminance Adequacy is defined as meeting the MCDOT streetlight and illuminance standards. These standards are identified on MCDOT's Streetlight webpage.

Illuminance is the measure of the density of light on a surface divided by the area of the surface, which provides an average illuminance over that area. Proper illuminance levels ensure that everyone using the roadway can navigate safely in low-light conditions.

The Applicant must perform photometric evaluations using computer software that follows the calculation methods detailed in the Illuminating Engineering Society's (IES) RP-8-21, *Recommended Practice: Lighting Roadway and Parking Facilities*. While photometric evaluations are necessary for any proposed permanent streetlighting conditions, they may also be used for determining existing lighting conditions. More information on evaluating illuminance is available in Appendix 7 and on Montgomery Planning's webpage.

3. ADA Compliance Adequacy

ADA Compliance Adequacy is defined as meeting the current Americans with Disabilities Act (ADA) standards.

The Applicant must identify any ADA non-compliance issues with pedestrian facilities and elements in the public right-of-way, including curb ramps, sidewalk ramps, and traffic signals. The Applicant must also identify any significant trip hazards, cross slope deviations, and broken, missing, or structurally failing sidewalks.

To comply with ADA requirements, curb ramps must meet specific standards for width, slope, cross slope, placement, and other features, as described in the U.S. Access Board's *Guide to the ADA Accessibility Standards*, Chapter 4: Ramps and Curb Ramps.

The Applicant must analyze curb ramps using the methods in the U.S. Department of Justice's *ADA Best Practices Tool Kit for State and Local Governments*. Specifically:

- ADA Accessibility Survey Instructions: Curb Ramps
- ADA Accessibility Survey Check List: Curb Ramps

Note that portions of the ADA Toolkit may not fully reflect the current ADA regulation. Where the information conflicts, applicants should refer to the U.S. Access Board's *Guide to the ADA Accessibility Standards* for current standards.

4. Bicycle Adequacy

Bicycle Adequacy is defined as providing a "Low" (LTS-2) or "Very Low" (LTS 1) Level of Traffic Stress.

Bicycle Level of Traffic Stress (LTS) captures the amount of discomfort that people feel when they bicycle close to traffic. The scoring of streets and trails considers attributes such as traffic speed, traffic volume, number of lanes, frequency of parking turnover, ease of intersection crossings, and others. Montgomery Planning's Transportation Development Review webpage.

The applicant must also field-verify existing conditions and validate the information in the Montgomery Planning's Bicycle Level of Traffic Stress map. Planning staff will provide the Applicants with a unique website link to the validation application once the *Transportation Adequacy Form* is approved.

5. Bus Transit Adequacy

Bus Transit Adequacy is defined as providing ADA-accessible bus shelters and amenities at bus stops per MCDOT guidelines.

C. Motor Vehicle System Analysis

An LATR Study must include an assessment of Motor Vehicle Adequacy for any proposed development project, except for those in a Red Policy Area or a Downtown. Developments in Red Policy Areas and Downtowns are exempt from the motor vehicle adequacy analysis and mitigation requirements.

C1. Adequacy Standards

Montgomery County permits greater levels of traffic congestion in areas with greater access to high-quality transit, walking, and bicycling. The following motor vehicle adequacy standards apply:

- Intersections in Yellow or Green Policy Areas with a Critical Lane Volume (CLV) level of service of 1,350 or less are adequate. No further motor vehicle adequacy analysis or mitigation is required to satisfy the County's adequacy standards.
- For intersections in Yellow and Green Policy Areas with a CLV greater than 1,350, the Highway Capacity Manual (HCM) delay-based level of service standards in **Table 4** apply. Intersections at or below the HCM standard are adequate.
- For intersections in Orange Policy Areas (except for those in Downtowns, which are exempt), the HCM standard in **Table 4** applies. Intersections at or below the HCM standard are adequate.

Table 4 presents the acceptable levels of intersection delay for different areas within the county. These "delay standards" are determined by the location of the intersection itself, not by the location of any proposed development. For intersections on the border between two areas, the less restrictive delay standard applies. A study for a development in an Orange policy area may assess an intersection on the border of an Orange and a Downtown or a Red policy area. However, such intersections do not have an associated standard, and therefore do not require mitigation.

The Applicant must provide:

- Study intersections (map).
- Multimodal counts (motor vehicle, bicycle, pedestrian) for study intersections.
- Pipeline developments (map and table).
- Programmed conditions (map and table).
- Summary of analysis methods and inputs, including site trip distribution, site trip assignment, CLV/HCM, and any additional analysis requested (queuing, gap analysis, etc.).
- Traffic model files (Synchro, VISSIM, SimTraffic, etc.).
- Vehicular analysis results in a summary table that provides the information shown in **Table 5** and highlights any intersections above the delay standard.
- Map of intersections above the delay standard (if applicable).

- Summary of proposed mitigations with a map and corresponding table that provides the information shown in **Table 5** (if applicable). Refer to **Chapter 4** for information on mitigation and cost estimates.

Table 4: LATR Intersection Delay Standards

Policy Area	Policy Area Classification (color)	HCM Average Vehicle Delay Standard* (seconds/vehicle)
Rural East Rural West	Green	41
Damascus	Green	48
Clarksburg West	Yellow	51
Cloverly North Potomac Potomac Olney	Yellow	55
Clarksburg East Germantown East Germantown West Great Seneca Communities	Orange	55
Colesville	Yellow	59
Derwood Gaithersburg Montgomery Village/Airpark	Orange	59
Aspen Hill Clarksburg Town Center Fairland/Briggs Chaney Germantown Town Center Rockville City Olney Town Center	Orange	63
Burtonsville Town Center North Bethesda	Orange	71
Bethesda/Chevy Chase Kensington/Wheaton Silver Spring/Takoma Park White Oak	Orange	80

*The 2019 Veirs Mill Corridor Master Plan set the HCM Average Delay Standard at 100 seconds/vehicle at all Veirs Mill Road signalized intersections between the boundaries of the Wheaton CBD Policy Area and the City of Rockville.

Table 5: Example Motor Vehicle Analysis Summary Table

Intersection	Signalized or Unsignalized	Delay Standard (CLV or HCM)	Existing Conditions (AM)	Existing Conditions (PM)	Future Background Conditions (AM)	Future Background Conditions (PM)	Total Future Conditions (AM)	Total Future Conditions (PM)
Street A / Street B	Signalized	HCM, 80 sec./veh.	40	65	60	75	67	85
Street A / Street C	Signalized	HCM, 80 sec./veh.	30	40	50	55	60	68

Table 6: Example Proposed Motor Vehicle Mitigation

ID	Location	Deficiency	Proposed Mitigation	Conditions After Mitigation (HCM) (AM)	Conditions After Mitigation (HCM) (PM)
M1	Street A / Street B	Operates above the delay standard	Modify signal timing	67	75

C2. Analysis Components

The Applicant should use the following general criteria and analytical techniques to show the proposed development's expected impact on public roadway segments and intersections.

6. Study Intersections

The Applicant must study:

- **Driveways:** All driveways accessing the proposed development from a public street.
- **Intersections:** A certain number of significant signalized and significant non-signalized intersections tiers in each direction. This number, found in **Table 7**, is based on the proposed development's estimated net new weekday peak-hour motor vehicle trips. Site driveways do not count towards this intersection requirement.

The term **"each direction"** applies to every significant intersection. For example, in a hypothetical grid pattern, the first tier around the site access point would encompass four intersections. The second tier would include the subsequent four significant intersections along the primary streets and

the four significant intersections encountered on cross streets within the first tier. As the number of intersection tiers grows linearly from one to seven, the total number of intersections within the study area grows exponentially. Refer to the example in **Figure 4**.

Planning staff, in coordination with the Applicant, will determine "significant" intersections requiring analysis. Considerations will include:

- Trip generation and distribution patterns to and from the site.
- Functional classification of the roadway (e.g. Town Center Boulevard).
- Surrounding land uses and key destinations.
- Existing vehicle congestion and/or queuing.
- Geographic boundaries, including rivers, major streams, parks, interstate routes, and railroads.
- Political boundaries (although the LATR Study may include intersections within Rockville and Gaithersburg, where the Planning Board lacks subdivision authority, findings will be shared with these municipalities).[2]

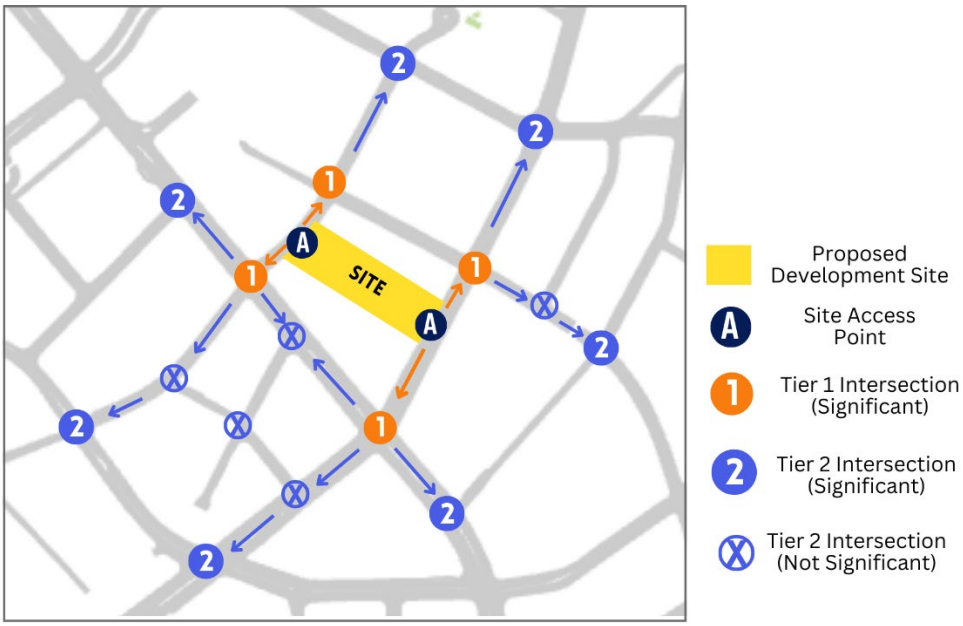
Planning staff, in consultation with MCDOT, SHA, and relevant municipalities, may find that specific circumstances warrant a more limited study area.

Table 7: Minimum Required Intersections Tiers

Net New Weekday Peak-Hour Site Vehicle Trips	Minimum Intersection Tiers in Each Direction
< 250	1
250–749	2
750–1,249	3
1,250–1,749	4
1,750–2,249	5
2,250–2,749	6
>2,749	7

[2] In such cases, the coordination of any new proposed intersection improvements shall be in accordance with the memorandum of understanding provided in Appendix 4.

Figure 4: Intersection Tiers Example



7. Programmed Transportation Projects

The analysis must consider existing and programmed conditions, including all roadway, transit, bicycle, and pedestrian projects fully funded for construction in the County or State budget in the next 6 years and conditioned developer projects. Montgomery Planning's Transportation Commitments Map provides information on programmed conditions.

8. Existing and Pipeline Development

The analysis must consider existing traffic, projected background traffic generated by developments approved and not yet built, and projected traffic generated by the Applicant's project. Planning staff may require the inclusion of projected traffic from nearby pending applications in the LATR Study if the Planning Board is likely to approve those applications before the subject application's projected Planning Board hearing date. Otherwise, the Applicant must update the LATR Study to include the pending applications approved between the *Transportation Adequacy Form* approval and the application's Planning Board hearing date. The LATR Study should also reflect any transportation improvements that nearby pending projects will make.

Planning staff may require, when appropriate, the inclusion of traffic for constructed buildings with unusually high vacancy rates.

Proposed development's estimated trip generation and background trips should be determined under the procedures outlined in **Chapter 2.B1**.

Approved but Unbuilt Development

As a general guideline, if an approved but unbuilt development is estimated to contribute at least 5 CLV, the Applicant should include its background traffic in the study. For background traffic generated by a large, staged development, the Applicant should stage the study appropriately. As noted above, background traffic data should also include trip reductions and conditioned constructed improvement.

9. Multimodal Counts

The LATR Study will base its analysis on current and up-to-date multi-modal counts. Typically, counts should be collected no more than 12 months prior to the acceptance of the LATR Study. An LATR Study submitted with counts older than one year may need to be updated with new counts.

Occasionally, Montgomery Planning may place a temporary moratorium on collecting multimodal counts countywide or in localized areas because of factors that substantially impact traffic counts (such as a government shutdown or a prolonged Metrorail closure). If these conditions persist for an extended period, Montgomery Planning may devise alternate review procedures. Applicants should refer to Montgomery Planning's Transportation Development Review webpage for periodic changes in policy because of extenuating circumstances.

Montgomery Planning maintains an Intersection Analysis Database with multi-modal intersection count data collected by MCDOT, SHA and private consultants to provide applicants with a preliminary assessment of conditions near a proposed development.

Multimodal counts should not be collected under the following conditions:

- On a Monday or Friday.
- During summer, or when public schools are closed.
- 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 government employees have mandated telework because of weather or other circumstances.

Planning staff will check the Applicant's intersection counts for reasonableness, comparing them to independent sources such as older

counts from the same or nearby locations. They may require a recount if a significant discrepancy exists.

10. Scenarios

The LATR Study must analyze scenarios that reflect the proposed development's phasing and build out year. Scenarios typically include Existing, Background (No Build), Total Future, and Future with Mitigation (as needed). Reviewing agencies may request additional scenarios and analysis.

11. Trip Distribution, Assignment and Split

Directional Distribution

The Trip Distribution and Traffic Assignment Guidelines in **Appendix 2** provide instructions on the directional distribution of background and site traffic generated by office and residential uses. The proximity of other trip generators—existing developments, employment hubs, commercial areas, regional shopping centers, transit facilities, and any supplementary trip data provided by staff—will determine the calculation of trip distribution to and from the proposed development. For land uses not covered in ITE documents, the Applicant will consult with Planning staff to develop the distribution.

Trip Assignment

Trip assignment provides an estimated assessment of how future traffic will affect the surrounding road network. This estimation's accuracy decreases as the distance from the origin or destination of the trip increases.

The Applicant, in collaboration with Planning staff, will establish the factors used for assigning trips. The Applicant and Planning staff will apply these factors to the proposed development's generated trips, then allocate the resulting traffic volumes to the nearby road network.

The assessment will consider generated trips, background traffic, and existing traffic when determining the adequacy of transportation facilities. Trip assignment will extend to the nearest major intersection, or intersections, in consultation with Planning staff.

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 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. Planning staff, in consultation with the applicant, SHA, and MCDOT, will resolve these cases individually before presentation to the Planning Board.

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 the ITE Trip Generation Manual for directional split guidance.

12. CLV and HCM

The LATR Study must analyze average delay at the intersection using either CLV or HCM methodologies. (Refer to **C1** for policy area standards.) The motor vehicle analysis, by prioritizing average delay, incentivizes traffic management and operational strategies. This shifts the focus towards optimizing the existing road network's efficiency through measures like optimized signal timing, improved signage and markings, and smoother vehicle flow, rather than solely expanding road capacity. **Appendix 3** details the methodology for assessing traffic flow at intersections based on delay-related performance metrics. It also clarifies whether the analysis should either concentrate on individual intersections or evaluate interconnected networks of closely spaced intersections.

13. Additional Analysis

MCDOT and SHA may require other analysis, including but not limited to queuing, signal warrant, weaving/merge, gap, and crash analysis. MCDOT and SHA may request more analysis after reviewing the LATR Study results. Note that MCDOT and SHA may have additional requirements for access reviews and other analyses separate from the LATR process.

D. Proposed Mitigation

If deficiencies are documented in the non-motor vehicle and/or motor vehicle adequacy assessments, the Applicant must provide a prioritized list of proposed off-site mitigation projects. **Chapter 4: Mitigation** provides information and instructions for determining proportionality, prioritizing off-site mitigation projects, and estimating costs.

The Applicant must provide:

- A prioritized list of proposed off-site mitigations with cost estimates (table and map). See **Table 8** for an example.

- Proportionality Guide calculation and amount.
- Summary of off-site mitigation considerations.
- If proposing a mitigation payment, provide justification.

Table 8: Example of Prioritized Proposed Off-Site Mitigation
*See instructions in **Chapter 4**.*

ID	Location Description	Deficiency Type	Deficiency Description	Proposed Mitigation	Linear Feet (if applicable)	Cost Estimate
1	Northeast curb ramp of intersection A and B	Non-Motor Vehicle (ADA)	Broken curb ramp with no DWS	Reconstruct the curb ramp and add DWS	N/A	$X,XXX
2	North side of Street A between Street B and Street C	Non-Motor Vehicle (PLOC)	No street buffer between the sidewalk and roadway	Add a 6-foot-wide street buffer and relocate sidewalk	300	$X,XXX

E. Submittal and Review Process

Montgomery Planning strongly encourages the early submission of a draft LATR Study (including all appendices, traffic modeling files, and a signal timing plan, if applicable) to Planning staff and MCDOT for review.

To streamline the review process:

1. Submit a draft LATR Study to Planning staff for review. Planning staff will review the draft to ensure completeness and provide feedback.
2. Once Planning staff determines the draft study is complete, submit the final LATR Study through ePlans.

Submitting a final LATR Study through ePlans without first having Planning staff review a draft may significantly increase the time required to obtain reviews and written recommendations from MCDOT and SHA.

Prior to submitting an LATR Study to ePlans as part of the official development application, the Applicant must:

- Pay the LATR Study review fee and provide a receipt from MCDOT as proof of payment.
- Send traffic model files (Synchro, VISSIM, etc.) to MCDOT and SHA, when applicable.

- Send an electronic copy of the LATR Study and appendices to Planning staff via transportation.review@montgomeryplanning.org.

An LATR Study will not be reviewed until all documents are submitted and requirements are met. The Applicant must submit a completed LATR Study Checklist along with LATR Study. The checklist is available on Montgomery Planning's Transportation Development Review webpage.

The LATR Study will be reviewed by Montgomery Planning, MCDOT, and other agencies applicable to the project context, including SHA and/or the local jurisdiction. Transportation agency approvals may take multiple rounds of review; MCDOT and SHA can take up to 30 and 45 days, respectively, for each review round. When responding to agency comments, the Applicant must submit a red-lined version of the LATR Study with revisions clearly marked.

The reviewing agencies will participate in scheduled Development Review Committee (DRC) meetings and work collaboratively with the Applicant and each other to seek mutually satisfactory resolutions to any issues that arise during review. Finally, MCDOT and other applicable agencies (e.g., SHA) will submit written recommendations, which will help inform the Planning Board's APF finding. These letters will be included in the Planning staff's report to the Planning Board.

After the LATR Study is completed and before the Planning Board hearing date, the Applicant must upload data, including speed study results, intersection counts, and pedestrian and bike data verification to Montgomery Planning's database via a custom URL provided by Planning staff.

Chapter 4. Mitigation

The GIP requires Applicants to mitigate inadequate infrastructure to an extent proportional to its impact. Specific constructed improvements should be consistent with master plans, functional plans, and county policies identified in consultation with Planning staff and MCDOT. If the Planning Board and MCDOT determine that constructing all or part of these requirements is impracticable or undesirable, an applicant can satisfy this requirement by making a mitigation payment to MCDOT, based on the estimated construction expenses. (Refer to **Chapter 4.B4** for information on mitigation payments.)

This chapter provides information and instructions for determining proportionality, prioritizing mitigation projects, and estimating costs.

A. LATR Proportionality Guide

The LATR Proportionality Guide helps the Planning Board determine a fair cost for off-site improvements to address transportation deficiencies. This ensures that the cost of mitigation is proportionate to the development's impact on the transportation system and applied consistently across development projects. The LATR Proportionality Guide amount serves as a recommended maximum cost of mitigation improvements, encompassing both offsite motor vehicle and non-motor vehicle related improvements. It does not include frontage improvements.

A1. Proportionality Guide Amount

Net New Daily Motor Vehicle Trips x Proportionality Guide Rate =

Proportionality Guide Amount[3]

- Step 1: Calculate the Net New Daily Motor Vehicle Trips. (Refer to Chapter 2.B1)
- Step 2: Multiply by the Proportionality Guide Rate.

A2. Proportionality Guide Rate

As of January 1, 2025, the Proportionality Guide Rate is $765.

Beginning on July 1, 2027, the Planning Board will update the Proportionality Guide Rate on July 1 of each odd-numbered year by the cumulative increase or

[3] For daycares that are part of a mixed-use development, the trips generated by a daycare will not be included in the Proportionality Guide calculation if the daycare use generates fewer than 50 net new peak-hour weekday motor vehicle trips.

decrease in the Engineering-News Record's Baltimore Construction Cost Index over the prior two calendar years.

The Applicant must use the prevailing rate in effect on the date that Montgomery Planning accepts the application.

A3. Using the Proportionality Guide

While the LATR Proportionality Guide aims to ensure rough proportionality, the Planning Board may, in rare circumstances, find a modified approach to proportionality warranted (within the bounds of GIP). The Planning Board maintains the flexibility to determine when existing transportation infrastructure will not adequately support a proposed use or when the LATR Proportionality Guide amount presents an excessive burden on an Applicant.

B. Determining Mitigation Requirements

After documenting deficiencies in the study area and calculating the LATR Proportionality Guide amount, the Applicant must suggest a prioritized list of proposed off-site mitigations with estimated costs.

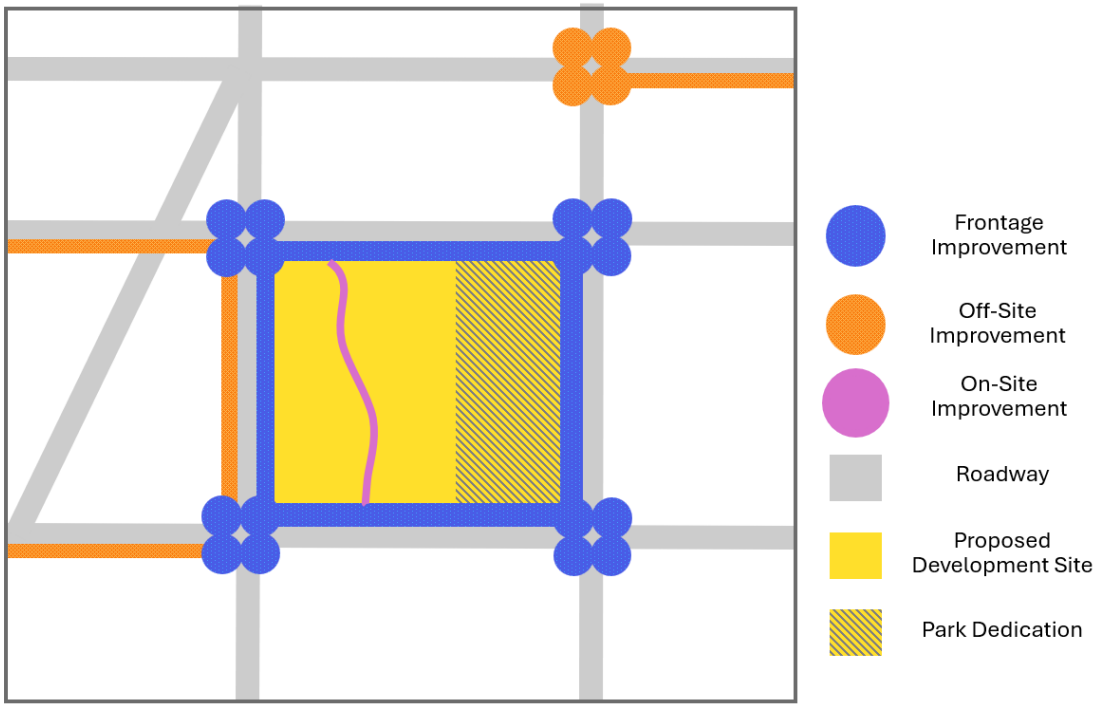
B1. Definition of Off-Site, Frontage, and On-Site Improvements

Transportation improvements and thus mitigations are classified in three ways.

- Off-site improvements are upgrades to transportation facilities including but not limited to sidewalks, bikeways, and ADA curb ramps not located directly at, or adjacent to, a development site.
- Frontage improvements are upgrades to transportation facilities within the right-of-way along the site boundary. They do not include improvements on the other side of the street. These are required as part of development but are not considered an LATR mitigation and cannot be included as a mitigation project or count toward the Proportionality Guide.
    - Site Access improvements are typically considered a Frontage Improvement except in some cases where an LATR study identifies a site access improvement that addresses a noted off-site deficiency, such as protected crossing.
- On-site improvements are upgrades located within a development site itself. On-site improvements are required as part of development but are not considered an LATR mitigation and cannot be included as a mitigation project or count toward the Proportionality Guide.

Figure 5 provides an example of each type of improvement.

Figure 5: Improvement Types Example



While the determination of what constitutes an off-site improvement versus a frontage or on-site improvement may require further discussion with Planning staff, the following general guidance should be used.

- If one ADA curb ramp at an intersection is being (re)constructed on the corner of a development property (a frontage improvement), then the corresponding ramp on the other side of the street is also considered a frontage improvement as ADA compliance requires both ramps to meet applicable standards.

If a project is dedicating property as part of a development application, the frontage along this dedicated area is still considered the subject property frontage.

B2. Off-Site Mitigation Considerations

Planning staff will provide feedback on the suggested prioritized list of proposed mitigation improvements. In prioritizing off-site mitigation, the Applicant and Planning staff will consider:

- Proximity to the site.
- Availability of right-of-way.
- Master plan priorities.
- Greatest community benefit.
- ADA improvements.
- Access to transit, public facilities, and major destinations.

- Safety: identified in the High Injury Network or the Predictive Safety Analysis.
- Improvements that address multiple deficiencies.
- Severity of conditions: Higher PLOC and LTS scores.
- Transit stops with high boardings.

Each project may have circumstances that place a greater priority on one or more of these considerations. Planning staff will assess the priority level for proposed improvements.

Bike facility improvements are only appropriate along master planned bikeways. However, improving an inadequate bikeway (LTS-3 or LTS-4) along a master planned route is a viable mitigation project.

For motor vehicle adequacy, the Applicant must mitigate the project's impact on motor vehicle delay or reduce motor vehicle delay to the applicable policy area standard, whichever is less. Operational changes and infrastructure improvements that increase safety for all roadway users are the first mitigation options to pursue. Consider roadway capacity improvements only if they do not negatively impact safety. For the Planning Board to accept a motor vehicle improvement as a mitigation measure, the applicant must show that alternative non-motor vehicle mitigation measures are not feasible or desirable.

An Applicant is not required to mitigate the conditions assessed in the Vision Zero Statement speed studies. However, with the concurrence of the responsible agency, an Applicant may implement or contribute to implementing safety countermeasures as part of their off-site mitigation efforts.

Improvements conditioned for construction or payment by one applicant typically will not be required of another.

B3. Cost Estimation

The Applicant must prepare concept (10 percent) plans and itemized costs for the identified off-site improvements. The Applicant must generate the cost estimates using Planning's cost estimation tool, which is available on Planning's Transportation Development Review webpage. Planning staff update the tool on July 1 of each odd-numbered calendar year. Planning staff will review the cost estimates for reasonableness.

The Applicant should estimate costs for mitigation projects in order of priority and continue to do so until the total cost of the projects reaches the Proportionality Guide amount or there are no additional projects on the list that will sum to a cost that is less than or equal to the Proportionality Guide.

Cost estimates are not required for infeasible improvements where the right-of-way is not available.

Montgomery Planning encourages the Applicant to identify and propose alternative mitigation projects. If included in the conditions of approval, the alternative projects can serve as a substitute for a project that is subsequently determined to be infeasible. (Refer to **Chapter 4.B4**.)

The estimated costs are final at the Planning Board's approval of the plan.

B4. Condition of Approval

The condition of approval will include a list of mitigation projects and/or a mitigation payment to address motor vehicle and non-motor vehicle adequacy.

All mitigation measures, either individually or in combination, must be completed or fully operational by the time the proposed development is scheduled for completion. The nature, design, and scale of any additional facility or program must receive prior approval from any government agency that would construct or maintain the facility or program, and the applicant and the public agency must execute an appropriate public works agreement before the Planning Board approves a record plat.

Conditions for Mitigation Payments

While constructed improvements are strongly preferred, mitigation payments may be necessary when existing deficiencies cannot be mitigated by a constructed improvement. Mitigation payments are acceptable only if the Planning Board and MCDOT agree that constructing all or part of the mitigation projects may be impracticable or undesirable for reasons not limited to, unattainable right-of-way, an existing CIP project, or other conditions outside the applicant's control.

If a mitigation payment is required, the condition will identify the:

- Payment amount, based on the estimated cost of the constructed mitigation project, as determined by Planning's cost estimation tool.
- Type of improvement (non-motor vehicle or motor vehicle).
- Policy areas where MCDOT can use the funds. Fund use is determined by the project's location. MCDOT must use funds to construct improvements either within the same policy area or in an adjacent policy area unless the applicant agrees otherwise.

The condition of approval will state that the payment will be adjusted from the mailing date of the Planning Board resolution to the first above-grade building permit or right-of-way permit (whichever comes first) based on the Federal Highway Administration's National Highway Construction Cost Index.

Consistent with Section TL3.4 of the 2024-2028 GIP, any mitigation payment will be reduced proportionally based on the share of trips generated by any moderately priced dwelling unit (MPDU) and any other low-and moderate-income housing which is exempt from paying a development impact tax.

Modifications to Conditioned Improvements

If a preferred conditioned improvement becomes impracticable during the design and engineering process, or obsolete because of construction by others or a change in the master plan recommendation:

- An alternative project (or set of projects) of similar value listed in the conditions of approval can serve as a substitute for the impracticable or obsolete preferred project. Planning staff must approve, and the Applicant must reflect the change on a revised Certified Preliminary Plan.
- If neither of the conditions of approval nor the LATR Study include any appropriate alternative projects, the Applicant will need to amend the plan.

As the condition of approval includes a list of mitigation projects and not the calculated LATR Proportionality Guide, an increase in construction costs either under or outside of the applicant's control does not justify a change in the conditions of approval without a plan amendment.

Chapter 5. Additional Guidance

A. Amendments to Previously Approved Adequate Public Facilities (APF)

When proposing an amendment to a valid APF, the Applicant must calculate trip generation for both the original APF approval and the proposed amendment using the method outlined in **Chapter 2.B1.**

- If the proposed amendment ***increases*** the net new peak-hour weekday motor vehicle trips compared to the original APF approval, the Applicant must conduct a new LATR Study and obtain a new APF approval under the current GIP and LATR Guidelines.
- If the proposed amendment ***decreases*** the net new peak-hour weekday motor vehicle trips compared to the original APF approval, the Applicant may request an amendment to the approval without conducting a new LATR Study. The amended APF will reflect the decreased number of net new peak-hour weekday motor vehicle trips.
- If the proposed amendment ***does not change*** the net new peak-hour weekday motor vehicle trips compared to the original APF approval, the Applicant may request an amendment to the approval without conducting a new LATR Study.

B. Avoiding Piecemeal Development

B1. Subsequent Applications

An Applicant may not avoid LATR Study requirements by dividing a large project into smaller ones and submitting piecemeal applications or approval requests.

- If a project with fewer than 30 total net new peak-hour weekday motor vehicle trips is approved, any future phases of the development must consider the cumulative trip impact of all phases.
- Once the total number of net new peak-hour weekday motor vehicle trips from the entire development reaches 30, an LATR Study is required.

B2. Trip Credits

To be eligible for trip credits, existing uses on the site that are *not* being replaced by the proposed development must meet the following condition:

- A use and occupancy permit for at least 75% of the originally approved development (which includes the subject property as part of the same preliminary plan or Adequate Public Facility determination) must have

been issued more than 12 years prior to the Applicant's submission of the *Transportation Adequacy Form*.

For existing or former uses (including demolished uses) on the site that are being replaced by the proposed development to be eligible for trip credits, the land use must have been occupied for a period of at least 12 years prior to the Applicant's submission of the *Transportation Adequacy Form*.

The Planning Board has the discretion to waive or modify these conditions depending on the specific circumstances.

Glossary

ADA Accessibility Guidelines: Accessibility standards issued under the Americans with Disabilities Act of 1990 (ADA) that apply to places of public accommodation, commercial facilities, and state and local government facilities in new construction, alterations, and additions.

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

Critical Lane Volume (CLV): The sum of traffic volumes that cross at a single point in an intersection.

Daily Trips: Average number of vehicle trips to and from a site during a 24-hour period on a typical weekday. They are calculated by establishing a trip rate, taking appropriate reductions (e.g., pass-by and diverted link trips, etc.), and applying the Policy Area Adjustment Factor.

Downtown Areas: Montgomery County's highest density areas, including central business districts and urban centers. They are envisioned to have dense, transit-oriented development and a walkable street grid (existing or planned). These areas are envisioned to share several of the following characteristics: identified as central business districts and/or major employment centers; high levels of existing or expected pedestrian and bicyclist activity; high levels of transit service; street grid with high levels of connectivity; continuous building frontage along streets, with minimal curb cuts; and mostly below ground or structured parking.

Existing conditions: Transportation system conditions based on recent observations.

Existing trips (Trip Credits): Motor vehicle trips generated by an eligible existing or former use. They are calculated by establishing a trip rate, taking appropriate reductions (e.g., pass-by and diverted link trips, etc.), and applying the Policy Area Adjustment Factor.

Highway Capacity Manual (HCM): The manual provides the concepts, guidelines, and computational procedures for determining the capacity and quality of service of various highway facilities, including freeways, signalized and unsignalized intersections, rural highways, and the effects of transit, pedestrians, and bicycles on the performance of these systems.

Institute of Transportation Engineers (ITE): An is an international membership association of transportation professionals dedicated to advancing transportation knowledge and practices. ITE develops technical resources, including tools and standards.

Level of Service (LOS): A qualitative measure of transportation system performance described in the Highway Capacity Manual.

Level of Traffic Stress (LTS): A qualitative measure of bicyclist comfort initially developed by the Mineta Transportation Institute and modified by Montgomery Planning. Montgomery Planning applied the measure to develop the Bicycle Master Plan.

Metropolitan Washington Council of Governments (**MWCOG):** A regional organization of the Washington area's major local governments and their governing officials. MWCOG works toward solutions to such regional problems as growth, transportation, housing, air pollution, water supply, water quality, economic development, and noise, and serves as the regional planning organization for the Washington metropolitan area.

Net new trips: Motor vehicle trips by a site, considering only those net additional trips proposed by the current development application after any applicable trip reductions. They are calculated by subtracting eligible **existing** (or former) use trips from **proposed** trips.

Pedestrian Level of Comfort (PLOC): A qualitative measure that captures how comfortable it is to walk and roll under different conditions in Montgomery County.

Proposed trips: Motor vehicle trips generated by a proposed site after any applicable trip reductions. They are calculated by establishing a trip rate, taking appropriate reductions (e.g., pass-by and diverted link trips, etc.), and applying the Policy Area Adjustment Factor.

Programmed conditions: Projects fully funded for construction in the County or State budget in the next 6 years and conditioned developer projects.

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 inadequacy.

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

Trip Generation Handbook: Recommended practice for application of the Trip Generation Manual published by the Institute of Transportation Engineers.

Trip Generation Manual: Repository of vehicle trip generation rates most recently published by the Institute of Transportation Engineers.

Motor vehicle trip: Trip by a single vehicle entering or leaving a study site.

Maximum net new motor vehicle trips: The greater of the net new AM and PM weekday peak-hour motor vehicle trips.

Appendix 1. Trip Adjustment Factors

Appendix Table 1-1: Policy Area Trip Generation Rate Adjustment Factors

Policy Area	Residential (%)	Office (%)	Retail (%)	Other (%)
1 Aspen Hill	81	86	87	83
2 Bethesda CBD	58	72	72	71
3 Bethesda/Chevy Chase	82	84	85	83
4 Burtonsville Town Center	80	89	89	84
5 Chevy Chase Lake	82	89	89	84
6 Clarksburg East	80	89	89	84
7 Clarksburg Town Center	80	89	89	84
8 Clarksburg West	80	89	89	84
9 Cloverly	80	89	89	84
10 Colesville	80	89	89	84
11 Damascus	80	89	89	84
12 Derwood	80	89	89	84
13 Fairland/Briggs Chaney	80	89	89	84
14 Forest Glen	64	72	74	73
15 Friendship Heights	53	61	63	58
16 Gaithersburg City	82	90	89	89
17 Germantown East	83	89	90	91
18 Germantown Town Center	88	92	94	94
19 Germantown West	88	92	93	88
20 Glenmont	76	86	88	86
21 Great Seneca Communities	88	94	93	93
22 Great Seneca Life Sciences Center	90	96	93	94
23 Grosvenor	75	81	80	88
24 Kensington/Wheaton	79	82	84	83

25 Lyttonsville	79	75	84	84
26 Medical Center	66	67	72	71
27 Montgomery Village/Airpark	87	89	94	92
28 North Bethesda	76	79	81	83
29 North Bethesda Metro Station	70	81	81	82
30 North Potomac	92	89	92	92
31 Olney	93	98	100	98
32 Olney Town Center	93	98	100	98
33 Potomac	89	92	94	93
34 Purple Line East	64	67	71	72
35 Rock Spring	66	81	83	81
36 Rockville City	77	86	84	88
37 Rockville Town Center	73	79	78	78
38 Rural East	95	94	96	97
39 Rural West	100	100	100	100
40 Shady Grove	68	84	82	85
41 Silver Spring CBD	52	54	54	53
42 Silver Spring/Takoma Park	67	70	71	70
43 Takoma	67	70	71	70
44 Twinbrook	62	82	83	85
45 Wheaton CBD	72	76	79	75
46 White Oak	72	75	76	77
47 White Oak Downtown	74	85	82	86
48 Woodside	64	68	68	59

Appendix 2. Trip Distribution and Traffic Assignment Guidelines

A. Introduction

This appendix provides trip distribution guidance for an LATR Study prepared for a development site in Montgomery County. Vehicle trip distribution and trip assignment are described in **Chapter 3.C2** of the LATR Guidelines.

B. Definitions

- **Trip distribution** determines the destinations of trips originating from a development site and, conversely, the origins of trips terminating at the site.
- **Traffic assignment** then pinpoints the specific local intersections used to access (both enter and exit) the development site.

B1. Discussion

The tables in this appendix provide generalized assumptions for trip distribution for both background development(s) and the development site. For the purposes of reviewing trip distribution, the Washington, DC metropolitan region is divided into 16 geographic areas, called **super districts**. Montgomery County has 11 of the 16 super districts, as shown in **Appendix Map 2-1**. The remaining 5 super districts are situated in neighboring jurisdictions.

Appendix Table 2-1 through Appendix Table 2-8 provide trip distribution assumptions for developments within each of the county's 11 super districts. For each super district, the tables list the assumed trip distributions for general office and residential development.[4]

For instance, **Appendix Table 2-9** shows that 10.9% of trips generated by an office development in Germantown would have origins or destinations within Frederick County. In contrast, only 1.8% of trips generated by a residential development in Germantown are projected to have origins or destinations in Frederick County.

[4] The trip distributions in these tables rely on the 2010 Travel/4 model, adapted from MWCOG's 2.3.52 model (validated by the 2007-2008 HTS). Residential trip distributions use origin-based data, while office distributions use destination-based data, both for morning peak-hour home-based work trips.

Trip distribution for other land uses will be decided based on consultation with Planning staff and the Applicant prior to submission of the transportation study.

The application of the trip distribution information in **Appendix Table 2-1 through Appendix** Table 2-8 is straightforward in cases where a transportation study has a limited number of alternate routes. In other cases, judgment is required to convert the trip distribution information into traffic assignment information useful for conducting the LATR Study.

B2. Trip Assignment

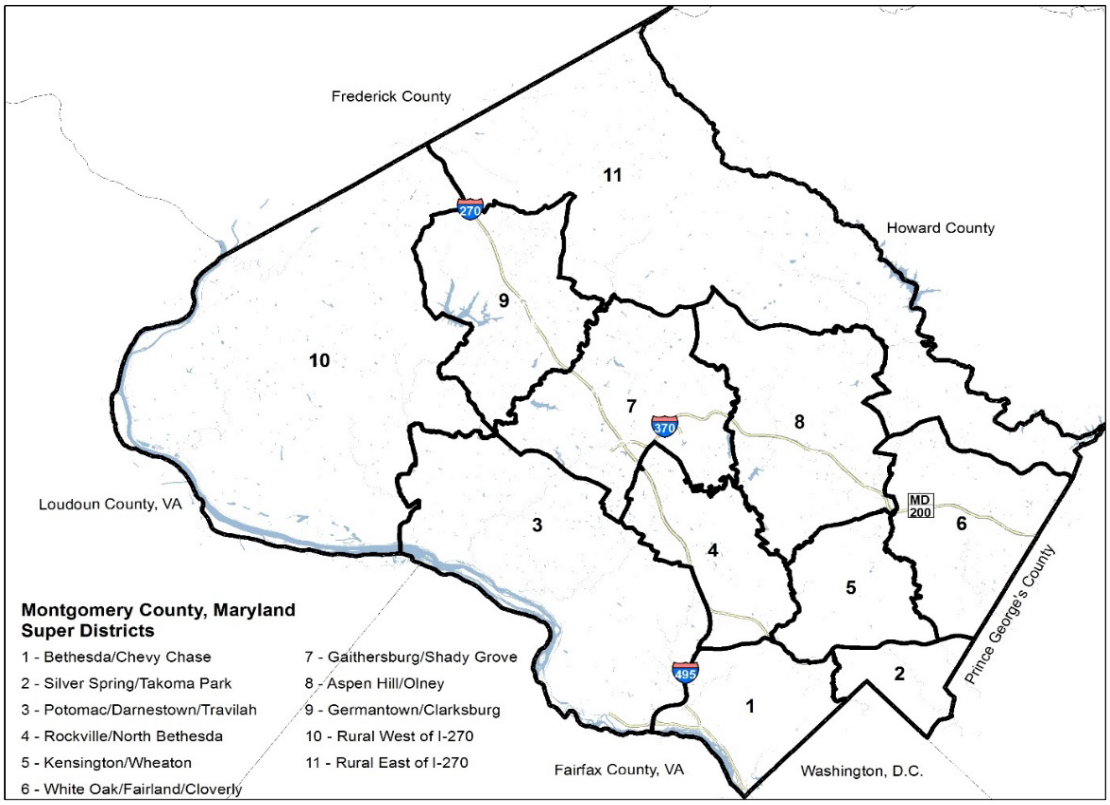
Instructions for Developing Trip Assignment Information

1. **Refer to Appendix Table 2-12 through Appendix** Table 2-15**.** These tables provide an example of how to convert trip distribution information into trip assignment information for a hypothetical case within Super District 4 (Rockville/North Bethesda) with both office and residential components.
2. **Focus on Appendix Table** 2-12 **and Appendix** Table 2-13 **for** the office component trip distribution and assignment.
3. **Use Column A ("Office Development")** in both tables. This column contains the office development trip distribution data for Super District 4, sourced from **Appendix Table** 2-4**.**
4. **In Appendix Table** 2-12**:**
    - **Determine "Trip Assignment for Origin by Super District" in Columns B–G.**
        - Outline the assumed routes or assignments for trips between the site and each super district.
    - **Develop this data using professional judgment and expertise.**
    - **Submit the developed data for review and validation by Planning staff.**
5. **In Table Appendix** Table 2-13**:**
    - **Calculate "Trip Assignment for Development Case" in Columns B-G.**
    - Multiply the value in Column A ("Office Development Trip Distribution by Super District") by the corresponding cell value in Table 2-12 ("Trip Assignment for Origin by Super District").
    - **Sum the assignment data in the last row of the table.** This will generate an aggregate trip assignment for the trips generated by the office components.

6. **Appendix Table** 2-14 **and Appendix** Table 2-15**:**

- **Develop trip assignment for the residential components by using Column B ("Residential Development")** in both tables, with the residential development trip distribution data for Super District 4, sourced from **Appendix Table** 2-4.

Appendix Map 2-1. Super Districts in Montgomery County



Appendix Table 2-1. Super District 1: Bethesda/Chevy Chase
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	24.0	31.4
2	Silver Spring/Takoma Park	4.1	4.5
3	Potomac/Darnestown/Travilah	5.4	3.1
4	Rockville/North Bethesda	6.2	9.8
5	Kensington/Wheaton	5.2	2.9
6	White Oak/Fairland/Cloverly	2.4	1.1
7	Gaithersburg/Shady Grove	3.4	2.8
8	Aspen Hill/Olney	3.2	0.7
9	Germantown/Clarksburg	2.1	0.5
10	Rural West of I-270	0.2	0.0
11	Rural East of I-270	0.8	0.1
12	DC	6.6	29.6
13	PG /AA/Cal/St.M/Chls, MD	15.2	5.5
14	VA / WV	13.5	7.6
15	Frederick, MD	2.8	0.1
16	Howard/Carroll, MD	4.9	0.3

Appendix Table 2-2. Super District 2: Silver Spring/Takoma Park
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	6.8	8.9
2	Silver Spring/Takoma Park	21.9	22.7
3	Potomac/Darnestown/Travilah	2.8	1.7
4	Rockville/North Bethesda	3.9	6.5
5	Kensington/Wheaton	8.7	6.9
6	White Oak/Fairland/Cloverly	5.5	5.0
7	Gaithersburg/Shady Grove	2.2	2.2
8	Aspen Hill/Olney	3.7	1.6
9	Germantown/Clarksburg	1.3	0.3
10	Rural West of I-270	0.1	0.0
11	Rural East of I-270	0.8	0.3
12	DC	6.4	23.8
13	PG /AA/Cal/St.M/Chls, MD	22.1	13.0
14	VA / WV	7.5	6.2
15	Frederick, MD	1.6	0.1
16	Howard/Carroll, MD	4.7	0.8

Appendix Table 2-3. Super District 3: Potomac/Darnestown/Travilah
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	5.9	7.7
2	Silver Spring/Takoma Park	2.0	2.0
3	Potomac/Darnestown/Travilah	32.8	18.0
4	Rockville/North Bethesda	11.6	19.5
5	Kensington/Wheaton	3.3	1.7
6	White Oak/Fairland/Cloverly	1.6	0.9
7	Gaithersburg/Shady Grove	10.9	15.0
8	Aspen Hill/Olney	2.8	0.9
9	Germantown/Clarksburg	5.6	2.6
10	Rural West of I-270	0.6	0.1
11	Rural East of I-270	0.9	0.2
12	DC	3.8	18.4
13	PG /AA/Cal/St.M/Chls, MD	6.2	4.2
14	VA / WV	5.6	7.9
15	Frederick, MD	3.8	0.5
16	Howard/Carroll, MD	2.6	0.4

Appendix Table 2-4. Super District 4: Rockville/North Bethesda
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	4.6	7.4
2	Silver Spring/Takoma Park	1.9	2.3
3	Potomac/Darnestown/Travilah	8.7	5.4
4	Rockville/North Bethesda	20.5	38.2
5	Kensington/Wheaton	5.4	4.1
6	White Oak/Fairland/Cloverly	2.7	1.6
7	Gaithersburg/Shady Grove	10.8	13.4
8	Aspen Hill/Olney	6.9	2.8
9	Germantown/Clarksburg	4.8	1.7
10	Rural West of I-270	0.4	0.1
11	Rural East of I-270	1.5	0.3
12	DC	2.3	11.0
13	PG /AA/Cal/St.M/Chls, MD	10.2	4.4
14	VA / WV	9.3	6.5
15	Frederick, MD	4.3	0.3
16	Howard/Carroll, MD	5.7	0.5

Appendix Table 2-5. Super District 5: Kensington/Wheaton
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	5.1	8.6
2	Silver Spring/Takoma Park	7.2	6.9
3	Potomac/Darnestown/Travilah	2.7	2.2
4	Rockville/North Bethesda	7.6	13.9
5	Kensington/Wheaton	28.3	20.7
6	White Oak/Fairland/Cloverly	7.8	5.8
7	Gaithersburg/Shady Grove	2.9	3.9
8	Aspen Hill/Olney	9.7	5.3
9	Germantown/Clarksburg	1.3	0.5
10	Rural West of I-270	0.1	0.0
11	Rural East of I-270	1.0	0.5
12	DC	3.9	16.6
13	PG /AA/Cal/St.M/Chls, MD	13.3	8.6
14	VA / WV	3.9	5.5
15	Frederick, MD	1.4	0.1
16	Howard/Carroll, MD	3.8	0.9

Appendix Table 2-6. Super District 6: White Oak/Fairland/Cloverly
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	1.6	3.6
2	Silver Spring/Takoma Park	4.1	4.0
3	Potomac/Darnestown/Travilah	1.1	1.0
4	Rockville/North Bethesda	2.4	6.6
5	Kensington/Wheaton	6.2	5.3
6	White Oak/Fairland/Cloverly	37.2	30.8
7	Gaithersburg/Shady Grove	1.7	2.9
8	Aspen Hill/Olney	5.4	3.7
9	Germantown/Clarksburg	0.8	0.4
10	Rural West of I-270	0.1	0.0
11	Rural East of I-270	1.8	1.8
12	DC	2.8	15.6
13	PG /AA/Cal/St.M/Chls, MD	22.9	16.4
14	VA / WV	3.2	4.7
15	Frederick, MD	1.4	0.1
16	Howard/Carroll, MD	7.3	3.1

Appendix Table 2-7. Super District 7: Gaithersburg/Shady Grove
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	1.5	3.2
2	Silver Spring/Takoma Park	0.7	1.0
3	Potomac/Darnestown/Travilah	7.4	4.0
4	Rockville/North Bethesda	8.0	15.7
5	Kensington/Wheaton	1.7	1.2
6	White Oak/Fairland/Cloverly	1.4	0.9
7	Gaithersburg/Shady Grove	35.2	45.4
8	Aspen Hill/Olney	4.8	2.1
9	Germantown/Clarksburg	11.7	6.5
10	Rural West of I-270	0.7	0.2
11	Rural East of I-270	3.2	1.1
12	DC	1.2	8.7
13	PG /AA/Cal/St.M/Chls, MD	5.3	3.0
14	VA / WV	5.3	5.6
15	Frederick, MD	6.4	0.7
16	Howard/Carroll, MD	5.5	0.7

Appendix Table 2-8. Super District 8: Aspen Hill/Olney
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	1.4	4.5
2	Silver Spring/Takoma Park	1.9	2.5
3	Potomac/Darnestown/Travilah	1.6	1.6
4	Rockville/North Bethesda	5.9	14.9
5	Kensington/Wheaton	8.0	6.0
6	White Oak/Fairland/Cloverly	6.0	4.2
7	Gaithersburg/Shady Grove	5.5	9.4
8	Aspen Hill/Olney	47.4	26.2
9	Germantown/Clarksburg	1.7	1.2
10	Rural West of I-270	0.1	0.0
11	Rural East of I-270	3.1	1.7
12	DC	1.6	13.9
13	PG /AA/Cal/St.M/Chls, MD	7.3	6.9
14	VA / WV	1.6	5.0
15	Frederick, MD	2.0	0.3
16	Howard/Carroll, MD	4.9	1.7

Appendix Table 2-9. Super District 9: Germantown/Clarksburg
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	0.7	2.9
2	Silver Spring/Takoma Park	0.3	0.9
3	Potomac/Darnestown/Travilah	3.6	3.1
4	Rockville/North Bethesda	2.8	10.5
5	Kensington/Wheaton	0.7	0.8
6	White Oak/Fairland/Cloverly	0.5	0.6
7	Gaithersburg/Shady Grove	13.7	22.7
8	Aspen Hill/Olney	1.6	1.0
9	Germantown/Clarksburg	50.2	35.0
10	Rural West of I-270	1.2	0.6
11	Rural East of I-270	4.2	1.6
12	DC	0.5	9.2
13	PG /AA/Cal/St.M/Chls, MD	2.3	2.7
14	VA / WV	2.7	5.9
15	Frederick, MD	10.3	1.8
16	Howard/Carroll, MD	4.7	0.7

Appendix Table 2-10. Super District 10: Rural West of I-270
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	0.4	3.7
2	Silver Spring/Takoma Park	0.2	1.0
3	Potomac/Darnestown/Travilah	2.5	3.6
4	Rockville/North Bethesda	1.4	9.8
5	Kensington/Wheaton	0.3	0.8
6	White Oak/Fairland/Cloverly	0.2	0.6
7	Gaithersburg/Shady Grove	5.5	14.0
8	Aspen Hill/Olney	0.7	0.7
9	Germantown/Clarksburg	11.0	9.2
10	Rural West of I-270	45.5	24.2
11	Rural East of I-270	2.0	0.8
12	DC	0.2	15.0
13	PG /AA/Cal/St.M/Chls, MD	1.1	3.0
14	VA / WV	2.5	8.3
15	Frederick, MD	21.2	4.6
16	Howard/Carroll, MD	5.3	0.7

Appendix Table 2-11. Super District 11: Rural East of I-270
Auto-Driver AM Trip Distribution

Trip Distribution to Super District		Office Development (%)	Residential Development (%)
1	Bethesda/Chevy Chase	0.5	3.1
2	Silver Spring/Takoma Park	0.8	1.4
3	Potomac/Darnestown/Travilah	0.8	1.3
4	Rockville/North Bethesda	1.8	8.7
5	Kensington/Wheaton	1.7	1.6
6	White Oak/Fairland/Cloverly	7.0	3.4
7	Gaithersburg/Shady Grove	6.9	16.1
8	Aspen Hill/Olney	7.2	4.5
9	Germantown/Clarksburg	7.1	7.9
10	Rural West of I-270	0.3	0.3
11	Rural East of I-270	33.6	19.9
12	DC	0.8	13.4
13	PG /AA/Cal/St.M/Chls, MD	8.2	6.5
14	VA / WV	1.5	6.1
15	Frederick, MD	10.7	2.5
16	Howard/Carroll, MD	11.1	3.3

Appendix Table 2-12. Example Office Component (Part 1a) Origin by Super District

Trip Distribution by Super District		Office Development (%)	Trip assignment for origin by super district (%)					
			Montrose Road/Parkway west	MD 355 north	Randolph Road east	MD 355 south	MD 187 south	TOTAL
		A	B	C	D	E	F	G
1	Bethesda/Chevy Chase	4.6				50	50	100
2	Silver Spring/Takoma Park	1.9				100		100
3	Potomac/Darnestown/Travilah	8.7	80				20	100
4	Rockville/North Bethesda	20.5	25	75				100
5	Kensington/Wheaton	5.4			80	20		100
6	White Oak/Fairland/Cloverly	2.7			80	20		100
7	Gaithersburg/Shady Grove	10.8	75	25				100
8	Aspen Hill/Olney	6.9	20	50	30			100
9	Germantown/Clarksburg	4.8	90	10				100
10	Rural West of I-270	0.4	100					100
11	Rural East of I-270	1.5	40	40	20			100
12	Washington, DC	2.3	70				30	100
13	PG /AA/Cal/St.M/Chls Cos., MD	10.2				100		100
14	VA / WV	9.3	80		10		10	100
15	Frederick Co., MD	4.3	100					100
16	Howard Co./Carroll Co., MD	5.7		10	10	80		100
	TOTAL	100						

Appendix Table 2-13 Example Office Component (Part 1b) For Development Case

	Trip Distribution by Super District	Office Development (%)	Trip assignment for development case (%)					
			Montrose Road/Parkway west	MD 355 north	Randolph Road east	MD 355 south	MD 187 south	TOTAL
		A	B	C	D	E	F	G
1	Bethesda/Chevy Chase	4.6				2.3	2.3	4.6
2	Silver Spring/Takoma Park	1.9				1.9		1.9
3	Potomac/Darnestown/Travilah	8.7	7.0				1.7	8.7
4	Rockville/North Bethesda	20.5	5.1	15.4				20.5
5	Kensington/Wheaton	5.4			4.3	1.1		5.4
6	White Oak/Fairland/Cloverly	2.7			2.2	0.5		2.7
7	Gaithersburg/Shady Grove	10.8	8.1	2.7				10.8
8	Aspen Hill/Olney	6.9	1.4	3.5	2.1			6.9
9	Germantown/Clarksburg	4.8	4.3	0.5				4.8
10	Rural West of I-270	0.4	0.4					0.4
11	Rural East of I-270	1.5	0.6	0.6	0.3			1.5
12	Washington, DC	2.3	1.6				0.7	2.3
13	PG /AA/Cal/St.M/Chls Cos., MD	10.2				10.2		10.2
14	VA / WV	9.3	7.4		0.9		0.9	9.3
15	Frederick Co., MD	4.3	4.3					4.3
16	Howard Co./Carroll Co., MD	5.7		0.6	0.6	4.6		5.7
	TOTAL	100	40.2	23.2	10.4	20.6	5.7	100
	USE -->		40.0	23.0	10.0	21.0	6.0	100

Appendix Table 2-14. Example Residential Component (Part 2a) Origin by Super District

Trip Distribution by Super District		Residential Development (%)	Trip assignment for origin by super district (%)					
			Montrose Road/Parkway west	MD 355 north	Randolph Road east	MD 355 south	MD 187 south	TOTAL
		A	B	C	D	E	F	G
1	Bethesda/Chevy Chase	7.4				50	50	100
2	Silver Spring/Takoma Park	2.3				100		100
3	Potomac/Darnestown/Travilah	5.4	80				20	100
4	Rockville/North Bethesda	38.2	25	75				100
5	Kensington/Wheaton	4.1			80	20		100
6	White Oak/Fairland/Cloverly	1.6			80	20		100
7	Gaithersburg/Shady Grove	13.4	75	25				100
8	Aspen Hill/Olney	2.8	20	50	30			100
9	Germantown/Clarksburg	1.7	90	10				100
10	Rural West of I-270	0.1	100					100
11	Rural East of I-270	0.3	40	40	20			100
12	Washington, DC	11	70				30	100
13	PG /AA/Cal/St.M/Chls Cos., MD	4.4				100		100
14	VA / WV	6.5	80		10		10	100
15	Frederick Co., MD	0.3	100					100
16	Howard Co./Carroll Co., MD	0.5		10	10	80		100
	TOTAL	100						

Appendix Table 2-15 Example Residential Component (Part 2b) For Development Case

Trip Distribution by Super District		Residential Development (%)	Trip assignment for development case (%)					
			Montrose Road/Parkway west	MD 355 north	Randolph Road east	MD 355 south	MD 187 south	TOTAL
		A	B	C	D	E	F	G
1	Bethesda/Chevy Chase	7.4				3.7	3.7	7.4
2	Silver Spring/Takoma Park	2.3				2.3		2.3
3	Potomac/Darnestown/Travilah	5.4	4.3				1.1	5.4
4	Rockville/North Bethesda	38.2	9.6	28.7				38.2
5	Kensington/Wheaton	4.1			3.3	0.8		4.1
6	White Oak/Fairland/Cloverly	1.6			1.3	0.3		1.6
7	Gaithersburg/Shady Grove	13.4	10.1	3.4				13.4
8	Aspen Hill/Olney	2.8	0.6	1.4	0.8			2.8
9	Germantown/Clarksburg	1.7	1.5	0.2				1.7
10	Rural West of I-270	0.1	0.1					0.1
11	Rural East of I-270	0.3	0.1	0.1	0.1			0.3
12	Washington, DC	11	7.7				3.3	11
13	PG /AA/Cal/St.M/Chls Cos., MD	4.4				4.4		4.4
14	VA / WV	6.5	5.2		0.7		0.7	6.5
15	Frederick Co., MD	0.3	0.3					0.3
16	Howard Co./Carroll Co., MD	0.5		0.1	0.1	0.4		0.5
	TOTAL	100	39.4	33.7	6.2	11.9	8.7	100
	USE -->		39	34	6	12	9	100

Appendix 3. Delay-Based Analysis

This appendix details the methodology for assessing traffic flow at intersections based on delay-related performance metrics. It also clarifies whether the analysis should concentrate on individual intersections or necessitate a broader evaluation of interconnected networks of closely spaced intersections.

The LATR Guidelines retain the application of the critical lane volume (CLV) approach as a screening tool to determine the need for the application of more robust state-of-the-practice traffic analysis tools (such as HCM methodologies) to provide measures that are more readily correlated with traveler experience.

The LATR Study must analyze average delay at the intersection using either CLV or HCM methodologies. The motor vehicle analysis, by prioritizing average delay, incentivizes traffic management and operational strategies. This shifts the focus towards optimizing the existing road network's efficiency through measures like optimized signal timing, improved signage and markings, and smoother vehicle flow, rather than solely expanding road capacity.

A. Isolated Intersection and Network Analysis

When analyzing an individual intersection, the acceptable delay threshold applies to the overall performance of the intersection, not to specific lanes or turning movements. Similarly, when analyzing a network of intersections, the acceptable delay threshold applies to the network as a whole, rather than to each individual intersection within it.

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)/1,100=5.4 seconds per vehicle.

A1. Isolated Intersection Delay

Vehicular delay can be considered for isolated intersections 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 shown in **Appendix Table 3-1.** Adequacy is achieved when the average intersection vehicle delay in the total future with mitigation condition does not exceed either the applicable congestion standard shown in **Table 4** or average intersection delay in the background condition, whichever is higher.

Appendix Table 3-1. Equivalency Between CLV, LOS and Average Vehicle Delay

HCM LOS Threshold / Boundary	Corresponding Average Vehicle Delay per HCM (seconds)	Corresponding CLV Value
A / B	10	1,000
B / C	20	1,150
C / D	35	1,300
D / E	55	1,450
E / F	80	1,600
n/a	120	1,800

A2. Network Delay

For study intersections where the average intersection vehicle delay is greater than 80 seconds in existing, background, or total future conditions, and the intersection is either:

- On a congested roadway with a travel time index greater than 2.0 as documented by monitoring reports[5] or
- 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 in Appendix 6 and the Virginia Department of Transportation (VDOT) Traffic Analysis Tools Guidebook.

If a proposed development is projected to increase the CLV through an intersection by fewer than 5 total CLV for the entire intersection, the intersection does not need to be analyzed in the LATR study, even if it would otherwise be identified as appropriate to study. However, CLV analyses must be submitted in addition to any necessary HCM delay analyses to demonstrate that these conditions are met.

B. Critical Lane Volume Intersection Analysis Method

An intersection's capacity to handle traffic flow can be determined using Critical Lane Volume (CLV). CLV measures the level of congestion at locations where vehicles may conflict, typically at intersections. Current CLV standards, where applicable, align with county policy, which

[5] Relevant monitoring reports include the latest edition of the MWCOG Congestion Management Report, MDSHA State Highway Mobility Report and the Montgomery County Travel Monitoring Report (formerly called the Mobility Assessment Report). Applicants should consult with Planning staff regarding the appropriate reference to use.

permits higher levels of traffic congestion in areas with greater access to and use of public transportation.

For an LATR Study, the existing traffic conditions, as well as traffic generated by background development and the proposed development itself, must be evaluated against the intersection's capacity using the CLV method. This analysis should be conducted for both the morning and evening peak hours on weekdays, excluding holidays and other atypical traffic conditions.

The CLV method is widely accepted by various Maryland public agencies, including SHA, MCDOT, and the cities of Rockville, Gaithersburg, and Takoma Park, as well as the Montgomery Planning. This methodology is adaptable to most intersection configurations and can be easily adjusted for unique situations and unusual conditions. While certain assumptions, such as lane usage factors (detailed in Step 3 below), may differ slightly between jurisdictions and agencies, the core CLV methodology remains consistent.

The CLV method can be applied to both signalized and unsignalized intersections. For unsignalized intersections, a two-phase traffic operation should be assumed. Traffic volumes approaching the intersection should be determined for each scenario (existing conditions, existing conditions plus background development, and existing conditions plus background development plus the proposed development).

B1. Determining Intersection Delay Levels

Applicants should follow these steps to determine the level of delay at an intersection with a simple two-phase signal operation.

- **Step 1:** Determine the signal phasing, number of lanes and 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 the turning vehicles in a typical signal cycle without overflowing into the adjacent through lanes. Otherwise, none or only a 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 **Appendix Table 3-2.** (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 staff and MCDOT

regarding any overlap signal phasing.)

- **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:** Add 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 Appendix Table 3-3**).

Appendix Table 3-2 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.

An example of a CLV calculation for a hypothetical intersection is provided in **Appendix Table 3-3** and depicted in **Appendix Figure 3-1**.

Appendix Table 3-3. Critical Lane Volume Calculations

Direction from the:	Lane Approach Volume		Critical Lane Use Factor		Approach Volume		Opposing Lefts		Lane Volume Per Approach
North	775[a]	x	0.53	=	411	+	200	=	611
South	800[b]	x	0.53	=	424	+	175	=	599
	500	x	1.00	=	500	+	175	=	675[e]
East	700[c]	x	0.53	=	371	+	100	=	471
West	750[d]	x	0.53	=	398	+	150	=	548[e]

[a] Approach volumes are the sum of through, right, and left turn movements in two lanes.

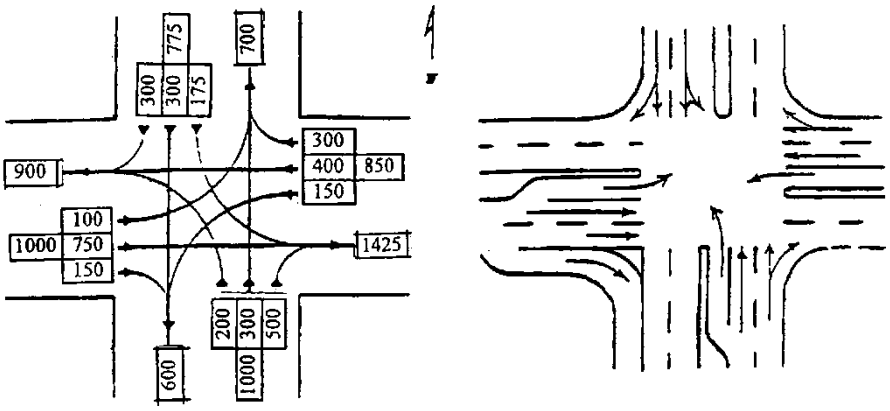
[b] For a heavy right turn, evaluate worst of rights in one lane or through and rights in two lanes

[c] Approach volumes are the sum of through and right turn movements in two lanes.

[d] Approach volumes are through only because of free right and separate left.

[e] Intersection critical lane volume = higher sum = 675 + 548 = 1,223.

Appendix Figure 3-1. 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 critical lane volume (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 Manual on Unified Traffic Control Devices (MUTCD) criteria are not met, applicants must inform MCDOT, request that they revise the signal timing, and include this revision in the pedestrian statement.
- Crossing distances are to be measured from the curb to the curbside edge of the far motor vehicle or bicycle travel lane (not curb to curb).
- “Desired times” are to be determined by dividing the crossing distance by 3.5 feet per second and then subtracting the total clearance time for that associated phase, as per the Manual on Uniform Traffic Control Devices.

Appendix 4. Interagency Traffic Study Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING BETWEEN

THE CITY OF GAITHERSBURG

AND

THE CITY OF ROCKVILLE

AND

THE MONTGOMERY COUNTY PLANNING BOARD OF THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

FOR

THE COORDINATION OF TRAFFIC IMPACT STUDIES FOR PROPOSED DEVELOPMENT PROJECTS

This Memorandum of Understanding (MOU) is entered into by and between Montgomery County Planning Department of The Maryland-National Capital Park and Planning Commission, the City of Gaithersburg, and the City of Rockville (collectively, the Parties)

WHEREAS, the purpose of this MOU is for the Parties to work cooperatively to better manage traffic conditions given the inter-jurisdictional impact of traffic generated by development in close proximity to nearby jurisdictions through the exchange of information regarding traffic reports (traffic impact study or applicable traffic statement) of proposed development and through the coordination and review of such reports; and

WHEREAS, the parties acknowledge that each has a different set of standards for traffic reports within their jurisdiction.

NOW, THEREFORE, the Parties agree to the following:

1. The methodology for determining the scope of traffic reports for proposed development projects, and also for analyzing the intersections included in such reports, will be determined in accordance with the standards set by the approving jurisdiction.

2. If a proposed development project has a signalized intersection within the scope's study area and located in a neighboring jurisdiction (one of the other parties to this MOU), that such intersection will be analyzed as part of the required traffic reports in accordance with the standards set by the approving jurisdiction.

3. Each Party will notify their neighboring jurisdiction when a project is submitted for review that includes a signalized intersection within the scope's study area and located in that neighboring jurisdiction. This includes notification of pre-Development Review Committee/Development Review Team (DRC/DRT) meetings and regular DRC/DRT meetings for such project.

4. When a signalized intersection falls within a neighboring jurisdiction, the approving jurisdiction will provide the neighboring jurisdiction with a copy of the applicable traffic report scope between the applicant and the approving jurisdiction. The approving jurisdiction will also provide the accepted traffic report to the neighboring jurisdiction. The neighboring jurisdiction will then be allowed up to thirty (30) days to review and submit comments back to the approving jurisdiction regarding the proposed development's traffic report.

IN WITNESS WHEREOF, the undersigned being duly authorized by the respective agencies, has signed this MOU.

City of Gaithersburg, Maryland:

John Schlichting, Director, Planning and Code Administration

Date: 10/10/12

City of Rockville, Maryland:

Susan Swift, Director, Community Planning & Development Services

Date: 10-2-12

Montgomery County Planning Department:

Rose Krasnow, Acting Director

Date: 9-27-12

Appendix 5. White Oak Local Area Transportation Improvement Program Mitigation Payments

A. Introduction

This appendix provides information pertaining to the mitigation fee payment schedule requirements for the White Oak Local Area Transportation Improvement Program (LATIP). These fees are paid by applicants to the Department of Permitting Services (DPS) at the same time and in the same manner as the transportation impact tax for new development in the White Oak policy area.

Discussion

The 2024-2028 Growth and Infrastructure Policy states that the Planning Board may only approve a subdivision in the White Oak LATIP Policy Area conditioned on the applicant paying a fee to the county commensurate with the applicant's proportion of the cost of the White Oak LATIP improvements. The proportion is based on a subdivision's share of net additional peak-hour vehicle trips generated by all master-planned development in the White Oak Policy Area approved after January 1, 2016.

The County Council established the White Oak pro rata share process under Resolution 18-107. County Council Resolution 18-726, adopted on February 14, 2017, set the LATIP fee at $5,010 per p.m. peak hour vehicle trip. This fee was calculated by dividing the plan area's total infrastructure costs by the number of new peak-hour vehicle trips:

LATIP fee = Total Infrastructure Costs in the Plan Area/Total Number of New PM Peak Hour Vehicle Trips

The *Total Infrastructure Costs in the Plan Area* were determined by a forecast estimate of the local area transportation needs and associated costs approved by the County Council. The *Total Number of New PM Peak Hour Vehicle Trips* was determined by a forecast estimate of the travel demand associated with the full build-out of the White Oak Science Gateway (WOSG) Master Plan.

The fee must be paid at a time and manner consistent with Local Area Transportation Mitigation Payments as prescribed in Section 52-51 of the County Code. The Department of Finance must retain funds collected from this fee in an account to be appropriated for transportation improvements that result in transportation capacity and mobility for the specific projects in the White Oak Local Area Transportation Improvement Program.

The trip generation rates used in support of the White Oak LATIP calculation are provided in the chart below. They are based on the peak hour trip rates used in support of the WOSG

Master Plan local area traffic analysis and customized to reflect existing conditions and future changes in both land use and travel behavior. These trip rates have been disaggregated relative to those applied in the master plan to match the impact tax land use categories. Development resulting in increments of less than a trip will have the fee applied proportionally (no rounding). The resultant fees are paid at the same time and in the same manner as the transportation impact tax and apply to new applications for residential and commercial development in the White Oak LATIP policy area.

The process by which applicants may receive a transportation impact tax credit for improvements is described in Montgomery County Code, Section 52-47.

Appendix Table 5-1. White Oak LATIP Trip Generation Rates

Land Use	Trips per Unit of Development	Units
Office	1.20	1,000 SF
Retail	3.00	1,000 SF
Industrial	1.00	1,000 SF
Bioscience	0.99	1,000 SF
Hospital	1.07	1,000 SF
Other Non-residential	0.92	1,000 SF
Single Family Detached	1.28	Dwelling Unit
Single Family Attached	0.65	Dwelling Unit
Multi Family Low Rise	0.52	Dwelling Unit
Multi Family High Rise	0.34	Dwelling Unit

Appendix 6. SimTraffic/Synchro Parameters

Category	Description
Lane Settings	
Approach Orientation	All approaches should be oriented N, S, E, or W. Exceptions include intersections with more than 2 intersecting streets (e.g. 5-legs). For SHA roadways, the SHA orientation should be used as default.
Lanes and Sharing	Per signs and pavement markings and/or observations (e.g. through lanes with on-street parking may function as right turn bays)
Street Name	Road name and Route Number where applicable - MD State Route number should be entered in with the "#" sign, such as "Wisconsin Avenue #355"
Link Speed	Use posted speed
Area Type	Use CBD for Downtown/TDM Areas
Storage Length	Use Field measurements. Include taper under simulation settings
Right Turn Channelized	Use FREE, YIELD, or SIGNAL with right-turn overlap as appropriate
Add Lanes (#)	Field Verification
Lane Utilization Factor	Use default values
Right Turn on Red?	Field verification
Right Turns on Red (RTOR)	Use default values
Intersection Lane Widths	Use Field measurements
Volume Settings	
Traffic Volume	Based on turning movement counts. Provide guidance on appropriate times for using intersection versus system peak counts for analysis. System peak is necessary for corridor analysis.

Category	Description
Peak Hour Factor (PHF)	Site-specific by INTERSECTION (not approach or lane group) based on peak hour count data. Use PHF from Existing Conditions through all scenarios with a 0.85 minimum and 0.92 for new intersections. Exception to this are land uses with short interval peak conditions, such as schools and churches, which causes a significant imbalance in movements into and out of the site as these locations typically have more variability over the hour. If the LATR/TIS is expanding an existing land use (school or church), use the rates from the existing driveway counts. For a new development, rates from other similar land use can be used or the County and SHA can provide recommendation during scoping.
Heavy Vehicles	Use existing count data. If data is not available, assume 2% default.
Number of Conflicting Pedestrians per Hour	Conflicting Pedestrians per Hour are to be entered as the number of pedestrians crossing the leg that the left or right turn movements are turning on to.
Number of Conflicting Bicycles per Hour	Conflicting Bicyclists per Hour is to be entered as the number of through bicyclists that a right-turn movement must turn across. Where a bike lane is left of the right turn movement, this number is zero.
Node Settings	
Node #	Numbering should be consistent between models and supporting materials
Offset Value (s)	Per timesheet from field controller/ dial sheet
Reference to:	MCDOT files are set to "begin of green"
Timing Settings	
Turn Type	Per timesheet from field controller/ dial sheet
Phase Numbering	Per timesheet from field controller/ dial sheet
Minimum Initial	Per timesheet from field controller/ dial sheet
Yellow Time	Per timesheet from field controller/ dial sheet
All-Red Time	Per timesheet from field controller/ dial sheet
Lagging Phase?	Per timesheet from field controller/ dial sheet
Recall Mode	Per timesheet from field controller/ dial sheet
Phasing Settings	
Maximum Splits	Per timesheet from field controller/ dial sheet
Vehicle Extension (s)	Per timesheet from field controller/ dial sheet

Category	Description
Minimum Gap (s)	Per timesheet from field controller/ dial sheet
Pedestrian Phase	Per timesheet from field controller/ dial sheet
Walk Time (s)	Per timesheet from field controller/ dial sheet
Flash Don't Walk (s)	Per timesheet from field controller/ dial sheet
Dual Entry?	Per timesheet from field controller/ dial sheet
Fixed Force Off?	Per timesheet from field controller/ dial sheet; but MCDOT uses fixed force off
Simulation Settings	
Taper Length	Use Field measurements
Lane Alignment	Based on pavement markings or field observations
Enter Blocked Intersections	Use field observations and SimTraffic simulations. Assume "No" for most intersections and "1 or 2 veh" for unsignalized nodes or models with large signalized nodes
Median Width	Field verification
Link Offset (ft)	Field Verification
TWTL Median	Field Verification
Turning Speed	Use default values
Positioning Distances	Adjust as needed based on field observations
Detector Settings	
	Detector settings shall be in accordance with prevailing SHA practice at intersections within SHA's ROW. The size of loops used for advance detection shall be 6' x 6'. The size of loops use for presence/stop bar detection shall be 6' x 30'.
Simtraffic Settings	
Seeding Interval Duration	Generally, 15 minutes. Use 30-60 for larger and/or severely congested networks
Recording Interval Duration	60 minutes (4 recordings of 15 minutes each)
Record Statistics	No- Seeding, Yes- Recordings
Growth Factor Adjust	No
PHF Adjust	No to Seeding, Recordings 1,3,4. Yes to Recording 2. (S: N | R: N, Y, N, N)

Category	Description
Anti PHF Adjust	No to Seeding and Recordings 1,2,4. Yes to Recording 3 (S: N | R: N, N, Y, N)
Percentile Adjust	No
Number of Runs	Default of 5 runs, additional runs to be discussed at scoping
Random Number Seed	1
Reports	
Synchro	
Intersection Delay Report	Report overall intersection delay only using the latest HCM methodology where applicable and HCM 2000 where NEMA phasing limits use of newer methodology.
Corridor Delay Report	Use Measures of Effectiveness report for Control and Queue delay/vehicles by arterial. Include results by direction and for corridor ("All"). For each direction and for corridor, Total corridor delays = Control Delay + Queue Delay. Use "Denied Delay" for congested networks
Synchro Queue Reports	Include average and 95th percentile queues for each movement. Where queueing results units are in veh, assume 25 ft per vehicle.
Simtraffic	
Queuing Reporting	Default of 5-run report (additional run report to be discussed at scoping), document the maximum 50th and 95th queue for each lane group and, where applicable, add the corresponding maximum upstream queue (B## columns) to the dominant movement.
	95th percentile queues based on SimTraffic analysis results shall be reported for each movement. The available existing storage determined from field measurement and verification shall be reported for each movement. We recommend adding acceptable queuing guidance for congested corridors. Mitigation is often requested for corridors where congestion is expected and vehicles are traveling slow because of congestion.
Additional Parameters	
	Scoping process should identify if Synchro and/or SimTraffic should be used for LOS/delay and queuing outputs. Use of SimTraffic for both is preferred for highly congested corridors/networks.

Category	Description
	Model location should be established using map feature. This will help if M-NCPPC wants to later combine models.
	Map Settings should be adjusted for readability – Street Names, Node Numbers and Arrow Diagrams changed to Size "25"
	SimTraffic models should be calibrated to existing traffic conditions for travel times and queues
	Insert nodes with hidden side streets for drop or add lanes that cannot be otherwise coded
Vehicles in Median Storage (#)	0,1, or 2. Should be based on field observations

Appendix 7. Streetlighting and Illuminance Instructions

Resources

MCDOT Streetlight Design Requirements: Policy and design guidance on the planning, evaluation, design, and construction of streetlighting. • MCDOT Streetlight Map: Partial database of existing streetlights.

Concepts

- Illuminance
  The measure of the density of light on a surface divided by the area of the surface, which provides an average illuminance over that area. Illuminance is expressed in lux (lx) where 1 lx = 1 lumen per square meter, or footcandles (fc) where 1 fc = 1 lumen per square foot.
- Light Level Criteria
  MCDOT's Streetlight Design Requirements contains target minimum light level criteria by street type for Active Zones and Street Zones (Intersections and Segments).
    - Maintained Average Horizontal Illuminance
      The average amount of light falling on a horizontal plane within a defined area (Active Zone, Intersection, Segment) measured in footcandles. Values greater than or equal to the target value or range are adequate.
    - Maintained Average Surface Illuminance
      The average amount of light falling on a roadway surface within a defined area (Active Zone, Segment) measured in candela per square meter. Values greater than or equal to the target value or range are adequate.
    - Maintained Average Vertical Illuminance
      The average amount of light falling on a vertical plane within a defined area (Active Zone, Intersection, Segment) measured in footcandles. Values greater than or equal to the target value or range are adequate.
    - Minimum Horizontal Illuminance
      The lowest acceptable amount of light falling on a horizontal plane at a specific point measured within a defined area (Active Zone, Intersection, Segment). Values greater than or equal to the target value are adequate.
    - Uniformity Ratio
      The ratio of average horizontal illuminance to minimum horizontal illuminance within a given calculation area (Active Zone, Intersection, Segment). Values less than or equal to the target value are adequate. o Veiling Luminance The ratio of the maximum luminance divided by the average

luminance for a Segment. Values less than or equal to the target value are adequate.

- Zones
    - Active Zone
      The portion of the right-of-way that contains the Maintenance Buffer, Frontage Zone, Clear Zone (including sidewalks, sidepaths, and separated bike lanes, but excluding buffered bike lanes, conventional bike lanes, and advisory bike lanes), and several types of buffers (Pedestrian-Bike Buffer and Street Buffer).
    - Street Zone
      The area bound by the curbs or pavement that provides access and mobility for motor vehicles, transit, freight, and emergency vehicles. It contains all uses that are typically between the curbs or edges of pavement, including travel lanes, transitway lanes, a median, a Curbside Zone which can include parking, and on-street bike lanes, but excludes separated bike lanes which are part of the Active Zone. The target lighting values for Street Zones are separated into Intersections and Segments. o Intersection: The portion of the Street Zone between the back of all legal crossings where streets intersect. o Segment: The portion of the Street Zone excluding the Intersection.

Approach

- Lighting value metrics must be calculated for each Active Zone, Intersection, and Segment individually. Zones are continuous until interrupted by another zone or roadway centerline.
    - When calculating metrics for a portion of a public street right-of-way, the Applicant may consider lighting output from other portions of a public street right-of-way. The applicant may not consider lighting output from a private street right-of-way.
    - When calculating metrics for a portion of a private street right-of-way, the Applicant may consider lighting output from other portions of a public street or private street right-of-way.
- Photometric evaluations must follow the calculation methodologies detailed in IES RP-821, Recommended Practice: Lighting Roadways and Parking Facilities. Select site specific lighting equipment and mounting heights from MCDOT's specifications.
- When proposing lighting for a private street right-of-way or frontage along a public street right-of-way, provide photometric plan sheets, a photometric legend with labels identifying each Active Zone, Intersection, and Segment (Figure 1), and a table with rows corresponding to locations in the legend and columns containing the information shown in Table 2.

Local Area Transportation Review (LATR) Study: Illuminance Adequacy

- When determining existing conditions as part of an LATR Study, the Applicant may either collect lighting values in the field or perform a photometric evaluation using computer software based on the existing fixtures being in “like new” working condition.
- In the LATR Study Appendices, provide existing conditions photometric plan sheets, a photometric legend with labels identifying each Active Zone, Intersection, and Segment (Figure 1), and a table with rows corresponding to locations in the legend and columns containing the information shown in Table 2. Underline and highlight inadequate conditions in red, as shown in the example.
- If conditions are inadequate, the Applicant must propose mitigation improvements to bring conditions to adequate levels. The mitigations must be identified even if they are ultimately not included in the final list of mitigations under the proportionality guide. Analyze proposed conditions and provide a proposed conditions table with rows corresponding to locations in the plan sheet(s), and columns containing the information shown in Table 2. Underline and highlight any changed conditions in green, as shown in the example.

Figure 6: Photometric Legend Example

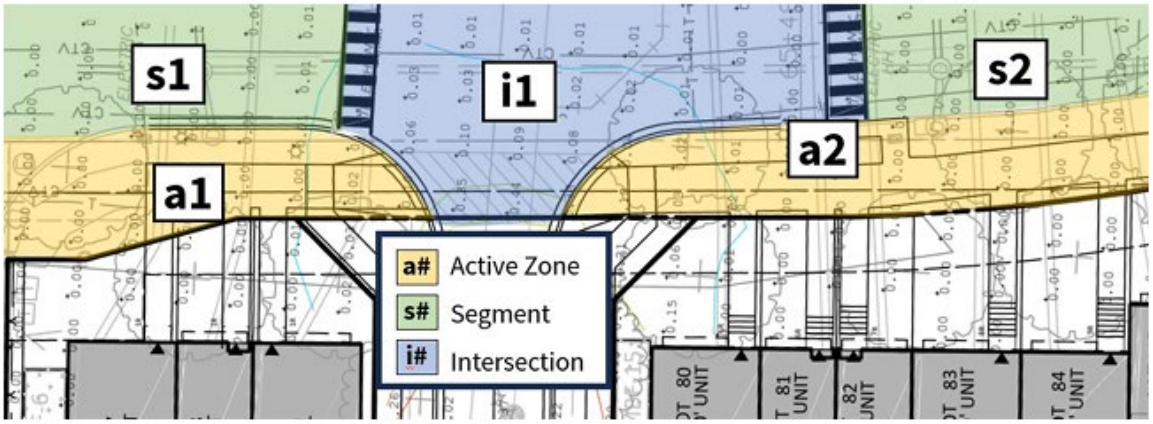


Table 9: Existing Conditions Example

Key	Zone Type	CSDG Street Type	Min. Horizontal Illuminance (fc), $E_{H,min}$		Maintd. Avg. Horizontal Illuminance (fc), $E_{H,avg}$		Uniformity Ratio ($E_{H,avg}$ / $E_{H,min}$)		Maintd. Avg. Vertical Illuminance (fc), $E_{V,avg}$		Maintd. Avg. Surface Luminance (cd/m^2), L_{avg}		Veiling Luminance (L_{max}/L_{avg})	
			Target (Min.)	**Modeled Existing**	**Target (Min)**	**Modeled Existing**	**Target (Max.)**	**Modeled Existing**	**Target (Min.)**	**Modeled Existing**	**Target (Min.)**	**Modeled Existing**	**Target (Min.)**	**Modeled Existing**
a1	Active	Downtown Boulevard	0.2	0.2	0.9	1.1	3.0	**5.5**	1.0 – 1.2	1.1	2.0 – 2.5	2.2	------	------
a2	Active	Downtown Boulevard	0.2	0.3	0.9	1.1	3.0	3.0	1.0 – 1.2	1.1	2.0 – 2.5	2.2	------	------
s1	Street Zone: Segment	Downtown Boulevard	------	------	0.7 – 1.0	**0.4**	3.0	2.9	------	------	0.6 – 1.5	1.3	0.3	0.3
s2	Street Zone: Segment	Downtown Boulevard	------	------	0.7 – 1.0	0.9	3.0	2.9	------	------	0.6 – 1.5	1.3	0.3	0.3
i1	Street Zone: Intersection	Downtown Boulevard	0.2	0.3	0.9	1.1	3.0	**3.7**	------	------	------	------	------	------

Table 10: Proposed Conditions Example

Key	Zone	CSDG Street Type	Min. Horizontal Illuminance (fc), $E_{H,min}$		Maintd. Avg. Horizontal Illuminance (fc), $E_{H,avg}$		Uniformity Ratio ($E_{H,avg}$ / $E_{H,min}$)		Maintd. Avg. Vertical Illuminance (fc), $E_{V,avg}$		Maintd. Avg. Surface Luminance (cd/m^2), L_{avg}		Veiling Luminance (L_{max}/L_{avg})	
			Target (Min)	**Modeled Proposed**	**Target (Min)**	**Modeled Proposed**	**Target (Max.)**	**Modeled Proposed**	**Target (Min)**	**Modeled Proposed**	**Target (Min.)**	**Modeled Proposed**	**Target (Min)**	**Modeled Proposed**
a1	Active	Downtown Boulevard	0.2	**0.3**	0.9	1.1	3.0	**3.0**	1.0 – 1.2	1.1	2.0 – 2.5	2.2	------	------
a2	Active	Downtown Boulevard	0.2	0.3	0.9	1.1	3.0	3.0	1.0 – 1.2	1.1	2.0 – 2.5	2.2	------	------
s1	Street Zone: Segment	Downtown Boulevard	------	------	0.7 – 1.0	**0.9**	3.0	2.9	------	------	0.6 – 1.5	1.3	0.3	0.3
s2	Street Zone: Segment	Downtown Boulevard	------	------	0.7 – 1.0	0.9	3.0	2.9	------	------	0.6 – 1.5	1.3	0.3	0.3
i1	Street Zone: Intersection	Downtown Boulevard	0.2	**0.5**	0.9	1.1	3.0	**2.2**	------	------	------	------	------	------