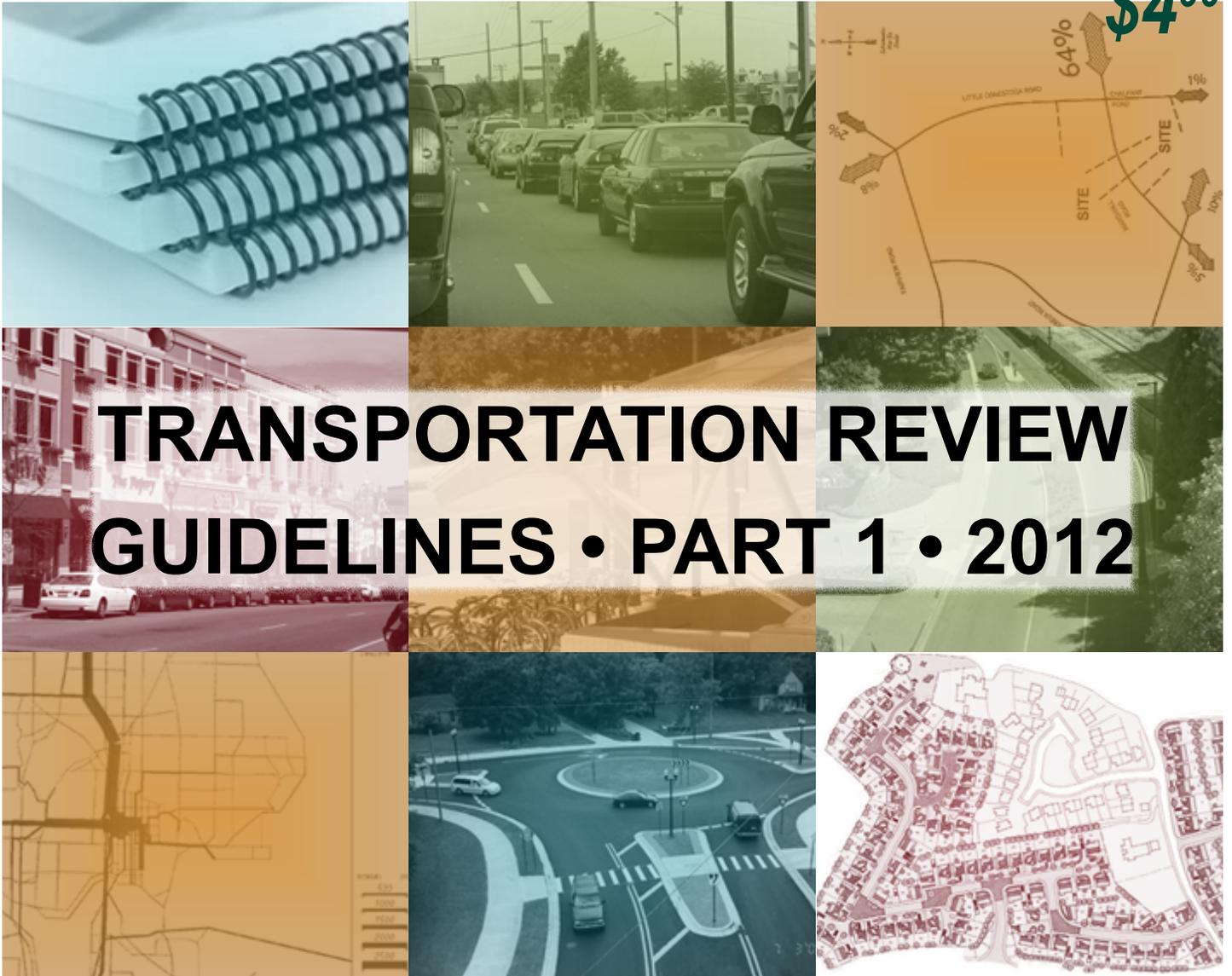


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# **TRANSPORTATION REVIEW GUIDELINES • PART 1 • 2012**

**Transportation Planning Section**

**Prince George's County Planning Department**

**The Maryland-National Capital Park and Planning Commission**

*Including*

*Guidelines for the Analysis of the Traffic Impact of Development Proposals*



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# Abstract

- TITLE:** Transportation Review Guidelines · Part 1 · 2012
- AUTHOR:** The Maryland-National Capital Park and Planning Commission
- SUBJECT:** The technical standards for the evaluation of the adequacy of transportation facilities, along with other plan evaluations, by the Prince George's County Planning Board and the staff of the Transportation Planning Section.
- DATE:** November 2012
- SOURCE OF COPIES:** The Maryland-National Capital Park and Planning Commission  
14741 Governor Oden Bowie Drive, Upper Marlboro, Maryland 20772
- ABSTRACT:** The primary purpose of this document is to provide the technical standards for the evaluation of the adequacy of transportation facilities by the Prince George's County Planning Board. Secondly, it documents a number of processes and procedures used to review development plans as well as master, sector, and small area plans. The Guidelines establish criteria by which staff and applicants with land development proposals can assess the traffic impact and transportation issues related to development proposals. They also indicate the manner in which information will be presented to the Planning Board. Section 1 of these Guidelines describes the process of gathering existing data and submitting studies; it also include a glossary of transportation terms. Section 2 summarizes study requirements for the various types of applications. Section 3 details the methodology to be used in performing the traffic study. Sections 4 through 6 describe the use of a system of trip credits related to design as well as off-site transit, pedestrian, and bicycle facilities. Section 7 documents a number of transportation modeling procedures and their use in the analysis of plans. Section 8 includes the County Council's Guidelines for Mitigation Actions. Section 9 specifies several processes in plan review outside of the review of traffic impact studies. Section 10 denotes the implementation and applicability of these Guidelines. A future Part 2 will be prepared no later than June 1, 2013 to guide the determination of findings related to Section 24-124.01 of the Subdivision Regulations.
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## Preface

The Prince George’s County Planning Board initially adopted general criteria and guidelines for the analytical review of the traffic impacts of land development proposals on March 3, 1977. These criteria and guidelines were revised in 1980, 1984, 1989, 1997, and 2002. The information that follows is the sixth revision of the guidelines, pursuant to the County Council’s approval of the *Approved Countywide Master Plan of Transportation* in 2009. This action provides new policy direction by incorporating complete street principles into the guidelines as well as identifying the need to improve analytical approaches for links and unsignalized intersections. Additionally, the guidelines have been modified to add a number of procedures that are not related to traffic impact studies or their preparation. Finally, in 2011 County Executive Rushern Baker established a Permit Review Task Force, and this task force added recommendations that the guidelines be modified to incorporate feasibility analyses for off-site transportation improvements as well as site access procedures.



This document is Part 1 of the “Transportation Review Guidelines,” and it establishes criteria by which staff and applicants with land development proposals can assess the traffic impact of the proposed development. It also indicates the manner in which information will be presented to the Planning Board. For the first time, these guidelines incorporate the documentation of a number of procedures that are outside of the process of preparing a traffic impact study but related to the review process of roads and highways in Prince George’s County. A future document will be Part 2 of the “Transportation Review Guidelines.” It will be prepared no later than June 1, 2013, to guide the determination of findings related to Council Bill CB-002-2012. This legislation requires a finding of adequate pedestrian and bikeway facilities in the General Plan centers and corridors. Much like this document, Part 2 will establish criteria by which adequate pedestrian and bicycle facilities are determined as well as indicating the manner in which information will be presented to the Planning Board.

The guidelines are divided into ten sections. The highlights of each section are briefly summarized below:

- Section 1: This section includes a glossary of transportation terms. It also describes the process of scoping and submitting a study, the process of gathering existing data within the study area, issues regarding access, and the policy standards used for evaluation of facilities. A revised scoping agreement is included in this section, and this section requires that all traffic information be submitted in an electronic format.
- Section 2: This section describes the findings and studies required for each type of development application and includes a number of special circumstances in the final subsection.
- Section 3: This section includes the procedures and standards by which various transportation facilities are analyzed. It includes processes for evaluating the three scenarios (existing, background, and total traffic) in a traffic study. It introduces significant changes to the link analysis procedure and the unsignalized intersection procedure. Also, considerable discussion is given to the elements of site trip generation, including the application of trip credits.
- Section 4: This section introduces the concept of evaluating the quality of transit-oriented development (TOD) provided for a site. It includes a checklist for the evaluation of TOD for all sites within the General Plan centers and corridors. It also provides the

opportunity for development within centers and corridors to obtain a trip credit for the demonstration of quality TOD.

- Sections 5 & 6: These sections designate potential trip credits for the provision of off-site transit, pedestrian, and bicycle facilities. While such facilities are required to be justified and feasible, and must be accepted by the operating agency, the potential is provided to reduce trips or mitigate trips using transit, pedestrian, or bicycle facilities.
- Section 7: This section provides an overview of the Transportation Planning Section's travel demand model. It also provides guidance in using the model for the analysis of certain zoning cases as well as the use of the model in analyzing area master plans and sectional map amendments.
- Section 8: This section is composed of the guidelines for mitigation actions as approved by the County Council by means of CR-29-1994. They describe the process of analyzing mitigation under Section 24-124(a)(6) and are virtually unchanged from the previous guidelines.
- Section 9: This section includes four topics that are generally outside of the scope of preparing and reviewing traffic impact studies. These topics include analysis procedures for developments generating fewer than 50 trips, best practices for subdivision and site layout, right-of-way procedures, and procedures for the review of departures and variations. These topics were included as a means of standardizing review processes within the Transportation Planning Section.
- Section 10: This section is a brief discussion regarding the timing for implementation of the guidelines after adoption, along with provisions for circumstances in which the 2002 guidelines may continue to be used after adoption of these guidelines.

The guidelines have been named the "Transportation Review Guidelines" because they incorporate areas of review beyond prior publications of "Guidelines for the Analysis of the Traffic Impact of Development Proposals." For purposes of reference to the Prince George's County Code, the "Guidelines for the Analysis of the Traffic Impact of Development Proposals" includes Sections 1 through 6, Section 7(C), Section 8, and Section 9(A).

These guidelines are intended to generally supersede all previous editions of the guidelines. However, significant discussions in the 2002 guidelines regarding the surplus capacity reimbursement procedure (SCRIP) and the rezoning of properties to the M-X-C Zone have been eliminated in this update, with reference made to the prior guidelines. The SCRIP, since being enacted in 1993, has not been utilized as a funding strategy by any development. The M-X-C Zone was approved for a single property in the county in 1995, and a complete round of area master plans has been approved since that time without any recommendation for a second application of the zone. Due to the general non-application of SCRIP and the M-X-C Zone in the foreseeable future, the 2002 guidelines should serve as Planning Board guidance regarding these processes in the event that they are to be utilized in the future.

## Section 1: General Requirements

All traffic impact studies should use the same general approach in analyzing traffic impacts. While the required findings for various types of applications differ, and the standards may change between the different tiers or even in certain sectors and additional tools may be available in selected areas, the process for conducting the analysis should remain consistent. This chapter is intended to provide common terminology and a common approach toward data collection, traffic impact study (TIS) scoping, and information submittal. It also summarizes the overall policy standards for transportation analysis in Prince George’s County.



### A. Glossary of Transportation Planning Terminology

The following glossary includes a number of the transportation-specific terms used throughout this document. It also includes a number of the abbreviations utilized with either a clarification of the abbreviation or a reference to another term in the glossary. A number of terms are formally defined in Subtitle 24 or Subtitle 27 of the Prince George’s County Code; rather than repeat or paraphrase those terms in this listing, reference should be made to the “Definitions” section of each subtitle.

Glossary Term	Definition
Access Controls	Regulations by which access to a road facility from individual driveways, minor streets, or major streets may be limited for the purpose of increasing roadway capacity and improving safety.
Adequate Public Facilities	A type of local regulation intended to control the impacts of growth by requiring completion of infrastructure prior to, or at the same time as, new development that will utilize the infrastructure.
ADT	See Average Daily Traffic.
All-Way Stop Control	See Unsignalized Intersection.
APF	See Adequate Public Facilities.
Arterial	A highway for through and local traffic, either divided or undivided, with controlled access to abutting properties and at-grade intersections.
At-Grade Intersection	The location at which two or more roadways cross and join at the same elevation; access through the intersection may be controlled by traffic signals or stop/yield signs.
Average Daily Traffic (ADT)	The total traffic volume passing a point along a roadway in both directions during an average 24-hour period.

Glossary Term	Definition
Background Development	For purposes of the review of a subdivision, approved and unbuilt development within the study area having any one of the following: (1) an approved and valid preliminary plan of subdivision; (2) a valid final plat; (3) a record plat not required to be resubdivided pursuant to Section 24-111(c); (4) an approved special exception; or (5) a capital project involving new or expanded facilities having full construction funding within six years in an approved capital program of a governmental entity. For conceptual site and comprehensive design plans, approved and unbuilt CSPs and CDPs within the study area shall be included. For mixed-use and comprehensive design zone requests, approved and unbuilt mixed-use zones and CDZs shall be included.
Background Traffic	In a TIS, existing traffic <i>plus</i> traffic generated by background development <i>plus</i> growth in through traffic on the current road network <i>plus</i> all roadway improvements, which are fully funded by the state, the county, or another party.
Capacity	On a roadway link, the maximum number of vehicles that can pass a given point during a defined period of time under prevailing roadway and traffic conditions. This is often described as the upper limit of level of service E.
Capital Improvement Program (CIP)	A six-year, comprehensive statement of the objectives of capital programs with cost estimates and proposed construction schedules for specific projects. The CIP is the tool through which locally funded public facilities, such as sewers, local roads, schools, libraries, and parks, can be scheduled and built. Unless otherwise stated, the CIP refers to the Prince George’s County CIP.
Center	A geographic policy area designation in the <i>Prince George’s County Approved General Plan</i> (and any subsequent approved amendments to this plan), generally located in proximity to current or future transit stations. See also Corridor and Tier.
CIP	See Capital Improvement Program.
CLV	See Critical Lane Volume.
Collector	A two- to four-lane roadway with minimal access controls, providing movement between developed areas and the arterial system.
Consolidated Transportation Program (CTP)	A six-year, comprehensive statement of the objectives of capital programs with cost estimates and proposed construction schedules for specific projects. The Maryland State CTP is prepared by the governor and adopted by the state legislature. The CTP is the tool through which state-funded public facilities can be scheduled and built.

Glossary Term	Definition
Corridor	A geographic policy area designation in the <i>Prince George's County Approved General Plan</i> (and any subsequent approved amendments to this plan), generally located along major transportation facilities. See also Center and Tier.
Critical Lane Volume (CLV)	At an intersection, the sum of the critical movements. For a four-way intersection, this would be the sum of the critical movements in the north-south direction and the east-west direction.
Critical Intersection	In general, any intersection serving 20 percent or 150 peak-hour trips (whichever is less) of the applicant's site-generated traffic. Reference shall be made to Section 1, Subsection B, for precise criteria in determination.
Critical Link	In general, any roadway segment serving 20 percent or 150 peak-hour trips (whichever is less) of the applicant's site-generated traffic. Reference shall be made to Section 1, Subsection B, for precise criteria in determination.
Critical Roadway	See Critical Link.
Critical Movement	<p>At a four-way intersection, the highest total of a through movement plus its opposing left-turn movement in one direction on an hourly, per-lane basis. For example, the critical movement in the north-south direction of an intersection is the higher of:</p> <ul style="list-style-type: none"> <li>• The northbound through movement plus the southbound left-turn movement computed on an hourly, per-lane basis.</li> <li>• The southbound through movement plus the northbound left-turn movement computed on an hourly, per-lane basis.</li> </ul>
CTP	See Consolidated Transportation Program.
De Minimus Development	A development that generates five or fewer peak-hour trips.
Design Speed	The maximum safe speed for which the various physical features of the roadway are designed.
Diverted Trip	A trip that is deviated from a roadway within the vicinity of the uses on a site to access a site. The roadway from which the trip is diverted could include streets or freeways that are adjacent to the site but without direct access to the site.
DPW&T	The Prince George's County Department of Public Works and Transportation.
DRD	The Development Review Division within the Prince George's County Planning Department.
Existing Traffic	In a TIS, current traffic in accordance with recent traffic counts on the current road network.
Expressway	A divided highway for through traffic with full or partial access controls and grade-separated interchanges at selected public roadways with some at-grade intersections.

Glossary Term	Definition
Fixed Guideway Transit (FGT)	A public transportation system of vehicles that operate primarily on their own pathway or right-of-way constructed for that purpose. The term is inclusive of rail transit (including light rail, commuter rail, and Metrorail) and also bus rapid transit.
Four-Way Stop Control	See Unsignalized Intersection.
Freeway	A divided highway for through traffic with full access controls and grade-separated interchanges at selected public roadways.
General Plan	The 2002 <i>Prince George's County Approved General Plan</i> . This reference includes any successor documents as well as any approved amendments to the General Plan.
Grade-Separated Interchange	A location where multiple roadways cross with one passing over the other on an overpass and with a system of ramps joining the roadways.
Grade Separation	A location where two roadways cross with one passing over the other on an overpass but lacking a direct connection via a system of ramps.
Interchange	See Grade-Separated Interchange.
Internal Trip Capture	A reduction from a trip generation number to account for the “capture” of vehicles that will travel from one land use to another within a mixed-use development without leaving the site and utilizing the roadway system.
Intersection	See At-Grade Intersection.
Level of Service (LOS)	A qualitative measure using a sequence of letters from A through F to describe the quality of operational conditions within an intersection or a roadway link. The LOS standards used in the guidelines are based on the 2002 <i>Prince George's County Approved General Plan</i> and any successor documents.
Link	See Roadway Link.
LOS	See Level of Service.
Major Collector	A four-lane, divided roadway with controlled access to abutting properties and at-grade intersections.
Mitigation	In Prince George's County, a specific process for achieving adequate transportation facilities in accordance with Section 24-124(a)(6) and described in greater detail in Section 8.
Modal Split	The percentage of people using a particular means of transport, such as auto, transit, or walk, to make a trip.
Operating Speed	The maximum average observed speed for a given set of roadway and traffic conditions.
Other Master Plan Roadway Facilities	Residential, industrial, and commercial roadways, providing access to and between developed areas that are selectively shown on area master plans.
Pass-By Trip	A trip made to a site, generally a commercial site, from traffic already “passing by” that site on an adjacent street that contains direct access to the generator.

Glossary Term	Definition
Peak Hour	The one-hour period of greatest utilization of a transportation facility or greatest trip generation of a use. Weekdays normally have two peak hours—one in the morning and one in the afternoon—while Saturdays and Sundays are typically represented by a single peak hour.
Peak Hour Factor (PHF)	The ratio of the hourly traffic flow rate to the peak rate of traffic flow within the hour. This factor is most often used in traffic studies for analyses of unsignalized intersections; when the analysis period is 15 minutes, the ratio is computed as the peak-hour traffic volume ( $V_{PH}$ ) divided by the peak 15-minute traffic volume ( $V_{15}$ ) times four. In equation form, $PHF = V_{PH} / (V_{15} * 4)$ .
Peak Period	A three-hour period during which a transportation facility has significantly increased levels of use; this period includes the peak hour. Weekdays normally have two peak periods: one in the morning and one in the afternoon.
PFFIF	See Public Facilities Financing and Implementation Program.
PGTAZ	See Traffic Analysis Zone.
Pro Rata Share	The portion of the cost of a transportation facility attributable to a development based upon its traffic impact on the facility.
Public Facilities Financing and Implementation Program (PFFIF)	A financing strategy that is developed to implement specific facilities to serve one or more developments within a specific area and is defined in Section 27-107.1. The program must be established by the County Council, with the specific financing strategy, prior to its usage in the development approval process.
Queuing Study	An analysis done for the purpose of estimating the length of a line of waiting vehicles, normally done for the purpose of ensuring turn bays and other intersection approaches are of adequate size and length.
Ramp	A length of roadway providing an exclusive connection between two highway facilities, usually within a grade-separated interchange.
Roadway Link	A segment of roadway between two points.
Roundabout Intersection	A type of unsignalized intersection that is a modern form of a traffic circle or rotary. It is characterized by approaches that yield to the traffic in the circle and also characterized by channelized entry points used to maintain lower speeds within the circle.
Scoping Agreement	A signed statement specifying the study area and the other major assumptions associated with the preparation of a traffic impact study.
Screenline	An analysis line used for transportation demand model validation that bisects a study area. Generally, screenlines follow natural or manmade geographic features.
SCRP	See Surplus Capacity Reimbursement Procedure.
Service Volume	On a roadway link, the maximum number of vehicles that can pass a given point hourly at a given level of service.
SHA	The Maryland State Highway Administration of the Maryland Department of Transportation.

Glossary Term	Definition
Sight Distance Study	An analysis of the length of roadway visible to a driver, normally done for the purpose of assessing safety issues associated with an intersection or an access point.
Signalized Intersection	A location at which two roadways cross and join at the same vertical elevation with access through the intersection controlled by a traffic signal or traffic light.
Spillback	Spillback is caused when a queue from a downstream signalized intersection occupies the entire link and prevents vehicles from entering an upstream signalized intersection on green.
Study Time Frame	The period of time in a traffic study over which future traffic is to be estimated. Most studies will estimate traffic conditions over a three-year to six-year time frame.
Subdivision Review Committee	A staff committee composed of various reviewers from within the Prince George’s County Planning Department and other county and state departments; this committee meets to coordinate interagency review of development cases. The committee is mandated by Section 24-116 of the Subdivision Regulations for the review of all preliminary plans of subdivision and sketch plans and meets every two weeks for this purpose. Since 2009, other significant development review cases requiring interagency coordination have been added to the agenda, and the meeting is now known as the Subdivision/Development Review Committee (SDRC) meeting.
Surplus Capacity Reimbursement Procedure	A process to allow a development to provide a needed transportation improvement up-front and be reimbursed for the cost of providing the improvement on a pro-rata basis by subsequent developments. Section 24-124 provides specific requirements for the use of the SCRP.
TAZ	See Traffic Analysis Zone.
TDFM	See Transportation Demand Forecasting Model.
TDM	See Transportation Demand Management.
TFMP	See Transportation Facilities Mitigation Plan.
Technical Staff Report	A review document prepared by DRD staff in advance of a public hearing for a development proposal. The review includes a recommendation of approval, approval with conditions, or denial, along with supporting background information about the proposal and a review of all required findings in support of the recommendation. The report is submitted to the Planning Board for their consideration during the hearing.
Through Traffic	Trips that begin and end outside of a given study area but pass through the study area.
Tier	A geographic policy area designation in the <i>Prince George’s County Approved General Plan</i> (and any subsequent approved amendments to this plan). Areas of the county are designated as being within the Developed Tier, the Developing Tier, or the Rural Tier. See also Corridor and Center.
TIS	See Traffic Impact Study.

Glossary Term	Definition
Total Traffic	In a TIS, background traffic <i>plus</i> traffic generated by the development under consideration.
TPS	The Transportation Planning Section of the Countywide Planning Division within the Prince George’s County Planning Department.
Traffic Analysis Zone	A geographically distinct area defined by natural or man-made features. Socioeconomic and demographic data for each zone are analyzed to help estimate future transportation demand. Within the county, this geography is often termed PGTAZ.
Traffic Control Device	Any sign, signal, pavement marking, or device placed or erected for the purpose of regulating, warning, or directing traffic and/or pedestrians.
Traffic Impact Study	An analysis that assesses the effects that a particular development will have on the transportation network in a community beyond the boundaries of the development. It typically includes an assessment of the existing situation, the future situation without the development, and the future situation with the development. These three scenarios are termed the existing, background, and total traffic situations.
Traffic Signal Phasing	The means by which portions of the traffic signal cycle (the time required for one complete sequence of signal indications) is allocated a traffic movement or combination of traffic movements.
Traffic Signal Warrant Study	An analysis done for the purpose of reviewing the criteria required for installation of a traffic signal at an intersection. The Federal Highway Administration has identified 11 circumstances under which a signal may be justified. The warrants include measures of volume, safety, delay, and general operations.
TransForM	The long-term travel forecasting computer model employed and maintained by TPS staff (the term is a shortened form of “Transportation Forecasting Model”).
Transportation Demand Forecasting Model (TDFM)	A collection of data files and computer programs that are combined to forecast highway traffic volumes, transit ridership, and other aspects of future usage and performance of the transportation system.
Transportation Demand Management (TDM)	A strategy intended to reduce vehicle trips during specified periods of the day. This includes, but is not limited to, such strategies as car and van pools, transit-use incentives, parking fees and disincentives, and improved pedestrian and bicycle access and facilities.
Transportation Demand Management District	A legally defined geographic area established by the Prince George’s County Council pursuant to Subtitle 20A in which vehicle trip reduction procedures, strategies, and programs are required.
Transportation Facilities Mitigation Plan (TFMP)	A document or a section within a traffic impact study that proposes mitigation actions pursuant to Section 24-124(a)(6) of the County Code. The TFMP shall indicate at least one geographic criterion that makes a site eligible for mitigation, describe the mitigation action being recommended, show the analyses that indicate that the mitigation action meets the numerical criteria for consideration, and provide justification for the use of mitigation as opposed to meeting conventional adequacy standards.

<b>Glossary Term</b>	<b>Definition</b>
Trip	A one-way movement by a person or a vehicle having an origin and a destination.
Trip Assignment	The process of allocating vehicle travel generated within a land parcel to each link of the roadway network.
Trip Cap	A limit on the off-site traffic impact of a development proposal. This type of limit is typically enforced through a condition placed on a development by the Planning Board. Such a condition is based on the quantities and types of uses that are specified in the TIS and is based on the trip generation of the uses after the application of any discounts, adjustments, or credits.
Trip Credit	A reduction in trip generation for a site approved pursuant to the provision of TOD design elements, transit facilities, or bicycle and pedestrian facilities in accordance with the procedures in Sections 4, 5, and 6.
Trip Distribution	The process of estimating the direction of travel and the length of vehicle trips originating from or destined for the uses on a land parcel.
Trip Generation	The process of estimating the number of vehicle trips originating from or destined for the uses on a land parcel.
Two-Way Stop Control	See Unsignalized Intersection.
Unsignalized Intersection	A location at which two roadways cross and join at the same elevation with access through the intersection controlled by stop or yield signs. Two-way stop control requires that each approach on the more minor roadway encounters a stop sign before proceeding through the intersection. Four-way (or all-way) stop control requires that each approach encounters a stop sign before proceeding through the intersection. See also Roundabout Intersection.
Volume-to-Capacity Ratio (v/c)	A performance measure computed using the ratio of an actual or future estimated roadway volume to the capacity of a roadway link.

***B. Traffic Impact Study Scoping***

An assessment of the area affected by traffic generated by the proposed development is mandatory. The study area size and shape will depend on the size and type of development proposed, the existing and planned roadway system, adjacent and proposed land uses, and the presence of natural or man-made barriers. Prior to beginning a TIS, the applicant or applicant’s designee shall submit a scoping agreement, shown in Table 1 on page 17, and request concurrence of the Transportation Planning Section (TPS) staff, Countywide Planning Division, Prince George’s County Planning Department, and The Maryland-National Capital Planning Commission (M-NCPPC). The scoping agreement specifies the study area and the other relevant assumptions associated with the TIS. The study area should generally include all significant transportation facilities to which 20 percent or 150 peak-hour trips (whichever is less) of the application’s site-generated traffic is assigned. Subject to the above criteria, the following facilities shall be included in the study as critical for review of the application:

- Any site access point intersection.
- All at-grade intersections between collector, arterial, and/or expressway facilities.
- Interchange ramp at-grade intersections with lesser facilities.

- Primary street, secondary street, or driveway intersections with higher facilities that involve significant turning movements.
- Critical roadway links connecting the site to any critical intersection as described by the following:
  - A link that includes an approach to an intersection that does not meet the level of service standard without improvements funded or otherwise provided by the applicant should be deemed critical, subject to the following limitations (which are described more fully under “Links” in Subsection 3(A):
    - Any link for which queuing does not result in spillback to the adjacent upstream signalized intersection shall not be studied.
    - Any link that is constructed to its master plan recommended cross section shall not be studied.
    - Any link shorter than 400 feet in length shall not be studied.
- Roundabout intersections within interstate highway system interchanges (along I-95, I-295, I-495 or I-595 (US 50)) are specifically excluded from the study area.

It is strongly recommended that TIS scoping issues be identified before the Subdivision Review Committee meeting or before the first meeting between staff and the applicant, following submission of development applications that are, or may be, subject to the county’s transportation adequacy requirements. Staff will review the applicant’s proposed scoping agreement with the operating agencies and any municipalities having maintenance authority for a critical facility and will concur or respond with comments within 15 working days. When no acknowledgment from TPS staff is received within five working days, the traffic consultant shall directly e-mail staff to ensure receipt of the scoping agreement, determine the status of review, and determine if a meeting to obtain comments or concurrence will be needed. It is noted that TPS staff can refuse to sign a scoping agreement due to outstanding points of disagreement, and such points must be provided to the traffic consultant. However, continued non-response beyond 15 working days shall be deemed to signify approval of the scope as submitted and shall be documented and presented with the unsigned scoping agreement in the submitted TIS.

The following types of applications have special scoping requirements and needs that are more fully described in Section 2, Subsection H, of these guidelines:

- Traffic studies required by Subtitle 27 of the Prince George’s County Code for approval of special exceptions for certain use types.
- Traffic studies conducted within the area of the *Approved Central US 1 Corridor Sector Plan and Sectional Map Amendment*.
- Studies for places of worship.

A scoping agreement is not needed when it has been determined that a TIS is not needed to support an application.

### ***C. Traffic Information Submittal, Acceptance, and Review***

Traffic Studies: The primary means of submitting a TIS shall be an electronic file in Portable Document Format (PDF). Two hardcopies (one for the case file and one for the TPS staff person) plus a disc containing the electronic file will be provided to the Applications Section of the Development Review Division (DRD) for the official submittal. In submitting electronic files, the following shall be noted:

- Pictures and mapping should be readable and need not be scanned or provided at the highest possible resolution. In many cases, 100 dots per inch (dpi) will be readable, and 300 dpi should generally be the maximum resolution used.
- The submitted file containing the report and the needed appendices must be 10 megabytes (MBs) or smaller in order to be sent electronically as an e-mail attachment. Larger documents, items that are graphic-intensive, or large documents of a high resolution should consider strategies to make the document manageable, including the following:
  - Providing multiple files of 10 MBs or less each.
  - Providing either the file(s) or large figures within the study as a compressed (zip) file.

Both the hardcopies and the PDF must be received before acceptance review of a study can commence. All submittals of a TIS or other traffic data for the record must be made via DRD. Every TIS received by DRD staff is immediately logged and forwarded to TPS staff.

Once a TIS is received by TPS staff, a review of the study for sufficiency will be completed within three working days. This review consists of the following:

- Confirming that the study conforms to the plan being submitted.
- Verifying existing conditions.
- Checking consistency of all assumptions in the submitted study with the scoping agreement and other supporting documentation of the application.
- Confirming the appropriate use of procedures and methods of analysis from these guidelines or from other professionally recognized sources.
- Confirming the inclusion of all count sheets, surveys, other site-specific field data, and the scoping agreement.

Studies deemed insufficient may not be referred, and TPS staff will have the responsibility for contacting the applicant (or the applicant's traffic consultant) to indicate deficiencies. Also, traffic studies shall not be accepted for review unless the accompanying development application has also been accepted and referred.

Once the TIS is deemed acceptable, it is referred electronically to other agencies for review and comment. Consistent with the submittal requirements, it is anticipated that most studies will be referred as single or multiple e-mail attachments, but very large studies may be referred by means of downloading through a file transfer protocol (FTP) host internet site. Traffic studies in support of a subdivision application must be accepted for review at least 55 calendar days prior to the scheduled Planning Board hearing date. Traffic studies in support of urban design or zoning cases must be accepted for review at least 65 days prior to the scheduled Planning Board hearing or review date. These review timelines allow 30 days for agency review, four days for TPS staff to review agency comments and to coordinate preparation of a recommendation, and 21 days (28 days for urban design and zoning cases) for DRD staff to coordinate comments, prepare the Technical Staff Report, and publish it in a timely manner as required by the County Code. Note that revisions to studies, especially studies involving mitigation or requiring SHA review, can require a new 30-day period for agency review and may result in a delay in the board hearing date.

Other Traffic Data: As stated above, the primary means of submittal of requested traffic data, such as turning movement counts, trip generation data, or other information, shall be an electronic file in PDF. A single hardcopy for the case file will be provided to the Applications Section of DRD for the official case

file. All traffic data submissions for the record must be made via DRD at least 35 days prior to the Planning Board hearing date. Any traffic information received by development review staff is immediately logged and forwarded to TPS staff.

#### ***D. Inventory of Existing Conditions for Traffic Impact Studies***

**Roadway Configurations:** An inventory of existing roadway characteristics within the study area is required for inclusion in the TIS. A field inspection of the critical roadways will be done to determine the number of lanes, the posted speed limits, the number of approach lanes at intersections under study, the type and location of intersection traffic controls in place, signal phasing, horizontal and vertical alignment (if irregular), and the locations of existing access points in the vicinity of the critical intersections.

**Traffic Counts:** Recent traffic counts shall be included for all critical links (link volume counts, taken at the midpoint of the roadway link under study) and intersections (turning movement counts) within the study area. Counts should not be used if they are more than one year old at the time the original application is submitted or if significant changes have occurred at or near the count location. Where a TIS is provided in support of an application type with no fixed review period, the TIS should be updated with new counts if the counts in the submitted study are more than two years old at the time of the Planning Board hearing. Intersection counts must always be accompanied by a diagram showing lane configurations, traffic control type and location, and (where signals are present) the use of split phasing. Regarding counts, please note the following:

##### **Availability**

Traffic counts are generally available from the Maryland State Highway Administration (SHA) and the Prince George's County Department of Public Works and Transportation (DPW&T). SHA currently maintains a traffic count database on its web site. The traffic consultant or the applicant shall be responsible for providing traffic counts that are not available through the state or the county.

##### **Weekday Peak Period Counts**

Counts shall be taken for a minimum of three hours in the morning and three hours in the afternoon. At intersections, turning movement counts shall be taken for each through and turning movement. Along roadway links, link volume counts shall be taken for each direction. The counts shall be summarized for 15-minute intervals, and the peak hour shall be identified and summarized. It is strongly advised that recent counts in the area are reviewed to ensure that start and end times for counts will fully include the peak hour; counts may be disallowed if it appears that the entire peak hour has not been included.

##### **Counts Outside of Weekday Peak Periods**

Studies of traffic generation by specialized uses, including, but not limited to, places of worship (and related facilities) and recreational and entertainment venues, will normally be required during the peak period for the specific use. Other uses in areas that have a high concentration of commercial activity may be required to study weekday, midday, or Saturday peak hours. While the starting and ending times of counts will be determined in consultation with TPS staff, such counts should generally begin one hour prior to the peak hour for the use and conclude one hour after the peak hour for the use. The counts shall be conducted identically to weekday peak period counts.

##### **Summer Counts**

While summer counts are discouraged because of the localized impact of school traffic, they can be used in selected cases with seasonal adjustment factors. Traffic consultants shall obtain TPS staff approval before taking and using summer counts. When deemed acceptable for use, summer counts should be adjusted with the following factors:

<b>Month</b>	<b>A.M. Peak Hour</b>	<b>P.M. Peak Hour</b>	<b>Any Other Time Period</b>
June	1.02	1.02	1.00
July	1.05	1.02	1.00
August	1.04	1.01	1.00

#### Holidays and Incidents

Traffic data must reflect existing normal peak-hour conditions at the time of the study. For that reason, traffic counts should not be conducted during periods or days when schools are closed, on days before or after national or local holidays, during Thanksgiving week, or on Mondays or Fridays (unless specifically requested). The occurrence of significant traffic incidents (accidents, closures, etc.) or inclement weather in the vicinity of the count location during the count may provide a basis for disallowing the count. In addition, ongoing construction, maintenance, or utility work on nearby roadways may cause temporary diversions that could result in counts that do not reflect normal conditions. Adjustments to counts taken under these circumstances should be made using a method acceptable to TPS staff.

Transit, Pedestrian, and Bikeway Facilities: An inventory must be conducted of transit, pedestrian, and bikeway facilities within the General Plan centers and corridors, and in all cases where the applicant seeks to take advantage of trip credits associated with these facilities as described in Sections 4 and 5. It is advisable to perform such an inventory in other cases as well.

#### Transit

An adequate inventory shall include the following:

- Existing transit service that is within one-half mile of the proposed development.
- The location of bus stop(s), a description of any amenities at the stop (such as a shelter, benches, a schedule), and walking distance to the stop(s).
- The bus routes serving the stops.
- The frequency and hours of operation of bus service.
- Metrorail, light rail, or commuter rail stations within one-half mile of the site.
- Walking distance to each identified station, with a map displaying the walking route(s).

#### Pedestrian and Bikeway Facilities

An adequate inventory shall include the following:

- Identification of nearby trip-generating uses, as described in Section 3, within one-half mile of the proposed development.
- A map to indicate sidewalk, sidepaths, and bike paths between the site and the above uses with widths of any such facilities.
- Additional sidewalks, sidepaths, and bike paths in the vicinity of the site with potential for connection to the site with widths of any such facilities.
- Master plan trail facilities within one-quarter mile of the site.

#### Traffic Accident Data

The Planning Board does not have the authority to make its own findings regarding the causes of traffic accidents and the corrective actions needed to address safety issues.

Nonetheless, Section 24-125 of the Prince George’s County Code provides that the Planning Board may “impose such conditions as are needed to protect the public health and safety” in the case of a “commercial or industrial subdivision fronting on an arterial road or a road of greater capacity.” In such cases, the applicant should provide information relating to “traffic safety and efficiency,” including “access points, directional signing, internal circulation and general parking proposals.” In addition, Section 27-317 of the Code (pertaining to special exceptions) lists the findings required for approval of special exceptions, including Subsection (a)(4), “The proposed use will not adversely affect the health, safety or welfare of residents or workers in the area.” In the majority of cases, these findings can be addressed through sound access planning and site design. However, in cases where access options are limited, traffic accident data could become a necessary resource in making the needed finding.

In order to support a finding of fact, accident data may be provided to address specific concerns. When needed, the accident data should be presented as follows:

- Accident data should be obtained along the roadway link subject to the required findings for Sections 24-125 and 27-317 (generally the frontage of the property) for the most recent three-year period prior to the submission of the study.
- Accident rates (based on total accidents) for the subject roadway link should be computed and compared with appropriate average statistics. Average statistics can be obtained through the Maryland Highway Safety Office.

Accident data from the state’s traffic accident reporting system may be requested through SHA’s Office of Traffic and Safety or DPW&T’s Division of Traffic Engineering if necessary. These contacts should be made as early as possible to allow time for processing the information request, and the request should be kept as simple and focused as possible.

### *E. Access*

Access to a site must be carefully planned. The access to a site can, to a great degree, determine the appropriate uses for a site and the ultimate value of a site. Applicants shall note that the fronting of lots along major collector roadways or roadways of a higher classification, which results in the proliferation of individual driveways along these roadways, is greatly discouraged. Rather than fronting lots along high classification roadways, the use of dedicated service roadways, easements (where legal), or the reconfiguring of lots or uses is encouraged.

Additionally, within the subdivision process, driveways onto roadways of an arterial classification or higher can only be approved by obtaining a variation from Section 24-121(a)(3). This requires a specific justification with specific findings and is reviewed by the Planning Board as a part of the review of the overall subdivision.

Notwithstanding findings made by the Planning Board with regard to Subtitles 24 or 27, persons seeking to develop properties that require access to county roadways or state highways must meet the requirements of the appropriate agency to obtain the right to construct the access. The following studies may be required by the operating agency during review of the preliminary plan of subdivision as a means of making the finding in Section 24-124(a):

- Sight distance studies.
- Additional traffic studies, including a study of signal warrants or warrants for other types of traffic control as a condition of subdivision approval.

- Queuing analyses, particularly when access points are located near existing traffic signals.
- Other studies as needed where access points are proposed at a skew to an existing roadway or at a small offset from another existing access point.

The operating/permitting agency, in meeting the requirements of Section 24-124(a), can reasonably require that access points or proposed public streets be constructed to meet the agency's physical standards or be shifted in circumstances where the agency's standards are not met. In the most difficult of circumstances, an agency can require that traffic controls limit movement at an access point or that an access point not be constructed at all. It is strongly advised that access issues be an early part of the discussion of any development proposal.

### ***F. Policy Standards***

Prince George's County's standards for acceptable levels of service on roadways have been set in the 2002 *Prince George's County Approved General Plan* (General Plan), and subsequent amendments to the General Plan as approved by the District Council. These standards vary geographically by policy tier and the General Plan centers and corridors as identified in the plan, with the location of a development indicating the applicable policy standard. Table 2 on page 19 summarizes the level of service standards contained in the General Plan. Questions about the location of a specific site within a policy tier, center, or corridor should be addressed by using PGAtlas (<http://www.pgatlas.com>). Concerns about which policy standards apply to a particular Tier, Center, or Corridor should be referred to TPS staff. The applicable standards will be identified in the scoping agreement.

# Table 1: Traffic Impact Study Scoping Agreement

## The Maryland-National Capital Park and Planning Commission

Prince George’s County Planning Department

Transportation Planning Section, Countywide Planning Commission

*This form must be completed prior to commencing a traffic impact study (TIS). The completed and signed scoping agreement should be submitted to the Transportation Planning Section (TPS) by the traffic consultant for concurrence and signature. TPS will return a signed copy with any comments to the traffic consultant for inclusion in the TIS. Failure to conduct the study in accordance with the guidelines and the signed scoping agreement may be grounds for rejection of the study, thereby necessitating an addendum or a new study prior to the start of staff review.*

Project Name:	
Policy Tier (Developed, Developing, or Rural): Please note if in center or corridor:	
Type of Application (see Table 3):	
Project Location:	
Traffic Consultant Name: Contact Number(s):	

Describe the Proposal Under Study: Residential—Number & Type of Units: Commercial—Amount & Type of Space: Other Uses and Quantity:	
Are pass-by trip rates in accordance with the guidelines? (circle one)	Yes      No      If No, please provide explanation on separate sheet.
Are there diverted trips? (circle one)	Yes      No      If Yes, please provide explanation on separate sheet.
Will a TOD credit be used? (Section 4 of the Guidelines) (circle one)	Yes      No      Note that all development in centers and corridors will be evaluated for TOD.
Will a transit facilities credit be used? (Section 5 of the Guidelines) (circle one)	Yes      No      Need/nexus must be justified in study, and it must be supported by operating agency.
Will a bike/ped facilities credit be used? (Section 6 of the Guidelines) (circle one)	Yes      No      Need/nexus must be justified in study, and it must be supported by operating agency.
Are additional trip reductions (internal trips, transit trips, etc.) proposed? (circle one)	Yes      No      If Yes, please provide explanation on separate sheet.

Attach a map (or maps) showing the study area network with included intersections and links, estimated site trip distribution, and growth factors for through traffic.

SHA/DPW&T capital program improvements assumed:		
Other improvements assumed:		
Is Mitigation (Section 8 of the Guidelines) to be proffered? (circle one)	Yes      No	Note the locational criteria in Section 8, and please note the clarifications regarding mitigation included in Section 3, Subsection E.
Is a cooperative funding arrangement (such as a SCRP, PFFIP, or some other pro rata) to be used? (circle one)	Yes      No	If Yes, please provide explanation on separate sheet, and note limitations in Section 3, Subsection E.
Will summer counts be used? (circle one)	Yes      No	The use of summer counts must have specific concurrence of TPS staff.
Have there been discussions with the permitting agency (DPW&T and/or SHA) regarding access to this site and the analysis requirements? (circle one)	Yes      No	Section 1, Subsection E, strongly advises that these discussions occur early in the development review process. Note that driveway access onto arterial facilities must be justified and approved by the Planning Board as a part of the subdivision process.
Has a listing of background development been developed? (circle one)	Yes      No	If Yes, please provide the list so that TPS staff may either concur with it or provide changes.
Have the costs and feasibility of potential off-site transportation improvements been evaluated? (circle one)	Yes      No	If No, bear in mind that Section 3, Subsection D, requires that any recommended physical off-site improvements include an evaluation of feasibility.

**SIGNED:**

\_\_\_\_\_ **Traffic Consultant**

\_\_\_\_\_ **Date**

**APPROVED:**

\_\_\_\_\_ **TPS Coordinator (or Supervisor)**

\_\_\_\_\_ **Date**

*This form is not required for sites that do not require a TIS.*

**Table 2: Policy Level of Service Standards**

Site Location	LOS Standard	Threshold Values		Exception
		CLV (intersection)	v/c (link)	
<b>Tiers</b>				
Developed Tier	E	1,600	1.000	Planning Board may allow developments to mitigate per 24124(a)(6) and CR-29-1994.
Developing Tier	D	1,450	0.845	Planning Board may allow developments to mitigate per 24124(a)(6) and CR-29-1994.
Rural Tier	C	1,300	0.650	Planning Board may allow developments to mitigate per 24124(a)(6) and CR-29-1994.
<b>Metropolitan and Regional Centers</b>				
All Tiers	E	1,600	1.000	Based on Tier
<b>Community Centers, Corridors, and Revitalization Overlays</b>				
	Based on Tier	Based on Tier	Based on Tier	Based on Tier

## Section 2: Requirements/Findings for Various Application Types



The Prince George’s County Planning Department processes hundreds of development applications in any given year, and only a portion of these applications are required to be accompanied by a TIS. This section summarizes the types of applications handled by the DRD (which includes the Subdivision, Urban Design Review, and Zoning Sections) and the TIS requirements for each type of application. Also, the required transportation finding(s) for each type of application with reference to the appropriate section of the Prince George’s County Code is indicated. Each TIS should provide the necessary information to support the required finding(s) for that particular application.

Whether a TIS is required or not, the Transportation Planning Section (TPS) staff must address the required finding(s) at the time that any application is reviewed. This is particularly true for subdivision applications. Regardless of the size of the subdivision, it is mandatory for TPS staff to address the required subdivision findings in Section 24-124 during the review. In doing so, all development applications are treated fairly regardless of size. The Planning Board may find that the traffic impact of a very small development is a de minimus or insignificant impact. Under the guidelines, a de minimus development is one that generates five or fewer peak-hour trips (see glossary at beginning of Section 1).

Each following subsection discusses findings, study requirements, and staff procedures for the various types of development applications. As a convenience, Table 3 on page 21 is provided to very briefly summarize the TIS requirements for each case type. Table 3 should be used with the narrative to determine the level of study needed for a development application.

It is the responsibility of each applicant submitting an application for review to make the case that the submittal complies with Prince George’s County regulations for approval. The lack of information needed to make the required findings may be deemed an incomplete application and could be subject to a recommendation of disapproval.

### ***A. Preliminary Plans of Subdivision***

The law requires that the Planning Board determine that roads that will serve a proposed subdivision be adequate before approving a submitted preliminary plan. To make this finding, a TIS is required from an applicant if the proposed subdivision will produce 50 or more new trips during any peak hour. The study must forecast future traffic volumes for the roads and streets within a study area that has been defined by means of the scoping procedures identified in Section 1. Submittal procedures are outlined in Section 1 as well. The process for conducting a study is described in Section 3.

### Table 3: Summary of Traffic Study Requirements by Case Type

Case Type	Study Type <sup>1</sup>	Notes and Qualifiers	
<b>Subdivision Applications</b>			
<b>Preliminary Plan of Subdivision</b>	4-	Section 3	Depending on size of application.
<b>Zoning Applications</b>			
<b>Rezoning</b>			
Basic Plan	A-	Section 7, Subsection B	Only when determined to not be in conformance with the underlying master or sector plan.
M-X-T Zoning Map Amendment	A-	Section 3	When determined to not be in conformance with the underlying master or sector plan, a study using the process in Section 7(B) shall also be done.
M-X-C Zoning Map Amendment	A-	Section 7, Subsection B	See text in this section under Special Requirements regarding the overall review process.
All Other Zoning Map Amendments	A-	None <sup>3,4</sup>	
<b>Special Exception</b>	SE-	None <sup>3</sup>	Several uses have specific traffic study requirements mandated by the Zoning Ordinance. See text in this section under Special Requirements.
<b>All Other Zoning Applications</b>		None	Includes ROSP-, DDS-, DPLS-, DSDS-, SP-, NCGS-, and NCFRR-.
<b>Urban Design Applications</b>			
<b>Comprehensive Design Plan</b>	CDP-	Section 3	Depending on size of application.
<b>Conceptual Site Plan</b>			
In the M-X-T zone	CSP-	Section 3	Only for sites in the M-X-T zone, which were rezoned through a sectional map amendment, or for which the use requires a traffic study.
All others	CSP-	None <sup>4,5</sup>	
<b>Specific Design Plan</b>	SDP-	None <sup>2</sup>	
<b>Detailed Site Plan</b>			
In the M-X-T zone	DSP-	None <sup>2</sup>	For sites in the M-X-T zone that have never had an adequacy finding. See text.
Within the Central US 1 Corridor	DSP-	Section 3	See text in this section under Special Requirements.
All others	DSP-	None <sup>4,5</sup>	
<p><sup>1</sup> Study Type refers to sections in these guidelines describing traffic study procedures.</p> <p><sup>2</sup> See text. Changes in funding or bonding of proposed projects may trigger need for a study.</p> <p><sup>3</sup> Uses generating more than 100 net trips may be requested to provide a study. See text.</p> <p><sup>4</sup> A rezoning to the M-U-TC or M-U-I zone may require a traffic study. See text.</p> <p><sup>5</sup> A study may be required by an overlay zone amendment. See text.</p>			

Places of worship and other uses that have their most intensive activity outside of weekday street peak hours require more careful consideration and discussion. Also, the following areas have very specific requirements:

- The development district overlay of the *Approved Central US 1 Corridor Area Sector Plan and Sectional Map Amendment*.
- The area within the *Approved Transit District Development Plan for the College Park-Riverdale Transit District Overlay Zone*.
- The area within the *Prince George's Plaza Approved Transit District Development Plan for the Transit District Overlay Zone*.

The subsection at the end of this section (Subsection H, Special Requirements) includes an extended discussion of the study requirements for these types of uses and for uses within these areas.

With regard to the study requirement, the following is noted:

- A TIS may be requested of developments generating fewer than 50 new peak-hour trips in areas where the TPS reviewer is aware that there are existing operational problems.
- A study will be required for uses generating more than 50 trips, which have significant peak hours during middays or weekends, to address the peak hour of the use.
- It is strongly recommended that separate studies for nearby or adjacent properties, whether under identical ownership or not, be submitted as separate subdivision applications, although reviewed at the same time.
- An applicant having common ownership of multiple adjacent properties shall not avoid the intent or purpose of any TIS requirements by submitting piecemeal applications for subdivisions. TPS staff shall recommend the submittal of traffic counts or a TIS when the total number of site-generated peak-hour vehicle trips at one location has reached the appropriate trigger. At that point, the impact of the total number of site-generated trips at the location will be evaluated in accordance with these guidelines.

The following finding is required for a preliminary plan of subdivision:

*Section 24-124(a):*

*Before any preliminary plat may be approved, the Planning Board shall find that:*

(1) *There will be adequate access roads available to serve traffic which would be generated by the proposed subdivision, or there is a proposal for such roads on an adopted and approved master plan and construction scheduled with one hundred percent (100%) of the construction funds allocated within the adopted County Capital Improvement Program, within the current State Consolidated Transportation Program, and/or such roads are incorporated in a specific public facilities financing and implementation program as defined in Section 27-107.01(186.1); and*

(2) *The traffic generated by the proposed subdivision will be accommodated on major intersections and major roadways within the established study area such that they will be functioning below the minimum peak-hour service levels adopted by the Planning Board in the "Guidelines for the Analysis of the Traffic Impact of Development Proposals," as may be amended from time to time (hereinafter the "study area" refers to major intersections and major roadways as defined in the "Guidelines"); or*

(3) *Roadway improvements or trip reduction programs fully funded by the subdivider or his heirs, successors, and assigns will alleviate the inadequacy as defined in the “Guidelines;” or*

(4) *Roadway improvements fully funded by the subdivider and the County and/or the State government which will alleviate any inadequacy as defined in the “Guidelines,” and which will provide surplus capacity, may be eligible for the establishment of a Surplus Capacity Reimbursement Procedure, as defined in the “Guidelines,” provided:*

...

*or*

(5) *Roadway improvements participated in by the subdivider will alleviate any inadequacy as defined by the “Guidelines.” Such participation shall be limited to improvements defined in paragraph (4), above, and with sufficient surplus capacity to adequately accommodate the subdivider’s proposed traffic impact. The amount and timing of the subdivider’s participation shall be determined by the Planning Board as defined in the “Guidelines;” or*

(6) *Consideration of certain mitigating actions is appropriate as defined in the approved “Guidelines for Mitigation Actions,” and as provided below:*

...

*or*

(7) *There is a proposal for such roads on a plan being considered by the United States Department of Transportation and/or Federal Highway Administration, and which is funded for construction within the next ten years. The Planning Board may condition the approval of the subdivision on a construction schedule that minimizes any inadequacy.*

Commercial and industrial subdivisions fronting on an arterial or a roadway of higher classification must consider additional information. While the TIS may incorporate additional information, such as safety data, in most cases, the submittal of a detailed circulation plan with the preliminary plan will be sufficient to allow the following finding to be addressed:

*Section 24-125:*

*In the case of a commercial or industrial subdivision which fronts on an arterial road or a road of greater capacity, the applicant may be required to provide information relating to traffic safety and efficiency, such as access points, directional signing, internal circulation, and general parking proposals. If the Planning Board finds that there is a probability of traffic hazard or serious impairment of circulation, it may impose such conditions as are needed to protect the public health and safety.*

For purposes of “vesting” transportation adequacy findings made as part of the subdivision process, it is necessary to proceed to record plat (the term “vesting” is loosely applied in this circumstance; the legal requirement for the vesting of development rights is much more strictly defined). Prior to recordation, the filing of a preliminary plan of subdivision subsequent to a prior approval involves an entire set of new findings. In such a circumstance, new traffic studies or data consistent with these guidelines will be needed to support the applicable findings.

## ***B. Comprehensive Design Zones***

The Comprehensive Design Zone (CDZ) is a type of zone that is designed to encourage creativity of design and to allow specialized land development. CDZs allow an increase in residential density or commercial

intensity in exchange for the provision of public benefit features that will improve the quality of the project. Development proposals in a CDZ are approved via a three-phase review process.

### Basic Plan

A TIS for a CDZ submission should support the findings required for CDZ approval. It is strongly recommended that the testing for CDZ applications that propose changes in land use that are not in accordance with the land use recommendations of the applicable master or sector plan be conducted using the Planning Department’s transportation demand forecasting model (TransForM). This procedure, if used, would follow the process described in Section 7, Subsection B.

A more conventional TIS following the procedures in Section 3 may be conducted at the option of an applicant, and it will be reviewed accordingly. Nonetheless, it is preferred that this type of review occur at the time of comprehensive design plan for four reasons: (a) the proposed development yields are better known at that stage of review; (b) there is a specific requirement for TIS submittal at the time of comprehensive design plan; (c) the review of the comprehensive design plan is better suited to run concurrently with the review of the preliminary plan, allowing a single study to be used for both applications; and (d) Section 27-195(c)(1) greatly limits the scope of conditions placed at the time of rezoning, which minimizes the value of a detailed evaluation of traffic operations at the time of basic plan.

The following finding is required for basic plan approval:

*Section 27-195(b)(1):*

*Prior to the approval of the application and the Basic Plan, the applicant shall demonstrate, to the satisfaction of the District Council, that the entire development meets the following criteria:*

...

*(C) Transportation facilities (including streets and public transit) (i) which are existing, (ii) which are under construction, or (iii) for which one hundred percent (100%) of the construction funds are allocated within the adopted County Capital Improvement Program, within the current State Consolidated Transportation Program, or will be provided by the applicant, will be adequate to carry the anticipated traffic generated by the development based on the maximum proposed density. The uses proposed will not generate traffic which would lower the level of service anticipated by the land use and circulation systems shown on the approved General or Area Master Plans, or urban renewal plans;*

...

In cases where the basic plan being proposed is consistent with the land use recommendations of the applicable master or sector plan, it is the interpretation of TPS staff that the first section of the above finding is met by (a) noting that a TIS will be completed at the time of comprehensive design plan and preliminary plan of subdivision; (b) identifying the critical intersections that will be studied at the later stages of review; and (c) identifying the major links to be constructed or improved and major intersections to be improved.

### Comprehensive Design Plan (CDP)

Unless otherwise waived by TPS staff under the general criteria for requiring a TIS described under “Preliminary Plans of Subdivision,” a TIS is required to be submitted with each CDP application. The procedure for conducting a TIS is described in Section 3.

It is the intention that, although preliminary plans and CDPs have substantially different findings, the traffic studies for each plan type utilize identical procedures and identical standards. By doing this, the

two application types can be reviewed concurrently or within a similar time frame, allowing a single detailed review of traffic operations to be done. The following finding is required for a CDP approval:

*Section 27-521(a):*

*Prior to approving a Comprehensive Design Plan, the Planning Board shall find that:*

...

*(7) The staging of development will not be an unreasonable burden on available public facilities;*

...

### Specific Design Plan (SDP)

A TIS is ordinarily not required for SDP review. Trip generation, phasing reports, or a status report on outstanding conditions imposed at an earlier phase of review may be required by TPS staff as a means of making the following finding for the SDP:

*Section 27-528(a):*

*Prior to approving a Specific Design Plan, the Planning Board shall find that:*

...

*(2) The development will be adequately served within a reasonable period of time with existing or programmed public facilities either shown in the appropriate Capital Improvement Program or provided as part of the private development;*

...

The review of conformance to this finding shall focus on demonstrating the period of time required for the implementation of any needed transportation facilities as opposed to requiring new studies. The “period of time” may be described in absolute terms (i.e., four years) or in relative terms to a trigger that is controlled by the applicant or a related party (i.e., 18 months after the completion of the access roadway connection by the adjacent property). In circumstances where programmed or bonded transportation facilities, assumed to be part of background development during preliminary plan review, have been deferred because of a loss of funding or bonding, TPS staff has the option of requesting and reviewing a new TIS prepared as described in Section 3.

### ***C. Mixed-Use Transportation (M-X-T) Zone***

The M-X-T Zone is a type of zone which is designed to provide a variety of compatible uses that create a 24-hour environment in the immediate vicinity of major transportation facilities. Development proposals in the M-X-T Zone can have up to three stages of review.

#### Zoning Map Amendment

A TIS submitted with an application for the M-X-T Zone submission should support the findings required for approval of the zone. It is strongly recommended that the testing for M-X-T Zone applications that propose changes in land use that are not in accordance with the land use recommendations of the applicable master or sector plan be conducted using the Planning Department’s TransForM. This procedure, if used, would follow the process described in Section 7, Subsection B.

The Zoning Ordinance requires that a more conventional TIS following the procedures in Section 3 be conducted and submitted with the application. The following finding is required for a zoning map amendment for the M-X-T Zone:

*Section 27-213(a)(3):*

*(A) Prior to approval, the Council shall find that transportation facilities that are existing, are under construction, or for which one hundred percent (100%) of construction funds are allocated within the adopted County Capital Improvement Program, within the current State Consolidated Transportation Program, will be funded by a specific public facilities financing and implementation program established for the area, or provided by the applicant, will be adequate to carry anticipated traffic for the proposed development.*

...

It is noted that Section 27-213(c)(1) greatly limits the scope of conditions placed at the time of rezoning. Nonetheless, if a positive recommendation for the map amendment is made, TPS staff shall recommend detailed conditions with the provision that the adequacy finding and the resulting conditions may be amended by the Planning Board during its review of the preliminary plan of subdivision.

Conceptual Site Plan (CSP):

Unless otherwise waived by a master plan or sector plan, all properties in the M-X-T Zone must prepare a CSP. Specifically, Section 27-546(b)(8) requires that a more conventional TIS following the procedures in Section 3 be conducted and submitted with the application but only if the property was placed in the M-X-T Zone by a sectional map amendment. The following findings govern CSP approval:

*Section 27-276(b):*

*(1) The Planning Board may approve a Conceptual Site Plan if it finds that the Plan represents a most reasonable alternative for satisfying the site design guidelines without requiring unreasonable costs and without detracting substantially from the utility of the proposed development for its intended use. If it cannot make this finding, the Planning Board may disapprove the Plan.*

...

*Section 27-546:*

*(d) In addition to the findings required for the Planning Board to approve either the Conceptual or Detailed Site Plan (Part 3, Division 9), the Planning Board shall also find that:*

...

*(9) On a Conceptual Site Plan for property placed in the M-X-T Zone by a Sectional Map Amendment, transportation facilities that are existing; that are under construction; or for which one hundred percent (100%) of construction funds are allocated within the adopted County Capital Improvement Program, or the current State Consolidated Transportation Program, will be provided by the applicant, or are incorporated in an approved public facilities financing and implementation program, will be adequate to carry anticipated traffic for the proposed development. The finding by the Council of adequate transportation facilities at the time of Conceptual Site Plan approval shall not prevent the Planning Board from later amending this finding during its review of subdivision plats.*

...

In cases where the CSP is for a property that was placed in the M-X-T Zone by a zoning map amendment, in making a positive recommendation for the plan, TPS staff shall (a) note that a TIS was completed at

the time of zoning; (b) reiterate the transportation adequacy-related conditions imposed at the time of zoning, noting that these conditions are not the result of a new finding but a reiteration of conditions placed at a previous phase of review; and (c) state that the adequacy finding made at zoning and the resulting conditions may be amended by the Planning Board during its review of the preliminary plan of subdivision.

#### Detailed Site Plan (DSP)

A TIS is ordinarily not required for DSP review. Trip generation, phasing reports, or a status report on outstanding conditions imposed at an earlier phase of review may be required by TPS staff as a means of making the following findings for the DSP:

*Section 27-285(b):*

*(1) The Planning Board may approve a Detailed Site Plan if it finds that the plan represents a reasonable alternative for satisfying the site design guidelines, without requiring unreasonable costs and without detracting substantially from the utility of the proposed development for its intended use. If it cannot make these findings, the Planning Board may disapprove the Plan.*

...

*Section 27-546:*

*(d) In addition to the findings required for the Planning Board to approve either the Conceptual or Detailed Site Plan (Part 3, Division 9), the Planning Board shall also find that:*

...

*(10) On the Detailed Site Plan, if more than six (6) years have elapsed since a finding of adequacy was made at the time of rezoning through a Zoning Map Amendment, Conceptual Site Plan approval, or preliminary plat approval, whichever occurred last, the development will be adequately served within a reasonable period of time with existing or programmed public facilities shown in the adopted County Capital Improvement Program, within the current State Consolidated Transportation Program, or to be provided by the applicant.*

...

In cases where the second finding is applicable, the review of conformance to this finding shall focus on demonstrating the period of time required for the implementation of any needed transportation facilities as opposed to requiring new studies. The “period of time” may be described in absolute terms (i.e., four years) or in relative terms to a trigger that is controlled by the applicant or a related party (i.e., 18 months after the completion of the access connector roadway by the adjacent property). In circumstances where programmed or bonded transportation facilities, assumed to be part of background development during preliminary plan review, have had a deferral because of a loss of funding or bonding, TPS staff may request and review a new TIS, prepared as described in Section 3, if more than six years have elapsed since the most recent finding of adequacy was made.

In cases where an adequacy finding has never been made for a site, TPS staff shall review recent traffic data as a means of making the above finding or otherwise determine that the site plan as proposed would have a de minimus impact upon area traffic. Nonetheless, applications for sites that are determined to generate

more than 50 new peak-hour trips, or sites for which deficiencies are noted, may have to provide traffic count data or a full TIS for review as described in Section 3.

#### ***D. Mixed-Use Infill (M-U-I) Zone***

The M-U-I Zone encourages the efficient use of land, public facilities, and services in areas that are substantially developed. The zone is frequently granted by means of a sectional map amendment, but a property can be rezoned by an individual petition submitted through the zoning map amendment or the detailed site plan process. The M-U-I Zone can only be approved within the Transit District Overlay (TD-O) or the Development District Overlay (D-D-O). A municipality or the Prince George's County Redevelopment Authority may request the zone in other circumstances.

Within the T-D-O, a request for the M-U-I Zone is required to show that the proposal will meet development plan goals and objectives, and will demonstrate compatibility with existing and proposed development on adjacent parcels. If the proposal represents an intensification of traffic over the underlying plan, the goals and objectives of the relevant transit district development plan (TDDP) should be reviewed to determine whether a study is needed or not. The type of study may need to employ the procedures in Section 3 or Section 7, Subsection B—or some combination of the two—but shall utilize a scope and process similar to whatever traffic analysis was utilized in approving the underlying plan.

Within the D-D-O, a request for the M-U-I Zone is required to demonstrate compatibility with existing and proposed development on adjacent parcels. Unless the site plan itself must show compatibility with development standards that include transportation adequacy, a study is not needed to accompany a rezoning to M-U-I within the D-D-O.

#### ***E. Overlay Zone Amendments***

There are five types of overlay zones in use in Prince George's County. Of these, the Transit District Overlay (T-D-O) and the Development District Overlay (D-D-O) have a primary purpose of shaping new development while the remaining three overlay zones emphasize preservation and revitalization. Because the T-D-O and the D-D-O have the potential to generate new traffic impacts, these overlay zones are the principal concern of this subsection.

Overlay zones impose certain standards for development, but in many cases the overlay zone is designed to streamline the review process as well, making it desirable to seek an amendment to the overlay zone boundaries. Within either the T-D-O or the D-D-O, a request to amend the overlay zone boundary (or any other allowable amendment) is required to show that the proposal will conform to the purposes and the recommendations of the transit district or the development district as stated in the appropriate district plan.

A study may be needed if the proposal represents an intensification of traffic over the underlying plan. Depending on the goals and objectives of the relevant TDDP or development district recommendation, a study may or may not be needed. The type of study may need to employ the procedures in Section 3 or Section 7, Subsection B, (or some combination of the two) but shall utilize a scope and process similar to whatever traffic analysis was utilized in approving the underlying plan.

#### ***F. Conceptual and Detailed Site Plans (Outside of Mixed-Use Zones)***

A conceptual site plan (CSP) is required for properties developing in the I-3 Zone and may also be required as a condition of a conventional rezoning or for other particular uses. Unless otherwise required by a condition or a use (in which case the procedures in Section 3 should be utilized), a TIS is not required for a CSP. The following finding governs CSP approval:

*Section 27-276(b):*

*(1) The Planning Board may approve a Conceptual Site Plan if it finds that the Plan represents a most reasonable alternative for satisfying the site design guidelines without requiring unreasonable costs and without detracting substantially from the utility of the proposed development for its intended use. If it cannot make this finding, the Planning Board may disapprove the Plan.*

...

A detailed site plan is a requirement for a wide range of uses and situations. A TIS is not required for DSP review. The following finding governs DSP approval:

*Section 27-285(b):*

*(1) The Planning Board may approve a Detailed Site Plan if it finds that the plan represents a reasonable alternative for satisfying the site design guidelines, without requiring unreasonable costs and without detracting substantially from the utility of the proposed development for its intended use. If it cannot make these findings, the Planning Board may disapprove the Plan.*

...

Note: The above study requirements do not apply within the M-X-T Zone (see Subsection C) or within the Central US 1 Corridor (see Subsection H). Please refer to the text elsewhere in this section regarding these circumstances.

### **G. Other Zoning Cases**

In general, other types of cases processed by the Zoning Section do not require the preparation of a TIS. Each type of case is briefly discussed below with the needed finding:

- Zoning map amendments (ZMAs) for conventional (also termed Euclidean) zones are granted pursuant to the following finding:

*Section 27-157(a)(1):*

*No application shall be granted without the applicant proving that either:*

*(A) There has been a substantial change in the character of the neighborhood; or*

*(B) Either:*

*(i) There was a mistake in the original zoning for property which has never been the subject of an adopted Sectional Map Amendment; or*

*(ii) There was a mistake in the current Sectional Map Amendment.*

The conventional zones include all residential, commercial, and industrial zones plus the Planned Mobile Home Community (R-M-H) Zone. For the purpose of considering traffic impacts, the Planned Community (R-P-C) Zone is included in this discussion as well, although it is not a conventional zone. The TPS staff evaluates conventional zoning map amendments for the net traffic impact of the highest and best by-right use of the proposed zone versus the highest and best by-right use of the existing zone. In cases where the new traffic impact would exceed 100 peak-hour trips, applicants are encouraged and may be requested to prepare a TIS as described in Section 3. This is done to ensure that applicants, the reviewing agencies, and the general public are aware of the traffic impacts of larger zoning applications and also to consider conditions that are necessary to protect surrounding properties or the general neighborhood.

- The Mixed-Use Town Center (M-U-TC) Zone is granted and amended through the preparation of a small area plan. The focus of the M-U-TC Zone is on redevelopment, revitalization, and limited compatible new development. In cases where the new traffic impact would exceed 100 peak-hour trips, applicants are encouraged and may be requested (but not required) to prepare a TIS as described in Section 3. This is done to ensure that applicants, the reviewing agencies, and the general public are aware of the traffic impacts of larger zoning applications and also to consider conditions that are necessary to protect surrounding properties or the general neighborhood.
- Special exceptions are reviewed to ensure that the proposed use is compatible with surrounding uses and the general neighborhood. Many particular special exception uses must also conform to their own unique set of requirements listed by use in Part 4, Division 3, of Subtitle 27. Attention shall be given to these use-related requirements by applicants and staff alike in the justification for and review of a special exception.

The following general finding is required for special exception approval:

*Section 27-317(a):*

*A Special Exception may be approved if:*

...

*(4) The proposed use will not adversely affect the health, safety, or welfare of residents or workers in the area;*

...

TPS staff evaluates special exceptions for the new traffic impact of the proposed use versus the highest and best by-right use of the underlying zoning. Review is generally related to access but can extend beyond the driveway and the limits of the site where access options are limited. In cases where the new traffic impact would exceed 100 peak-hour trips, applicants are encouraged and may be requested to prepare a TIS as described in Section 3. This is done to ensure that applicants, the reviewing agencies, and the general public are aware of the traffic impacts of larger special exception applications and also to consider conditions that are necessary to protect surrounding properties or the general neighborhood.

Several types of special exceptions have particular TIS requirements identified in Part 4, Division 3, of Subtitle 27. Further guidance regarding TIS preparation and review to address these requirements is provided in Subsection H of this section.

- Revisions to site plans for special exceptions (ROSPs) are limited to changes that do not constitute an enlargement or extension of the use. As such, a TIS is not required.
- Departures are related to parking, loading, and signage. As such, a TIS is not required. Other types of studies related to parking generation, parking usage, or parking design may need to be provided as a part of the justification for the request, and these types of requirements are described in greater detail in Section 9.
- Special permits are generally limited to the U-L-I Zone and the M-U-TC Zones. In most cases, special permits are reviewed with a detailed site plan. Review is limited to design conformity with the underlying master or sector plan; no TIS is required.

- Outside of the special exception process, changes to nonconforming uses are generally not reviewed by TPS staff. The exceptions are nonconforming gas stations and nonconforming drive-in and fast food restaurants. The review is limited to the site plan; no TIS is required.

## ***H. Special Requirements***

- 1. The Central US 1 Corridor Area**—The Approved Central US 1 Corridor Area Sector Plan includes several special requirements related to TIS preparation within the development district overlay. This sector plan (along with its predecessor plan) introduced the average peak period level of service for three roadway segments along US 1, as described below:

*“Within the Central US 1 Corridor Development District, the transportation facilities adequacy standard shall be Level-of-Service E, based on the average peak period levels of service for all signalized intersections in three designated segments of the Central US 1 Corridor.”*

The roadway segments are defined as follows:

- The segment of US 1 between Cherry Hill Road and MD 193, including the Cherry Hill Road intersection.
- The segment of US 1 between MD 193 and Paint Branch Parkway/Campus Drive, and not including the Paint Branch Parkway/Campus Drive intersection.
- The segment of US 1 between Paint Branch Parkway/Campus Drive and Guilford Drive, inclusive of both intersections.

The average peak period level of service is to be analyzed as follows:

- Counts are to be taken at each signalized intersection within the segment under study for three hours during each peak period under study.
- At each intersection within the segment, the three-hour total counts are analyzed to determine the peak-hour turning movement count for the intersection.
- The peak-hour turning movement count is analyzed using the critical lane volume method, as described in Section 3 of these guidelines. This is done for each signalized intersection for the segment under study.
- The average peak period level of service for a segment is the average critical lane volume for the signalized intersections in the segment weighted by the sum of the average hourly turning movements.
- The maximum standard average peak period level of service is level of service E (LOS E) or an average weighted critical lane volume of 1,600 vehicles per hour.

Aside from the extra computation of the weighted critical lane volumes, the conduct of the study is very similar to the standard TIS. However, it is advised that links within the segment are not to be studied when the average LOS is computed for the segment.

For the portion of the development district outside of the Capital Beltway, the adequacy standard shall be peak period LOS E for each individual intersection. Links within the defined study area are to be studied, and the adequacy standard shall be peak period LOS E for each individual link.

For the purposes of adequacy findings, the use of the average peak period level of service for the three segments of US 1 is a methodology that is restricted to development proposals within the D-D-O of the Approved Central US 1 Corridor Area Sector Plan. Applications outside of the overlay within this sector plan, plus any other applications for which intersections within the three segments would be critical, are advised to scope the TIS and perform any analyses using conventional techniques.

Within the development district overlay of the Approved Central US 1 Corridor Area Sector Plan, properties are required to demonstrate adequacy at the time of detailed site plan. This requirement is enabled by a requirement that new development within the overlay area is subject to detailed site plan review and that all detailed site plans must conform to all standards for the development district (including the transportation adequacy standard). As such, the following guidance is offered:

- New development deemed to have a de minimus trip generation can have this fact considered in demonstrating adequacy.
- Properties for which adequacy findings have been made within one year prior to the date of the application may utilize those findings in satisfaction of the detailed site plan requirement.
- All other sites may utilize available counts associated with findings made within one year prior to the date of the application or other available counts that are one year old or newer. The applicant shall submit an analysis that explicitly includes the site under consideration.

**2. Areas Controlled by Parking Supply**—Development within two T-D-O areas is governed by limits on the parking supply within the T-D-O. For development applications on properties located in the following areas, the required findings for transportation adequacy shall be based on the recommendations in the currently approved transit district development plan for the respective area:

- College Park Metro-Riverdale Transit District Development Plan
- Prince George’s Plaza Transit District Development Plan

Adequacy is based upon conformity with the parking caps recommended in each plan. Proposals recommending excess parking (parking beyond the cap) of the appropriate plan shall conduct a TIS. The type of study may need to employ the procedures in Section 3 or Section 7, Subsection B, or some combination of the two, but shall utilize a scope and process similar to whatever traffic analysis was utilized in approving the underlying plan.

**3. Special Exceptions Having Mandatory TIS Requirements**—The following uses (Zoning Ordinance section given in parentheses) have specific TIS requirements:

- Amusement park (Section 27-335)
- Asphalt mixing plant (Section 27-337.01)
- Commercial recreational attraction (Section 27-342)
- Concrete batching or mixing plant (Section 27-343.02)
- Concrete recycling facility (Section 27-343.03)
- Sand and gravel wet processing plant (Section 27-405)
- Class three fill (Section 27-405.01)

- Sanitary landfill (Section 27-406)
- Rubble fill (Section 27-406)
- Surface mining (Section 27-410)

The following guidance is provided regarding studies for the above uses:

- All but two of the above uses (amusement park and commercial recreational attraction) are primarily truck generators. Truck trip generation for these uses will be based on a measure of the daily activity for the use. In addition, peak-hour trip generation shall also consider employees and visitors associated with the use. Both components of trip generation shall be noted in the TIS associated with an application.
  - Except for the surface mining and class three fill uses, all studies should be scoped using the guidelines provided in Section 2 of this document.
  - Surface mining and class three fill uses are required to identify haul routes associated with the use. Therefore, scoping will be based on the haul route and will follow the haul route to either an origin/destination or to a facility of arterial classification or higher.
  - Any TIS submitted in support of a class three fill or for a concrete recycling facility is required to be provided at the time the special exception is filed. All others are allowed to be submitted during review of the application; the exact section of the Zoning Ordinance should be consulted for the timing of study submittal.
  - In accordance with the Zoning Ordinance, the agencies are given 45 days to review a TIS associated with a concrete recycling facility.
  - A TIS mandated by the Zoning Ordinance shall not be waived by staff for reasons of the size of the use or its minimal impact on public roadways. At a minimum, the study shall consider the site access point and the link (or links) adjacent to the use.
- 4. Places of Worship**—Preliminary plans of subdivision proposing places of worship are subject to the same findings as other subdivision applications. Unlike most other applications, however, places of worship typically have their maximum traffic impact outside of normal weekday peak hours, and the following guidance is provided regarding off-peak and peak-hour traffic analyses:
- For places of worship less than 20,000 square feet of proposed gross floor area, traffic counts beginning one hour before the starting time of the primary weekly service or gathering and ending one hour after the conclusion of that same service or gathering should be conducted. The site access point and the nearest major intersection serving more than 50 percent of site-generated traffic, along with the roadway link(s) connecting the two intersections, shall be studied.
  - For places of worship 20,000 square feet or greater of proposed gross floor area, a TIS should be done. The study shall utilize traffic counts beginning one hour before the starting time of the primary weekly service or gathering and ending one hour after the conclusion of that same service or gathering. Scoping shall be conducted using the guidance in Section 1, Subsection B.
  - Places of worship that include more conventional peak-hour-generating uses, such as day care and school facilities, should scope a weekday peak-hour TIS (or provide weekday peak-hour traffic counts if appropriate) using the guidance in Section 1, Subsection B.

- Places of worship that do not propose accompanying uses must consider weekday traffic impacts. Even small institutions have office and custodial needs, counseling, and deliveries that will generate some peak-hour trip activity. If that activity is five trips or fewer in each peak hour, the impact can be deemed de minimus. Otherwise, weekday traffic counts (or possibly a TIS) will be needed.
- Places of worship that do not have routine weekly services or gatherings should work with TPS staff to determine an appropriate trip generation and traffic analysis needs. Such a discussion should occur as early as possible during the development review process and, preferably, before the filing of an application.

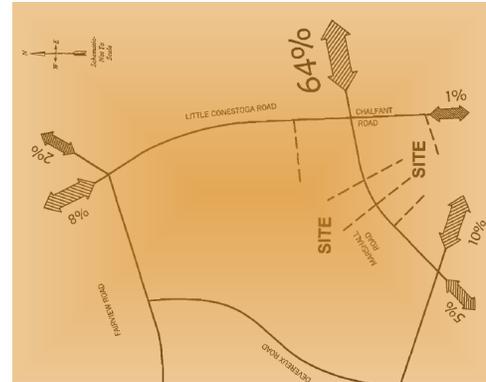
Preliminary plans of subdivision proposing places of worship shall include a square footage on which the adequacy finding will be based. TPS staff shall confirm with the applicant (or the engineer responsible for the application) the square footage desired for approval by the plan along with quantities for any other uses.

**5. The Mixed-Use Community (M-X-C) Zone**—The M-X-C Zone was developed to encourage a balanced mix of residential, commercial, recreational, and public uses. The zone is in current use for a single large development, but it has been over 15 years since an application was made to utilize this zone at any other location in the county. The M-X-C development process utilizes a four-step process that includes two unique application types, and three of these processes have TIS requirements as described below:

- A TIS utilizing the procedures described in Section 7, Subsection B, must accompany the zoning map amendment application. The standards used to review the application are as described in the 2002 “Guidelines for the Analysis of the Traffic Impact of Development Proposals” and as documented in Zoning Map Amendment A-9894 for Fairwood.
- The second phase, the comprehensive sketch plan, requires a TIS that generally uses the procedures described in Section 3. The only difference is that road improvements that are included, but not necessarily fully funded for construction within the capital program, may be used in making the needed finding for approval.
- The third phase, the final development plan, requires a TIS that utilizes the procedures described in Section 3. The final development plan is intended to be reviewed at approximately the same time that a preliminary plan of subdivision is under review, and both plans should utilize the same study.
- The fourth phase, the detailed site plan, does not require a TIS. Trip generation, phasing reports, or a status report on outstanding conditions imposed at an earlier phase of review may be required by TPS staff as a means of making the needed finding.

## Section 3: Traffic Impact Analysis

Every TIS should use the same general approach in analyzing traffic impacts. While the required findings for various types of applications differ and the standards may change between the different tiers or even in certain sectors and additional tools may be available in selected areas, the process for conducting the analysis should remain constant.



### A. Network Evaluation

The ability of the roadway network to accommodate projected traffic volumes generated by a proposed development must be assessed utilizing various techniques to measure capacity. Roadway capacities must then be defined over a range of operating conditions utilizing the LOS concept. A description of this concept is included in the Transportation Research Board's *Highway Capacity Manual*, and a brief definition of the term is included in the glossary in Section 1. The techniques selected to measure capacity and determine corresponding levels of service should depend on the nature of the study area and the types of facilities under study.

- 1. Signalized Intersections**—In areas where the flow of traffic is controlled by signals, the critical lane volume (CLV) method should be used to measure the LOS at major signalized intersections in the study area. This analysis is a broad evaluation of the capacity of an intersection that determines the LOS for a given set of demand volumes and geometrics. The advantage of the technique is that it is simple and easy to use given the data that are typically available during development review.

Input information: The procedure does not consider the details of lane width, parking conditions, or other features, nor does it consider the number of trucks and buses in the traffic stream.

- Geometrics: Number of lanes on each approach and turning movements assigned by lane.
- Volumes: Total vehicles per hour as determined over the applicable peak period for each movement of each approach.

Assignment of traffic volume by lane:

- Where exclusive turning lanes are present, all turns are assigned to the appropriate turning lane.
- When two or more lanes are present on an approach, volume is distributed among the available lanes as follows:

Number of Approach Lanes	Lane Use Factor
1	1.00
2	0.55 (0.60 for double left-turns only)
3	0.37 (0.45 for triple left-turns only)
4	0.29

- When permitted left turns are included in shared lanes, vehicles are assigned to available lanes so that the number of vehicles using each lane is equal. All right-turning and through vehicles have a passenger car equivalent (PCE) of 1.00, while permitted left turns have the following PCE values:

<b>Opposing Through and Right-Turning Hourly Volume</b>	<b>Passenger Car Equivalent (PCE)</b>
0 to 199	1.10
200 to 599	2.00
600 to 799	3.00
800 to 999	4.00
1,000 and over	5.00
It should be noted that all left-turning traffic must be assigned to the leftmost lane.	

Because signal phasing and timing is not known during development review, combinations of critical lane volumes are identified by considering conflicting movements. For a north-south street, critical conflicts are the northbound left-turn movement with the southbound through movement and the southbound left-turn movement with the northbound through movement. The critical volume for the north-south street is the larger sum among:

- Northbound single-lane, left-turn volume plus the maximum single-lane volume for the southbound through movement plus the right-turn movement.
- Southbound single-lane, left-turn volume plus the maximum single-lane volume for the northbound through movement plus the right-turn movement.
- Similarly, the critical volume for the east-west street is the larger sum among:
- Eastbound single-lane, left-turn volume plus the maximum single-lane volume for the westbound through movement plus the right-turn movement.
- Westbound single-lane, left-turn volume plus the maximum single-lane volume for the eastbound through movement plus the right-turn movement.

The total critical lane volume for the intersection is the sum of the critical volumes for the north-south and east-west streets. The computed critical lane volume corresponds to the following levels of service:

<b>Critical Lane Volume</b>	<b>Level of Service</b>
0 to 1,000	A
1,001 to 1,150	B
1,151 to 1,300	C
1,301 to 1,450	D
1,451 to 1,600	E
1,601 and over	F

The critical volume for the intersection is then compared to the policy criteria in Table 2 on page 19.

In cases when it is known that an existing intersection is controlled by a three- or four-phased signal, it should be assumed that such phasing will continue to be used in the future. The critical lane analytical procedure should be modified to reflect the presence of the additional phases.

In reviewing the traffic study, the operating agency may request additional information of the traffic consultant as a means of making a recommendation. An analysis of queue lengths or delays, or perhaps a more comprehensive analysis of a study area using a tool such as Synchro, can be requested by

an operating agency. However, while the results of such tools can be used to supplement a staff recommendation to the Planning Board, they cannot be used in lieu of the board's standards.

- 2. Unsignalized Intersections—In areas where a significant portion of the traffic from the proposed development must utilize an unsignalized intersection, the procedures contained in the *Highway Capacity Manual* generally form the basis of the analysis. It shall be noted that the duration identified in the analysis refers to the duration of peak traffic flow and is typically 0.25 hours; a longer duration (up to one hour) may be used if the traffic counts indicate that the peak flow remains constant over a longer time period. Also, the correct peak-hour factor must be used in the procedure. Refer to the glossary to determine the correct way to compute the peak-hour factor.**

*Two-way stop-controlled intersections:*

The following procedure shall be employed for two-way stop-controlled intersections:

- Using the two-way stop-controlled procedure for unsignalized intersections in the *Highway Capacity Manual*, determine the maximum delay in seconds for any movement within the intersection. If no movements exceed 50.0 seconds of delay, the intersection is deemed to operate acceptably, and the analysis is complete.
- If any movement within the unsignalized intersection has a delay exceeding 50.0 seconds, compute the minor street approach volumes. If the peak hourly approach volumes on each minor street approach are 100 or fewer, the intersection is deemed to operate acceptably, and the analysis is complete.
- Where movements have delay exceeding 50.0 seconds and at least one minor street approach has a volume exceeding 100 vehicles during a peak hour, the CLV analysis procedure for a two-phase operation shall be employed and reported. Intersections operating at a CLV of 1,150 or better shall be deemed adequate as unsignalized intersections. Intersections operating at a CLV greater than 1,150 may propose additional turning lanes on approaches as appropriate to bring the CLV to within the acceptable level or may consider other traffic control changes. Signalization shall be considered only when all approaches to an intersection are a minimum of two approach lanes.
- It is recognized that the *Highway Capacity Manual* procedure is a delay-based and not a capacity-based procedure. The additional steps above are intended to make the process more capacity based. As traffic grows at an unsignalized intersection, however, a traffic signal warrant study will ultimately be required as a Planning Board condition, and this study will be reviewed by the appropriate operating agency. The traffic signal warrant study is a more detailed study of daily traffic variations, safety, and pedestrian movements. The appropriate operating agency shall make the decision of whether a signal is warranted.
- The three-step process of analyzing the two-way stop-controlled intersection is to be treated as a “pass-fail” analysis, and a level of service will not be reported.

*All-way stop-controlled intersections:*

The following procedure shall be employed for all-way stop-controlled intersections:

- Using the all-way stop-controlled procedure for unsignalized intersections in the *Highway Capacity Manual*, determine the maximum delay in seconds for any movement within the intersection. If no movements exceed 50.0 seconds of delay, the intersection is deemed to operate acceptably, and the analysis is complete.

- Where movements have delay exceeding 50.0 seconds, the CLV analysis procedure for two-phase operation shall be employed and reported. Intersections operating at a CLV of 1,150 or better shall be deemed adequate as unsignalized intersections. Intersections operating at a CLV greater than 1,150 may propose additional turning lanes on approaches as appropriate to bring the CLV to within the acceptable level or may consider other traffic control changes. Signalization shall be considered only when all approaches to an intersection are a minimum of two approach lanes.
- The two-step process of analyzing the four-way stop-controlled intersection is to be treated as a “pass-fail” analysis, and a level of service will not be reported.

*Roundabouts:*

Modern roundabouts are essentially circular, at-grade intersections. They provide fewer conflict points, operate at lower speeds, and generally result in fewer crashes, especially fatal and severe injury collisions when compared to signalized and stop-controlled intersections.

The National Cooperative Highway Research Program publication, *Roundabouts: An Informational Guide, Second Edition*, has recommended that satisfactory operations for roundabouts occur between 85 and 90 percent of capacity. There are a number of software tools available for the capacity analysis of roundabouts, including the *Highway Capacity Manual* and Sidra Intersection (Sidra Solutions) software packages. The use of a different analysis procedure should be confirmed with the appropriate operating agency.

Where the analysis indicates a volume-to-capacity (v/c) ratio greater than 0.850 for the intersection, geometric improvements or trip reduction measures should be considered that will reduce the v/c ratio to an acceptable level. To the degree that factors in the above-cited publication are relevant, the operating agency can deem a v/c between 0.850 and 0.900 to be acceptable, and that agency must do this in writing in order for the Planning Board to make a similar finding. Any improvements must be deemed acceptable by the operating agency.

As with the other unsignalized intersection analyses, the roundabout analysis is a “pass-fail” analysis, and a level of service will not be reported.

3. **Links**—Traffic volumes on the critical roadway links (or segments) in the study area shall be analyzed to determine the ability of the area roadway system to accommodate a proposed development. The use of the link analysis is limited by the following criteria:
  - Any critical roadway links must be within the study area as defined in Section 1.
  - Any link that includes an approach to a signalized intersection that does not meet the LOS standard without improvements funded or otherwise provided by the applicant is a candidate for study subject to the following limitations:
    - Links for which queuing does not result in spillback to the adjacent upstream signalized intersection shall not be studied. The amount of queuing shall be computed using the following formula:

$$L = (V/PHF) * K * 25 * (1 + P) / N_c$$

where L = queue length, in feet

V = peak-hour volume for an approach (per lane if it is a multiple through lane approach

PHF = peak-hour factor

K = a constant to reflect random arrival of vehicles (1.5 if right turn on red is permitted and 2.0 otherwise)

25 = length of a typical passenger car, in feet

P = percentage of trucks and buses (use 1 percent unless specific data are available

$N_c$  = number of traffic signal cycles per hour

The computed queue length (L) shall be compared to the length of the link from stopbar to stopbar. If L exceeds the length of the link, the link is a candidate for link analysis.

- Any link that is constructed to its master plan-recommended cross section shall not be studied.
- Any link shorter than 400 feet in length shall not be studied.

The link analysis procedure used is a simple comparison of a peak-hour roadway service volume (its capacity) (the per lane capacity multiplied by the number of lanes) with the actual volume to determine the v/c ratio for the roadway link. A single v/c shall be computed for the critical link in each peak hour. The following table should be used to determine two-way capacity for a roadway, which is the upper limit of LOS E:

Facility Type	Operating Characteristics	Per Lane Capacity
Expressway	Full access control with median and with posted speed of 50 miles per hour or less	1,550
Rural-Type Highway	Rural, two-lane roadway links where traffic flow is uninterrupted by signals and with posted speed of 45 miles per hour or greater	1,270
Arterial	Divided facility or facility with continuous left-turn lane controlled by signals and with posted speed of 45 miles per hour or greater	1,225
Major Collector	Divided facility or facility with continuous left-turn lane controlled by signals and with posted speed of 40 miles per hour or less	1,065
Collector	Undivided facility with traffic movement controlled by signals and with posted speed of 40 miles per hour or less	725
Rural-Type Collector	Rural, two-lane roadway links where traffic flow is uninterrupted by signals and with posted speed of 40 miles per hour or less	670

The following shall be noted:

- The current (or future programmed) operating characteristics of a facility (not necessarily the master plan designation) shall determine the type of facility to be assumed along with its capacity.
- Facilities falling outside of the types or operating characteristics in the above table shall consult with TPS staff at the time of scoping to determine the correct facility type and hourly capacity to use in the link analysis.
- The number of through lanes shall be present over the entire link in order to be used to determine a facility type.

The ratio of existing (or future) traffic volume to capacity—the v/c ratio—is computed, rounded to the nearest one-thousandth (three decimal places), and compared to the table below to determine the existing (or future) level of service for a roadway link under study:

Volume to Capacity Ratio (v/c)	Level of Service
0 to 0.275	A
0.276 to 0.450	B
0.451 to 0.650	C
0.651 to 0.845	D
0.846 to 1.000	E
1.001 and over	F

### ***B. Existing Traffic Situation***

Each TIS is to be generally prepared using a three-step process. This process is illustrated below with existing traffic highlighted. Existing traffic shall be analyzed and summarized using the data collected in accordance with the requirements of Chapter 1. The existing traffic situation is a summary of traffic conditions at the current time, using current traffic counts and a current inventory of vehicular and non-vehicular facilities.



### ***C. Background Traffic Situation***

The background traffic situation is an estimation of future traffic conditions, assuming that the subject application does not develop. Background traffic takes the existing traffic situation and adds three components: background development, fully-funded transportation improvements, and regional growth. The following figure illustrates the TIS process with the background traffic situation highlighted. Each of the major components added to existing traffic is described in greater detail in the subsections that follow.



1. **Background Development**—Approved development shall be considered in each TIS in accordance with the definition of background development in the glossary in Section 1. At this time, there is no singular source of reference for planned or background development. The following sources may be used:

- The development activities layer on the PGAtlas web site is the best source of background development information. It is the most current source of information. However, this layer lacks older development approvals and is not updated to reflect permit activity.
- Other older traffic studies may provide limited but non-current information.

While the Planning Department will provide limited assistance to consultants in identifying relevant background developments in the study area, it is the ultimate responsibility of the traffic consultant to ensure that the background development list is complete prior to staff review of the TIS. Field checking of background development is strongly advised. Older subdivisions for which a final plat has not been approved or recorded should also be researched; the preliminary plan of subdivision may have expired. As new resources for identifying background development become available, the TPS staff will inform traffic consultants of their availability.

Pending cases within the study area for a TIS are not required to be included in the study. However, once a case within the study area is approved by the Planning Board, that case must be considered background for any subsequent approvals in the area by the board. Failure to include a pending case in a TIS may result in that study being deemed incomplete during the course of its review if that pending case is approved. This may result in a request to revise the study. Consequently, the review process for the TIS could be delayed.

It is advised that unbuilt developments having conditions to improve a critical intersection or link should be considered as background to other developments studying that intersection or link. Consistent with the study time frame, significantly larger developments may be included using a phased approach. Such phasing shall be reviewed with TPS staff.

2. **Funded Transportation Facilities**—Programmed transportation facilities in the Prince George’s County Capital Improvement Program (CIP) and the Maryland Department of Transportation (MDOT) Consolidated Transportation Program (CTP), which are fully funded for construction, shall be considered. Bonded improvements have the same status as CIP or CTP improvements when all three of the following criteria are met:

- The bonding is sufficient to cover 100 percent of the construction cost of the improvements assumed in the traffic analysis.

- The construction permit has been approved by SHA or DPW&T or some other responsible transportation agency.
- A construction schedule (for the improvements to be built within the next six years) has been included in the permit package.

In order to include a bonded improvement in a TIS, the applicant must demonstrate that the above criteria have been met. A copy of the bond and the permit shall be included in the study.

3. **Regional Growth (Growth in Through Traffic)**—Growth should generally be estimated using historical traffic data. Extrapolation of historical data from at least the past ten years is considered acceptable for developments that will be built within a six-year time horizon. More in-depth study of the surrounding area is encouraged for development proposals of a broader scale. The TIS will apply the regional growth factor for a period of time (the study time frame) commensurate with the size and type of application as noted in the table below:

Application Type	Land Use Type	Quantity	Minimum Study Time Frame
Basic Plan/Rezoning	All	Any	6 years
Special Exception	Uses Having Mandatory TIS Requirements	Any	5 years
	All Others	Any	2 years
CDP/CSP/Preliminary Plan of Subdivision	Residential	60 dwelling units (DU) or fewer	2 years
		More than 60 DU	6 years
	Office, Industrial, and Mixed Use	100 peak-hour trips or fewer	2 years
		More than 100 peak-hour trips	6 years
	Retail	20,000 square feet or fewer	2 years
		More than 20,000 square feet	6 years
	Institutional	50,000 square feet or fewer	2 years
		More than 50,000 square feet	6 years
Others	Any	6 years	
All others	All	Any	6 years

During scoping, any deviations from the above table can be considered, particularly for single buildings with a financially committed user. Longer study time frames should be considered with phased projects.

#### ***D. Total Traffic Situation***

The total traffic situation is an estimation of future traffic conditions, assuming that the subject application does develop. Total traffic takes the background traffic situation and adds the trips generated by the development proposal under study. The following figure illustrates the TIS process with the total traffic situation highlighted.



- 1. Trip Generation**—The TIS must always include a breakdown of the proposed development. A complete summary of gross square footage by land use category should be provided for all nonresidential land uses. A summary of the number and type of dwelling units proposed should be provided for residential land uses. This information will facilitate the application of appropriate trip generation rates.

Tables 4, 5, and 6 on pages 46, 47, and 61 respectively provide trip generation rates for various zoning classifications and land uses. These rates were developed by studies of existing land uses in Prince George’s County and should be used in every TIS except where it can be demonstrated by acceptable field data that a more appropriate rate is applicable.

Trip generation rates for land uses not cited in Tables 4, 5, or 6 should be estimated using the most recent edition of the Institute of Transportation Engineers’ *Trip Generation*, often termed the ITE Trip Generation Manual. Trip generation rates for any uses not cited in these figures or the ITE Trip Generation Manual should be researched for validity and are subject to review and revision if deemed necessary by TPS staff. Where supporting data are insufficient to validate use of the proposed rates within the study area, the rates approved by the TPS staff shall be used.

## Table 4: Residential Trip Generation

Land Use		Trip Generation <sup>1</sup> Residential: trips per dwelling unit (DU)						
		A.M. Peak Hour			P.M. Peak Hour			Daily
Zoning Categories	Density (Euclidean Zones Only) <sup>2</sup>	In	Out	Total	In	Out	Total	Total
		<b>Residential Uses</b>						
<b>Single Family Housing</b>		0.15	0.60	0.75	0.59	0.31	0.90	9.00
R-O-S	0.05 DU/acre							
O-S	0.20 DU/acre							
R-A	0.50 DU/acre							
R-E	0.85 DU/acre							
R-R	1.85 DU/acre							
R-80	3.40 DU/acre							
R-55	4.20 DU/acre							
<b>Townhouse<sup>3</sup></b>		0.14	0.56	0.70	0.52	0.28	0.80	8.00
R-T	9.00 DU/acre							
R-35	8.50 DU/acre							
R-30 & R-30C	9.00 DU/acre							
R-20	11.00 DU/acre							
R-18 & R-18C	9.00 DU/acre							
<b>Apartments (garden and mid-rise)<sup>4</sup></b>		0.10	0.42	0.52	0.39	0.21	0.60	6.50
R-18/R-18C (garden)	12.00/14.00 DU/acre							
R-18/R-18C (mid-rise)	20.00/20.00 DU/acre							
R-30	10.00 DU/acre							
R-30C	12.00 DU/acre							
<b>Apartments (high-rise)<sup>5</sup></b>		0.06	0.24	0.30	0.26	0.14	0.40	4.00
R-H	48.40 DU/acre							
R-10 & R10A	48.00 DU/acre							
<b>Student Housing<sup>6</sup></b>		0.03	0.10	0.13	0.10	0.07	0.17	1.70
<b>Senior Adult Housing—Single Family<sup>7</sup></b>		0.08	0.14	0.22	0.16	0.11	0.27	3.71
<b>Senior Adult Housing—Multifamily<sup>7</sup></b>		0.05	0.08	0.13	0.10	0.06	0.16	3.48

**General Notes:**

1. Uses not included in this table are advised to use rates in the ITE Trip Generation Manual. Peak-hour analyses should be based upon rates given for the peak hour of adjacent street traffic where available.
2. Density is presented for conventional residential, commercial, and industrial zones as a means of estimating the potential yield of a site. Densities for residential zones reflect estimated averages where available. Densities for commercial and industrial zones reflect average floor to area (FAR) ratios observed in the county.

**Residential Notes:**

3. Townhouse trip rates should be used where each residence has a shared wall, floor, or ceiling but has a separate entrance to the street or outdoor common area.
4. Apartment (garden/mid-rise) rates should be used where multiple residences share a common entryway to the street or outdoor common area. Garden apartments are one to three stories in height. Mid-rise apartments are four to eight stories in height.
5. High-rise apartments are nine or more stories in height.
6. Rates are given on a per-bed basis for a dormitory or apartment-type facility. They should be used only for student housing within walking distance of the campus or for complexes employing shuttle services. Complexes offering housing to the general public as well as students should use appropriate apartment trip rates.
7. Rates are to be used for age-restricted housing, serving persons at or near retirement age requiring little or no medical supervision. Single-family rates shall be used for residences having individual garages and/or driveways. Multifamily rates shall be used for residences having shared garage or parking facilities.

## Table 5: Employment Trip Generation

Land Use		Trip Generation <sup>1</sup> Non-Residential: trips per 1,000 square feet gross floor area (GFA)						
Zoning Categories	Density (Euclidean Zones Only) <sup>2</sup>	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
<b>Employment Uses</b>								
<b>Office (General)<sup>3</sup></b>		1.80	0.20	2.00	0.35	1.50	1.85	14.00
I-1, I-2, I-3	0.4 Floor Area Ratio							
C-O, C-R-C	0.4 Floor Area Ratio							
C-M, C-S-C	0.4 Floor Area Ratio							
<b>Office (Medical/Professional)</b>		2.30	0.55	2.85	1.20	2.60	3.80	40.00
I-1, I-2, I-3	0.4 Floor Area Ratio							
C-O, C-S-C	0.4 Floor Area Ratio							
C-A, C-M, C-R-C	0.4 Floor Area Ratio							
<b>Warehouse</b>		0.32	0.08	0.40	0.08	0.32	0.40	3.10
I-1, I-2, I-4	0.3 Floor Area Ratio							
<b>Light Service Industrial</b>		0.69	0.17	0.86	0.17	0.69	0.86	4.80
I-1, I-4, U-L-I	0.3 Floor Area Ratio							
<b>Heavy Industrial</b>		0.80	0.20	1.00	0.20	0.80	1.00	5.90
I-2, I-4	0.3 Floor Area Ratio							
<b>Industrial Park</b>		0.55	0.18	0.73	0.20	0.55	0.75	8.00
I-3	0.3 Floor Area Ratio							
<b>Flex Office<sup>4</sup></b>		see note						

**General Notes:**

1. Uses not included in this table are advised to use rates in the ITE Trip Generation Manual. Peak-hour analyses should be based upon rates given for the peak hour of adjacent street traffic where available.
2. Density is presented for conventional residential, commercial, and industrial zones as a means of estimating the potential yield of a site. Densities for residential zones reflect estimated averages where available. Densities for commercial and industrial zones reflect average floor to area (FAR) ratios observed in the county.

**Employment Notes:**

3. General office rates shall apply for quantities of 108,000 square feet or less within a well-connected and walkable area. Office aggregations greater than 108,000 square feet should use the fitted curve for “general office building” in the ITE Trip Generation Manual with in/out distributions in accordance with this figure.
4. Flex office is assumed to be a combination of general office and warehouse space that can occur in any industrial zone. The use components are to be checked at the time of site plan or permit. Unless otherwise identified, when the term flex office is used it shall be assumed to be a mix of one-third general office and two-thirds warehouse.

## Table 6: Retail and Institutional Trip Generation

Land Use		Trip Generation <sup>1</sup> Non-Residential: trips per 1,000 square feet gross floor area (GFA)						
Zoning Categories	Density (Euclidean Zones Only) <sup>2</sup>	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
<b>Retail and Institutional Uses</b>								
<b>Retail Centers and Retail Buildings<sup>3</sup></b>		see note						
C-S-C, C-R-C, C-M	0.25 Floor Area Ratio							
<b>Church (25,000 square feet or less)</b>		0.35	0.21	0.56	0.26	0.29	0.55	7.00
<b>Church (over 25,000 square feet)<sup>4</sup></b>		see note						7.00
<b>Day Care<sup>5</sup></b>		0.42	0.38	0.80	0.39	0.43	0.82	4.48

**General Notes:**

1. Uses not included in this table are advised to use rates in the ITE Trip Generation Manual. Peak-hour analyses should be based upon rates given for the peak hour of adjacent street traffic where available.

2. Density is presented for conventional residential, commercial, and industrial zones as a means of estimating the potential yield of a site. Densities for residential zones reflect estimated averages where available. Densities for commercial and industrial zones reflect average floor to area (FAR) ratios observed in the county.

**Retail and Institutional Notes:**

3. General retail buildings and centers may use the fitted curve for “shopping center” in the ITE Trip Generation Manual. In general, the shopping center rate covers commercial uses (including related pad sites) within a given site having the “integrated shopping center” use as defined in the Zoning Ordinance except non-accessory office space and gas stations; these uses and other non-retail uses shall include a separate trip generation calculation. Freestanding commercial and retail buildings not within an integrated shopping center should consider using specific rates from the ITE Trip Generation Manual, particularly when those uses are more trip intensive than general retail.

4. Larger churches should compute weekday peak-hour trip generation as follows: A.M. peak-hour total trips = 14 plus 0.34 per 1,000 square feet of GFA above the first 25,000 square feet; 62 percent entering and 38 percent exiting; P.M. peak-hour total trips = 14 plus 0.34 per 1,000 square feet of GFA above the first 25,000 square feet; 48 percent entering and 52 percent exiting.

5. Rates are given on a per-student basis. A percentage of projected traffic for day care uses may be assumed to be already on the adjacent roadway (pass-by trips). Up to 65 percent pass-by may be assumed for facilities on through arterials or collectors. Less pass-by shall be assumed for facilities located along local streets, although additional trips may be diverted trips. In all cases, exit/entrance driveway turning volumes shall reflect 100 percent of projected volumes.

Should the applicant decide to collect trip generation data, it is strongly advised that multiple observations be provided to improve the statistical soundness. The applicant’s trip generation report should include the following:

- Specific time period for data collection (i.e., dates and times).
- Specific location of measurement stations.
- Measurement techniques (visual, mechanical).
- Specific description of the site(s) chosen (to include size of development, land uses, occupancy, and number of employees at work on the day of data collection if relevant).
- Description of pertinent site characteristics (e.g., number of employees, square footage, ownership, availability of transit and parking).
- The applicant’s evaluation of why the proposed rates are more appropriate than those in Table 4 on page 44 or the ITE Trip Generation Manual.

Table 4 provides both A.M. and P.M. peak-hour rates by direction; it is expected that both time periods will be analyzed unless the transportation staff has agreed otherwise. For mixed-use proposals, the appropriate trip generation rate shall be documented for each type of land use in the proposal.

Several adjustments to the site trip generation are possible. Note that the threshold requirement for performing a TIS is based upon total trip generation, not an adjusted or discounted number. The various types of adjustments are handled as follows:

*Larger Vehicles*

- Within the context of analyzing special exceptions, uses that are significant generators of trucks and buses must adjust their trip generation to reflect their impact on intersection capacity. The adjustment factors to be used are as follows:

<b>Vehicle Type</b>	<b>Passenger Car Equivalent (PCE)</b>
Passenger car or motorcycle	1.00
Two- and Three-Axle Single-Unit Trucks and all Buses	1.50
Single-Unit and Combination Trucks of Four Axles or Greater	2.00

*Pass-by and Diverted Trips*

- Pass-by trips for retail uses will be estimated using the guidance in the following table:

<b>Land Use Type</b>	<b>Pass-By Trip Rate</b>
Shopping center over 600,000 square feet	20 percent
Shopping center between 300,000 and 600,000 square feet	30 percent
Shopping center between 25,000 and 300,000 square feet	40 percent
Shopping center between 10,000 and 25,000 square feet	50 percent
Shopping center less than 10,000 square feet	60 percent

Pass-by rates for specific retail and commercial uses should be estimated using guidance in the ITE Trip Generation Manual or other available sources. Deviations from prescribed pass-by rates may be considered, depending upon location and other technical documentation. Additional diverted trips may be considered where appropriate.

- While trip generation may be “discounted” to take into account pass-by travel, any assumed pass-by trips must be assigned to the site access points.
- In cases where a use is determined to include diverted or pass-by trips, these “discounts” must be assigned to the network as well. While the site trip assignment may be summarized on a single sheet in the body of the report, separate sheets detailing diverted and pass-by trips (where appropriate) should be included in an appendix.

### *Transit Trip Reduction*

- Significant discounts may be provided in the form of trip credits using the methods in Sections 4, 5, and 6. Because the areas within centers and corridors, as identified in the General Plan and its subsequent amendments, have the greatest potential for transit trip reduction, these areas should be subjected to the most detailed scrutiny for the degree and extent to which they incorporate transit-friendly and transit-supportive design. Generally, the credits that can be provided under the provisions of Sections 4, 5, and 6 should, in the great majority of cases, constitute an appropriate trip reduction allowance to account for the use of transit and other non-motorized modes of travel, particularly for peak-hour travel.
- An additional trip reduction allowance based on the proximity to a transit station serving more than 60 one-way departures per day (particularly in cases where available trip credits may be limited) or other types of trip or travel demand management may be considered. Such additional reductions shall be identified at the time of scoping and justified in the TIS.
- The most effective means of achieving additional trip reduction beyond any credits given pursuant to Sections 4, 5, and 6 may be through the creation of a Transportation Demand Management (TDM) District, created by the County Council, as provided in Subtitle 20A of the Prince George's County Code.

### *Internal Trip Capture*

- Mixed-use developments generally have considerable potential for a degree of interaction among land uses within an individual site that reduces total trips to and from the site, and it is strongly advised that traffic analyses account for this interaction. Guidance on the estimation of internal capture rate is contained in the ITE Trip Generation Manual.
- An internal capture rate when done in accordance with the methods in the ITE Trip Generation Manual is applied as a numerical reduction to trip generation estimates to account for trips internal to the site. If sufficient information is not available, a percentage reduction to trip generation estimates may be applied with staff concurrence. Trip reduction for internal trips is separate from a reduction for pass-by trips. If applicable, internal capture trips should be subtracted before pass-by trip reductions are applied.

### *Credits*

- Once the site trip generation is computed, any trip credits that are derived that can be attributed to TOD design (Section 4), transit facilities (Section 5), and/or bicycle and pedestrian facilities (Section 6) may then be applied.
- Trip credits determined in accordance with Sections 5 and 6 must be justified in accordance with the applicable provisions of those sections. Any improvement or enhancement deemed to be not feasible or not supported by the appropriate operating agency or entity shall not be allowed trip credit and cannot be conditioned by the Planning Board.
- With regard to Section 4, applications at earlier stages of review that incorporate TOD-based or attributed trip credits into the TIS, as an automatic condition of approval, will be required to demonstrate the level of TOD that can produce those trip credits during application review at either the detailed site plan or specific design plan phase.
- Any trip credits that are allowed will be subtracted from the final trip generation calculations for the site under review prior to trip assignment.

Staff findings shall be based on the type and amount of each type of land use specified in the TIS. When the TPS staff recommends approval of the subject development, that recommendation shall include a condition that caps the development at the amount and type specified in the TIS or other development that will generate no more than an equivalent number of vehicle trips in each peak hour. Because the findings are made regarding off-site intersections, the cap will be based on the trip generation of the uses after the application of any discounts, adjustments, or credits.

- 2. Trip Distribution**—Existing and projected traffic volumes entering and leaving the study area should be assigned to the roadway network for each peak hour. The existing traffic distribution by principal direction of travel, may be used as a guide for determining the new distribution when the proposed development is of limited scope and major alteration of the roadway system is not planned. Depending on the scale of the proposed development, planned roadway improvements and existing traffic conditions, it may be desirable to use regional trip tables for the distribution of trips. Regional trip tables are available from the Metropolitan Washington Council of Governments. Past traffic studies in the area may be used for guidance as well.

Should the applicant or consultant find it appropriate to use a different technique, the distribution of trips associated with the proposed development must be justified by the relative location of other generators. For mixed-use developments, it is strongly recommended that residential, shopping, and employment trips be distributed and assigned separately based on surrounding residential, retail, and commercial development.

- 3. Trip Assignment**—After all applicable trip reductions and credits have been applied, the trip projections attributed to the site should be assigned to the study area roadway network using the previously developed distribution factors.

Most studies will incorporate an all-or-nothing assignment for trips oriented to a given direction. However, the road network in some areas may dictate that trips oriented to a given direction may utilize two or more assignment routes. It is advised that any such assignments be well-documented and that simplicity be maintained to the greatest extent possible to allow ease of review.

If there are multiple land uses that are predicated on different trip distributions while the trip assignment may be summarized on a single sheet in the body of the TIS, separate sheets that detail the trip assignment(s) for each use should be clearly detailed in an appendix.

### ***E. Recommendations of the TIS***

In circumstances where a TIS identifies a deficiency within the study area, the applicant may choose to recommend an improvement, enhancement, or other action that results in adequate operations based on the LOS standards in Table 2 on page 19. Such actions most frequently consist of physical improvements that add transportation system capacity. Other approaches can include programmatic initiatives that will reduce trips, the use of staging to defer or otherwise time portions of the development to coincide with future transportation improvements or capacity enhancements that will accommodate the additional trips, or cooperative funding arrangements to defray or cover the costs of improvements or program initiatives needed to accommodate the additional trips.

- 1. Physical and Operational Improvements**—Improvements recommended by an applicant might include roadway widening, intersection geometric improvements, or signalization improvements,

and these will be considered during the review. To assist in the review of the recommendations, the following information shall be included in the TIS:

- An initial assessment of off-site right-of-way needed to construct the recommended improvements. For both staff review and the information and consideration of the Planning Board, this assessment should include a strategy, or strategies, for acquiring any additional right-of-way that will be needed.
- An initial assessment of utility relocations or other constraints that are or may be associated with the recommended improvements. This assessment should include any above-ground physical facilities as well as any underground water and sewer facilities to the extent that such facilities can be located using routine field work and other procedures. For both the staff review and the consideration of the Planning Board, the TIS shall indicate a strategy for accommodating or moving such facilities.
- An assessment of the length of any proposed turn lanes or widening shall be included for review and verification by the operating agency.
- An identification of any special permits or permissions that may have to be obtained, and the likelihood, or estimate of the time and procedures required, to obtain those permits or permissions. This would include, but not necessarily be limited to, environmental permits, permission to cross utility or railroad facilities, and other implementation requirements or contingencies that may be of concern.
- Where the operating agency charged with ultimately permitting a proposed improvement can document concerns about the ability to implement that improvement, TPS staff may request or require clarifications or additional information of an applicant prior to making a final recommendation to the Planning Board.

The agencies or entities that will ultimately be responsible for implementing any recommended actions shall be clearly identified. In particular, when right-of-way for off-site improvements is to be obtained, the study should attest that the applicant has or can obtain the necessary right-of-way. Responsibility for off-site right-of-way acquisition shall not be assigned to a public agency unless that public agency agrees in advance to that strategy. This information will be incorporated into the final review by means of findings made and conditions imposed by the Planning Board as a part of approval of a development application.

The design and construction of any recommended improvement must receive the concurrence of the appropriate state, county, municipal or other appropriate public agency. The design policies and standards of the agency shall apply to any applicants who propose to construct the improvements under permit to the agency. These standards may include provision of sidewalks, trails, and bike lanes adjacent to the roadway or intersection improvements and maintained within the agency's right-of-way or easements. Unless otherwise determined by means of resolution or prior agreement, applicants shall be responsible for all costs associated with recommended improvements.

Operational improvements, such as signal retiming, can offer significant benefits at a low cost, and can even be feasible for smaller developments to provide. However, such a strategy must have specific concurrence from the operating agency before it can be considered in approving a development proposal.

2. **Cooperative Funding Arrangements**—Outside of three specific provisions made in Subtitle 24, along with ad hoc arrangements that may be enacted through resolutions of the Prince George's County Council, sitting as the District Council, funding a transportation improvement by means of a "fair

share” payment is not allowed by law and will not be accepted as a means of achieving adequacy in a TIS.

The three specific provisions allowed by law include:

- Public Facilities Financing and Implementation Program (PFFIP): This is a comprehensive plan that is developed to construct, improve, or enhance specific facilities that serve one or more developments within a specific area and is defined in Section 27-107.1. The program must be established by the County Council and must include a specific financing strategy prior to its inclusion in the development approval process.
- Surplus Capacity Reimbursement Procedure (SCRP): SCRP allows an applicant, or applicants, for a specific development project to provide a needed transportation improvement up-front and be reimbursed for the cost of providing the improvement on a pro-rata basis by subsequent developments that derive benefit from or have their applicants’ approvals conditioned upon the up-front improvement.
- Section 24-124 provides specific requirements for the use of the SCRP. TPS staff can provide Section 12 of the 2002 “Guidelines for the Analysis of the Traffic Impact of Development Proposals.” That section provides specific guidance on the usage of a SCRP.
- Pro rata share as an element of mitigation: Section 24-124(a)(6)(C) allows the payment of a pro rata cost share of mitigating physical improvements. However, this option is restricted to developments that generate fewer than 25 A.M. or P.M. peak-hour trips.

In select cases, a transportation improvement might be shown to be fully funded for construction in the CIP with a provision for “developer contribution” or words that effectively convey the same programmatic substance. Such improvements are to be considered a part of background traffic, and the development may be approved with a condition for a pro-rata contribution toward the capital project. The amount of this contribution shall be determined by TPS staff in consultation with the staff of DPW&T, and the cost figure cited in the condition shall be indexed for inflation.

- 3. Staging and Transportation Demand Management**—TDM initiatives and trip reduction programs should be staged with the proposed development so that their potential for success in achieving the proposed demand or trip reductions can be clearly and concretely evaluated. Within Prince George’s County, Subtitle 20A of the Prince George’s County Code is the preferred tool for implementing staging plans based on such programs.

For example, an applicant may suggest that the traffic impact of a proposed 1,000,000-square-foot office development can be reduced by 20 percent by implementing a carpooling program. Thus, a straightforward staging plan might involve approval of only 50 percent of the development (500,000 square feet) with the implementation of the carpool program. The program would then be monitored by the Planning Department consistent with the procedures in Subtitle 20A to determine if the proposed 20 percent reduction in vehicular traffic has, in fact, been achieved. Only when the goal of 20 percent trip reduction is met would construction of the remainder of the development be approved.

The staging program should be developed so that no more development is included in the first stage than can be accommodated by the existing and programmed transportation system. However, if the trip reduction programs accomplish more than anticipated, future phases of development may be accelerated. Provision should be made for trip monitoring techniques that can be validated by TPS staff. This will usually be accomplished by establishing a TDM district consistent with the requirements in Subtitle 20A of the Prince George’s County Code.

It is the general practice that when a development has an impact on a critical intersection that one or more previously-approved developments have conditions to improve, the development under consideration receives a condition for the very same improvements plus any additional improvement needed to achieve adequacy. However, this practice is based on an assumption that the developments will eventually occur in the order that they were reviewed. If there needs to be consideration of some other phasing plan for improvements to a critical intersection, any needed sensitivity analyses should be included in the traffic study. The staff recommendation should use this information to ensure that (a) all needed improvements will be in place once all developments are complete; and (b) any individual development has the responsibility to implement the improvements needed to achieve or maintain adequacy for that development regardless of phasing.

***F. Clarifications Regarding the Use of Mitigation***

In Prince George’s County, the term “mitigation” denotes the specific usage of mitigating actions recommended pursuant to Section 24-124(a)(6) of the County Code in a Transportation Facilities Mitigation Plan (TFMP). Procedures for the use of mitigation are included as Section 8 of these guidelines. Since the codification of mitigation, the need has arisen for a number of clarifications as noted below:

- Mitigation may be applied in all three General Plan Tiers. As written, the law refers to a level that is 25 percent over the LOS standard threshold in each tier. Section 8 of these guidelines was written and approved prior to the establishment of the tier designation in the General Plan. As a result, the guidelines are predicated on a LOS D standard throughout Prince George’s County (this particular LOS standard is now the standard established in the General Plan only for the Developing Tier). The following table presents the numerical values to be used in analyzing mitigation in the Developed Tier and the Rural Tier:

Tier	Signalized Intersections		Links	
	CLV Standard	CLV Standard Plus 25 Percent	v/c Standard	v/c Standard Plus 25 Percent
Developed	1,600	2,000	1.000	1.250
Developing	1,450	1,813	0.845	1.057
Rural	1,300	1,625	0.650	0.813

- Mitigation may be considered for signalized intersections and for links. Mitigation will not be considered for unsignalized intersections or for roadway segments or intersections that utilize a standard based upon the average peak period level of service.
- Given that mitigation is an alternative to a more conventional determination of transportation adequacy that would otherwise be considered by the Planning Board, any recommendation of a mitigating action in a TIS shall include a justification for the mitigating action. The justification shall indicate the rationale for considering mitigation in preference to a more conventional evaluation of transportation adequacy that is based on a strict adherence to the LOS threshold policy for that tier.
- Section 8 states that “the TFMP and the comments received from the appropriate operating agencies (or municipalities) ... will form the basis of the staff findings and recommendations.” In accordance with this requirement, the concurrence of the operating agency must be received before the TPS staff can provide an affirmative recommendation regarding mitigation actions. This is the case even if a response to a referral has not been received from the operating agency.

- Improvements to be provided pursuant to Sections 5 and 6 of these guidelines may be considered mitigation actions based on an assessment of their likely operational impact on the intersection or link being mitigated.
- Traffic studies are expressly required for developments generating 50 peak-hour trips or more. Section 8 provides very specific procedures for developments generating fewer than 25 peak-hour trips. However, the process of using mitigation for developments that generate between 25 and 49 trips is not as clearly defined by Section 8.

An applicant intending to use the process in Section 8 for a proposal that generates between 25 and 50 peak-hour trips is strongly advised to perform and supply a TIS in support of the application. Such a study should be deemed needed but not required and should be scoped in accordance with Section 9.

If an applicant opts not to perform a TIS, a formal request in writing must be provided with the application or at the Subdivision Review Committee meeting to have the staff's review utilize mitigation and make recommendations accordingly. Unless such a written request is received, the application shall be treated as a non-mitigation case. The review will be conducted by TPS staff in accordance with the guidelines for analyzing smaller developments in Section 9 and may require the provision of traffic count data by the applicant (as detailed in Section 9).

## Section 4: Transit-Oriented Development in Centers and Corridors

### A. Overview

TOD is defined by the MDOT as development that creates compact, walkable neighborhoods around transit stations. TOD seeks to capitalize on the existing county, state, and federal investment in fixed guideway transit (FGT)—MARC commuter rail, Metrorail, the future Purple Line light rail system, and follow-on FGT elsewhere in Prince George’s County—by maximizing transit ridership through the creation of a range of high-quality shops and working and living destinations within a short, safe walk of FGT services and stations. It also offers residents a convenient non-automobile-based commute to a quality mix of jobs, shops, and entertainment at strategic locations in the county and the region.



In considering the planning and adequacy criteria that are most relevant to TOD within Prince George’s County, some clarifications are needed:

- Transit-oriented really means pedestrian-oriented (albeit centered on a transit station). Planning and designing a transit station area for people rather than solely for vehicles will ultimately support healthy transit ridership.
- Compact neighborhoods are, by nature, moderate- to high-density land uses. The level of density should vary by community and is determined by the planning area classification (General Plan corridor node or center type) and the master or sector plan recommendations.
- Development includes not only buildings but the streets, sidewalks, bus zones, and public buildings and properties in the transit station area.
- TOD planning generally is premised on an acceptably short walk to a transit station being about one-half mile or ten minutes. However, in safe and pleasant surroundings, people may consider a longer walk to be reasonable.
- TOD can refer to one or more individual buildings but should usually describe the entire neighborhood around a transit station or a transit-oriented community.
- TOD cannot automatically produce congestion relief for this county or this part of the Washington region. It can, however, create options to allow persons to live near one transit station, work near a second, and shop at yet a third without using or being completely dependent upon a car. In doing so, a network of quality TOD in Prince George’s County offers the best chance to improve the quality of life in urban and denser suburban settings.

### B. Creating an Emphasis on TOD

This section is largely premised on the 2010 document “Alternative Adequate Public Transportation Facilities Ordinances and Review Procedures Study” (Kittelsohn and Associates, Inc., prepared for MNCPPC). That study was undertaken to provide a framework for addressing a number of transportation issues dealing with growth, private investment, and traffic congestion in Prince George’s County. The study made five key recommendations:

- Land use and transportation need to be planned together to support one another in order for future adequate public facilities (APF) tools to be fully effective. This is especially true in the General Plan centers and at key nodes in General Plan corridors.
- If desired growth plans and patterns for the General Plan centers and corridors are to be realized, the constraints that are implicit in or created by the conventional vehicular-traffic-only, LOS-based APF will need to be resolved by suitable multimodal alternatives.
- To ensure efficient TOD-supportive design of its General Plan centers and corridors, the county should commit to enhancing and expanding its planning and review tools.
- Through traffic may be a major impediment to achieving some forms of smart growth, particularly TOD-supportive growth, in the General Plan centers and corridors.
- Programs that incorporate trip reduction and travel demand management measures should be designed to optimize the use of alternatives to the private automobile.

The checklists shown in Tables 7, 8, and 9 on pages 58, 59, and 60 respectively (and the definitions at the end of Table 8) provide a template for the provision of true TOD projects. The first checklist (Tables 7 and 8) provides explanations of what has been termed the “4Ds” of compact development (density, diversity, design, and destinations). The second checklist (Table 9) contains elements of parking, along with the computation of the TOD Points (an evaluation tool).

- Any development within centers and corridors, as designated in the General Plan (or any successor document) and as amended by other master or sector plans, shall be evaluated by TPS staff for consistency with these TOD checklists. The evaluation will be undertaken during review of the comprehensive design, specific design, conceptual site, and detailed site plans as well as the preliminary plan of subdivision.
- The results of the evaluation shall be reported to the Planning Board as a part of TPS staff review of the application. The results will be reported as one of the following:
  - Excellent TOD: A checklist score of 92 TOD points or greater.
  - Very Good TOD: A checklist score of 80 to 91 TOD points.
  - Acceptable/Marginal TOD: A checklist score of 56 to 79 TOD points.
  - Not TOD: A checklist score of 55 TOD points or less.

In the case of developments that are evaluated as either “Not TOD” or “Acceptable/Marginal TOD,” staff will furnish comments that detail the areas of concern or weakness in the project plan. In the case of developments that are evaluated as “Very Good TOD,” comments may be provided to indicate anything in the plan that would improve it further or otherwise make it more consistent with the TOD checklist criteria.

- As a part of TPS staff review, a statistic for intersection density within and adjacent to a proposed development within centers and corridors, as designated in the General Plan (or any successor document) and as amended by other master or sector plans, shall be computed and provided by TPS staff. The guideline below shall be used for computing intersection density:

*Intersection density is the number of publicly accessible street intersections per square mile, including intersections of streets with dedicated alleys and transit rights-of-way, and intersections of streets with nonmotorized rights-of-way. Gated streets shall not be included. If one must both*

*enter and exit an area through the same intersection, such an intersection and any intersections beyond that point are not counted; intersections leading only to culs-de-sac are also not counted. The calculation of square mileage excludes water bodies, parks larger than 1/2 acre, and other areas that are nonbuildable.*

The following figure provides a general picture of various intersection densities.



- Plans deemed to be “Acceptable/Marginal TOD” or better may be eligible for trip credits as a part of that plan’s traffic study as detailed below:

Development TOD Checklist Evaluation	Trip Credit in Centers and Corridors Only
Excellent TOD (92 points or more)	30 percent of site trip impact
Very Good TOD (80 points to 91 points)	15 percent of site trip impact
Acceptable/Marginal TOD (56 points to 79 points)	6 percent of site trip impact
Not TOD (55 points or fewer)	No credit

- The determination of the total number of trips generated by a proposed development will be made prior to the application of any trip reduction allowance. If a proposed development generates more than 50 total peak-hour trips prior to the application of the allowance, a TIS will be required. The trip reduction allowance will be shown in the resulting TIS.
- Traffic studies are generally reviewed during early phases of the development review process. However, quality TOD is, in most cases, difficult to properly evaluate prior to the detailed site plan or specific design plan phase. This is because many important and defining elements of the overall project that make it TOD are not shown or specified at early stages of review. Development applications at earlier stages of review that incorporate a TOD trip credit into the TIS will be conditioned to demonstrate the appropriate level of TOD at the detailed site plan or specific design plan phase. Failure to comply with this condition will result in TPS staff recommendations that the applicant either revise the plan or submit a new preliminary plan that incorporates the appropriate lower TOD credit. Ultimately, a failure to comply with this particular condition could result in a staff recommendation that the plan be disapproved if the submitted plan goes to a hearing.
- As noted above, quality TOD is difficult to properly evaluate prior to a detailed site plan stage. It is recognized that many uses within many Euclidean zones are not required to complete a detailed site plan. Nonetheless, a condition for detailed site plan review will be recommended for preliminary plans of subdivision that incorporate a TOD trip credit into the TIS.

- The TOD credit is a credit given for quality and sustainable land use and design in the most significant current and future growth and development priority areas of Prince George’s County. Because the credit is a generous one, it is expected that in the great majority of cases the TOD credit (plus other credits available in Sections 5 and 6) will constitute an appropriate reduction that accurately accounts for the use of all forms of mass transit and other non-vehicular, non-motorized modes. Nonetheless, additional vehicle trip reductions that are attributable to the proximity of transit (particularly FGT), the implementation of additional TDM strategies, and other appropriate factors can be considered subject to the trip generation discussion in Section 3. These mode shift or automobile trip reduction strategies can be a very important component of certain small area and overlay plans (the *New Carrollton Transit District Development Plan and Transit District Overlay Zoning Map Amendment* provides an example of this).

**Table 7: Transit-Oriented Development Checklist, Design, Density, and Diversity Elements**

*For Use in Centers and Corridors Only*

Transit-Oriented Development Checklist 4D (Density, Diversity, Design, Destinations) Elements				
Major Elements	Yes	To Some Degree	No	Measure
Development Design				Do windows and doors of proposed buildings face the street and/or public parks and plazas?
				Does structure placement result in a maximum 25 percent diversion from an idealized walking distance between the site and key destinations within one-half mile of the site?
				Do buildings come all the way to the street or build-to line?
				Are street patterns based on a grid/interconnected system? Is the average block length 600 feet or less?
				The Transportation Planning staff shall compute an intersection density (intersections per square mile) as a part of this review and report the result to the Planning Board. The statistic shall not be part of the scoping but is computed for informational purposes only.
Land Use and Density				Are retail, restaurant, and/or service uses arranged with an average 80 feet or less between main entrances? Where such uses are surrounded by parking and/or drive aisles, do quality pedestrian connections correlate such uses to other similar uses?
				Are drive-in or drive-up facilities not provided?
				Are densities at or within 10 percent of the maximum permitted density (if a Euclidean zone) at the density recommended by a master or sector plan or a general plan designation?
				Is structured parking utilized for more than 75 percent of the on-site parking?
Diversity of Uses				Will the planned mix of uses attract people around the clock?
				Will the planned mix of uses attract people throughout the week?
				Are uses included that would be conveniences for surrounding residents, commercial tenants, and transit patrons? (For example, newsstands, coffee shops, daycare, and dry cleaners.) Are such uses within walking distance?
				Is vertical mixed-use incorporated into the development?
=====				
				Sum of Checks in Column (carry result onto second page)

**Table 8: Transit-Oriented Development Checklist,  
Pedestrian Elements, Scoring, and Definitions**

*For Use in Centers and Corridors Only*

Transit-Oriented Development Checklist 4D (Density, Diversity, Design, Destinations) Elements				
Major Elements	Yes	To Some Degree	No	Measure
Internal Pedestrian Connections				Are on-site pedestrian pathways continuous with off-site pedestrian facilities?
				Is some shade available for pedestrian walkways? How about at the on-site transit stop (if applicable)?
				Are there protected places to walk if it is cold, rainy, or snowy? How about at the on-site transit stop (if applicable)?
				Do walkways and any on-site transit stops have additional lighting beyond County standards?
				Are quality pedestrian connections provided along and between buildings?
Scoring	=====			
				Sum of Checks in Column (this page)
				Sum of Checks on Table 7 (carried from Table 7)
	=====			
				Grand Total of Both Pages (sum of previous two lines)
	2	1	0	Multiply by these Factors
	=====			
				Sum of Three Columns Times 2.5 = Carry Above Number onto Table 9.
Definitions	<p>Idealized Walking Distance—The length of the most logical walking path between an origin and a destination, taking into account availability of access, natural features, and blockages.</p> <p>Key Destinations—Any of the following uses: transit stations or stops; public facilities (e.g., schools, libraries, parks, or post offices); recreational, community, or cultural facilities; retail centers encompassing more than 20,000 square feet of GFA; employment centers encompassing more than 40,000 square feet of GFA.</p> <p>Pedestrian Amenity—An enhancement to the pedestrian environment, including but not limited to the following: benches/seating, ponds, fountains, and public art.</p> <p>Quality Pedestrian Connection—A sidewalk or pedestrian way at least six feet in width and ADA accessible, which incorporates at least two of the following elements: pavers, special lighting, plantings, pedestrian amenities, or shade over a minimum of 50 percent of its length.</p> <p>Structured Parking—Any underground or above-ground parking that is contained within a building that also contains other levels of parking, and/or residential, and/or commercial use. This definition is provided strictly for the purposes of these guidelines.</p> <p>Vertical Mixed Use—A circumstance where two or more different uses occupy the same building, usually on different floors. An example would be retail on the ground floor and office and/or residential uses on the second and/or third floors. Accessory uses shall not be considered a component of vertical mixed use.</p>			

**Table 9: Transit-Oriented Development Checklist,  
Parking/TDM Elements and Final Scoring  
For Use in Centers and Corridors Only**

Parking and TDM Elements					
Major Elements	Yes	To Some Degree	No	N/A	Measure
<b>On-Site Parking</b>					Are parking requirements reduced in comparison to strict compliance with Subtitle 27?
					Is parking screened from the street (e.g., a structured lot “wrapped” by residential or commercial space or a surface lot behind the building it serves)?
					If multifamily housing is included, is bicycle parking provided at a rate of one space per five residences (with a minimum of 2 spaces and a maximum of 25 spaces)?
					If commercial space exceeds 10,000 square feet, is bicycle parking provided at a rate of 1 space per 10,000 square feet (with a minimum of 2 spaces and a maximum of 25 spaces)?
					Is a pricing strategy used to control parking demand?
					Are different uses sharing the same parking supply at different times of the day?
<b>Scoring</b>	<p>Score 2 points for each check under “Yes.”                      Score 1 point for each check under “To Some Degree.”                      Add the first two lines.                      If no boxes are checked under “N/A,” multiply result by 1.33 to obtain parking points.                      If one box is checked under “N/A,” multiply result by 2.00 to obtain parking points.                      If two boxes are checked under “N/A,” multiply result by 2.50 to obtain parking points.</p>				

Insert 4D points from Tables 7 and 8.

+

Insert parking points from Table 9.

====

Add above two boxes for TOD points.  
Compare with table in Section 4.

## Section 5: Transit Facilities

These guidelines strongly support the implementation, maximum feasible use, and expansion of transit and transit-related facilities. To encourage the provision of transit enhancements, development applications that include or propose to defray the cost of such enhancements can be eligible for trip reductions based on the implementation of those transit and transit-related facilities. Such facilities would include bus shelters, bus or intermodal transfer stops, park-and-ride facilities, construction of bus stop pads or pullouts, and direct cash contributions toward the service initiation costs of extending or expanding bus services to serve the subject property or other desirable transit service or system enhancements/amenities that serve the subject property.



- An applicant may propose to reduce the site impact by constructing on-site or off-site bus shelters or other bus stop enhancements. If off-site, such new or enhanced facilities must be within one-half mile of the proposed development and shall be connected to the proposed development by adequate pedestrian facilities (the provision of such facilities may themselves be eligible for trip credit in accordance with the methodologies in Section 6). DPW&T will review any location proposed for provision or enhancement of bus stop or bus shelter facilities and shall concur with the location and/or the facilities proposed prior to TPS staff's final determination that trip credits should be utilized.
- The provision or designation of park-and-ride spaces may occur either on-site or off-site. Any off-site facility shall be within one-quarter mile of the site or shall otherwise be deemed to be so located with respect to the proposed project that it clearly serves the residents, workers, or patrons of the site. Any such park-and-ride spaces shall be adjacent to an existing bus stop/shelter or a bus stop/shelter that will either be provided by the applicant or otherwise provided within the current fiscal year at the time of plan approval. DPW&T will review any location proposed for provision or designation of park-and-ride spaces and shall concur with the location prior to TPS staff's final determination that trip credits should be utilized.
- The capital or service initiation costs associated with other transit enhancements to be provided by the applicant may be eligible for trip credits. Likewise, a direct contribution toward the additional costs incurred by the extension or the expansion service may be considered for trip credits. Any transit facilities or enhancements that are not expressly listed in this section that are proposed to be constructed by the applicant must be on-site or within one-half mile of the site. The applicant shall include with the proffer an estimate of the right-of-way and construction cost of the physical facilities for review by DPW&T. DPW&T will review the physical improvements, and shall concur with or revise the cost figure prior to TPS staff's final determination that trip credits should be utilized.
- A direct contribution toward transit capital costs shall only be made toward services, facilities, or a combination of both that include a station, stop, or transfer point within one-half mile of the proposed development and is or will be connected to the proposed development by adequate pedestrian facilities. DPW&T will review any cash proffers made in this regard and shall concur with the appropriateness of receiving the contribution toward capital costs prior to TPS staff's final determination that trip credits should be utilized. The route name(s) and/or number(s) affected by this proffer shall be identified in the final staff review and recommendation, and the capital cost shall be indexed for inflation.
- The maximum trip credit for any development shall be related to the development area as designated in the General Plan, and as shown in the following table:

Bicycle or Pedestrian Facility	Trip Credit		
	Rural and Developing Tiers	Developed Tier	Centers, Corridors, and TDOZs
Bus shelter	2	4	8
Provision/designation of park-and-ride spaces	4 credits per 10 spaces		
Other transit enhancements	1.5 credits per \$10,000 spent		
Maximum trip credits for a development (total for transit and bicycle/pedestrian facilities)	75 trips or five percent of site trip impact (whichever is greater)	120 trips or ten percent of site trip impact (whichever is greater)	200 trips or 20 percent of site trip impact (whichever is greater)

- The table above represents the maximum reduction that can be considered by the Planning Board for the provision of transit facilities. The board may balance the community and environmental impacts of reducing congestion at an intersection against improving transit options in any area. The board may also consider the utility of proposed transit improvements and their contributions to the overall transportation system in communities nearest to and most directly affected by the proposed development.
- The operating agency or entity that will ultimately be responsible for permitting and maintaining a proposed bicycle or pedestrian improvement must agree in principle to the improvement before the Planning Board can consider allowing a trip reduction credit for the improvement.
- Any TIS that utilizes trip reduction credits shall include a justification that provides a detailed rationale for the utility and the feasibility of each credit-eligible improvement. Specifically, the justification shall include:
  - The need for and desirability of the improvement or enhancement.
  - The likelihood (and estimate of the number) of trips to and from the development to be diverted from personal automobiles to the transit facilities or services that are proposed to be enhanced. This is requested as a means of establishing a nexus.
  - The identification of the operating agency or entity to be responsible for maintaining any facility or providing any service.

Unless an enhancement is either poorly located in relation to the site and its access or otherwise inappropriate for the area, it should be expected that the full trip credit will be given if need and nexus are fully justified.

- Improvements and enhancements associated with trip credits shall not be shared among any other developments that are approved and are, therefore, already in the pipeline.
- Any on-site transit facilities are eligible for trip credits.
- The determination of the total number of trips generated by a proposed development will be made prior to any reduction. If a proposed development generates more than 50 new peak-hour trips, a TIS would be required. The trip reduction will be shown in the resulting TIS. An applicant proposing these trip reduction strategies will be required to inventory the transit system, supply, and operations within the local area to aid in evaluating effectiveness of the strategies proposed. An applicant may only apply a trip reduction method after the total number of peak-hour trips is determined using standard trip rates.

- Any improvement or enhancement that is deemed to be not feasible or that is not supported by the appropriate operating agency or entity shall not be recommended by TPS staff for use of the allowed trip credit and will not be included in a staff recommendation to the Planning Board.

## Section 6: Bicycle and Pedestrian Facilities



These guidelines strongly support the implementation and expansion of bicycle and pedestrian facilities. To encourage the provision of non-motorized (bicycle and pedestrian) facilities, development applications that include such facilities can be eligible for trip reductions based on the implementation of non-motorized facilities. Such facilities would include sidewalks, pedestrian-accommodating street furniture, sidepaths, bike paths, cycle tracks, and enhanced bicycle/pedestrian crossings that would serve the subject property.

**Important:** On April 24, 2012, the Prince George’s County Council approved Council Bill CB-002-2012. This legislation requires a finding of adequate public pedestrian and bikeway facilities in the General Plan centers and corridors. Pursuant to that legislation, Part 2 of these guidelines will be prepared no later than June 1, 2013 to guide the determination of that finding. This section, which is Part 1 of the “Transportation Review Guidelines,” *is not* interim guidance pursuant to that legislation, and in all likelihood *will not be replaced* by guidelines prepared pursuant to that legislation. The materials in this section provide a system of developer trip credits that can be utilized in a traffic impact study. It is anticipated that such credits can supplement CB-002-2012 by incentivizing the provision of bicycle and pedestrian facilities beyond those facilities strictly required by CB-002-2012 and beyond the policy areas covered by CB-002-2012.

The implementation of bicycle and pedestrian facilities is strongly supported. As a means of encouraging their implementation, development applications can be eligible for trip reductions based on the implementation of bicycle and pedestrian facilities. Such facilities would include sidewalks, sidepaths, bike paths, and enhanced bicycle/pedestrian crossings.

- An applicant may propose to reduce the site impact by constructing off-site sidewalks, sidepaths, bike paths, and/or enhanced bicycle/pedestrian crossings of master plan roadways. These facilities shall connect the proposed development to any of the following uses:
  - Rail or bus transit stations or stops
  - Public facilities (e.g., schools, libraries, parks, or post offices)
  - Recreational, community, or cultural facilities
  - Retail centers of more than 20,000 square feet of GFA
  - Employment centers of more than 40,000 square feet of GFA
  - Existing sidewalks, sidepaths, bike paths, or cycle tracks.

To be eligible for consideration, these facilities or uses must be within one-half mile of the proposed development.

- The maximum trip credit for any development is shown in the following table and is related to the development area as designated in the General Plan:

Bicycle or Pedestrian Facility	Trip Credit		
	Rural and Developing Tiers	Developed Tier	Centers, Corridors, and TDOZs
100 linear feet of five-foot-wide sidewalk	1.5	2.5	4.0
100 linear feet of eight-foot-wide sidepath or bike path	2.0	3.0	4.5
Enhanced bicycle/pedestrian crossings of master plan roadways	3.0	7.5	10.0
Maximum trip credits for a development (total for transit and bicycle/pedestrian facilities)	75 trips or 5 percent of site trip impact (whichever is greater)	120 trips or 10 percent of site trip impact (whichever is greater)	200 trips or 20 percent of site trip impact (whichever is greater)

- The table above represents the maximum reduction that can be considered by the Planning Board for the provision of non-motorized facilities. The board may balance the community and environmental impacts of reducing congestion at an intersection against improving bicycle and pedestrian facilities in any area. The board may also consider the utility of proposed non-motorized improvements and their contributions to the overall transportation system in communities nearest to and most directly affected by the proposed development.
- The operating agency or entity that will ultimately be responsible for permitting and maintaining a proposed bicycle or pedestrian improvement must agree in principle to the improvement before the Planning Board can consider allowing a trip reduction credit for the improvement.
- Any TIS that utilizes trip reduction credits shall include a justification that provides a detailed rationale for the utility and the feasibility of each credit-eligible improvement. Specifically, the justification shall include:
  - The need for and desirability of the improvement or enhancement.
  - The likelihood (and estimate of the number) of trips to and from the development to be diverted from personal automobiles because of the presence of the proposed bicycle or pedestrian facility. This is requested as a means of establishing a nexus.
  - The identification of the operating agency or entity responsible for maintaining any facility or providing any service.
  - The feasibility of constructing or improving the facility under consideration, taking into account environmental constraints, available right-of-way, and any need to accommodate utilities.

Unless an enhancement is either poorly located in relation to the site and its access or otherwise inappropriate for the area, it should be expected that the full trip credit will be given if need and nexus are fully justified.

- All improvements and enhancements, whether required as a part of adequacy findings pursuant to Subtitle 24 or proffered over and above such requirements, can be eligible for trip credits.
- Improvements and enhancements associated with trip credits shall not be shared among any other developments that are approved and are, therefore, already in the pipeline.

- On-site bicycle and pedestrian facilities are not eligible for trip credits.
- The determination of the total number of trips generated by a proposed development will be made prior to any reduction. If a proposed development generates more than 50 new total peak-hour trips, a TIS would be required. The trip reduction will be shown in the resulting TIS. An applicant proposing these trip reduction strategies will be required to inventory pedestrian/bicycle activity within the local area to aid in evaluating effectiveness of the strategies proposed. An applicant may only apply a trip reduction method after the total number of peak-hour trips is determined by using standard trip rates.
- Any improvement or enhancement that is deemed to be not feasible or that is not supported or approved (including not accepted for maintenance or operation) by the appropriate operating agency or entity, shall not be recommended by TPS staff for use of the allowed trip credit and will not be included in a staff recommendation to the Planning Board.

## Section 7: Transportation Network Analysis

While most traffic studies will follow the procedures in Section 3, certain types of rezoning applications must include an evaluation of the overall transportation network that takes into consideration planned facilities and undeveloped or underdeveloped, zoned land. This section is intended to guide traffic consultants in the appropriate procedures for using the TPS transportation model. It is also intended to guide TPS staff in using the model as a part of analyzing a master plan and developing appropriate recommendations.



### A. Overview of the TransForM Model

This subsection briefly describes the major model components and inputs of the TransForM that is maintained by the Prince George’s County Planning Department of MNCPPC. The TransForM was originally implemented using the Caliper Corporation TransCAD Version 4.8 platform (TransCAD is a proprietary software package developed by Caliper Corporation), and it was subsequently upgraded to TransCAD Version 5.0. The TransForM embodies many enhancements to prior models and to the Metropolitan Washington Council of Governments (MWCOC) travel demand forecasting model (TDFM). TransForM is a proprietary software package of the Prince George’s County Planning Department.

The overall objective of the TransForM is to provide a transportation planning and analysis tool that will be more suitable than previous available models for evaluating land use impacts and transportation improvements in Prince George’s County. To date, TransForM has been calibrated to the year 2000 using the best available data, and employs improved modeling procedures to more closely match validation data than was previously possible with earlier model platforms. In addition to containing somewhat greater geographic detail, there are a number of other modeling developments that enhance the department’s forecasting and analysis capabilities. One of these is the inclusion of the same 2,191-zone system and a model structure that makes it easier to accommodate future MWCOC updates of data and zone analysis methods for the metropolitan region outside of Prince George’s County. A second enhancement is the use of more “user-friendly” Windows operating systems and GIS-based modeling software embodied in the TransCAD software platform. A third consideration is the ongoing enhancements of TransForM that seek to employ better algorithms for transit path finding, trip distribution, mode choice, and traffic assignment and to achieve higher convergence—a “better fit” between estimated and actual “real world” transportation data—and more realistic calibration of the model results with observed data.

TransForM is a regional model that has the same geographic modeling scope as the MWCOC regional model: a 6,800-square-mile study area. The MWCOC model, at the time that TransForM was developed, contained 2,191 traffic analysis zones (TAZs) and encompassed all 22 jurisdictions of the MWCOC region: the District of Columbia, northern Virginia, suburban Maryland, and one county in West Virginia.

The key TransForM databases are:

TAZ Database: The TransForM model uses a TAZ database consisting of 2,523 zones, including 47 external stations. This database was developed by expanding the 381 TAZs for Prince George’s County in the MWCOC model to 883 TAZs in the TransForM database. The zone geography outside of Prince George’s County is the same as that in the MWCOC model. Each single zone is represented within the model as a single point (termed a centroid). Each zone centroid is then connected to the transportation

network by one or more centroid connectors that provide reasonable locations for trips that enter or leave the zone using the transportation network.

**TAZ Demographics:** The TAZ demographics consist of households, population, and employment estimates (by industry) that have been generated from the MWCOG Round 8.0 Cooperative Forecasts for the year 2040 for all zones outside of the county. Given that the model is a buildout model (buildout is intended to show future land use projections with the realization of all approved zoning as well), where buildout projections exist within Prince George’s County, those projections are used. In all other cases, 2040 forecasts are used. Also, since the MWCOG forecasts are based on the MWCOG zonal system, the demographics have been disaggregated for zones in Prince George’s County where applicable.

**Highway Network:** The model uses a conflated and realigned highway network that incorporates all of the links that were present in the previous models. There were several tasks performed as part of the preparation of the TransForM highway network, as detailed below:

- Aerial photography and GIS datasets were collected from various sources.
- The Prince George’s County SYSTEM II network and the MWCOG network were then imported into TransCAD. The imported networks were merged by replacing the Prince George’s County links from the MWCOG network with those from SYSTEM II, the predecessor departmental TDFM software platform.
- The resulting network was then completely rebuilt, conflated, and realigned to fit directly on the aerial imagery for Prince George’s County. Conflation replaces links in the network line layer with links that have more accurate geography. Typically, this means they have more “shape” segments and also more accurately placed shape points. However, it also involves correcting the beginning and ending locations of the nodes for links. Links may also be realigned or reshaped directly to fit high resolution aerial photography. This may entail adding or correcting the location of beginning and ending nodes as well as shape points.
- Conflation and realignment can be used together to ensure that network links closely match the correct geographic shape of the roads included in the network. During this process, new links such as freeway ramps were also added that did not previously exist in the network.
- Particular attention was paid to the MWCOG freeway and freeway/ramp interchanges outside Prince George’s County, “dualizing” link segments along freeways and expressways, and identifying HOV facilities. During the network development procedure, links with incorrect attributes were also identified, and the attributes were corrected. The resulting network is not merely a better visual depiction; it provides improved network distances and travel times for use by the model.

**Transit Network:** The TransForM model employs a comprehensive peak and off-peak transit route system to build the peak and off-peak components of the transit network. The database incorporates WMATA and non-WMATA bus services (TheBus, Maryland Transit Administration commuter bus services, and the University of Maryland Shuttle) as well as the Metrorail and MARC commuter rail routes. Unlike the highway network, which is normally limited to a specific definition of the infrastructure (location, facility size and type, and speed), the transit network must include service characteristics (frequency and user cost) as well as any basic infrastructure needed for the correct operation of the transit service.

Most TDFMs, including TransForM, currently use an approach known as the four-step modeling process, as summarized below:

## 1. Trip Generation—Why and How Often Do People Travel?

The first step, termed trip generation, determines the number of daily trips that take place in the county (or that will take place in the future) by estimating the number of trips to and from each of the TAZs inside and outside of the county. The trip purposes that are modeled are: home-based work trips, home-based shopping trips, home-based other trips, non-home based (NHB) trips, medium truck trips, and heavy truck trips. Person-trips are generated for all non-truck trip purposes.

These trip estimates make certain assumptions about the number of trips typically made by each type of household or employee to each type of destination within or outside of the county. The estimates consider socio-economic factors and area types to account for the different rates of trip making that past research and experience with four-step transportation demand forecasting indicate are characteristic of different parts of the county. These factors are included in the equations that are used to derive trips for each TAZ in the modeled area. For example, a household inside the Capital Beltway in a Developed Tier community can be safely assumed to usually make fewer trips than a comparable household in the Rural Tier, in part, because of the comparative proximity of destinations that prompt trip making and, in part, because of the availability of alternatives to driving by car to many or most such destinations.

In the trip generation step, each TAZ is considered both a “producer” and an “attractor” of trips. The trips “produced” are based in the TAZ and include residents’ trips to and from work, their trips to and from shopping destinations, and other round trips made from home (an example would be trips to and from school). The trips “attracted” by a TAZ are those for which the TAZ is the initial destination. Trips are “attracted” by work sites, retail sites, and other destinations. Productions and attractions are balanced to ensure that, within the overall network, each trip is therefore counted twice: once as a “production” of the origin zone and once as an “attraction” of the destination zone.

A set of equations is used to estimate the number of trips produced by and attracted to each TAZ based on its residential, employment, and other demographic characteristics. These estimates rely upon the actual or projected employment in each TAZ to determine how many workers, shoppers, and other types of trips it attracts. The more employment a TAZ has, the more work trips it attracts. As the number of retail employees in a TAZ increases, the model assumes that more shopping trips are attracted to that zone. The mix of employment affects other types of trips as well.

When the trip generation step is completed, the model can, or should be able to, estimate the trips produced and attracted to each TAZ but not which travelers are going to which destinations. The task of matching the trips produced in each TAZ with the TAZ to which those trips are attracted is undertaken in the next step.

## 2. Trip Distribution—Who Goes Where?

In step two, trip distribution, the trips that are “produced” and “attracted” within the model are geographically linked into origin-destination pairs. For example, the number of work trips produced by persons residing in a TAZ in the Developing Tier is matched with work trip attractions in that same TAZ as well as in surrounding TAZs, neighboring jurisdictions, downtown Washington, and elsewhere throughout the metropolitan region encompassed by the model. This process is then repeated to estimate all possible trips to and from all possible pairings of TAZs in Prince George’s County and the rest of the metropolitan region in the model.

Trip distribution relies on the general assumption that people, whether driving, walking, biking, or using some form of transit, will want to spend as little time and money as possible to reach their final destination. Furthermore, it is assumed that time spent traveling is perceived negatively. In other words,

travel time is considered part of the cost of getting from an origin to a desired destination. The more distant the destination, the more negatively (or costly) the trip is perceived.

The trip distribution phase of transportation demand forecasting, therefore, is predicated on an important geographical assumption: most of the trips produced in any given TAZ will be attracted to nearby or surrounding TAZs; some trips will be attracted to moderately distant TAZs; and very few (or comparatively few) trips will be made to very distant TAZs. Trip distribution also assumes that the effect that distance has in discouraging non-work trips will be more pronounced than it is for work trips. More than the other common trip types, work trips decrease less sharply as the distance increases between an origin, or “production,” and a destination, or “attraction.” For instance, while an individual or household may compensate for the perceived high cost of a shopping trip by trying to find a nearer destination at which to shop, it is often impractical or impossible to compensate for a high work commute cost because the job “attractions” are generally clustered away from the household “productions.”

When translated into a set of mathematical procedures (algorithms), this general assumption is what makes TransForM, like most conventional TDFMs, a gravity model. The effect of travel time is represented in such models as a “friction factor.” Once completed, this procedure yields a set of tables of trips made from and to each TAZ within the modeled region for each type of trip being modeled. The next step is to determine how those people represented within these tables will travel to their destinations.

### 3. **Modal Choice**—How Are Trips Made?

Step three determines what is known as modal choice or mode share. For each trip, commuters are assumed to choose from some combination of the following transportation modes: mass transit, drive alone, and carpool or vanpool (walk and bicycle are also admissible modes of travel but all four-step TDFMs, including TransForM, have somewhat variable and less accurate levels of sensitivities to these modal options, and allowances for these modes are made after the results are completed by what is known as post-processing). The model assumes that travelers’ choices are based on the comparative availability, cost, and attractiveness (convenience) of each mode. Factors considered in determining this are:

- Accessibility of mass transit
- Automobile ownership
- Proximity to carpool (or HOV) lanes
- Costs required to use each mode
- Time required to use each mode

The cost variables represent “out-of-pocket costs,” including mass transit fares, the price of gasoline and parking, and a mileage rate for driving. Time variables include time spent waiting for transit, time transferring between mass transit routes, or time spent to drive and park the car and reach the final destination. The mode choice factors are arrayed in an equation that estimates the probability that each traveler will select a given mode given the characteristics of both the mode and the traveler.

At this point, the estimated number of person-trips using transit are literally skimmed from the analysis to be assigned to the transit network in the next step (transportation planners often use the term “transit skim” to refer to this matrix). The remainder of the person-trips is placed into drive alone, HOV2, and HOV3 plus matrices for final assignment to the road network.

#### **4. Trip Assignment—Which Route Is Chosen?**

The final modeling step, termed trip assignment, determines the routes travelers choose to reach their destinations. It estimates how many vehicles will travel on each roadway and transit segment in the network (a segment is usually given the term “link”). To perform this step, the model selects the best “path” through the network for each type of trip, determining the shortest route, both in time and distance terms, from zone to zone for each trip. For accuracy, this “path building” process takes into account the actual capacities of road segments to avoid assigning (or “loading”) more vehicles onto a route (combination of road segments) than can be realistically accommodated. This is accomplished by assigning only a percentage of the total number of trips to the network at a time.

After the first set of trips is assigned, the travel speeds used to calculate the best paths are revised to reflect the actual effects of the amount of traffic on the roads used. Then an additional set of trips are loaded, and speeds are revised downward again to reflect the decreased capacity (and lower traffic service levels) that results as more trips are added.

This procedure continues until all trips have been assigned. It simulates the effects of drivers selecting alternate routes to avoid congested roads. Upon completion of this process, the congested travel times are fed back to the trip distribution step to repeat the process, converging on a set of constrained travel times before the model execution concludes. Each such repetition of this process is considered to be a single iteration. As a rule, a minimum of 80 iterations are routinely executed to achieve a convergence of travel times and assigned traffic volumes (the convergence is said to occur when changes in traffic volumes become progressively smaller from one iteration to the next).

At the conclusion of model execution, the four-step process produces a set of trip tables that show origin and destination patterns by mode for the entire modeled area. Zone-to-zone trips and travel times can be produced. The process also produces A.M. peak, P.M. peak, off-peak, and daily traffic assignments (trips or traffic volumes) for every travel link under study. Finally, the model produces aggregate highway and transit projections and is able to summarize regional statistics. TransForM can show and segment these results in many ways.

#### ***B. Use of the TransForM Model for Zoning Map Amendments***

Several types of rezoning applications require that the rezoning conform to underlying area, sector, or other plans. While petitions for such rezoning are comparatively rare, there is a need to identify a process by which such petitions can be fairly and consistently evaluated and to establish the components to be included in the analysis.

##### **1. Procedures**

The process of using the TransForM model to analyze a zoning map amendment is generally triggered when a request for a floating zone (a comprehensive design, mixed use, or overlay zone) is determined to not conform to the underlying area, sector, or other plan. While this generally occurs with a stand-alone zoning map amendment application, a rezoning can occur in selected overlay zones as a part of a conceptual or detailed site plan. However, applications for the M-X-C Zone must use a transportation planning model.

The scope of the traffic study, including the study area, traffic assumptions, network assumptions, land use assumptions, and analysis methodology, will be submitted to TPS staff for review and approval prior to the preparation and submittal of the traffic study. The traffic analysis will be based on forecasts of average daily traffic (ADT) volumes developed utilizing the Planning Department’s TransForM or another long-range TDFM acceptable to TPS staff. The applicant should meet with TPS staff to

identify the study parameters and either (1) obtain data lease agreement forms for use of the Planning Department's TransForM datasets by his consultant, or (2) arrange for a payment schedule for TPS staff to prepare the analysis.

While the TransForM model is the county's recommended model, largely because the buildout transportation network and buildout land uses within Prince George's County have been thoroughly verified, analyses may be conducted using other outside traffic modeling. In such cases where an applicant opts to do this, the following information must be submitted to TPS staff:

- The type of modeling software that will be used to generate the traffic analysis reports and other data.
- The list of land use assumptions identified by the Prince George's County traffic analysis zone (PGTAZ) and their sources. The basic land use geography of TransForM is the PGTAZ. For the most part, PGTAZs are smaller "nesting" subsets of a smaller number of larger TAZs created by MWCOG for use in their regional modeling. Applicants proposing to use a TDFM or methodology other than TransForM will be required to present their forecasts and other results by PGTAZ.
- A copy of the computerized roadway network with all assumptions, including facility type, number of lanes, and other network attributes.
- The list of trip generation rates used in the traffic model and their sources.

## **2. Developing the Base Case Scenario**

The Base Case Scenario is the existing land use and transportation plan in which the subject property retains its current zoning. It is strongly recommended that the traffic consultant review the transportation network to ensure that all planned facilities are included. Any discrepancies shall be reviewed with TPS staff, and corrections shall be made by the applicant if TPS staff deems that to be necessary or appropriate.

The Base Case Scenario forecast shall incorporate the following:

- Land use assumptions that reflect the buildout condition within Prince George's County in accordance with all approved master plans or the current General Plan.
- Land use assumptions that reflect the latest available long-range land use forecasts outside of Prince George's County as provided by the MWCOG, the Baltimore Regional Council of Governments, or the Tri-County Council of Southern Maryland, as appropriate.
- Transportation facilities (including streets and public transit) that exist, are under construction, are provided for in an adopted and approved master plan or the current General Plan, or which will be otherwise provided by the development.
- As noted above, the base case model run shall incorporate the elements listed above without the subject rezoning.

At this point, it is advisable to review all results within the study area for reasonableness. Even with the best algorithms for assigning traffic to individual routes, individual factors affect the way that individual persons utilize the highway system in ways that are not consistent with the global factors used in a model. Sometimes these inconsistencies are obvious when one travel link is heavily used while a nearby parallel travel link is virtually unused, but often the inconsistencies are less obvious. The use of a screenline analysis provides a systematic means of correcting such inconsistencies.

Screenline analyses can establish a natural “boundary line” across several links. Actual ground counts and capacities are determined for all links crossing the screenline. This actual data can then be compared with the modeled traffic assignments and capacities for the links. Based upon the actual traffic volumes, the modeled traffic may be adjusted upward or downward to best utilize the available transportation network capacity crossing the screenline. Any adjustments made at this stage, particularly to critical links, must be very carefully documented using the procedures in *Report 255: Highway Traffic Data for Urbanized Area Highway Project Planning and Design* (National Cooperative Highway Research Program).

It is important to note that the definition of links within the study area must be determined early during the scoping process. Many “links” shown on a plot of a modeled area result from centroid connectors, connectors to the transit network, and other minor details within the model and should be combined with adjacent “links” for the purpose of making meaningful summaries and recommendations.

### **3. Developing the Base Case Plus Rezoning Scenario**

The Base Case Plus Rezoning Scenario is the existing land use and transportation plan with the subject property assuming the proposed rezoning.

The Base Case Plus Rezoning Scenario forecast shall incorporate the following:

- Land use assumptions that reflect the buildout condition within Prince George’s County in accordance with all approved master plans or the current General Plan.
- Land use assumptions that reflect the latest available long-range land use forecasts outside of Prince George’s County as provided by the MWCOG, the Baltimore Regional Council of Governments, or the Tri-County Council of Southern Maryland, as appropriate.
- Transportation facilities (including streets and public transit) that exist, are under construction, are provided for in an adopted and approved master plan or the current General Plan, or which will be otherwise provided by the development.
- As noted above, the Base Case Plus Rezoning model run shall incorporate the elements listed above together with the proposed subject rezoning. Special care shall be taken to ensure that the land use associated with the current zoning is properly identified and that the land use associated with the rezoning is correctly identified and added to the appropriate zone (or zones) to ensure that the net impact is reflected in the final results. Further, while most development proposals are described using numbers and types of dwelling units and square footage of non-residential uses, models (including TransForM) generally use population and employment. The zoning yield will need to be converted to population and employment, with employment segmented by office, retail, industrial, and other employment.

As discussed under the Base Case Scenario, any adjustments made through screenline or other analyses to the base case should be carried through to the Base Case Plus Rezoning Scenario.

### **4. Analysis and Standards**

Traffic volumes on the roadway links (or segments) in the study area shall be analyzed to determine the ability of the area roadway system to accommodate a proposed zoning action by undertaking a comparison of daily roadway service volumes with actual modeled volumes to determine the LOS for a roadway link. In general, Table 7 on page 58 should be used to determine the service level for a roadway link and two-way daily capacity for a roadway that is the upper limit of LOS E if needed.

The master plan designation and the number of lanes shown on the master plan shall determine the type of facility to be assumed along with its capacity.

#### *Comprehensive Design Zones*

For comprehensive design zones, the general requirement is that the proposed uses will not generate traffic that would lower the LOS anticipated by the land use and circulation systems shown on approved master plans. While not explicitly stated in county law, the latter is interpreted to mean that an application that lowers the LOS along a roadway segment or segments below the appropriate standard for the General Plan tier, center, or corridor in which the application is located must identify or propose new facilities that will solve the problem link. Such a recommendation could include, but is not limited to, the following:

- A revised master plan recommendation for the problematic link(s) that increases link capacity or capacities.
- An additional roadway link that directs traffic away from the problematic link(s).
- Additional or enhanced transit facilities that have a demonstrable potential to reduce overall traffic levels on the problematic link(s).

Any recommendation made in connection with a rezoning application must include an implementation strategy that includes the following elements:

- A conceptual analysis of right-of-way and environmental impacts of the recommendation that shall include a map of the recommendation on a base map that combines tax maps and the most recent available aerial photography.
- Identification of the likely operating agency for the proposed improvement(s) once the proposed improvement(s) is/are completed.
- The estimated construction cost of the recommended improvement(s), exclusive of right-of-way or utility relocation costs but including major structures.
- The timing of and potential funding sources for the recommended improvement(s).

The furnished information shall be reviewed by the TPS staff and the operating agencies, and TPS staff and agency comments shall be made a part of the record for the zoning case.

**Table 10: Service Volumes by Roadway Type**  
*Upper Limits for a Given Level of Service*

Roadway Type & LOS		Developed & Developing Tiers					Rural Tier		
		Number of Lanes					Number of Lanes		
		2	4	6	8	10	2	4	6
Freeway									
LOS	E	-	91,100	138,460	187,030	236,810	-	-	-
LOS	D	-	76,980	117,000	158,040	200,100	-	-	-
LOS	C	-	59,220	90,000	121,570	153,930	-	-	-
LOS	B	-	41,000	62,310	84,160	106,560	-	-	-
LOS	A	-	25,050	38,080	51,430	65,120	-	-	-
Expressway									
LOS	E	27,100	68,130	102,200	136,260	-	26,700	60,210	90,320
LOS	D	21,300	57,570	86,360	115,140	-	21,100	57,570	86,360
LOS	C	15,000	44,280	66,430	88,570	-	14,900	44,280	66,430
LOS	B	7,600	30,660	45,990	61,320	-	8,000	30,660	45,990
LOS	A	2,200	18,740	28,110	37,470	-	2,400	18,740	28,110
Arterial									
LOS	E	26,920	53,850	80,770	107,690	-	23,790	47,580	71,370
LOS	D	22,750	45,500	68,250	91,000	-	20,100	40,210	60,310
LOS	C	17,500	35,000	52,500	70,000	-	15,460	30,930	46,390
LOS	B	12,110	24,230	36,350	48,460	-	10,710	21,410	32,120
LOS	A	7,400	14,810	22,210	29,610	-	6,540	13,080	19,630
Major Collector									
LOS	E	23,350	46,700	-	-	-	-	-	-
LOS	D	19,730	39,460	-	-	-	-	-	-
LOS	C	15,180	30,360	-	-	-	-	-	-
LOS	B	10,510	21,020	-	-	-	-	-	-
LOS	A	6,420	12,840	-	-	-	-	-	-
Collector									
LOS	E	15,930	31,870	-	-	-	14,110	28,210	-
LOS	D	13,460	26,930	-	-	-	11,920	23,840	-
LOS	C	10,350	20,720	-	-	-	9,170	18,340	-
LOS	B	7,170	14,340	-	-	-	6,350	12,690	-
LOS	A	4,380	8,760	-	-	-	3,880	7,760	-

#### *Mixed-Use Zones (Except for the M-X-C Zone)*

The general requirement for this class of zone is the less-specific criterion that rezoning would not substantially impair the integrity of the appropriate approved master or functional plans. While the analysis is the same as that used for comprehensive design zones, all information is presented for the record. As such, an applicant can opt to recommend or not recommend facilities that would alleviate failing transportation network conditions within the study area.

Nevertheless, if an applicant opts to recommend additional facilities, an implementation strategy as described in the comprehensive design zone section (above) must be completed by the applicant and submitted for staff review.

#### *The M-X-C Zone*

The petition for the M-X-C Zone involves very specific standards for review. For an M-X-C Zone request, the review standards are as described in the 2002 “Guidelines for the Analysis of the Traffic Impact of Development Proposals,” and as documented in Zoning Map Amendment A9894 for Fairwood.

If additional transportation facilities are recommended as a part of the rezoning, an implementation strategy as described in the comprehensive design zone section (above) must be completed by the applicant for staff review.

### **5. Presentation of Findings**

The study findings shall include the following:

- A written description of the proposal along with the land uses expressed conventionally as dwelling units and square footage as well as population and employment.
- Descriptions of the development of the “Base Case” and the “Base Case With Rezoning” scenarios.
- A brief description of the study area in text, with a more detailed description of the study area in tabular format.
- Model runs (plots) that identify both “Base Case” and “Base Case With Rezoning” project scenarios:
  - The volumes displayed on the plots should be presented in 100s for ADT.
  - Any adjustments made by means of screenlining or any other analysis will be described in detail.
- A tabular presentation of the final results for the “Base Case” and the “Base Case Plus Rezoning” scenarios, with LOS by link. Any recommendations shall be accompanied by an implementation strategy as described in the comprehensive design zones subsection (above).

#### ***C. Use of the TransForM Model for Master Plans and Sectional Map Amendments***

Master plans, sector plans, sectional map amendments, and other land use studies conducted by the Prince George’s County Planning Department must often consider the long-term transportation impact of changes in zoning and recommend appropriate strategies to address those impacts. The following procedures should guide analyses conducted by the TPS for the various types of plans and studies. It is possible that simplified analyses may be employed for plans and studies that do not propose major zoning changes. When the use of a TDFM is necessary, the following set of procedures should be used.

## 1. Procedures

The need to use the TransForM model to analyze master plans and sectional map amendments is generally triggered when the District Council approves the initiation of a plan or plan update through one of the two Community Planning Divisions. Council initiation of transportation or other functional plan updates and certain other special planning studies may also require the use of TransForM.

It is at this time that TPS scoping be coordinated with the Community Planning Division staff who are responsible for (or assigned to) the plan, plan update, or planning study process. The scope of the traffic analysis, including the study area, traffic assumptions, network assumptions, and analysis methodology, should be reviewed with the community planners responsible for that plan or plan update. At this time, it should be determined if there will be alternative land use forecasts to be studied. If an analysis of interim land use or development phases is to be conducted, this is the point in the process to discuss the parameters of that analysis. The Community Planning Division should determine if the latest future land use forecasts for the plan study area are sufficient or if revised land uses that represent a buildout or some other interim condition will need to be analyzed. Note: if a major rezoning is anticipated through a sectional map amendment, the Community Planning Division responsible for the plan is strongly urged to provide revised land use forecasts of households and employment by zone, with the employment subdivided by the categories of office, retail, industrial, and other. Unless otherwise specifically provided for or directed, TPS staff is not responsible for developing the land use forecasts on which subsequent transportation analyses of a plan, plan update, or planning study will be based.

The timelines and deadlines for the timely provision of the required data sets by the Community Planning Division and the provision of results and potential recommendations should be clearly established and agreed to as early in the plan initiation process as is possible. This need is particularly pressing when outside resources such as consultants will be employed. Because of the nature of plan preparation and, particularly, public input and engagement processes, it is recognized and understood that community planners may not want or be able to commit to certain development patterns very early in the process. However, providing as much data as possible on key planning initiatives early in the planning process significantly helps and expedites the analysis process. Key transportation impacts and proposals can be considered with and presented to stakeholders, and the resulting outreach and engagement process can help in preparing a plan that all stakeholders, particularly the affected communities, can understand.

At this stage in the process, the TPS staff assigned to the planning effort should complete the Transportation Planning Analysis Group Form and submit it to the transportation planning supervisor. The form should identify:

- The general scope of the plan or study.
- Interim and final study products, tables, graphs, and plots.
- The plan or study timeline.
- Any and all other major components of the plan or study process for which TPS will be partly or wholly responsible, including coordination of the work by outside transportation or other specialists or consultants.

## 2. Developing the Base Case Scenario

The Base Case Scenario is the existing land use and transportation plan with all properties in the study area retaining their current zoning. It is strongly advised that the TPS staff person review all relevant data as noted below:

- The roadway facilities on the current functional master plan should be included with the appropriate facility type and size.
- The PGTAZs that comprise the study area should be identified. The centroids that represent these zones in the network should be analyzed to ensure that centroid connectors are adequate and appropriate and take into consideration future development and constraints. Larger zones should be split if appropriate or recommended by TPS staff.

It shall be the responsibility of the TPS staff to conduct this review. Furthermore, the assigned TPS staff must review recent assignments in the area under study to identify anomalies or other factors that may affect the assignment. While uneven assignments can be adjusted after a model run, daily traffic volumes of zero on key roadway links, as an example, often suggest more basic problems within the transportation network that must be fixed before the model can be expected to produce credible or useable results.

The Base Case Scenario forecast shall incorporate the following:

- Land use assumptions that reflect the buildout condition within Prince George’s County in accordance with all approved master plans or the current General Plan.
- Land use assumptions that reflect the latest available long-range land use forecasts outside of Prince George’s County as provided by the MWCOG, the Baltimore Regional Council of Governments, or the Tri-County Council of Southern Maryland, as appropriate.
- Transportation facilities (including streets and public transit) that exist, are under construction, or are provided for in an adopted and approved master plan or the current General Plan.
- As noted above, the Base Case model run shall incorporate the elements listed above without any revisions that reflect changes projected for or assumed in the plan or study being undertaken.

At this point, it is advisable to review all results within the study area for reasonableness. Even with the best algorithms for assigning traffic to individual routes, individual factors affect the way that individual persons utilize the highway system in ways that are not consistent with the global factors used in a model. Sometimes these inconsistencies are obvious when one travel link is heavily used while a nearby parallel travel link is virtually unused, but often the inconsistencies are less obvious. The use of a screenline analysis provides a systematic means of correcting such inconsistencies.

Screenline analyses can establish a natural “boundary line” across several links. Actual ground counts and capacities are determined for all links crossing the screenline. This actual data can then be compared with the modeled traffic assignments and capacities for the links. Based upon the actual traffic volumes, the modeled traffic may be adjusted upward or downward to best utilize the available transportation network capacity crossing the screenline. Any adjustments made at this stage, particularly to critical links, must be very carefully documented using the procedures in *Report 255: Highway Traffic Data for Urbanized Area Highway Project Planning and Design* (National Cooperative Highway Research Program).

It is important to note that the definition of links within the study area must be determined early during the scoping process. Many “links” shown on a plot of a modeled area result from centroid connectors, connectors to the transit network, and other minor details within the model that should be combined with adjacent “links” for the purpose of making meaningful summaries and recommendations.

### 3. Developing Alternative Scenarios

Alternative scenarios are used in the development and analysis of planning or planning study recommendations. Some plans or planning studies may have or recommend only one scenario beyond the base case. In such cases, land use changes may be limited in scope, and the area may impose environmentally, operationally, or technically significant limitations on the ability to plan or provide for additional or enhanced transportation facilities. In other plans or planning studies, there may be multiple land use scenarios requiring some level of detailed analysis, or multiple strategies for changing the transportation network—or both. In all cases, it is important that all model runs be systematically cataloged and archived so that datasets used for input, plots, graphs, and tabular data are consistent in analyzing the results of one model run against another.

Any alternative scenario should incorporate the following:

- Land use assumptions that reflect the buildout condition within Prince George’s County but outside of the study area in accordance with all approved master plans or the current General Plan.
- Land use assumptions that reflect the latest available long-range land use forecasts outside of Prince George’s County as provided by the MWCOG, the Baltimore Regional Council of Governments, or the Tri-County Council of Southern Maryland as appropriate.
- Transportation facilities (including streets and public transit) which are existing, under construction, or which are provided for in an adopted and approved master plan or the functional countywide functional plan, or which will be recommended in the scenario under analysis.
- Within the study area, land uses reflecting proposed zoning changes for the scenario under study.
- The staff persons responsible for conducting the plan or planning study are strongly urged to prepare land use changes and transportation changes so that they can be analyzed discretely with one scenario building upon another, and not concurrently under a single scenario.

As discussed under the Base Case Scenario, any adjustments made through screenline or other analyses to the Base Case should be carried through to apply to any additional scenarios that are developed during the planning process.

### 4. Analysis and Standards

Traffic volumes on the roadway links (or segments) in the study area shall be analyzed to determine the ability of the area roadway system to accommodate a proposed zoning action by undertaking a comparison of daily roadway service volumes with actual modeled volumes to determine the level of service for a roadway link. In general, Table 7 on page 58 should be used to determine the service level for a roadway link and two-way daily capacity for a roadway, which is the upper limit of LOS E if needed. The master plan designation and the number of lanes shown on the master plan shall determine the type of facility to be assumed along with its capacity.

Prince George’s County standards for acceptable levels of service on roadways have been set in the General Plan. These standards vary geographically within the policy Tiers, Centers and Corridors as designated in the General Plan and the subsequent plans that updated it. The standards are summarized in Table 2 on page 19 of these guidelines.

For purposes of preparing a master, sector, or other legally binding plan, it is desirable but not always possible to produce land use and associated transportation recommendations that, while attaining the preferred county growth and development goals, also achieve these standards. When links within

a master or sector plan study area are identified as not meeting the appropriate and geographically applicable policy standards, a select link analysis should be conducted to determine the types of trips that are projected to use that link in the future. Once more is known about the types of traffic using a given link, a number of policy strategies can be considered:

- Adding or expanding transportation facilities should be explored to the extent feasible. In most areas of Prince George’s County, adding or upgrading roadway facilities beyond the master plan recommendation is not really practical because of the cost of obtaining right-of-way in developed communities and the environmental costs of attempting to utilize the small amounts of open space that still exist. Often, the public opposes a plan not because of future congestion predicted by a transportation planning model but because long-planned upgrades and new facilities have not been built. In areas where roadways fail but the master plan includes considerable capacity to serve current and future development, phasing policies should be considered and analyzed.
- Links that fail primarily due to local traffic may be improved by seeking a lesser level of density or improving local circulation. TDM or other congestion management strategies may help within commercial centers if recommending less density is not a realistic or desirable option.
- Links that fail primarily due to traffic generated within a corridor may be helped by transit, particularly when adding capacity to a radial facility might not be practical or cost-effective. In some cases, doing this could defeat the desired growth and development goals for nodes in a General Plan Corridor and, therefore, should not be considered. However, it is important that transit only be recommended to support land uses of sufficient content, mix, and density to generate ridership that will support transit. The ridership potential is absolutely essential when considering fixed guideway transit facilities such as busways or light rail transit.
- In the absence of either roadway or transit options that solve the identified policy standard problem(s), corridor management strategies or TDM strategies combined with development or growth phasing may help. In such cases, land use densities within the plan area probably cannot be reduced sufficiently to benefit the problematic failing links, and may inhibit the future implementation of transit strategies that could ultimately benefit the corridor as a whole.
- Failing links near the county line are particularly difficult to resolve. Often, such links fail due to strategies, land uses, or transportation network operations employed in neighboring counties. While transit and corridor management can be helpful on radial links, non-radial links may lack a solution that can be reasonably recommended by a master or sector plan.

## 5. Presentation of Findings

Basic recommendations shall be made a part of a master/sector plan or other planning study. If undertaken in a master or sector plan, at a minimum, the transportation recommendations shall be summarized in a table that includes the facility name, type, and project limits with the right-of-way width and the planned number of lanes.

In most cases, TPS staff should prepare a technical report or appendix that supports and further details the transportation recommendations in the master or sector plan or planning study. This report, which should also relate the master or sector plan recommendations to any applicable recommendations in either the current General Plan or the 2009 (or any subsequent) *Approved Countywide Master Plan of Transportation*, should be generally available at the time of any hearings; if not available at that point, it must be completed at the time of any Planning Board worksessions. The technical report (or appendix) should include the following:

- A comparison of land uses by PGTAZ between the base case and any growth and development alternatives that were studied.
- A brief description of the study area in text accompanied by the more detailed description in tabular format.
- Model runs (plots) that identify transportation demand forecasts for base case and any rezoning or facility recommendations and alternatives either provided or incorporated by reference. The volumes displayed on the plots should be presented in 100s for ADT. Any adjustments made by means of screenlining or any other process should be described with all necessary detail.
- The final results for the base case and any scenarios developed with levels of service shall be presented in tabular format by link.
- Any roadway recommendations shall be described in detail. While these recommendations may be summarized in a table that includes the facility name, type, and limits with the right-of-way width and the number of lanes, more information should be provided, particularly if the recommendation is a change from the previous approved plan. In particular, when the right-of-way width and/or the number of lanes vary over the length of the facility, the technical report should provide details to guide future information and dedication requests. Corresponding detailed descriptions should contain of any changes that the master plan or planning study makes to fixed guideway (busway, light rail, commuter rail, or Metrorail) transit recommendations that are in either the previous master/sector plan or the 2009 (or any subsequent) *Approved Countywide Master Plan of Transportation*.

Once the plan is approved, its accompanying technical report should be kept available by TPS staff and should be available in hard copy and electronic format for any public requests during the life of the plan.

## Section 8: Guidelines for Mitigation Actions



*As a means of maintaining consistency with the other sections of this document, minor changes are made herein to the text approved by the Prince George's County Council as CR-29-1994. The reference to the Prince George's County General Plan has been changed to make reference to the 2002 General Plan document. The term "traffic impact analysis (TIA)" has been changed to "traffic impact study (TIS)."*

Section 24-124(a)(6) of the County Code authorizes the Planning Board to consider traffic mitigation procedures identified in TFMPs to allow development to proceed in certain areas experiencing unacceptable transportation service levels. However, the development could occur only if transportation improvements are made that would result in an improvement in traffic operations beyond what would have been expected if the development had not occurred.

Mitigation is a process developed by the Prince George's County Council by which developments in certain areas of the county are allowed to provide roadway improvements (or funding for transportation improvements) that would improve traffic operations at nearby intersections. Mitigation represents a departure from the remainder of these guidelines in that these improvements need not achieve the LOS criteria in the General Plan on the affected links or at the affected interchanges or intersections. These mitigation procedures would allow development to proceed in certain areas experiencing unacceptable transportation service levels; however, the development could occur only if transportation improvements are made that would result in an improvement in traffic operations beyond what would have been expected if the development had not occurred.

Under Council Resolution CR-29-1994, the Planning Board may consider the use of mitigation procedures in the following circumstances:

- The development is located within designated revitalization areas where the county wants to encourage new development or redevelopment as approved by the District Council pursuant to CB-116-1993.
- The development impacts roads inside the Beltway that are built to the full master plan recommendation or which cannot be improved due to physical or environmental constraints (in which case mitigation applies only to the facilities cited pursuant to this criterion).
- The development impacts the following major regional road facilities that have a significant proportion of external traffic (in which case mitigation applies only to the facilities cited in this criterion): (a) MD 210 from Charles County to I-95; (b) MD 5 from Charles County to I-95; (c) MD 4 from Anne Arundel County to I-95; (d) US 301 from US 50 (I-595) to MD 5; and (e) MD 3 from Anne Arundel County to US 50.
- The development is located within one mile of a Metrorail or MARC station that is existing, under construction, funded for construction, or has an approved environmental impact statement and is actively in development and evaluation by the MDOT. The one-mile distance shall be measured from the actual station.
- The development is located in an area in which public water and sewer is currently available, which meets all adequate public facilities findings (except those for transportation) with existing facilities or

facilities having 100 percent construction funding in the county or state programs and which is within one-half mile of a bus stop having 15-minute headways or better and load factors of 100 percent or less.

Sites must meet at least one of the above geographic criteria to be considered for the use of mitigation procedures. Proposals for sites that partially meet the geographic criteria listed above are not eligible for mitigation.

When staff receives a scoping agreement that includes mitigation within a municipality, the municipality will be notified.

Before preparing a TFMP, the applicant shall prepare a TIS for a study area as otherwise provided under these guidelines. All significant transportation facilities shall be analyzed in accordance with procedures contained in these guidelines or the Highway Capacity Manual (Special Report 209) as appropriate. Where (a) there is one or more critical intersections or roadway links within the study area where the resulting CLV or v/c ratio under total projected traffic is greater than that allowed for the LOS threshold values shown in Table 5 on page 45, and (b) the development proposal is in an area that is eligible for the use of mitigation procedures; the applicant may include a TFMP with the TIS to support the application for preliminary plan of subdivision. The TFMP is a proffer of the applicant and will not be prepared by the staff unless the proposed development generates fewer than 50 additional peak-hour trips and the TFMP is specifically requested by the applicant at the Subdivision Review Committee meeting following receipt of the application by staff. However, the failure of the applicant to request the TFMP at subdivision review will preclude its preparation by staff for the technical staff report unless a 70-day waiver is requested and granted.

If either of the following instances occurs and the development proposal is in an area that is eligible for the use of mitigation procedures, the applicant shall include a TFMP with the TIS to support the application for preliminary plan of subdivision:

- There are one or more critical intersections within the study area where total traffic is at least 25 percent greater than LOS D (CLV of 1,813) or along roadway links where the total traffic condition produces a v/c ratio at least 25 percent greater than LOS D (v/c ratio of 1.0). The applicant's TFMP shall recommend improvements that will (1) eliminate at least 100 percent of the development-generated CLV at the critical intersections, thereby resulting in a CLV no greater than 1,813; or (2) eliminate at least 100 percent of the incremental change in the v/c ratio (the difference between the v/c ratio under background traffic and the v/c ratio under total traffic) along the critical roadway links, thereby reducing the v/c ratio to no more than 1.0.
- There are one or more critical intersections within the study area where the total traffic exceeds LOS D by 25 percent or less at intersections or along roadway links. The applicant's TFMP shall recommend improvements that will (1) eliminate at least 150 percent of the development-generated CLV at the critical intersections or reduce the CLV to 1,450; or (2) eliminate at least 150 percent of the incremental change in the v/c ratio (the difference between the v/c ratio under background traffic and the v/c ratio under total traffic) along the critical roadway links or reduce the v/c ratio to 0.8.

The TIS shall include the analysis of all facilities within the study area, indicating the projected level of service with and without the recommendations contained in the TFMP. The TFMP shall cite the specific geographic criterion(a) that determines the applicability of the use of mitigation procedures and verify that the following conditions exist for all facilities that are mitigation candidates within the study area:

- Adequate roadways, intersections, and/or interchanges are not available to provide an adequate level of service for traffic generated by the proposed subdivision, and these facilities do not have 100 percent of the required construction funding identified in the current CIP or the current CTP.

- Total traffic in the study area (including traffic generated by the proposed Preliminary Plan of Subdivision) will result in the peak-hour level of service at major intersections, interchanges, and on roadways located within the study area worse than the LOS standard shown in Table 5 on page 45.
- Transportation facility improvements or trip reduction programs funded in whole or in part (if in part, other commitments must be made) by others cannot eliminate the identified inadequacy.
- The source, timing, and commitment of the funding to implement the identified improvements, programs, and/or other methods of mitigation are consistent with adopted plans, policies, and programs of M-NCPPC, DPW&T, SHA, and other transportation agencies.

Upon acceptance of a traffic study that includes a TFMP, the TPS staff will circulate the study for review and comment to SHA, DPW&T, and other appropriate agencies. If the TFMP includes improvements to facilities within one mile of a municipality, the TPS staff will circulate the study for review and comment to that municipality. The length of the review period will be 30 days from the date of circulation. In its cover memorandum requesting agency (or municipality) comment, the TPS staff shall indicate that the traffic study includes a proposed TFMP and shall request specific comments concerning the proposed TFMP. If the applicant recommends a geometric improvement strategy as part of the TFMP, the proposed geometric improvements must be in accordance with the standards or requirements established by the appropriate operating agency (i.e., DPW&T, SHA, a municipality, or others).

The TFMP and the comments received from the appropriate operating agencies (or municipalities) must be included in the TPS staff report and will form the basis of the staff findings and recommendations to the Prince George's County Planning Board. The Planning Board may require that the applicant (or the applicant's heirs, successors, and/or assignees) shall be responsible for the full cost of any roadway improvements or trip reduction programs necessary to alleviate any inadequacy as defined in the guidelines. An affirmative vote of the Planning Board members in attendance shall be required if the TFMP is opposed by the municipality within which the facility is located.

Alternative mitigation strategies are allowed for development proposals generating fewer than 25 additional peak-hour trips if requested by the applicant at the Subdivision Review Committee meeting following receipt of the application by staff. Again, failure of the applicant to request the TFMP at subdivision review will preclude its preparation by staff for the technical staff report unless a 70-day waiver is requested and granted. Such development proposals must meet each of the following criteria:

- Traffic levels of service from existing development on the established study area's significant transportation facilities are at LOS D or better.
- Traffic levels of service on significant transportation facilities in the established study area are at LOS E or better after considering background traffic plus traffic generated by the proposed subdivision.

When these criteria are met, the TPS staff will prepare a TFMP for the significant transportation facility(ies) for which the TFMP criteria are under consideration. The TFMP shall include (a) a projection of total traffic (existing plus background plus site-generated traffic) for significant transportation facilities; (b) an identification of those geometric improvement strategies that are necessary to alleviate any inadequacy in accordance with the guidelines; (c) an estimate of the construction costs of those strategies; and (d) a methodology to determine the applicant's pro rata share of the construction costs of those strategies.

This TFMP shall be circulated for review and comment to SHA, DPW&T, other appropriate agencies, and the applicant. If the TFMP includes improvements to facilities within one mile of a municipality, the TPS staff will circulate the study for review and comment to that municipality. The length of the review period will be 30 days from the date of circulation. The operating agencies (or municipalities) that review the

TFMP may provide comments indicating that the proposed geometric improvements are in accordance with the standards or requirements established by those agencies. The TFMP and those comments received from the operating agencies (or municipalities) must be included in the TPS staff report and will form the basis of the staff recommendation to the Prince George's County Planning Board. The Planning Board may require that the applicant (or the applicant's heirs, successors, and/or assignees) be responsible for the pro rata cost determined by the TPS staff of the improvements necessary to alleviate any inadequacy in accordance with the guidelines. An affirmative vote of the Planning Board members in attendance shall be required if the TFMP is opposed by the municipality within which the facility is located.

## Section 9: Other Transportation Planning Topics

Historically, the Planning Board's purpose for publishing a set of guidelines has been limited to guiding traffic consultants and staff in the preparation of a TIS that will be submitted for review. This section departs from that practice in that it covers several topics outside of TIS preparation. The various subsections are intended principally to provide a written policy to guide staff review of developments. However, each subsection will also be of interest to applicants, site engineers, attorneys, and other consultants.



### *A. Analysis Procedures for Smaller Developments*

As described in Section 2, the law requires that the Planning Board determine that roads serving a proposed subdivision will be adequate before approving a submitted preliminary plan. To make this finding, a TIS is required of an applicant if the proposed subdivision will produce 50 or more new trips during any peak hour. For sites that fall short of that 50-trip threshold, however, the finding must still be made.

As noted in Section 2, a TIS may be requested of developments that generate fewer than 50 peak-hour trips in areas where the TPS reviewer is aware that operational problems exist that may affect the ultimate approval of the development. This would include circumstances where mitigation, as described in Section 8, would be used but could include other situations as well. Outside of these cases, the TPS staff may perform a study of a limited scope. The procedures for scoping and performing this kind of study are provided below:

- The following are considered critical by TPS staff for review of any application generating fewer than 50 new peak-hour trips and exceeding the five-trip de minimus threshold:
  - Any site access point intersection with a major street.
  - The nearest off-site intersection between the public street that serves the site and a collector, arterial, or expressway facility serving the majority of site-generated trips.
  - In cases where a development generates more than 20 new peak-hour trips, a second off-site intersection in the opposite direction from the intersection identified above may be added to the study area if the intersection is deemed to serve more than 30 percent of site-generated trips.
  - In cases where a development generates more than 35 new peak-hour trips, if there is an additional off-site intersection that serves the majority of site-generated trips, this additional intersection shall be added to the study area.
  - All roadway links connecting the site to any critical intersection shall be included.
  - Roundabout intersections within Interstate Highway System interchanges (along I-95, I-295, I-495 or I-595 (US 50)) are specifically excluded from the study area.
- As a means of making the case for approval of a subdivision or other application, the Planning Board authorizes TPS staff to request an applicant to provide the counts needed to allow staff to conduct the required analyses. TPS staff will make a reasonable effort to locate acceptable counts that are already available prior to requesting that an applicant provide them. Counts shall be provided as described in

Section 1, and such counts may be new counts or counts that were taken less than one year previously that are available from any other source. Failure to provide requested counts may result in a TPS recommendation of disapproval based on a lack of available evidence supporting the required finding.

- Upon receipt of the requested counts, TPS staff shall analyze the traffic data in accordance with the procedures in Section 3. In the referral, TPS staff shall report results under existing, background, and total traffic. TPS staff shall also report trip generation and major assumptions, such as trip distribution and bonded or funded capital projects, and include a summary of background development assumed.
- In the event that a transportation facility does not meet the policy level of service standard in Table 2 on page 19, the following steps should be taken regarding a recommendation:
  - If there is an improvement to the failing facility that has been made a condition of another development and that improvement results in an adequate LOS under the staff's current analysis, the subject application shall be recommended with a condition to make the needed improvement.
  - In all other non-mitigation cases, unless an applicant is willing to proffer an improvement that achieves adequacy, the TPS staff should recommend disapproval of the development.
- In cases involving mitigation, an applicant intending to use the process in Section 8 for a proposal that generates fewer than 50 new peak-hour trips is strongly advised to perform and supply a TIS in support of the application. If such an applicant opts not to perform a TIS, staff must have a request in writing with the application or provided at the Subdivision Review Committee meeting to utilize mitigation and make recommendations accordingly. Unless such a written request is received, the application shall be treated as a non-mitigation case.

### ***B. Several Recommended Practices for Subdivision and Site Layout***

The review of development proposals by TPS staff is not limited to the review of the traffic impacts. TPS staff persons are required to review the subdivision plan and various types of site plans as well. The following practices are advisable in site development and should be considered by TPS staff in their review of a proposal.

1. **Access**—Site access is discussed to some degree in Section 1. Coordination with the appropriate agency that will permit the access is encouraged. Conceptual approval of any access point onto a public roadway is needed prior to the approval of the preliminary plan of subdivision. Other access issues follow:
  - The number of site access points should be deemed adequate to serve the proposed development. For single family residential developments, a single access point should be limited to an ADT volume of 2,000.
  - Where multiple access points are present to serve a development, no single access point should serve an ADT volume exceeding 2,000 in consideration of trip distributions and the internal site layout. Above these thresholds, additional access must be considered. When additional access cannot be provided concurrently with the development, a phasing plan to provide additional access is strongly advised.
  - The number of access points on master plan roadways should be minimized.
    - Along collector roadways, corner lots should be planned with minor street access, and turnaround driveways should be planned for single family non-corner lots.

- Driveways onto a facility that is classified as an arterial or greater require a variation from Section 24-121(a)(3); see Subsection D later in this section.
  - Driveways proposed onto a major collector facility are strongly discouraged as well; Strategy 3 of Policy 3 in Chapter VI of the *Approved Countywide Master Plan of Transportation* recommends that such driveways be treated similarly to driveways onto arterial or higher facilities. In these cases, TPS staff will actively pursue alternative access and layout.
  - In cases where service roadways are proposed within residential communities with homes fronting on a major collector or higher facility additional landscaped buffering or larger setbacks from the roadway are desirable.
- 2. Layout**—TPS staff will review all plans to ensure that circulation within the site and areas adjacent to the site is efficient. Specific layout issues include the following:
- Culs-de-sac shall not be excessive in length. The rationale for creating culs-de-sac is to create residential spaces with minimal traffic. However, culs-de-sac produce inconvenient neighborhood access, increase traffic on adjacent through streets, and result in reduced efficiency in the delivery of emergency services as well as routine public services.
    - The publication *Residential Streets, Third Edition* (Urban Land Institute/National Association of Home Builders/American Society of Civil Engineers/Institute of Transportation Engineers) indicates a maximum ADT of 200 on a cul-de-sac. This suggests that a maximum of 22 single-family, detached residences would be appropriate on a cul-de-sac, and lots with a frontage of 80 feet would produce a cul-de-sac of 800 feet in length (typical of R-R zoning).
    - The same standard goes on to indicate that, in areas with large lots or steep terrain, a cul-de-sac length of greater than 1,000 feet may be appropriate. This suggests that, in typical development, cul-de-sac lengths greater than 1,000 feet are not appropriate, and the use of longer culs-de-sac must be warranted by means of a brief statement of justification before they can be used.
  - The overall circulation pattern should be deemed logical when adjacent subdivisions are considered. Proposed streets shall be continuous and in alignment with existing planned or platted streets with which they are to connect. Proposed streets shall be extended to the boundary lines of the land to be subdivided unless prevented by topography or other physical conditions or unless such an extension is not desirable for the coordination of the subdivision with either the existing layout or the most advantageous future development of adjacent tracts. Situations where adjacent developable lands are left without public street access (often termed a “landlocked” condition) shall be avoided.
  - Where subdivision streets parallel contiguous property of another owner, undevelopable strips of land outside of the right-of-way that are not developable (often termed spite strips) are strongly discouraged. Similar strips at the end of a roadway and contiguous to an adjacent property are also strongly discouraged. Where proposed, TPS staff will recommend that such strips be deeded to the adjacent property or dedicated upon demand by a public agency to public use.
- 3. Street Standards**—TPS staff will review all plans to ensure that internal streets are designed in accordance with their appropriate function. Specific issues include the following:
- Commercial and Industrial Roadways: A minimum right-of-way of 35 feet from centerline is generally required adjacent to commercial or industrial zoning in accordance with the regulations for commercial and industrial zones.

- Primary Residential Streets: New subdivisions shall use a 60-foot right-of-way (the urban primary residential road standard) in lieu of a 50-foot right-of-way (the urban secondary residential road standard) in the following circumstances:
    - The street serves an estimated ADT of 500 or greater.
    - The street serves a parcel without a fixed trip generation (i.e. the parcel could be developed as *something other than* a single family residence on a fee-simple lot).
    - The street stubs onto an adjacent property.
    - The street is expected to serve transit.
    - The street will be a public street serving townhouses (provided concurrence is received from DPW&T).
  - Subdivisions accessing an existing 50-foot street should be restricted to an ADT of 600 or less over the length of the street.
  - Standard cross sections should be employed on all public streets. The use of a non-standard width along any street proposed for county maintenance must have county approval before preliminary plan approval. The use of a non-standard width along any street proposed for municipal maintenance will be deemed to be acceptable unless an objection is registered by the municipality or by the county.
  - The use of roundabouts, hammerhead turnarounds at the ends of culs-de-sac, or other non-standard elements shall have conceptual approval of the non-standard element from the appropriate operating agency before preliminary plan approval.
  - Rural roadway standards should not be used for internal streets in areas that should include sidewalks. Such areas would typically include lots that are predominantly 20,000 square feet or less, roadways that will serve transit, and roadways that connect residences with transit, commercial development, or schools within the development or within one-quarter mile of the development. In such cases, it is recommended that an urban roadway standard be used. Alternatively, consideration can be given to designing sidewalks into the rural roadway section.
- 4. Site Plan Issues**—Commercial, industrial, and institutional sites often are subject to site plan review. TPS staff will review plans to ensure that internal driveways and access are designed to best serve the uses proposed and limit impacts on adjacent properties and facilities. Specific issues include the following:
- Site plans should be carefully reviewed to ensure that trucks of appropriate size can access proposed loading spaces. In particular, it is expected that trucks be able to enter and exit the site without off-site maneuvering. TPS staff may request a truck access plan as a means of ensuring that the site can be adequately accessed by trucks.
  - TPS staff will carefully examine entrance and exit driveways to ensure that excessive queuing does not occur. Driveways should be designed to access the parking and should not bring all traffic in front of the main entrance of a high-traffic use. Exiting driveways should be appropriately sized, and a queuing analysis should be employed to determine cases where wider exiting driveways are appropriate.

- Wherever possible along arterial or higher classification roadways, driveways, or service roadway connections between commercial uses shall be actively pursued. Although this issue is better addressed at the time of preliminary plan of subdivision, reviewers should seek opportunities to create interparcel connections.
  - It is strongly recommended that commercial and employment sites within centers, corridors, or areas served by transit be designed to improve access by bicycles and pedestrians. Primary entrances can be made accessible to the street by siting the building closer to the right-of-way; alternatively, pedestrian ways through large areas of parking can improve linkages as well.
5. **Exceptions**—Exceptions to any numerical standard in this subsection may be allowed provided that TPS staff can find that the topography or other physical conditions of the development site make it impossible as opposed to a mere inconvenience or added expense to meet the standard and that issues of cul-de-sac length and street width will not unreasonably impact the ability to provide emergency and other public services. TPS staff, as a means of making such a finding, may request written justification of an applicant in this regard.

### ***C. Reservations and Other Right-of-Way Procedures***

While making a determination of adequacy pursuant to Subtitles 24 and 27 of the Prince George’s County Code is the primary function for TPS staff during the development review process, the determination and verification of plans of the master plan rights-of-way is an equally important and more longstanding function. This subsection focuses on the preliminary plan of subdivision process because that process is the only Planning Board process through which rights-of-way for transportation facilities are dedicated (rights-of-way can be deeded at any time, but that is a direct transaction between a property owner and a transportation agency). Nonetheless, at every stage of the development review process, TPS staff shall confirm that proposals conform to the *Approved Countywide Master Plan of Transportation* (or any successor documents).

Subtitles 23 and 24 of the Prince George’s County Code grant the county and the Planning Board fairly broad authority to require dedication in accordance with master plan requirements. Subtitle 24 includes the following language governing the subdivision process:

*Sec. 24-103. Policy.*

(a) *It is hereby declared to be the policy of Prince George’s County to consider the subdivision of land and the subsequent development of the subdivided land as subject to the control of the County, pursuant to the General Plan, for the orderly, planned, efficient, and economical development of the County.*

(b) *Land to be subdivided shall be of such character that it can be used safely for building purposes without danger to health, safety, and welfare. Land shall not be subdivided until needed public facilities are available, or will be made available in the foreseeable future, and proper provision has been made for capital improvements, such as schools, police facilities, fire and rescue facilities, parks, recreational facilities, transportation facilities, and other improvements.*

(c) *The existing and proposed public facilities shall conform to, and be properly related to, the proposals contained in the General Plan and the amendments thereto, the capital improvement programs, and the Ten Year Water and Sewerage Plan. It is intended that these regulations shall supplement the provisions and standards contained in the Building Code, the Zoning Ordinance, the General Plan, area master plans, functional master plans, the road ordinance, capital improvement programs, and the Prince George’s County Comprehensive Ten Year Water and Sewerage Plan.*

Over the years, this policy has been balanced against other applicable laws as well as case law to establish a practice for implementing the master plan. In general, TPS staff review of subdivisions includes the following with regard to master plan rights-of-way:

- All master plan recommended facilities that are situated within or adjacent to the subject property are identified. The “Master Plan Right of Way” layer on PGAtlas (<http://www.pgatlas.com>) is the most authoritative source of information in this regard.
- Notwithstanding the above, in the past, the vast majority of master plan right-of-way recommendations have been limited to the right-of-way needed to serve vehicular traffic. Recent indications are that recommended pedestrian and bicycle facilities cannot be accommodated without obtaining additional rights-of-way. Roadways that will include bike lanes will generally need another 10 feet (five-foot bike lanes in each direction) over and above the published right-of-way width. Roadways that will include a sidepath need an additional three feet on the side of the roadway on which the sidepath is planned. The “Bikeway Lines” layer on PGAtlas (<http://www.pgatlas.com>) is the most authoritative source of information in this regard.
- If a right-of-way is shown on a plan and is proposed for dedication, TPS staff determines if the dedication is consistent with the master plan. Normally, the plan is revised, if necessary, and the needed dedication becomes a condition of approval of the plan.
- It is important to remember that Article 28 of the Annotated Code of Maryland, Section 7-115(e), allows the Planning Board to require dedication for the widening of streets and roadways in accordance with a duly adopted master plan, and this dedication can be up to the width of a primary roadway (60 feet). Unless the applicant is willing to proffer additional right-of-way or unless a legal nexus for greater dedication can be demonstrated, 60 feet is probably the maximum right-of-way that can be obtained through dedication.
- If a master plan transportation facility is not reflected adequately on a plan, TPS staff shall advise an applicant to revise the plan accordingly. Section 24-121(a)(5) indicates that the plat (and presumably any plans that preceded it) shall conform to the area master plan. Similarly, Section 24-123(a)(1) requires that the Planning Board, in approving any plat, shall require that all master plan rights-of-way be shown on any plat (and presumably any plans that preceded it). Even when the right-of-way is not being dedicated, it must be shown with an appropriate plat note or plan notation.
- As a means of preserving the option for a future planned right-of-way in cases where a legal nexus for dedication might not exist, TPS staff and the applicant should discuss alternatives to dedication where appropriate. A building restriction line or a reconfiguration of the development plan for a site can be effective preservation strategies in some cases.

In cases where an applicant does not intend to dedicate all or part of a master plan right-of-way, and no other strategies for preservation are appropriate to the situation, TPS staff shall consider reservation pursuant to Section 24-139. Reservation is a condition of approval that limits land development for a maximum of three years (or less, as determined by the Planning Board). During this period, the landowner pays no property taxes on the land in reservation, and government has the option to purchase the land on a fee-simple basis. Section 24-139 requires that reservations follow a specific process within the context of a preliminary plan of subdivision application. This process is detailed below:

- Upon determining that reservation can be considered, TPS staff will refer the preliminary plan to the DPW&T, SHA, any other public agency concerned with potential acquisition, the County Executive, the County Council, and any municipality within which such property is located for their comments. Alternative areas for such reservation may be proposed. TPS staff shall allow 30 days for reply.

- A public agency's recommendation, if affirmative, shall include a map showing the boundaries and area of the parcel to be reserved and an estimate of the time required to complete the acquisition. Documentation of a funding source for the potential acquisition shall be included as a means of affirming to the Planning Board that acquisition can be made a priority during the reservation period.
- Upon receipt of an affirmative report from a public agency, the TPS staff shall notify the property owner, the County Executive, and the County Council of the intent of the Planning Board to establish the reservation concurrently with the approval of the preliminary subdivision plan.
- A recommendation of reservation shall be limited to areas identified as master plan rights-of-way.
- The Planning Board shall establish such reservation concurrently with the approval of the preliminary subdivision plan. If the location of the proposed reservation is not reflected, or differs substantially from that shown on the *Approved Countywide Master Plan of Transportation* or any succeeding amendment, update, or master plan document, the Planning Board shall hold a public hearing to consider the reservation. Hearings may be held by the Planning Board in other reservation cases as deemed appropriate. Notice of any hearing must be given in accordance with Section 24-139(d)(1).
- An applicant may request reservation of areas beyond the master plan right-of-way provided that the public agency concerned with potential acquisition agrees that the reservation is appropriate. The ultimate extent of the reservation shall be established by the Planning Board.
- Declaration of public reservation shall be by Planning Board resolution. Notice of the reservation shall be carried once in each of the county newspapers of record. Certified copies of the resolution shall be sent as required by Section 24-139(e).
- Final plats for the property shall be in strict conformity with the preliminary plat as to public reservation. The Planning Board shall cause to be prepared a plat of any land reserved for public use pursuant to Section 24-139(g).
- Reservations shall be for a minimum of one year as a means of ensuring that one year's worth of tax benefit accrues to the property owner. No reservation shall continue for longer than three years without the written approval of all persons holding or otherwise owning any legal or equitable interest in the property. Property in reservation shall be exempt from all state, county, and local taxes during the reservation period. Certified copies of the resolution shall be sent to the affected taxing and assessing bodies.
- Use of the property shall be restricted in accordance with Section 24-140.
- Section 24-141 shall govern the termination and/or renewal of any reservation.

In identifying these steps, the intent is to ensure that the reservation process is carried out in a fair and consistent manner. Strong evidence is required of an outside public agency in order for the Planning Board to enact a reservation. Given the process-oriented nature of Section 24-139, with its lack of findings to govern either approval or disapproval of the reservation, the outside public agency that provides an affirmative recommendation should have a reasonable expectation that the Planning Board will establish the reservation. The hearing process is intended to determine the location, extent, and time period of the reservation. To the extent that issues outside of these limited points are considered within the context of a public hearing, TPS staff and the Planning Board run the risk of affecting private negotiations between a property owner and the public agency that may ultimately purchase a future right-of-way.

Upon either (1) the termination of a reservation or (2) a finding by the Planning Board that the criteria for establishing a reservation is not met or, in the case of a site already in reservation, is no longer met, the area

within a master plan right-of-way is otherwise allowed to develop as appropriate under the law. If such a property is the subject of a new preliminary plan of subdivision process, it shall not be reviewed again for potential reservation unless the site is subject to review under a new area or sector master plan.

#### ***D. Departures and Variations***

TPS staff conducts reviews of several other types of applications. These include three types of departures, which are reviewed as development review applications. Also, TPS staff reviews one type of variation in connection with the review of a preliminary plan of subdivision. This section will briefly describe the procedures associated with staff review of these items, along with any information that should be provided by an applicant in support of the review.

- **Departure from Parking and Loading Standards:** TPS staff routinely comments on a departure from the number of parking or loading spaces required. Most departures of interest to TPS staff involve decreases in the number of parking spaces. Decreasing the number of loading spaces on a site usually does not produce impacts that are perceived by the general public or adjacent properties. While TPS staff is inclined to favor less parking as a means of limiting the traffic impact of a site on area roadways, any such request must be justified, and the appropriate findings must be made. Parking studies on the subject site (if appropriate) or similar sites, along with information from *Parking Generation* (Institute of Transportation Engineers) or other standards relevant to the use, is expected to be provided as a means of justifying the request. While transit availability can be a consideration in granting a departure, the frequency of service during the hours of the use and the walking (not a straight line) distance of the site from the use (one-quarter mile from a bus stop; one-half mile from a fixed guideway transit station) will determine the degree to which TPS staff believes transit is a relevant consideration.
- **Departure from Design Standards:** While most types of design standards are reviewed by staff of the Development Review Division with little comment from TPS staff, departures from elements of parking design require some evaluation by TPS staff. In general, applicants requesting departures of this sort are expected to provide information regarding parking turnover, expected hourly and daily traffic using critical parking aisles, and documentation of industry standards as they relate to the request.
- **Departure from Sign Design Standards:** Staff review is generally limited to a determination of whether the sign under review is within a right-of-way for a planned roadway facility. Even when a sign is proposed to be placed within the planned right-of-way, Section 27-614 does allow for the temporary placement of a freestanding sign within the ultimate right-of-way under certain conditions.
- **Variation:** The type of “variation” discussed in this subsection is a variation from the planning and design requirements for subdivisions described in Section 24-121. The involvement of TPS staff is generally limited to Section 24-121(a)(3), which states the following:

*(3) When lots are proposed on land adjacent to an existing or planned roadway of arterial or higher classification, they shall be designed to front on either an interior street or a service road. As used in this Section, a planned roadway or transit right-of-way shall mean a road or right-of-way shown in a currently approved State Highway plan, General Plan, or master plan. If a service road is used, it shall connect, where feasible, with a local interior collector street with the point of intersection located at least two hundred (200) feet away from the intersection of any roadway of collector or higher classification.*

When lots or parcels are designed to front upon (and have driveway access to) an arterial or higher facility, this type of arrangement must be justified by the applicant. This is done by means of the preparation of a justification statement that addresses the following findings (findings shown in

italics, with guidance in regular type) that are required in order to approve the variation (see Section 24-113):

*(a) Where the Planning Board finds that extraordinary hardship or practical difficulties may result from strict compliance with this Subtitle and/or that the purposes of this Subtitle may be served to a greater extent by an alternative proposal, it may approve variations from these Subdivision Regulations so that substantial justice may be done and the public interest secured, provided that such variation shall not have the effect of nullifying the intent and purpose of this Subtitle; and further provided that the Planning Board shall not approve variations unless it shall make findings based upon the evidence presented to it in each specific case that:*

*(1) The granting of the variation will not be detrimental to the public safety, health, or welfare, or injurious to other property;*

TPS staff typically relies upon the appropriate operating agency to provide comments and information regarding this finding. If the arrangement is in any way beneficial to traffic or safety considerations or is somehow beneficial to the surrounding neighborhood this information should be highlighted as part of that justification. Also, if safety reasons dictate that a proposed access point be limited to certain movements, such information should be provided at this point in the justification.

*(2) The conditions on which the variation is based are unique to the property for which the variation is sought and are not applicable generally to other properties;*

This finding should be addressed by highlighting the reasons that the site, the lot, or the parcel would be unique in such a way that there is not general applicability to other properties in the area. Location, zoning, and the opportunities and constraints of the property itself should be examined within the justification. Lot size and shape may be discussed, but other properties in the area should be examined to ensure that these traits are truly unique. A self-created “uniqueness” resulting from proposing a lot line is not an appropriate justification.

*(3) The variation does not constitute a violation of any other applicable law, ordinance, or regulation; and*

TPS staff typically relies upon the appropriate operating agency to provide comments and information regarding this finding. However, a review of master or sector plans, prior plats, and the exact zoning requirements and use tables is strongly advised in addition to agency comments in the process of making this finding.

*(4) Because of the particular physical surroundings, shape, or topographical conditions of the specific property involved, a particular hardship to the owner would result, as distinguished from a mere inconvenience, if the strict letter of these regulations is carried out;*

This finding should be addressed by highlighting the reasons that the surroundings of the site, the lot, or the parcel make alternative access infeasible. The justification should examine alternative access configurations, such as service roadways or connections to easements, internal private streets, or adjacent public streets of collector level or below, and explain why such connections are not viable. A self-created “hardship” resulting from proposing a lot line is not an appropriate justification.

*(5) In the R-30, R-30C, R-18, R-18C, R-10A, R-10, and R-H Zones, where multifamily dwellings are proposed, the Planning Board may approve a variation if the applicant proposes and demonstrates that, in addition to the criteria in Section 24-113(a), above, the percentage of dwelling units accessible to the physically handicapped and aged will be increased above the minimum number of units required by Subtitle 4 of the Prince George’s County Code.*

This finding has limited applicability and is only considered for the specific group of zones cited.

Direct driveway access onto arterials or higher facilities should be considered only after all other alternatives have been fully considered. TPS staff will comment upon any justification provided at the applicable Subdivision Review Committee meeting and review the findings in the staff referral.

Direct driveway access onto major collector facilities is strongly discouraged; Strategy 3 of Policy 3 in Chapter VI of the *Approved Countywide Master Plan of Transportation* recommends that such driveways be treated similarly to driveways onto arterial or higher facilities. A strict justification is not required because access onto major collector facilities is addressed through policy not specific law. However, in all cases involving driveways onto facilities classified as major collectors or higher, TPS staff will actively pursue access and layout alternatives.

## Section 10: Effective Date of Application

### A. Traffic Studies and Scopes

All traffic studies that are submitted and “in review” at the time that these guidelines are adopted shall be reviewed pursuant to the 2002 guidelines. Traffic studies that are scoped but not submitted shall be strongly encouraged to bring the studies into conformity with the updated guidelines; however, it is expected that all studies submitted after January 1, 2013, will conform to the updated guidelines. All traffic studies scoped after the date of adoption of these guidelines shall be required to conform to them.



### B. Other Transportation Reviews

All applications submitted after the date of adoption of these guidelines shall be reviewed by TPS staff in accordance with them. This would generally include reviews utilizing Sections 7(B) and 9 of these guidelines and will also include reviews conducted pursuant to Section 4.

### C. Determinations of Compliance with Conditions

It is recognized that conditions involving trip caps (either to determine ultimate development or phasing) have been written based on the older versions of the guidelines. These guidelines include several additional uses within the trip generation rate table (Table 4 on page 44) and have greatly changed trip generation computations for retail and office uses (there are no changes to the residential uses). The following guidance is provided for analyzing trip caps that were approved prior to the adoption date of these guidelines:

- The trip generation rates for residential uses have not changed. Therefore, the use of these guidelines in analyzing a residential trip cap would pose no issue.
- For office and employment uses, the basic published rates have not changed. For the general office use, the fitted curve equation in *Trip Generation* (Institute of Transportation Engineers) is now prescribed for office concentrations of more than 108,000 square feet, and this curve should typically allow more square footage under a given cap than allowed by prior editions.
- In a number of cases, these guidelines have had a more mixed impact on computed trip generation.
  - For retail and service uses, these guidelines prescribe the use of the equations in *Trip Generation* (Institute of Transportation Engineers), and they also suggest lower pass-by trip rates for generalized retail uses. The prior published rates in the guidelines attempted to replicate a curve, and the consistency with the actual curve will vary. Pass-by rates for most uses are lower in these guidelines, meaning that for many uses these guidelines would compute a higher off-site trip generation.
  - Several new uses (student housing, senior housing, churches, and day care centers) are included in the trip generation table in these guidelines. In most cases, rates are included for the purpose of documenting past practices and bringing consistency to the review process.
  - Mixed uses are now encouraged to consider internal trip capture in analyses. Trip caps in resolutions accepted prior to the adoption of these guidelines, in most cases, did not account for internal trip capture in such a formal manner.
  - The determination of trip cap compliance should be based on the trip generation procedures in these guidelines upon their adoption.

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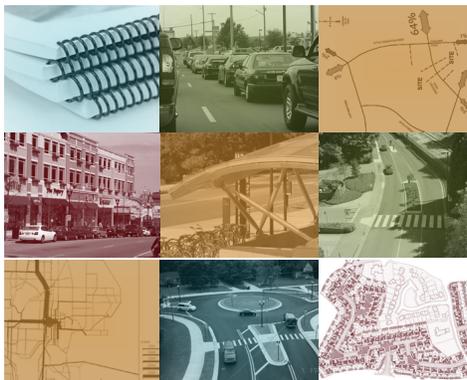
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# TRANSPORTATION REVIEW GUIDELINES • PART 1 • 2012



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