APFO Reform Part 2: Tests for Transportation Adequacy

Wheaton Metro Station Area

INTRODUCTION

This report provides recommendations for the transportation adequacy testing portions of the Growth Policy Review. This report is organized into four sections:

- Recommendations for the Planning Board to consider.
- The proposed Policy Area Mobility Review (PAMR).
- Changes considered to Local Area Transportation Review (LATR), and
- Responses to other questions from the County Council.

RECOMMENDATION SUMMARY

Staff has separated recommendations into those for a Policy Area Review system and those for the Local Area Transportation Review system:

Policy Area Review

1) A second test, in addition to Local Area Transportation Review (LATR), is desirable to stage growth in concert with the implementation of adequate public facilities.

2) Based on the level of concerns regarding the importance, coherence, and reliability of the Policy Area Transportation Review (PATR), staff recommends against reinstating the PATR system as previously defined.

3) Staff recommends that the Planning Board support continued development of a new policy area test, tentatively called Policy Area Mobility Review (PAMR), that we find builds upon the many positive characteristics of PATR while improving:

- Coherence, as the adequacy standards are based on forecasted traveler delays rather than the forecasted Average Congestion Index
- Reliability, as the equivalency between transportation system capacity and vehicle trips for areas that "fail" the PAMR test is defined in a lookup table, rather than through an iterative process of travel demand model runs
- Applicability, as the lookup table allows both the public and private sector opportunities to address areas that fail the PAMR test through a wider range of actions in the form of non-auto amenities such as transit and pedestrian facilities in addition to providing roadway capacity.

4) The Policy Area Mobility Review (PAMR) system should have the following characteristics:
   - Uses the existing Policy Area geographies.
   - Considers a horizon year that includes current jobs and households, all the approved development in the pipeline, and the transportation system of current plus future projects fully-funded in the six year CIP and CTP.
   - Uses the travel demand forecasting model to determine the relative mobility for both transit vehicles and autos and compares these relationships against a standard for groups of policy areas.
   - Makes a single finding for each Policy Area; either the policy area is adequate or not adequate in terms of PAMR.
   - For Policy Areas that are found inadequate, development applicants (other than those with *de minimis* impacts) can do any one or some combination of the following:
     - Conduct a trip reduction program with an agreement signed with MNCPPC to reduce or eliminate peak hour trips.
     - Provide non-auto amenities such as sidewalks, handicap ramps, or bike lockers to gain vehicle trip credits as specified in the LATR guidelines (up to a maximum of 120 trips).
     - Construct additional roadway capacity with the amount based on a table that will be provided in the Growth Policy that will be related to the type of development, its size, and the type of roadway to be widened or added to – major highway, arterial/business district street, or master planned primary. All improvements must be in the master plan, and be a logical continuous segment, from one intersection to another. The Planning Board would have the approval authority over the segment to be constructed.

- Provide transit capital improvements in terms of adding to the fleet of transit vehicles.
- Apply for a fee-in-lieu of provision of capital improvements, but only after demonstration to the Planning Board of a good-faith effort to pursue capital improvement implementation.

- The PAMR process outlined by staff does not yet contain proposals on some of the more specific procedures that were part of PATR in the past, although we have given them attention. These include procedures for special treatment of affordable housing, strategic economic development projects, and other land uses. Staff can bring these recommendations forward fairly quickly once there is consensus on major points.

Local Area Transportation Review

5) Retain the LATR congestion standards currently in effect

6) Require an LATR study for the Alternative Review Procedure in Metro Station Policy Areas.

7) Revise the practice for already approved development sites being expanded to provide for:
   - Allowing an increase of five peak hour trips to avoid a traffic study altogether based on “de minimis” logic.
   - Basing the number of signalized intersections in the study on the increased number of peak hour trips rather than the total number of peak hour trips, in cases where use and occupancy permits for at least 75% of the originally approved development were issued more than twelve years prior to the LATR study scope request for the expansion.

8) Allowing payment in lieu of implementation for non-automobile transportation amenities with the agreement of the DPWT, WMATA, SHA, or Maryland Transit Administration.

9) Requiring documentation that traffic mitigation or trip reduction measures were considered in all cases.

10) Requiring studies be submitted by certified professionals (Professional Engineer, Professional Transportation Planner, or Professional Transportation Operations Engineer).

11) Continue the Highway Mobility Report on a two year cycle, and incorporate an expanded data collection program within the Department to allow for improved reporting of intersection conditions and travel time

analysis in the report and verification of developer-submitted traffic studies.

Additional procedural clarifications to the Planning Board's LATR Guidelines are described in the Appendix to this report. These clarifications are for the Board's information and will be considered when an update to the LATR Guidelines is prepared.

POLICY AREA TRANSPORTATION REVIEW

The Council directed the Board to provide recommendations on the renewed use of a Policy Area Transportation Review (PATR) test. Staff recommends a new test, called Policy Area Mobility Review (PAMR), that would be a second, policy area level, test to supplement the Local Area Transportation Review test.

The following paragraphs describe:

- A summary of the philosophy and rationale behind each of the staff recommendations
- A description of potential approaches that were considered, with a table summarizing the relative strengths and weaknesses of the approaches
- Responses to particular questions raised by Council members during the interim status reports

Rationale for Conclusions and Recommendations

The Policy Area Mobility Review (PAMR) test considers the transportation system adequacy of each of the County's policy areas. The Policy Areas are shown in Exhibit 2-1. This section of the report describes the details of the PAMR process and describes responses to several "frequently asked questions" that we have asked ourselves during the system development.

PAMR Details

The Policy Area Mobility Review consists of the following elements:

- Establishment of Transit LOS and Arterial LOS standards to be applied within each policy area
- Evaluation of the forecasted conditions for each policy area
- Finding of PAMR "adequacy" or "inadequacy" for each policy area
- Development of alternative approaches to mitigate transportation impacts of development in areas found inadequate.

In establishing transit and arterial level of service standards, the PAMR assesses areawide adequacy on two scales:

- Transit LOS is established by considering **relative transit mobility**, defined as the relative speed by which journey to work trips can be made by transit, as opposed to by auto
- Arterial LOS is established by considering **relative arterial mobility**, defined as the relative speed by which auto trips move during the PM peak hour as compared to the free flow speed.

The **relative transit mobility** is based on the Transit/Auto Travel Time LOS concept in the 1999 Transit Capacity and Quality of Service Manual published by the Transportation Research Board. This concept suggests that LOS A conditions exist for transit when a trip can be made more quickly by transit (including walk-access/drive-access and wait times) than by the single-occupant auto. This LOS A condition is true in the Washington region for certain rail transit trips with short walk times at both ends of the trip and some bus trips in HOV corridors. LOS F conditions exist when a trip takes more than an hour longer to make via transit than via the single-occupant auto.

This ratio between auto and transit travel times can also be expressed in an inverse relationship, defined by modal speed. If a trip can be made in less time via transit than via the auto, the effective transit speed is greater than the effective auto speed. Based on the typical roadway network speed during the AM peak period, staff has established the following relationship between auto and transit trips as described in the following table:

Relative Transit Mobility and Transit LOS

If the effective transit speed is	PAMR Transit LOS is
100% or more (e.g., faster) than the highway speed	A
At least 75% of the highway speed	B
At least 60% of the highway speed	C
At least 50% of the highway speed	D
At least 42.5% of the highway speed	E
Less than 42.5% of the highway speed	F

The **relative arterial mobility** is based on the urban street delay level of service in the 2000 Highway Capacity Manual, published by the Transportation Research Board. This concept suggests that for a trip along an urban street that has a free-flow speed (generally akin to posted speed) of 40 MPH, LOS A conditions exist when the actual travel speed is at least 34 MPH, including delays experienced at traffic signals. At the other end of the spectrum, LOS F conditions exist when the actual travel speed is below 10 MPH.

The PAMR only evaluates conditions on the arterial roadway network. As was the case with PATR, there is a philosophical tenet for excluding freeway level of service from a policy area test. The County has limited influence over either the design or the operations of the freeway system, and we have historically decided

not to link local development directly to the performance of the freeway system. Additionally, with the PAMR system, the arterial LOS is exclusively an urban street network measure.

Relative Arterial Mobility and Arterial LOS

If the actual urban street travel speed is	PAMR Arterial LOS is
At least 85% of the free-flow speed	A
At least 70% of the highway speed	B
At least 55% of the highway speed	C
At least 40% of the highway speed	D
At least 25% of the highway speed	E
Less than 25% of the highway speed	F

The PAMR Transit LOS and the PAMR Arterial LOS standards are inversely related, reflecting the County's long-standing policy that greater levels of roadway congestion should be tolerated in areas where high-quality transit options are available. The PAMR uses the following equivalency:

Equivalency Between Transit LOS and Arterial LOS

If the forecasted PAMR Transit LOS is	The PAMR Arterial LOS standard is
A	F
B	E
C	D
D	C
E	B
F	A

Exhibits 2-2 through 2-4 show this information graphically using a graph on which the **relative transit mobility** is expressed along the X-axis and the **relative arterial mobility** is expressed along the Y-axis. In each case, a higher number along the axis reflects a better level of service, so that the best conditions would be found in the upper-right corner of the graph (excellent transit and highway mobility) and the poorest conditions would be found in the lower left corner of the graph.

- Exhibit 2-2 shows the application of the Transit LOS standards, shown as vertical bars,
- Exhibit 2-3 shows the application of the Arterial LOS standards, shown as horizontal bars, and
- Exhibit 2-4 shows the intersection of the two sets of standards using the equivalency described above. The colored line across the center of the chart shows the division between "adequate" areas to the upper right and "inadequate"" areas to the lower left. On Exhibit 2-4 this line is shown in

several different colors to demonstrate how the Transit LOS and the Arterial LOS boundaries from Exhibits 2-2 and 2-3 are applied.

PAMR Results

The results of the PAMR test for three different land use and transportation network scenarios are shown in Exhibits 2-5 through 2-8.

- Exhibit 2-5 shows the policy area conditions for the forecasted "year 2013" conditions, reflecting current PAMR test results.
- Exhibit 2-6 provides the same year 2013 information shown in Exhibit 2-5, but in tabular form. In Exhibit 2-6, the columns are organized from left to right in the order in which the PAMR finding is made.
- Exhibit 2-7 shows the policy area conditions for year 2005 conditions, and
- Exhibit 2-8 shows the policy area conditions forecasted for the year 2030 Constrained Long Range Plan (CLRP), a long range forecast scenario similar to one that would be used in the analysis of master plans.

In each of the graphic exhibits the results for each of the 21 Policy Areas are indicated by a point on the graph. In addition, the average results for all arterial roadways countywide is shown by a labeled point on the graph.

This PAMR test indicates that two Policy Areas are found to be inadequate for the year 2013:

- The Germantown East Policy Area
- The Gaithersburg Policy Area

This finding is indicated in Exhibit 2-5 by the fact that these two areas are to the lower left of the line dividing adequate and inadequate policy areas. This finding is indicated in Exhibit 2-6 by the fact that the Relative Arterial Mobility is lower than the Arterial Mobility Standard.

The North Bethesda Policy Area and Fairland/White Oak Policy Areas are also close to being inadequate, but are on the "adequate" side of the dividing line.

Comparison of the trends from 2005, 2013, and 2030 provides the following conclusions:

- As the County both matures and anticipates limited transportation infrastructure financing resources, vehicle congestion experienced by individual system users will increase. This finding is demonstrated by the fact that the point measuring countywide average conditions "moves" toward to the bottom of the graphic in successive horizon years. This finding is not surprising and matches the findings in other recent long range planning studies.

- Over time, the relative attractiveness of transit for County residents will increase. This finding is demonstrated by the fact that the point measuring countywide average conditions "moves" toward the right of the graphic in successive horizon years. This finding reflects the fact that significant new transit services such as the Corridor Cities Transitway and the Georgetown Branch portion of the Purple Line are assumed to be in place by 2030. However, the finding also reflects the fact that as vehicle speeds decrease, speeds for transit systems on exclusive alignments, such as Metrorail and MARC, while not becoming faster in an absolute sense are yet becoming faster relative to the auto.
- In each horizon year, most policy areas are found to have adequate transportation system performance while two or three Policy Areas are found to have inadequate performance. In general, the 2013 conditions tend to be relatively poor in the I-270 corridor but to improve by 2030, as significant investments are assumed in the form of the Corridor Cities Transitway, I-270 widening, and Midcounty Highway.

As indicated by comparing Exhibits 2-5, 2-7, and 2-8, the PAMR is suitable for considering areawide conditions for multiple horizon years and alternative land use and transportation scenarios. **Staff finds that this test is desirable as both a regulatory tool as well as for long-range planning needs such as assessing the long range balance between land use and transportation in master plans**.

Mitigation for Applications in Policy Areas with Inadequate PAMR

For Policy Areas which are found to be adequate, an applicant must still comply with the Local Area Transportation Review procedures and any other applicable development requirements, but no additional actions are required under PAMR. Applications in Policy Areas with a PAMR finding of inadequacy have several options by which they can mitigate the finding of inadequacy and move forward to LATR. (Staff proposes to retain the prior definition of a *de minimis* impact being an application that generates five or fewer peak hour vehicle trips and should not be subject to PAMR).

Trip Mitigation. As was the case in PATR, an applicant can choose to enter into a binding Trip Mitigation Agreement (TMAg) under which up to 100% of the projected peak hour vehicle trips would be removed from the roadway by implementing Transportation Demand Management (TDM) techniques applied to the applicants trips, or potentially to a combination of properties (so that an applicant could still generate some trips if the mitigation program removed an equal number of trips from other sites in the same Policy Area).

Trip Reduction Through Provision of Non-Auto Amenities. The LATR Guidelines allow applicants to mitigate roadway congestion impacts to some extent by the provision of non-auto transportation amenities that will enhance

pedestrian safety or increase the attractiveness of alternative modes of travel. The table of allowable amenities and their corresponding vehicle trip credits is excerpted from the LATR in Exhibit 2-9 (and the CLV standards referenced in Exhibit 2-9 are presented later in Exhibit 2-13). Such amenities include sidewalks, bike paths, curb extensions, countdown pedestrian signals, bus shelters and benches, bike lockers, and static or real time transit information signs. These amenities can be provided in exchange for vehicle trip "credits", with both the credit value and maximum potential trip reduction credit (from 60 to 120 peak hour vehicle trips) dependent upon the LATR congestion standard. Staff recommends that these provisions be accepted in their entirety as a PAMR mitigation tool.

Implementation of Roadway Capacity. The applicant can mitigate trips above the limits included in the LATR Guidelines for non-auto amenities by constructing link-based roadway network capacity. The conversion rate between vehicle trips and lane miles of roadway is provided in Exhibit 2-10. The values in Exhibit 2-10 are derived from regional estimates of vehicle trip length by trip purposes and uniform per-lane capacities for roadway functional classes that should be applied countywide. Several conditions apply, as noted in Exhibit 2-10:

- The number of lane miles in Exhibit 2-10 reflects total capacity provided (so if an applicant were to widen a roadway by one lane in each direction, the total minimum project length would be half the length listed in the table)
- The roadway construction or widening must have logical termini (for instance, connecting two intersections)
- The roadway construction must occur in the same Policy Area as the proposed development
- The roadway construction must be recommended in a master plan

Implementation of Transit Capacity. Staff estimates that on average, the typical Ride-On bus serves approximately 30 peak hour passenger trips. Staff recommends that an applicant be allowed to mitigate inadequate PAMR conditions by purchasing 40-foot long hybrid electric fleet vehicles for the Ride-On system, including 12 years of operations funding, at the rate of 30 peak hour vehicle-trips per fleet vehicle.

Provision for payment in-lieu of construction. Staff has found that, due to changing conditions, good implementation policies may quickly become outdated. For instance, the LATR Guidelines encourage the provision of "super shelters", but as a result of the Clear Channel Communications agreement, this option is no longer acceptable to DPWT as a mitigation option. Payment of a fee in lieu of facility implementation is often criticized as ineffective because implementation by the public sector may not be as prompt or because the funds may be spent on a program or in a geographic area without a strong nexus to the development providing the funding. However, payment of a fee in lieu of

construction should be accepted for both PAMR and LATR in cases where a good faith effort to implement the facility can be publicly demonstrated and the Planning Board finds that a desirable improvement cannot feasibly be implemented by the private sector but that the same improvement or an equivalent alternative can be implemented by a public agency at a later time.

PAMR "Frequently Asked Questions"

1. How and when might the PAMR system be modified? One concern with any new regulatory system is that as the system is applied, the results may be counterintuitive or actually create irreconcilable conflicts with other policies. Staff recognizes that many readers might feel that the proposal described in this report does not yield intuitive results regarding transportation system adequacy. Yet one advantage of this system is its relative transparency. Staff suggests two ways that the system could be adjusted by policy makers by working simply with Exhibit 2-5 and without affecting the underlying methodology:

- The line dividing "adequate" from "inadequate" in Exhibit 2-5 could be defined differently. One way would be to draw a generally diagonal line connecting the midpoints of each LOS threshold rather than the minimums reflected in the stair-step shape. Staff recommends that use of the LOS minimum standards is generally more defensible in a regulatory process.
- The equivalency between Transit LOS performance and Arterial LOS standards could be adjusted to be more stringent, so that for a Transit LOS of B, the Arterial LOS standard would be set at LOS D rather than at LOS E. Staff recommends the equivalency proposed (where A matches to F, B to E, and C to D) based on the symmetry inherent in the application of a six-stage quality of service scale.

The current growth policy review is a deliberative process, appropriate for considering changes to the County's regulatory structure. The implementation of the PATR system in 1986 included several months of public deliberation. To date, the discussions of PAMR have taken place primarily at the agency staff level.

The PAMR uses many of the concepts established in the PATR, so the PAMR may be somewhat more familiar, and acceptable, to stakeholders and require less discussion than the adoption of the PATR in 1986. The Planning Board's outreach efforts proposed during the first two weeks of May will provide a useful opportunity to collect comment on the PAMR proposal. The feasibility of transmitting a fully-developed second-tier test from the Planning Board to the County Council by May 21 should be assessed after considering public comment.

Should the County Council adopt the PAMR system, or one like it, staff proposes to reassess policy area adequacy on an annual basis and consider changes to

the measure tools and processes on a biannual basis. The annual changes would include extending the horizon year to maintain a six-year forecast horizon, updating pipeline development, regional demographic assumptions, and CIP/CTP assumptions accordingly, and reassessing the relative transit mobility and relative highway mobility for each policy area. The biannual review would allow the Council to consider procedural changes. The MWCOG model structure is a state-of-the-art forecasting tool, which by definition means it is in a nearly continual state of evolution. Staff expects that every two to three years we will update our travel demand model to keep pace with the MWCOG process.

Any of these annual changes (procedural or assumptions regarding land use and transportation systems) might cause policy areas to shift between adequate and inadequate over time. Certainly one intent of the system would be to pursue land use and transportation decisions through both the development review and capital programming processes that would enable policy areas with poor transportation system performance to be improved to reach adequacy. As was the case with PATR, the key to minimizing uncertainty associated with annual changes is to establish clear timeframes for both policy area changes and their effective dates as applied to development applications.

2. Why retain the current Policy Area geographies? In the 2003 and 2005 reviews of growth policy procedures, the Planning Board staff assessed some transportation measures according to the five subareas used in the Transportation Policy Report (TPR). The Appendix to this report includes an update on the "Proportional Staging" alternative test using those five subareas. Some County Council members expressed interest in 2005 in pursuing a new geographic definition that would result in a geographic unit that would fall somewhere between the five TPR subareas and the 21 Policy Areas (not including MSPAs and TCPAs).

Staff uses a concept called a "superdistrict" for providing trip distribution guidance to preparers of LATR studies. There are 11 superdistricts defined in the LATR Guidelines, as indicated in Exhibit 2-11. For some geographic areas, the superdistricts might make sense in a regulatory arena. For instance, the superdistricts essentially mirror the two Policy Areas inside the Beltway. The superdistricts also combine three other sets of Policy Areas. Combining Cloverly with Fairland/White Oak and Aspen Hill with Olney may make sense in the regulatory arena.

However, in and around the I-270 corridor the superdistricts don't make sense from a regulatory perspective for several reasons:

- The independent municipalities of Gaithersburg and Rockville are logical independent Policy Areas; the superdistricts don't make that distinction.

- The Policy Areas adjacent to the municipalities, including Derwood, Montgomery Village/Airpark, and the R&D Village, have no independent identity in the superdistrict model.
- Potomac, North Potomac, and Darnestown/Travilah are logically combined into one superdistrict but have very different land use and transportation policies
- Damascus is not differentiated from the rest of the rural area; another solution that is pragmatic for trip distribution but not for implementing transportation policy.

As far as the TRAVEL/3 travel demand forecasting model is concerned, these alternative reporting geographies such as planning areas, policy areas, or superdistricts are merely reporting tools. They are not used for modeling travel behavior; they are used to report results and to regulate development activity. There has been some interest in modifying policy area geographies to match transportation corridors, for example, in the belief that it will better capture actual travel behavior. However, t*he TRAVEL/3 model forecasts travel demand throughout the entire MWCOG region, regardless of the geographic unit for which the results are reported.* So while the consideration of the reporting *purpose* is important in considering the selection of the reporting *tool*, the selection of the reporting tool does not change the underlying travel demand model results.

There is a benefit to having policy area boundaries as small as possible while allowing results to be reported with validity. Smaller policy areas mean less averaging of congestion conditions. There is also some benefit to having policy area boundaries that are generally consistent with master plan and sector plan boundaries (with some exceptions) so that ongoing travel monitoring can be tied back to master plan objectives.

3. Why not have staging ceilings in PAMR? One significant difference in the philosophy behind PAMR as opposed to PATR is that once a finding is made regarding Policy Area adequacy, no further analysis is required to track jobs and housing totals. Staff recommends this binary approach for three reasons:

- Approaching mitigation from a vehicle-trip basis as opposed to a jobs/housing basis is a more straightforward calculation of impacts
- The tracking of pipeline development against staging ceilings need not be concerned with the tracking of public sector development (such as the number of jobs at NIH)
- The concept of adequacy can be thought of as similar to a positive or negative remaining staging ceiling. A policy area determined to be inadequate can be though of as having a negative staging ceiling for both jobs and housing.

Finally, staff notes that the staging ceiling concept, while familiar to proponents of PATR, was unique to the transportation arena. By removing staging ceilings in favor of a pass-fail system, the policy area test for transportation would be made consistent with the policy area test for schools.

4. Why aren't more Policy Areas given a failing grade? The PAMR results for 2005, 2013, and 2030 each show that most areas have acceptable levels of mobility as currently defined. The primary reason for this finding is the use of the 2000 Highway Capacity Manual urban street level of service criteria, which reflects a an acceptance of rolling delays on urban streets that may be less stringent than some would expect but that staff finds appropriate for link-level analysis.

Rockville Pike in North Bethesda is often cited as both a key segment of Montgomery County's "main street" and an emblem of undesirable roadway congestion. Staff conducted a series of travel time runs for the MD 355/I-270 study last fall, measuring travel time in either direction between Strathmore Hall in North Bethesda and the Woodmont Country Club in Rockville. This 2.7 mile segment of MD 355 has a posted speed limit of 40 MPH, so that the travel time at free-flow speeds would be about four minutes. The typical observed travel time was eight or nine minutes. A nine-minute trip includes five minutes of delay, which would be unacceptable if it were accrued at a single intersection, but averaged over a 2.7 mile trip, results in an average speed of 18 MPH, or 45% of the free flow speed. Per the Highway Capacity Manual, the urban street LOS for this segment is LOS D; perhaps not great, but certainly consistent with staff expectations for highway mobility in an urbanizing area with high quality transit options.

5. If we have new PAMR standards for arterial congestion, should we also change the LATR standards? Staff recommends that the LATR congestion standards (expressed in terms of Critical Lane Volume, or CLV) should be retained as they currently exist, ranging from an 1800 CLV in MSPAs and a 1400 CLV in rural policy areas. Two arguments could be logically made for changing the LATR standards in response to implementing PAMR.

First, some might argue that the LATR standards should be adjusted to reflect the PAMR Arterial LOS standards. This adjustment would result in LOS C or D congestion standards for nearly all Policy Areas in the County, far more stringent than today's standards. However, the LOS industry standards for roadway links (per the PAMR) and roadway intersections (per the LATR) are not directly linked; they are apples and oranges.

Second, some might argue that if the Council reinstates a second-tier test, then the LATR standards regarding CLV and the 30-trip threshold requiring a traffic study should be "reset" to their values prior to the FY 03 Growth Policy. Staff recommends that both the tighter LATR congestion standards (except in MSPAs)

and the more stringent requirement to conduct LATR studies for applications with more than 30 vehicle trips remain appropriate. Both the current congestion standards and vehicle trip thresholds provide greater opportunity to implement improvements (which may be non-auto amenities in addition to intersection widening) concurrent with new development.

6. Should Metro Station Policy Areas be exempted from the PAMR test?
From an accounting perspective, the inputs and outputs for Metro Station Policy Areas (MSPAs) and Town Center Policy Areas (TCPAs) have been incorporated into the reports for their "parent" policy areas. For example, the values listed in this report for the North Bethesda Policy Area include the Twinbrook, White Flint, and Grosvenor MSPAs as well as the remainder of the North Bethesda Policy Area outside the MSPAs.

Staff recommends that the PAMR also incorporate the MSPAs within their "parent" policy areas. In other words, if the North Bethesda Policy Area were to be found inadequate, this finding would by definition extend to Twinbrook, White Flint, and Grosvenor MSPAs. This recommendation may appear to be inconsistent with current policies that progressively encourage growth in MSPAs. Staff makes this recommendation to apply PAMR to MSPAs and TCPAs for several reasons:

- Traffic generated by development within MSPAs does have an impact outside the MSPA and frequently this impact extends outside the bounds of the LATR study area. The PAMR test is more appropriate than the LATR test for addressing this impact.
- As we encourage increasing proportions of development into MSPAs, we also allow an increasing proportion of development to bypass the second-tier test; more than one-third of our forecast residential growth is within MSPAs.
- Our transportation needs are severe enough and funding sources scarce enough that exemptions to any potential source for implementing transportation improvements should be minimized.
- Our MSPAs have matured as developable land has become more scarce so that financial incentives to encourage redevelopment in MSPAs are of decreasing value to the County
- Because the PAMR mitigation tables are based on vehicle-trips (rather than the measure of jobs or dwelling units applied in PATR), transit-oriented development in MSPAs already gets a "discount" by virtue of higher transit mode shares and therefore lower vehicle trip generation rates as compared to development outside MSPAs.

Staff suggests that if the Planning Board or County Council find that, based on current County policies promoting smart growth, MSPA developments should not

be fully subjected to the PAMR requirements, staff suggests three potential alternatives to the full PAMR test. Developments in MSPAs could be:

- Allowed to apply for the Alternative Review Procedure (with double the transportation impact tax and a formal Trip Mitigation Agreement) in lieu of passing the PAMR test. This policy was in effect during the final years that Policy Area Transportation Review was in effect;
- Subject to a discount (perhaps 50%, per the transportation impact tax discount) in trip mitigation or capacity requirements; or
- Be exempted from the PAMR test but subject to a different test, such as a cordon capacity analysis; or
- Fully exempted from the PAMR test.

Other Potential Policy Area Level Tests

In responding to the Council's request to reconsider PATR, staff considered six other approaches to a second, policy area level, transportation test to supplement LATR. These approaches are summarized below:

- **PATR 2003 Using Total Transportation Level of Service and an Average Congestion Index (ACI):** This approach is similar to what was used previously in the PATR with some refinements in accounting for the quality of available transit service.
- **Proportional Staging**: Allow development based on the proportion of the transportation system as a percentage of the master planned development potential (proportional facility staging)
- **Cordon Line Capacity:** The capacities of roadways and transit entering and leaving an area is used in setting the development levels within the area (Such an approach was used at prior times for both the Silver Spring and Bethesda CBD's for setting the overall development capacity of those areas).
- **Corridor Analysis**: The capacities of parallel roads and transit are taken together to determine the overall system capacity serving specified subareas of the County (Such an approach is used in parts of Florida).
- **Jobs/ Housing Accessibility**: This approach would measure opportunities to match available housing locations with available employment locations within a given generally acceptable travel time budget.
- **Travel Time Variability**: This approach would consider the consistency of expected travel times from one day to the next with a particular concern for "Travel Time Reliability", which is a measure that is of increasing importance to many transportation service providers, particularly for transit service and goods movement, as well as for most travelers in private vehicles.

Each of the potential alternative procedures was rated according to how well it satisfies several characteristics that we judge to be relevant to the Board, Executive, and Council as well as to the broader stakeholder community. These characteristics include the following:

- **Importance** – are the factors measured of interest to constituents (residents, business interests, and decision-makers)?
- **Relevance** – are the factors measured appropriate to considering the transportation effects of growth?
- **Coherence** – are the test results understandable to the constituents and are the results from different scenarios intuitive to the decision makers and stakeholders?
- **Reliability** – does the test measure what it says it does, and can the results be replicated?
- **Availability** – is the data observable and available today for current conditions and can that measure reasonably be forecast to represent future conditions?

Exhibit 2-12 shows how the staff recommended Policy Area Mobility Review (PAMR) compares to the alternative approaches considered.

Exhibit 2-12. Characteristics of Alternative Tests to Supplement LATR

Alternative Approaches	Characteristics of Desirable Alternative Approaches					
	Importance	Relevance	Coherence	Reliability	Availability	
					Current	Future
Policy Area Mobility Review	**Good**	**Excellent**	**Fair**	**Excellent**	**Good**	**Good**
Policy Area Transportation Review	Fair	Excellent	Poor	Fair	Good	Good
Proportional Staging	Fair	Poor	Excellent	Poor	Good	Good
Cordon Line Capacity	Fair	Poor	Fair	Excellent	Excellent	Good
Corridor Analysis	Good	Poor	Fair	Good	Fair	Poor
Jobs/Housing Accessibility	Fair	Excellent	Poor	Good	Good	Good
Travel Time Variability	Good	Poor	Excellent	Good	Fair	Poor

As shown in the table, most of the potential approaches meet several of the indicators in a good or excellent manner, but are fair or poor at one or more of the criteria. The recommended Policy Area Mobility Review is good or excellent at more characteristics than any other alternative. Staff finds the coherence of the process remains its weakest point, but that the PAMR coherence is an improvement over the PATR coherence. Descriptions and the staff review of each of the potential approaches are summarized below.

Policy Area Transportation Review (PATR) using Total Transportation Level of Service and an Average Congestion Index (ACI): This approach is what was used previously in the PATR. The general strengths and weaknesses of PATR were previously described in the description of PAMR.

Staff also considered more minor adjustments to PATR to better account for the quality of available transit service without reliance on a quantitative measure. Such modifications would generally follow the Five-Group Framework identified in the *Staff Draft Policy Element* of the *2003 – 2005 Annual Growth Policy Report* that identified five basic types of transit service areas.

The intent would be to have a Policy Area Group System that would be more sensitive to transit availability and have each group be associated with a range of standards of average roadway congestion – the ACI standards. Thus an investment in a sufficient amount of improved transit service could more likely result in an increase in the staging ceiling for an area because the policy area "moved-up" within it's group, rather than needing to move from one group to another in its entirety. The limitation to this system, however, is that the minor changes desired to allow an area to "move up" incrementally within its group require a quantitative analysis tool to ensure that judgments are not arbitrary. Staff therefore does not recommend pursuing this approach further for regulatory purposes.

Proportional Staging: This was an option that staff has analyzed in depth in both 2003 and 2005, and the Council has expressed continuing interest in. Proportional staging is attractive because its basic premise – providing planned transportation capacity at the same time as planned development – most closely meets the definition of APF. **However, the proportional staging process has a fatal flaw** in that there is truly no "end-state" condition for either development or transportation service in Montgomery County. Adding new projects to plans increases the overall potential system capacity, but immediately reduces the amount of system that is "complete" since the overall is then larger.

The most compelling example of this fatal flaw is that the addition of a new transportation service in the master plan, such as the adoption of a Purple Line alignment east of Silver Spring, would have exactly the opposite effect of that desired. Because the Purple Line would increase the master planned transportation capacity, the current and programmed transportation would

immediately be a lower proportion of master planned capacity. Therefore, the adoption of a Purple Line amendment would immediately reduce the current status of any policy areas it affects. The headline might read, “Council adopts Purple Line amendment; places Silver Spring in moratorium”. However due to the interest in this procedure in the past, details of the latest analysis are available in the Appendix to this report. While this tool is inappropriate for regulatory work, it might be useful as an indicator of progress in capital programming.

Cordon Line Capacity measures traffic entering and leaving a policy area compared to the roadway capacity at the policy area boundary, or cordon. Cordon line capacity is a concept that has been applied several times during master plan reviews. In the case of the Silver Spring CBD, the cordon line capacity is already a Growth Policy measure. The availability and use of transit is taken into account in an overall manner by the use of mode share and trip generation estimates.

Policy area boundaries often follow natural or manmade features, such as stream valleys or railroad lines, which create transportation capacity constraints. Thus in such cases, the remainder of the traffic volumes crossing into and/or out of these areas may appropriately reflect roadway capacity constraints. In many other cases, however, cordon lines do not reflect roadway capacity constraints and planned congestion relief is not associated entirely with improving capacity at the cordon lines. For instance, in the Fairland/White Oak Policy Area, the ICC will increase cordon line capacity. However, in Eastern Montgomery County traffic congestion is most greatly associated with travel along and across US 29. Even without the ICC, significant improvements in east-west travel within the Fairland/White Oak Policy area are being implemented by building grade-separated interchanges, an improvement that would not be reflected in a cordon line capacity mechanism.

Corridor Analysis is similar to our previous policy area review procedures in that it looks at the average volume to capacity ratio for several combined facilities against a standard. The corridor analysis process has been used in some locations in Florida as part of their “concurrency analysis” of development. The procedure defines the higher classification roadways, the freeways and arterials, in a parallel direction and combines their capacity and demand. This process is similar to **screenline analysis**, a tool commonly used to examine facilities crossing a defined point, such as a stream valley. In some applications the capacity of nearby transitways are also counted. We used this tool extensively during the Transportation Policy Report analysis and are using it again in the MD 355/I-270 Corridor study. However, the corridor analysis has the same limitations as PATR and PAMR but is further limited as its application is only for selected parallel facilities.

Jobs/Housing Accessibility measures how many opportunities for matching housing with jobs exist within a given travel time budget (such as a 45 minute trip from any given starting point). From a planning agency perspective, this may be the purest measure of the balance between transportation and land use. Jobs/housing accessibility can be improved by either providing additional transportation system capacity (achieving greater accessibility by increasing the geographic coverage area within the travel time budget) or by reallocating land uses (achieving greater accessibility by increasing the number of destination points within a smaller geographic coverage area).

A primary concern with the accessibility measure, however, is that it is not important to constituents, as not all jobs are created equal. While we can reallocate theoretical jobs/housing totals, the jobs that may locate in a housing-heavy area such as Olney may not have the same value to Olney residents as jobs that locate in a jobs-heavy area such as Bethesda. A secondary concern is that the measure is not easily understood. For instance, a typical Montgomery County resident may today reach many thousands of potential jobs within a 45 minute trip. But most residents only want to reach one job, and the job is defined by the type of work it entails, and many other issues not related to transportation. The value, therefore, of increasing the number of potential jobs 20,000 or 40,000 with a new transportation link is of limited importance.

Travel Time Variability considers the consistency of expected travel times from one day to the next. Transportation system travel time reliability is a measure that is of increasing importance to many transportation service providers (particularly for transit service and goods movement) and for all travelers. Travel time varies based on many external factors. Non-recurring delay is the term often used, where vehicle crashes and other incidents are perhaps the most notable, but other factors of equal importance in determining variability include weather conditions, special events, and system maintenance activities. The transportation service industry continues to improve data collection, analysis, and forecasting tools to assess travel time reliability. However, the information systems in place needed to make decisions based on reliability are still several years away. Further, while travel time variability is of importance to the County, it relationship to growth policy is not very strong. This characteristic is currently reported as part of the Department's Highway Mobility Report, and can be a useful indicator of system performance without being the basis for growth policy decisions.

LOCAL AREA TRANSPORTATION REVIEW

The current Local Area Transportation Review (LATR) process applied to all new subdivisions is consistent with the Institute of Transportation Engineers (ITE) Recommended Practice on Traffic Access and Impact Studies for Site Development (TAAISD), the national document that guides studies for new development reviews. The Montgomery County procedures have been, and continue to be, among the most closely documented and, in some respects, most stringent in the country. For example, the threshold for requiring a traffic study on new or amended development is 30 peak hour trips in Montgomery County, while the TAAISD suggests that a 100-trip threshold is appropriate. The use of congestion standards based on different parts of the County, related to the amounts of transit available, with the most congested locations being the Metrorail station areas, is also very progressive in relation to other locations.

Summary of Information Influencing Recommendations

No significant changes to the LATR philosophy or standards are recommended by staff, but we recommend some amendments to the Council's Growth Policy. The rationale for each of these is described below.

1. Requiring an LATR study for the Alternative Review Procedure in Metro Station Policy Areas. Section TA1 of the current growth policy states that an applicant following the Alternative Review Procedure "need not submit any application or take any action under TL Local Area Transportation Review". However, the LATR Guidelines page 9 states that the applicant must conduct "a traffic study to identify intersection improvements and/or trip mitigation measures that would have been required." This was adopted by the Board based on their acknowledgement that knowing the potential impacts was valuable to staff in determining potential capital facility projects and roadway modifications. Staff supports the LATR position and recommends the Growth Policy statement be amended to say that the applicant "need not take any action to implement measures identified in the study submitted per TL Local Area Transportation Review."

2. Revising the practice for sites being expanded. The "30 trip" threshold for requiring a traffic study applies to both existing and future trips generated by the development site. This is a necessary provision required to discourage property development in a piecemeal fashion that would avoid the LATR study altogether. One, perhaps unintended, consequence is that if a large property (say, the Life Sciences Center) applies for a minor amendment that changes the number of peak hour trips generated from 1,750 to 1,751 trips, that property should, under the guidelines, perform a traffic study with "five rings" of intersections to document the effects of the single increased trip. Staff recommends that the guidelines be amended as follows:

A) Allowing an increase of five peak hour trips to avoid a traffic study altogether based on “de minimis” logic.

B) Basing the number of signalized intersections in the study on the increased number of peak hour trips rather than the total number of peak hour trips, in cases where use and occupancy permits for at least 75% of the originally approved development were issued more than twelve years prior to the LATR study scope request.

3. Allowing payment in lieu of implementation for non-automobile transportation amenities in hardship cases. The LATR Guidelines allow applicants to take vehicle trip credits for implementing amenities such as offsite sidewalks, bike paths, bus shelters, bike lockers, and Intelligent Transportation System (ITS) components. Staff finds that this is an excellent tool to guide smart growth, wherein turn lanes can essentially be converted to pedestrian amenities. The implementation of these features is a challenge, however, due to evolving and sometimes competing interests among reviewing and implementing agencies. The most pervasive example of this challenge relates to the DPWT agreement with Clear Channel Communications regarding bus shelter implementation. Based on agreements with Clear Channel Communications, DPWT has not been able to support developer-installed bus shelters, even in locations where there may be concurrence on need. Payment in lieu of implementation has been suggested, but the accounting required to track payments to individual segments of sidewalks or shelters is not practical and payment into a general countywide fund is often not satisfying to local constituents. However, where needs exist and developer implementation is not feasible, the payment to a general fund, followed by a good-faith effort on the part of County government to address site-specific concerns, appears most pragmatic. Staff recommends that the guidelines be amended to indicate that in cases where DPWT, DPS, an MDOT agency, or WMATA, concurs in writing with the need for a proposed offsite improvement, but that any other of the same agencies states in writing that the offsite improvement should not be constructed by the applicant, the applicant be allowed to contribute payment to the County in lieu of constructing the improvement. Staff understands that a new, more flexible project or program may need to be established in the CIP to support this approach.

4. Requiring documentation that traffic mitigation or trip reduction measures were considered in all cases. Based on previous Council Growth Policy Actions, “the Planning Board has the authority to select either trip mitigation agreements, non-automobile transportation amenities, or physical road improvements (or a combination thereof) as the required means to relieve local congestion. Priority will be given to non-physical improvements in Metro Station and CBD Policy Areas.” Throughout the County, staff has noted community interest in pursuing trip reduction measures in lieu of physical improvements. Staff therefore recommends that in all LATR studies where a physical

improvement is recommended, the study document the consideration of mitigation or non-auto amenity improvement alternatives and the reasons why physical improvements were selected.

5. Requiring studies to be submitted by certified professionals. Staff recommends that the LATR studies be submitted by a registered Professional Engineer (P.E.), Professional Traffic Operations Engineer (P.T.O.E), or Professional Transportation Planner (PTP).

6. Intersection Data Base and Data Collection. With the elimination of Policy Area Transportation Review, the Council directed the Planning Board to prepare an annual report documenting traffic congestion trends in the County. Called the Highway Mobility Report, the most recent edition of this study was prepared in the summer of 2006. This report is possible due to the development over time of a GIS-based intersection data repository at the Planning Department. All the counts of intersections made by DPWT and the Maryland State Highway Administration, as well as counts made as part of the development review process for LATR, are entered into the Department data base for use in analysis of the system conditions. The database includes information from traffic counts for different years; more up-to-date data for a greater number of intersections would significantly improve the value of the analysis. **Expanding this database over time with a more robust intersection count will make monitoring of current (and therefore future since this is the starting point) conditions more comprehensive, as well as allowing for verification of developer-provided counts. This would require higher levels of funding for this activity.**

7. Intersection Critical Lane Volume (CLV) Standards. The Council requested the Board to consider the changes that were proposed to the LATR standards in 2005. The most significant consideration in 2005 was to revise downward a number of the CLV standards. Staff does not support this recommendation. The current standards and those used in 2003 and for several years before are shown in Exhibit 2-13, with the change made in the 2003-2005 Growth Policy. All CLV standards except those in Metrorail Station Policy Areas were lowered by 50. The recommendations for use of the Policy Area Mobility Review procedures are intended to address in part the concerns about the necessity to further reduce intersection CLV standards due to congestion since it creates an additional areawide test.

Background Information on the LATR Recommendations

Some changes to the LATR process have been suggested during prior critiques. These changes are discussed below in terms of their strengths and weaknesses. Staff does not recommend any significant changes to the LATR process. We do recommend one amendment to the LATR sections in the Council's Growth Policy, as reflected in the recommendations.

Should the County use a delay based intersection analysis process, such as the procedures from the Highway Capacity Manual (HCM) of the Transportation Research Board? This has been raised a number of times, and several detailed work sessions have been held with the Planning Board and Council over the past years. Interestingly, the "planning" procedures in the HCM have been evolving over time, beginning as variations on the complex delay based process used for current signalized intersection analysis, to the current process that is more like our Critical Lane Volume procedure. However, in our review we have consistently found the shortcomings of the HCM procedures too great to warrant a change to our current process. These shortcomings include:

- The need to use software to conduct the analysis, making the calculations less transparent. A full use has desirable information such as signal timing and other information on the vehicle mix, such as truck volumes, that is not available in the future conditions we are dealing with in LATR tests.
- The results are generally unreliable at and above the "capacity" of the standard intersection, our 1,600 CLV levels, making it not usable in situations such as the Metrorail stations, where we have found that acceptable congestion can be maintained well above this level.
- There is a lack of a real world connection between the calculated delay and the actual observed delay. So using this process would not provide information about the expected actual delay, but would just be another calculated outcome.

On the positive side for our CLV procedures, it is ideal for the planning applications we apply it to, where often the only known information is the volumes and number and type of lanes. We have enough experience with it now that we know what levels of congestion are associated with the different CLV levels, and can fine tune these to reflect different public policies.

Should there be an LATR test in the Metrorail Station Policy Areas? The issue of appropriate standards for intersections in urban areas such as the County Metrorail stations and CBDs is a complex one. Density of development brings with it significant levels of auto use, even with high transit use. The challenge is to accommodate the vehicles at some acceptable level, and yet retain a transit supportive environment that encourages walking and bicycling. Montgomery County has been successful up to now in this with a variety of policies that have provided the needed roadway capacity primarily via public infrastructure improvements. Staff recommends that this system be maintained, with strong incentives for each development in these areas to maximize non-auto use, create good walking environments, and pay appropriate fees for improvements to be provided at the most effective locations by the County and State.

Should the LATR test be more multimodal? One emerging national trend in traffic impact studies is to include non-auto modes in the tests. Montgomery County has addressed this in several ways already:

- A pedestrian impact statement is part of every LATR study, stating how the development will impact pedestrians. Staff can use this to assure that problems identified are mitigated in the process.
- The congestion standards vary according to the availability of transit options, with greater congestion levels tolerated where transit options are robust.
- A wide variety of off-site non-auto alternatives are available to the applicant, to get trip credits in lieu of making intersection modifications.
- The Board has the ability to require demand management rather than intersection improvements in a situation where it felt the community or environmental impacts of the improvements would be detrimental.

One issue to be addressed is the **need for checking pedestrian crossing times at urban area intersections**. This has some value, but is an operational traffic control tool controlled by DPWT and can change between the time of the LATR study and when the development is open. One approach might be for the Council to set a single County policy on acceptable crossing times for which DPWT would be responsible for implementation.

The applicant has the ability to propose demand management/ trip reduction actions that could mitigate some, or even all, the site trips, and this can be accomplished in a wide variety of methods identified by them an agreed upon by the Board and DPWT. Our staff recommendation on having each applicant show that non-roadway improvements were considered is our approach to this valid issue.

OTHER ISSUES RAISED BY COUNCIL

The first two issues below were included in the Council Resolution for comment by the Board. These are also discussed from a slightly different perspective in the Infrastructure Financing section of this report. The third topic was requested at the first Interim Report, and is one that has come up often concerning transportation analysis.

Accounting for Federal Facilities in Montgomery County

The topic of how to account for possible future Federal employees at large employment centers in the County has been extensively discussed over the years in relation to Growth Policy. Since the Federal Government is not subject to the Growth Policy, the main issue is how and when to count the traffic generated by Federal facilities as background traffic. Department staff suggests that a somewhat more proactive approach be taken than in the past, which did not monitor Federal employment closely and waited to count traffic generated by new Federal facilities, such as the relocation of the Food and Drug Administration, until the project was fully-funded in the Federal budget. *Staff recommends monitoring federal employment at federal installations on an annual basis and counting the traffic from new or expanded federal installations as soon as the increases are forecast with reasonable certainty.*

A short summary of the issues follows. This discussion centers on a limited number of large federal facilities where jobs are congregated, including: National Institutes of Health, Food and Drug Administration at White Oak, the Walter Reed Annex, the National Naval Medical Center in Bethesda, and to a lesser extent federal agencies in privately owned buildings such as National Oceanographic and Atmospheric Administration in Silver Spring, and the Nuclear Regulatory Commission in North Bethesda.

How to best treat large Federal agencies within the County growth policies requires considering the consequences of different approaches. One basic assumption is that all the employees at the site are already being accounted for in any intersection counts or other data collection. Thus, it is only future growth that is at issue. There are several perspectives on this.

- If the Federal employees who may come to the site are counted as pipeline or otherwise given the status of approved development, then desired local growth could be denied due to lack of transportation system capacity, or facilities oversized if the growth does not take place.
- Alternatively, if the future employees are not accounted for and they do come to the site, congestion over the standards may occur.
- Determining with precision the timing and amount of future growth is difficult since these activities are often dependant upon funding each year

by Congress, and changes that occur in agency missions and staffing. The agencies are not under any legal obligation to meet local transportation requirements or to adjust their facility plans to conform to local land use and public facility goals. Much of our commentary to federal agencies is via the National Capital Planning Commission, which does have some authority over the master plans and facility plans of the agencies. Agencies also do not have an obligation to report employee levels, but they have been cooperating with Planning staff and providing updated estimates and forecasts of installation employment for the annual Economic Forces study.

The County's most effective approach has been one involving an agreement by the agencies to emphasize reduced peak hour trip making through strong demand management programs, often accompanied by a written agreement with the Planning Board. The most effective of these programs has been with the Nuclear Regulatory Commission, but National Institutes of Health has also been a good partner, as has Walter Reed Annex. Food and Drug Administration growth is accompanied by a significant roadway modification program, and efforts to assure adequate local bus service to the site are on-going. The Base Realignment And Closure (BRAC) mandated growth at National Navy Medical Center Bethesda will have potential roadway effects, and studies to identify these are underway with good cooperation from the Navy and others involved on the Federal side. A continuation of these policies is recommended by staff.

Considering "through traffic" in the development review process

Some percent of the trips on the roadway network at any time of the day are going through the County, meaning neither a beginning nor end in a County location. Most of these are on the Interstates (I-270 and I-495) but some are on the major arterials such as US 29. The County approach to these type of trips has been to limit the number of lanes available at the entry points into the County on the northern side through caps in the master plans. Consequently, the master plan for Clarksburg and Vicinity has a maximum of six lanes for I-270 where it goes into Frederick County. The US 29 bridge over the Patuxent River at the Howard County line is a maximum of four lanes total.

Any forecasting done with the transportation model takes into account all these trips, since it uses the land use from the surrounding jurisdictions and the full regional roadway and transitway network. Thus, the forecasts used for transportation facility planning and master plans, which always have a future year horizon and use a travel forecasting model, account fully for through trips.

Another issue is whether some accounting for through trip growth is desirable for Local Area Transportation Review. The LATR process requires the applicant to take all the approved development in the study area as background to the

analysis. This assumes that all the approved development will develop to the full extent of the approval. An analysis done several years ago of projected intersection congestion from traffic studies versus the actual congestion found that for at least the first six years after the study, the projections were well above the actual traffic levels. Only after about eight years did the actual volumes reach and exceed the projections. By that time the effect of additional development beyond that in the study is probably at work. So there has not been data that would show that growth in through traffic is making the LATR analysis incorrect, and staff recommends no change to the LATR process to account for growth in through trips.

Responses to LATR issues discussed in 2005

In the Growth Policy Resolution No. 16-17, Council directed the Board to provide analysis and recommendations on "…the current LATR test and alternatives to it, *including those considered during the 2005 review of the Growth Policy*" (emphasis added). The following is staff response to the LATR issues found in the November 14, 2005 memorandum to Council on the Growth Policy from Deputy Staff Director Glenn Orlin.

Tighten the number of intersections to be studied by different sized development. Planning staff finds the current guidelines are conservative from a public policy perspective, and we do not recommend changes to the current requirements in the Growth Policy. As distance from the site increases it becomes less pragmatic to allocate smaller and smaller proportions of the site traffic to individual intersection turning movements. Staff is very aware of the Council's concern for this topic, and we have been rigorous in the application of the study area definition. Current guidelines are now resulting in larger developments studying 20 or more intersections, sometimes including ones miles from the site. We see the current requirements as sufficient to insure the impacts are effectively analyzed.

Concerning whether intersections outside the County would be analyzed, staff would recommend against this requirement unless it is for information purposes only. Other jurisdictions have their own procedures and objectives for the intersections within their control.

Require a link capacity analysis. This analysis is now incorporated in the PAMR recommendations, which are based on part on the capacity and demands on the roadway links of the transportation network. A specific link analysis is not needed in the LATR procedures.

Tighten the LATR standards. This is discussed in detail in the LATR section of this report.

Address queuing in the LATR standards. There is now a queuing analysis procedure in the LATR Guidelines, which is applicable in Metrorail Station Policy Areas where an intersection exceeds 1800 CLV under total traffic conditions. This comes from the objective of insuring that traffic in our most congested areas can operate effectively, without "gridlock" which is caused when one intersection backs up through another upstream, blocking cross-movement. The current procedure is one of calculating marginal change from the current operations, and can work well in a closely spaced intersection network such as found in the Silver Spring and Bethesda CBD's.

However, queuing in many situations is a function of the signal timing and phasing, which can be changed, and of larger traffic movements such as on-ramps to the Beltway. Staff finds that outside of the current procedures for the MSPAs, addressing queuing would require applicants to use a simulation program. These are expensive and complex and the results are very sensitive to variables such as signal timing and percent of trucks and buses in the traffic stream. If the Board and Council wish staff to investigate this aspect further we can do so. However, a review of queuing may best be done and reported as part of the annual Highway Mobility Report, and not associated with specific development approvals.

Using Transit to Reduce Roadway Congestion

The question of how to use transit or other non-roadway capacity actions to reduce congestion is one that the Council and others have raised on the context of the Growth Policy. This is a very complex topic that has generated many professional articles and books, with approaches and findings evolving over time. Staff expects that the rewards and risks of relying on demand reduction as an alternative to roadway capital facilities will be a topic of significant discussion during the Growth Policy process. We would offer the following as starting points, based on our review of recent literature.

- Congestion mitigation from other than increasing roadway capacity is best accomplished with a combination of methods – parking pricing and supply, corridor specific high quality transit enhancements so that transit trips are competitive with the auto trip, transit and pedestrian oriented land uses, and other Travel Demand Management strategies are ones that have proven effective.
- The addition of bus service in an attempt to capture choice riders for a trip that is not competitive with the automobile travel time and comfort will likely have little impact on overall delays attributable to congestion. Research on actions that cause choice riders to shift from auto to transit has found that a variety of attributes are important including: trip time relative to auto, reliability, headways (wait times), safety, and comfort. Having a congested roadway system with buses in the traffic stream will

not in itself therefore cause a mode shift if these other attributes are not found in the transit services available to the auto users. This problem can be mitigated to varying degrees by with a variety of approaches to give travel preference to transit vehicles, or to separate auto and transit travel lanes.

- New research on pedestrian access to rail services has indicated that accepted walking distances may be greater than has previously been found. The potential effects of these findings may vary with the actual kinds of trips that were surveyed (walk from home to station as opposed to walk from station to work), and more details on this research should accompany further discussion on this aspect.
- When auto users are attracted to transit services, they create space on the roadway that can reduce congestion. As with other capacity increases, over time this can induce other auto users to shift routes, or travel further, somewhat reducing or moving the positive effects from the most desirable routes to lower category, less desirable ones.

Recent use of PATR for assessing master plan balance

Even after the PATR test was eliminated from the Growth Policy in 2003, staff continued to apply the Total Transportation Level of Service and Average Congestion Index tools to assess the "balance" between master planned land use and transportation. The Planning Board and County Council also used the results from this tool in their deliberations, with master plan policies customized to reflect the needs of each plan area. The consideration of land use and transportation balance for the four most recently adopted master plans are described below; the PATR test featured prominently in three of them:

- The 2005 Olney Master Plan includes a staging element that limits the first stage of development to a total of 15,235 dwelling units, based on the PATR standard and concerns regarding potential development densities, particularly in the mixed-use Town Center.
- The 2006 Shady Grove Sector Plan includes an aggressive transportation staging plan that includes a requirement that developments generating more than 100 vehicle trips enter into formal Trip Mitigation Agreements and includes construction of the MD 355/Gude Drive interchange, or comparable capacity improvement, as a prerequisite for the second stage of development. These staging elements were developed in part due to the fact that the Average Congestion Index for the Derwood Policy Area was forecast to be substandard in 2025 regardless of the range of actions included in the Shady Grove Sector Plan (which includes a small geographic subset of the Derwood Policy Area).
- The transportation analysis for the 2006 Woodmont Triangle Sector Plan built upon the Bethesda Stage II analysis completed in 2004. The overall

land use/transportation balance was not discussed in great detail primarily because the 2004 staging analysis confirmed that the forecasted 2025 ACI was well below the PATR congestion standard.

- The 2006 Damascus Master Plan included carefully crafted land use recommendations to retain the recommendation that roadways outside the Town Center remain at two lanes, based on Average Congestion Index. The fact that the Plan was in balance for the forecast 2025 conditions was a key consideration in the recommendation not to reserve right-of-way for a future Damascus Bypass.

Staff recommends that the PAMR system proposed for regulatory review in this report should also be adopted for considering the adequacy of master plan transportation / land use balance.