

Memorandum

To: TISTWG Members
From: Dan Hardy
Date: January 4, 2015
RE: LATR CONCEPTS – UPDATED WITH 12/3 MEETING (& FOLLOW-UP) NOTES

This memorandum provides an updated guide to the LATR Concepts memorandum delivered November 30 and discussed at the December 3 TISTWG meeting. To facilitate review, the memorandum edits have been saved in “track changes” mode, with particular attention to revisions to the “Next Steps” elements.

A separate document demonstrates how these changes reflect comments received between December 3 and December 31.

The objective for our January 7 meeting is to review areas where the greatest diversity of opinion has been registered and try to reach consensus on those points and our next study steps. Note that the TISTWG activities need to be able to dovetail with PHED and County Council review on Subdivision Staging Policy Amendment #14-02 on the White Oak Science Gateway transportation implementation process scheduled for PHED discussion on January 26. While the proposed Amendment has not previously been discussed as part of TISTWG, it is a variation on the “Pro-Rata Share” approach described in SA-2 below and is referenced (based on the concern about background traffic) as part of ST-3 in this memorandum. A summary of the White Oak Science Gateway approach drafted by MCDOT is included in both the 1/7 meeting agenda packet and pasted into the SA-2 discussion below.

Again, we hope that you are all able to review these materials in the first half of the week and attend the meeting this Wednesday afternoon. If you are not able to attend, we will follow up with you to get your reactions and input.

Table 1. Organization of LATR Concepts and Concerns

Scoping Concepts (Board #1)

Study Approaches (starting on page 7)

- SA-1. Alternative Review Procedure – Metro Station Policy Areas TMAg (no change)
- SA-2. Alternative Review Procedure – White Flint (no change)

Study Triggers (starting on page 11)

- ST-1. Trip Generation Threshold
- ST-2. Study Area
- ST-3. Background Traffic
- ST-4. Modal Analysis Triggers

Study Refinements (starting on page 24)

- SR-1. Potomac Two-Lane Policy (no change)
- SR-2. Exempt Second Improvement Mitigating < 5 CLV (no change)
- SR-3. Protected Intersections
- SR-4. Non-Transportation-Related Policies (no change)

Analysis Elements (Board #2)

Approach (starting on page 30)

- AA-1. Priority of mitigation approach

Measurements: (starting on page 32)

- AM-1. Pedestrian System Measurement
- AM-2. Bicycle System Measurement
- AM-3. Transit System Measurement
- AM-4. CLV Thresholds (no change)
- AM-5. CLV/HCM Thresholds

Solutions: (starting on page 48)

- AS-1. CLV mitigation requirement (100% or 150%) (no change)
- AS-2. \$12K per trip (no change)
- AS-3. Ped-bike gap contribution

Elements proposed to be dropped (Board #3) (starting on page 53)

- D-1. VMT based standards/thresholds
- D-2. Connectivity indices (as standalone – may be part of bike/ped accessibility)
- D-3. Screenlines/cordon lines with person-throughput
- D-4. Traffic Mitigation Goals under SSP APF2
- D-5. Areawide trip caps or parking caps (with or without trading)

Other Issues (Board #4 – no facilitated group discussion)

- O-1. Ensuring a balanced approach (i.e., test/tweak each concept so that a bunch of new rules aren't death by a thousand cuts)
- O-2. Effect on review processes/schedules by multiple agencies
- O-3. Defining area types (are BRT stations all urban areas?) in subsequent SSP Council actions
- O-4. Reflecting flexibility for evolution in land use-types over time (i.e., the millennials argument)
- O-5. "Free rider" issues – new rules exacerbate the problem, but are there improvements to status quo?
- O-6. Defining peak periods for different modes (particularly midday pedestrian flows)
- O-x. Others to be added by meeting participants.

LATR CONCEPT SUMMARY

SA-1: Alternative Review Procedure – Metro Station Policy Areas TMAg

Process: Scoping Elements

Sub-Process: Study Alternative Review Procedures

Concept in a Nutshell:

Enter into a Traffic Mitigation Agreement (TMAg) to agree to reduce 50% of peak period vehicle trips and pay twice the applicable transportation impact tax in lieu of conducting any Local Area Transportation Review or Transportation Policy Area Review actions.



Primary Purpose:

Incentivize trip reduction and eliminate need to examine and mitigate vehicular LOS in Metro Station Policy Areas

Effect of current approach on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Focuses private sector efforts solely on trip reduction.	None.
Improving predictability	Eliminates uncertainty associated with LATR and TPAR.	Creates uncertainty associated with the risk of non-performance in reducing vehicle trip generation by 50% over the course of the TMAg performance period.
Streamlining implementation	Places responsibility for transportation implementation on public sector.	None.

Relationship to Current LATR (or prior growth policy concepts)

This Alternative Review Procedure is an existing LATR approach within Metro Station Policy Areas (Resolution 17-1203 TA1, p. 16; LATR/TPAR Guidelines, p. 23). No changes are proposed as of the date of this memorandum.

Expected Application Area:

Metro Station Policy Areas only. No changes are proposed as of the date of this memorandum.

Examples of Application

Two applications have been approved under this Alternative Review Procedure:

- Twinbrook Commons was approved (Preliminary Plan 1-04054) in May 2004 by the Planning Board and subsequently annexed into the City of Rockville
- North Bethesda Center (LCOR) was approved (Preliminary Plan 12004049A) in November 2007 by the Planning Board and is within the geographic area now covered by the White Flint Special Taxing District.

The North Bethesda Center project has an executed Traffic Mitigation Agreement (TMAg) executed in December 2006 and in effect for 55 years, or until the Planning Board determines it is no longer needed. It is possible that over time the LCOR approach will be renegotiated at some point in the future to shift from the TMAg approach to the broader Special Taxing District approach.

This procedure has rarely been applied, due primarily to the risk associated with its aggressive, and long-term, trip reduction performance requirements. However, it remains a logical option to retain in the pantheon of LATR concepts as it is a key option in fulfilling the County's vision for reducing reliance on auto travel in transit-served areas.

This procedure requires what is commonly termed a "hard" TMAg with defined performance measures for site outcomes (such as vehicle trip caps) and penalties (typically backed by a security agreement such as a performance bond or letter of credit) that are guided by Section 42 of the County Code but are ultimately a function of site-specific conditions negotiated at time of subdivision approval. (Conversely, "soft" TMAgs require participation in Transportation Management District activities but do not have specific performance measures.) . A continuing area of discussion common throughout Montgomery County and transportation demand management programs nationwide is the disinclination to pursue legal action, primarily due to the potential damage to the collaborative working nature that is the hallmark of TDM success, but also due to the relatively low ratio between the punitive value of the fines and the administrative cost of their pursuit.

Next Study Steps

~~No changes to this existing LATR Concept are currently proposed, but comments from stakeholders are welcomed.~~

Identify proposed language to:

- Require performance bonds
- Extend maximum period of performance beyond 12 years

LATR CONCEPT SUMMARY

SA-2: Alternative Review Procedure – White Flint

Process: Scoping Elements

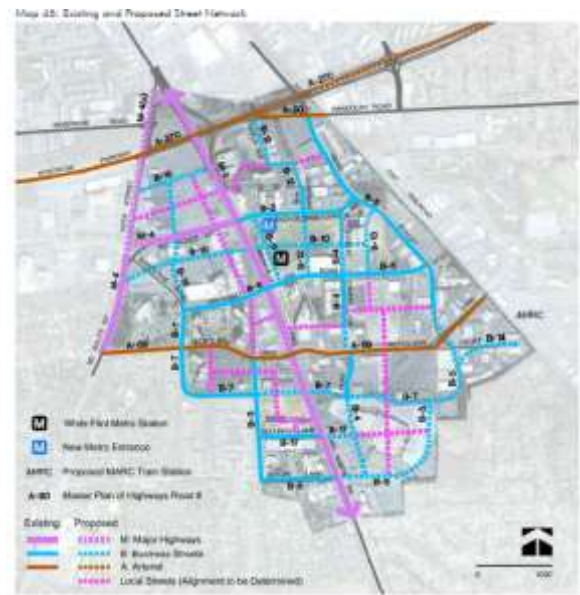
Sub-Process: Study Alternative Review Procedures

Concept in a Nutshell:

Within the White Flint Metrorail Station Policy Area, LATR and TPAR requirements have been replaced with a Special Taxing District and Sector Plan staging and monitoring approach.

Primary Purpose:

Leverage the property values in the White Flint Sector Plan area to help fund needed transportation system improvements, notably a robust street grid with significant eminent domain requirements that make it infeasible to implement under traditional LATR and TPAR exaction processes.



Effect of current approach on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Monitoring program examines periodic progress towards multimodal goals	Requires substantial advance planning and negotiation to establish alternative process
Improving predictability	Removes uncertainty from development proposal process	Staging plan entails some risk of future areawide moratoriums
Streamlining implementation	Facilitates implementation of well-defined, multimodal network improvements requiring governmental actions such as eminent domain to implement.	None, although the challenges with a consolidated plan implementation initiative may be more visible than would be with dozens of smaller projects.

Relationship to Current LATR (or prior growth policy concepts)

The White Flint Special Taxing District is an existing approach (Resolution 17-1203 TL2, p. 13, LATR/TPAR Guidelines p. 4).

Expected Application Area:

White Flint Metro Station Policy Area only. No changes are proposed.

Examples of Application

The White Flint Sector Plan area is the only location in Montgomery County where LATR and TPAR are fully replaced by an alternative review procedure.

This project classifies the establishment of such districts as “Pro-Rata Share” approach to addressing the transportation impact of development.

The concept might be considered for other areas of the County where individual transportation impact taxes could be replaced by a multimodal implementation district. Other jurisdictions in the literature review utilizing a similar approach that replaces analysis with a pay-and-go approach include:

- Multimodal Transportation Districts in Florida, including the City of Kissimmee and the City of Destin
- Plan Districts in the City of Portland, Oregon (covering about half the city acreage)
- Traffic Mitigation Zones in the City of Baltimore, Maryland (covering about half the city acreage)

Next Study Steps

The process for establishing additional “Pro-Rata Share” zones generally requires establishment of concurrence on planned transportation vision, needed transportation system improvements, and the appropriate tax, fee, or other payment/implementation processes. These processes typically take several years to develop. The 2016 Subdivision Staging Policy is not the appropriate study vehicle to enact additional Pro-Rata Share zones in the County, but the concept should be included in documentation and presentations to facilitate consideration of additional areas of the County where such an approach could be developed in concert with a community Master Plan or Sector Plan process.

The White Oak Science Gateway Sector Plan may be the first additional area to move to a Pro-Rata Share system. The PHED Committee is scheduled to meet on January 26 to consider Subdivision Staging Policy Amendment #14-02, a proposal for identifying and managing a Pro-Rata Share approach. The PHED committee packet is expected to include the December 10, 2014 draft developed by the Montgomery County DOT and inserted on the following page.

Additional information on the background traffic concerns prompting the introduction of Subdivision Staging Policy Amendment #14-02 is provided under the discussion of LATR Concept ST-3 on background development.

White Oak LATR Proposal—December 10 Draft

1. Conduct a single consolidated traffic study for the entire area that will identify the LATR improvements needed when all estimated development occurs. The study will determine:
 - a. The specific intersection improvements needed between now and buildout, as well as the added number of buses for local service, and unbuilt bikeway and sidewalk connections on major highways, arterials, primary residential streets, and business district streets to help reach the Plan's NADMS goals.
 - b. The costs of the above improvements.
 - c. The number of new daily vehicle trips generated in the Plan area.
 - d. Cost of improvements per new daily vehicle trip generated.
2. Allocate costs per trip generated to specific developments on the basis of:
 - a. The size of the ultimate development for a tract of land.
 - b. Adjustments for inflation and detailed design, based on the time of actual payment.
 - c. The LATR payment is made concurrent with the applicable TPAR payment.
3. Implementation:
 - a. Initial study to be conducted by an independent consultant hired by MCDOT, funded from the CIP.
 - b. Creation of a new White Oak LATR CIP project.
 - c. Collection of LATR related payments into a new fund for this CIP project.
 - d. Design, obtain permits and identify land acquisition needs.
 - e. Adjustments for actual design and right of way acquisition.
 - f. Construction of improvements, prioritized according to several factors:
 - i. Proximity to imminent development
 - ii. Complexity of implementation
 - iii. Timing of right of way acquisition
 - iv. Timing of other major projects that may affect the same intersections (i.e. interchanges, BRT, Old Columbia Pike).
 - g. Forward-funding of these improvements with the General Fund, to be reimbursed by accumulated LATR payments.
 - h. Periodic reporting of design and construction implementation to the general public, the Planning Board and Council.
4. Other assumptions:
 - a. The cost of interchanges, BRT lines, and Old Columbia Pike extension and widening would be entirely funded by the public sector (County, State, & Federal funds).
 - b. LATR payments—like TPAR payments—would not be creditable against impact taxes.

LATR CONCEPT SUMMARY

ST-1 TRIP GENERATION THRESHOLD

Process: Scoping Elements

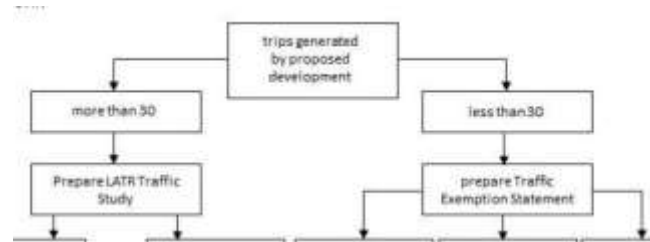
Sub-Process: Study Triggers

Concept in a Nutshell:

The number of vehicle trips generated by a site is used as a threshold trigger to determine whether a Local Area Transportation Review (LATR) study is required.

Currently, the trigger is set at 30 peak hour vehicle trips, where peak hours occur between 6:30-9:30

AM and 4:00-7:00 PM (although staff has leeway to examine alternative peak periods for unusual uses such as houses of worship).



The proposed concept would expand upon the current vehicle trip threshold to establish context-sensitive trip generation thresholds for different areas of the County to both encourage development in smart growth areas and reduce the cost (to both the private sector and the staff) of development review

Primary Purpose:

The vehicle trip generation thresholds serves as a definition of *de minimis* impacts on the Local Area Transportation system.

Effect of proposed changes on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	None	None
Improving predictability	Reduces cost of smaller projects	Less data in public realm on smaller projects, some minor improvements may not be required
Streamlining implementation	Reduces complexity of multiple smaller projects contributing to individual improvements	None

Relationship to Current LATR (or prior growth policy concepts)

The 30-vehicle trip threshold is established in current procedures (Resolution 17-1203 TL1, p. 10; LATR/TPAR Guidelines p. 3). The Subdivision Staging Policy does provide an option for applicants who generate between 30 and 49 peak hour vehicle trips to pay an additional 50% surcharge on the

transportation impact tax in lieu of taking action under LATR. Under the proposed change to increase the threshold to 50 or more vehicle trips countywide, this clause would become obsolete.

The Subdivision Staging Policy also notes that the 30-vehicle trip generation rate applies to both existing and new trips, but that if the existing development is fairly well established (75% of approved use and occupancy permits were issued more than 12 years prior to LATR study scoping) then the study scope must be based on the increased vehicle trip generation rate rather than the total trip generation rate, and that no LATR action is needed in such cases if the proposed development expansion would generate 5 or fewer new peak hour vehicle trips.

Expected Application Area:

The draft (straw-man) proposal would change the vehicle trip generation rates to:

- 75 peak hour vehicle trips in Metro Station Policy Areas and Central Business Districts
- 50 peak hour vehicle trips elsewhere in the County

The existing 30-peak hour vehicle trip threshold is the lowest threshold of any of the jurisdictions included in the literature review (Rockville also has a 30-trip threshold). A threshold of 50 vehicle trips is a fairly common threshold; most jurisdictions with a vehicle trip threshold use either 50 or 100 vehicle trips. Further, the TPAR and transportation impact tax processes provide a belt-and-suspenders approach toward addressing transportation impacts. Finally, since review of the MWCOG household travel survey indicates that MSPAs tend to have non-auto-driver mode shares about 20-30% higher than the rest of the County, a 75-vehicle trip threshold for MSPAs and CBDs might reasonable be equated to the level of activity generated by a 100-vehicle trip threshold commonly used by other jurisdictions.

A higher trip generation rate threshold is appropriate in the most smart growth areas for several reasons:

- These are the areas where the County most wants to encourage private development, so reducing the “barrier to entry” in these areas is a recurring theme for all LATR Concepts
- These areas generally share a few common characteristics that suggest private and public sector analysis efforts are better spent elsewhere:
 - The overall levels of activity mean that a “new neighbor” generating 75 vehicle trips will likely be less noticeable in an MSPA/CBD than one generating 50 vehicle trips in a less developed community
 - Adjacent intersections within CBDs tend to operate well below the congestion standards; congestion requiring mitigation is generally outside the MSPA/CBD areas where only larger studies requiring larger study areas would trigger analysis of congested locations

Examples of Application

There is likely to be concern regarding loss of analytic information associated with the proposed increase from 30 to 50 peak hour vehicle trips. Examples of urban jurisdictions that have adopted mode-specific person trip generation rates include:

- New York City has development thresholds that are based in development size descriptions, such as 200 dwelling units, 115,000 square feet of office space for lower Manhattan – designed to establish 50 peak hour vehicle trips as an appropriate threshold
- Conversely, the beta draft of Washington DC’s Comprehensive Transportation Review Guidelines recommends a threshold of 50 peak hour person trips, which in some cases could be lower than 30 peak hour vehicle trips.
- The City of San Francisco also uses the 50 peak hour person trip threshold

Next Study Steps

~~Consider comments on proposed changes.~~ Consider the following approaches:

- A two-tiered *de minimis* threshold in which a smaller application may trigger a payment-in-lieu for infrastructure improvements (i.e., sidewalks, bicycle facilities, bus shelters) not covered by TPAR or impact tax payments and a larger application triggers a traffic study.
- Alternative person trip generation thresholds and approaches by context area, considering a balance of multimodal placemaking objectives.
- A stronger branding of the concept that the LATR changes need to allow smaller infill projects to move forward with less administration/mitigation cost but that larger projects that create greater multimodal impacts will have some greater analytic requirements. Sort of akin to aphorisms like:
 - “Don’t sweat the small stuff”
 - “Manage the dollars and the pennies will take care of themselves”

LATR CONCEPT SUMMARY

ST-2: Study Area

Process: Scoping Elements

Sub-Process: Study Triggers:

Concept in a Nutshell:

The need to consider Impact mitigation at any given location should be generally proportional to the amount of increased travel demand at that location. Sites that generate larger numbers of trips should have a larger study area; a concept common across multiple jurisdictions.

Table 1: Intersections to be included in a Traffic Study

Weekday Peak Hour Site Trips	Minimum Number of Intersections in Each Direction
30 – 249	1
250 – 749	2
750 – 1,249	3
1,250 – 1,749	4
1,750 – 2,249	5
2,250 – 2,749	6
>2,750	7

The proposed change to the study area determination would apply [an “Intersection Proportionality Test”](#), a comparison of site vehicle trip distribution to existing intersection entering volumes to screen out intersections that are nominally within the LATR study area but for which the proportion of site generated vehicles is relatively minor.

Primary Purpose:

The existing approach serves to identify intersections where the site trips generated are expected to have a significant impact. The proposed changes [to incorporate an Intersection Proportionality Test](#) streamline the identification process.

Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	None	None
Improving predictability	Reduces cost of analysis by identifying insignificant impacts at time of study scoping	None
Streamlining implementation	None	None

Relationship to Current LATR (or prior growth policy concepts)

The current Subdivision Staging Policy (Resolution 17-1203 TL1, p. 10; LATR/TPAR Guidelines p. 7) identifies “rings” of study area intersections required as a minimum for an LATR study. For the smallest study area, at least one intersection in each direction is required for sites generating fewer than 250 peak hour vehicle trips. For the largest study area, at least seven intersections in each direction are required for sites generating more than 2,750 peak hour vehicle trips.

Per the Subdivision Staging Policy, the number of vehicle trips cited reflects the total trips (not the net increase in trips), unless use and occupancy permits for at least 75% of the originally approved development were issued more than 12 years before the LATR study scoping request.

The Subdivision Staging Policy also indicates that if a site requires improvements to at least one intersection (or a TMAg is required or proffered by the applicant) and the site causes a second intersection to have a < 5 CLV increase, then the applicant need take no action to mitigate that latter intersection. The LATR/TPAR Guidelines indicate that this consideration can be applied at time of study scoping, but the conditions to satisfy this characteristic can only be known after the study has been completed.

Expected Application Area:

Countywide.

Examples of Application

Most jurisdictions have some level of relationship between the size of the development and the size of the transportation impact analysis. Examples of precise guidance include:

- The City of Rockville expresses minimum study parameters based on the number of new peak hour trips generated that are somewhat similar to Montgomery County's; the smallest study area (for 30 peak hour vehicle trips) is expected to include at least 4 intersections within a quarter mile of the site and the largest study (for more than 700 peak hour vehicle trips) is expected to include at least 16 intersections within a mile of the site.

- The Atlanta region has square footage/dwelling unit thresholds (for Cobb County, within the Metropolitan Tier, these thresholds include 400 DU, 400,000 GSF of office) that trigger a Development of Regional Impact (DRI)

Roadway Segment	Facility Type	Facility LOS Standard	Facility Service Volume @ Standard (vpd)	Adjusted Facility Service Volume @ Standard (vpd) ^a	Project Traffic Distribution	Project Trips Assigned	% Service Volume Consumed	Presumptive Impact (>7%)?
Roadway A	4LD-1	C	33,200	31,540	30%	2,587	8.2%	Yes
Roadway A	4LD-1	C	33,200	31,540	25%	2,156	6.8%	No
Roadway A	4LD-1	C	33,200	31,540	16%	1,552	4.9%	No
Roadway B	4LD-2	D	33,500	33,500	35%	3,018	9.0%	Yes
Roadway B	4LD-2	D	33,500	33,500	25%	2,156	6.4%	No
Roadway B	4LD-2	D	33,500	33,500	17%	1,466	4.4%	No
Roadway C	2L-0	D	24,800	24,800	15%	1,293	5.2%	No
Roadway C	2L-0	D	24,800	24,800	12%	1,035	4.2%	No
Roadway C	2L-0	D	24,800	24,800	10%	862	3.5%	No
Roadway D	2L-1	E	16,600	17,430	20%	1,724	9.9%	Yes
Roadway D	2L-1	E	16,600	17,430	15%	1,293	7.4%	Yes
Roadway D	2L-1	E	16,600	17,430	5%	431	2.5%	No

^aLeft-turn lane and divided roadway adjustments from Table 5-4

processes administered by the Atlanta Regional Commission (ARC). For DRIs, a roadway segment has a significant impact if the site generates at least 7% of the subject facility's capacity (an example shown in the table excerpted from the DRI guidelines). A similar process, using Critical Lane Volume analysis, identifies significant impacts at intersections.

- King County, Washington identifies a significant intersection impact as occurring when the site will add more than 30 vehicles per hour to the intersection and those 30 vehicles constitute at least 20% of the total site generated trips.

The proposed Intersection Proportionality Test adjustment to the study area would utilize these concepts to better define locations without significant impact during the scoping process. Unlike the current LATR/TPAR Guidelines process, the straw-man proposal would consider:

- Peak hour vehicle-trip distribution and assignment
- Existing intersection volumes as available from M-NCPPC or Maryland SHA

Intersections that would otherwise be included in the study area defined by the “minimum number of intersections in each direction” may be excluded from analysis if:

- The site-generated intersection volume is less than 1% of the total intersection entering volume (note that the site entering volume is likely to constitute only 2 to 6 of the possible 12 turning movements at a four-legged intersection and the total entering volume includes all 12 movements), or
- The site-generated intersection volume is less than 5% of the total site generated traffic.

Next Study Steps

~~Respond to comments on proposed changes.~~ Consider:

- Whether study area extent should be based on urban transect context (considering balancing placemaking objectives)
- Sample calculations for the Intersection Proportionality Test to consider the effect of appropriate volume or percent volume thresholds as applied to total entering traffic or to CLV.

LATR CONCEPT SUMMARY

ST-3: Background Traffic

Process: Scoping Elements

Sub-Process: Study Triggers:

Concept in a Nutshell:

The baseline condition for establishing transportation impacts should be one in which other development already approved and “in the pipeline” is assumed to occur.

Primary Purpose:

To account for cumulative impacts of multiple development projects.



Effect of existing concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Recognizes increased travel demand in background condition	Many legacy development approvals do not reflect current market trends
Improving predictability	None	Addressing assumptions for legacy approvals can create uncertainty
Streamlining implementation	Responsibility for improvements can be shared among multiple applicants	Documenting/monitoring shared responsibility for improvements can be challenging.

Relationship to Current LATR (or prior growth policy concepts)

The Subdivision Staging Policy is silent on the treatment of background traffic and the LATR/TPAR guidelines define background traffic as that generated by approved but unbuilt development (LATR/TPAR Guidelines, p. 6, 22). Page 6 notes that pending developments may also be required to be assumed as background traffic, primarily for the practical assessment of cumulative impacts for multiple applications in the same study area.

Expected Application Area:

Countywide.

Examples of Application

The assessment of an appropriate analysis horizon year and level of background traffic is perhaps one of the most widely divergent topics found in the literature review. Most jurisdictions that require assessment of impacts from background traffic apply a high level of judgment in defining those background developments compared to Montgomery County. However, many jurisdictions are more conservative in the amount of additional growth beyond approved developments.

Traffic Growth Factor	Background Developments	Both
Cobb County / GRTA (M) VDOT 527 (F)	Montgomery County (J) Pasadena (J) San Francisco (J)	Los Angeles (J, O) San Jose (J, O) Boulder (F, J, O) Baltimore New York City (J)
Key to abbreviations: (F) = more than one future horizon year may be required (i.e., project open, longer term buildout) (J) = considerable judgment applied in defining background developments re: location, size, approval status (O) = options for cumulative traffic (California term) may include pending plans in addition to approved developments and/or a growth factor (M) = travel model data may be used in lieu of historic trendline traffic growth		

The simplest approach to background traffic is to use a common traffic growth factor in lieu of specific background developments, such as applied by Cobb County, GA and in the Virginia statewide guidance for Section 527 analyses. Many jurisdictions like Montgomery County, simply use the amount of background traffic generated by approved but unbuilt developments. But many jurisdictions combine the two approaches, recognizing that some background traffic will be generated by developments beyond those near the subject site. In nearly all cases, the written guidance stresses the need to apply judgment in determining an appropriate definition for background developments.

The background conditions also include transportation system improvements that are either conditioned of prior development approvals or are fully funded in the first six years of the currently approved County CIP or state CTP (LATR/TPAR Guidelines, p. 12).

Bill #14-02 would change the Subdivision Staging Policy for the White Oak Science Gateway Policy Area by eliminating the provision of background traffic conditions. This proposal, as well as the Planning Board's response proposing a proportional share payment approach, is described in the packet for the October 20, 2014 PHED Committee packet:

http://www.montgomerycountymd.gov/council/Resources/Files/agenda/cm/2014/141020/20141020_P_HED1.pdf

The concerns currently paramount in the White Oak Science Gateway Policy Area echo similar concerns that have surfaced as “free rider” concerns over the past several decades in different areas of the County, so an approach that works countywide is desirable. The PHED discussion on October 20 directed the TISTWG to consider alternative approaches and develop a recommendation as part of the comprehensive Subdivision Staging Policy recommendations.

Next Study Steps

The examination of equitable approaches to background traffic will need to accomplish the following objectives; with a priority order suggested below and the value of using White Oak as a testbed for known (i.e., Spectrum) and expected (i.e., Percontee) projects:

- For White Oak, define whether sufficient knowledge is available to move from a “negotiated exaction” approach to a true “pro-rata share” approach for all improvements in the White Oak Science Gateway Policy Area, particularly ~~–Gg~~ given the uncertainty associated with BRT and interchange specifics
- Define the limitations associated with the “payment in lieu of construction” element of the LATR/TPAR Guidelines (p. 26) as applies to the White Oak area concerns.
- Identify other approaches in the current Subdivision Staging Policy that may be applicable and cite pros and cons as applied to the White Oak area concerns, including:
 - Approach for Multiple Applicants for intersection improvements (LATR/TPAR Guidelines p. 19)
 - Establishment of a development district and Provisional APF approval under TP4 of the Subdivision Staging Policy
- Identify additional alternative means for addressing proportional assignment of costs and benefits for multiple public and private sector applicants.

Countywide, next steps include:

- Determining whether additional clarity on background development definition is needed to improve transparency to reviewers (from either agency staff or civic perspectives)
- Developing a proposed approach to define when building or area vacancy rates are high enough to warrant inclusion of “re-occupancy” as part of an increase to existing traffic volumes.
- Determining whether “APF trading”, proposed in 2009 and reconsidered in 2012, should be revisited.

LATR CONCEPT SUMMARY

ST-4: Modal Analysis Triggers

Process:

Sub-Process:

Concept in a Nutshell:

The level of quantitative analysis for autos, transit, bicycles, and pedestrians should each be linked to the amount of travel demand generated by each mode.

Primary Purpose:

Identify impacts and mitigation that are responsive to the types of travel demand anticipated by each mode, based on the type of development, location in the County, vision for the County, and desired travel demand management approaches.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Establishes context-sensitive triggers for modal analysis based on expected demand for each mode	None
Improving predictability	None	None
Streamlining implementation	Helps identify specific improvements for each mode of travel	None

Relationship to Current LATR (or prior growth policy concepts)

For the most part, LATR study analyses have focused solely on quantitative analysis of auto traffic. (Traditionally, trucks and buses are also included in the analysis of traffic streams in jurisdictions nationwide; for the purposes of simplicity they are also referred to as “autos” or “vehicles” in this memorandum unless otherwise specified where the term is applied.) The primary exception to this rule is when a Traffic Mitigation Agreement (TMAg) is required either to mitigate a specific number of vehicle trips or achieve a specific trip reduction target such as the 50% auto trip reduction goal described in Concept SA-1 or a master planned mode share goal. And in such cases, the focus has typically remained on two particular elements of trip reduction:

- achieving a **non-auto driver mode share goal (NADMS)**, regardless of the submodal split between auto passengers, transit riders, pedestrians, bicyclists, and/or number of trips not made due to flex time or telework

- focusing on the **home-based work (HBW)** trip, which usually consists of a “journey-to-work” trip for which the US census (and its continuous and rolling American Community Survey element) provides a robust data source at the census block level, and often an assumption that the return journey home from work is made by the same mode as the journey to work

Across the nation, jurisdictions are realizing that the consideration of multimodal travel demands needs to become both more accurate and more precise. The Institute of Transportation Engineers has recognized this need in a full revamping of their “how-to” guide on trip generation, called the Trip Generation Handbook, which is a companion to the more frequently referenced “Trip Generation” (aka Trip Generation Manual) compendium of observed vehicle trip generation rates compiled from studies nationwide. The first two editions of the Trip Generation Handbook, published in 2001 and 2004, provide guidance on nuances such as pass-by trips and internal trip capture in mixed use activity centers, but remain oriented on vehicle trips. The 3rd edition of the Trip Generation Handbook was published in draft form (as a Proposed Recommended Practice) in August 2014 and proposes a sweeping change from a vehicle-trip orientation to a person-trip orientation. In most suburban and rural environments, the 3rd edition recognizes that vehicle trips may continue to be the only mode which warrants quantitative analysis. However, the handbook recommends “thinking” in terms of person trips and then assigning those trips to each mode of travel, particularly important in environments such as mixed use centers, transit-friendly developments, and infill developments, where the NADMS will be substantially higher than the primarily suburban environments for which the Trip Generation Manual has vehicle trip generation rates. The draft Trip Generation Handbook provides available information to estimate NADMS for vehicle trip generation rates for many common land use codes. In suburban environments, the primary component of NADMS is auto passengers; Table C.3 of the draft Trip Generation Handbook demonstrates that for most uses, each auto tends to carry between 1.1 and 1.4 persons (i.e., with an average auto occupancy of 1.25, even if there are zero walk, bike, and transit trips, the NADMS equals 20%).

Table C.3 Baseline Vehicle Occupancy in Trip Generation Manual Data Volumes

Land Use Description	Time Period	Average	Range	Comment
021 Commercial Airport	Weekday		1.75-2.42	
022 General Aviation Airport	Weekday		1.25-1.70	
030 Intermodal Truck Terminal	Weekday	1.15		avg. of 2 studies
110 General Light Industrial	Not Available	1.3		for all industrial sites
120 General Heavy Industrial	Not Available			
150 Warehousing	Not Available			
130 Industrial Park	Weekday	1.37	1.25-1.90	
140 Manufacturing	Weekday		1.25-1.30	
151 Mini Warehouse	Weekday		1.25-1.90	
F14 Corporate Headquarters Building	Weekday	1.2	1.05-1.74	avg. of 10 studies
F15 Single Tenant Office Building	Not Available	1.1	1.05-1.14	avg. of 10 studies
F20 Medical Dental Office Building	Not Available	1.37	1.32-1.44	avg. of 8 studies
F21 State Motor Vehicles Department	Weekday	1.35	1.30-1.45	
F30 United States Post Office	Weekday	1.14		avg. of 4 studies
F60 Research and Development Center	Weekday	1.19	1.10-1.33	avg. of 13 studies
R12 Building Materials and Lumber Store	Weekday	1.17	1.10-1.21	
R15 Free Standing Discount Store	Weekday	1.32	1.15-1.45	avg. of 2 sites
R16 Hardware/Paint Store	Weekday	1.31	1.15-1.39	avg. of all sites
R57 Discount Club	Not Available	1.45		limited sample
R60 Wholesale Market	Weekday	1.21		avg. for site
R60 Furniture Store	Weekday	1.43	1.12-2.05	
R62 Copy, Print, and Express Ship Store	AM street pk	1.12		
	PM street pk	1.21		
	PM 1 Hour	1.15		
R91 Quality Restaurant	Weekday	1.75	1.55-1.95	
R92 High-Turnover (50-60min) Restaurant	Weekday	1.52	1.35-1.65	

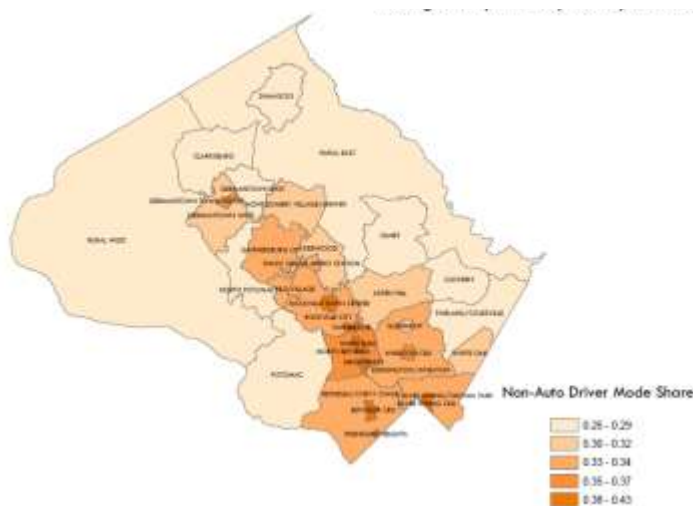
Source: Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, Washington, DC, 2012.

Appendix C: Person Trip Data for Specific Sites

The Trip Generation Handbook will likely take a year or so to be adopted by ITE as a Recommended Practice, following a formal comment period and editorial changes in response (ITE’s Recommended Practices go through an adoption process not too dissimilar from a master plan or sector plan adoption

process). In the interim, the Montgomery County Planning Department is proceeding with a separate study to update trip generation rates and similarly convert from an auto-oriented approach to a person-trip oriented approach. The Planning Department's approach builds from the ITE approach to utilize both the MWCOG Household Travel Household Surveys conducted between 2007 and 2012 which report on all modes and purposes for some 144,000 individual trips in the region; as well as the MWCOG travel demand model which is validated against those survey data points.

An assessment of NADMS for all purposes and all times of day from the MWCOG Travel Model for trips starting and ending in each of the County's policy areas provides a fairly recognizable picture of travel demand in the County. As indicated in Table C.3 of the draft Trip Generation Handbook, the fact that auto passengers are fairly common, particularly for most non-home-based work trips, means that every policy area in the County has a baseline NADMS of about 26%, with many MSPAs and CBDs having an NADMS of 38% to 43%. This range may not seem as wide as



conventionally perceived in master plan discussions of NADMS, but is due to the inclusion of all trips, rather than peak period journey-to-work trips (as well as the fact that even for work trips, a common misperception is that the ITE rates are suburban and therefore reflect an NADMS of 0%, whereas even the most suburban workplaces typically have an NADMS of about 10% due to carpooling).

Expected Application Area:

Countywide, with vehicle trip generation rates higher in CBDs/MSPAs. Other modal triggers would remain constant countywide, but quantitative analysis would be more readily triggered in urban areas and less likely to be triggered in suburban and rural areas.

Examples of Application

A straw man proposal would include the following triggers:

Location	Triggers for quantitative analysis (all peak hour of site generator)			
	Auto	Pedestrian	Bicycle	Transit
CBD/MSPAs	75 vehicle trips	100 pedestrian trips	100 person trips and site located within a quarter mile of an existing or proposed bikeshare station, college, or high school	50 transit trips
Elsewhere	50 vehicle trips			

Quantitative analysis would entail the concepts described in Analysis Methods Concepts:

- AM-1 for pedestrians
- AM-2 for bicyclists
- AM-3 for transit

Next Study Steps

~~Respond to comments on proposal.~~ Consider the following:

- Alternative examples of how the approach would apply (see next page) and potential for different triggers for different Policy Areas or transect areas
- Means for addressing, or eliminating, a bicycle-specific analysis
- Incorporating preliminary results from the ongoing LATR trip generation study

M-NCPPC LATR Concepts

Examples of how Modal Analysis Triggers (Concept ST-4) would apply:
Using 11/30/14 concept proposed thresholds

1. For a prototypical MSPA application

	Overall			Auto	Transit	Bicycle	Pedestrian
Proposed Thresholds	75			75	50	100	100
	persons	Auto drivers plus passengers	Average Vehicle Occupancy	vehicles	riders	persons (in places with bike propensity)	persons
Example peak hour modal splits		68%	1.2	57%	14%	2%	16%
Office - person trips by mode at various levels of development intensity:				Vehicle trips	Transit trips	Bicycle trips	Pedestrian trips
25000 GSF	55	37		31	8	1	9
75000 GSF	165	112		94	23	3	26
125000 GSF	276	188		156	39	6	44
175000 GSF	386	262		219	54	8	62
225000 GSF	496	337		281	69	10	79
275000 GSF	607	413		344	85	12	97
325000 GSF	717	488		406	100	14	115
375000 GSF	827	562		469	116	17	132
425000 GSF	938	638		532	131	19	150
475000 GSF	1048	713		594	147	21	168

2. For a prototypical suburban application

	Overall			Auto	Transit	Bicycle	Pedestrian
Proposed Thresholds	50			50	50	100	100
	persons	Auto drivers plus passengers	Average Vehicle Occupancy	vehicles	riders	persons (in places with bike propensity)	persons
Example peak hour modal splits		95%	1.25	76%	2%	1%	2%
Office - person trips by mode at various levels of development intensity:				Vehicle trips	Transit trips	Bicycle trips	Pedestrian trips
25000 GSF	59	40		45	1	1	1
75000 GSF	177	120		135	4	2	4
125000 GSF	295	201		224	6	3	6
175000 GSF	413	281		314	8	4	8
225000 GSF	531	361		404	11	5	11
275000 GSF	648	441		492	13	6	13
325000 GSF	766	521		582	15	8	15
375000 GSF	884	601		672	18	9	18
425000 GSF	1002	681		762	20	10	20
475000 GSF	1120	762		851	22	11	22

Study Needed?

Colored cell
indicates an LATR
study is needed

Colored cell indicates
modal analysis
needed

Colored cell indicates
modal analysis
needed

Colored cell indicates
modal analysis
needed based on
person-trip
generation if in area
of high bike
propensity

Colored cell indicates
modal analysis
needed

LATR CONCEPT SUMMARY

SR-1: Potomac Policy Area Two Lane Roadway Policy

Process: Study Scoping

Sub-Process: Study Refinements

Concept in a Nutshell:

Most intersections in the Potomac Policy Area are not subject to LATR review

Primary Purpose:

The vision of the Potomac Subregion master plan is predicated on part of the retention of narrow, two-lane roadways, which is more important than addressing delays due to congestion. For the most part, the Potomac Subregion has been classified as a subregional “cul de sac” in that its position adjacent to the

Potomac River limits its attraction to through vehicles. Eleven intersections in the Potomac Subregion, where the prevailing environment is more suburban and economic and regional concerns outweigh the desire for a rustic ambiance, are subject to LATR.



The Potomac “two lane roadway policy” is somewhat similar in approach to the Protected Intersection concept in SR-3, although the latter concept applies to enhancing the pedestrian experience in urban areas rather than preserving the rural ambiance of rural areas.

Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Recognizes the balance between rural preservation, local resident interests, and broader countywide mobility needs	None, as long as the policy remains in place and the public sector needs not make capacity improvements to “catch up”.
Improving predictability	Reduces uncertainty in negotiating unpopular intersection improvements	None
Streamlining implementation	None	None

Relationship to Current LATR (or prior growth policy concepts)

Included in the Subdivision Staging Policy (Resolution 17-1203 TL3, p. 12; LATR/TPAR Guidelines p. 23).

Expected Application Area:

Potomac Policy Area

Examples of Application

Common across all LATR studies for development proposals in or affecting the Potomac Policy area.

Next Study Steps

Confirmation of retention of policy.

LATR CONCEPT SUMMARY

SR-2: Second Improvement Mitigating < 5 CLV

Process: Study Scoping

Sub-Process: Study Refinements

Concept in a Nutshell:

If an applicant is already required to make an intersection improvement or participate in a Traffic Mitigation Agreement then the same applicant should not be required to expend additional effort on improvements for minor impacts (less than 5 CLV) at any other intersection.



Primary Purpose:

Address one element of the “free rider” concern by recognizing that the first mitigating action (intersection improvement or trip reduction program) likely creates more capacity than required so that an additional minor impact elsewhere can also be considered to have been mitigated by the first mitigating action.

Effect of current concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	None	None
Improving predictability	Reduces risk of “death by a thousand cuts”	None
Streamlining implementation	None	None

Relationship to Current LATR (or prior growth policy concepts)

Included in the Subdivision Staging Policy (Resolution 17-1203 TL1, p. 10; LATR/TPAR Guidelines p. 21).

Expected Application Area:

Countywide.

Examples of Application

TBD.

Next Study Steps

Confirm retention of LATR concept.

LATR CONCEPT SUMMARY

SR-3: PROTECTED INTERSECTIONS

Process: Study Scoping

Sub-Process: Study Refinements

Concept in a Nutshell:

Establish a policy that certain intersections are not to be widened and exempt them either from LATR analysis, or from requirements to make any improvements that would be identified in an LATR analysis.

Primary Purpose:

Reduce propensity for widening intersections to provide vehicular capacity at locations where additional widening is contrary to the established vision for an area.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Reduces the identification of auto-oriented solutions where such solutions are contrary to the vision	Detracts from finding other “negotiated-exaction” solutions, such as non-auto facilities at \$12K per trip
Improving predictability	Reduces uncertainty in identifying and negotiating costly and unpopular vehicular capacity improvements	None
Streamlining implementation	Reduces the likelihood of a conditioned improvement being superseded or otherwise affected by a public sector improvement	None

Relationship to Current LATR (or prior growth policy concepts)

The protected intersection concept is already applied in the Potomac Policy Area to preserve the so-called two-lane road policy in Potomac, except for twelve intersections specifically identified in the Subdivision Staging Policy (Resolution 17-1203 TL3, p. 14; LATR/TPAR Guidelines p. 23).

Expected Application Area:

Intersections primarily in urban areas, although as with the Potomac Policy Area approach, the Protected Intersections would be identified based on a countywide analysis of candidate locations and then specified in the Subdivision Staging Policy.

Examples of Application

San Jose's Protected Intersection policy provides a precedent for this approach

The concept of a "protected intersection" is most sound where:

- Additional roadway capacity is likely not feasible or runs counter to established plans or visions
- The county has already established a policy establishing a pedestrian priority in intersection design, such as in the County's urban areas
- Appropriate alternative routes are available for traffic to avoid the protected intersection.

For instance, the intersection of Georgia Avenue (MD 97/US 29) and Colesville Road (US 29/MD 384) in the Silver Spring CBD is a logical Protected Intersection candidate as it is impractical to add additional roadway capacity, it is located in a designated MSPA/CBD/urban area, and there is a robust network of designated business district streets to allow traffic to disperse in all four quadrants to avoid the subject intersection.



Conversely, the intersection of MD 355 and Gude Drive is not a logical Protected Intersection as the Shady Grove Sector Plan recommends additional capacity enhancements (either at-grade or grade separated) as part of the staging plan, it is not located in a designated urban area, and there are no designated business district or arterial routes within a half-mile radius to allow traffic a bypass option; all traffic must flow through this intersection.



Next Study Steps

The development of a Protected Intersections list entails the following steps:

- Conduct a GIS analysis for candidate Protected Intersections by identifying
 - Major Highway intersections with other Major Highways and Arterials
 - The subset of those intersections with other master planned streets that provide connectivity in some or all quadrants within a one-half mile radius
- Consider definitions for candidate Protected Intersections, including
 - Does the applicable master plan recommend additional through lanes or other capacity improvement such as a grade-separated interchange?
 - Is the intersection in a designated urban area?
 - Is the intersection the location of an existing or future fixed-guideway transit station?
 - How far from the intersection does the "protected" designation extend?
- Review draft recommendations with TISTWG.

LATR CONCEPT SUMMARY

SR-4: Non-Transportation Related Policies

Process: Study Scoping

Sub-Process: Study Refinements

Concept in a Nutshell:

The Subdivision Staging Policy contains several policies that are not directly related to transportation system adequacy, but whose origins arose from other public policy initiatives. This one Concept Summary deviates from the normal template approach by simply listing the policies and their current status.

Because these policies are not directly related to transportation, we propose no changes to them, but are listing them in the interests of providing as comprehensive a portrait of the full LATR environment as is reasonably practical.



Itemization of Non-Transportation Related Policies

Per the Subdivision Staging Policy (Resolution 17-1203):

- TA3 (p. 15) – **Automobile Related Uses in the Cherry Hill Employment Area:** no action needed under TPAR or LATR for APF-related submissions prior to July 26, 2016
- TA4 (p. 15) – **Public Facility Project:** no action under TPAR or LATR for projects constructed solely for public use such as schools, libraries, or fire stations.

Next Study Steps

Confirm no changes to these policies, but clarify expectations for documentation as opposed to mitigation-

LATR CONCEPT SUMMARY

AA-1: Priority of Mitigation Approach

Process: Analysis

Sub-Process: Approach

Concept in a Nutshell:

Require consideration of priority improvements to address LATR impacts, beginning with trip reduction and proceeding through non-motorized improvements, transit improvements, and finally vehicular capacity improvements.

Primary Purpose:

Bring consideration of multimodal impacts to the forefront of both the analytic approach of all LATR studies and to public awareness.

Priority	Mitigation Approach	PAMR Mechanism	LATR Mechanism	Single Mitigation Action Addresses	Examples of Mitigation Actions
1	Peak hour vehicle trip reduction	Traffic mitigation agreement (TMAg)	Traffic mitigation agreement (TMAg)	Both PAMR and LATR impacts	Vehicle trip caps, flex-time/telecommute programs, shuttle services
2	Public transit capacity	Service provision	Not applicable	PAMR impacts only	Purchase of RideOn bus with 12 years of operation
3	Non-auto facilities	Project implementation	Project implementation	Both PAMR and LATR impacts	Offsite sidewalks
4	Intersection improvements	Applicable if required by LATR	Project implementation	Both PAMR and LATR impacts	Turn lanes, change of lane use configurations
5	Roadway link improvements	Project implementation	Project implementation only if site-specific LATR impacts are addressed	PAMR impacts; LATR impacts if applicable	Roadway widening

For both PAMR and LATR studies, applicants proposing any mitigating action other than weekday peak period vehicle trip reduction must include a statement describing their consideration of each of the higher-priority mitigation approaches and a rationale for selecting the mitigation approach or approaches proposed. The Planning Board will consider and accept mitigation approaches on a case-by-case basis, using these Guidelines.

Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Promotes and codifies multimodal approach consistent with County priorities	None
Improving predictability	None	Minor amount of additional documentation required
Streamlining implementation	None	None

Relationship to Current LATR (or prior growth policy concepts)

Subdivision Staging Policy (Resolution 17-1203 TL1, p. 12) notes that “for the Planning Board to accept an intersection improvement as a mitigation measure, the applicant must show that alternative non-auto mitigation measures are not feasible or desirable.” The same statement occurs on p. 24 of the LATR/TPAR Guidelines, except the word “roadway” is used in place of “intersection”.

The table of priority improvements above was included in LATR/TPAR Guidelines when Policy Area Mobility Review (PAMR) was in effect (2008-2012). While the PAMR elements are no longer relevant, the 5-stage priority remains relevant and should be raised in visibility from a two-line statement on page 24, but should be readjusted slightly (transit compared to non-motorized priority levels) to move from least costly to most costly types of transportation: trip reduction, non-motorized travel, transit, intersection capacity, roadway link capacity.

Expected Application Area:

Countywide, but with increasing levels of expectation for policy areas:

In CBDs and MSPAs, the consideration of each priority approach should include a statement of mitigation approaches proposed and their expected effect on person trip generation by mode with an attempt to achieve any mode share goals in applicable master or sector plans. Where intersection or roadway widening is proposed as mitigation, the narrative must describe why the higher priority approaches of trip reduction, non-auto facilities, or transit services were not sufficient to mitigate LATR impacts (whether through true shifting of modal demand or through the LATR concepts such as the \$12K/vehicle trip mitigation exchange rate for non-auto facilities). Typical explanations may include the fact that capacity improvements were required to satisfy access permit, or other safety, requirements; that the LATR maximums for such non-auto facilities were reached; that the developer interests were better served by a lower-priority improvement approach; or that appropriate non-auto mitigation sites could not be identified in conjunction with agency staff. The statement should identify potential actions that the public sector might consider to better support the higher priority approaches for interagency staff consideration in CIP and operating budget commentary.

In other Urban Areas, the consideration of each priority approach should include a similar statement regarding the examination of non-auto facilities, but without supporting quantitative assessments of modal shift or plan mode share goal achievement.

In other areas of the county besides CBDs, MSPAs, and Urban Areas, the consideration of each priority approach should include a paragraph describing options considered and why they were not pursued; this statement may be brief and entirely qualitative.

An exception to the priority approach should be made so that any proposed mitigation that is explicitly described in a master plan or sector plan can be elevated above a higher-priority approach.

Examples of Application

TBD

Next Study Steps

Respond to comments from stakeholders.

LATR CONCEPT SUMMARY

AM-1: Pedestrian System Measurement

Process: Analysis

Sub-Process: Measurement

Concept in a Nutshell:

Refine the provision of off-site pedestrian connectivity to reflect improved site accessibility to destinations reachable by walking.

Primary Purpose:

Improve walkability and implement planned pedestrian connections.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Improve identification of the most valuable pedestrian connections in the vicinity of a development site	Potential for increased analytic complexity, depending on analysis details
Improving predictability	Improve identification of potential connections through pre-screened candidate locations provided by M-NCPPC	Potential for increased negotiation for potential connections not on pre-screened candidate location list
Streamlining implementation	Improve implementation or funding of pre-screened candidate locations	None.

Relationship to Current LATR (or prior growth policy concepts)

The Subdivision Staging Policy defers administrative findings on pedestrian and bicyclist safety to the Planning Board. The LATR/TPAR Guidelines include the preparation of:

- Assessment of sufficient pedestrian crossing time at signalized intersections (LATR/TPAR Guidelines p. 10).
- A Pedestrian and Bicycle Impact Statement (LATR/TPAR Guidelines, p. 13) which includes quantitative data on pedestrian and bicycle counts at study intersections and a qualitative inventory of conditions near the site and observed deficiencies.

- Guidance (LATR/TPAR Guidelines, p. 25) on encouraging off-site pedestrian facilities near pedestrian generators including transit stations, public facilities, public or private recreation/amenities centers, retail centers with 20+ employees, housing developments of 27+ SFDUs, and office centers with 100+ employees.

The Pedestrian and Bicycle Impact Statement remains essentially a state of the practice assessment of qualitative conditions, emblematic of similar requirements in most jurisdictions nationwide. It should be retained essentially as is; but with additional quantitative considerations described below.

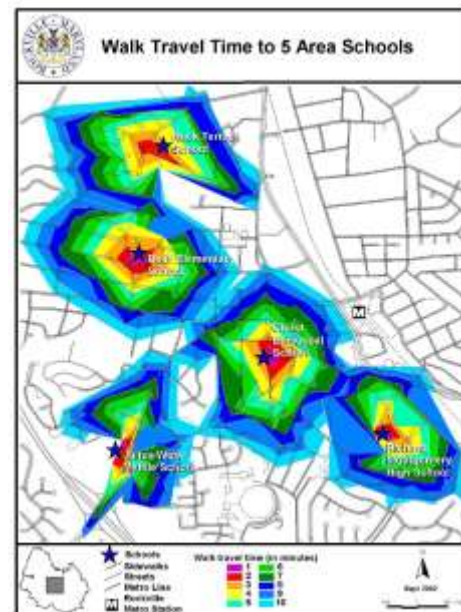
Expected Application Area

Countywide, but based on mode-specific trip generation (see Concept ST-4)

Examples of Application

Quantitative analysis thresholds and approaches for pedestrian system analysis include:

- The New York City CEQR requires detailed pedestrian analyses for any pedestrian system element such as a sidewalk segment, crosswalk, or intersection corner will increase by 200 or more peak hour pedestrians (including pedestrians en route to transit). For these location, the quantitative pedestrian assessment utilizes on Highway Capacity Manual approaches to pedestrian level of service which focuses on pedestrian flow densities (pedestrians per square foot of space). Qualitative assessments of safety are also required in a manner similar to the current LATR Pedestrian and Bicycle Impact Statement.
- The Washington DC draft CTR requires detailed pedestrian and bicycle system analysis for sites that have at least 200 residential units, 50,000 GSF of commercial/retail, is more than one block in size, or generates 100 combined pedestrian/bicycle trips. The pedestrian analysis walkshed is one-quarter mile from the site. Quantitative analysis includes signal-related traffic delay along pedestrian routes to major destinations such as Metro stations. Simulation may be required showing how pedestrian and bicyclist flow will be accommodated at locations where a high concentration of multimodal conflicts is judged to occur. Qualitative analysis includes sidewalk widths, condition, and gaps; ADA compliance, and presence of pedestrian scaled lighting. Mitigation includes addressing any characteristics that would preclude achievement of the proposed mode splits for the site. Any mitigation to address pedestrian improvements must assess its delay on other modes.
- The City of Rockville incorporated accessibility analysis in the Transportation Element of its Comprehensive Master Plan. The concept of pedestrian walksheds that are based on travel time



rather than a fixed radius is shown in the page 4-24 exhibit from the plan showing walk travel time to area schools. The concept of pedestrian accessibility is an element of the City's Trip Reduction Plan.

Considering the relative sizes and densities of the New York and Washington system environments, the Washington DC approach (with lower thresholds combined with a more flexible and collaborative analysis approach) appears more appropriate for Montgomery County.

Three potential means for incorporating pedestrian accessibility in the LATR Guidelines are shown in the following set of exhibits, with a focus on the Spectrum development at 12345 Old Columbia Pike. The first graphic shows a conceptual 4,000' radius distance from the study site, with an overlay of the areas that could be reached (labeled as the walkshed) by walking 4,000' along the local street network. The selection of 4,000' is only for illustrative purposes; a one-quarter mile, one-half mile, or one-mile radius may be more appropriate for walking or bicycling trips. The ratio of land accessible within the walkshed as compared to the crow-flies radius is roughly 50%.



The second graphic shows the effect of a hypothetical new connection between Old Columbia Pike and Staley Manor Drive and the Southern Asian Seventh Day Adventist Church, which would increase the walkshed by about 20 acres, or about 2% of the land area. This could be one measure of the value of offsite pedestrian system improvements for a given development site.



Of course, the White Oak Science Center is bounded along its western edge by the Paint Branch Stream Valley Park, which is a natural and passive recreational resource, but not a high volume destination. A second alternative would be to use destinations, rather than land area, as the measure of accessibility. Again, hypothetically speaking, the original walkshed may provide access to only 50% of the land area within the crow-flies radius, but perhaps that land area contains 90% of the jobs and housing units within the crow-flies radius. Therefore, the same connection may increase walk and bike access to 3% or 4% of the total jobs and housing units; a second measure of accessibility.

Finally, the relative value of proximity to the study site could be incorporated in the assessment by applying a "friction factor" or decay curve, to the value of jobs and housing units that are more distant from the site, reflecting the fact that most people will walk a short distance to a desired destination but only a small proportion will walk 4,000' to the same destination. Applying a "gravity weighted", or

decay-weighted value would increase the complexity of the analysis, but assign a more appropriate value to the new connection by weighting connections that are closer to the study site higher than those that are farther away.

The accessibility approach could be measured in terms of distance, as in the 12345 Columbia Pike examples shown above, or it could be converted to consider walking time and incorporating signal delays, as in the Rockville plan example.

The accessibility value would be used to either augment or replace the modal value associated with the new connection. Currently, Table 6 in the LATR/TPAR Guidelines assigns off-site sidewalks and bike paths an

Table 6: Graduated and Maximum Trip Credits Related to Congestion Standards

non-automobile transportation facility	trip credit vs. congestion standard		
	1,350-1,500	1,550-1,600	1,800
100 linear feet of five-foot wide sidewalk	0.5	0.75	1.0
100 linear feet of eight-foot wide bike path			1.0
other non-automobile facilities	\$12,000 per vehicle trip		
maximum trip credits	60	90	120

equivalency between length of new facility and a number of vehicle trips to be discounted. A simple replacement would be to replace the “100 linear feet” specification with additional acreage, jobs/housing units, or gravity-weighted jobs/housing units, depending on the independent variable selected.

An alternative approach could be to establish context-sensitive standards for pedestrian accessibility. For instance, in CBDs and MSPAs with good grid networks, the ratio between accessibility for the crow-flies distance and the walking distance should be high (perhaps 75% or 80%). In contrast, rural areas with sparse networks would have a much lower ratio (perhaps 25% or less). This concept can be explored further, although given the wide range of possible parcel-specific accessibility scores, this approach would likely have unintended consequences if established as a standard measure as opposed to an incentive-based approach.

Predictability of application could be enhanced by the development of a list of desired pedestrian system connections in each policy area that are pre-screened by M-NCPPC, ~~and~~ MCDOT, SHA, and WMATA as ready for implementation (including facilities in facility planning). Applicants should be encouraged to identify potential valuable connections that are not already in master plans.

Next Study Steps

Respond to comments on the proposed pedestrian accessibility approach, including:

- Desirability of an approach similar to that of Washington DC that assesses pedestrian delay within a quarter-mile of the site for sites that generate 100 peak hour pedestrian trips.
- Desirability of an accessibility-based measure of pedestrian accessibility.
 - Desirability/cost-effectiveness of the three alternative approaches measuring geographic area, total destinations, and gravity-weighted/decayed destinations
 - Measures to require, incentivize or convert the increased accessibility to a unit value that converts the LATR/TPAR Guidelines Table 6 “linear feet” of facility to an

accessibility value such as acreage, jobs/housing units, or gravity-weighted jobs/housing units.

- Consideration of significant improvements to quality of pedestrian experience.
- Consideration of alternative peak period definitions

LATR CONCEPT SUMMARY

AM-2: Bicycle System Measurement

Process: Analysis

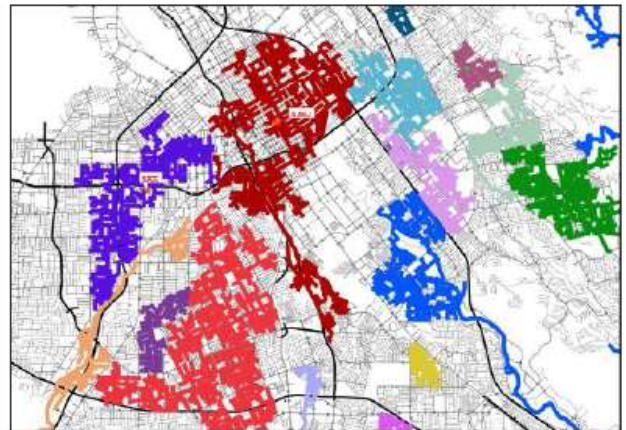
Sub-Process: Measurement

Concept in a Nutshell:

Incent the identification and implementation of on-street network connectivity improvements.

Primary Purpose:

Increase the ability to move about the County in a low-stress bicycling environment, focusing on connections between bicycling activity clusters.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Improve identification of the most valuable low-stress bicycle connections in the vicinity of a development site	Potential for increased analytic complexity, depending on analysis details
Improving predictability	None	Potential for increased negotiation for potential connections
Streamlining implementation	Improve implementation of low-stress bicycle connectivity.	None.

Relationship to Current LATR (or prior growth policy concepts)

Not included in current Subdivision Staging Policy or LATR/TPAR Guidelines.

Expected Application Area

Countywide, but based on mode-specific trip generation (see Concept ST-4)

Examples of Application

Most jurisdictions, like Montgomery County, handle bicycle system impacts from a qualitative perspective, with judgment applied where necessary. For instance, the San Francisco guidelines indicate that “if sufficient bicycle traffic exists or is anticipated on a study area street, it may be necessary to include a quantitative analysis of the impacts using the methodology in the 2000 Highway Capacity Manual or some similar technique.

- The Washington DC draft CTR requires detailed pedestrian and bicycle system analysis for sites that have at least 200 residential units, 50,000 GSF of commercial/retail, is more than one block in size, or generates 100 combined pedestrian/bicycle trips. The bicycle analysis walkshed is one mile from the site. Simulation may be required showing how pedestrian and bicyclist flow will be accommodated at locations where a high concentration of multimodal conflicts is judged to occur. The location of any proposed bikeshare stations must be shown. Any mitigation to address bicycle improvements must assess its delay on other modes.

Most jurisdictions and staffs recognize that the methods for assessing on-road bicycle LOS such as those in the Highway Capacity Manual are somewhat limited for an approach to development review. Because they are based on stated and revealed preference surveys by on-road bicyclists themselves (which is an appropriate and noble goal) the level or quality of service is more a function of adjacent street traffic and truck percentage than it is a function of the on-road bicycle facility itself. The inability to “move the needle” with mitigation makes such measures undesirable from a development review perspective. Admittedly, the 2010 Highway Capacity Manual techniques were derived prior to the advent of buffered bicycle lanes or cycle tracks, which may represent a notable improvement over signing and marking techniques used for more conventional shared roadway and bicycle lane treatments.

The Montgomery County Planning Department is exploring the concept of “Low Stress Bicycling and Network Connectivity” following the techniques described in the Mineta Transportation Institute (MTI) Report 11-19 from May 2012.

<http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf>

This connectivity approach recognizes that many roads will not practically be made comfortable (or low-stress) for most on-road bicyclists, and examines ways to increase the connectivity between places through a network of roadway that are low stress.

This approach might be combined with the accessibility-based concept described in AM-1 on pedestrian system measurement to examine places that are accessible via low-stress bicycle facilities. Considering for the moment that all the industrial streets east of US 29 and south of Fairland Road might be found to be low-stress bicycle routes, but that crossing US 29 might be high stress, the area of low-stress bicycle connectivity within a 4,000’ distance of 12345 Columbia Pike might be shown in the first diagram at right.

If an improved crossing of Columbia Pike were provided in the vicinity of Industrial Parkway, then much of the neighborhood on the west side of Columbia Pike might be found also within a



4,000' low-stress bicycle environment, as indicated in the second diagram at right.

As with the pedestrian accessibility approach suggested in LATR Concept AM-1, this approach could be developed with any one of three basic metrics:

- Geographic area of increased accessibility
- Additional destinations (jobs and housing units) associated with increased accessibility
- “Gravity-weighted”, or decayed value, destinations associated with increased accessibility.

Next Study Steps

Respond to comments on LATR Concept, including:

- Response to comments on Mineta Institute process for identifying low-stress bicycle connections
- In conjunction with AM-1, assess:
 - Desirability of an accessibility-based measure of ~~pedestrian-bicyclist~~ accessibility.
 - Desirability/cost-effectiveness of the three alternative approaches measuring geographic area, total destinations, and gravity-weighted/decayed destinations
 - Measures to require, incentivize or convert the increased accessibility to a unit value that converts the LATR/TPAR Guidelines Table 6 “linear feet” of facility to an accessibility value such as acreage, jobs/housing units, or gravity-weighted jobs/housing units.
- Consideration of feasibility of modifying the Mineta Institute approach to incorporate topography
- Consideration of bikeshare implementation approach

LATR CONCEPT SUMMARY

AM-3: Transit System Measurement

Process: Analysis

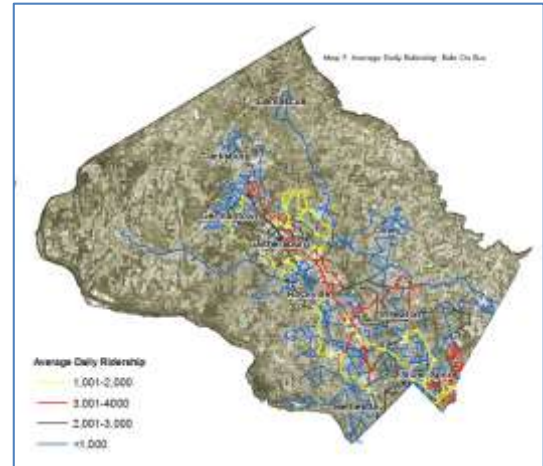
Sub-Process: Measurement

Concept in a Nutshell:

Assessing the degree to which additional transit trips generated by site development create capacity constraints in the transit system.

Primary Purpose:

Ensure transit system adequacy to support additional development and encourage additional transit use.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Introduces transit system analysis for significant transit trip generators	None
Improving predictability	None	Introduces identification of transit system mitigation elements
Streamlining implementation	Provides bases for consideration of transit impacts and mitigation	None

Relationship to Current LATR (or prior growth policy concepts)

Not included in current Subdivision Staging Policy or the LATR/TPAR Guidelines as related to LATR (the TPAR element does include areawide transit system adequacy).

Expected Application Area

Countywide, but based on mode-specific trip generation (see Concept ST-4)

Examples of Application

Most jurisdictions do not have a specific threshold for triggering a transit system analysis. For instance, San Francisco publishes current and horizon year screenline capacities for different transit systems and a quantitative analysis is required if the project would cause a screenline to exceed a 1.0 volume/capacity

ratio (which as of the current publication date was only 100 additional peak hour, peak direction riders on the Third/Mission Street corridor, but more than 500 additional peak hour, peak direction riders on all other screenlines).

Specific trip thresholds for transit analysis include:

- The New York City CEQR requirements have fairly stringent transit analysis metrics but also fairly high analysis triggers:
 - A subway/rail analysis is required if the proposed action will increase the peak hour volume at a single subway station (with multiple lines) or a single subway line (with multiple stations) by 200 or more riders per hour. In such a case, the CEQR analysis requires detailed assessments of line-haul, platform, farecard machine, fare array turnstiles, stairway, and escalator capacities.
 - A bus transit analysis is required if the proposed action will increase the peak hour volume at a single bus line by 50 or more riders (in the peak direction) per hour.
- The Washington DC draft CTR requires transit system analysis if the proposed site generates at least 50 transit trips or the transit mode share exceeds 30%. A capacity analysis of transit conditions will be performed for any site that generates 30 peak hour transit trips to any bus or streetcar route that has headways greater than 20 minutes in the peak hour. Remaining justification of the transit system to accommodate the projected transit volume is to be performed qualitatively, considering the transit service characteristics and adequacy of the pedestrian access between the transit station and the site. The Washington DC draft CTR refers applicants to the WMATA *Design and Placement of Bus Stops* guidance for prioritization of potential mitigating improvements.

Considering the relative sizes and densities of the New York and Washington system environments, the Washington DC approach (with lower thresholds combined with a more flexible and collaborative analysis approach) appears more appropriate for Montgomery County. It is unlikely that the 30% transit mode share will be achieved in all but the most Metro-accessible residential locations (such as Wheaton Safeway), and the use of the 50 transit trip threshold appears sufficient without combining it with a 30% transit mode share criteria (i.e., an infill project of 20 townhomes might generate 10 peak hour person trips with a 30% transit mode share, but quantitative analysis should not be required to assess the impact of those three transit trips).

Next Study Steps

Develop concurrence on the following approaches:

- Application of the Washington DC draft CTR triggers, modified slightly to use 50 new transit trips as the trigger for quantitative analysis
- Use of the Washington DC analysis to require:
 - Coordination with WMATA on Metrorail station access and circulation if the site is within a quarter mile of a Metrorail station

- Assessment of bus system capacity if the site is currently served by buses with 20 minute or longer headways
- Consideration of transit system facility size, function, and quality as an element of determining value for transit system improvement (i.e., a BRT bus shelter may be worth more than a standard bus shelter; a commuter bus system improvement may have a different value than a local bus system improvement).
- Consideration of bus operational impacts in coordination with WMATA.
- Application of the pedestrian gap analysis described in Concept AS-3 to include connectivity to the nearest bus stop or Metrorail station (if within one-quarter mile). In other words, even if the AS-3 concept is not found supportable as a stand-alone approach, it should be considered part of the transit analysis.
- Consider payment-in-lieu approaches.

LATR CONCEPT SUMMARY

AM-4: CLV Thresholds

Process: Analysis

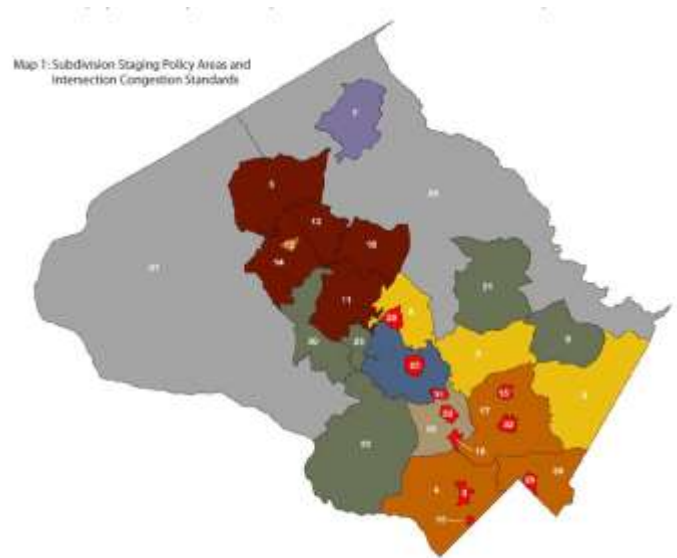
Sub-Process: Measurement

Concept in a Nutshell:

CLV standards are higher (i.e., more congestion is allowed) in urban policy areas.

Primary Purpose:

More roadway congestion is appropriate in urban areas where transit service is excellent; more stringent roadway congestion standards are needed in suburban and rural areas where transit options are less robust.



Effect of existing concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Provides multimodal equity by balancing transit and auto mobility (one, but not both, modes must be adequate in all areas of the County). Promotes walkable TOD by reducing pressure to widen intersections.	None
Improving predictability	None	None
Streamlining implementation	None	None

Relationship to Current LATR (or prior growth policy concepts)

Defined in Subdivision Staging Policy (Resolution 17-1203 Table 2, p. 23; LATR/TPAR Guidelines Map 1, p. 5).

Expected Application Area:

Varies by Policy Area as shown in Map 1.

Examples of Application

Applies to each application based on the policy area that the intersection is located in.

Next Study Steps

~~Confirm adequacy of current approach~~ Respond to comments, including:

- Elimination of CLV thresholds in downcounty MSPAs
- Consideration of LRT/BRT station area threshold CLV adjustments, either based on current plans and conditions, or to be adjusted as station areas are defined in master plans.
- Tailoring CLV thresholds for MSPAs to relate to adjacent suburban policy areas rather than a constant 1800 CLV (i.e., apply an 1800/1600 ratio approach so that the Shady Grove CLV standard, in an area surrounded by Derwood (1475) may more appropriately be 1650.

LATR CONCEPT SUMMARY

AM-5: HCM/simulation support for CLV

Process: Analysis

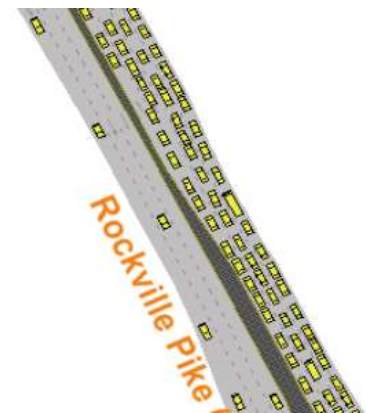
Sub-Process: Measurement

Concept in a Nutshell:

Refine thresholds for HCM or simulation analysis, in addition to the current 1600 CLV threshold.

Primary Purpose:

Apply multimodal operational assessment of intersection operations where CLV does not provide sufficient accuracy to gauge an appropriate mitigation approach due to the potential for queueing/spillback.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Potential for improved assessment of quality/level of service for all modes of travel, including delay-based measures of effectiveness	Increased cost of analysis preparation, review, and impact determination/negotiation
Improving predictability	Improved constituent buy-in on problem identification and appropriateness of solutions	Increase in number of analysis variables results in both increased analytic flexibility and uncertainty, particularly for stochastic models (where different random number seeds produce different results)
Streamlining implementation	Improved identification of appropriate solutions	None

Relationship to Current LATR (or prior growth policy concepts)

The current LATR process requires Highway Capacity Manual (Resolution 17-1203 TL1, p. 12; LATR/TPAR Guidelines p. 6) for intersections where the CLV is 1600 or greater. The County Council Resolution defers the details of this application to the Planning Board.

The proposed changes would expand the analysis to intersections that are identified as “near capacity” (equal to a CLV of 1450 or greater) if they meet any of the following criteria:

- Within 600 feet or less (an industry standard for desired intersection spacing to facilitate traffic flow) of another signalized intersection, or
- On a segment of roadway identified by M-NCPPC in the most recently published Mobility Assessment Report as congested (the graphic from the 2009 Highway Mobility Report is no longer current, but shown as an example of the potential for agency designation of congested corridors where operational analysis would be triggered at a 1450 CLV.



Expected Application Area:

Countywide (although the occurrences requiring analysis will be greater in or near urban areas where congestion is highest and intersections tend to be more closely spaced).

Examples of Application

Many jurisdictions use Highway Capacity Manual techniques, including simulation programs such as Synchro or VISSIM, as the primary tool for intersection adequacy analysis. Examples of additional guidance includes:

- Alexandria, VA uses HCM where V/C ratios are < 0.85 and VISSIM for more congested locations as well as locations where there is a dedicated transitway or interstate highway access. The city provides guidance on VISSIM calibration acceptance targets for modeled link volumes.
- Washington DC indicates that an increase in 5-seconds of delay per vehicle at an intersection or a queue length increase of more than 150 feet are significant impacts to be mitigated, and that solutions to mitigate vehicle LOS must not add significant delay to other modes.
- New York City describes significant impacts as 3 seconds (if already at LOS F) to 5 seconds (if already at LOS D) in an increase to average vehicular delay and indicates spillback should be addressed, although without a specific definition or mitigation requirement.

Next Study Steps

Define more study parameters, such as:

- Triggers for operational analysis as initially proposed above
- Whether HCM is acceptable as a stand-alone methodology or whether all operational analysis should require a simulation tool such as Synchro, CORSIM, or other cited analysis tools (such as VISSIM)
- Whether the operational analysis needs to incorporate pedestrian and transit analyses, perhaps:

- Pedestrian analyses for minimum crossing times conducted countywide
- Pedestrian analyses for impedance to vehicular traffic flow conducted in urban areas
- Transit analyses for bus stop locations and current bus service frequency conducted in CBDs and Metro Station Policy Areas
- Whether to focus on intersection performance measures (most commonly described in literature) or network-wide performance measures (in which case average delay values would reflect a weighted average for multiple intersections).
- Defining study area boundaries – which would be influenced both by the extent of queuing and the definition of intersection or network performance measures
- What the appropriate operational triggers are for queuing, if any. (The operational considerations for vehicular LOS are defined in terms of V/C ratio for the intersection in Table 5 on p. 22)
- What standards for validation are required (suggest staff judgment)
- What types of assumptions may be changed during evaluation of mitigation (suggest signal phasing and timing, but with the requirement that the same level of vehicle throughput be required to attain an acceptable level of mitigation)
- Whether transit or pedestrian delay should be considered as a measure of effectiveness.
- How to document baseline conditions where operational experience doesn't correspond to customer experience (such as where spillback may contribute to delays at intersections where observed CLVs are below the operational threshold), such as via the Highway Mobility Report or other formal agency documents.

LATR CONCEPT SUMMARY

AS-1: CLV Mitigation Requirement

Process: Analysis Elements

Sub-Process: Solutions

Concept in a Nutshell:

Where intersection congestion is not substandard in a baseline condition, the applicant must mitigate 100% of their impact that exceeds the congestion standard. Where intersection congestion is substandard in a baseline condition, the applicant must mitigate 150% of their impact or an amount required to achieve the congestion standard.



Primary Purpose:

An applicant should not be held fully responsible for substandard intersection performance that they do not cause, but in such cases the applicant should be required to not only mitigate their own trips but help improve the baseline condition in an effort to return to (or towards) the congestion standard. This has been informally described in prior Subdivision Staging Policy discussions as akin to the Boy Scouts motto of “leave things better than you found them”.

Effect of existing concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Focuses additional private sector attention and resources where intersection performance is substandard.	None
Improving predictability	None	None
Streamlining implementation	Minimizes the likelihood that an applicant improvement and public sector improvement will both be pursued simultaneously	None

Relationship to Current LATR (or prior growth policy concepts)

Included in the Subdivision Staging Policy (Resolution 17-1203 TL1, p. 10; LATR/TPAR Guidelines p. 19)

Expected Application Area:

Countywide

Examples of Application

Existing applications in Montgomery County; this approach was not found in the literature review.

Next Study Steps

Confirm adequacy of current concept.

LATR CONCEPT SUMMARY

AS-2: \$12,000 per Vehicle Trip Mitigation

Process: Analysis Elements

Sub-Process: Solutions

Concept in a Nutshell:

Incentivize the provision of non-auto facilities by allowing applicants to mitigate vehicle trips through provision of non-auto facilities valued at \$12,000 per vehicle trip



Primary Purpose:

Improve ability to provide safe and convenient pedestrian travel and support the creation of facilities that encourage transit use, walking, and bicycling (as stated in the Subdivision Staging Policy TLI, p. 11)

Effect of existing concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Facilitates consideration of multimodal solutions	Policy does not relate to value of actual vehicle trip reduction achievement
Improving predictability	Establishes a known dollar value of mitigation (up to the applicable maximum trip credit limits)	None
Streamlining implementation	Requires Board to report on trip credits issued and status of construction of any required improvements.	None

Relationship to Current LATR (or prior growth policy concepts)

The Subdivision Staging Policy provides the Planning Board the ability to adopt administrative guidelines regarding the provision of peak hour vehicle trip credits for providing non-auto facilities (Resolution 17-1203 TL1, p. 12; LATR/TPAR Guidelines, p. 25).

Expected Application Area

Countywide (no changes proposed), with the maximum number of trip credits allowable increasing in areas with higher congestion standards (60 trips for policy areas with a 1350-1500 CLV standard, 90 trips for policy areas with a 1550-1600 CLV standard, and 120 trips for policy areas with an 1800 CLV standard).

Examples of Application

The payment of a fee to mitigate peak hour vehicle trips was applied fairly regularly for Preliminary Plans under the Policy Area Mobility Review (PAMR) procedure (e.g., BB&T Bank Kensington-Wheaton 120110350, Bethesda Center 120120070, Olney Assisted Living 120120090, Travilah Grove 120120290). The PAMR procedure is no longer relevant under the Subdivision Staging Policy but the fee payment remains available as a mitigation approach for LATR.

The Planning Board established the value as \$11,000 per trip in 2009 based on a literature review and analysis as part of the 2009-2011 Growth Policy (details in Appendix M) and has periodically adjusted the rate for inflation since then.

Next Study Steps

Confirm no change to current concept, except for identifying the inflation-adjusted value to take effect as part of the 2016 Subdivision Staging Policy.

LATR CONCEPT SUMMARY

AS-3: Bicycle/Pedestrian Gap Contribution

Process: Analysis Elements

Sub-Process: Solutions

Concept in a Nutshell:

A project providing a significant increase in pedestrian/bicycle traffic has a nexus to connect its sidewalk connections to a logical nearby terminus or destination to avoid creating a safety hazard through increased exposure to a network gap or severe inadequacy.

Primary Purpose:

Address gaps in pedestrian and/or bicycle connectivity in areas with high levels of non-motorized demand.



Effect of proposed change on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Facilitates identification of meaningful gaps in the pedestrian/bicycle network and identification of solutions	None
Improving predictability	None	Increases negotiation of solution unless a pay-and-go approach is implemented
Streamlining implementation	Increases attention and resources to resolving pedestrian and bicycle network gaps	Presumes timely public sector follow-through

Relationship to Current LATR (or prior growth policy concepts)

Not included in current Subdivision Staging Policy or LATR/TPAR Guidelines. This concept would provide additional context to the Pedestrian and Bicycle Impact Statement (LATR/TPAR Guidelines, p. 13).

Expected Application Area:

Urban areas, with further clarification that action would only be required where pedestrian and/or bicycle trip generation increases would be significant.

Examples of Application

The definition of significant pedestrian impacts is likely to require some discussion. Two jurisdictions in the literature review have quantitative definitions for significant pedestrian generation that are fairly disparate:

- New York, NY requires detailed pedestrian analysis for increases of 200 or more pedestrians per hour at any sidewalk, crosswalk, or intersection corner.
- Washington DC proposes detailed pedestrian analysis for increases of 100 or more pedestrians per hour generated by the site, or by site characteristics including more than 200 residential units, 50,000 square feet of commercial/retail space, or a site encompassing more than a small block grid.

The Washington DC draft CTR notes that if deficiencies in the study area would preclude achievement of the proposed mode split, then those deficiencies must be mitigated. The 2013 TRB paper by Zimbabwe et al states that “if pedestrian, bike, or automobile exposure is substantially increased in any area where a safety deficiency has been documented, then a developer must provide partial mitigation of the issue, so as to not significantly exacerbate an existing condition”.

Next Study Steps

Define more study parameters, such as what constitutes:

- A sidewalk or bicycle network deficiency. A straw man proposal might include:
 - A missing segment of sidewalk or bicycle path that connects the development site to a significant pedestrian or bicycle generator within a quarter mile, including a bus stop or bikeshare station
- Significant additional exposure. A straw man proposal might :
 - blend the New York and Washington definitions, using an increase of 200 peak hour pedestrian and bicycle trips (including walk trips to transit) generated by the site (without regard to pedestrian trip assignment).
- Mitigation. A straw man proposal might include either completion of the missing sidewalk gap, or else payment in lieu of construction based on a per-linear foot construction cost based on urban area sidewalk projects in the current CIP.
- The relationship between information required as part of site development and identification of gaps or needed projects that can be maintained and provided by the public sector.

LATR CONCEPT SUMMARY

D-1: Vehicle Miles of Travel

Process: Concept Proposed to be Dropped

Concept in a Nutshell:

VMT combines vehicle trip generation with average trip length. From a holistic planning perspective, VMT is more directly correlated than vehicle trip generation with most auto-related measures of effectiveness, including congestion, emissions, fuel consumption, and carbon footprint.

The adoption of California's senate bill (SB 743) removing the state requirement for auto Level of Service (LOS) in the California Environmental Quality Act (CEQA) requirements has focused renewed attention on VMT as a potential evaluation metric. This is partly because California's Office of Planning and Research (OPR) has suggested that state agencies and local jurisdictions conducting CEQA reviews consider VMT as a replacement measure for auto LOS. The conversation at both state and local levels is expected to continue through most of 2015 as individual jurisdictions consider whether they want to retain auto LOS (which is an option – SB 743 removes the mandate to consider auto LOS, but does not mandate local jurisdictions stop using auto LOS) or replace with VMT or any other metric.

The OPR also suggests VMT be used first as a means for identifying a trigger for further study, with a suggestion that any development (or public agency action such as building a road or transit line) that generates per-unit VMT (i.e., per capita, per square foot, etc.) at a rate less than the regional average be considered to have no significant impact on transportation, unless any of several safety-related measures are triggered. There are two basic structural problems with the OPR proposal:

- The comparison to a regional average is unclear, but has many potential adverse consequences:
 - If not separated from land use type, it may have the effect of making low-intensity uses (i.e., self-storage) more desirable than high-intensity uses (i.e., grocery stores)
 - If segregated by land use type, it would likely penalize non-core jurisdictions where VMT rates are usually lower than even smart-growth locations in suburban jurisdictions. For instance, from a regional perspective, it is likely that any hospital in DC, Arlington, or Alexandria would generate lower than average VMTs for hospitals, therefore having no significant impact, and that any hospital in Montgomery County would generate higher than average VMTs for hospitals, a significant impact. Or, if the comparison was simply within-County, the Washington Adventist Hospital location in Takoma Park may be

Figure - 1. Moving 12-Month Total on ALL Roads



found to have no traffic impacts based on its infill location, whereas the White Oak location would have traffic impacts.

- The analysis of safety impacts complicates the reliance on VMT. There is widespread concurrence nationwide that safety for all modes of travel is of paramount importance. The OPR draft suggests that safety impacts would be triggered if additional traffic generated by a new development (regardless of its location or VMT generation characteristics) created a 15-MPH speed differential between adjacent roadway travel lanes, or an off-ramp backup onto a freeway. These safety concerns are important, but both require the analysis the initiative was designed to minimize and suggest auto-oriented mitigation actions the initiative was designed to avoid.

From a broader perspective of potential application to LATR, there are three key reasons that VMT should be dropped from further consideration, without delving further into the philosophical and technical concerns above:

- LATR focuses on localized impacts; very few vehicle trips generated are likely to be shorter than the LATR study area,
- VMT is already implicitly incorporated in the TPAR approach, and
- LATR already has many other existing tools for mitigating auto trips with non-auto-oriented solutions, and many additional concepts are being investigated as part of this study.

A slightly broader summary of SB 743 is included in the TISTWG meeting packets for September 3 and October 1. The full OPR report currently under discussion is available here:

http://www.opr.ca.gov/docs/Final_Preliminary_Discussion_Draft_of_Updates_Implementing_SB_743_080614.pdf

The Western District of ITE has prepared a letter of commentary on concerns related to SB 743 as related to land use policy, planning and implementation. The final letter (November 21) has not yet been posted to the westernite.org website but a copy in PDF form can be provided upon request.

<http://www.westernite.org/ITE%20Draft%20Letter%20to%20OPR%2010-27-14.pdf>

Primary Purpose:

The genesis for SB 743 was to exempt transit-oriented or infill development projects from CEQA transportation analyses, as such projects would have lesser impacts on typically congested roadways, thereby supporting both the private sector investment in TOD/infill projects and removing the need to mitigate congestion impacts in environments where even small projects often triggered auto LOS mitigation in CEQA in congested areas where the state and local agencies frankly did not intend to uphold LOS standards by adding vehicular capacity.

Effect of concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Intent is to exempt infill/TOD projects from transportation requirements.	California's exemption process would not capture community concerns about understanding congestion and addressing multimodal needs. Most vehicle trips are longer than LATR study areas, so VMT does not add much more information than vehicle trip generation.
Improving predictability	None	Requires more information on trip purpose and trip length, generally reliant on MWCOC travel demand model data
Streamlining transportation project implementation	None	None

Relationship to Current LATR (or other current or prior growth policy concepts)

No direct relationship to LATR, but VMT is implicitly incorporated in the Transportation Policy Area Review (TPAR) analyses which uses forecast VMT aggregated at the TAZ level to assess areawide arterial network adequacy countywide (i.e., beyond the bounds of the Local Area Transportation Review study area).

Should TISTWG members be interested in better incorporating VMT into the transportation mitigation process, an adjustment to the transportation impact tax might be a more logical venue to do so. Currently, the transportation impact tax is based on vehicle trip generation rates.

Expected Application Area:

None recommended

Examples of Application

None recommended

Proposed Next Study Steps

~~Document decision to drop VMT from further consideration.~~

Consider further as a potential tool for refining use-specific or location-specific parameters. The general consensus of 12/3 meeting participants was that VMT is not directly applicable to the LATR process for reasons described above. Yet the concept that: given two sites of equal vehicle trip generation, the one that has shorter trip lengths contributes less to overall roadway network burden, remains attractive to some participants.

For instance, one concept could be to extend a *de minimis* threshold (in MSPA/CBD locations only) from the proposed 75 peak hour person trips for a use that can be demonstrated to, effectively and permanently, reduce vehicle trip lengths below comparable similar uses in the same location. However, the burden of proof for such concepts would be challenging and perhaps counter-intuitive. For instance, in early 2013, researchers at UC Davis prepared a before/after study that estimated that the first big box retail store in Davis, CA resulted in a substantial reduction in VMT (full article available via the Journal of Transportation and Land Use at the hotlink below):

<https://www.jtlu.org/index.php/jtlu/article/view/336>

This topic is intriguing, challenging, and complex. The TRB Annual Meeting held January 11-15 will feature several opportunities for further exploration of this concept with other jurisdictional staff who are considering VMT (both as part of California's SB 743 initiative associated with land development and as an independent sustainability metric). It makes sense for the several TISTWG members attending the TRB conference to engage in this networking opportunity before making decisions about it in the TISTWG venue. We will return to the discussion of its potential application at the February TISTWG meeting.

LATR CONCEPT SUMMARY

D-2: Connectivity Indices

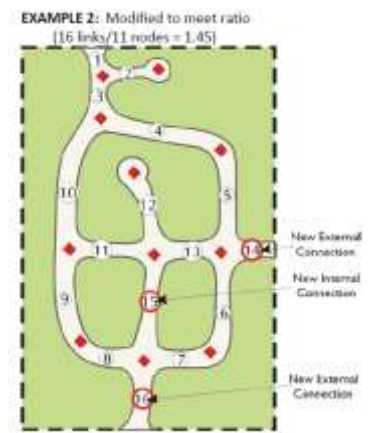
Process: Concept Proposed to be Dropped

Concept in a Nutshell:

Requirement for new subdivisions to have a minimum level of street connectivity.

Primary Purpose:

The objective of high levels of street network connectivity is to improve walkability through short block lengths and more direct connections between potential origins and destinations. Better connectivity between adjacent subdivisions also increases the ability for trips by all modes to be made without burdening the arterial roadway network.



Effect of concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Intent is to improve walkability through more robust, dense street networks	Topological requirements alone do not guarantee effective connectivity
Improving predictability	None	Definitional challenges associated with connectivity increase level of required negotiation
Streamlining transportation project implementation	None	None

Relationship to Current LATR (or other current or prior growth policy concepts)

Not incorporated in current LATR. The CR Zone provides incentive density for through-block connections as part of a site plan (Section 59-C-15.853).

Expected Application Area:

None recommended

Examples of Application

The concept of street connectivity is useful for developing general guidelines for design elements such as maximum block lengths and cul-de-sac lengths. Several jurisdictions include street connectivity in their subdivision design standards, although they are generally not part of a transportation adequacy or concurrency test. The most common approach is a connectivity ratio defined as the number of street

intersections divided by the number of street segments, with a ratio of 1.4 often defined as a desired or required ratio.

- The state of Delaware adopted a connectivity ratio requirement of 1.4 in Title 2 of the Delaware Administrative Code in 2009.
- The City of Durham, NC has a connectivity ratio requirement of 1.4 in Section 13 of their Unified Development Ordinance, adopted in 2006.
- The state of Virginia enacted a connectivity requirement in the inaugural Secondary Street Acceptance Requirements (SSAR) legislation in spring 2009, with compact areas requiring a connectivity ratio of 1.6, suburban areas a ratio of 1.4, and no requirement for rural areas. The requirement was removed in the 2011 edition and replaced with a requirement for a multiple subdivision entrances for each 200 dwelling units or 2,000 ADT trip generation.

A key objective of a connectivity ratio or index is to promote internal and external connectivity in cases where community opposition or market preferences would tend to result in a greater reliance on cul-de-sacs. A challenge for connectivity requirements is the recognition that site constraints often preclude achievement of the desired connectivity ratios, particularly for smaller subdivisions. The short-lived Virginia requirement recognized exceptions for constraints created by railroads, freeways, bodies of water greater than 4 feet deep, grades greater than 20%, and protected government lands or conservation easements. The connectivity ratio was found to be somewhat confusing and raised concern that it did not actually increase cross-subdivision easements (as “artificial” internal street connections could be designed to meet the connectivity ratio requirements without significantly affecting actual mobility).

Proposed Next Study Steps

Document decision to drop connectivity indices from further consideration.

LATR CONCEPT SUMMARY

D-3: Screenline Analyses

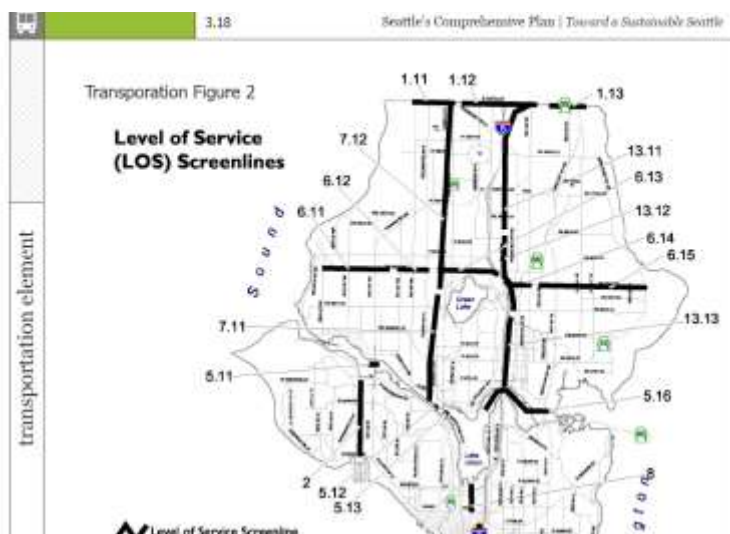
Process: Concept Proposed to be Dropped

Concept in a Nutshell:

Definition of significant auto travel impact based on the amount of traffic traversing a specific roadway segment as opposed to an intersection analysis.

Primary Purpose:

The use of screenline analyses to identify area capacity is a simplifying approach to identifying capacity constraints, particularly where traffic may distribute itself across several parallel routes, so that identification of an impact on Road A may not need to be mitigated if parallel Road B has additional roadway capacity to accommodate diverted trips.



Effect of concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Intent is to avoid adding vehicular capacity on any given route when capacity may exist on parallel routes	Does not account for congestion due to intersection performance.
Improving predictability	Remaining system capacity on screenlines easy to calculate	None
Streamlining transportation project implementation	None	None

Relationship to Current LATR (or other current or prior growth policy concepts)

No direct relationship to LATR, but the concept of aggregating available capacity on parallel routes is implicitly incorporated in the Transportation Policy Area Review (TPAR) analyses which uses average areawide VMT / VMC (vehicle miles of capacity) to assess areawide arterial network adequacy.

Screenlines (or cordon lines, a screenline drawn around an activity center) are often effective tools for assessing and communicating transportation system capacity at choke points for master planning or

transportation facility planning. The screenline analysis is not likely appropriate for development review, however, as it is a far simpler tool than CLV to assess capacity and the prevailing stakeholder sentiment at this time appears to be that CLV is too coarse a tool to assess many intersection operations.

The establishment and definitions of screenline or cordon line capacity also requires time and effort to gain consensus. Screenlines and cordon lines are only sensitive to improvements made on the links that cross the screenline or cordon line themselves, not adjacent intersection or link improvements that may meaningfully improve operations.

Expected Application Area:

None recommended

Examples of Application

The City of Seattle uses a screenline approach to track transportation concurrency. Under this approach, a transportation analysis estimates the auto trips generated by the project that will cross one or more screenlines near the project site. Project volumes plus background traffic volumes for a screenline are compared to the established capacity for the screenline.

Proposed Next Study Steps

Document decision to drop screenline or cordon analyses from further consideration.

LATR CONCEPT SUMMARY

D-4: Traffic Mitigation Goals Under SSP APF-2

Process: Concept Proposed to be Dropped

Concept in a Nutshell:

Establish a range of non-auto driver mode share goals for traffic mitigation agreements.

In Policy Areas With
LATR CLV Standard of
1800 and 1600
1550
1500
1475 and 1450

Required Percentage Greater Than
Prevailing Non-Auto driver Mode Share
100%
80%
60%
40%

Primary Purpose:

To reflect reasonable goals for Traffic Mitigation Agreement mode share goals.

Effect of current concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Focuses attention towards trip reduction	Legacy approach outdated and therefore unused for many years.
Improving predictability	Supposes a trip reduction goal	Legacy approach; goals expressed in imprecise terms and not maintained to reflect increasing number of policy areas with goals set in SSP TL4
Streamlining transportation project implementation	None	None

Relationship to Current LATR (or other current or prior growth policy concepts)

The Subdivision Staging Policy (Resolution 17-1203 APF2, p. 20) identifies Traffic Mitigation Goals as shown in per the table above describing the “required percentage greater than prevailing non-auto driver mode share”. The legislative history of this tabulation approach to mode share goals would require additional research to determine, but the APF2 table supersedes goals identified in Section 42A-9A (a) 4 of the Montgomery County Code on “Traffic mitigation agreements for certain developments”. Specifically, Section 42A-9 (a) 4:

- Setting peak period non-auto driver goals for policy area employees that are the same as the currently observed non-auto driver share for residents in the policy area
- Referencing that the goal in the previous bullet above would be superseded by commuting goals specified in the Growth Policy (sic), which is the intent of the APF2 table above

APF-2 notes the Silver Spring CBD goals in TL4.1, but does not note those subsequently added in TL4.2 through TL4.6.

Recent history indicates that most Traffic Mitigation Agreements tend to develop goals that are either based on master plan or sector plan mode share goals (an intent suggested both by Section 42A-9A and APF-2) or to achieve specific trip reduction necessary to achieve LATR requirements. To be consistent with the “Exempt Second Improvement Mitigating < 5 CLV” concept, it seems unreasonable to require TMAg mode share goals in excess of those required to satisfy LATR (or TPAR) requirements.

Any historic Traffic Mitigation Agreements whose goals were predicated on APF-2 should, if still in operation, be presumed able to stand on their own merits for trip reduction goal achievement so that the removal of APF-2 from the next Subdivision Staging Policy will not have any adverse effects.

Expected Application Area:

None recommended

Examples of Application

N/A

Proposed Next Study Steps

Document decision to abandon Subdivision Staging Policy APF-2, but to add remaining adopted master plan non-auto driver mode share goals in Subdivision Staging Policy TL4.

LATR CONCEPT SUMMARY

D-5: Areawide Trip and Parking Caps

Process: Concept Proposed to be Dropped

Concept in a Nutshell:

Restrict the total number of parking spaces or vehicle trips allowed in a geographic area and potentially allow applicants to trade capacity for the allotted resource amongst themselves in either a free or regulated marketplace.



Primary Purpose:

Placing areawide restrictions on parking or vehicle trips reduces the propensity for vehicle trip generation. Establishing a cap and trade system where capacity for vehicle trips or parking spaces is a scarce resource would incentivize developers to use less of their allotted resource

Effect of concept on:

Study Objective	Strengths	Weaknesses
Improving context-sensitivity and multimodal analysis	Potential for aggregating and simplifying vehicle trip impacts across multiple shared applications	Cap and trade systems can be difficult to establish and manage.
Improving predictability	Areawide parking constraints (as currently applied in Silver Spring CBD) provide known levels of additional capacity.	Requires periodic public sector monitoring of private sector parking or trip capacity inventory
Streamlining implementation	None	None

Relationship to Current LATR (or prior growth policy concepts)

The Subdivision Staging Policy (Resolution 17-1203 TL4.1, p. 13) identifies a parking constraint of 17,500 long-range public and private parking spaces within the Silver Spring CBD. This constraint is not included in the LATR/TPAR Guidelines because it is not directly relevant to vehicle trip generation rates in the CBD (in part because the limit is not close to being reached; a 2010 Desman Associates study estimated commercial parking space demand at about 14,600 spaces.)

Expected Application Area

None for LATR purposes; consideration may be given to expanding the Silver Spring CBD parking cap to other Parking Lot Districts or urban areas as a separate Subdivision Staging Policy element.

Examples of Application

Several jurisdictions are exploring the concept of trip caps or parking caps with the concept of allowing development applicants to share or trade capacity in either an open or regulated market, but the practice is not yet sufficiently established to be implementable in Montgomery County during the timeframe of this study.

- The District of Columbia Department of Transportation (DDOT) is examining the concept of parking caps or trip caps with a focus on the emerging Navy Yard/Ballpark Metro station area. As described in a 2014 TRB paper by Henson et al (available upon request). The concept of a cap and trade program is particularly attractive in highly urbanized environments with shared parking (whether privately and/or publicly managed) in which observed travel patterns are often not correlated to trip purpose and destination (i.e., a pedestrian entering a downtown building may have parked two blocks away, or may be walking through the lobby en route to a different destination).
- The White Flint Sector Plan identifies a desired maximum number of long term parking spaces and Montgomery County has explored the creation of “Secondary Parking Benefit Districts” in which the County would not act as a property owner or garage operator (functions the County performs in the four current Parking Lot Districts).
- The City of Rockville participated in a MWCOC Transportation Land Use Connections study in 2013 in which a cap-and-trade program for either vehicle trips or parking credits was identified as a potential approach.

<http://www.mwcog.org/transportation/activities/tlc/pdf/Rockville-Dev.pdf>

Follow-up to comments at the 12/3 TISTWG meeting included research on two potential jurisdictions where comments suggested parking caps may exist.

The City of Boston, MA has a “parking freeze” program that caps the number of parking spaces that can be operated as public parking lots or garages. The parking freeze was established as part of air quality regulations established by the Environmental Protection Agency in the early 1970s, and applies within three areas of the city (Boston Proper, South Boston, and East Boston). A slightly larger area is defined as the Restricted Parking District; an area where proposed non-residential private development parking garages and lots are treated as conditional uses and



Figure 12
Parking Freeze and Restricted Parking Area
The Boston Air Pollution Control Commission designated "parking freeze" that cap all or part of the parking supply in:
Boston Proper, South Boston and East Boston.
Source: Boston Air Pollution Control Commission

subject to additional context-sensitive guidelines under review by the Zoning Board of Appeals. Guidance provided by the Boston Transportation Department for the Zoning Board of Appeals includes ranges of parking spaces appropriate for different use types, with guidance that each project should be considered on its unique merits.

The City of Cambridge, MA includes minimum off-street parking space requirements for all land uses in Article 6 of the city's Zoning Ordinance. Article 6 also includes maximum off-street parking space requirements for many commercial uses, but does not apply areawide parking caps.

Next Study Steps

Confirm decision to drop trip/parking caps from LATR; consider expansion of Subdivision Staging Policy parking caps as an element of preliminary plan approval distinct from LATR.