PHED COMMITTEE #2
October 10, 2016

MEMORANDUM

October 7, 2016

TO: Planning, Housing, and Economic Development Committee

FROM: GO Glenn Orlin, Deputy Council Administrator

SUBJECT: 2016-2020 Subdivision Staging Policy (SSP): school test follow-up; transportation test

Please bring the SSP Report and Appendix to this worksession.
The Draft SSP resolution is on pp. 111-150 of the Appendix.

I. SCHOOL TEST FOLLOW-UP

As noted in the September 26 worksession, the current school test has two thresholds: (1) if a cluster is forecast in 5 years to exceed 120% capacity at any level (ES, MS, or HS), then no further housing units can be approved; and (2) if a cluster is forecast in 5 years to exceed 105% capacity at a level, then further housing units can be approved only if the development makes a school facility payment for that level.

Council President Floreen is now recommending eliminating the school facility payment threshold, and instead increasing the school impact tax across the board by 10%. She points out that only about $5 million in school facility payments has been collected in the past 6 years; over the same period a school impact tax 10% higher would have raised about $11 million more (©1).

This proposal is simpler than the current approach, and is much simpler than what is proposed by the Planning Board. It would generate more funds, and the amount of revenue collected would be somewhat more predictable than from school facility payments. It is possible some developers are holding back their proposals until new capacity is programmed in order to avoid the school facility payment, but that also means the payment of school impact taxes is being delayed. **Council staff recommendation: Concur with Council President Floreen's proposal.**

II. TRANSPORTATION TEST

*1. **Background.*** The SSP (and its predecessor, the Annual Growth Policy, or AGP) has included a transportation school test since the Council first established the AGP in 1986.[1] In the beginning, and during most of the years since, there has been a both a policy area review test that examined whether transportation was adequate, on average, over the entire policy area, and a local area test, which examined the congestion level at intersections proximate to the development being tested. The tests have always measured adequacy at a point in the future, when it was believed that an approved subdivision would materialize into actual housing units and buildings generating traffic. Congestion standards were changed one way or another almost every time the Council updated the Growth Policy. From the 1980s until the early part of this century, if a development "failed" either the Policy Area Transportation Review (PATR) or Local Area Transportation Review (LATR), it was usually up to the developer to build capacity or reduce demand, by building or widening roads, adding turn lanes at intersections, running bus shuttles, etc., so that the future congestion level would be no worse with the development than if the development never happened.

As time went on, developers found it increasingly difficult to borrow large amount of funds from banks and other lending institutions to build projects or fund traffic mitigation programs. In the late 1990s the Council experimented with a "pay-and-go" regime, under which developers would pay to the County a pre-set fee per trip to pass the transportation test, and the County would use the funds for transportation capacity improvements in the vicinity of the paying development. This was phased out a couple of years later. In 2004 the Council eliminated PATR entirely, opting instead to tighten LATR considerably. In 2007 the incoming Council reintroduced a form of policy area review called Policy Area Mobility Review (PAMR) that measured policy-wide mobility: evaluating both traffic congestion and the quality of transit service. If a development failed the test, it could proceed by paying a fee based on the number of peak period trips the development would generate.

In the 2012-2016 Subdivision Staging Policy the Council replaced PAMR with yet another policy area test called Transportation Policy Area Review (TPAR), which expanded the time-horizon of "countable" projects to those programmed for completion within 10 years. TPAR has a road component and a transit component. The road component calculates the future average congestion in the peak direction during peak periods on major roads in a policy area and compares that average to a standard specific to that policy area.[2] If the average road congestion forecasts to fail the standard, then a development can proceed only by paying an additional traffic mitigation fee equal to 25% of the applicable transportation impact tax. The transit component assesses whether a policy area has sufficient local bus service—in terms of coverage, frequency, and span (the hours of bus service during a normal weekday)—measured against policy-specific standards for coverage, frequency, and span. If local bus service cannot meet the standards, then, again, a development can proceed only by paying an additional traffic mitigation fee equal to 25% of the applicable transportation impact tax. If a policy area fails both the road and transit components, then a 50% surcharge is required.

Note that under both PAMR and TPAR, the Council has moved away from the original PATR model that if a subdivision did not meet the standard the developer would build transportation capacity

[1] Prior to the AGP the Planning Board, since the late 1970s, had administered a transportation test for subdivisions under its Comprehensive Planning Policies Report (CPPR).

[2] PATR and PAMR had calculated the average congestion in *both* directions on major roads in a policy area.

or conduct transportation demand management to mitigate the effect of a subdivision. Over the past decade the policy area test has morphed entirely into a pay-and-go regime.

2. Proposed new policy area test. The Planning Board recommends overhauling both the policy area and local area reviews. For policy area review, the Board would introduce a new geographic grouping of policy areas: "Red" policy areas are the current MSPAs; "Orange" policy areas are corridor cities (but not MSPAs), town centers, and emerging transit-oriented development areas where transitways (Purple Line, BRT lines) are planned; "Yellow" policy areas are lower density residential neighborhoods with community-serving commercial areas; and "Green" policy areas are the Agricultural Reserve and other rural areas. Although Germantown East and Germantown West to its south would be Yellow areas, the Board recommends that the Clarksburg Policy Area be an Orange area in recognition of the original master-planned vision for the area and the high quality service to be provided ultimately by the Corridor Cities Transitway. Furthermore, the Board recommends new, small policy areas around the future Purple Line stations at Lyttonsville, Long Branch, and Takoma/Langley Crossroads; all would be in the Orange group, the same as the Silver Spring/Takoma Policy Area that surrounds them. A map displaying the policy areas by group is on p. 20 of the SSP Report.

The Board proposes measuring adequacy based on transit accessibility: how many jobs are within a certain commuting time of housing in each policy area. The Board has estimated/forecasted the number of jobs within an hour's commute by transit in Years 2015, 2025 (10 years out) and 2040 (25 years out). The 2025 findings are based on the land use forecast for 2025 and the transportation projects programmed to be built within 10 years (similar to the practice for the current TPAR test). The 2040 findings are based on the land use forecast for 2040 and the transportation projects included in the Constrained Long Range Plan (CLRP) of the National Capital Region Transportation Planning Board (TPB), except that the entire master-planned BRT system is also assumed.

Using these calculations, the Board then compares how much transit accessibility is forecast to improve between 2015 and 2025 compared to the anticipated improvement between 2015 and 2040. If the improvement in transit accessibility is at least 40% by 2025—Year 2025 being 40% of the way to 2040—then transit accessibility will be on pace for that policy area, and so the new policy area will have "passed." If the 2025 improvement in transit accessibility is less than 40% but at least 30%, then a development would make a partial mitigation payment equal to 15% of the applicable transportation impact tax. If the 2025 improvement in transit accessibility is less than 30%, then a development would make a full mitigation payment equal to 25% of the applicable transportation impact tax. The test would not apply to policy areas where the forecasted increase in jobs within an hour's transit ride from housing would increase by less than 60,000. A more detailed description of this concept is on ©2-3. The table on ©4 shows which policy areas would require no mitigation payment, the partial mitigation payment, or the full mitigation payment.[3]

The Board recommends applying the transit accessibility test solely to the Orange and Yellow areas. The Board believes there is no need to apply the transit accessibility test to the Red areas (the MSPAs) since they already have high transit accessibility, by definition. Nor would they apply it to the

[3] Planning staff reports an error on p. 23 of the SSP Report. Silver Spring/Takoma is described as being inadequate to the point of requiring a full mitigation payment. However, it would in actuality be adequate, so currently there would be no mitigation payment.

Green areas, because attaining adequate transit accessibility in rural areas is neither likely nor desired. The Board, however, recommends retaining TPAR to test master-plan transportation adequacy.

Given that the Council's deadline for action on the SSP is only 5 weeks away, the Council has really only three realistic options:

1. approve the transit accessibility test, with any revisions it may wish to make to the Board's proposal;
2. eliminate the policy area test entirely (as was the case in 2004-2007), perhaps replacing it with a higher transportation impact tax, similar to Council President Floreen's proposal for the School Test; or
3. retain TPAR for now, but provide the Planning Board with concrete direction in developing an alternative, and a timetable for bringing the alternative back in an SSP amendment.

Option 1: Transit accessibility. An advantage of using transit accessibility as a measure is that development could proceed not just by adding a new transit line or more frequent bus service, but by allowing more density—particularly mixed-use development—at existing or programmed transit nodes. Even a new road, a road widening, or an intersection improvement can improve transit accessibility, since buses would be running in less congested conditions. **If the Council were to go with this option, several revisions should be made to the Planning Board's approach:**

a. **Carve out a new Clarksburg Town Center Policy Area from the existing Clarksburg Policy Area, and place it in the Orange group; place the new Clarksburg Policy Area (minus its town center) in the Yellow group. The boundary for the Clarksburg Town Center Policy Area should be the same as its Road Code Urban Area.** This had been the Planning staff's proposal. It is difficult to conceive of most of Clarksburg as having the transit accessibility that, say, the North Bethesda Policy Area has. By designating Clarksburg as Yellow with an Orange core, it would be comparable to how Germantown is treated in the SSP.
b. **The 2040 CLRP+BRT network should only include those BRT lines most likely to be built in the next 25 years, namely: the Corridor Cities Transitway, US 29, MD 355, Veirs Mill Road, New Hampshire Avenue, and the North Bethesda Transitway.** It is not likely that the full BRT network will be built out by 2040, so the other master-planned BRT routes (University Boulevard, Georgia Avenue North and South, and Randolph Road) should not be assumed in the calculations of transit accessibility. The table on ©5 shows which policy areas would require no mitigation payment, the partial mitigation payment, or the full mitigation payment.
c. **Set the partial mitigation payment at 25% (instead of 15%) of the applicable impact tax and the full mitigation payment at 50% (instead of 30%).** This would make the mitigation payments comparable to what they are now under the TPAR test, where failing either the transit or road test results in a 25% surcharge, and failing both results in a 50% surcharge.
d. **Apply the transit accessibility test to the "Red" group, too.** The Planning Board stipulates that MSPAs, by definition, have good transit accessibility. But if they do, why not prove it using the same metric by which the Orange and Yellow areas are gauged? In fact, ©5 shows that the Wheaton CBD Policy Area will only have improved its transit accessibility by 37% by 2025, which means that it should be subject to partial mitigation payment. As it happens, however, Wheaton CBD is an active enterprise zone, so it is currently exempt from traffic mitigation

payments anyway.[4] That does not mean Wheaton CBD, or some other "Red" area, may not fall below the threshold at some point in the future.

e. **Update the findings every 4 years, as part of each regular update of the SSP.** In the next SSP the comparison would be using the transit accessibility estimates for 2020, 2030 (10 years from 2020), and 2045 (25 years from 2020). All these data sets should be available, including the 2045 CLRP.

Option #2: eliminate the policy area review test. As noted above, the proposed policy area review, like PAMR and TPAR before it, is a pay-and-go approach: if the accessibility standard is not met the development can still proceed with a mitigation payment. The payments under PAMR and TPAR over the past decade—as with the school facility payment—have been quite small. The following are the transportation mitigation payment funds that were conditions of subdivision approvals under the PAMR and TPAR regimes:

Fiscal Year	Transportation Mitigation Payments Required
2011	$176,000
2012	45,400
2013	383,300
2014	468,000
2015	214,058
2016	170,728
Total	**$1,457,486**

Over the past 6 years, the County has collected about $1.46 million in transportation mitigation payments, or about 2% of what the County collected in transportation impact tax revenue during the same period. If the Council were to go with this option, it should eliminate the policy area test and raise the transportation impact tax above what it would be otherwise. For example, Council staff's proposed rates, if increased by a further 5%, would be:

Land Use Category	Current General District Rates	Current MSPA Rates	Current Clarksburg Rates	Council Staff Rates	Council Staff Rates +5%
Single-family detached	$13,966/unit	$6,984/unit	$20,948/unit	**$14,613/unit**	**$15,344/unit**
Single-family attached	$11,427/unit	$5,714/unit	$17,141/unit	**$10,208/unit**	**$10,718/unit**
Multi-family garden apartments	$8,886/unit	$4,443/unit	$13,330/unit	**$9,250/unit**	**$9,713/unit**
Multi-family high rise	$6,347/unit	$3,174/unit	$9,522/unit	**$6,607/unit**	**$6,937/unit**
Multi-family senior	$2,539/unit	$1,269/unit	$3,808/unit	**$2,643/unit**	**$2,775/unit**
Office	$12.75/sf	$6.35/sf	$15.30/sf	**$13.45/sf**	**$14.12/sf**
Industrial	$6.35/sf	$3.20/sf	$7.60/sf	**$6.69/sf**	**$7.02/sf**
Retail	$11.40/sf	$5.70/sf	$13.70/sf	**$11.96/sf**	**$12.56/sf**
Place of worship	$0.65/sf	$0.35/sf	$0.90/sf	**$0.70/sf**	**$0.74/sf**
Private grade school	$1.05/sf	$0.50/sf	$1.35/sf	**$1.06/sf**	**$1.11/sf**
Other non-residential	$6.35/sf	$3.20/sf	$7.60/sf	**$6.69/sf**	**$7.02/sf**

[4] There are 4 other MSPAs currently exempt: Silver Spring CBD is a former enterprise zone; Glenmont, like Wheaton CBD, is an active enterprise zone; White Flint has a special taxing district for transportation; and the County's SSP does not apply in Rockville's Town Center. So, currently, the transportation mitigation payments can be levied only in 5 MSPAs: Friendship Heights, Bethesda, Grosvenor, Twinbrook, and Shady Grove.

If the Council were to go with this option, eliminate policy area review and increase the transportation impact tax by 5%.

Option #3: Retain TPAR for now, but come back with a series of measures by next spring and summer that would replace TPAR with a robust traffic mitigation program. For more than a year the Transportation Demand Management (TDM) Work Group, headed by DOT but with representation from DPS, Planning, and Council staffs, have developed a detailed outline of a more comprehensive and consistently-applied approach for traffic mitigation agreements. The Work Group necessarily delved into other areas of TDM as well.

A summary of Work Group's findings and recommendations are on ©6-17. The key recommendations are to:

- require varying levels of TDM to all areas of the County except rural (Green) areas;
- establish a tiered system for applying TDM that responds to the variety and quality of local mobility options;
- apply TDM efforts to commercial and moderate-to-high density residential developments;
- establish NADMS goals where they do not currently exist in the Red, Orange, and Yellow areas;
- develop and adopt a TDM menu of required tools and strategies; and
- improve monitoring and reporting, and to strengthen enforcement mechanisms.

Implementing the Work Group's recommendations—many of which are yet to be fleshed out—likely will require legislation, budget actions, and SSP amendments. The Work Group met with several stakeholders from the development industry on October 5; a summary of their reaction is on ©18-19. The T&E Committee will be reviewing the Work Group's findings and recommendations in more detail at its October 13 meeting.

There is clearly much work left to do, but Council staff nevertheless is confident that, with the present momentum for change in this arena—and the budget to support it—much of this new approach could be initiated during FY18. **If the Council were to go with this option, it should direct DOT and the Planning Board to develop the requisite legislation, budget requests, and SSP amendments over the next several months in time for transmittal to the Council for deliberation and (hopefully) action next spring and summer.**

3. Proposed revisions to LATR. The Planning Board recommends that LATR no longer be required in the Red areas (MSPAs). The Board notes that the combination of the current, congestion-tolerant standard of 1,800 CLV (actually 1.13 volume-to-capacity ratio using the Highway Capacity manual test), and the presence of a fine grid of streets within most MSPAs that distribute the traffic, has had the result that very few traffic studies for MSPA developments have shown a "failure" that needed to be addressed. The Board also wants to streamline the approval process for developments near Metro stations as they are most desirable in terms of transportation efficiency. Instead, the Board suggests a Comprehensive LATR be conducted biennially to identify trouble spots where the County should invest in improvements.

Opinion is divided on this. The business community generally supports the Planning Board's recommendations, but civic groups and many individuals oppose dropping the LATR requirement for the Red areas. DOT had also expressed concern about this. Planning staff notes that very few traffic studies in MSPAs have resulted in findings that required intersection improvements or some other type of mitigation, and the concern is these studies incur considerable cost and review time. A consistent argument is that even if an intersection improvement were warranted, the resulting impact on pedestrian and bike accommodation might be severe: in other words, the cure is worse than the cause.

On this last point, it must be noted that most of the congestion generated by MSPA development is usually not at intersections within the MSPA where there is a grid of streets, but at the fewer "gateway" intersections to the MSPAs, through which the traffic is funneled. Five of the 10 most congested intersections in the county, according to the Planning Board's most recent Highway Mobility Report, are "gateway" intersections:

#1 - Rockville Pike at West Cedar Lane (gateway to Bethesda CBD)
#5 - Shady Grove Rd at Choke Cherry Lane (gateway to Shady Grove)
#6 - Connecticut Avenue at East West Highway (gateway to Bethesda CBD)
#7 - Georgia Avenue at 16th Street (gateway to Silver Spring CBD)
#10 - Rockville Pike at First Street/Wootton Parkway (gateway to Rockville Town Center)

Some of these intersections have improvements that are either under construction or master-planned; all of them could add turning lanes without deteriorating an urban, walkable environment. Only one intersection in the "Top 10" is within an MSPA: Rockville Pike and Nicholson Lane (White Flint), where there is no LATR test.

Planning Chair Anderson and DOT Director Roshdieh have ironed some differences between their departments relative positions on some issues (©20-21). DOT and Planning staff have recently agreed to using 750,000sf as the threshold for whether an LATR study would be required in a Red policy area. However, a large proposed MSPA development near its edge likely would have a greater impact: being further from the Metro station means it likely would have a lower NADMS, and it would be physically closer to a gateway intersection so more likely to pass trips through it.

Council staff recommendation: For the time being, continue to require the LATR test for MSPA developments, but only where the scope of the traffic study would carry out to gateway intersections. For several years the SSP has had the following directive on a study's scope:

> Each traffic study must examine, at a minimum, the number of signalized intersections in the following table, unless the Planning Board affirmatively finds that special circumstances warrant a more limited study.

Maximum Peak-Hour Trips Generated	Minimum Signalized Intersections in Each Direction
< 250	1
250 – 749	2
750 – 1,249	3
1,250 – 1,750	4
1,750-2,249	5
2,250 – 2749	6
>2,750	7

If a proposed development is large enough to warrant studying a large enough radius of signalized intersections to reach a gateway intersection, then a traffic study for that intersection—and its mitigation to meet the applicable LATR standard—should be required.

However, in the SSP resolution the Council should also direct the Planning Board to develop, in concert with DOT, a comprehensive LATR for each County MSPA, leading to proportional cost-sharing of local area transportation improvements. This model, approved in an earlier SSP amendment for the White Oak Policy Area, would identify all "local" transportation capital improvements that contribute to transportation capacity—such as new streets, intersection improvements, filling gaps in the local sidewalk and bikeway network, bikesharing stations, additional Ride On buses for local transit service, etc.—and divide their cumulative cost across the master-planned development yet to be built. Thus a per-trip fee would be calculated, which, if approved by the Council after a public hearing, would be required of any new development in lieu of the standard LATR test.

In the next few weeks the Executive Branch is anticipated to transmit its study on White Oak and the Executive's recommended per-trip fee. In the meantime DOT has produced a memorandum describing how the White Oak model could be applied to MSPAs (©22-25). As with the TDM concept described earlier, this concept will also need more fleshing out and revisions[5], and both DOT and Planning staff support developing a work program to do exactly that (©20, last bullet). This approach would produce an equitable means to generate the revenue for these improvements, which would be programmed by the Council as the need for them becomes evident. DOT estimates that concurrent studies were undertaken for all 8 MSPAs[6], the White Oak model could be in place in 9-18 months, or in about 3 years if two or three MSPAs were undertaken at a time (©26).

Traffic generation rates. For many years the Planning staff has used some traffic generation rates that are based on county surveys for most major land use categories, and Institute of Transportation Engineers (ITE) rates when local data has not been collected. These rates have been applied countywide, however, even though actual trip generation often varies by how urban the setting is. The Planning Board recommends adjusting ITE rates—which are the nationwide average for suburban environments—to reflect the transportation character of each policy area. For example, in Damascus the ITE rates would be utilized for all land uses, but in the Bethesda CBD the rates would vary from 61% of the ITE rate for retail to 79% for residential. Table 2 on p. 26 of the SSP Report shows the adjustment factors by policy area and land use category that the Board would include in the next edition of its LATR Guidelines. **Council staff recommendation: Concur with the Planning Board.**

Threshold for a traffic study. Currently the rule is that an LATR study is required if a proposed subdivision will generate 30 or more peak-hour vehicle trips. The Board proposes amending the threshold to 50 peak-hour *person* trips. **Council staff recommendation: Concur with the Planning Board.**

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[5] One revision is that the per-trip fee should be paid at the same time impact taxes are: not at building permit issuance, but 6 or 12 months later (depending on whether the development is residential or commercial) or at final inspection, whichever is earlier.

[6] Except White Flint and Rockville Town Center, as they are forever exempt from LATR.

Type of intersection analysis. Under Growth Policies prior to 2012, the County used the Critical Lane Volume (CLV) method of analyzing future conditions at an intersection. CLV has the advantage of being simple, transparent, and quick. However, the traffic engineering profession, over the past 20 years, has shifted steadily towards using more robust methods of estimating future delay, especially as operational analysis methods such as that described in the Transportation Research Board's Highway Capacity Manual (HCM) and even network operational models such as Synchro and Corsim have developed and became easier to use.

For more than a decade the LATR studies conducted by the Planning staff have not relied solely on CLV in all circumstances. For example, if in the reviewer's judgement congestion at a nearby intersection would likely influence the forecasted congestion at the intersection under study, then a network analysis was used. In 2012 the Council decided that any intersection forecast to have a CLV worse than 1,600 (the borderline between Level of Service E and F) would require a second-tier test incorporating the HCM method.[7] The Planning staff, in its draft of the 2016-2020 SSP, recommended a 3-tier test:

1. Tier 1: If an intersection is to forecast to operate at 1,350 CLV (near the border between Levels of Service C and D) or better, no further analysis is required.
2. Tier 2: If the forecast is above 1,350 CLV, than require an operational analysis of the intersection using the HCM method. The intersection must operate better than the policy area's HCM standard for it to "pass" (for example, HCM=1.00 in Bethesda/Chevy Chase Policy Area).
3. Tier 3: Instead of the Tier 2 analysis, perform a modeling analysis of the network of intersections near the development if:
    a. a future intersection projects to have a CLV greater than 1,600; or
    b. a future intersection projects to have a CLV greater than 1,450, the development under study will add at least 10 CLV, and either:
        i. the intersection is on a congested roadway with a travel time index greater than 2.0, or
        ii. the intersection is within 600' of another traffic signal.

The Planning Board has recommended that the cut-off for the Tier 1 test be the applicable LATR standard for each policy area. For example, the cut-off would remain at 1,600 CLV for the downcounty policy areas, vary between 1,400 and 1,550 CLV for the upper- and mid-county policy areas, and 1,350 CLV for rural areas. The Board concurred with its staff on the Tier 2 and 3 tests.

Brian Krantz testified, with evidence of several national research efforts, that CLV is not a good predictor of delay. He recommends discontinuing the use of CLV altogether (©27-37). The Council has received some other correspondence from individuals in support of his recommendation. Mr. Krantz also decries the current LATR study practice of using very few, over even one, traffic count as the basis for measuring existing traffic at an intersection.

Council staff recommendation: Concur with the Planning staff's proposal to shift the threshold for a higher tier test from 1,600 CLV down to 1,350 CLV. It is difficult to imagine an intersection operating with a significant delay with a CLV of 1,350 or less, unless it is close to another, failing intersection; in such a case current practice allows the plan reviewer to require an operational

[7] The Council was divided on this point. A minority wanted the threshold to be 1,800 CLV.

analysis anyway. Retaining CLV (at 1,350) as a screening mechanism makes sense in order not to waste time and money evaluating an intersection that would not be a problem. The Planning Board's recommendation—using the policy area CLV standard as the test threshold—would be a more tighter requirement than what is in effect now, but would not be nearly tight enough, especially in those policy areas with 1,550-1,600 CLV as the CLV standard; the soft relationship between CLV and delay could easily result in underestimating the true delay.

Council staff recommendation: Encourage the Planning Board to require more traffic counts for its LATR studies. This is properly a subject for the Planning Board when it takes up its LATR Guidelines, which usually follows shortly after adoption of an updated SSP. But the Council has a role here, too: not only should more counts be required of a development applicant, but the Council should approve a higher budget for the Planning Board (and/or DOT) to conduct more frequent counts.

Pedestrian, bicycling, and bus transit tests. The SSP report describes recommended standards for measuring adequacy for pedestrian movement, bicycling, and bus transit (p. 30):

> *Pedestrian system adequacy* is defined as providing LOS D capacity or better (at least 15 square feet per person) in any crosswalk. Any site that generates at least 100 peak hour pedestrians (including transit trips) must:
> • Fix (or fund) ADA non-compliance issues within a 500' radius of site boundaries, and
> • Ensure LOS D for crosswalk pedestrian space at LATR study intersections within 500' of site boundaries or within a Road Code Urban Area/Bicycle Pedestrian Priority Area (RCUA/BPPA). Regardless of the development size and location, if an intersection operational analysis (Tier 2 or 3) is triggered for any intersection within a RCUA/BPPA, mitigation must not increase average pedestrian crossing time at the intersection.

M-NCPPC and DOT would tighten the threshold to intersections where 50 peak hour bicycle/pedestrian trips are generated. They would also require that in Red area applicants fix deficiencies within 500 feet of the site boundary. Rather than defining pedestrian system adequacy as having sufficient crosswalk capacity, their recommendation is now use pedestrian crosswalk delay as the measure of adequacy (©21, third bullet).

> *Bicycle system adequacy* is defined as providing a low Level of Traffic Stress (LTS). For any development generating at least 100 peak hour pedestrian volumes and within a quarter mile of an educational institution or existing/planned bikeshare station, the applicant must identify improvements needed to provide LTS=2 (or "Low") conditions to all destinations within 1,500 feet of site boundaries.

A Level of Traffic Stress 2 –better termed a "low stress" bicycling environment – is one where most adults would be comfortable bicycling. It would mostly consist of: (1) trails, side paths, or protected bike lanes, or (2) streets with a speed limit that does not exceed 30 mph, no more than 3 total traffic lanes, and low parking turnover.

> *Transit system adequacy* for LATR is defined as providing a peak load of LOS D for bus routes (< 1.25 transit riders per seat) on routes during the peak period. For any development generating at least 50 peak hour transit riders the applicant must inventory bus routes at stations/stops within

1,000 feet of the site and identify the peak load at that station for each route. The applicant must coordinate with the transit service provider to identify improvements that would be needed to address conditions worse than LOS D due to additional patrons generated by the development.

Rather than using 1,000 feet from the site as the strict distance to measure bus transit adequacy, Director Roshdieh and Chairman Anderson now recommend that the limit be extended to the nearest transfer point if it is reasonably close to 1,000 feet from the site (©21, second bullet).

Of these three tests, only the pedestrian system adequacy might require an applicant to make an improvement. The other two "tests" only require the applicant to make an inventory of improvements that should be made. **The Council should consider whether improvements should also be required if the bicycle system and transit system adequacy tests find deficiencies.**

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MONTGOMERY COUNTY COUNCIL
ROCKVILLE, MARYLAND

NANCY FLOREEN
COUNCIL PRESIDENT

MEMORANDUM

October 5, 2016

To: Councilmembers

From: Nancy Floreen, Council President

Subject: Subdivision Staging Policy provisions for School Facilities Payment

As we proceed through the Subdivison Staging Policy, I ask for your support for an approach that would continue this year's Council theme: "Education First."

At our PHED committee meeting on September 26 we learned that, over the past six years, a bit less than $5 million has been collected in School Facility Payments under the SSP (required when school clusters exceed the 105% threshold of cluster school capacity). The number has ranged from around $6,000 one year, to $2 million another year, with varied amounts throughout. This year, the Planning Board proposes a somewhat more complex and granular approach to measuring capacity at all school levels. While I applaud the Board's good intentions, I would cut to the chase and focus our attention on generating more money for school capacity needs, and minimize the complexity of the effort.

To that end, I propose that we increase the school impact tax by ten percent, to address our increasing capacity needs across the county, and eliminate the School Facilities Payment. If this approach had been in effect previously, I am advised that we would have raised around $16 million in the past six years, or about $11 million more than we actually received.

I would retain the existing provisions for moratorium, as well as the current approach with respect to placeholder capacity, and the cluster measures that we've employed in the past. The increased impact tax revenue will more than supplant current School Facility Payments and will provide support for addressing our capacity needs below the 120% threshold.

Thanks for your attention to this issue. I'll be happy to answer any questions you may have.

cc: Tim Firestine, Chief Administrative Officer
Casey Anderson, Chair Montgomery County Planning Board
Gwen Wright, Planning Director
Glenn Orlin, Deputy Staff Director
Dr. Jack Smith, Superintendent MCPS
Bob Drummer, Council Staff Attorney
Paul Bessel, President MCCPTA
Melissa McKenna, VP Programs and CIP Chair MCCPTA

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In lieu of the current Policy Area transportation test (TPAR), a new transportation adequacy test based on transit accessibility (defined as the number of jobs that can be reached within a 60-minute travel time by walk-access transit) is desirable to better reflect existing and planned multi-modal travel options and transit supportive land use densities, and to better align growth with the provision of adequate public facilities. The proposed definition of Policy Area adequacy is based on the proportion of transit accessibility that can be achieved within the next 10 years based on changes in land use and the implementation of transportation facilities within this timeframe. It is the estimated share of the Master Plan vision, reflecting a 25-year (master) planning horizon, attainable within the next 10 years.

This assessment recognizes that not all Policy Areas are planned to have high levels of transit accessibility. The degree to which areas have high transit accessibility scores is dependent upon the balance and intensity of jobs and households in each area of the County, and the degree to which the area is well connected by transit to jobs elsewhere in the region. The degree of transit accessibility is therefore highly correlated to proximity to the Washington, DC core, where the number and density of jobs are the greatest.

The recommended proposed measure of accessibility is not total transit accessibility, but rather the degree to which the planned increase in transit accessibility is proceeding at an acceptable pace.

The transit accessibility metric considers three conditions:

- Current (year 2015) transit accessibility.
- Planning horizon (year 2040) transit accessibility with transportation improvements recognized as fiscally feasible from a regional planning perspective and therefore included in the Constrained Long Range Plan (CLRP) such as the Purple Line and the Corridor Cities Transitway. These transportation improvements are assumed in combination with the Countywide Transit Corridors Functional Master Plan (CTCFMP) network reflecting service attributes in the non-CCT corridors which are largely by average speeds that are faster than local bus service but less than speeds that would be attained operating in fully dedicated lanes.
- Regulatory horizon (year 2025) transit accessibility with transportation improvements included in the state Consolidated Transportation Program (CTP) and County Capital Improvements Program (CIP). Notably, the Purple Line is fully funded for construction by 2025 in the current state CTP, but the Corridor Cities Transitway is not funded for construction at all by the state or County.

The 10-year regulatory horizon (from 2015 to 2025) is 40 percent as long as the 25-year planning horizon (from 2015 to 2040). Areas that have at least 40 percent of their planned 2015-2040 transit accessibility by 2025 are, therefore, considered to be "on pace" with respect to reaching a key indicator of future non-auto travel options and are therefore considered "adequate." The remaining areas are "behind pace" and are considered to have inadequate transit accessibility. The recommendation is that the mitigation requirement for these areas to help fund transit capital projects or transit access projects should be specified as follows:

- If transit accessibility in 2025 is between 30% - 40% of 2040 transit accessibility, a partial mitigation payment of 15% of the applicable transportation impact tax is required.

- If transit accessibility in 2025 in less than 30% of 2040 transit accessibility, a full mitigation payment of 25% of the applicable transportation impact tax is required.

The results of the transit accessibility test by policy area are reported in the following tables for two scenarios:

- The scenario described in the Planning Board draft SSP, in which the full complement of BRT lines in the Countywide Transit Corridors Functional Master Plan are assumed as part of the 2040 scenario
- A refined 2040 scenario developed in the past two weeks in response to coordination with MCDOT and Council staff that assumes only the highest priority BRT lines are in place, including the Corridor Cities Transitway, MD 355 (north and south), US 29, Veirs Mill Road, New Hampshire Avenue, and the North Bethesda Transitway.

For both tables, the following information is provided for each policy area:

- The total increase in transit accessibility between 2015 and 2040. This reflects the effects of the planned master planned land use and transit system investments.
- The percentage of that 2015-2040 increase that will occur by 2025.
- The policy area requirement following the 30% and 40% criteria for partial and full mitigation above for Yellow and Orange policy areas; Red and Green policy areas are exempt.

Transit Accessibility Mitigation Requirements
2040 Includes BRT Plan
6/24/2016

PA_Name	2015-2040 Increased Transit Accessibility	Percent of 2015-2040 increase by 2025	Mitigation Status
RED Policy Areas			
Friendship Heights	515167	47%	Exempt
Bethesda CBD	513033	52%	Exempt
Silver Spring CBD	468746	46%	Exempt
White Flint	437498	41%	Exempt
Grosvenor	425356	44%	Exempt
Twinbrook	418386	42%	Exempt
Wheaton CBD	374648	35%	Exempt
Glenmont	526166	33%	Exempt
Rockville Town Center	363238	42%	Exempt
Shady Grove Metro Station	292100	41%	Exempt
Orange Policy Areas			
Silver Spring/Takoma Park	432512	62%	No Mitigation
North Bethesda	364476	29%	Inadequate - Full Mitigation
Bethesda/Chevy Chase	233689	66%	No Mitigation
Kensington/Wheaton	375324	27%	Inadequate - Full Mitigation
Rockville City	264023	19%	Inadequate - Full Mitigation
White Oak	440229	65%	No Mitigation
Derwood	166121	36%	Inadequate - Partial Mitigation
R&D Village	283345	8%	Inadequate - Full Mitigation
Gaithersburg City	175671	19%	Inadequate - Full Mitigation
Germantown Town Center	141449	2%	Inadequate - Full Mitigation
Clarksburg	5472	0%	Inadequate - Full Mitigation
Yellow Policy Areas			
Aspen Hill	141072	13%	Inadequate - Full Mitigation
Fairland/Colesville	213473	31%	Inadequate - Partial Mitigation
Potomac	62153	60%	No Mitigation
North Potomac	94161	5%	Inadequate - Full Mitigation
Germantown East	105769	2%	Inadequate - Full Mitigation
Germantown West	86314	15%	Inadequate - Full Mitigation
Montgomery Village/Airpark	27944	N/A	No Mitigation
Olney	83166	4%	Inadequate - Full Mitigation
Cloverly	74593	22%	Inadequate - Full Mitigation
Green Policy Areas			
Rural East	7167	N/A	Exempt
Rural West	195	N/A	Exempt
Damascus	710	N/A	Exempt

Transit Accessibility Mitigation Requirements
2040 Refined BRT Plan Concept
10/5/2016

PA_Name	2015-2040 Increased Transit Accessibility	Percent of 2015-2040 increase by 2025	Mitigation Status
RED Policy Areas			
Friendship Heights	512866	48%	Exempt
Bethesda CBD	506296	53%	Exempt
Silver Spring CBD	459977	47%	Exempt
White Flint	409350	43%	Exempt
Grosvenor	425210	44%	Exempt
Twinbrook	387500	46%	Exempt
Wheaton CBD	355450	37%	Exempt
Glenmont	331539	52%	Exempt
Rockville Town Center	350026	43%	Exempt
Shady Grove Metro Station	261067	45%	Exempt
Orange Policy Areas			
Silver Spring/Takoma Park	417974	64%	No Mitigation
North Bethesda	356814	29%	Inadequate - Full Mitigation
Bethesda/Chevy Chase	233195	67%	No Mitigation
Kensington/Wheaton	295303	34%	Inadequate - Partial Mitigation
Rockville City	228717	22%	Inadequate - Full Mitigation
White Oak	389724	74%	No Mitigation
Derwood	148700	40%	Inadequate - Partial Mitigation
R&D Village	219843	11%	Inadequate - Full Mitigation
Gaithersburg City	167844	20%	Inadequate - Full Mitigation
Germantown Town Center	120902	2%	Inadequate - Full Mitigation
Clarksburg	71402	0%	Inadequate - Full Mitigation
Yellow Policy Areas			
Aspen Hill	73619	24%	Inadequate - Full Mitigation
Fairland/Colesville	124890	53%	No Mitigation
Potomac	83278	45%	No Mitigation
North Potomac	60014	8%	Inadequate - Full Mitigation
Germantown East	66030	3%	Inadequate - Full Mitigation
Germantown West	73869	17%	Inadequate - Full Mitigation
Montgomery Village/Airpark	26230	N/A	No Mitigation
Olney	608	N/A	No Mitigation
Cloverly	18612	N/A	No Mitigation
Green Policy Areas			
Rural East	6853	N/A	Exempt
Rural West	989	N/A	Exempt
Damascus	838	N/A	Exempt

MONTGOMERY COUNTY DEVELOPMENT-RELATED TDM PROCESS RECOMMENDATIONS FOR REVISIONS

October 2016

TDM Process Review Work Group

The Montgomery County Department of Transportation (MCDOT) convened a diverse work group of Executive, Council and M-NCPPC staff to provide input regarding improvements to the process for Traffic Mitigation Agreements (TMAgs) and other Transportation Demand Management (TDM) strategies used in the County. Nelson/Nygaard Consulting Associates facilitated the discussions, consolidated recommendations from the group and contributed information regarding best practices nationally. The objectives were to improve consistency and predictability in the development process while enhancing the ability to achieve the County's non-auto driver mode share (NADMS) and broader TDM goals.

After consideration of national best practices and alternatives for local application, the TDM Process Review Work Group ("Work Group") recommended consideration of a number of modifications to the development review and subdivision process with the goal of sustaining mobility in the County to support the economic strength of the County and the quality of life offered to residents and workers. Working with the consultants, MCDOT has incorporated the Work Group recommendations into a plan for revision of the process, as highlighted with additional recommendations (in ***bold italics***) below.

Summary of Key TDM Work Group Recommendations:

1. ***Expand Transportation Demand Management efforts to all areas of the County (excluding Agricultural Reserve areas)***
2. ***Establish a tiered system for applying TDM that responds to the variety and quality of local mobility options, using geographic units and/or boundaries already established in the County.***
3. ***Expand TDM efforts beyond commercial projects to include moderate-to-high density residential developments***
4. ***Establish project-specific mode share targets that help the County achieve Transportation Management District (TMD), area and/or Countywide goals***
5. ***Develop and adopt a TDM "menu" of required tools and strategies. The recommended menu or "toolbox" should provide both flexibility and consistency.***
6. ***Improve monitoring and reporting and strengthen enforcement mechanisms.***

After review of these alternatives, the Work Group determined that a hybrid approach was preferred – one that provided a flexible toolbox of expected measures combined with performance requirements to ensure the package of programs chosen delivered the required results. The following conceptual approaches are proposed:

Geographic Application

The current areas of application for TMAgs, as established by County Code, are fairly narrow at present – limited only to projects within designated TMDs. It is recommended that the program be modified under the Code to apply to the whole of Montgomery County, excepting only areas within the designated Agricultural Reserve. The application of the program throughout the

County levels the playing field and reduces the possibility of leapfrog development or an incentive to develop just outside of established TMD boundaries.

Certain issues remain to be resolved. Subdivision regulations have been proposed which would allow for TMAgs outside of TMDs, which is a good start. However, non-motorized mode share goals do not currently exist in all portions of the County, particularly in less urbanized areas. Those goals need to be established.

Work Group Recommendation for NADMS Goals:

- ***Include NADMS goals in Subdivision Staging Policy (SSP) transportation recommendations for all Policy Areas except Green.***
- ***Use current master plan/sector plan NADMS goals for a 10-year time frame, where available.***
- ***As a starting point for areas where NADMS goals do not currently exist, use Planning Board assumptions shown in the SSP Appendix (data based on the most recent Journey to Work of the American Community Survey in the U.S. Census) for NADMS and add 5 percent. For example, the draft SSP shows that the Olney Policy Area has NADMS for residential trips of 35.7% and 23.7% for office trips – so the NADMS goals for Olney should be 40.7% for residential trips and 28.7% for office trips.***

Tiered Requirements by Geographic Area or Project Type

Although it is appropriate that TMAgs be required across the County, it is recognized that the County is not homogeneous in land use context and level of transit services. For that reason, it is recommended that a tiered system be established to determine the appropriate level of transportation demand management expected and achievable in areas with very different context and/or of projects with different intensities of impact.

The Work Group recommended that three tiers of TDM requirement be established.

The Work Group recommends using the same geographic classifications for TDM as for the SSP.

These three tiers then would be:

1. *High Mode Choice (HMC) Areas (SSP: Red)*– These are defined to include areas with transit services operating in exclusive rights-of-way, which due to higher speed and reliability are able to attract a higher level of fixed investment from prospective developers. They are comprised of the Metro Station Policy Areas (MSPAs) defined in the 2016 Subdivision Staging Policy recommendations as the "Red" areas. These high-choice areas include some established Transportation Management Districts but may include additional designated areas that provide other modal options.

Work Group Recommendation: All areas designated as "Red" in the SSP should be TMDs. However not all TMDs should be Red. Thus Glenmont and Wheaton (which are designated "Red") would need to have TMDs created by Council resolution. Wheaton could be established as a TMD in the near-term. The timing for creation of the Glenmont TMD would relate to level of development.

2. *Moderate Mode Choice (MMC) Areas (SSP: Orange)*– The Work Group recommended these areas be those with some level of transit service, although service may not necessarily be frequent. Moderate Mode Choice areas would include corridor cities, town centers, and emerging Transit Oriented Development (TOD) areas as well as Bicycle Pedestrian Priority Areas (BiPPAs) and Urban Road Code Areas as defined by the SSP.

Work Group Recommendation: Define these areas as all the "Orange" areas designated in the SSP.

3. *Limited Mode Choice (LMC) Areas (SSP: Yellow)*– These are areas of the County that may not have distinct centers or modal hubs that would support a variety of mode options to meet commuting or other travel needs.

Work Group Recommendation: Define these areas as the "Yellow" areas designated in the SSP – but LMC areas could also include the "Green" areas when proposed for new development of the types to be included in the requirements for TMAgs/TDM strategies.

Exemptions from TDM Program Requirements

The following types of development projects should not be required to participate in TDM program efforts, regardless of in what geographic area they are located:

- Single Family Detached Residential Projects

  Single family detached residential developments are unique. Sustainable management and delivery of the TDM programs are generally difficult in these projects given the diffuse ownership structure and lack of a common management oversight. Consistent monitoring and enforcement is nearly impossible. For this reason, it is recommended that developments of single family detached properties should not be required to develop or deliver a formalized transportation demand management program or enter into a TMAg. These projects should, however, be reviewed with a keen eye and required to build into their physical infrastructure TDM-supportive features such as bicycle parking, transit-supportive amenities, connected and walkable networks, and low stress bicycle accommodation.

- Projects that generate fewer than 50 Peak Hour Person Trips

  Since the new SSP guidelines call for basing Traffic Impact Analysis for LATR on Person Trips rather than Vehicle Trips – and since projects generating fewer than 50 Peak Hour Person Trips would be exempt from LATR analysis – the Work Group recommended that Projects generating fewer than 50 Peak Hour Person Trips that are exempt from LATR likewise be exempt from requirements to do a TDM plan.

  For example, a 20,000 sq. ft. office building would be expected to hold approximately 100 employees. If half of those employees commute to work during the peak hour, they would generate 50 Peak Hour Person Trips. Projects of that and similar size would be the smallest ones where a TDM Plan would be required.

- Religious Institutions and similar non-profit places of public assembly

It is part of public policy to encourage churches, other places of worship, and community-based non-profit organizations to maintain locations within the County's urban centers and where those without access to private autos can still readily access those service providers.

Fee for Service/Incentives for Compliance

The TDM program currently provides certain services and assistance to commercial and, in some cases, high density residential development projects within TMDs, and on a limited basis to major commercial developments outside TMDs. The Work Group recommended that a basic level of TDM education, awareness and services should be offered throughout the County to support the Countywide effort to reduce traffic impacts and achieve TDM goals.

Under the proposed system discussed in the Work Group, developments would pay into a countywide TDM fund commensurate with their mode choice area designation. Such a tiered fee would require some level of administrative tracking versus a general tax.

- Areas within designated TMDs would continue to have the existing TMD fee apply, and would retain their existing programming and attention.
- Adding participation by areas outside TMDs will level the playing field between TMD and non-TMD locations and the associated requirements. It will also provide the pooled resources necessary to provide more effective TDM services and support to the non-TMD portions of the County, which represent a much larger geographic area.

Currently TMD fees are applied only to commercial developments first occupied after the fees were adopted in 2006. The Work Group recommended consideration be given to assessing TMD fees on multi-unit residential projects as well, and potentially to existing development that was in place prior to adoption of the fees, since all projects – new or existing – benefit from the TDM efforts in those areas.

Work Group Recommendation:

- ***Red areas/HMC/TMDs – Fees should apply to all development, regardless of when completed (i.e., both those completed prior to 2006 and those built/occupied after that). Fees should apply to residential multi-unit and townhome projects, as well as commercial development.***
- ***Orange areas/MMC – Fees should apply to commercial, multi-unit residential and townhomes. Fees should be set at a level to cover staff and marketing of TDM programs and services. Consider 50% of TMD fee.***
- ***Yellow areas/LMC – Fees should be set lower commensurate with lower level of TDM services. Consider 25% of TMD fee.***

Projects will have the option of providing their own TDM program to achieve NADMS and other TDM goals, or participating in the County's programs. Projects not wishing to provide their own TDM program may be required to pay a separate fee for service to have the County TDM program concurrently provide TDM services to the payee's property.

Targets and Thresholds

The new SSP draft recommends a peak hour 50-person trip threshold to trigger Local Area Transportation Review studies. In parallel, the new TDM program would utilize that same 50-

person trip threshold to determine whether a project must submit a TDM plan/strategy and participate in ongoing monitoring requirements.

Work Group Recommendation: Every development project required to have LATR analysis must have a TMAg, including developments in the Red/HMC areas that exceed the 50 Peak Hour Person Trip threshold (consistent with pending revision of SSP recommendations).

It is appropriate that projects each have an independent performance requirement for their development. These independent targets should roll up into a larger NADMS goal for the general area. Failure to successfully meet and maintain the target would trigger a requirement to revisit and revise the adopted TDM measures.

Each existing TMD, as a transit-rich area, already has designated Non-Auto Driver Mode Share targets. Every new project is expected to contribute positively to the overall goal. However, with few exceptions, projects currently are not actually required to achieve a certain NADMS goal or any other specific TDM goals for their project itself.

Under the proposed TDM program, newly established *High Mode Choice Areas* will have goals and targets set for them just as with the existing TMDs, and all new (and perhaps existing) development projects over a given size will be required to achieve the goals and targets.

Universal, area-wide goals also will be set for *Moderate Mode Choice Areas*. While existing projects within these areas should strive to meet these goals, new projects proposed in the area may be required to achieve a higher level of Non-Auto Driver trips in order to ensure the target is met for the whole area.

Targets may not be established for *Limited Mode Choice Areas* but rather basic standards of mode choice support and encouragement must be demonstrated and a good faith effort made.

Toolbox of TDM Measures – Appendix A

Appendix A presents a sample of TDM measures considered potentially suitable for Montgomery County by Nelson/Nygaard. The required measures in the toolbox would need to be scaled appropriately to the *High, Moderate* and *Limited Mode Choice Areas*. Some elements will be common across all areas such as parking management techniques and informational elements. High Mode Choice Areas will have more robust requirements that are reduced in the lower mode choice areas. The toolbox would be flexible regarding adding components as they become available and their efficacy is evaluated.

The final toolbox or "menu" may include default/required measures together with comparable options that could be swapped out for the default measure. Like a well-balanced meal, the required TDM programs may outline the basic components but permit applicants to choose the specific measure (for example a healthy meal may include a protein, two vegetables and a fruit but diners may choose what individual components best suit their taste – and for developers, best suit their project type, context and "travel consumers.")

In identifying or allowing the application of alternative programs or services, the County must also consider the cost to provide the alternatives making up that program. Ideally that cost would be approximately comparable across various projects on a per unit basis (e.g., cost per square foot, housing unit, or trip generated/reduced). However, where gaps between existing NADMS and NADMS goals are greater, costs for achievement may also be greater. The County must also consider context to ensure that alternative program selections have the area infrastructure necessary to support their success and effectiveness. Determination of whether measures are

required or optional, and what cost basis should be used to ensure equity, will be made at a later date in conjunction with further discussion with stakeholders and other parties.

Monitoring and Reporting

At present, measurement and reporting on specific activities is conducted primarily by the properties themselves utilizing online reporting templates developed and provided by the County. The County conducts an annual Commuter Survey to determine overall area NADMS, and can determine NADMS for specific properties, but does not have the resources to survey every property every year. Currently the County does not have the capacity nor resources to conduct monitoring and reporting on all aspects of TMAgs with properties on a regular basis.

The requirement for monitoring and reporting may vary across the tiers of modal choice opportunity areas.

- Projects in *Limited* (LMC) or *Moderate Mode Choice* (MMC) areas would be required to demonstrate that they are doing what they said they would do. These areas may not have specific NADMS targets. But even if the decision is made to establish NADMS targets for MMC areas, individual projects may not be required to achieve those targets. Therefore, the properties themselves would not be held to specific numerical targets or measures of effectiveness. They would simply need to show that they are providing the services, programs and amenities as committed to and agreed upon.
- Projects in *High Mode Choice* (HMC) areas need to have more active monitoring, not just a certification of action as with the lower tier areas. These projects will be held to a property-specific performance target. TDM plans approved for these areas must be actually monitored for effectiveness and must be modified if properties are not achieving the expected level of effectiveness. It is not enough to simply do what was agreed upon. Programs must be effective or they must be altered.

Several alternatives for monitoring were discussed by the Work Group and in subsequent discussions within MCDOT:

1. Monitoring could be done by the County, with expanded staff capacity.
2. Projects could be tasked to self-report following an established data collection methodology and certification.
3. The County could designate and certify third party contractors to complete monitoring (as is done in Arlington County, VA). These vendors may be contracted directly by the property, or properties could pay the County for regular monitoring. The County may then aggregate properties requiring monitoring in that particular year, bundle and contract under one effort, likely enabling reduced cost for monitoring associated with this economy of scale.

Performance Security: Projects in the HMC/Red areas, and projects with specific goals in the other areas, will be required to provide some type of security for their commitments. This may take the form of a bond or letter of credit. In most cases, the letter of credit must be in effect for up to 12 years. Alternatively, projects may choose to make an up-front payment if they anticipate they may not be able to securitize the project for the whole monitoring period. The security and/or payment will be scaled to project size. These provisions require further discussion.

Work Group Recommendation:
Adopt two types of monitoring: Self-Directed and County-Directed
Both types must be based on valid and reliable determination of NADMS, thus requiring improved methods of data collection with regard to commuting choices.

Self-Directed

- ***Project/Developer will monitor based on approved data collection and analysis protocol, conducted with an approved vendor. (MCDOT will establish criteria for vendor approval.)***
- ***Project/Developer will submit bi-annually a report on accomplishing the NADMS goal.***
- ***If NADMS goal is met, then project is in compliance.***
- ***If NADMS goal is not met, a remediation plan must be developed by the Project/Developer and approved by MCDOT within three months.***
- ***Implementation of the remediation plan must commence within three months of MCDOT approval.***
- ***A new monitoring report must be submitted within one year of implementation of remediation.***
- ***County reserves the right to monitor achievement independently of Project owner***

County-Directed

- ***MCDOT will establish toolbox of TDM measures appropriate for each Mode Choice geography (Red/HMC; Orange/MMC; Yellow/LMC)***
- ***Project/Developer will have options to choose among choices with certain elements optional and others required.***
- ***Project/Developer is responsible to implement the approved plan***
- ***County responsible for monitoring and reporting on achievement of NADMS***
- ***Failure to achieve NADMS goal will require a remediation plan developed by MCDOT with Project/Developer cooperation and assistance.***
- ***County's role is to establish a toolbox of measures appropriate to each geographic area. Implementation costs of those measures will be the responsibility of the developer/owner.***

Enforcement and Corrective Action

The TDM program will be enforced through both regulation and penalties. Additional research and work is necessary to determine the available remedies, though penalties may be contingent on the flexibility of the final instituted program. For instance, if a property follows a compulsory set of measures, but does not reach specified goals, a penalty may not be appropriate. However, if a property chooses to design their own program, and that program proves to be ineffective, then a penalty may be in order.

Work Group Recommendation:

- ***NADMS goals for each Project must be achieved within five years of approval of TDM plan***

- ***Failure to meet NADMS goals will incur penalties/liquidated damages. These will be proportionate to the shortfall***
- ***Penalty level should relate to the cost of achieving the goal for Policy Area.***
- ***Penalty is assessed annually until goal is achieved.***

Instruments for Implementation

Currently TDM programs for new development projects are implemented using the Development Review process, with recommendations made by MCDOT/Commuter Services for incorporation into conditions of approval by Planning Board. Recommendations made at that level are generally broad and do not delve into more specific details of the program and commitment. At present, these details for individual projects are expressed through the Traffic Mitigation Agreement (TMAg).

The Work Group recommends actions to move away from individually negotiated agreements for programs and into more consistent requirements incorporated into the County Code, specifically Section 42A-25. While the standard "required" measures may be able to be clearly articulated as additions to the County Code, higher-level TDM measures/strategies tailored to a specific project may still require individualized TMAgs. However, a level of standardization and basic elements required should be established to reduce the amount of negotiation necessary for these agreements.

TDM requirements will continue to be inter-related with SSP categories. Ensuring the currency and consistency of the TDM requirements may require regular re-examination of the provisions of future adopted Subdivision Staging Policies. An implementation deadline is currently undetermined, but should be given near-term consideration.

Work Group Recommendation:

- ***Incorporate standard TDM requirements into County Code and/or SSP provisions, based upon geographic location***
- ***Permit individualized arrangements for specific projects through TMAgs, selecting from Toolbox of options to achieve goals, coupled with Performance Security measures as appropriate based upon geographic location***

Appendix A

Transportation Demand Management
Sample Toolbox/Menu of Options

	High Mode Choice Area	Moderate Mode Choice Area	Limited Mode Choice Area
PARKING			
Maximum parking limits: Transit-oriented residential and office developments in Montgomery County exhibit lower parking demand than required by the county's parking requirements by being in a location where residents and workers have multiple transportation options. As a result, residential and commercial developments in parking lot districts or reduced parking areas have maximum parking limits. High minimum parking limits undermine the performance of TDM programs and encourage more driving. Providing a maximum parking limit in high mode choice areas can eliminate underused parking and create incentives to use other transit modes.	X		
Eliminating minimum parking requirements: Parking minimums can make it difficult to provide a compact, walkable urban environment, whether by forcing different buildings and uses to spread out or by making development projects on smaller lots infeasible. Some cities have eliminated minimum parking requirements in order to encourage appropriate development and allow the market to determine parking needs.	X		
In-lieu fees or ad valorem tax: Montgomery County currently requires a minimum number of parking spaces in Parking Lot Districts; if the property owner provides fewer than the requirement, they must pay an ad valorem tax to the PLD to contribute to shared public parking facilities. This encourages developers to build less parking while taking advantage of existing parking infrastructure.	X		
Unbundled parking: Renters or homebuyers in Montgomery County pay for parking in new housing, whether they use it or not. This can add costs to what is already an expensive housing market, particularly in areas where residents have multiple transportation options and may not need a car. Separating the cost of parking from housing can reduce housing costs while providing an additional incentive to take advantage of modes other than driving. Similar benefits accrue when parking for office and some other commercial space is unbundled from tenant leases. f	X	X	X
Unassigned parking: Currently, the county's zoning code requires that all developments provide assigned parking spaces for different uses (such as a building with apartments and retail), which can often duplicate parking resources. Different users may require parking at different times; for instance, office workers may park during the day, while residents could use the same spaces at night. Allowing unassigned parking between building uses could take advantage of varying parking demand throughout the day while reducing the need to build additional parking.	X	X	X

	High Mode Choice Area	Moderate Mode Choice Area	Limited Mode Choice Area
BICYCLING			
Bicycle access improvements: Ensuring safe, easy bicycle access to a property can encourage occupants and visitors to bike there instead of driving. This means providing multiple entrances for people on foot or bike and, on larger sites, publicly-accessible paths through the site. Building entrances should face pathways or streets, not parking lots. Montgomery County already allows developers to contribute to closing gaps in the bicycle network, whether through a fee or by constructing the improvement themselves.	X	X	X
Secure bicycle parking: Adequate bicycle parking gives bicyclists the same reliability that drivers expect at sites where parking is provided. Secure, indoor bicycle parking such as a bike room or bike lockers adds an additional level of security for building occupants seeking long-term parking. Today, developers in CR and some other zones are already required to provide on-site bicycle parking, usually in the form of bike racks.	X	X	X
On-site bicycle repair facilities: Like secure bicycle parking, on-site bicycle repair facilities make bicycling a more reliable transportation mode for occupants and visitors and reduce barriers to owning and maintaining a bike. They also keep bicycles in circulation, ensuring that people who come and go from the site by bike will continue to do so unimpeded by repair issues.	X	X	X
Participation in County bikeshare: Private entities such as developers or property managers can sponsor an on-site bike share station that is part of the County bikeshare program, creating connectivity with a larger system in the County and the region. This creates an incentive for residents or workers to bike to and from the property, particularly for short trips or "first mile/last-mile" connections. Incentives for bikeshare use can also be provided to tenants, employees, residents etc. using membership sponsorship programs available in the region.	X	X	
Private individual bicycle share: Developers or property managers can sponsor a bikeshare program within an individual site for round trips or within a network of bikesharing "pods" available to residents or employees affiliated with a particular developer or company. This is particularly geared towards short trips, such as meetings or running errands, as well as exercise and tourism. It generally does not result in as robust or flexible a system as the County bikeshare system but could be used for developments outside the County's bikeshare service areas.	X		X
Private bicycle loan programs: Like a private individual bikeshare program, properties can provide bikes to rent or borrow for a set period of time, but only for round trips. Borrowers may be provided a helmet and lock and be required to return the bike within a set period of time.	X		
VEHICLE SHARING SERVICES			
Fleet-based car share: Fleet-based car share operators (like Zipcar) maintain a fleet of cars at set locations. Property managers or developers can provide spaces for car sharing vehicles on their site for their occupants or the general public to use. Montgomery County offers provision of car sharing spaces as an option for developers in the CR zone seeking additional density. Developers/property managers can incentivize one-way car share use by providing dedicated spaces on their property for them, and/or offering discounted or free passes to users.	X	X	X
One-way car share: One-way car sharing programs (like car2go) enable users to pick up and drop off vehicles within a set "home area," typically a municipal boundary. One-way car sharing programs allow users to mix-and-match transportation options, for instance taking transit to a location and using a car share vehicle for the return trip. They reduce the barriers to using other modes of transportation. In DC, car2go vehicles can park on street or within specific private parking facilities for free. Developers/property managers can incentivize one-way car share use by providing dedicated spaces on their property for them and/or offering discounted or free passes to users.	X		X

	High Mode Choice Area	Moderate Mode Choice Area	Limited Mode Choice Area
TRANSIT PASSES			
Universal transit pass programs: Transit pass programs can encourage the use of public transportation by reducing financial barriers to using transit or making transit comparable in price to the perceived value of free parking. In doing so, they can improve transportation access and reduce vehicle ownership rates, as well as the demand for parking, in turn reducing the carbon footprint of more intensive land uses. Universal transit passes, when implemented at a residential or commercial property, allow occupants unlimited use of all service within a system for a significant discount. The passes can be distributed by the property manager or employer to occupants. In some cases costs may be recouped from rent, HOA dues, or other fees. WMATA is currently testing a SelectPass program that allows unlimited transit use for a discounted price based on trip length (since Metro fares are set by distance).	X		
Discount transit pass programs: Discounted passes are partially subsidized by a property manager or employer and sold to occupants at a lower rate. Like a universal pass, they may provide unlimited use of all regular transit service, and may be covered by rent, HOA dues, or other fees. This is an in-house program and property occupants can elect whether or not to purchase a pass. The County recently re-instituted their Fare$hare transit subsidy matching program, which is designed to incentivize employers to offer discounted transit passes to their employees. The County pays half the cost of transit passes, up to $100/month/employee for employers located in TMDs. Employers are also eligible for a State tax credit of 50% up to $100/month/employee for their portion of any transit subsidy provided to employees.	X		
Guaranteed Ride Home: Emergency ride home programs are commonly offered by employers to incentivize their workers to use transit, though they may also be offered in residential communities. They provide a subsidy that can either be set to a maximum value or number of trips for residents or workers to get home in an emergency by transit, taxi, or transportation network company (TNC) services such as Lyft or Uber. In the Washington region the Commuter Connections program of the Council of Governments provides a GRH program throughout the region. These programs are especially effective when traveling from a high mode choice area to a low mode choice area (such as from a suburban residential community to an urban job center, or a reverse commute from a transit-oriented residential community to a suburban job center.	X	X	X

	High Mode Choice Area	Moderate Mode Choice Area	Limited Mode Choice Area
COORDINATION AND COMMUNICATION			
Marketing and distribution of materials: Apartment or office buildings generally experience turnover of occupants (tenants and/or employees) over a given period of time. They may face challenges in informing new residents or workers about transportation options. Property managers can place an information kiosk on the property or provide new occupants a transportation package with information about nearby transit and bicycle facilities, TDM programs such as transit passes, walking/biking groups, and rideshare matching. Marketing materials should convey the benefits of a car-free or car-light lifestyle. Not only do these materials educate occupants, but they make the property more attractive to residents or employers interested in transportation choices.	X	X	X
On-site commute coordinator: At apartment or office buildings, an on-site TDM coordinator can be an additional source of information for residents or workers who do not know about transportation options in the area, and reduce friction to those seeking alternatives to driving.	X	X	X
Rideshare or ride-matching programs: A trip coordinator can collect information from interested residents or workers about travel preferences and match them with partners with similar plans. This may be most effective with large-scale participation. Rideshare programs can reduce single-occupancy vehicle trips, particularly in areas with low mode choice. Commuter Services provides the local connection to the regional Commuter Connections ridematching program and region-wide database of potential rideshare partners.	X	X	X
Real-time transportation news and commuter alerts: Provide occupants updated information on transit schedules, transit and bike maps, important service changes, and real-time transit arrivals. This can be in the form of an interactive, real time display of transit information and other options (such as a TransitScreen) in a prominent, highly-visible location. It can also be postings on static lobby or breakroom displays or similar information posted on the local website, e-distribution or listserv. This further reduces barriers to using multimodal transportation options, while improving the experience of using different options.	X	X	X
Organized walk or bike groups: Organized groups on a property- or neighborhood-level scale can promote pedestrian or bicycle travel, help people feel more comfortable with active transportation modes, and improve health and camaraderie. This may be most effective for suburban bike-to-work journeys, and can also be accompanied by safe cycling classes and other pedestrian and bicycle safety information.			X
Wayfinding: Provide signage for clear directions and walking or biking time to nearby destinations, such as transit stops, shopping and commercial districts, major employers, or public institutions such as schools or libraries. Wayfinding signage can make the area easier to navigate and encourage people to travel by foot or bike. Montgomery County already offers provision of wayfinding as an option for developers seeking extra density under the CR zone.	X		X

TMD/TMAg Recommendations:
Summary of Development Community Stakeholder Input – Meeting of 10/5/16

A work session with representatives of the development community on the draft recommendations from the interagency work group on development-related transportation demand management was held on October 5, 2016. A brief summary of the discussion is provided below.

Process: The development community is curious about how these ideas will be incorporated into the ongoing discussion of the Subdivision Staging Policy and is seeking clarity about how the TMAg requirements and expanded concepts for transportation demand management will be implemented.

Specific Questions about the Recommendations:

- Standardization and predictability are positive aspects of proposals.
- The development community commented that it is difficult to react to the framework presented without knowing more of the specific details, especially fees and penalties, and its relationship to other development laws and regulations.
- Some representatives of the development community commented that TMAgs are a useful tool resulting in benefits to projects. Also these requirements can help convince owners/managers of ongoing need to implement TDM strategies.
- There is some question about why we would expand TDM to entire County. If we need transit to achieve best results, why extend TDM efforts to areas of County not currently well-served by transit? And why charge fees to those projects?
- Representatives stated that some aspects of TDM & these recommendations go beyond developers' control. Developers could use all tools available and still not meet goal.
- There are some concerns about how these requirements are either translated to employer requirements or to unit owners in for-sale residential development (particularly townhouse and single family units).
- Participants mentioned that TDM strategies and developer commitments must be accompanied by corresponding public investments in infrastructure that promotes alternative transportation modes – e.g. bikeshare, BRT, and other walking and bicycling improvements. Implementation of these projects over time suggests the need for interim goals.
- Some representatives suggested that aggregate goals for TMD's seem more fair, rather than individual project goals. Aggregate goals promote collaboration among various owners, plus can use the structure of TMD to coordinate. It was also suggested to use aggregate goal for TMD, but if one property is meeting its goals and another is not, and therefore the aggregate goal is not being achieved, the property meeting its goals should still be permitted to proceed with further phases even if aggregate goal not being achieved.
- It was widely agreed that security-instrument requirements for TDM are off-putting, costly, difficult to implement. Alternatively, we should agree on the strategies to be implemented and agree to a process to revise the program if the goals are not being attainted.

- Some suggested that we should not penalize developers if strategies agreed upon are not working. It would be preferable to use funds that would otherwise be paid by developer for penalties and have developer use these to implement additional strategies.
- Participants noted that technology is changing quickly and the toolbox needs to be easily updated to reflect evolving options. The toolbox useful as a way to identify strategies up-front, not late in the process. There is a need to be sure toolbox includes identifies the physical requirements of the program so they can be incorporated into site planning early.
- Participants suggested that a TDM budget for projects should be established and that programs can be updated or replaced within that budget. This would help provide more certainty for property owners.
- Participants suggested that there should be rewards for good performance in addition to,or instead of, penalties for poor performance. TMAgs can be good for their development re attracting tenants, employees, residents. Some suggested that we consider reducing incentives once goals are achieved.
- Others identified that the real incentive is being able to build project in timely fashion & not be subjected to added requirements. Also, participants noted that TDM can help offset other liabilities and associated payments -e.g. LATR fees.
- Generally, representatives indicated that the development community willing to collaborate on this, but much more certainty about the details is needed and costs need to be understood and controlled.

TDM Developer Stakeholders

TDM Developer Stakeholders		
Sign In Sheet		
Wednesday 10/5/16		
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MONTGOMERY COUNTY PLANNING BOARD
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

OFFICE OF THE CHAIR

October 6, 2016

The Honorable Nancy Floreen
Chair, Planning, Housing, and Economic
Development Committee
Montgomery County Council
100 Maryland Avenue
Rockville, Maryland 20850

Dear Chair Floreen:

The Planning Department and the Montgomery County Department of Transportation have worked together to address the concerns raised in Mr. Roshdieh's September 14 letter. We have concurred that the following changes are appropriate across both the SSP and the Board's LATR Guidelines and we expect that many of these changes will materially satisfy MCDOT's concerns.

- Proceeding with the transit accessibility approach as the preferred method for policy area review, but with a slightly refined list of planned BRT lines in 2040 to reflect the fact that not all master planned lines can reasonably be expected to be implemented by the horizon year.
- Reducing the threshold for quantitative pedestrian LATR analyses from 100 peak hour ped/bike trips generated (based on New York City and Washington DC thresholds) to 50 peak hour ped/bike trips generated.
- Including a requirement for improvement to sidewalk deficiencies within 500 feet of the site boundary for the Red Policy Areas as an applicant requirement (consistent with what is required in the other policy areas).
- Including a provision that will require a project-specific impact assessment for projects greater than 750,000 SF in the Red Policy Areas.
- Retaining a process to tie reduced parking to an adjustment in trip generation rates, or as an alternative adopt a fee structure that incentivizes reduced parking.

We are looking forward to further review and discussion with Councilmembers on defining the relationships of the following elements as related to LATR studies both within the Red Policy Areas and elsewhere in the County:

- Existing access/circulation studies, independent from the SSP, as required through Section 50 of the County Code to address independent M-NCPPC, MCDOT, and (where applicable) SHA assessment of access permits and site design,
- Requirements that may be developed through TDM and TMAgs as a result of the ongoing interagency work group developing proposed conditions Countywide,
- Purpose and scope for biennial monitoring within the Red Policy Areas, to include both a Comprehensive Local Area Transportation Review of forecast growth and a performance assessment of observed multi-modal travel conditions, and
- Development of a work program to determine pro-rata share contribution needs with engagement of SHA in the Red Policy Areas (similar to the recently established approach in White Oak).

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The Planning Department and MCDOT are in agreement regarding several elements of the LATR process that will be incorporated with the Planning Board's LATR Guidelines after the Council adopts the SSP. Continuing coordination on these elements will be enhanced by including MCDOT in the scoping process for LATR studies to address the following in a collaborative manner:

- Maintaining flexibility in whether or not a network approach is warranted for intersection operational assessments,
- Considering the extension of the assessment of transit capacity to the nearest major transfer point when such points are reasonably close to the suggested 1,000 ft distance from a site,
- Using pedestrian crosswalk delay rather than crosswalk capacity as the LATR measure for pedestrian system adequacy, and
- Modifying the LATR mitigation approach from "payment in lieu of construction" in Road Code Urban Areas and Bicycle Pedestrian Priority Areas to one in which payment in lieu of construction is an appropriate option only in cases where applicant coordination with public projects is anticipated; retaining the Planning Board's hierarchy of mitigation approach priorities.

Sincerely,

Casey Anderson
Chair, Montgomery County Planning Board

Al Roshdieh
Director, Montgomery County Department of Transportation

cc: Councilmember Leventhal
Councilmember Riemer

MEMORANDUM

October 5, 2016

TO: Glenn Orlin
Deputy Council Administrator

FROM: Chris Conklin, Deputy Director for Policy
Department of Transportation

SUBJECT: Preliminary Technical Approach to Red Policy Area LATR Pro-Rata Analysis

Ongoing discussions on the Subdivision Staging Policy (SSP) have yielded an increased interest in the use of pro-rata fee structures to address LATR needs in Red policy areas. What follows is a summary of a potential scoping process, methodology, and implementation of such a concept, based on MCDOT's experience with White Oak Science Gateway (WOSG) pro-rata fee. The WOSG analysis is nearing completion and we anticipate completing the reporting in the next few weeks.

The Red Policy Areas differ from White Oak in many ways in terms of the current characteristics of the areas, the types of development generally proposed, and the transportation system serving the policy areas. This preliminary approach differs in several ways from the ongoing work on WOSG. For example:

- Use of a person-trip basis for pro-rata calculation instead of vehicle trips
- Assessment of local area transportation needs beyond intersection improvements
- More direct incorporation of transit, pedestrian, bicycle, and NADMS program needs

The approach outlined below is preliminary and intended to improve understanding of how this process could work. If the Council believes this type of approach will be beneficial for implementation of the SSP, MCDOT will work with the Planning Department and MDSHA to formalize these as LATR study guidelines for Red Policy areas, incorporating changes as appropriate.

TECHNICAL SCOPING & ANALYSIS

The LATR assessment should be multimodal and, in addition to roadway capacity needs, should include local transit, pedestrian, and bicycle facilities that serve the policy area. For traffic analysis, the study area should span approximately 2 major intersections beyond the policy area boundary, with additional intersections added as deemed appropriate to make connections to other major facilities like interchanges. Similarly, non-auto infrastructure outside the policy area may be included in the scope to reach a major transfer point for transit or connection to major trail or other pedestrian/bicycle routes. Generally, the analysis should be scoped consistent with the master plan

non-auto driver mode share (NADMS) goals for the policy area. A decision about to incorporate master plan phasing thresholds should also be determined during project scoping. The LATR-type analysis should include the following elements:

- Local transit capacity and quality of service;
- Local bikeways and pedestrian routes, including street crossings and sidewalk gaps;
- The need to supplement to Transportation Management District (TMD) operations to achieve NADMS goals; and
- Intersection capacity and traffic operations.

Scoping should be done with input from affected communities and partner agencies. This scoping process should include, at a minimum, the Maryland State Highway Administration (MDSHA), MDCOT, Montgomery County Planning staff, development community representatives, and citizen's groups identified by the Regional Service Center. Ideally, scoping would occur concurrent with the development of a new master plan, allowing for an existing process for public input. For those areas where plans are already complete, a separate scoping process should occur.

The analysis should assume an appropriate level of Master Plan Buildout. Full yield of master plans is very unusual, however, 100% development build-out (as compared to the 75% typically used in master planning analyses) may be the best assumption to use for these LATR-type analyses, due to the uncertainty of development progression. This assumption maximizes both the "numerator" (the amount of investment needed) and the "denominator" (the number of development units) in the pro-rata calculation.

For transit improvements, the required capital cost for new buses, stations, transit centers, etc. should be identified. For non-motorized facilities, conceptual plans for new links should be developed and included in traffic impact analyses (if they affect capacity). For traffic analysis, a regional model will evaluate the land use and infrastructure inputs across the entire analysis area. The outputs of this regional model are then applied to an intersection-by-intersection network. Mitigating treatments are identified at each intersection. In some cases, further adjustment to the NADMS and appropriate measures to achieve these goals may need to be substituted for physical improvements.

A determination should be made regarding the suitability of including large-scale projects (LRT, BRT, Metro Station improvements, interchanges, new highways, etc.). Generally, this scale of improvement should be excluded from a pro-rata calculation, or be limited to a fair-share contribution. It may be appropriate to identify alternative, short-term improvements for locations where large-scale projects are proposed.

COST ESTIMATING

Preliminary concepts should be developed for pedestrian and bicycle improvements, preliminary service concepts should be developed for local transit, and preliminary intersection designs should be prepared for intersections that do not meet LATR metrics. Conceptual cost estimates should then be developed for each type of improvement using established methodologies such as SHA's Major Quantities Estimating methodology, or another accepted practice. Operating costs are not currently included in these estimates, though recurring costs over the lifetime of a plan (such as for replacement buses, Bikeshare, or TMD expenditures) could potentially be included.

At this stage, concurrence about the improvements identified and their costs among the transportation planning, management, and operating agencies (MCDOT, MDSHA, Montgomery Planning, others as appropriate) is needed.

POLICY AREA PRO-RATA FEE DETERMINATION

Not all identified projects may necessarily be included in the pro-rata fee. Examples of cases where projects may be excluded from the fee could include pending capital projects that would address their needs (such as interchanges), pending developments that would build the project as a condition of development due to a high proportion of the benefits accruing to one development, projects that are located outside of the policy area, and/or projects considered to be "not feasible" to implement.

The total cost of all included projects provides for the numerator in the $-per-trip fee. The denominator can be measured in any unit of trips or development but consideration should be given toward whether 100% of -person trips should be used, or a value between 75% and 100% to recognize that 100% of development potential is unlikely to be built-out.

IMPLEMENTATION

Each policy area under a pro-rata structure could have its own dedicated CIP, as well as a dedicated account to receive the pro-rata fees. This CIP will identify the projects to be included, and may include some direction as to prioritization among these projects.

This CIP will be a mechanism to allow for forward-funding of projects, ensuring that design and construction can occur on schedule with development. Revenues from the pro-rata fee – acquired at building permit – would be used to pay down initial public investment associated with forward funding. Other fees (such as Impact Taxes, TPAR, TMD Fees, their successors, or new fees) may still apply normally, with no changes to how such revenues are spent. We assume that pro-rata fees would not be eligible for impact tax credit.

A cost-sharing agreement may be necessary with SHA to establish how the pro-rata fees would be contributed toward State projects included in the fee estimate. The State Transportation Participation CIP (P500722) may provide a potential framework for this need.

Monitoring and reassessment should occur periodically over the lifetime of the policy. These analyses will effectively repeat this initial process, with the intent of identifying changes in land use, rates of development, changes in traffic estimates, changes to what projects are needed or should/should not be included in the fee, and any other factors. These estimates may be used for prioritizing identified projects for implementation.

OTHER CONSIDERATIONS

Several other elements need to be considered in this approach, as described below.

SITE ACCESS
This analysis is still largely rooted in large-area methodologies, and does not reflect the intricacies of individual developments, which may have a varying number of access points spread out across one or multiple roadways. New developments should still evaluate access points for any necessary treatments and mitigate as necessary.

POLICY-AREA-ADJACENT DEVELOPMENTS
To address developments located outside the policy area but impacting intersections within the policy area, we suggest assessing the pro-rata fee on all trips originating from or destined into the study policy area.

MONITORING / REASSESSMENT
Changes in the pace and nature of development as well as the need and palatability of transportation infrastructure will change over time. Regular reassessments of the pro-rata fee should be included. We suggest the analysis and fee be reassessed at 4-5 year intervals.

COLLECTION & APPLICATION
We suggest that the pro-rata fee be due at Building Permit and that an account be setup for each applicable policy area to receive the fees. We suggest that a CIP be created for each policy area, into which funding can be allocated.

ESTIMATING BASIS
Costs are likely to be developed in present value. Recurring costs can to be normalized to a present value as well. The expenditures will occur in future years. An agreed upon structure for adjusting the pro-rata fee to year of collection and/or use is needed.

FORWARD FUNDING
Revenues from the pro-rata fee will not be generated quickly or early enough to allow for design and implementation of associated needs. Forward funding either individual projects or a policy area CIP will be critical to ensuring that necessary infrastructure and services are in place to serve the growing needs.

PRIORITIZATION
A policy area may include multiple activity centers, each of which may be vying for what could be a limited supply of funding. A process for prioritization between competing needs as a part of the CIP process will be needed to implement this program.

Should you have any questions regarding this analysis, please feel free to contact me or Mr. Andrew Bossi, Senior Engineer, at 240-777-7200.

cc: Al Roshdieh, MCDOT
Gary Erenrich, MCDOT
Andrew Bossi, MCDOT
Casey Andersen, Montgomery Planning
Pam Dunn, Montgomery Planning
Eric Graye, Montgomery Planning

Potential Red Policy Area LATR Workflow/Schedule:*

Activity	Duration**
• Agency Scoping	1 month
• Public Scoping Review	1 month
• Finalize Scope, Contracting & Kickoff	1-2 months
• Data Collection and Existing Conditions Assessment	1-3 months
• Future Conditions Assessment	1-3 months
• Mitigation Determination and Cost Estimating	1-3 months
• Draft Report and Agency Review	1-2 months
• Council Review	1 month
• Final Report and Pro-Rata Fee Establishment	1-2 months
Total Study Duration	***9 – 18 months******

* Policy area studies could occur concurrently. It is assumed that 8 of the 10 Red Policy Areas would need study (excluding White Flint and Rockville Town Center).

** Small policy areas (Grosvenor/Friendship Heights) would probably be faster, larger policy areas, like Silver Spring/Wheaton/Shady Grove) would probably take longer. The magnitude of the plan will also have some influence on the schedule. Some plans, like Bethesda, may have substantial foundational work available, which could accelerate the study.

*** If 2 - 3 studies are conducted at a time; a complete cycle of the studies could be complete in +/- 3 years. Before a policy area study is complete, a typical LATR process, as modified through the proposed policy could apply.

Analysis of Critical Lane Volume in Local Area Transportation Review

Brian Krantz, bskrantz@verizon.net, 301.571.4538

1 Summary

The Local Area Transportation Review (LATR) portion of the 2016 Subdivision Staging Policy Planning Board Draft fails to meet the stated goal of calling for robust analytic assessments for those proposed projects where an LATR study is required. Specifically, the Planning Board Draft continues to utilize the Critical Lane Volume (CLV) metric in a similar manner as the existing 2012 SSP. To our knowledge, there are no data supporting the Planning Department's claims of a specific and significant relationship between CLV and intersection congestion. In fact, the only available data obtained demonstrate a fairly weak relationship, and also indicate intersection congestion can occur at significantly lower CLV values than those asserted by the Planning Department. Furthermore, most people recognize that congestion and delays vary day-to-day, and that the delays of any single day are not necessarily indicative of average conditions. However, the Planning Board Draft continues to allow single-day snapshots to assess existing intersection adequacy.

2 Background

Successful growth in Montgomery County is reliant on meaningful and robust adequacy tests, which are supposed to be established in the County's Adequate Public Facilities Ordinance (SFPO), the Subdivision Staging Policy (SSP). The SSP is revisited and revised every four years. Currently, the 2016-2020 SSP process is underway, due to be adopted by the County Council in November 2016. On July 21, 2016, the Planning Board released their Draft to the County Council. Within the sections pertaining to Transportation, there is ample room for improvement across many different topics and levels of detail. However, the foremost issue at hand is that the actual adequacy tests are fundamentally flawed, defeating the main purpose of the SSP: a safety mechanism for unexpected growth spurts, allowing growth to be consistent with the public infrastructure.

3 Discussion

3.1 Fundamental Flaws of the 2016 SSP Planning Board Draft

This brief discussion provides supporting data and explanation of the claims that:

- Even if CLV was a perfect measure of congestion, any meaningful adequacy assessment is negated due to the fact that the policy does not mandate a statistical analysis of CLV over multiple days
- CLV, at best, is only weakly correlated to the delay of an isolated intersection, and the relationship that does exist is significantly different than that employed within the SSP

3.1.1 Lack of Statistical Analysis

Imagine if Major League Baseball proposed gauging the talent of a batter by his batting performance of a single game – or even more absurd, a single at-bat. Averages over a series: gone. Averages over a season: gone. Career averages: definitely gone. The entire country would outcry, and Major League Baseball would be ridiculed by their preposterous proposal. People would insist that batter performance varies game to game, and year to year – and that the only fair way to assess performance is by examining average performance over various lengths of time. The people would be correct, but the issue is that this is how existing traffic adequacy is assessed in Montgomery County; in transportation

impact studies, LATR mandates that applicant provide CLV data for only a single day for any particular intersection.

The vast majority of people understand that traffic delays vary day-to-day in the Metropolitan Washington area. Traffic delays can easily vary by ±16% (e.g., a commute that is 60 ± 10 minutes), and because we are assuming that CLV is a perfect indicator of intersection congestion (i.e., intersection delay), than CLV must vary in a similar manner as delay, such as ±16%. Consider an SSP policy area such as Damascus with a CLV threshold of 1400. Let's say that the actual peak-hour average CLV for a particular intersection was 1500 (meaning that the intersection *should* fail the adequacy test). However, with a ±16% window, the measured CLV for the intersection on any given day will be 1500 ± 240, or within the range of 1260-1740. Note that this encompasses the pass/fail threshold of 1400, meaning that the CLV test could easily pass on any single day.

This example is depicted in Figure 3-1, where a statistical distribution of 250 CLV measurements was created (Distribution: Gaussian, Mean: 1500, Standard Deviation: 16%). Note that the upper limit of CLV was clamped at 1800, in an attempt to represent that intersection CLVs saturate at about this level, as reported in various publications. As shown in this notional example, the total probability that a single CLV measurement would pass the adequacy test, *in error*, is 27%.

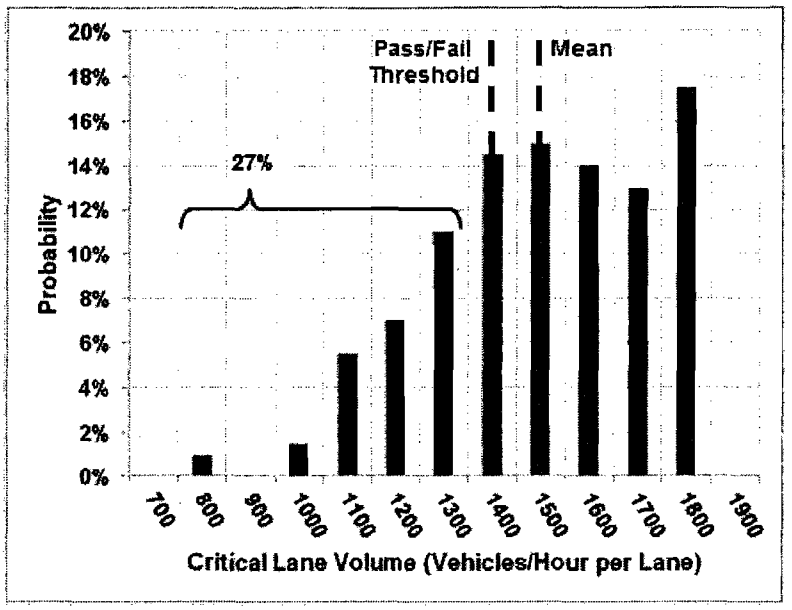

Figure 3-1: Example Statistical Analysis

3.1.2 Critical Lane Volume versus Congestion

The statistical discussion of Section 3.1.1 above assumed that CLV was a perfect indicator of intersection congestion. The nationwide standard for intersection congestion is the Average Control Delay, as defined by the Highway Capacity Manual (HCM). In the LATR, the Planning Department contends that CLV is a good enough indicator of HCM Delay, at least for CLV values up to 1600. The Planning Department's mapping of CLV to HCM Delay is shown below in Table 3-1, for the threshold levels between the different Levels of Service (LOS).

Level of Service (LOS)	CLV (veh/hr. per lane)	HCM Delay (secs)
A/B	1000	10
B/C	1150	20
C/D	1300	35
D/E	1450	55
E/F	1600	80

Table 3-1: Planning Department CLV/Delay Equivalency

The basic premise being asserted in the LATR is that CLV can be directly converted into HCM Delay by a formula based on a regression fit of Table 3-1. As such, LATR contends it is not necessary to directly measure the nationwide standard HCM Delay, unless the measured CLV is greater than or equal to 1600. As this is a departure from the nationwide methodology, it would be prudent to examine the legitimacy of the CLV/Delay equivalency that is claimed here. The Planning Department has been asked repeatedly for any data that supports the equivalency shown in Table 3-1, but has yet to be responsive on this particular subject. In a recent TISTWG meeting, Planning Department representatives acknowledged that they do not have any data that supports their claims.

As we were unable to obtain any supporting data from the Planning Department, we searched for any publically available data sets that could substantiate or refute the CLV/Delay equivalency asserted in the LATR. We were able to find only two recent traffic studies within Montgomery County that included values for both CLV and HCM Delay. One study included data for a series of intersections within the Bethesda Central Business District (CBD) [1], and the other assessed various intersections within Gaithersburg City [2]. Between the two studies, data from a total of eleven intersections are available.

Figure 3-2 shows the scatterplot of HCM Delay and CLV for the above datasets that were obtained via the Internet. Thresholds between LOS D/E and E/F are represented.

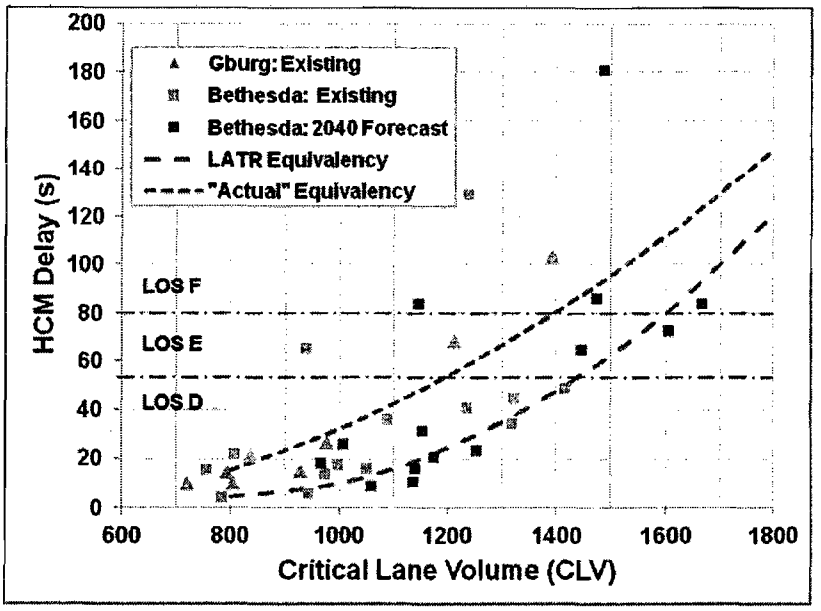

Figure 3-2: CLV/Delay Equivalency

Of note, two of the eleven existing intersections are heavily to severely congested - at moderately low CLVs, well below their respective CLV standards. The AM and PM data for these two intersections are summarized in Table 3-2. As shown, with Levels of Service at E and F, all conditions are still *deemed adequate* by the 2012 and 2016 LATR (although in the 2016 LATR, Bethesda CBD would be exempt from LATR). Clearly a disconnect between congestion and CLV is evident.

Intersection/ Peak Period	Policy Area	Peak Period	CLV Congestion Standard	HCM Delay (secs)	Measured CLV	Level of Service
Bradley Blvd & Arlington Road	Bethesda CBD	AM	1800	65.5	939	LOS E
		PM		129.3	1238	LOS F
MD 355 & MD 124	Gaithersburg City	AM	1425	68.9	1212	LOS E
		PM		103.8	1392	LOS F

Table 3-2: Examples of Congested Intersections with Acceptable CLVs

With regards to general trends of these study data, Figure 3-2 shows a line corresponding to the LATR CLV/Delay Equivalency. A 2nd order polynomial regression fit was calculated for the union of the two studies and is also shown, labeled as "Actual Equivalency". There are two observations that can be made, based on the available data. First, the correlation coefficient of the data, r^2, is 0.46. What this means in simple terms is that less than 27% of the HCM Delay standard deviation can be attributed to CLV. Specifically, the standard deviation of HCM Delay is about 32 seconds per vehicle, and CLV only accounts for 8 seconds. In even simpler terms, it does not appear that relationship between CLV and HCM is particularly strong.

This analysis is not the first study to demonstrate that CLV does not correlate well with HCM Delay. In 1998, Rick Hawthorne, then Chief of Transportation Planning at the Montgomery County Park and Planning Department, published a paper [3] that analyzed the relationship between average delay and CLV, based on 27 intersections in 1993 and 1996 that had CLVs ranging from about 1000 to 2300. With a correlation coefficient of 0.14 (even less than the datasets presented above), the study conclude that "there is little relationship between delay and CLV".

If an honest intersection assessment is desirable, why use CLV, an indirect and inferior method – as opposed to the direct and widely accepted HCM method? The Planning Board Draft references the fact that measuring CLV is less time consuming and more economical than the HCM nationwide standard. It appears that you get what you pay for.

The second observation is that these data do *not* substantiate the validity of the SSP's LATR CLV/Delay equivalency. In fact, it appears as the LATR CLV/Delay Equivalency may describe the *minimum* HCM Delay, as opposed to the *average* delay as claimed in the LATR. That is, the datapoints are not centered about the "LATR Equivalency" line: instead, nearly all points are above it. To illustrate the impact of this flaw, consider the threshold between LOS E and LOS F. The nationwide standard, HCM, establishes this at a delay of 80 seconds; the LATR equates this to a CLV of 1600, which happens to be the threshold level in many policy areas (e.g., Bethesda/Chevy Chase, Kensington/Wheaton, Silver Spring/Takoma Park, Germantown Town Center, White Oak). However, based on *actual* data, the LOS E/F threshold probably equates to a CLV of ~1400, not 1600. Revising the LATR CLV Pass/Fail threshold from 1600 to 1400 would certainly result in many more intersection failures, but this decision would be supported by genuine data.

3.2 CLV as a "Screening" Tool

The 2016 SSP Planning Board Draft recommends the application of adequacy tests that are widely accepted nationwide (i.e., Intersection Operations Analysis and Network Operations Analysis), under certain conditions – but only if a CLV threshold is first surpassed. For reference, Table 3-3 summarizes and compares the traffic adequacy testing scheme for 2012 and the recommendations for 2016. It is essential to realize here that *neither* of the two "robust" adequacy tests is mandated unless the CLV condition is met. The 2016 recommendations make it slightly easier to trigger "Tier 2" tests in more rural portions of the County, but this is not sufficiently adequate. Recall the statistical analysis argument in Section 3.1; regardless of the policy area, if an intersection has an average CLV close to the policy area threshold, there will be a 50% chance that it will be surpassed, and a 50% chance it will not. There is no rational argument to justify the continued use of CLV in the adequacy tests – even as a "screening tool".

	2012 SSP	**2016 SSP Planning Board Draft**
Tier 1: CLV	Calculate Future CLV	Calculate Future CLV
Tier 2: Intersection Operations Analysis	If CLV > 1600	If CLV > Policy Area Threshold (1350-1600)
Tier 3:Network Operations Analysis	N/A	1) If CLV >1600 **OR** 2) CLV > 1450 **AND** Development Increases CLV by > 10 **AND** at least one of the below: • Intersection is on a congested roadway with a travel time index greater than 2.0 • Intersection is within 600' of another traffic signal

Table 3-3: Summary Comparison of 2012 and 2016 Traffic Adequacy Test

4 Conclusion

Continuing to use CLV "as is" in the Subdivision Staging Policy prevents honest, legitimate and robust assessment of transportation adequacy. As such, we recommend removing CLV from the policy entirely, and rely on HCM Delay, as well as Network Operations Analysis. Interestingly, a similar conclusion was determined as part of a consultant's 2012 Literature Review [4] for Montgomery County as part of the 2012 SSP Process. We believe Montgomery County should heed the advice from its own subject matter experts and paid consultants.

5 References

[1] Bethesda Purple Line Minor Master Plan Appendix - Traffic Analysis.
[2] Appendix - Traffic Study for City of Gaithersburg, The Traffic Group, 2013.
[3] R. Hawthorne, *Measuring Congestion and Delay: the Critical Lane Volume Method*, 68th Annual Meeting of the Institute of Transportation Engineers, 1998.
[4] P. Silberman, *Literature Review of Local Area Traffic Impact Study Processes*, SABRA, WANG & ASSOCIATES, INC., Technical Memorandum, April 9, 2012.

SABRA, WANG & ASSOCIATES, INC.
Engineers • Planners • Analysts

TECHNICAL MEMORANDUM

TO: Mr. Eric Graye, Planning Supervisor, Functional Planning and Policy Division, Montgomery County Planning Department

FROM: Paul Silberman, P.E. PTOE, Senior Associate, Sabra, Wang & Associates, Inc.

REFERENCE: **Literature Review of Local Area Traffic Impact Study Processes**

DATE: **April 9, 2012**

Introduction

In order to evaluate current local area traffic impact policy, performance and analysis methodology, the Sabra Wang team developed a comprehensive questionnaire asking pertinent questions pertaining to the complete process of a traffic impact study (TIS) from triggering all the way through to mitigation. The survey was to be used as a tool to compare Montgomery County's local TIS process with that of other similar jurisdictions. The survey will be used to find the best practices, or at least to highlight alternative means for accomplishing similar goals within the TIS Process in order to make Montgomery County's more efficient and relevant.

Montgomery County, MD, along with the following 12 jurisdictions were successfully interviewed for this research:

1. Baltimore, Maryland
2. Seattle, Washington
3. Vancouver, Washington
4. Boston, Massachusetts
5. Miami-Dade County, Florida
6. Miami Beach, Florida
7. Alexandria, Virginia
8. King County, Washington
9. Orlando, Florida
10. Rockville, Maryland
11. Gaithersburg, Maryland
12. San Jose, California

Key staff from each jurisdiction were identified and asked to fill out a lengthy questionnaire on policy and procedure for submitting, performing, and reviewing traffic impact studies, from application submittal up to and including mitigation. Montgomery County staff completed the questionnaire in order to provide a baseline existing conditions scenario from which to compare the responses of other jurisdictions.

Methodology

The questionnaires covered the six main areas of a traffic impact study, starting with basic **background framework** questions, such as *Is there a formal policy in place?* and *Who is the governing authority over the traffic impact process?* Respondents were asked about staffing levels, frequency of policy updates, junior or senior governing agency coordination, and the presence and form of coordination between local site transportation review and area-wide transportation review. The questionnaire contained a small set of questions related to the conditions that **trigger** an applicant to file a formal traffic impact study such as zoning, development size or number of trips. In addition, respondents were asked about the **project scoping** (i.e. size, determining the number of intersections to include, etc.), study performance, determining the horizon year as well as how overlapping studies and multi-phased projects are handled and if there is an alternative review process such as pay-and-go. The fourth section of the questionnaire was the largest, as it covered **Data Collection and Analysis**. In this section, inquiries were directed toward topics such as what modes of data are collected; how and when the data is collected; how traffic data is validated; and future through traffic growth rates. From the analytical perspective, the questionnaire asked the practitioners about analysis method (e.g. Critical Lane Volume, Highway Capacity Manual, other); modes of travel analyzed, the inclusion of roadway segments in the local review; upstream queuing; traffic simulation; and the inclusion of unfunded or programmed transportation improvements. The respondents about required **forecasting** methods.

These questions focused on how trip generation rates were determined; modal split; internal capture; trip distribution and assignment; and trip credits (in the cases of redevelopment). The final section of questionnaire focused on **mitigation**. These questions probed acceptable levels of service; spillover traffic effects across jurisdictions; impact fees; negotiation parameters; Travel Demand Management; non-vehicle impacts; and the authority of the jurisdiction to deny permits based on inability to fully mitigate trips.

In addition to the questionnaires that we received back, many jurisdictions publish their formal procedures on-line as standalone documents.

Key Findings

Respondents sent back individual filled-out questionnaires. In many cases, there were follow-on interviews to clarify responses. Individual responses were compiled into a large matrix, along with Montgomery County's responses, so that their answers to each question could be contrasted with answers from all of the other jurisdictions in a side-by-side comparison. While the key findings of this comparison are presented below, the entire matrix is included as Appendix A.

For clarity, key findings (or differences) are grouped by the following classification:

1. Process and Scoping
2. Data Collection and Analysis
3. Forecasting
4. Mitigation

Process and Scoping

A comparison of the other jurisdictions shows similar initial triggers for a traffic impact study. Every jurisdiction looks at net trips generated or development as the triggering mechanism for a study; the difference among jurisdictions is the details of that mechanism. For example, while most jurisdictions evaluate peak hour trips – like Montgomery, Orlando looks at daily trips generated (1000 is the threshold). Both Boston and Baltimore use 50,000 gross square feet as their threshold, though Baltimore has a much higher threshold for warehouses and a much lower threshold if the development was near an intersection that was already at level of service D.

More often than not, the developer hired their own consultant to perform the traffic impact study and submit to the local jurisdiction – similar to Montgomery County's requirements. However, a few jurisdictions – Orlando, Boston, and Baltimore utilize 3rd party consultants hired by the local agency authorized to review the TIS.

With regard to scoping of the traffic impact study, all jurisdictions used trip impact as the determining factor, although a couple of jurisdictions handled the scope on a case-by-case basis. Of the respondents, Vancouver appeared to have the most far reaching scope, with development generating only 250 trips requiring a 3-mile radius scope. As of this writing, they are looking at both increasing the thresholds and reducing the radii. Most jurisdictions, like Montgomery County, looked at *peak hour* trip impacts, although one Jurisdiction – Orlando – looked at total *daily* trips generated. In addition, Boston used a gross square footage of development as the triggering factor.

The horizon year for a development was typically consistent with project opening (assuming some 5 of occupancy). But for large projects, some jurisdictions looked at a horizon year 10 years out.

Like Montgomery County, a couple of the surveyed jurisdictions have alternative processes that involve an applicant paying a fee for every trip generated.

Data Collection and Analysis

Most jurisdictions, like Montgomery County allow data that is no older than one year old. A few jurisdictions allow data up to two years. All jurisdictions require AM and PM peak period data collection, though the actual peak period times vary from place to place. Like Montgomery County, other jurisdictions will require weekend peak period data collection for retail establishments, such as grocery stores. When a developer is redeveloping an active site, Montgomery County, like all jurisdictions surveyed, allow for trip credits based the trips generated by an existing use.

Montgomery County requires data collection for vehicles and pedestrians and for transit routes to be identified. Several other jurisdictions – for example Boston and Baltimore – also include counting of bikes, as well. Miami-Dade goes a step further and counts transit headway and ridership, while Vancouver, Washington counts vehicle delay and travel time.

Montgomery County validates counts though its own internal database, while most jurisdictions typically rely on the applicant's consultants. Some jurisdictions use their internal Synchro file both as a check or also to supply to applicant's traffic consultants in order for them to populate with projected traffic volumes.

Background developments are part of the data collection for Montgomery County and all surveyed jurisdictions. In addition, while Montgomery County does not account for regional growth in through-traffic (typically on Arterials only), most other jurisdictions do. Typical arterial growth rates vary from 0.25% annually (Boston) to 1.5-2% annually for Vancouver. Gaithersburg only requires this additional background growth for developments that have a build-out date exceeding 3 years. Almost all jurisdictions justify the additional annual percentage increase in traffic from regional growth, based on historical counts.

Unlike Montgomery County that uses CLV[1] for analysis of traffic counts, most jurisdictions utilized the Highway Capacity Manual 2000 methodology[2]. Montgomery County did utilize a CLV congestion standard that varied based on the local policy area. For example, a higher level of congestion is permissible in Central Business Districts (CBDs) and Metro Station Policy Areas than relative to suburban and rural areas of the County. Rockville utilizes a similar tiered CLV congestion standard, whereby it varies based on the signal cycle length and number of phases. Only Miami-Dade has reported using HCM 2010, while several of the jurisdictions say they are interested in switching or are researching it. Like most jurisdictions, Montgomery County does not require Synchro or other simulation software as part of the traffic impact analysis but recognizes that is often useful to study the effects of queuing. VISSIM was also cited by several jurisdictions as a software package that was used to provide additional information for a comprehensive traffic impact analysis. Like most jurisdictions, Montgomery County calculates level of service only for vehicles. However, Seattle reported calculating LOS for pedestrians at certain downtown locations.

Montgomery County typically evaluates intersection level of service, but occasionally will evaluate level of service on road segments, on a case-by-case basis. This practice is similar across all jurisdictions surveyed. Likewise, Montgomery County, similar to other jurisdictions, requires special studies on a case by case basis. Special studies would include crash data analysis, signal warrants and queuing analysis. Triggers for these studies are not formally spelled out, but are generally location-driven. In addition, for large developments, the City of Alexandria requires a formal transportation demand management (TDM) plan to reduce automobile trips. Vancouver Washington also measure arterial travel speeds.

When considering the existing roadway capacity, Montgomery County allows applicants' consultants to consider un-built but planned roadway assuming that they are fully funded and will be completed within the next six years. All jurisdictions had a similar policy, though the time frames varied from four to six years out. No jurisdiction surveyed allowed for unfunded transportation improvements to be counted in an analysis even if they were programmed into a Capital Improvement Program or Transportation Improvement Program.

1- There is only one overriding measure for CLV analysis: the Critical Volume. This critical volume is correlated with preset values to calculate LOS and a v/c ratio. There is no relationship at all between the LOS and v/c ratios in the CLV and the HCM methods; their derivations are significantly different. It should also be noted that the CLV methodology differs from the HCM methodology because here, LOS and v/c ratio are the only 2 ways of representing the total intersection sufficiency. Unlike the HCM methods, CLV analysis calculates overall intersection Critical Volume, whereas the HCM aggregates each MOE on a lane group, approach, and then overall intersection basis, thus identifying failed movements and approaches. Additionally, in the CLV method, the maximum capacity of the intersection is fixed; i.e. it does not vary with signal timings, grades, lane widths, etc.

2 – There are two primary measures of effectiveness used to evaluate the performance of an intersection in the Highway Capacity Manual: intersection control delay (seconds per vehicle) and volume-to-capacity ratio (v/c). Level of Service is determined using control delay. As noted in the HCM, Level of Service (LOS) is a measure of the acceptability of delay levels to motorists at a given intersection, and is defined as a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. It is subjective in that levels that are considered acceptable in a large city might be unacceptable in a rural area. Volume-to-capacity (v/c) ratio is an approximate indicator of the overall sufficiency of an intersection. A v/c ratio of 1.0 indicates that an intersection or a movement has reached it theoretical capacity, i.e. demand volume equals maximum theoretical supply. A v/c ratio above 1.0 indicates that a residual queue (i.e., unserved demand) will be expected. In layman's terms, this means that the specific movement or intersection will fail to operate satisfactorily under such a condition.

Forecasting

With regard to trip generation Montgomery County uses a combination of locally-derived trip generation rates and Institute of Transportation Engineers (ITE) trip generation rates. Approximately half of the jurisdictions surveyed utilized the same methodology, with the other half employing only ITE trip generation rates. ITE also is heavily used for pass-by and internal capture and mode split assumption, in conjunction with local knowledge. In addition, some jurisdictions cap internal capture and pass-by trip reductions. For example, internal capture is capped at 10% in transit-oriented area, while Miami-Dade caps pass-by trips at 10%. Boston's approach to mode split is unique in that they provide consultants with tables of modal split for each neighborhood in the City. Baltimore City also set's non-auto mode share at a neighborhood/ Traffic Analysis Zone level derived from the regional travel demand model. Consultants are required to utilize the tabular information.

Almost all jurisdictions use regional models for distribution/assignment of site-generated trips. Montgomery County has its own tabular data for trip distribution. The model divides the County into 11 "super districts" that each have their own distribution percentages both within the other super districts and outside the County to the surrounding locales. This approach is similar to the other jurisdictions surveyed, but used on a more refined manner that is specific to Montgomery County.

The length for which forecasting studies are valid varies greatly by jurisdiction from 1 year to up to 5 years. However, some jurisdictions have no formal limit, though these jurisdictions provided the caveat that if land use or traffic substantially changed prior to construction, then the forecast would no longer be valid. This is similar to Montgomery County, where the forecast is valid as long as the plan review is pending, with the caveat that background traffic conditions are still similar.

Mitigation

Because most jurisdictions utilize HCM and delay, while Montgomery County uses a variable CLV congestion standard, comparing congestion levels is difficult. Montgomery County has a CLV standard based on policy areas within the County, other jurisdictions vary their allowable LOS based on other factors. For example, Baltimore and Seattle set LOS D as their standard city-wide, but other jurisdictions vary depending on road classification (Rockville) or pedestrian/transit accessibility (Alexandria). Both King County, Washington and Boston allow LOS E, but Boston will allow LOS F in some cases. It was noted in subsequent discussions that the City of Frederick uses CLV as a primary capacity analysis screening tool and then may require HCM.

While Montgomery County has a specific mitigation negotiation policy, it is typically negotiated in "good faith" by the other jurisdictions surveyed. Other localities have a laundry list of items that they typically ask for during negotiation.

Montgomery County requires TDM strategies in some locations, particularly around Metro stations. Periodic performance monitoring by Montgomery County and a Planning Board auditor will be required for Traffic Mitigation Agreements that are designed to mitigate at least 30 peak hour vehicle trips. Similarly, Alexandria City monitors car pools and transit usage annually as part of its TDM performance monitoring. Other jurisdictions request performance monitoring to be done by the applicant. Orlando noted in the survey that TDM is rarely verified and/or enforced. Gaithersburg has stated that its policy is for self-reporting by developers on a quarterly basis.

When recommended roadway improvements are not feasible (typically because the right-of-way does not exist), Montgomery County applies other non-auto mitigation measures or allow for a monetary contribution to be made in lieu of mitigation. The survey found similar responses across the other jurisdictions, however, some noted that the applicant will have to find a way to reduce their site-generated auto trips. Boston, for example, says that developers must consider reducing parking requirements or even look at reversible lanes. Similarly San Jose cited the need to reduce project size if LOS impacts were shown to be significant. However, most of the responses centered on the need to apply mitigation improvements to other transportation modes, such as pedestrian/bike or transit. The City of Baltimore and Boston include transportation system management (such as communications and ITS) and operating contributions (e.g. transit) as part of mitigation options.

Pedestrian and bike and transit improvements or amenities are not measured or credited on the local TIS level in Montgomery County. Similarly, in other jurisdictions, these amenities are not measured but are often required on-site. Off-site amenities for pedestrian bike and transit are often used to justify higher non-auto mode splits.

No jurisdiction was found to have a formal policy for mitigating spillover effects of traffic into neighboring jurisdictions. However, many localities surveyed said that they share traffic impact studies with their neighbors and offer the opportunity for written comments.

Finally, all jurisdictions surveyed, including Montgomery County, have the ability and authority to cap, delay or deny future development if mitigation cannot be agreed upon by all parties.

Conclusion

The comparison between Montgomery County and the surveyed jurisdictions show many similarities in approach along with many differences – some of which are not substantial enough to be considered in an alternatives analysis. A detailed summary matrix of question-by-question responses is attached as an appendix to this memorandum. However, there are some key differences in the processes that are noteworthy in their approach. Several notable differences in TIS methodology between Montgomery County and other jurisdictions include *who* performs the TIS; *Type* of data collected in a TIS; TIS analysis method; alternative processes in lieu of a TIS; use of simulation software in as a validation tool; TDM management requirements and monitoring; local area mode split tables; and mitigation alternatives. In summary, the notable findings are as follows:

- Several jurisdictions surveyed allow a third-party consultant to scope, review or perform the traffic impact study, funded by the developer
- Several jurisdictions have an alternative review process that allows developers to pay a fee per trip and bypass performing a traffic study
- Most jurisdictions collect traffic data on vehicles, pedestrian and bicycles. A few collect transit usage (headway and occupancy) and one jurisdiction surveyed collected travel time
- Several jurisdictions use Synchro models to validate traffic count data, to account for oversaturated conditions (actual demand vs. throughput). At least one requests that consultants use the Synchro model in lieu of collecting new data.
- Most jurisdictions do not use the CLV, but rather HCM methodology to determine level of service.
- The most notable special study included in a local traffic impact study was a Transportation Demand Management plan, required by all developers in the City of Alexandria to identify specific methods to reduce site auto trips. No jurisdiction has a monitoring program specifically focused on development impact, however, Alexandria requires annual reports on a TDM plan which includes monitoring elements.
- Most jurisdictions only require vehicle level of service. The City of Seattle has performed pedestrian level of service analysis, and the City of Boston is leaning towards implementing a complete street multi-modal analysis requirement
- The City of Baltimore and Boston use mode share data from the regional travel demand model in accounting for discounts in raw vehicle trip generation rates for pedestrian, bicycle and transit site access.
- Most jurisdictions use level of service as an operational measurement, however, Vancouver Washington also uses arterial travel speeds.
- No jurisdiction had a formal policy for inter-jurisdictional coordination, good professional cooperation was the norm.
- The City of Baltimore and Boston include transportation system management (such as communications and ITS) and operating contributions (e.g. transit) as part of mitigation options. Requesting reduced parking (parking maximums) was a notable tool used by Boston to reduce auto trips when recommended roadway improvements are not feasible.

Based on this list of key peer local transportation review practice, it is recommended to consider in subsequent Beta Tests the following:

- Use of the Highway Capacity Manual (HCM) 2010 for capacity analysis
- Documentation of relative arterial mobility including average vehicle vs. bus speeds
- Analysis of pedestrian and bicycle level of service
- Safety analysis
- Consideration of growth in the traffic volumes
- Documentation of projected non-auto trips

- Non-auto travel shed analysis
- Use of traffic analysis software (Synchro/ SimTraffic) for signal timing and queuing assessment
- Use of person-throughput metrics and system-level operational measures of performance