Final Draft
2007-2009 Growth Policy

Toward Sustainable Growth for Montgomery County: A Growth Policy for the 21st Century

Prepared by the Montgomery County Planning Board
The Maryland-National Capital Park and Planning Commission

May 21, 2007

Toward Sustainable Growth For Montgomery County: A Growth Policy for the 21st Century

Along Montgomery County's northeast boundary

Statement of the Montgomery County Planning Board, M-NCPPC

INTRODUCTION

The 2007 Growth Policy marks an important evolution in the management of growth and change in Montgomery County. It moves from its historical roots as guideline for *staging* new development in concert with the provision of basic public facilities, such as transportation and schools, toward managing growth and change in ways that are *sustainable* and monitoring their consequences for the County's economy, environment, and social equity.

This evolution in growth policy is possible because of the cumulative experience of the past 20 years and the development of better ways of modeling and measuring growth and its consequences. It is necessary because of heightened awareness of consequences of inappropriate or unwise development choices for a maturing County. This is especially the case in light of the widely recognized implications of global climate change for development patterns and practices that conserve energy and protect the natural environment. Thus, the 2007 Growth Policy is an initial step in a transition from measuring public facility deficits and restricting development until the facilities able to support it are provided, to a framework that more fairly allocates the marginal costs of growth and also provides guidance for master plans, the Capital Improvement Program (CIP), and the development review process to encourage patterns and practices of development (including redevelopment) that, over time, produce better and more sustainable places in which to live, work, conduct business, and enjoy leisure time.

Although the analysis on which this policy is based is relatively complicated, the public policy principles are straightforward and should be kept at the front of deliberations and action on the details. Those principles are:

1. Development should pay the marginal costs of the capital facilities needed to serve or accommodate it. This facilitates concurrent provision of facilities and long-term fiscal stability.
2. In the aggregate, development should foster a more robust and diverse economy, and a balance of jobs and housing opportunities.
3. Development, at a minimum, should not degrade environmental resources, and at its best, should produce net environmental benefits and stronger linkages between the built and natural environments.
4. Development projects should be designed and built "green" to foster energy and resource conservation.
5. The design of the built environment should foster alternatives to the automobile for a wide variety of trips.
6. Activity centers should provide a mixture of uses and activities.
7. Infill development should respect the scale and integrity of host communities.
8. Development patterns should encourage social interaction through attention to human scale, the pedestrian environment and streetscape, and gathering places.
9. The consequences of growth policies should be monitored through the use of indicators in order to assess the effectiveness of policy in achieving outcomes and to identify areas for timely adjustments.

Applying these principles involves a conceptual adjustment from thinking of growth policy as primarily an instrument governing administration of the Adequate Facilities Ordinance (APFO) through the denial or delay of subdivisions until facilities—primarily roads—meet certain standards for levels of service. While growth policy continues to perform its traditional function, our recommendations are designed to perform a broader set of functions. These include:

Reinvigorating Growth Policy's role in establishing priorities for the Capital Improvements Program, which was an original impetus for its creation. Over time, the focus migrated to an almost exclusive focus on infrastructure needed for new development. As the County matures, equal attention needs to be given to the needs of established communities. This is especially the case when an increasing proportion of development activity involves redevelopment of older centers and infill in established communities. And as the staff report demonstrates, demographic changes can have greater effects on demand for facilities and services in

much of the County than physical changes to the built environment. Furthermore, standards of “adequacy” evolve with public understanding and tastes.

Shifting from reliance primarily on a strategy of denial or delay of development projects until such time as adequate facilities are provided or programmed and financed, to a strategy of requiring all development to cover the marginal cost of the additional facilities needed to provide it with an adequate level of service. This has been recent practice for water and sewerage facilities, which are fee-based. It has not been the case for the two most expensive facilities — transportation and schools. Aside from the occasional Road Club, in which developer-members share the cost of a needed road segment or interchange, or where a subdivision is required to ameliorate inadequacies through intersection improvements or by agreeing to a traffic management program, the needed incremental transportation improvements have been made primarily through public expenditures paid for by all County taxpayers. Transportation impact taxes and, more recently, school impact taxes do not currently cover actual costs of needs generated by either new development or population turnover in established neighborhoods.

Linking Growth Policy and Area/Functional Master Planning more closely so that infrastructure staging and design elements advance growth policy objectives, and growth policy, in turn, implements the General Plan and Master Plans. The biennial growth policy report should include analyses of the status of capital improvements recommended by master plans and their capacity to serve the residential and economic activities recommended for planning or policy areas, and a review of development on the ground and in the pipeline in order to assess whether the growth policy and master plans are working in concert. If there are substantial incongruities, the growth policy should recommend appropriate changes. This review can also identify important priorities for the next CIP. Master Plans ultimately define *adequacy* in terms of the way in which facilities serve residents and firms. In this regard, design can have a substantial effect on the carrying capacity of both the engineered and natural systems in the immediate planning area, in a corridor, and in the County at large.

Providing a biennial analysis of the pace and patterns of growth, the factors influencing development and demand for public facilities, and the economic, environmental, and social consequences of public policies that guide growth and development. One of the most important functions of a biennial report on growth policy should be assessment of whether policies are producing the expected and desired outcomes, and if they are not, recommendations for improvement.

Working within this conceptual framework, the Planning Board recommends that the Council adopt the following elements in its 2007 Growth Policy Resolution:

1. **The adequacy of transportation facilities to serve a development project should be subject to a two-part test that assesses the adequacy of transportation facilities for the Policy Area and the impact of the project on local capacity.**

    a. *Policy Area Mobility Review (PAMR) should be adopted as the best method of measuring the adequacy of the transportation system serving the policy area within which a project is proposed.* Metro areas should be included in the Policy Areas of which they are a part for purposes of this test of adequacy. We recommend this approach because it has a well-established basis in transportation research and neither depends on nor is subject to subjective manipulation; it focuses on the mobility experience of the traveler in terms of the relative time it takes to reach one's destination by driving or using public transportation. This approach acknowledges the tradeoff between auto and mass transit. It is simple and inexpensive to administer. It is relatively easy to understand by both the public and applicants. It can be annually revised to account for changes to the condition of either mode, and it can be used to assess the transportation performance of Policy Areas in order to make recommendations for transportation improvements in both the CIP and master plan amendments.

    The PAMR test is dichotomous—an applicant either passes or fails it. If failed, the applicant must provide transportation mitigation measures in addition to any actions taken to meet Local Area Transportation Review requirements and payment of the transportation impact tax (discussed below). The board agrees with staff's "stair step" approach to applying the PAMR test, as a more objective approach. Although in some instances it may be counter-intuitive in that travelers may still experience congestion induced delay on some roadways, the objective of this policy is to encourage the choice of transit when it enables people to travel in less time than it takes to drive. In this sense, relieving perceived congestion (even when the total elapsed trip time may be well within acceptable bounds) can defeat shifting travel behavior to transit. Changing the stair-step to a continuous line that divides the areas of adequate service from those with inadequate service does not have a sound theoretical or statistical basis.

    b. *Local Area Transportation Review (LATR) should continue to be used in the subdivision approval process.* This process is well-established and state-of- the-art. It requires developments

generating more than 30 trips to prepare a traffic study by a certified professional. While no major changes are recommended in LATR standards, we do recommend the following adjustments in administration:

i. A traffic study should be required for the Alternative Review Procedure involving Metro Station Areas. This will assist the staff and Board in evaluating an applicant's trip mitigation proposals, and assist in identifying and prioritizing needed public investments.

ii. Payments-in-lieu of non-automobile transportation amenities should be permitted in cases where Metro or the County cannot or will not accept the optimal mitigation measures agreed to by the applicant and Board. This will permit a transit-oriented project to proceed and apply the payment to a more acceptable mitigation project.

iii. LATR practices should be revised to allow applications for expansion of an existing or approved project to focus on the incremental increase rather than the entire project.

iv. To ensure an increased emphasis on non-auto solutions to transportation capacity deficits, the policy should require that all applicants document their consideration of traffic mitigation or trip reduction measures.

v. The Transportation Planning staff should expand its intersection database to provide an improved foundation for traffic analysis and for verifying developer-provided counts. This will require additional funding in the FY 2009 budget, or a supplemental appropriation if instituted before July 2008.

vi. All applicant traffic studies must be conducted by a licensed or certified professional.

2. **The test for the adequacy of public school facilities should be revised so that the threshold that triggers a School Facilities Payment is 110 percent of MCPS program capacity.** "Program capacity" is the definition of capacity used by the school system. In recent years the difference between "program capacity" and the capacity definition used by the growth policy has increased due to class-size reduction initiatives and other factors. Setting the standard at 110 percent of program capacity should eliminate the concern about tying the growth policy test too closely to Board of Education programming decisions, such as specialized uses of some classrooms or other changes in curricula or programming that can change capacities even though the physical facilities are unchanged.

a. *Revision of the School Facilities Payment threshold would mean that several clusters would be designated "inadequate" and residential development in those clusters would be required to make the payment.* The School Facilities Payment would be required at the high school level in the Wootton cluster; at the middle school level in the Clarksburg cluster; and at the elementary school level in the Blake, Clarksburg, Einstein, Kennedy, Northwest, and Wheaton clusters.

b. *The Planning Board recommends that the School Facilities Payment be set at the cost-per-pupil of school infrastructure, which is the same basis that the Board recommends for the school impact tax.* The payment would be $32,524 for each full-time equivalent (FTE) elementary school student, $42,351 for each FTE middle school student, and $47,501 for each FTE high school student. *The Board recommends that the School Facilities Payment be assessed only at the level that is inadequate and for the number of students the development generates at that level.* For example, the Blake cluster would be inadequate at the elementary school level. Each single-family detached home generates an average of 0.32 elementary students, so the School Facilities Payment for a single-family detached home in the Blake cluster would be $10,407 ($32,524 x 0.32).

c. *A moratorium on development in an area should be imposed if schools are operating at 135 percent of MCPS program capacity.*

3. **The normal time limits for the validity of a finding that public facilities are adequate to serve a project should be limited to five years.** The time limit is for receiving the last building permit and, thus, does not require that the project be completed, although most projects are completed in five years. Large and complex projects should be allowed a longer validity period, based on a staging plan, but initial validity periods of greater than 10 years should not be granted. For the Planning Board to approve a validity period longer than five years, the applicant must present a staging plan for the project, the Board must find that the longer period has a public benefit, and it may require additional transportation mitigation measures. Traffic studies are generally valid for about five years. Moreover, projects with long validity periods but low activity levels essentially hoard capacity, and can prevent other projects that are ready to build from proceeding due to lack of available capacity. This is a particular problem in Metro station areas and other locations where development advances County policy goals.

a. The Planning Board should have clear authority to require a new traffic study when reviewing a request for extension of the validity

period for APF. New traffic studies are not appropriate in all extension cases, but the Board should have explicit authority to require a fresh study where changes in capacity, facilities, traffic, or development activity; any or all of which may have affected capacity that was available when the application was initially considered.

4. **New development projects should be assessed impact taxes that reflect the marginal costs of expansion of school and transportation infrastructure capacity required to serve new development and sustain current levels of service.**

a. The cost of marginal additions to the transportation network necessary to support person-trips generated by new development should be recovered through transportation impact taxes allocated according to trips generated by different kinds of land uses. The transportation impact tax should be based on the total cost of new transportation capacity in the approved Constrained Long-Range Plan that is associated with new development. The tax rate for each type of land use should reflect its relative trip generation rate. This approach excludes projects that involve improvements designed to improve service to existing development.

Table 1 (on the following page) reflects actual impacts on transportation facilities and their costs for each type of development in Metro areas, Clarksburg, and the rest of the County. *For policy reasons, we recommend that hospitals not be assessed the infrastructure tax.* They are important parts of community infrastructure and are not profit-making institutions. It is useful, however, to understand the fiscal effect of their impact, and to use the information in this table in calculating the need for capital improvements to the transportation system.

Bio-Science facilities are included as a separate category in the current impact tax schedule, but, like hospitals, are not assessed a transportation impact tax, as it has been the policy of the County to stimulate such projects. The Board does not find a justification for exclusion of such projects, which can generate substantial numbers of trips, from the tax. Because of their nature, however, they are often hybrid land uses, including some industrial and some office uses. We recommend, therefore, that the tax on Bio-Science and other mixed-use facilities be assessed according to the proportions of each use contained in the project.

Table 1. Projected Marginal Transportation Impact Tax Rates

	General	Metro Station	Clarksburg
Residential (per dwelling unit)			
Single-family detached	$8,380	$4,191	$12,572
Single-family attached	$6,856	$3,429	$10,286
Multi-family attached (except high-rise)	$5,884	$2,943	$7,591
High-rise residential	$4,204	$2,102	$5,422
Multi-family senior residential	$1,682	$840	$2,169
Non-residential (per square foot GFA)			
Office	$11.55	$5.80	$13.90
Industrial	$5.40	$2.65	$6.40
Retail	$18.80	$9.50	$22.55
Place of worship*	$0.55	$0.30	$0.65
Private elementary and secondary school	$0.75	$0.35	$1.00
Hospital*	$4.85	$2.40	$5.80
Other non-residential	$4.85	$2.40	$5.80

** The Planning Board recommends that hospitals be exempted from the impact tax and that houses of worship be charged at the current rates: General-$0.30; Metro Station-$0.15; Clarksburg-$0.35*

Places of Worship and Private Schools are included in the current impact tax schedule. The rates assigned to them are based on their forecast proportion of "Other Non-Residential" development. The new rates represent substantial increases for both categories. These rates should also be reduced or excluded for policy reasons. Religious institutions have unique traffic generation characteristics, which can vary by denomination, and they tend to generate traffic in off-peak periods. They are also important components of well-functioning communities and, thus, are candidates for reduced or nominal rates. *We recommend that their rates not be increased from current levels, as indicated in the footnote to the table.* Private Schools present a more complex issue, as some are proprietary, while others are parochial or non-profit. Private schools ameliorate the impact on public schools but they often generate large numbers of trips, particularly in the a.m. peak hours.

b. *The cost of marginal additions to school capacity necessary to serve students resulting from new residential development should*

be recovered through school impact taxes allocated according to the average number of students generated by each type of residential unit. The school impact tax should be based on the total cost of new school capacity associated with new development. This approach excludes new capacity designed to meet programmatic changes and demand for space generated by demographic turnover in the existing housing stock. It also recognizes that different types of housing tend to generate different needs at the three levels of public schools. The tax should apply to all new residential development, regardless of whether it is located in a cluster with inadequate capacity because the new residents in such communities are using capacity that has been paid for by all taxpayers of the County. The tax is a one-time payment for the marginal impact of new students on school facilities.

Table 2 contains the Board's recommendation for the school component of the infrastructure impact tax.

Table 2. Proposed School Impact Tax Rates

For each FTE Student, Each new housing unit of:	Would be taxed:
Single-family detached	$ 22,729
Single-family attached	17,112
Multi-family non high-rise	10,815
Multi-family high-rise	4,585

As the table suggests, this component of the infrastructure impact tax applies only to residential development. It applies to all such development, regardless of where it occurs in the County and regardless of the extent to which schools in the immediate cluster serving it are operating above or below capacity. As with the transportation component of the infrastructure impact tax, *its purpose is to fund the marginal cost of new development to the system, in order to sustain the current levels of service over time.* After all, new development benefits from investments that have been made by several generations of taxpayers in the infrastructure systems of the County. These one-time taxes represent "buying in" to a going system.

Once again, the County may decide, for policy reasons, to reduce or forgive entirely the tax on some units, such as MPDUs, workforce, or subsidized housing. It remains important to recognize, however, the costs such tax expenditures impose on the

school system, and to provide the necessary funding for them in the capital budget.

c. *The Board recommends that the transportation and school impact taxes be phased in over 12 months as follows: Impose 25 percent of the increase within three months; 50 percent in six months, and 100 percent in 12 months.*

5. **The Recordation Tax levied on housing sales, resales, and other housing transactions should be increased to help fund school improvements, modernizations, and additions.**

The impact of turnover in existing ownership housing stock on school capacity serving existing neighborhoods should be recovered in part through an increase in the recordation tax. About 80 percent of the growth in enrollment in the public schools is the result of demographic change in existing communities rather than new development. A slight increase in the recordation tax can recover some of these marginal costs. Although the recordation tax falls on new owners without school age children as well as those with children, it recognizes the importance of good schools to property values. Rental housing is another source of turnover that is typically much more rapid than the turnover of owner-occupied housing. Students living in rental housing are more likely to move frequently, which is an educational challenge that goes beyond issues of capacity. The Board was unable to explore this issue in detail and meet the Council's deadline; however, we suggest that the Board of Education, in its Growth Policy review, offer its perspective on the impact of rental housing turnover on enrollment.

6. **The FY 2007 Growth Policy resolution should direct the Planning Board and other County agencies to develop policy recommendations and adopt practices that foster high quality civic design in planning sustainable centers and communities, regulation of development projects, and construction of public facilities**

Design is an important instrument of Growth Policy on two levels: (1) At the macro, or Countywide level, it is concerned with overall urban form, which is reflected in the Wedges and Corridors General Plan. (2) At the micro level of corridors, centers, and neighborhoods, attention to civic design refocuses growth policy toward the effect of development on people and the quality of their experience as citizens, residents and workers. In contrast to the almost exclusive focus of traditional growth policy on hardware—public facilities and private vehicles—and its use as a tool to prevent premature development in certain locations in the County, the introduction of a design component helps direct development where it

can be more sustainable and provides guidance for the kind of development that should occur.

To encourage placing a high priority on improving the design of public facilities, the Planning Board and Executive agencies should cooperate on a design summit to develop consensus on measures to ensure design excellence becomes a core value in all public projects. Design excellence matters in dealing with issues of facility capacity. Creating mixed-use communities and pedestrian environments that encourage walking and use of transit frees roadway capacity for traffic. Green building and articulation of the built environment with natural systems can reduce adverse impacts of growth, such as excess energy consumption, and water and air pollution, which induce need for additional infrastructure. Changes to the Road Code can help create communities and centers that offer higher levels of safety, convenience, and interest.

Revison of the Zoning Ordinance and subdivision regulations should include provisions that establish standard expectations of and incentives for high quality civic design. Because much of the new growth the County will experience in the next generation will be higher in density than in the past, the effect of major projects on sense of place and the quality of life will be profound. Mistakes will be highly visible. The Growth Policy should empower planners and regulators to demand design excellence of applicants. *Master and Sector Plans should include design guidelines that lay a foundation that fosters development projects that aspire to more than meet minimum regulatory requirements.* In this sense, growth policy inaugurates a different way of thinking about growth and a new level of public and developer expectations.

7. **The Planning Board should monitor the sustainability of the development that results from implementation of the Growth Policy, and include in its biennial report information on changes in economic/fiscal, environmental, and social equity outcomes.** With assistance of an advisory group, a discrete set of indicators should be selected that can measure changes in key outcomes or conditions that are objectives of the Growth Policy. The initial set of indicators should make intuitive sense, be supported by data that is available at appropriate geographic levels and time series, enjoys a high level of confidence in its accuracy, and has strong relevance to growth policy objectives. The list below is illustrative, as is the listing in the staff report.

   Indicators of Facility Adequacy;
   - Policy Area Mobility scores
   - School Capacity
   - Accessibility of residences to public transit
   - Accessibility of residences to jobs

- Accessibility of residences to public parkland

Indicators of Fiscal/Economic Sustainability

- Unfunded CIP projects recommended in Master Plans
- Cost of Deferred Maintenance
- Per capita debt service
- Jobs: Housing ratio

Indicators of Environmental Sustainability

- Air Quality Action Days (Red & Purple)
- Stream Index of Biological Integrity
- Percentage of Impervious Surface
- Forest area/ tree canopy

Indicators of Social Equity

- Percentage of households paying more than 30% of income for housing
- The income gap between top and bottom quintiles
- Percentage of population with post-secondary education
- A public health index
- Labor force participation

SUPPORTING MATERIALS

The materials that follow are staff reports that support the Planning Board's recommendations. These are materials contained in *the Staff Draft 2007-2009 Growth Policy* that have been revised and updated to reflect the Planning Board's recommendations. The final section contains a draft Growth Policy resolution and proposed changes to the County Code that would be necessary to implement the Planning Board's recommendations.

Staff Report

Toward Sustainable Growth for Montgomery County: A Growth Policy for the 21st Century

Established neighborhoods north of Viers Mill Road

Staff Report Supporting the Montgomery County Planning Board's Final Draft 2007-2009 Growth Policy

Prepared by the Montgomery County Planning Department
The Maryland-National Capital Park and Planning Commission

May 21, 2007

Abstract

Title:	Toward Sustainable Growth for Montgomery County: A Growth Policy for the 21st Century. *Staff Report Supporting the Montgomery County Planning Board's Final Draft 2007-2009 Growth Policy*
Author:	Montgomery County Planning Board Maryland-National Capital Park and Planning Commission
Subject:	Recommendations for infrastructure financing, sustainable development, design excellence, and the administration of the adequate public facilities ordinance for Montgomery County, Maryland for 2007 – 2009
Source of Copies:	The Montgomery County Planning Department, 8787 Georgia Avenue, Silver Spring, Maryland 20910, 301-650-5600 *www.montgomeryplanning.org*
Date:	May 2007
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Abstract:	Montgomery County Code Section 33A – 15 establishes the process by which the Montgomery County Council provides guidance for the management of growth. The Code requires the Council to adopt a biennial Growth Policy by November of each odd-numbered year. In December 2006, the Montgomery County Council directed the Planning Board to complete its study of growth policy issues by May 21, 2007. This document contains the recommendations of the Montgomery County Planning Board on growth policy issues.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

The Maryland-National Capital Park and Planning Commission is a bi-county agency created by the General Assembly of Maryland in 1927. The Commission's geographic authority extends to the great majority of Montgomery and Prince George's Counties; the Maryland-Washington Regional District (M-NCPPC planning jurisdiction) comprises 1,001 square miles, while the Metropolitan District (parks) comprises 919 square miles in the two counties.

The Commission has three major functions:

1. The preparation, adoption, and from time to time, amendment or extension of The General Plan (On Wedges and Corridors) for the Physical Development of the Maryland-Washington Regional District in Montgomery and Prince George's Counties;

2. The acquisition, development, operation, and maintenance of a public park system; and

3. In Prince George's County only, the operation of the entire County public recreation program.

The commission operates in each county through a Planning Board appointed by and responsible to the county government. All local plans, recommendations on zoning amendments, administration of subdivision regulations, and general administration of parks are responsibilities of the Planning Boards.

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Final Draft 2007-2009 Growth Policy: Summary Staff Report

INTRODUCTION

This report contains the recommendations of the Montgomery County Planning Department for amending the County's Growth Policy. The *Growth Policy* is a resolution adopted by the Montgomery County Council that contains guidelines for administering the adequate public facilities ordinance, or APFO.

Although commonly referred to as a separate ordinance, the APFO is actually part of Montgomery County's subdivision regulations: Section 50-35 (k) of the County Code. The APFO was adopted by the County Council in 1973 with the goal of synchronizing development with the availability of public facilities needed to support that development. The introductory sentence states, "A preliminary plan of subdivision must not be approved unless the Planning Board determines that public facilities will be adequate to support and service the area of the proposed subdivision." How, exactly, the Planning Board should make that determination, is the focus of the Growth Policy resolution.

The Capital Improvements Program, or CIP, is the vehicle through which the County increases the capacity of its public facilities to support additional growth. One role of the Growth Policy is to determine how much additional growth can be supported by public facilities that are added to the CIP. Another role is to highlight where in the County additional public facilities are needed.

Between 1986 and 2003, the Growth Policy was adopted annually, and was called the *Annual Growth Policy*, or *AGP*. Many people still refer to the resolution as the AGP. Since 2003, most Growth Policy-related work is conducted every two years, although school adequacy is still reviewed by the Planning Board every year.

Since its inception, the focus of the Growth Policy has been the timing, or *staging*, of development and public facilities. The County's General Plan, master plans, and sector plans, determine the *amount*, *type* and *location* of development. Because of its name, many people expect the Growth Policy to be a typical policy document, containing the County's goals and objectives with respect to growth. Instead, the Growth Policy contains few broad policy statements but focuses on the administrative procedures needed to test the adequacy of public facilities when new development projects are proposed.

In spite of this, or perhaps because of this, the APFO and the Growth Policy has been the subject of much discussion, debate, research and study in the 34 years since the APFO was adopted. One of the documents accompanying this report is a history of growth management in Montgomery County. It is a testament to the importance and complexity of the growth management issue that many of its aspects have been studied in depth numerous times. This is particularly true of the two tests for transportation adequacy, called Policy Area Transportation Review and Local Area Transportation Review, and the test for school adequacy. It is also true for an equally difficult issue: finding sources of the funds needed to finance infrastructure.

One such comprehensive review of the Growth Policy occurred in 2003 and resulted in substantial changes that placed less emphasis on staging development and greater emphasis on generating revenues for infrastructure. In December 2006, the County Council adopted a resolution directing the Planning Board to conduct a study to revisit many of those issues.

This report responds to the Council's resolution. In simple terms, the resolution deals with three primary topics: (1) possible changes to the guidelines for administering the adequate public facilities ordinance; (2) setting desirable rates for new development's financial contribution to infrastructure; and (3) other ways to improve the County's approach to growth management now and in the future. This report is organized around these three main topics.

CONCEPTS AND THEMES

Staff developed a few concepts or themes to help us organize and evaluate the various growth management options that are the subject of this study. These concepts provided a basis for us to treat one type of public facility differently than another, to distinguish between new development and existing development's responsibility for increasing demand on public facilities, and to recommend whether the remedy for inadequate public facilities should be moratoria, developer contributions, or other means.

Point Facilities and Network Facilities

The adequate public facilities ordinance cites the following as public facilities by which development is to be regulated: transportation, schools, water and sewerage, and public safety (police, fire and health) facilities. These facilities differ in their characteristics, and hence must be measured differently. Schools and public safety facilities are what may be called "point" facilities, in the sense that they occupy "points" of land, relatively small spatial areas that stand alone within the larger area that they serve. For example, each school receives students from a

MONTGOMERY COUNTY COUNCIL RESOLUTION 16-17:
PLANNING BOARD STUDY OF GROWTH POLICY ISSUES
Adopted December 12, 2006

1) The County Council directs the Montgomery County Planning Board, in cooperation with appropriate County Executive agencies, to prepare an analysis of growth policy issues and recommendations for managing growth in Montgomery County. By May 21st, 2007, the Planning Board must submit:

   a) A recommended set of tools to manage growth and fund infrastructure as needed to maintain and enhance Montgomery County's quality of life, including:

      i) proposals to direct future growth and manage the pace of that growth to promote the objectives of the General Plan;

      ii) identifying and prioritizing the infrastructure needed to support existing and future residents, businesses, and visitors; and

      iii) recommendations to strengthen the relationship between the pace of growth and the provision of public facilities, services, and infrastructure.

   b) Recommendations to better coordinate the County's growth management and affordable housing goals.

   c) Analysis and recommendations regarding:

      i) the current test for public school facilities and alternatives to it;

      ii) the current Local Area Transportation Review test and alternatives to it, including those considered during the 2005 Review of the Growth Policy;

      iii) Reinstating a form of Policy Area Transportation Review;

      iv) Treatment of traffic originating from outside the County and/or to destinations outside County borders,

      v) Treatment of traffic generated by federal government installations in the County, and

      vi) Any other adequate public facilities-related issues the Board finds relevant.

   d) An update of Planning Board's 2005 analysis of the number, age, and other characteristics of projects in the pipeline of approved development. The Board must also analyze regulations governing the time limits for the validity period of a finding of adequate public facilities, including extension provisions.

   e) Recommendations for measuring the success and evaluating the outcomes of the County's growth and development policies.

2) The Planning Board must also analyze the County's impact tax program and ways to improve them, including analysis of the full impacts of growth and possible expansion of impact taxes for public benefits other than transportation and public schools.

3) The Planning Board must submit analysis and recommendations sufficient to allow County Council action on major recommendations prior to its August recess. The Planning Board may also submit recommendations for further study, analysis, and Council consideration.

4) The Planning Board must submit interim summary reports of progress on or before February 15 and April 15, 2007.

catchment basin of housing units, the boundaries of which are set by the School Board in accordance with educational criteria. Although the educational criteria include a variety of factors, the essential nature of the "adequacy" test is spatially static, being based on the number of students per classroom – a number that is assumed to not vary with time of day or ebb and flow of student volume over time and distance.

Transportation and water/sewerage facilities, on the other hand, may be called "network" facilities. In the case of transportation, the combination of road, transit, and pedestrian facilities form an interconnected web or network of pathways over which people travel in a wide variety of directions. This travel volume fluctuates widely over both time and space. The measurement of traffic capacity, therefore, must take into account variations in travel volume that derive not only from the size and shape of the channels through which it flows (analogous to classrooms spatially), but also from the desires and modes of people to travel to and from different destinations along these pathways. While school capacity is a static phenomenon, traffic capacity is essentially a dynamic phenomenon. Measuring traffic capacity is inherently a more complex matter than measuring school capacity. The water and sewerage system is also a network, and while considerably simpler than the transportation network, is subject to some of the same complexities.

Of course, we are primarily concerned with how the differences in the nature of point facilities and network facilities affect "adequacy' – that elusive balance between demand and capacity. It is comparatively easier to adjust the demand for and capacity of point facilities than to do so for network facilities. For a school, either adding classrooms or adjusting the service boundaries can rebalance demand and capacity. It isn't possible, however, to reassign some auto drivers to other, less-congested roads. Moreover, and more challenging, is the downstream effect – the source of demand for roads (and water and sewerage capacity) at one end of the network could be located a considerable distance "upstream."

Share of Responsibility: Existing and New Development

Another issue or theme running through growth management studies is: to what extent is new development "responsible" for increased demand on public facilities, and to what extent is increased demand the result of changing behavior of residents of existing development? The logical result of answering that question could be: new development should contribute toward new infrastructure an amount that is proportionate to its share of new demand.

Planning staff accepts that logic to an extent, but not entirely. There are a couple of thoughts that undermine the pure application of a principle of proportionate share. The first is that local government can legitimately place a higher priority on safeguarding the quality of life (that is, preserving the adequacy of facilities) for current residents than on providing for new residents. It is not that far from that thought to a position that, when public facilities are not adequate, it is fair to hold new development responsible for not making the inadequacy worse.

The second thought is that the value of land for development comes principally from prior public investments in infrastructure. A parcel of land has considerable added development

value once it is served by roads, water and sewer, schools, and public safety facilities. The public sector could seek to recapture some of the added value that its infrastructure investments have created, or not. But the fact of added value from previous public investments does weaken the argument that new development's only responsibility is to contribute to added infrastructure and only a small share of that.

Measures of Adequacy/Remedies of Inadequacy

In one of the interim reports, staff pointed out that the Growth Policy consists of two steps: *measures of adequacy*, and *remedies for inadequacy*. Over time, both have been adjusted to yield desired outcomes. The Growth Policy's school capacity standard isn't just the dividing line between acceptable and unacceptable school crowding conditions. It also reflects a judgment about the relative importance of school capacity to the overall adequacy of schools, the role that new development plays in school enrollment, etc. If one decides that these two relationships are weak, one could develop a test that is difficult to fail (a loose standard of adequacy), or one could have a stricter standard of adequacy but make modest additional requirements on new development when the test fails.

Staff's general preference is that the Growth Policy's standard of adequacy be as close as possible to what most people would consider the dividing line between acceptable and unacceptable. This principle guided our recommendations for Policy Area Transportation Review and the School Test especially. We recognize, of course, that "adequacy" is inherently subjective and that others will have their own, equally valid, viewpoint.

The options for remedies for inadequacy include: development moratoria, provision of public facilities by the public or private sector, and financial contributions by the private sector. Our guideline for evaluating these options has been: are they fair, and are they likely to result in improvements to the inadequate public facilities?

Staging Versus Payments (Time or Money?)

The original purpose for adopting an adequate public facilities ordinance is to synchronize the time of development and facilities. In practice, this has meant building infrastructure as expeditiously as possible, and restraining new development where it is not yet provided. The tool for staging, or pacing, development has been the staging ceiling – that point when the Planning Board may no longer approve additional development. When approved and existing development reach the ceiling, a moratorium is declared until the public sector adds more infrastructure.

In other jurisdictions, the blunt instrument of a strict moratorium has been softened by a moratorium of limited duration, say four or six years. In this case, a developer knows that the moratorium will last no longer than some predetermined amount. The locality gets additional time to provide needed facilities, if it has the financial resources to do so.

The use of *delaying development* has always had a competitor as the primary remedy for inadequate public facilities. That competitor is the *developer contribution* – either in-kind (providing more of whatever facility is inadequate) or by agreeing to reduce trips, by providing some other public benefit (such as affordable housing), or by making a payment to the County to be used for public facilities.

The in-kind contribution (called "developer participation" in previous iterations of the Growth Policy) had several conditions, among them: construction on the infrastructure had to precede construction on the development project, and the resulting combination of development + infrastructure could not make the situation worse.

"Developer participation" works most easily in parts of the County that are relatively undeveloped. This is because two of the necessary components are: a potential supply of larger development projects that can absorb the cost of substantial transportation improvements, and a long list of planned-but-unbuilt transportation improvements. This situation reminds us of the essential "lumpiness" of public facilities – an observation made in the first growth policies – that infrastructure typically comes in larger increments than private development, so it is not often easy to match a specific development project with a specific transportation improvement, for example.

At times, the County has sought to find ways to solve the lumpiness issue. One of these was the "road club," where developers could band together to build one or more roads needed for their collective projects. These arrangements could be complicated for the participants as well as the public sector, whose job it was to monitor them. Another was "partial-cost developer participation" which was intended to allow development to pay toward its share of a programmed transportation improvement. This provision was never used, probably because use was tightly controlled and the approval mechanism was elaborate. A third way was to allow developers to reduce their impact on inadequate facilities through trip mitigation programs that could include running shuttles to Metro stations, sponsoring carpools, or agreeing to limit traffic-generating operations during peak travel periods.

The issue of lumpiness goes away if the developer's contribution becomes a requirement to pay money rather than to supply infrastructure. There are several valid ways to assess a per-unit or per-job payment on new development to be used by the public sector for infrastructure. This would be a perfect solution from one perspective, but problematic from another: revenues from these payments are often not sufficient to pay for needed improvements. As a result, one might have lots of partially-funded, or a few fully-funded infrastructure projects – either situation is unsatisfactory if it leaves some areas with new development and inadequate facilities.

Allowing development to "pay-and-go" essentially eliminates the timing aspect of the APFO – development is not delayed – in favor of increased revenues. If revenues are insufficient to provide facilities to keep pace with approvals, then the pace of development and facilities is no longer synchronized.

A solution to that last problem is to raise fees so that they are sufficient to pay for needed infrastructure. This can result in some payment rates that are much higher than public officials and the private sector are used to seeing.

The prospect of very large development approval fees or impact taxes brings us full circle, perhaps: Very large fees might act as a *de facto* time delay (for those developers who prefer to wait for public infrastructure over making such a large payment. But they may be an attractive alternative for developers for whom a time delay would be a bigger penalty than a large payment.

The recommendations that follow are based on staff's judgments about the relative roles that *time delay* and *payments* play in the County's administration of the APFO.

Effect of Impact Taxes

The Saturday, April 28, 2007 *Washington Post* reported that Prince William County officials are proposing to increase the fees that developers pay the county for permission to build houses to $51,113 for each single-family detached house, $43,262 for each townhouse, and $26,545 for each multifamily unit. The article's headline was *"Higher Builder Fee Sought; Home Price Increase Feared."*

Among the issues that staff explored during this review of the Growth Policy: the potential for impact taxes to support County land use policies by encouraging or penalizing development in certain locations (or other attributes), and the possibility that impact taxes would have a negative effect on the cost of housing.

Our conclusions on this issue, facilitated by academic research and other widely-reviewed studies, are:

- Impact taxes are not "passed on to the homebuyer" but are instead recaptured by the developer by paying less for land, and
- Because of this effect, impact taxes are not an effective tool for steering development to certain locations.

A developer or builder typically cannot pass impact taxes onto homebuyers because he is already pricing his product at the highest price the market will bear. If the builder has determined that he can sell a new home for $500,000, he will not be able to sell that home for $520,000 just because the locality has imposed a $20,000 impact tax. Particularly as impact taxes become routine, the developer includes the impact taxes into his calculations of the cost to develop and finds economies elsewhere. Research shows that this is often done by bidding less for the developable parcel....in other words: passing the impact taxes onto the land seller. Over time, this might mean that large impact tax rates would not have the time delay effect discussed above.

In a tight housing market with escalating home prices, a builder may be able to recapture impact taxes through higher than expected profits on the sale of his homes, but that is not the

same as passing the taxes onto the homebuyer. There is also some research that indicates that when impact taxes result in a higher level of services in a community, the value of the homes in that community also increases.

If developers are successful in bidding less for land to account for impact taxes, then there is little benefit to the developer of choosing a low impact tax area over a high impact tax area. This makes theoretical sense and is borne out in the real world. San Diego imposed a very high impact fee (in the $80,000 range) on rural development but saw no slowing of development in rural areas.

Planning staff circulated two studies on this and related issues in mid-March to the Planning Board and the County Council.[1] One of these studies also looked at the effect of growth management on housing prices and displacement (pushing development to a different location). Staff's conclusions from reading these and other studies: the housing supply must be constrained on a regional basis (and not just in one or two jurisdictions) to exert substantial upward pressure on housing prices; zoning is the "growth management" tool that has, by far, the greatest effect on limiting the supply of housing; and adequate public facilities ordinances, unless they result in moratoria for long periods in large areas, have a weak housing price and displacement effect.

The Growth Policy and the CIP

The first set of recommendations in this report are designed to reinvigorate the Growth Policy's role as a source of information for capital programming. This is a role that the Growth Policy was literally "born to play" as it was a reason why the Growth Policy was instituted.

Our recommendations add some value to the historical focus of the Growth Policy, which has been on the infrastructure needed to support new development. We would now include in the biennial Growth Policy's CIP review increased attention to the needs of established communities. In part this is because the dividing line between "facilities for new development" and "facilities for established neighborhoods" is often blurry.

Growth Management Improvements

The Growth Policy is only one tool in the toolkit of the County's growth management system. Coordinating as it does with the CIP on a biennial basis, it provides the opportunity for the Council and Executive to pause, in the midst of the daily/weekly/monthly flood of decision making pressures, to take stock, from a larger time and spatial perspective, of the degree to which the County's land policies and fiscal policies are in balance with each other. Other equally, and in some cases even more, important tools for maintaining a high quality of life include: the General and community Master Plans; the Zoning, Subdivision, and Building Ordinances; and the coordination that takes place between the administrative decisions of the Planning Board and those of the various agencies and departments of government responsible for building and maintaining the service facilities of the County. Only good coordination across all these decision making points can effectively bring about and maintain a high standard of livability as growth and change occur over time.

In response to the Council's request for analysis and recommendations regarding other ways to enhance the growth management in the County, staff has prepared reports on two important topics that we believe should be kept in mind when considering the overall growth management system at this time. The first is on the topic of Sustainability, and the second on the topic of Design. Both are somewhat "conceptual" topics, in that they deal with goals and values that are still evolving in the public consciousness, and have not yet matured into precisely defined criteria such as those the Growth Policy deals with in regard to the APFO factors. But evidence from around the nation, and indeed the world, is strong that the future will require ever more attention to be paid to exploring their meaning and application by governments at all scales.

The mounting evidence that climate change presents a problem of enormous magnitude already has been recognized by the Council in numerous ways, including its recent public forum on this subject and its initiatives in finding ways to save energy and promote "green" buildings. "Sustainability" has become globally a one word shorthand for the idea that public policy should be designed to take into account the interaction of the environment, the economy, and social equity in guiding growth and making decisions about public investment. Considering how actions can reinforce improvements in all three areas can help the world avert the worst of the effects of global warming and adapt to the changes that are unavoidable.

A number of County agencies have begun thinking about and working on this issue. The staff paper on this topic is the Planning Department's contribution to this growing dialog. It is a preliminary work that evaluates how other places have approached this issue, and offers some suggestions for further refinement of how these insights might be developed further to keep Montgomery County in the forefront of creative public policy.

The Design report reminds us of the importance of good urban design to the perceptions of citizens that they live in a community that cares about its quality of life. As we know from the favorable public reaction to the streetscapes and building improvements made in recent years to the central business districts of Silver Spring, Bethesda, and Friendship Heights, good urban design is a highly valued commodity. It may be difficult to define, but there is no question that it is important. We believe it will become increasingly important in the future, as the County matures from a rural "edge" jurisdiction into a more mixed use "creative class" working and living environment.

This paper rehearses the ways that the Planning Department seeks to assist both the private and the public sectors to continually search for better design solutions in each of the decision points that naturally occur in the development process. *Sustainability* may be the new goal of good planning in the twenty-first century, but *Design* is the process by which it will be achieved. The roots of these two ideas, Sustainability and Design, are already deep in Montgomery County's growth management system. Elevating their profile and the public understanding of their value to the future, while challenging to be sure, should not be as difficult in this County as in many others without as much of a planning tradition.

ACCOMPANYING REPORTS

Immediately following this report are two background reports: *Montgomery County and Growth*, and *History of Montgomery County's Growth Policy*.

The Planning Department's Growth Policy recommendations that are summarized below are explored in detail in attached reports. These are:

- **APFO Reform Part 1**, which includes the Planning Department's recommendations for improving the Growth Policy's role in identifying and prioritizing new infrastructure. This report also contains Planning staff's recommendations for modifying the school adequacy test, the test for adequacy of other public facilities, and staff's analysis of the pipeline of approved development.
- **APFO Reform Part 2,** which addresses the Department's recommendations for transportation adequacy tests, including reinstating a form of Policy Area Transportation Review and modifying Local Area Transportation Review.
- **Infrastructure Financing,** which includes recommendations for modifying the County's impact taxes and other infrastructure financing issues.
- **A Vision of Sustainable Development for Montgomery County,** which addresses how to assure that all policy changes and physical investments in Montgomery County direct growth and development in a way that is sustainable.
- **Design Excellence: Tools to Achieve a Quality Environment,** which discusses the role that design plays in achieving Growth Policy, General Plan, sustainability, and other policy objectives as well as the planning and regulatory tools that could be strengthened to better ensure high quality design.

SUMMARY OF RECOMMENDATIONS

The Montgomery County Planning Department recommends several changes to the County's growth policies, including changes to the guidelines for the administration of the Adequate Public Facilities Ordinance (the "Growth Policy") and its infrastructure financing mechanisms. Moreover, Planning staff has identified opportunities to increase the application of principles of sustainability and quality design in the land use planning process.

Identifying and Prioritizing Infrastructure

Planning Department staff recommends **that the biennial component of the Growth Policy review be substantially expanded** to provide improved information and guidance for the Capital Improvements Program and other public decisions. The Growth Policy was designed to provide input to the Capital Improvements Program by identifying areas where public facilities are inadequate. Over the years, the Growth Policy has had varying success in meeting this responsibility. More recently, the Highway Mobility Report is succeeding in providing detailed analysis and recommendations for prioritizing roadway improvements.

Planning staff suggests that the biennial component of the Growth Policy include:

- An analysis of current and future pace and pattern of growth in the County and the factors affecting demand for public facilities in established communities.
- An update on the County's success in meeting a set of indicators (if the County agrees to institute an indicators program, such as a Sustainability Indicators program based on General Plan principles and more that Planning staff recommends). Sample indicators: percentage of development that is mixed-use and location within one-half mile of a transit station; percentage of non-SOV commuting trips; acres of impervious surface. These indicators may also include desired levels of service for public facilities that are not regulated by the APFO: parks, libraries, community centers, etc.
- An implementation status report for each master plan and sector plan, that will include a review of how planned development is proceeding, and whether the public actions/facilities in the plan are occurring in a timely way. If the plan contains a staging element, this would be an opportunity to review the current status determine if the Growth Policy is reinforcing or working against the staging envisioned when the plan was adopted.
- A comprehensive list of priority facilities that are recommended for addition to the Capital Improvements Program. The report may also recommend other public actions needed to achieve master plan objectives, or to improve the County's performance on its adopted set of indicators (if the County chooses to pursue an indicators program).
- The current biennial Growth Policy schedule requires a staff draft report in May and a Planning Board final draft in June in odd-numbered years. This schedule would result in Planning Board facility recommendations as the County Executive is beginning the biennial Capital Improvements Program cycle.

When the County Executive's Recommended CIP is released, Planning staff would use the Growth Policy recommendations and analysis as the basis for preparing comments on the CIP for Planning Board review and transmittal to the County Council.

Schools

Planning Department staff recommends **that the County revise the test so that the definition of adequacy more closely conforms to the MCPS definition of capacity** by lowering the threshold that triggers the School Facilities Payment. That threshold should be based on "MCPS program capacity," not "Growth Policy capacity" but should be inflated to avoid the problems that have kept the County from using program capacity in the past. In addition, for the purposes of determining if a School Facilities Payment is required, the practice of "borrowing" high school capacity should not be used. Staff recommends that the threshold be when enrollment reaches 110 percent of program capacity, which would cause development in the following clusters to pay the school facilities payment: Blake, Clarksburg, Einstein, Kennedy,

Northwest, Wheaton, and Wootton. If policymakers prefer to continue to use "Growth Policy capacity," staff would recommend that the threshold for the School Facilities Payment be set at the point when enrollment reaches 95 percent of capacity. This would cause residential development to pay the School Facilities Payment in Bethesda-Chevy Chase, Blake, Clarksburg, Kennedy, Northwest, Quince Orchard, and Springbrook.

Planning Department staff recommends **increasing the School Facilities Payment from $12,500 per student to $35,524 per elementary school student, $42,351 per middle school student, and $47,501 per high school student.** This figure is derived from per-student costs for new schools by type of school. If enrollment exceeds the capacity threshold in a particular cluster, the school facilities payment would equal the per student rate for the type of school exceeding capacity.

Planning Department staff recommends **retaining an upper limit so that when enrollment greatly exceeds capacity, development approvals in that cluster stop.** This upper limit has very rarely been exceeded, but when it was, new school facilities were promptly programmed. This suggests that this upper limit is serving an "alarm" function when enrollment and capacity are severely out of balance.

Planning Department staff recommends that **the County consider capturing development that occurs outside the subdivision process.** As smaller housing units are replaced with larger ones, or are expanded with additions, some additional student generation can be expected. There is sufficient academic study of this issue to legitimately link student generation to size of home. Although the total number of additional students is small, the County could consider applying the School Facilities Payment or the School Impact Tax to these properties.

Planning Department staff recommends **some technical corrections to the Growth Policy resolution regarding schools.** The current Growth Policy resolution implies that the Planning Board must continue to conduct the School test annually even if the Council fails to pass a new Growth Policy resolution, but explicit language is needed. The language in the Growth Policy concerning school clusters in municipalities is confusing, now that municipalities have passed APFOs that are more stringent than Montgomery County's.

Planning Department staff recommends **monitoring the Office of Legislative Oversight (OLO) review of indicators for Montgomery County Public Schools** to see if they serve as a basis for further modification of the School Test.

Water and Sewerage Facilities

Planning Department staff recommends **no changes to the adequacy test for water and sewerage systems.** For purposes of the APFO, our primary concern is the potential for new development to be approved even when water and sewerage systems are not adequate to support that development. Staff believes the current test, backed up by planning and implementation of system improvements, is working as intended.

Police

Planning Department staff recommends **no changes to the adequacy test for police service.** Planning staff reviewed public safety facilities and services in detail in 2005 and recommended no changes at that time. For police services in particular, staff noted that the number and location of police "facilities"-that is, police stations - is not closely related to levels of service. Staff suggests that there are benefits to having the Police Department participate in the Development Review Committee for Crime Prevention through Environmental Design (CPTED) review of new development.

Fire and Rescue Services

Planning Department staff recommends **no changes to the adequacy test for fire and rescue services.** Planning staff reviewed public safety facilities and services in detail in 2005 and recommended no changes at that time. For fire and rescue services in particular, staff noted that the number and location of fire stations is correlated to adequacy (as measured in response times) because, unlike police, fire and rescue personnel are located at a station until a call comes in. Staff's 2005 research indicated that the major challenge for adding stations was finding suitable locations and that the master plan process is the best mechanism for designating those locations. Montgomery County Fire and Rescue Services representatives participate in the master plan process, and MCFRS has an up-to-date master plan.

During the course of our study this year, staff noted several aspects of fire and rescue services that may be useful for making land use recommendations during the master plan process. These include the fact that the great majority of calls are for emergency medical services, which suggests that Planning staff discuss with MCFRS the possibility of identifying locations for emergency medical units in master plans. The observation that only 12 percent of calls are for fires, and that most of these are for brush and vehicle fires, suggests to Planning staff that there are opportunities to increase the use of smaller fire trucks in the fleet, which allows use of smaller fire stations and road turning radii. Planning staff raises these issues only from a land use perspective: larger parcels of land are becoming rare, and the future of neighborhood design depends in part on narrower streets with smaller turning radii.

Other Public Facilities

Planning Department staff **does not recommend adding to the list of public facilities tested in the APFO.** However, Planning staff's review of these facilities has prompted us to offer some suggestions about how the adequacy of these facilities can be strengthened. The chief suggestion has to do with the Growth Policy itself.

Planning staff recommends that **the Recreation Guidelines applied in the regulatory process be revised.** This project is included in the Planning Department's requested FY08 work program. Among the issues to consider: whether to eliminate provisions that allow developers to count existing public facilities as part of satisfying the recreational requirements for new development.

Planning staff's research indicates **that additional study of parking policies and procedures is warranted.** In this study, Planning staff reviewed Parking Lot Districts (PLDs) as a "public facility" for APFO purposes. Although we don't suggest that they be incorporated in the APFO, we note that broader application of PLDs can support trip reduction initiatives and serve revitalization objectives outside of Central Business Districts. County parking policies could bear re-examination, including the minimum parking requirements in the zoning ordinance.

Transportation

Policy Area Review

The Montgomery County Planning Department believes **that a second transportation test, in addition to Local Area Transportation Review (LATR), is desirable to stage growth in concert with the implementation of adequate public facilities**. However, based on the level of concerns regarding the importance, coherence, and reliability of the Policy Area Transportation Review (PATR), Planning staff staff recommends against reinstating the PATR system as previously defined.

Instead, 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.

Staff suggests that the Policy Area Mobility Review (PAMR) system 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, the Planning Department recommends that development applicants (other than those with *de minimis* impacts) given the following options to meet the policy area-level transportation conditions:

- 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

The Planning Department recommends **retaining the Local Area Transportation Review (LATR) congestion standards currently in effect, but recommends other changes to strengthen the intersection congestion test.**

Planning staff recommends **requiring an LATR traffic study from development that takes advantage of the Alternative Review Procedure in Metro Station Policy Areas**.

Staff recommends **revising 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.

The Planning Department further recommends: a**llowing payment in lieu of implementation for non-automobile transportation amenities** with the agreement of the DPWT, WMATA, SHA, or Maryland Transit Administration; **requiring documentation that traffic mitigation or trip reduction measures were considered in all cases**; and **requiring traffic studies be submitted by certified professionals** (Professional Engineer, Professional Transportation Planner, or Professional Transportation Operations Engineer).

Planning staff recommends **continuing the Highway Mobility Report** on a two year cycle, and **expanding the traffic data collection program** 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.

INFRASTRUCTURE FINANCING

Planning staff understands that the Council may devote the summer to addressing changes to the Growth Policy resolution itself and may defer discussions of impact tax issues to the fall. Staff has prepared "short term" infrastructure financing recommendations which focus on changing the tax rates only, which staff understands does not require changes to the County Code. Staff has also prepared "long term" recommendations, which principally focus on issues that would likely require more study and deliberation.

We have noted that the market eventually accommodates impact taxes by reducing land values, but we also recognize that developers will have varying abilities to adjust to abrupt increases in taxes. Planning staff believes that the period required for the market to reach a new equilibrium level could be fairly short, given the sophistication of the home building industry in managing risk, but this is not an issue we have explored in any detail. We also recognize that delays in implementing new impact tax rates in the past created a rush for building permits that was undesirable from a revenue-generation perspective. If the Council plans to take up impact tax issues in the fall, they may wish to direct staff of all relevant agencies to look into these issues before then, possibly with the assistance of economic consultants.

Short Term School Impact Tax Recommendation

The Planning Department recommends that the County adopt school impact tax rates that reflect the cost of planned increases in school capacity. The schedule of tax rates that would accomplish this goal is the following:

$ 22,729 single-family detached*
$ 17,112 single-family attached
$ 10,815 multi-family non high-rise
$ 4,585 multi-family high-rise

* For single-family units there is a surcharge of $1 per square foot for each square foot of gross floor area above 4,500 square feet to a maximum of 8,500 square feet (gross floor area calculation includes basement).

This proposed impact tax rate schedule reflects the marginal costs for schools associated with new housing. They are adjusted by housing type to reflect the student generation rates calculated from the *2005 Census Update Survey.* These rates would be more than double the rates that will go into effect in July, when rates will be adjusted for inflation.

Short Term Transportation Impact Tax Recommendation

The Planning Department staff recommends setting transportation impact tax rates at levels that reflect the full cost (approximately $1.2 billion) of planned increases in transportation capacity. The schedule of tax rates that would accomplish this goal is the following:

	General	Metro Station	Clarksburg
Residential (per dwelling unit)			
Single-family detached	$8,380	$4,191	$12,572
Single-family attached	$6,856	$3,429	$10,286
Multi-family attached (except high-rise)	$5,884	$2,943	$7,591
High-rise residential	$4,204	$2,102	$5,422
Multi-family senior residential	$1,682	$840	$2,169
Non-residential (per square foot GFA)			
Office	$11.55	$5.80	$13.90
Industrial	$5.40	$2.65	$6.40
Retail	$18.80	$9.50	$22.55
Place of worship	$0.30	$0.15	$0.35
Private elementary and secondary school	$0.75	$0.35	$0.65
Hospital	$0.00	$0.00	$0.00
Other non-residential	$4.85	$2.40	$5.80

In addition to being more closely tied to the cost of infrastructure, staff's methodology for calculating transportation impact tax rates varies from the current approach in some other ways. One of the more notable is that staff is basing the cost allocations on *total daily* auto trips,

rather than *peak period* auto trips. The result of this change is to allocate more of the costs to retail uses. Retail excepted, these rates would be an 85 percent increase over the rates that will go into effect in July, when rates will be adjusted for inflation.

Phasing In Impact Tax Rate Increases

A phase-in of the impact tax rate increases is suggested. This assumes that near-term projects are especially cost-sensitive, but that the most cost-sensitive projects can move forward fairly soon.

- Impose 25 percent of the increase within 3 months
- Impose 50 percent in 6 months
- Impose 100 percent in 12 months.

Short Term Recordation Tax Recommendation

Planning staff reviewed the role that the recordation tax plays in infrastructure financing and notes the tax's ability to generate revenues from the turnover of existing housing units, which is one source of changing demand for infrastructure. The current tax in Montgomery County is $6.90 per $1,000 (with the first $50,000 exempt), with $4.40 going toward the general fund and $2.50 dedicated to MCPS and Montgomery College. The share of school infrastructure improvements generated by the turnover of existing units could be funded with an increase in the school's portion of the recordation tax of $11.20. Planning staff recommends that the recordation tax be increased to $11.20 with the total revenue generated dedicated to schools.

Long Term Infrastructure Financing Recommendations

Planning staff's longer term recommendations identify infrastructure financing issues to be explored. These include more sophisticated approaches to account for the various factors that affect the success of an infrastructure financing program: forecasts of growth, estimates of needed infrastructure, the use of exemptions, etc. These ideas have application beyond fine-tuning the tax rates; we think they may also be useful in planning and implementing needed facilities.

The *Infrastructure Financing* report echoes recommendations in the *APFO Reform* report to strengthen the planning and delivery of infrastructure and other public facilities and services, with, for example, regular evaluations of the status of master plan implementation. The *Infrastructure Financing* report also suggests that long-range capital facilities plans, tied to master plan requirements and other standards, will improve the County's ability to set and meet goals for infrastructure financing.

SUSTAINABLE DEVELOPMENT

"Sustainability" became a common term through a 1987 United Nation's World Commission on Environment and Development report titled *Our Common Future*. Since its inception, the notion of "Sustainability" has provided a holistic worldview of how social equity, economic, and environmental forces work together to create the world in which we live and, more importantly, how we may harness these forces to create something better. Planning staff proposes using the following definition to guide future growth and development in Montgomery County:

Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs. It recognizes the fundamental inextricable interdependence between the economy, the environment, and social equity, and works to promote each to the benefit of all.

The concept of sustainability allows us to discuss policies and plans in relationship to one another as plans and development proposals are considered. In this way, we can explore the advantages, conflicts and trade-offs associated with each proposal. Without this examination and measures or targets for sustainability, we will continue to approve development based on the rules it doesn't violate rather than on the goals, objectives and targets it achieves.

Planning staff believes that growth management policy in Montgomery County should incorporate sustainability as a guiding principle. The growth it guides should contribute to the sustainability of the County's environment, economy and social well-being, and it should be updated regularly to account for better information as well as changes in people's concerns and priorities. The sustainability principle should be applied to both new growth and changes in existing development.

The risk of not including sustainability in the growth policy is that growth will continue to be managed only in terms of how and when infrastructure is provided rather than on how well it serves the county's overall needs as a community and as a responsible part of the national effort to address the sustainability problem

This paper discusses how well the General Plan Refinement (GPR) expresses principles and goals that support sustainability, and finds that the General Plan already identifies most, although not all, of the principles needed to guide Montgomery County towards coming to the forefront of the sustainability movement. We suggest how the goals of the GPR can be modified to reflect sustainability more comprehensively.

Our survey of what other local governments are doing to implement sustainability plans around the country shows that many use "indicators" to establish specific targets and evaluate progress in meeting specified goals. Indicators allow residents and decision makers to track and monitor select social, economic and environmental conditions by measuring progress toward specific quantifiable goals or targets. Indicators simplify vast amounts of information and

data, and thus provide a common ground on which communities create relationships, build trust and consensus, and base decisions.

Communities take different approaches in developing suitable indicators, but the dialogue between stakeholders both informs the process and engages the public to offer clear direction for the future. Generating a sustainability indicators program offers a logical compliment to effective growth policy. These tools provide a means to accurately gauge the economic, environmental and social conditions within a community over the long term, allowing for more effective and informed decision-making.

The Planning Department currently is exploring how the broader perspective of the sustainability principle may be applied to the 355/I270 Corridor Study. Of necessity, this initial effort at applying this broad principle to a local land use exercise will be conceptual in nature. But it is expected that the product will yield some insights useful to the further refinement and practical application of this new approach.

The Water Resources Element required by state law (HB 1141) presents another opportunity to explore sustainability. This law requires that we demonstrate how planned growth will be supplied with drinking water and wastewater treatment capacity and show how our streams can accommodate the anticipated stormwater runoff while protecting local streams and the Chesapeake Bay.

Sustainability Recommendations

We face a tremendous challenge in the next decade: how to assure that policy changes and physical investments in Montgomery County direct growth and development in a way that is sustainable. The Planning Department suggests the following actions to begin meeting that challenge:

- **Work towards adopting a definition of sustainability** tailored to the needs of Montgomery County for use in our County programs.
- **Expand the goals of the General Plan Refinement** to include appropriate sustainability principles.
- **Incorporate into the Planning Board's existing 2007 work program initial efforts at further refining sustainability principles** for application to land use related plans and studies, such as the 355/I-270 Corridor Study and the State mandated Water Resources Element, to be undertaken in FY 2008.
- Using this experience, **undertake a public involvement process to establish countywide indicators and targets** as soon as feasible within upcoming budgets.
- **Apply sustainability principles and goals to the ongoing Growth Policy and Capital Improvements Program process,** especially the analysis of trends and evaluation of public investments that repond to or anticipate growth**.**

DESIGN EXCELLENCE

The attached report, *Design Excellence: Tools to Improve Growth's Contribution to Our Quality of Life,* is intended to address methods to achieve the objectives identified in the other papers included in the Growth Policy report. Design is not an end unto itself; it is the means by which we use the forces of growth and change to achieve objectives that we mutually set. As an example, if the report on sustainability identifies a set of objectives for the preservation of the environment, the design excellence report provides the tools to achieve those objectives.

Planning in Montgomery County in the next century will require significant attention to design quality in community building. Directing development to more dense Metro station areas and the I-270 Corridor and away from rural areas is a hallmark of the *General Plan …on Wedges and Corridors for Montgomery County.* Montgomery County has a limited amount of available land for development. Redevelopment of existing areas including older retail centers will be a focus of development pressure in the coming decades. Preserving the character of the existing rural communities continues to be a challenge. The character of the major transportation travel routes could be significantly improved. From an economic point of view, design excellence should also be part of maintaining the County's competitive edge in attracting quality businesses in the 21st century global market place. These development conditions require attention to design in community building for success as part of a comprehensive growth policy.

The attached report provides options for augmenting and enhancing the planning tools and methods authorized for Montgomery County. Among the design issues that relate most closely to the Growth Policy are: implementing sustainability goals, augmenting and enhancing the public realm, and improving pedestrian access in Montgomery County:

Design Excellence and Sustainability

Emphasizing the design of communities will assist in accomplishing the objective of creating a sustainable environment. Planning for sustainability should occur early in the design of communities. LEED (Leadership in Energy and Environmental Design) standards have been developed as part of a pilot program for planning green neighborhoods. Montgomery County could take a leadership role in reviewing the pilot program and establishing new standards in the design of green communities to assist in creating a sustainable environment.

Design Excellence and the Public Realm

Emphasizing design excellence in the public realm would significantly improve the character of Montgomery County. The following three areas of the public realm should be the focus of design excellence:

- **Streets and Highways** (coordinate with the revisions underway to the Road Code) - The design of streets represents a major determinant of the function and character of neighborhoods in Montgomery County.

- **Public Spaces** (clarify and enhance the requirements for public use space, green space, and active and passive recreation identified in the Zoning Ordinance) - The design of public spaces (the space between buildings) has a significant impact on the character of Montgomery County.
- **Blocks and Buildings** (coordinate with the finding for compatibility, and the finding for the provision of adequate, safe and efficient layout of buildings and open space specified in the Zoning Ordinance) - The layout of blocks and buildings provides the form and structure for the space between buildings.

Design Excellence and Pedestrian Access

Enhancing the design of sidewalks, pathways and park trails would provide opportunities to improve the connections to transit facilities, commercial centers, and recreation areas in Montgomery County. Improving pedestrian connections and enhancing the pedestrian experience provides the opportunity to significantly benefit the overall health of the residents in Montgomery County by encouraging alternatives to travel by the automobile.

(Footnotes)

[1] Been, Vicki. 2005. Impact Fees and Housing Affordability. Citiscape: A Journal of Policy Development and Research . Volume 8, Number 1, 2005. U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

Nelson, A.C., et. al., 2002. The Link Between Growth Management and Housing Affordability; The Academic Evidence , The Brookings Institution Center on Urban Metropolitan Policy, February 2002.

Montgomery County and Growth

Today

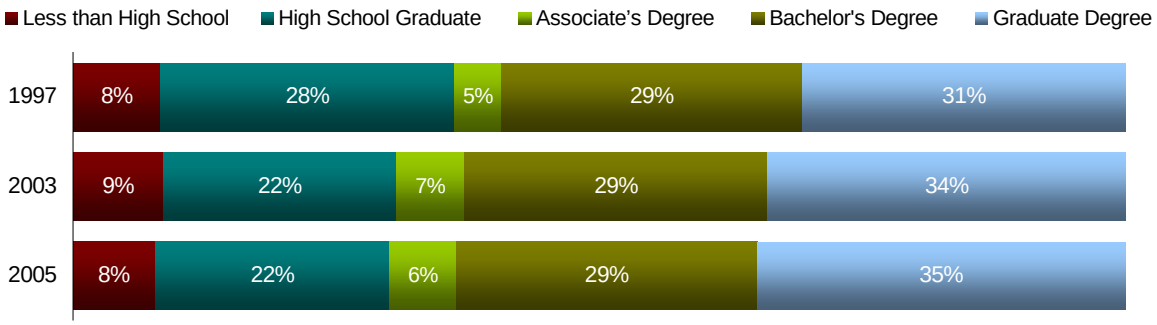
Ranked 45th in population, Montgomery County is among the most affluent and well-educated counties in the nation**.**

The County's 2004 median household income of $83,830 is among the highest in the United States; roughly 41 percent of County households have incomes of $100,000 or more. In the latest American Community Survey rankings, Montgomery County placed first among large counties[1] for the percentage of residents with graduate degrees, and third for college-educated residents. The unemployment rate has remained below state and national levels over the past decade, ranging from a low of 1.9 percent in 1999 to a high of 3.5 percent in 2000, standing at 2.9 percent in 2006.

More striking is the fact that, to date, Montgomery County has sustained these very high levels of income, education and employment through an extended period of dynamic growth and change that has dramatically reshaped its demographic, economic and physical environment. Its ability to continue doing so, however, will depend on how well Montgomery County absorbs and manages the long run impacts of this ongoing growth and change.

Housing, educating, protecting, employing and transporting a larger—and far more diverse—population are among the critical challenges that Montgomery County faces now and in the future. The purpose of this report is to outline some of the key trends and underlying forces that are shaping this future.

Educational Attainment
Montgomery County
Adults Ages 25+



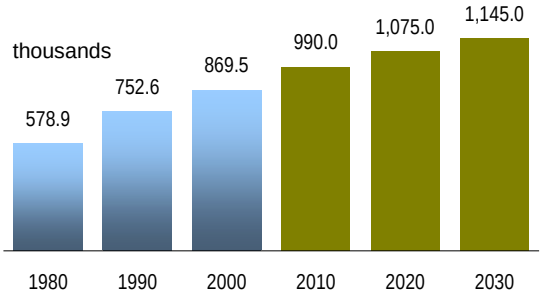
Source: M-NCPPC, Census Update Survey

[1] Counties with populations of 200,000 or more.

Rapid expansion followed by sustained, slower growth

Population growth peaked in the 1980s, then surged again in the late 1990s. During the first half of this decade, the County added roughly 69,000 people—an 8 percent increase in just five years. A combination of record birth levels and an influx of new residents drove the most recent population boom.

Population of Montgomery County
1980 to 2030

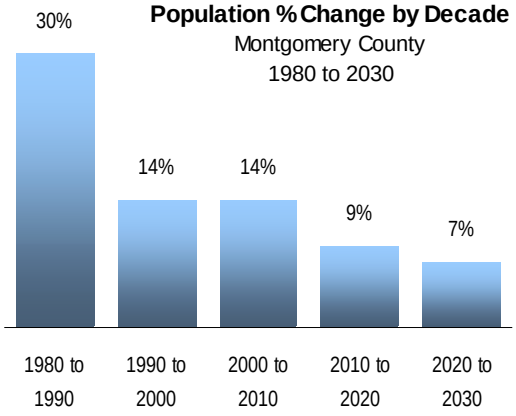


Source: Metropolitan Washington COG Round 7.1 Forecast

Most new residents (60%) come from outside the Washington area. Montgomery County serves as a "gateway" to both Maryland and the United States – when people move to Maryland, more of them move to Montgomery County than to any other county, by a wide margin.

Between 2000 and 2005, births exceeded deaths by 38,000 individuals. Over the same period, nearly 25,000 more people moved into the County than moved out; foreign immigration accounted for nearly 90 percent of this net population gain. By 2005, one in five residents—181,000 people—was new to Montgomery County, having moved in within the past five years.

Population % Change by Decade
Montgomery County
1980 to 2030



Source: Metropolitan Washington COG Round 7.1 Forecast

The immigration of new residents is replacing out migrating residents. Between April 2000 and July 2006, the County saw an increase in population of 62,627 from foreign immigration while 50,872 residents moved from Montgomery County to other places in the United States. Within Maryland, the most frequent location to which Montgomery County residents move is Frederick County, followed by Howard County.

Components of Population Change
Montgomery County, Maryland
April, 2000 to July, 2006

Natural Increase	**49,076**
Births	83,692
Deaths	-34,616
Net Migration	**11,755**
Net international migration	62,627
Net internal migration	-50,872
Residual Change	**-2,865**
Total Population Change	**57,966**

Source: U.S. Census Bureau

The past high rates of growth probably will not be seen again. Montgomery County has entered a phase of slower growth typical of larger, more developed counties and the supply of undeveloped land has dwindled. The County is approaching *buildout* – especially for

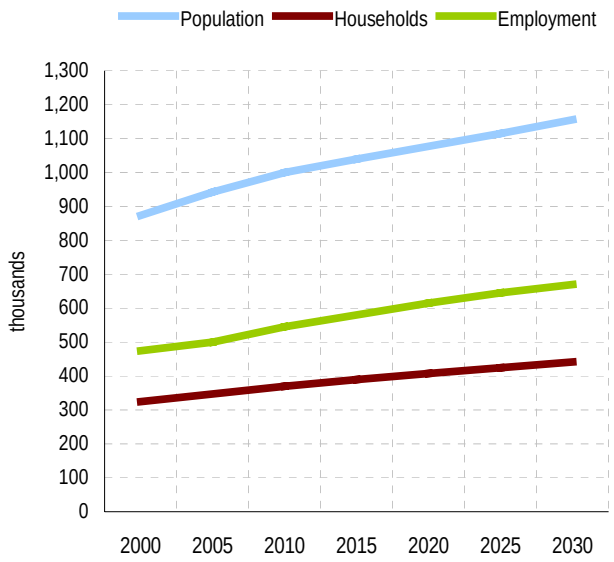
single family suburban houses, 72% of our future housing will be multi-family units, many of which will be infill in developed areas.

Population growth began tapering off in the middle of this decade, and is expected to slow to about 7 percent per decade—about half the pace of recent years.

With an estimated 2007 population of 958,000, Montgomery County will reach the 1-million residents mark around 2010. As of January, 2007, there were an estimated 355,700 housing units and 518,000 jobs in the County. Though the rate of growth will naturally moderate, the County retains significant planned additional job, housing and population capacity through 2030.

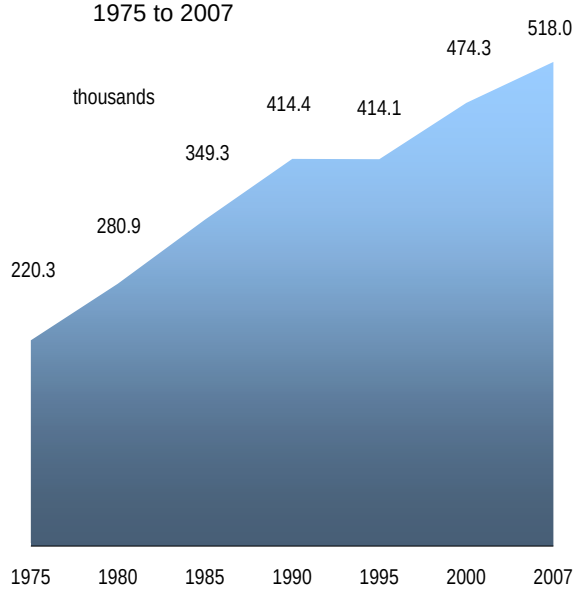
The latest Washington Council of Governments (COG) Cooperative Forecast envisions that between 2005 and 2030, Montgomery County will add 207,000 people, 94,300 households, and 170,000 jobs—roughly 23 new people, 10 new households, and 19 new jobs per day for 25 years.

Projected Growth
2000 to 2030



Source: Metropolitan Washington COG Round 7.1 Forecast

At-Place Employment Growth
Montgomery County
1975 to 2007



Source: Metropolitan Washington COG Round 7.1 Forecast

Emergence as a major job center

By any measure, Montgomery County's economy has been very healthy for the past three decades, adding nearly 300,000 jobs since 1975. As a regional employment center in the Washington, D.C. area, Montgomery County provides jobs to the majority of its residents with 60 percent of the employed residents living and working here in 2005. The labor force increasingly reflects the County's changing demographic profile, becoming significantly more diverse in terms of age, ethnicity, educational attainment and earning power.

Maintaining a relative balance in job and housing growth is a key objective. When jobs exceed housing capacity, an area must import workers, leading to an increase in the number and length of in-commutes and pushing housing prices up. Too few jobs can create unemployment and undermine fiscal stability. The county's current ratio of jobs to housing is about 1.4—just shy of the optimal 1.5 to 1.6 ratios. Employment and housing forecasts predict Montgomery County's ratio will balance above 1.5 by 2030.

Economic diversification

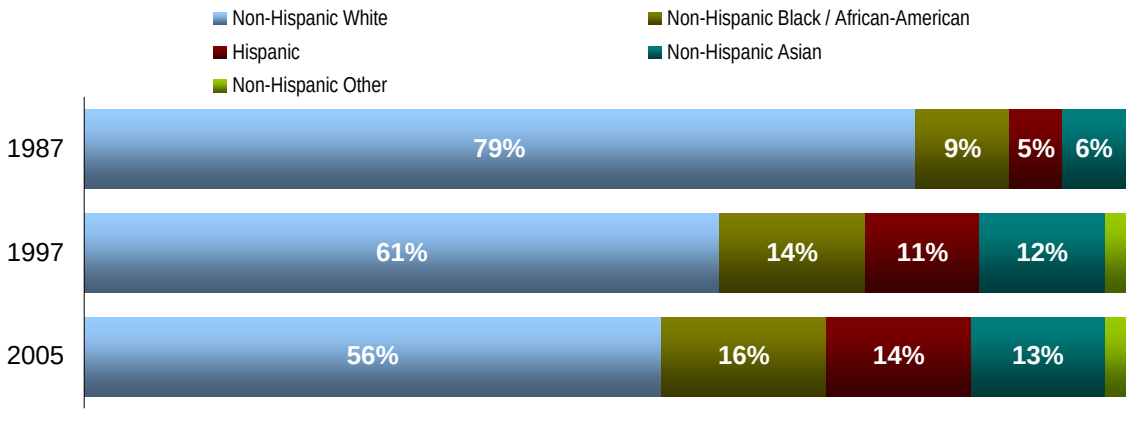
The federal government remains an important source of employment in Montgomery County, though there has been a shift away from direct government employment to private employment with federal contractors. Proximity to federal technology buyers and research labs has led to the emergence of important technology clusters—especially biotechnology. The most robust private sector growth has occurred in high-wage professional, scientific and technical services sector jobs, and other white-collar jobs. New residents reflect the white-collar economic forces attracting them to Montgomery County: among adult in-movers, 29 percent have bachelor's degrees and another 46 percent have an advanced degree.

Growth forecasts envision that a growing proportion of new jobs through 2030 will be based in offices. Rapid job and economic growth has boosted demand in health, business, residential, retail and hospitality service sectors.

An increasingly complex demographic base

Montgomery County's demographic profile has changed dramatically since the 1980s, becoming more diverse at a variety of levels. Part of this change can be attributed to wide-scale demographic trends, such as the aging of the existing population and a surge in foreign immigration. Other trends reflect the unique mix of economic, housing, quality of life and other factors that draw people to the County and the Washington, D.C.

Greater Racial and Ethnic Diversity



Source: M-NCPPC, 2005 Census Update Survey

metropolitan region. New residents provide some of the most striking clues about the key forces and directions of demographic change in Montgomery County.

In general, the County attracts highly educated new residents. Of new adult in-movers, 29 percent have bachelor's degrees and another 46 percent have obtained an advanced degree. Because education and income levels tend to be strongly correlated, this trend could reinforce and even accelerate Montgomery County's comparative affluence. At the same time, the rapid in-flux of residents—especially foreign-born—introduces an array of new and different challenges to Montgomery County.

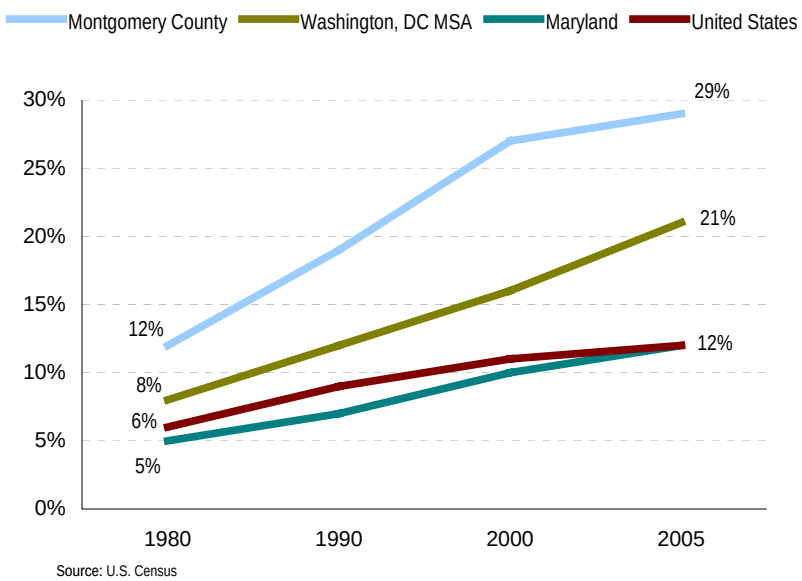
While it is difficult to predict how these demographic forces will shape the County over the long term, it is possible to identify a range of potential near-term impacts.

Ethnic and cultural diversification

Between 2000 and 2005, Montgomery County added 53,000 new residents. Over this same period, the minority population grew by 60,000 people—a reflection of higher birth and in-migration rates in this group compared to the existing population. Foreign-born immigrants accounted for most of the county's robust minority population growth. Forty-six percent of new residents live in a household with a foreign-born head or spouse compared to 35 percent for the County overall.

Many positive attributes are associated with immigration, including an enriched cultural environment and an infusion of labor and talent. Offsetting these assets are the challenges of integrating so many new residents from so many different cultural, linguistic, ethnic, educational and other backgrounds.

Foreign-born Share of Population



Source: U.S. Census

Forty-four percent of new residents are more likely to speak a language other than English. The Montgomery County Public Schools systems reports that more than 140 languages are spoken among students in its schools. Teaching and reaching out to the parents of such an extraordinarily complex student body is likely to be a continuing challenge for public schools. Adults with limited English proficiency face significant barriers to economic and cultural

integration, and create demand for language interpretation and English language training services.

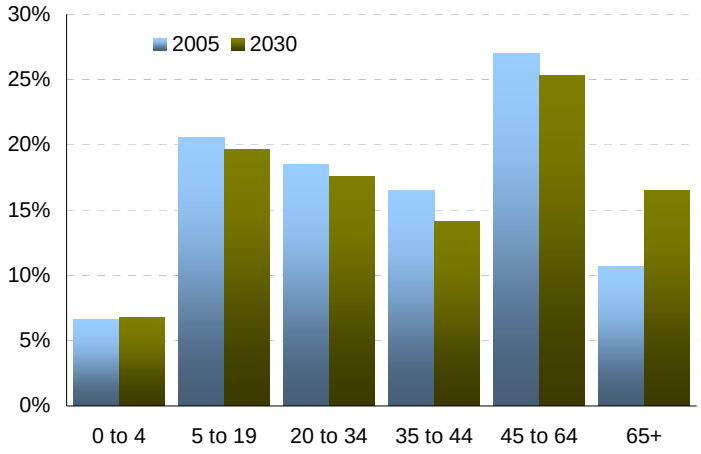
While many foreign-born residents come from elite educational and economic backgrounds, others lack a high school education and struggle with limited opportunities. Undocumented immigrants face an especially daunting environment; often relegated to low wage and unstable employment, many also avoid interacting with government out of fear of being deported—a factor that can greatly complicate community health, education, housing, law enforcement and other public functions.

An aging population

Over the next 25 years, all age groups will add population, but the fastest growth will occur among residents ages 65 and over. Currently accounting for about 112,000 people—11 percent of all County residents—this cohort will increase to 16.5 percent by 2030 with the maturing of the baby boomers.

A corollary trend is that a growing share of this population plans to age in place; a recent senior housing preference survey found that about 57 percent of residents ages 55 and older plan to retire in Montgomery County, with nearly 60 percent of these people planning to continue living in their current residence.

Age of County Residents
Percent of County Residents by Age Cohort



Source: Washington COG Round 7.0 Forecast

Offsetting this trend is the fact that people moving to Montgomery County are younger than the population as a whole. Partly, this reflects the fact that the propensity to move declines with age, and young, married couples with children are among the most likely to be attracted to the county's large job base, high quality of life and renowned public schools. In addition to these factors, foreign-born and minority residents tend to have higher birth rates than the population as a whole.

Greater income diversity

As noted above, a large proportion of Montgomery County's households are among the most affluent in the nation. Dual income households fuel lofty household incomes with high paying jobs in a variety of professional and managerial occupations that reward the well-educated resident work force.

But not every household is participating in the County's wealthy reputation. In 2005, one out of six households reported incomes less than $40,000. The median income of households with foreign-born head or spouse is 84 percent of the median of native-born households ($75,235 and $89,319 respectively). At about $72,0000, the median income of in-mover households is $12,000 below the County's median. The difference may be attributed to the relative youthfulness of the in-movers who have not entered the prime wage earning years of ages 45 and older.

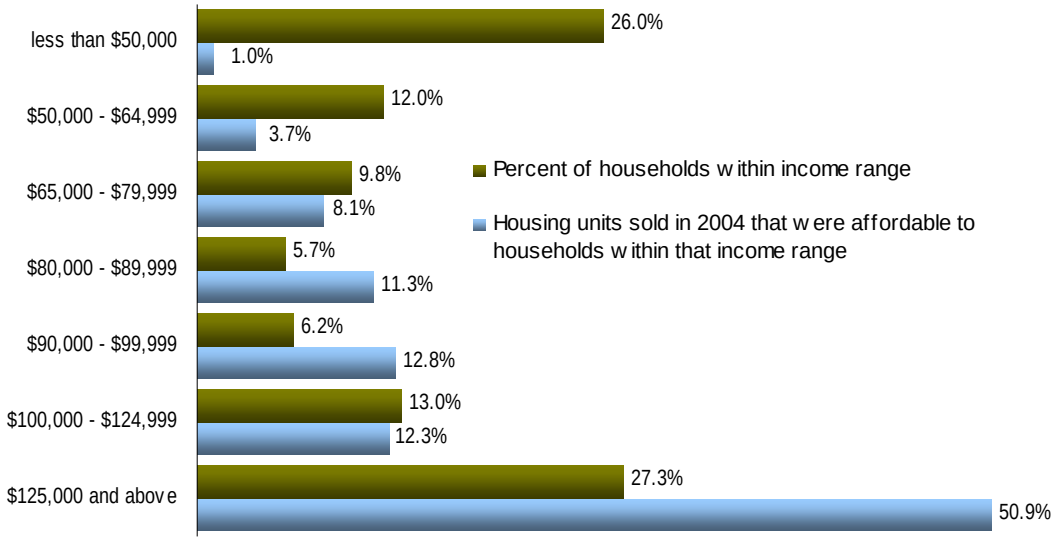
Twenty-nine percent of households (approximately 100,000 households in 2005) fall below the household income cap for Montgomery County's Moderately Priced Dwelling Units Program (65 percent of the County's median income).

An acute shortage of affordable housing

With large numbers of affluent residents, along with a heated housing market in recent years, Montgomery County has the highest median owner-occupied house value and the highest monthly homeowner costs ($466,100 and $2,041, respectively) in Maryland. Although the market has cooled slightly, sustained population and job growth will keep housing demand—and prices—high. Regardless of its type or location, Montgomery County's housing stock will remain expensive.

A mainstay of stable and prosperuous communities, homeownership increasingly is out of reach of a significant proportion of Montgomery County residents. In 2004, only one out of every ten homes sold in the County was affordable to households earning the median income of $80,000. Households with median incomes of $125,000 and up

Affordability of Homes Sold in Montgomery County
by Household Income Group (2004)



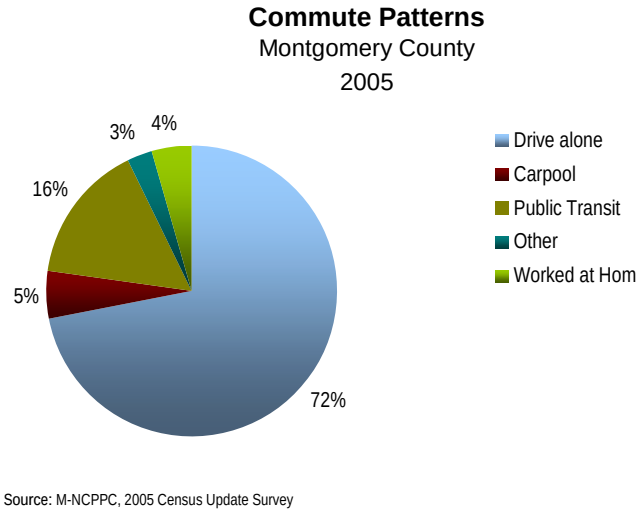
Sources: M-NCPPC 2005 Census Update Survey and Maryland State Department of Assessments & Taxation, 2004 sales.

accounted for half of all home sales. Fewer than 5 percent of homes were purchased by households earning less than $65,000

The burden of high housing costs falls most heavily on younger, less affluent and newer residents—populations that are crucial to Montgomery County's economic future. Demand for top technology and professional talent—as well as construction, retail, support and other workers—is expected to stay robust over the next few years, buoyed by economic expansion as well as pending Baby Boomer retirements. To offset the high cost of living, local employers are paying wage and salary premiums to attract and retain workers at all skill and experience levels. Even so, recent graduates, employees with young families and workers in lower wage occupations are finding it increasingly difficult to afford to live in or near jobs in the County.

Increased density and urbanization

While maintaining significant amounts of land in agriculture and open space, Montgomery County has accommodated the growth attracted by its status as a desirable suburb of the nation's capital. It has achieved this balance by following the general plan, *On Wedges and Corridors*, that channels most new growth along transportation corridors separated by less dense wedges.



Source: M-NCPPC, 2005 Census Update Survey

Several factors—including sustained job and population expansion, declining supplies of greenfield space, and land use policies favoring in-fill and transit-oriented development—have reinforced this pattern of concentrated development in recent years.

Growth, density and mixed-used development are transforming former commuter suburbs into increasingly more urban-like environments. Urbanization can reinforce economic development by attracting more jobs, workers and investment to the area; a mix of urban and natural amenities and a diverse range of housing and lifestyle opportunities are strong competitive assets as well. Rising fuel prices and growing awareness of climate change also are contributing to a renewed interest in more transit-friendly and environmentally sustainable compact development.

Housing prices and traffic congestion could increase with urbanization because of demands on housing stock, public services and infrastructure. Almost eighty percent of Montgomery County's employed residents currently commute by car, with 72 percent driving alone. Hectic schedules, dual-earner couples, convenience, shorter auto

commute times and high incomes have worked against greater use of carpooling and transit.

Diversifying, more densely-built housing stock

In the past, most housing in Montgomery County consisted of detached, single-family units built on vacant land. In keeping with the land use trends described above, new housing construction will feature more densely clustered single-family attached and multi-family units in existing developed areas. Continued growth and demographic changes are likely to spur additional variety in available housing types in new and existing developments. These may include larger units in intense multi-family developments located near transit; clusters of cottages; large single-family detached homes on smaller lots; zero lot line developments and accessibly-designed housing for seniors.

History of Montgomery County's Growth Policy

Along Clopper Road in Germantown, 1979 (left) and 2004 (right)

INTRODUCTION

Although commonly referred to as a separate ordinance, the APFO is actually part of Montgomery County's subdivision regulations: Section 50-35 (k) of the County Code. The APFO was adopted by the County Council in 1973 with the goal of synchronizing development with the availability of public facilities needed to support that development. The introductory sentence states, "A preliminary plan of subdivision must not be approved unless the Planning Board determines that public facilities will be adequate to support and service the area of the proposed subdivision."

For the following 13 years, it was the responsibility of the Planning Board to define adequate public facilities, and it developed a series of reports and guidelines to do that. Then, during the building boom of the mid 1980s, the Council became concerned that too much development was being approved. After several proposals for moratoria or caps on building permits were rejected, the Council, as a compromise, enacted legislation under which the Council each year adopted an Annual Growth Policy (AGP) for the County. Since 1986, the Growth Policy has been used by the Council to direct the Planning Board's administration of the Adequate Public Facilities Ordinance.

This report summarizes some of the milestones in the thirty-four years of growth management in Montgomery County. [1]

GROWTH POLICY MILESTONES 1960s-2007

1960s The County adopts its General Plan, "…On Wedges and Corridors," which, among many other accomplishments, identifies three goals that require special legislation to achieve. The goal of maintaining an

[1] *Portions of this review draw from, or quote from, work by David Levinson, a former Planning Department staff member who worked on the Annual Growth Policy in the early 1990s, and who is currently Associate Professor in the Department of Civil Engineering at the University of Minnesota.*

agricultural reserve leads to the transfer of development rights program; the goal of providing housing at all income ranges leads to the moderately-priced dwelling unit ordinance, and the goal of timing the delivery of public facilities and private development leads to the adequate public facilities ordinance.

1972 In *Golden v. Planning Board of the Town of Ramapo*, the United States Supreme Court finds adequate public facilities ordinances constitutional.

1973 The Montgomery County Council adopts the adequate public facilities ordinance to be administered by the Montgomery County Planning Board.

1974 The Advisory Committee on County Growth Policy is established by the Montgomery County Planning Board (Royce Hanson, Chairman; Richard Tustian, Planning Director) and organized by the League of Women Voters. This committee comprises 37 individuals, including many former or future County Council or Planning Board members, developers and citizen activists. The Committee held 91 meetings, totaling an estimated 3,000 volunteer person-hours, to produce a report called *Directions* in August of 1974. The *directions* were: 1) Analyze the impact of forecasts, 2) Manage population growth, 3) Assure a job/housing balance, 4) Provide low and moderate income housing, 5) Finance expanded public transit and concentrate development at stations, and 6) Stage growth on a countywide basis. In addition to recommending that the Planning Board develop a Countywide program to stage development, the sixth direction also recommends that use of the APFO be "extended to areas other than those required by new development," that development district legislation be enacted, and that all master plans have staging elements.

1974 In October, the Planning Board adopts the first annual Growth Policy report, called a *Framework for Action*. This report includes the development of a theory of growth management for Montgomery County, analysis of growth-related trends and their implications, and recommended actions. These recommendations address a number of the issues raised by the Advisory Committee, and include recommendations to concentrate development near Metro, improve connections between the growth policy and the capital improvements program, and establishing a "quality of life" indicators program.

1975 The Planning Board releases the second annual Growth Policy report, *Fiscal Analysis*, which examines the fiscal impact on Montgomery County of three different rates of growth. It concludes that all three

growth rates would require significant increases in tax rates if then-current levels of public expenditures were to be maintained.

1976 The third annual Growth Policy report is released, called *Forecasts: People, Jobs, and Housing*, and is apparently in response to concerns that previously existing forecasts need to be improved. Like *Fiscal Analysis*, this technical report is to be followed by a "sequel" report looking at the implications of the findings.

1977 The fourth annual Growth Policy report, called *Carrying Capacity and Growth Management,* establishes much of the theory tying provision of public facilities to the timing of development approval. The ecological notion of "carrying capacity" is applied to the urban system as the intellectual rationale for a comprehensive growth management system. This rationale enables the move from "accommodation" of growth to "management" of growth. This report also raises the issue of the "lumpiness" of public facilities compared to private development; that is, at some points in time there will be a surplus of public facilities, at other time a shortage, and for a few brief instances they will be in perfect balance. The rest of this report discusses the development of standards for public facilities and other steps to translate the concept of carrying capacity into guidelines for administering the adequate public facilities ordinance. In doing so, a number of sophisticated models are introduced, setting the stage (no pun intended) for future growth policies' reliance on models.

1979 The fifth annual Growth Policy report, *Planning, Staging and Regulating*, is issued in June 1979. This report reviews several different systems related to growth: the transportation system, the sewerage system, the school system, the fiscal system, and the stream valley system – but focuses on sewerage and transportation as the immediate basis for managing growth. This report introduces the concept of "policy areas" as the geography by which to measure transportation adequacy and introduces the concept of regulating the pace of development by establishing "thresholds" – later called "staging ceilings" – that represent the maximum amount of development that can be supported by the transportation system while maintaining a desired level of service. It also introduces the idea that roadway congestion standards should vary depending on the availability and usage of transit.

1980 The Planning Board reviews a *Comprehensive Staging Plan*, subtitled "An Amendment to the General Plan for Montgomery County." This report suggests how to implement the ideas of the fifth annual Growth Policy report by establishing roadway level of service standards and development thresholds by policy area. Thresholds are established for

housing units and jobs separately, mirroring what would later be called Policy Area Transportation Review. It envisions a process that would include adoption by the County Council. The County Council does not adopt this concept, leaving administration of the APFO to the Planning Board.

1980 The sixth annual Growth Policy report is called *Land Supply and Demand* and consists of two technical reports, one on land supply, and the other on land demand.

1981-85 The concepts and structure of the *Comprehensive Staging Plan* are included and further refined in five annual *Comprehensive Planning Policies* reports, adopted by the Planning Board, which include "guidelines for the administration of the adequate public facilities ordinance." These are very similar in structure to the *Annual Growth Policy* documents that follow. As in earlier reports, each policy area's profile includes growth forecasts, zoning capacity, and threshold (maximum amount of development that maintains adequacy of public facilities). There are eleven policy areas, of which three are over capacity for housing, and one is over capacity for jobs. During this period, the definition of a "countable" transportation project became progressively tighter: in 1982-84, the APFO counts a transportation project if it is at least *50 percent* funded in the first *six* years of the CIP. By 1986, a project had to be *fully* funded in the first *four* years of the CIP to be counted for APFO purposes.

1985 Concerned about the rapid pace of growth and lagging public facilities, the County Council appoints a "Consensus Committee on Growth Management" that provides recommendations for alleviating facility overload, expanding infrastructure financing, tightening development controls, and other policy, organizational, and procedural changes. Infrastructure financing recommendations include increasing the property tax and the gasoline tax, a surcharge on vehicle registration fees, creation of district-level taxes, and impact fees. The Committee also addresses how and when to count public facilities, including a proposal to establish a semi-annual Approved Road Program to list roads that are countable for APF review (which was implemented).

1986 By 1986 it is clear that the process of setting thresholds or staging ceilings was of great interest and importance to residents, the development community, and public officials. During this period, the County is experiencing its greatest development pressure and the largest amount of new development completed. First through an interim growth policy report, and then through an *Annual Growth Policy* resolution, a greater role in administering the APFO is assumed by the County Executive and County Council – roles that have largely

continued to the present day. The Planning Board proposes a new growth policy, which is reviewed by the County Executive and other agencies, and adopted as a resolution by the County Council. In the early years of the AGP, the County Executive extensively rewrites the Planning Board's proposal; in later years the County Executive provides comments.

FY1988 The *Annual Growth Policy* moves to the fiscal year schedule. The Planning Board releases the *Final Draft FY 1989 Annual Growth Policy* on December 1, 1986. Although not called Policy Area Transportation Review yet, there is a system for setting staging ceilings by policy area based on average congestion levels. There are 13 policy areas, of which five are over capacity for housing and six are over capacity for jobs. The new policy areas: Gaithersburg is divided into east and west, and the Damascus Policy Area is created. A "Special Ceiling Allocation for Affordable Housing" is recommended.

FY1989 During this period, and continuing for over a decade, the *Annual Growth Policy* includes detailed reviews of policy issues relating the administration of the APFO, as well as a report on the results of staging ceiling analysis. In FY89, these include analysis of how and when to test for adequacy of transportation facilities (testing at building permit is considered and rejected), how to allocate transportation capacity between jobs and housing, proposals to retest older subdivisions, and adopting a school adequacy test. Additional policy areas are created, including Silver Spring CBD, Bethesda CBD, and Rockville. The Germantown East and West Policy Areas come out of moratorium.

1989 The Planning Board releases its four-volume Comprehensive Growth Policy Study (CGPS), consisting of: *A Policy Vision: Centers and Trails*, *Alternative Scenarios: Analysis and Evaluation*; *Global Factors: Assessments and Implications*; and *Appendices of Background Information*. The four questions addressed by the CGPS are: Can we grow without excessive congestion? Can we afford the cost of growth? How should be approach these problems? A present management tools adequate?

A number of alternative growth scenarios were analyzed for their impact on traffic congestion and tax rates. Conclusions were presented that traffic congestion would deteriorate to unacceptable levels by 2020 if current trends continued. Only a major shift away from single occupancy vehicles towards all forms of transit, plus an accompanying shift in the jobs-housing balance in land use, which would be costly, would make a significant difference. Recommendations for further research in how to deal with this problem were presented.

FY1990 The *FY1990 Annual Growth Policy* tackles several policy issues, including jobs/housing balance, understanding the effect of growth on public revenues and expenditures, the structure of policy areas (Aspen Hill was separated from the Kensington/Wheaton Policy Area), and how to better manage the "queue" of pending development. Seven policy areas are in moratorium for housing, and four are in moratorium for jobs. Of concern that year: some transportation improvements in the CIP have been pushed back.

1990 At the request of the County Executive and County Council, the Montgomery County Economic Advisory Council establishes a Growth Assessment Task Force. The task force calls for the County to adopt a vision for growth – determining how much and what type of growth the County seeks, and the infrastructure the County is prepared to supply to support that growth. The task force also calls for more in-depth cost-benefits analyses of growth, and recommends that the County identify ways to pay for the facilities to support growth without significantly increasing the tax burden on individual residents.

FY1991 Policy issues addressed in the *FY1991 Annual Growth Policy* include: a comprehensive review of the structure of policy areas (recommendations: carve out Metro station policy areas following completion of sector plans, municipalities should be separate policy areas); limiting Potomac intersections that are subject to Local Area Transportation review to a list of six; addressing conflicts between master plan staging elements and the AGP with respect to the special ceiling allocation for affordable housing; prioritizing unbuilt transportation projects; and finding ways to allocate more development capacity to affordable housing projects. Five policy areas are in moratorium for housing, and eight are in moratorium for jobs.

1991 The Planning Board appoints a Growth Management Advisory Work Group to help identify growth-related issues that should be addressed in future work programs. The work group provides numerous recommendations in six categories, among them a suggestion that the County determine and pursue a financially sustainable rate of growth and a recommendation to evaluate the effects of long-term moratoria.

1991 James Duncan and Associates completes a study for the Planning Board comparing Montgomery County's Growth Policy to other growth management systems around the country. Recommendations include: codifying much of the growth policy resolution and moving to a system that performs technical updates annually and looks at policy issues less frequently (every 3-5 years).

FY1992 The *FY1992 Annual Growth Policy* completes much of the policy area restructuring that had been previously recommended (the number of policy areas increased from 17 to 22). Ten policy areas are in moratorium for housing and thirteen for jobs.

FY1993 The *FY1993 Annual Growth Policy* takes a break from policy issues and focuses on updating results for the tests as then-structured. All of the policy areas in moratorium in FY1992 remain in moratorium for FY1993, although no new policy areas are put into moratorium. As in previous years, schools are found to be adequate for all clusters.

FY1994 At adoption, the *FY1994 AGP* has six policy areas in moratorium for housing and nine in moratorium for jobs. Policy issues addressed in the *FY1994 Annual Growth Policy* include proposals to deal with a very large and inactive pipeline of approved development, the creation of North Bethesda Metro Station Policy Areas and a Germantown Town Center policy area, and an overhaul of the process for conducting Policy Area Transportation Review (PATR). Changes to PATR, which include a move to measuring transit service by *accessibility*, using an equation-based method for determining auto congestion standards ("TTLOS") and treatment of freeways separately from local roads, are adopted in a special amendment late in FY1994.

FY1995 Policy area restructuring and a new Policy Area Transportation Review test, as well as four new transportation projects, change staging ceilings for all policy areas. The *FY1995 Annual Growth Policy* has seven areas in moratorium for housing and six for jobs. Anticipating the adoption of the Clarksburg Master Plan, the Planning Board proposes creating a Clarksburg Policy Area. This would have subjected Clarksburg to Policy Area Transportation Review for the first time; the Planning Board recommends that the new policy area have approval capacity of zero housing units and zero jobs. The Council defers the issue until the next growth policy, which allows the Clarksburg Town Center project to be approved under Local Area Transportation Review only. The Growth Policy process is revised, in part based upon the 1991 consultant report, into two parts: a "ceiling element" to be adopted annually, and a "policy element" to be conducted every two years.

1995 The *1995-1997 Annual Growth Policy Policy Element* again recommends the creation of a Clarksburg Policy Area, as well as a Shady Grove Policy Area and a Glenmont Policy Area. The Clarksburg area is adopted, and immediately put in deficit by an amount equal to the size of the Clarksburg Town Center project. Shady Grove is adopted, but Glenmont is deferred until the completion of the sector plan. An interagency staff panel comprehensively reviews the school

adequacy test; no changes are adopted. A comprehensive review of Local Area Transportation Review by a workgroup that includes industry professionals and interested citizens results in some changes but also a validation of basic LATR methodology.

FY1996 The *FY1996 AGP Ceiling Element* is able to count two new transportation improvements, which increase ceilings in Germantown East, Germantown West and Gaithersburg City by a total of 2,750 housing units and 750 jobs. There are now 26 policy areas, of which nine are in moratorium for housing and seven in moratorium for jobs.

FY1997 The *FY1997 AGP Ceiling Element* is able to count one new transportation improvement – Norbeck Road Extended – that increase ceilings in Cloverly and Olney by a total of 2,000 housing units and 250 jobs. There are now 28 policy areas, of which seven are in moratorium for housing and seven in moratorium for jobs.

1997 The *1997-1999 Annual Growth Policy Policy Element* addresses 13 issues. Among them: a comprehensive review of the school adequacy test (considered but not adopted: reducing the adequacy threshold from 110 percent to 100 percent, and allowing developers to build schools to relieve school moratoria), creating the Glenmont Policy Area and the Friendship Heights Policy Area, a detailed review of LATR standards (previous standards retained), evaluation of a pipeline discount (not adopted), and analysis of a proposal for a "pay-and-go" alternative to meeting transportation adequacy tests, and some policy area boundary changes in Rockville and Takoma Park.

FY1998 The *FY1998 AGP Ceiling Element* counts one new transportation improvement: a partial interchange on the I-270 West Spur. The adopted AGP has eight policy areas in moratorium for housing and seven for jobs.

FY1999 The *FY1999 AGP Ceiling Element* counts one new transportation improvement: a partial interchange on the I-270 East Spur. The adopted AGP had eight policy areas in moratorium for housing and six for jobs.

1999 In the *1999-2001 Annual Growth Policy Policy Element* the Planning Board recommends that the County implement a countywide impact tax and reflect costs of transit and school facilities in calculating the tax rates; count transportation infrastructure fully funded in first five (rather than four) years of the CIP; decrease the time limit of a finding of adequate public facilities from 12 years to 6; require existing employers to participate in transportation management organizations; substantially change and limit the "Alternative Review Procedure for

Expedited Non-Residential Development Approval' (a form of pay-and-go). The APF time limit is decreased: the default is 5 years but the Board may approve APF time limits up to 12 years. A number of the other major recommendations were recommended a second time in *the 2001-2003 AGP Policy Element* and adopted, although some require separate legislation and can not be implemented immediately.

FY2000 The *FY2000 AGP Ceiling Element* is able to count transportation projects fully funded in the first five years of the CIP, instead of four. This year's AGP has eight policy areas in moratorium for housing and eight for jobs. The Fairland/White Oak Policy Area has been in moratorium for new housing since 1983 and new jobs since 1986. This was the eighth year that Damascus, Montgomery Village/Airpark, and North Potomac are in moratorium for new housing.

FY2001 The *FY2001 AGP Ceiling Element* brings Damascus and North Potomac out of moratorium for housing due to the programming of new roads. Transportation improvements increase Derwood's job ceiling from -2,297 to +1, but North Bethesda goes into moratorium for jobs.

2001 The Planning Board's recommended *2001-2003 Annual Growth Policy Policy Element* addresses 13 issues. The major issues: the Council does not endorse the recommended changes to Policy Area Transportation Review, but does tighten the school adequacy test, and does implement a countywide transportation impact tax. The Policy Area Transportation Review issue is especially difficult: Planning staff had "revalidated" the computer model used to set staging ceilings with up-to-date traffic counts and other adjustments. These changes result in substantially different staging ceilings in many areas and also highlight a technical problem with the method used to calculate congestion standards. The Council does not accept the revised ceilings but directs the Planning Board to conduct a "top-to-bottom review" of the growth policy during the next two years. The Council also substantially revises the school adequacy test, changing the standard of adequacy from 110 percent of capacity to 100 percent and clarifying the definition of "capacity." The effect of the Council's action is to put the Damascus cluster into moratorium; this moratorium is lifted in the next Growth Policy with the programming of Clarksburg High School. The countywide transportation impact tax departs from previous versions in several ways, one of which is that it is not tied to a list of specific transportation improvements. Other issues: LATR standards are reviewed in detail and retained, several new transportation test exemptions are created, and the issue of APF tests at zoning is raised (it would be revisited periodically until the Council adopts language clarifying that the primary APF test is at subdivision).

FY2002 Several policy areas are put into moratorium with the adoption of the *FY2002 AGP Ceiling Element*: Germantown West, North Bethesda and Olney for housing; Damascus and Twinbrook for jobs. However, Montgomery Village/Airpark comes out of moratorium for jobs for the first time since 1991.

2002 Park and Planning staff release a report entitled "Assessing the Effectiveness of Montgomery County's Adequate Public Facilities Ordinance." The report summarizes the history of the APFO, issues that have been the subject of debate over time, and how these issues can be addressed during a "top-to-bottom" review of the AGP.

FY2003 A grade-separated interchange on Route 29 at Briggs Chaney Road brings Fairland/White Oak out of moratorium for jobs in the *FY2003 AGP Ceiling Element*. Clarksburg High School is counted in the school test for the first time.

FY2004 Transportation improvements counted in the *FY2004 AGP Ceiling Element* include Montrose Parkway West, Nebel Street Extended, and Stringtown Road. These projects bring North Bethesda and Twinbrook out of moratorium and reduce the Clarksburg deficit. Eight policy areas are in moratorium for housing and six for jobs.

2003 The *2003-2005 AGP Policy Element* consists of the "top-to-bottom" review requested by the County Council in 2001. This review is described in detail at the end of this timeline.

FY2005 The new Growth Policy goes into effect on July 1, 2004. Without Policy Area Transportation Review, the main issue is adoption of the School Adequacy Test results, which the Council had delegated to the Planning Board. All clusters are found to be adequate for the next fiscal year.

2005 The *2005-2007 Growth Policy* studies the time limits of a finding of adequate public facilities and how APF tests are conducted for record lots. The Planning Board recommends retaining the 5-to-12 year time limits as well as substantial changes to extension provisions and tests for recorded lots. These recommendations are adopted by the County Council in 2006. The report also contains the 2005 *Highway Mobility Report*, an assessment of congestion conditions around the County, studies of the boundaries of two Metro station policy areas, and a review of development activity since the elimination of Policy Area Transportation Review. The Council does not adopt a new Growth Policy in 2005, so the *2003-2005 Growth Policy* remains in effect.

2006 The Council adopts changes to Chapter 8 and Chapter 50 of the County Code relating to the time limits of a finding of adequate public facilities and how APF tests are conducted for record lots. In June, the Planning Board updates the school test results and finds that all clusters are "adequate" by growth policy standards. In December, the County Council directs the Planning Board to study the major aspects of the growth policy and return with recommendations by May 21, 2007.

IN DETAIL: THE 2003 REVIEW OF THE ANNUAL GROWTH POLICY

The *2003-2005 AGP Policy Element* consists of the "top-to-bottom" review requested by the County Council in 2001. The following summarizes this review and the changes to the growth policy adopted by the Council.

The Top-to-Bottom Review Begins

In the period leading up to the start of the 2003 growth policy review, Park and Planning staff conduct research and analysis on growth policy issues. The resulting reports are presented to the Planning Board and County Council in February 2003. These reports consist of:

- An update/revision of the summer 2002 paper, consisting of an in-depth review of growth policy-related issues and a list of alternative approaches that staff would explore in the *Staff Draft 2003-2005 AGP*;
- A review of how adequate public facilities ordinances are administered in other jurisdictions around the country,
- A review of the "effectiveness" of Policy Area Transportation Review in slowing development;
- A report of two growth policy "focus groups" designed to elicit concerns about the current approach;
- Impact of the AGP on traffic congestion; and
- Factors affecting school enrollment changes.

Park and Planning staff release the *Staff Draft 2003-2005 AGP* on May 1, 2003. Among the recommendations in the Staff Draft:

- *Transportation:* Staff explore three options for reforming Policy Area Transportation Review: (1) keeping the current system but fixing the main problem: how to calculate transit service; (2) change to a new and much simpler system for setting staging ceilings; and (3) eliminate Policy Area Transportation Review and strengthen Local Area Transportation Review. Of these, staff recommends option 2.

- *Schools:* Staff recommends the changes that were ultimately adopted by the County Council.
- *Impact taxes:* A bill to expand and increase impact taxes had previously been introduced and staff endorses the basic properties of that bill.

2003: Planning Board Recommendations

On May 15, the Planning Board holds a public forum on the growth policy and begins a series of public worksessions that last through July. The Planning Board begins by asking basic questions about growth and its implications for the County. The Board reviews the County's plans and policies related to growth and develops a policy framework to support those policies and plans.

The administration of the adequate public facilities ordinance had been based on detailed measurements and standards of infrastructure availability and usage. These measurements and standards were adjusted from time to time to account for County policies. The result was a very complicated system with many individual calculations being conducted, which – critics charged – did not always adding up to a coherent growth policy for the County.

The Planning Board breaks with this tradition by suggesting that an APFO, once justified by sufficient objective analysis, could then be administered without a complicated system of measurements and standards that only a few people fully understand. The Board recommends that the County use all of its traffic counts, transit service measurements, analysis of past and future growth, the likely pace of construction of new infrastructure, and other calculations to identify an overall pace of growth that the County can absorb without further strain on public facilities. Once that overall pace of growth is identified, the Board suggests, a relatively simple process can be used to determine where new development could take place, as long as the process is consistent with the County's General Plan and land use policies. The Board's approach prioritizes development approvals based on transit service – more approvals would be permitted in metro areas, fewer in other areas.

The Planning Board also endorses increased/expanded transportation impact taxes and a new school impact tax.

The Planning Board releases these recommendations to the public and transmits them to the County Council and County Executive on August 6, 2003.

2003: County Council Consideration

The County Council's review of the Annual Growth Policy begins with a public "teach-in" on Saturday, September 13, 2003 in the Council Office Building cafeteria. The County Council then holds public hearings on September 16 and 24. The PHED Committee holds worksessions on September 22, 29, October 7 and 14. The MFP Committee holds a worksession on proposed impact taxes of October 16. The full Council holds AGP and impact tax worksessions on October 21 and 23.

During the Council's review, Council staff expresses the viewpoint that "staging ceilings are no longer warranted." Among the reasons cited in their October 21, 2003 memo to the Council:

- Staging ceilings measure the capacity of roadway links, but "today the biggest source of travel delay is at intersections, which is measured by Local Area Transportation Review" and
- "Most important, with the possible exception of Clarksburg, no policy areas are left with extensive amounts of master planned development that doesn't already exist or is in the pipeline. Therefore, there is not much more upstream/downstream effect about which to be concerned. Even Clarksburg is not a central issue: its employment will draw traffic mainly from either outside the County or in a reverse commute from downcounty, and most of its housing will be built as part of development districts."

The County Council takes action on the growth policy on October 28, 2003. The changes to the impact tax go into effect on March 1, 2004 and the new growth policy goes into effect on July 1, 2004.

- The Policy Area Transportation Review test is eliminated. The Planning Board must prepare an annual report on congestion, including a list of priority transportation improvements. (First called the *Approved Development and Congestion* report, it is now called the *Highway Mobility* report.)
- Local Area Transportation Review is tightened.
    - Intersection congestion standards are tightened by 50 Critical Lane Volume (CLV) in all areas except Metro Station Policy Areas.
    - Transportation projects that are fully funded in the first 4 years of the State or County capital improvements programs may be counted for capacity (instead of the first 5 years, as was the previous practice).
    - Limited LATR applies to subdivisions generating 30-49 peak-hour vehicle trips. The Planning Board must either require the development to meet LATR requirements or, at the Board's discretion, allow the developer to pay a fee equal to 50% of the applicable impact tax.

- The Planning Board is given explicit authorization to require that larger subdivisions test more distant intersections.
- The Planning Board is given more latitude to reject proposed LATR improvements if the Board finds that the proposed improvements (such as additional turning lanes) are not desirable, will have a negative impact on pedestrians, etc. The Planning Board has explicit authorization to require trip mitigation instead of a physical improvement, even if the developer prefers to make a physical improvement.
- At the Planning Board's discretion, trip mitigation programs must be at least 12 years but no more than 15 years in duration.
- Three more intersections are added to the list of intersections in the Potomac Policy Area that are subject to LATR.

- The Alternative Review Procedures are modified.
  - The Metro Station Areas procedure only applies to LATR now. The fee has changed (now based on impact tax). The Planning Board is no longer required to perform Comprehensive LATR in policy areas where the procedure is used.
  - The Special Ceiling Allocation for Affordable Housing is eliminated.
  - The Corporate Headquarters procedure was eliminated, except that Lockheed Martin remains eligible to use it for expansion of their headquarters, if needed.
  - The Strategic Economic Development Projects procedure is retained, but the fee is changed (now based on impact tax).
- The Development Districts process is unchanged, except that PATR will no longer be a basis for requiring transportation improvements.
- The School Test is tightened.
  - The adequacy test (enrollment compared to capacity) is 100% at the high school level and 105% at the middle and elementary school levels. The test continues to look 5 years into the future.
  - There is no longer any "borrowing" at the elementary or middle school levels. At the high school level, capacity may be borrowed from one adjacent cluster if needed to meet the 100% standard.
  - If enrollment exceeds the standard, but is below 110%, the developer must make a "school facilities payment" to the County. The payment is $12,500 per student, using the most recent student generation rates. Student generation varies by housing type.
  - If enrollment exceeds 110% of capacity at the elementary or middle school level, there is a moratorium on all new residential approvals

except senior housing. The same is true at the high school level, except that the capacity borrowing provisions (see “b”) apply.

- There is no definitive way to predict which areas might go into moratorium because of schools. However, in FY 2005 no areas would go into moratorium, or be subject to the school facilities payment, if the projects that add school capacity in the Superintendent’s Recommended FY 2005-10 CIP are fully funded.

- Development Impact Taxes are changed.
  - The impact taxes go into effect for building permits applied for starting March 1, 2004.
  - The transportation impact tax structure is changed and its rates generally are raised.
    - There are three transportation impact tax areas: Metro Station Policy Areas, Clarksburg, and everywhere else (the ‘General District’).
    - New rates are set. Rates in Metro Station Policy Areas are half those in the General District. Rates in Clarksburg are 50% higher for residential development and 20% higher for commercial development than in the General District.
    - Affordable housing units are exempt from the tax. Formerly, all units in a development with a significant percentage of affordable units were exempt.
    - The rate for a productivity housing unit is half the otherwise applicable rate.
    - The tax does not apply in State-designated Enterprise Zones, of which there are currently two in Montgomery County: the Silver Spring and Wheaton Central Business Districts.
    - The new transportation impact tax is anticipated to raise about $20 million annually. The revenue will be variable depending upon the residential and commercial construction activity, as well as the amount of impact tax credits drawn down in a given year.
    - The revenue collected in Clarksburg, Gaithersburg, and Rockville must be spent in the same area from which it is collected. Elsewhere, the revenue collected from a development should be spent on projects that serve the traffic generated by the development, if feasible.
    - There is a limited grandfather clause that is expected to allow four projects to pay the old rates: Fairfield development project in Germantown Town Center (residential portion), the

Hecht's site in Friendship Heights, White Flint Place (non-residential portion), and the Air Rights Building project in Bethesda CBD.

- The credit provisions were tightened prospectively.
    - A developer can receive a dollar-for-dollar credit against his impact tax for transportation capacity improvements. Until now, if a developer has spent more for a transportation improvement than the calculated impact tax, not only would there be no impact taxes paid, but the developer could apply the 'excess' credit against the impact tax on a future development for which the developer owns at least a 30% interest. New 'excess' credits will no longer be applicable, although existing excess credit may still be applied.
    - A developer can receive a credit against the applicable impact tax for capacity improvements to County roads, but not to State roads (unless, in Rockville or Gaithersburg, a Memorandum of Understanding between the City and County allows for a State road credit).
    - Credits issued after March 1, 2004 expire after 6 years from the date of their issuance.

o A new school impact tax on residential development is enacted.

- The base rates for single-family housing are $8,000 for a detached unit and $6,000 for an attached unit. For single-family units there is a surcharge of $1 per square foot for each square foot of gross floor area above 4,500 square feet to a maximum of 8,500 square feet (gross floor area calculation includes basement). Therefore, the top rate for a single-family-detached unit is $12,000 and the top rate for a single-family attached unit if $10,000.
- The rates for multi-family units are $4,000 for a garden apartment (except 1-bedroom garden apartments) and $1,600 for high-rise and 1-bedroom garden apartments.
- The rate for senior housing units is zero.
- Affordable housing units are exempt from the tax.
- The rate for a productivity housing unit is half the otherwise applicable rate.
- The school impact tax does not apply in State-designated Enterprise Zones, of which there are currently two in

Montgomery County: the Silver Spring and Wheaton Central Business Districts.

- The school impact tax is anticipated to raise about $25 million annually. The revenue will be variable depending upon residential construction activity.
- There is a limited grandfather clause. This clause is expected to allow three projects to be exempt: Fairfield development project in Germantown Town Center (residential portion), the Hecht's site in Friendship Heights, and the Air Rights Building project in the Bethesda Central Business District.
- Revenue from the school impact tax must be used only for public school projects that add capacity: new schools, additional permanent classrooms, and the portion of modernizations that add permanent classrooms.

APFO Reform Part 1: Identifying and Prioritizing Infrastructure, the School Adequacy Test, Testing Other Public Facilities, and the Pipeline of Approved Development

Richard Montgomery High School

INTRODUCTION

This report contains the Planning Department's analysis and recommendations for strengthening the Growth Policy as a tool for assessing the County's progress in delivering infrastructure and for setting priorities for programming public facilities; for amending the Growth Policy's school adequacy test; for considering other public facilities in the Growth Policy; and the Planning staff's analysis of the size, age, and other characteristics of the pipeline of approved development.

In reviewing the potential for adding other public facilities to those included the Growth Policy, Planning staff identified a few land use issues connected to those facilities. Although we raise them here, we are not recommending that these issues be addressed through the Growth Policy itself.

RECOMMENDATIONS

Identifying and Prioritizing Infrastructure

Planning Department staff recommends that the biennial component of the Growth Policy review be substantially expanded to provide improved information and guidance for the Capital Improvements Program and other public decisions. The Growth Policy was designed to provide input to the Capital Improvements Program by identifying areas where public facilities are inadequate. Over the years, the Growth Policy has had varying success in meeting this responsibility. More recently, the Highway Mobility Report is succeeding in providing detailed analysis and recommendations for prioritizing roadway improvements.

Planning staff suggests that the biennial component of the Growth Policy include:

- An analysis of current and future pace and pattern of growth in the County and the factors affecting demand for public facilities in established communities.
- An update on the County's success in meeting a set of indicators (if the County agrees to institute an indicators program, such as a Sustainability Indicators program based on General Plan principles and more that Planning staff recommends). Sample indicators: percentage of development that is mixed-use and location within one-half mile of a transit station; percentage of non-SOV commuting trips; acres of impervious surface. These indicators may also include desired levels of service for public facilities that are not regulated by the APFO: parks, libraries, community centers, etc.
- An implementation status report for each master plan and sector plan, that will include a review of how planned development is proceeding, and whether the public actions/facilities in the plan are occurring in a timely way. If the plan contains a staging element, this would be an opportunity to review the current status determine if the Growth Policy is reinforcing or working against the staging envisioned when the plan was adopted.
- A comprehensive list of priority facilities that are recommended for addition to the Capital Improvements Program. The report may also recommend other public actions needed to achieve master plan objectives, or to improve the County's performance on its adopted set of indicators (if the County chooses to pursue an indicators program).
- The current biennial Growth Policy schedule requires a staff draft report in May and a Planning Board final draft in June in odd-numbered years. This schedule would result in Planning Board facility recommendations as the County Executive is beginning the biennial Capital Improvements Program cycle.

When the County Executive's Recommended CIP is released, Planning staff would use the Growth Policy recommendations and analysis as the basis for preparing comments on the CIP for Planning Board review and transmittal to the County Council.

Schools

Revise the test so that the definition of adequacy more closely conforms to the MCPS definition of capacity by lowering the threshold that triggers the School Facilities Payment. That threshold should be based on "MCPS program capacity," not "Growth Policy capacity" but should be inflated to avoid the problems that have kept the County from using program capacity in the past. In addition, for the purposes of determining if a School Facilities Payment is required, the practice of "borrowing" high school capacity should not be used.

Staff recommends that the threshold be when enrollment reaches 110 percent of program capacity, which would cause development in the following clusters to pay the school facilities payment: Blake, Clarksburg, Einstein, Kennedy, Northwest, Wheaton, and Wootton. If policymakers prefer to continue to use "Growth Policy capacity," staff would recommend that the threshold for the School Facilities Payment be set at the point when enrollment reaches 95 percent of capacity. This would cause residential development to pay the School Facilities Payment in Bethesda-Chevy Chase, Blake, Clarksburg, Kennedy, Northwest, Quince Orchard, and Springbrook.

Increase the School Facilities Payment from $12,500 per student to $32,524 for each full-time equivalent elementary school student, $42,351 for each middle school student, and $47,501 for each high school student. This figure is derived from per-student costs for new schools. An alternative would be to have three school facilities payments (one each for elementary, middle, and high schools) and a development project would make a payment for each level that exceeded the threshold. So if enrollment exceeded the capacity threshold in a cluster at the elementary school level, it would pay the elementary school facilities payment only.

Retain the upper limit so that when enrollment greatly exceeds capacity, development approvals in that cluster stop. This upper limit has very rarely been exceeded, but when it was, new school facilities were promptly programmed. This suggests that this upper limit is serving an "alarm" function when enrollment and capacity are severely out of balance. Staff does not see a downside to retaining the upper limit; the current level seems to be about right, but is based of "Growth Policy capacity."

Consider capturing development that occurs outside the subdivision process. As smaller housing units are replaced with larger ones, or are expanded with additions, some additional student generation can be expected. There is sufficient academic study of this issue to legitimately link student generation to size of home. Although the total number of additional students is small, the County could consider applying the School Facilities Payment or the School Impact Tax to these properties. Staff is not yet ready to make a recommendation on this issue because we have not reviewed the number, type and location of these replacements/expansions. Possibly this issue could be studied along with the "mansionization" issue or in future Growth Policy studies.

Make some technical corrections. The current Growth Policy Resolution *implies* that the Planning Board must continue to conduct the School test annually even if the Council fails to pass a new Growth Policy resolution, but explicit language is needed. The language in the Growth Policy concerning school clusters in municipalities did not anticipate that municipalities would pass APFOs that are more stringent than Montgomery County's. As a result, the provision can be read two completely different ways.

Monitor the Office of Legislative Oversight (OLO) review of indicators for Montgomery County Public Schools to see if they serve as a basis for further modification of the School Test.

Water and Sewerage Facilities

Planning Department staff recommends no changes to the adequacy test for water and sewerage systems. For purposes of the APFO, our primary concern is the potential for new development to be approved even when water and sewerage systems are not adequate to support that development. Staff believes the current test, backed up by planning and implementation of system improvements, is working as intended.

Police

Planning Department staff recommends no changes to the adequacy test for police service. Planning staff reviewed public safety facilities and services in detail in 2005 and recommended no changes at that time. For police services in particular, staff noted that the number and location of police "facilities"—that is, police stations – is not closely related to levels of service. Staff suggests that there are benefits to having the Police Department participate in the Development Review Committee for Crime Prevention through Environmental Design (CPTED) review of new development.

Fire and Rescue Services

Planning Department staff recommends no changes to the adequacy test for fire and rescue services. Planning staff reviewed public safety facilities and services in detail in 2005 and recommended no changes at that time. For fire and rescue services in particular, staff noted that the number and location of fire stations is correlated to adequacy (as measured in response times) because, unlike police, fire and rescue personnel are located at a station until a call comes in. Staff's 2005 research indicated that the major challenge for adding stations was finding suitable locations and that the master plan process is the best mechanism for designating those locations. Montgomery County Fire and Rescue Services representatives participate in the master plan process, and MCFRS has an up-to-date master plan.

During the course of our study this year, staff noted several aspects of fire and rescue services that may be useful for making land use recommendations during the master plan process. These include the fact that the great majority of calls are for emergency medical services, which suggests that Planning staff discuss with MCFRS the possibility of identifying locations for emergency medical units in master plans.

The observation that only 12 percent of calls are for fires, and that most of these are for brush and vehicle fires, suggests to Planning staff that there are opportunities to increase the use of smaller fire trucks in the fleet, which allows use of smaller fire stations and road turning radii. Planning staff raises this issue only from a land use perspective: larger parcels of land are becoming rare, and the future of neighborhood design depends in part on narrower streets with smaller turning radii.

Other Public Facilities

Planning Department staff does not recommend adding to the list of public facilities tested in the APFO. However, Planning staff's review of these facilities has prompted us to offer some suggestions about how the adequacy of these facilities can be strengthened. The chief suggestion has to do with the Growth Policy itself.

Planning staff recommends that the Recreation Guidelines applied in the regulatory process be revised. This project is included in the Planning Department's requested FY08 work program. Among the issues to consider: whether to eliminate provisions that allow developers to count existing public facilities as part of satisfying the recreational requirements for new development.

Planning staff's research indicates that additional study of parking policies and procedures is warranted. In this study, Planning staff reviewed Parking Lot Districts (PLDs) as a "public facility" for APFO purposes. Although we don't suggest that they be incorporated in the APFO, we note that broader application of PLDs can support trip reduction initiatives and serve revitalization objectives outside of Central Business Districts. County parking policies could bear re-examination, including the minimum parking requirements in the zoning ordinance.

DISCUSSION

The Growth Policy as a Tool for Identifying and Prioritizing Infrastructure

The County Council charged the Planning Board with developing *"A recommended set of tools for managing growth and funding infrastructure to maintain and enhance Montgomery County's quality of life, including:*

- *recommendations for directing future growth and managing the pace of that growth in accordance with the goals and objectives of the General Plan;*
- *identifying and prioritizing infrastructure needed to support existing and future residents, businesses, and visitors;*
- *and recommendations for strengthening the relationship between the pace of growth and the provision of public facilities, services, and infrastructure."*

The report of the Sustainable Growth team, *A Vision of Sustainable Development for Montgomery County*, addresses the first bullet from a sustainability perspective. This section addresses the second two bullets.

The 12 points outlined in the background portion of the Council's resolution drew the link between the General Plan and the subsequent legislation (such as the APFO) and tools (such as the Growth Policy) designed to manage and stage growth.

The Council's charge can be organized into a three-part problem statement:

1. How to link the facility planning process to our master plan goals,
2. How to accomplish this linkage holistically, so that both new and existing communities enjoy the quality of life envisioned in our master plans, and
3. How to determine if the process for planning and implementing facilities actually achieves the intent of the master plans.

Staff developed two concepts to help frame these problems. The first concept is that our objective is to maintain the quality of life for all residents in accordance with the visions in our master plans. Concerns about quality of life are triggered when facilities fail to keep up with development in the County. Two aspects of this concept:

- **Maintaining our existing communities:** This should be the primary goal since it is the residents (and voters) in the existing communities—not people who don't live here yet—that are concerned about overcrowded roads and schools. Maintaining existing neighborhoods is the thrust of several of our down-County master plans.
- **Fitting new communities into the old communities**: Assuming that some degree of growth is desirable and/or inevitable, our goal should be to build the new communities envisioned in our master plans. Part of achieving this goal is looking at the provision of facilities in changing neighborhoods.

The second concept is to propose that we can establish a system that addresses all three problems. Numerous jurisdictions have attempted to create such a system. The literature on modern growth management practices describes a similarity of program structure, regardless of the type of jurisdiction, state, county, city. A sample structure or system is as follows:

- Policy statement pertaining to philosophy and towards growth.
- List of public facilities or categories of environmental goal – transportation, schools, water quality, air quality, etc.
- Standards for each listing.
- Test or performance standards- levels of service, ratios or qualitative measurements.
- Evaluation of effectiveness.
- Oversight mechanism.
- Periodic review.
- Feedback to planning and budgetary processes.

In Montgomery County, current growth management efforts focus on the first four components with much less emphasis on the second four. In other words, we have do not have the full system. The challenge is to better integrate the missing or weak components to strengthen the Growth Policy process. A stronger and more coherent system provides the basis for addressing the issue of whether or not facilities and services are adequate and, critically, how to pay to for such services and facilities.

The Current Growth Policy and the Capital Improvements Program

The Growth Policy provides guidance for synchronizing new development and the provision of public facilities. The Growth Policy is responsible for identifying areas where public facilities are inadequate (indicating where the County should add new facilities to the CIP), possibly pausing development until those facilities are made adequate through the CIP, and/or determining the responsibility of private development to provide the public facilities needed to meet the increased demand that is the result of growth. Over the years, the Growth Policy has had varying success in meeting this responsibility. More recently, the Highway Mobility Report is succeeding in providing detailed analysis and recommendations for prioritizing roadway improvements.

That classic relationship between the Growth Policy and the CIP only indirectly takes into account the public facilities needed to support existing communities within Montgomery County. The Growth Policy's role is incomplete because the CIP responds to both the *growing* and to the *mature* areas in the county. Facilities that are programmed in the mature portion of the County include new facilities as well as expansions, modifications and renovations. Comparing the facilities being supplied to both new and old development with demand from new development alone obscures the issue of supply and demand. There is real benefit in considering the facility demands

from both existing and new development somewhere in the Growth Policy process, particularly since the CIP does.

FIGURE 1

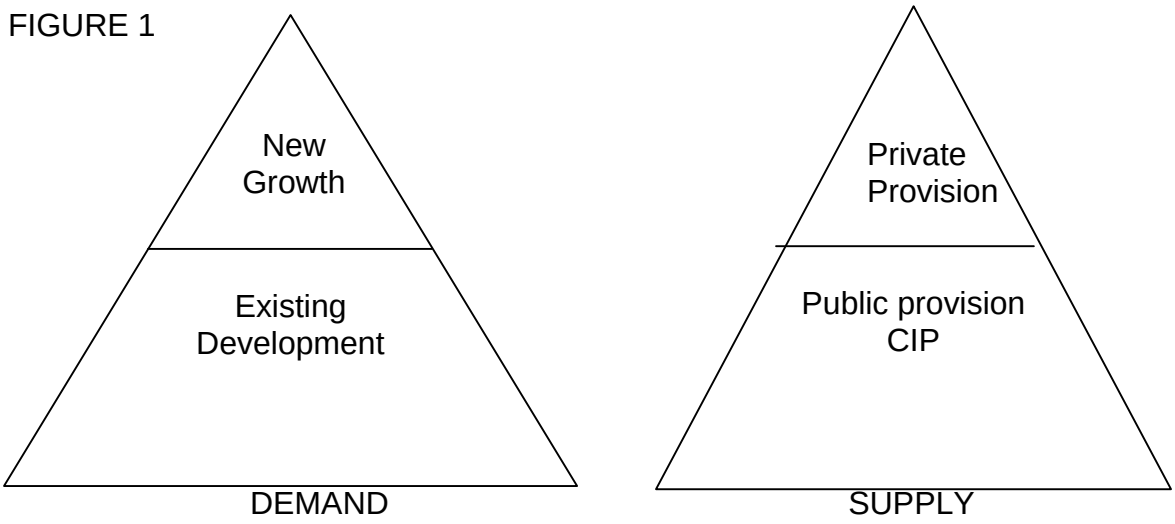


Figure 1 graphically represents the fact that existing development and infrastructure are much greater in importance than new development and new facilities. Most residents and businesses are housed in “existing” development and they depend on “existing” facilities to perform daily activities and for a high quality of life. The Growth Policy places greatest emphasis on the top of the pyramid with the expectation that other mechanisms are taking care of the rest of the pyramid.

Figure 1 also suggests a notion that existing residents be principally interested in the supply of public facilities serving existing development, and that new development take responsibility for providing the facilities needed to support growth.

Implementing the Growth Policy Through Development Review

The Growth Policy is implemented on a case-by-case basis through the regulatory process.

There are two means of ensuring “adequate facilities” through the development review process. For certain types of facilities, such as roads and schools, the Growth Policy tests individual development proposals through a complex process that seeks to ensure overall supply and demand for road and school capacity are kept in balance. For other types of facilities, the County does not apply a “test;” instead, we apply standards through the regulatory process to require new development pay for incremental impacts, thereby preserving whatever equilibrium already existed. This method responds to growth rather than attempts to manage it.

Examples of the latter approach include parking and recreation facilities. The development standards in the Zoning Ordinance require that certain facilities (e.g.,

parking, recreation facilities) be provided by the private sector to support proposed development. For example, developers must provide on-site parking to address the expected demand (or pay parking district taxes in the CBDs so that the County can provide the necessary parking). Similarly, we apply the recreational guidelines to new residential projects to ensure that the new communities will have facilities that would otherwise be provided publicly as neighborhood parks. In this example, the County transfers the costs of constructing and maintaining recreational facilities to the private sector. As with parking standards, the application of formulas during the development approval process is used to secure the facilities needed to satisfy the anticipated increase in demand.

These methods concentrate on the "top of the pyramid" in Figure 1. They address the needs resulting from growth but do not consider the needs that continually evolve in existing communities. In addition, it is not always easy to find the clear link between the public facility requirements in the development review process and the planning goals expressed in our master plans. In this way, the feedback loop is incomplete without a means to measure our progress in achieving our master plan.

Recommendations for Strengthening the Growth Policy a Tool for Identifying and Prioritizing Infrastructure

In order to address the challenges identified above, Planning Department staff recommends that the biennial component of the Growth Policy review be substantially expanded to provide improved information and guidance for the Capital Improvements Program and other public decisions.

This recommendation does not involve changes to the guidelines for administering the APFO during the development review process. Instead, it would strengthen the Growth Policy's role as an input into the budget process, particularly the Capital Improvements Program. It would add regularly-updated reports on the status of the implementation of master plans to the material that is used to recommend priority public facilities. If the County elects to pursue a Sustainability Indicators program (or similar program), the updated status of those indicators could also be included in this review. Sustainability indicators could also be among criteria used to select the public facilities recommended for higher priority.

The Growth Policy schedule allows for a review of policy issues on a biennial basis; not coincidentally, the "on" years from the Growth Policy alternate with the "off" years for the CIP. This means that Growth Policy recommendations are well-timed for consideration in the biennial capital budget process.

Planning staff suggests that the biennial component of the Growth Policy include:

- The biennial Growth Policy would include analysis of current and future pace and pattern of growth in the County. This analysis would also include demographic and other changes affecting existing communities, especially factors influencing existing communities' need for public services.

- The report would also include an implementation status report for each master plan and sector plan. Components would be: a review of how planned development is proceeding, and whether the public actions/facilities in the plan are occurring in a timely way. If the plan contains a staging element, this would be an opportunity to review the current status determine if the Growth Policy is reinforcing or working against the staging envisioned when the plan was adopted.
- If the County agrees to institute an indicators program, such as a Sustainability Indicators program based on General Plan principles and more that Planning staff recommends), the report could include updated indicator statistics. Sample indicators: percentage of new development that is mixed-use and location within one-half mile of a transit station; percentage of non-SOV commuting trips; and acres of impervious surface. These indicators could include measures of new and existing development. They may also include desired levels of service for public facilities that are not regulated by the APFO: parks, libraries, community centers, etc.
- These materials would be used by the Planning Board to develop a comprehensive list of priority facilities that the Board would recommend for addition to the Capital Improvements Program. The report may also recommend other public actions needed to achieve master plan objectives, or to improve the County's performance on its adopted set of indicators (if the County chooses to pursue an indicators program).
- The current biennial Growth Policy schedule requires a staff draft report in May and a Planning Board final draft in June in odd-numbered years. This schedule would result in Planning Board facility recommendations as the County Executive is beginning the biennial Capital Improvements Program cycle.
- When the County Executive's Recommended CIP is released, Planning staff would use the Growth Policy recommendations as the basis for preparing comments for Planning Board review and transmittal to the County Council.

This recommended process incorporates Planning Department responsibilities that have been conducted separately (Highway Mobility Report, CIP Review) or irregularly (master plan status reports). The potential for an indicators program is the main new element.

Montgomery County Public Schools

Since 1986, when the Annual Growth Policy (Growth Policy) was first applied, Montgomery County Public Schools (MCPS) enrollment has grown from 94,460 to 137,798 students. This is an increase of almost 50 percent. Although, there was a decline in enrollments in the 1970s and early 1980s, the public school student population grew steadily through the 1990s. By 2006 school enrollment reached a plateau and declined slightly, according to data contained in the FY 2008 *Recommended Capital Budget and Amendments to the FY 2007-2012 Capital Improvements Program*. This is the first school year with an enrollment decline since 1983. Enrollment is projected to rise again in a few years because the increase in the number of births was higher since 2000. Annual births have exceeded 13,000 since 2000.

In 2003, when staff last analyzed the school test, enrollment was 138,891 students and MCPS was in the process of modernizing and building additions to many of the existing schools, as well as opening new schools. MCPS has made a concerted effort over the last few years to reduce the number of relocatable classrooms. The approved *FY 2007-2012 MCPS Capital Improvements Program* (CIP) is still addressing the number of relocatable classrooms through additions and modernizations. This CIP report notes that by the end of the current CIP the number of relocatable classrooms projected to be in use will be 337. This is a reduction from the 719 previously in use in 2005-06. MCPS proposes to further reduce the relocatable classrooms to 229 by the 2012-13 school year if additional funding is provided. MCPS facility planning is increasingly directed at school additions and modernizations rather than new schools. There are 179 elementary schools, 38 middle schools, 25 high school, 6 special schools, and one career and technology center in the system.

School Test Methodology

The County Council approves the school test methodology in the Growth Policy resolution. Once the Council approves the CIP, MCPS recalculates the projected school capacity (based on final determination of funded capacity) and provides all data for the school test as required by the Adequate Public Facilities Ordinance (APFO).

The current Growth Policy school test uses a definition of capacity based on a standard multiplier. For example, kindergarten capacity is set at 22 students per classroom; grades 1-5 at 25 students per classroom and grades 6-12 are set at a capacity of 22.5 students per classroom. The test compares capacity available in the 6th year of the funded CIP to enrollment projections for the same year. (This is equivalent to the 5th year of the Growth Policy test.) Forecasts of enrollment and capacity are prepared by MCPS staff and reviewed by the Montgomery County Planning Board staff before the Council reviews the school test.

The School Test language in the Growth Policy is:

Public School Facilities

S1 Geographic Areas

For the purposes of public school analysis and local area review of school facilities at time of subdivision, the County has been divided into 24 areas called high school clusters, as shown in Map 32. These areas coincide with the cluster boundaries used by the Montgomery County Public School system.

The groupings used are only to administer the Adequate Public Facilities Ordinance and do not in any way require action by the Board of Education in exercising its power to designate school service boundaries.

S2 School Capacity Measures

The Planning Board must evaluate available capacity in each high school cluster and compare enrollment projected by Montgomery County Public Schools for each fiscal year with projected school capacity in 5 years. If sufficient high school capacity will not be available in any cluster, the Planning Board must determine whether an adjacent cluster will have sufficient high school capacity to cover the projected deficit.

The Planning Board must use 100% of Council-funded capacity at the high school level and 105% of Council-funded capacity at the middle and elementary school level as its measures of adequate school capacity. This capacity measure does not count relocatable classrooms in computing a school's permanent capacity.

Council-funded regular program classroom capacity is based on calculations that assign 25 students for grades 1-6, 44 students for half day kindergarten where it is currently provided, 22 students for all day kindergarten where it is currently provided, and an effective class size of 22.5 students for secondary grades.

S3 Grade Levels

Each cluster must be assessed separately at each of the three grade levels -- elementary, intermediate/middle, and high school.

S4 Determination of Adequacy

After the Council has approved the FY 2005-2010 CIP, the Planning Board must recalculate the projected school capacity at all grade levels in each high school cluster. If the Board finds that public school capacity will be inadequate at any grade level in any cluster, but the projected enrolment at that level will not exceed 110% of capacity, the Board may approve a residential subdivision in that cluster during FY 2005 if the applicant commits to pay a School Facilities Payment as provided in County law before receiving a building permit for any building in that subdivision. If projected enrollment at any grade level in that cluster will exceed 110% of capacity, the Board must not approve any residential subdivision in that cluster during FY 2005.

After the Council in 2005 has approved the amended FY 2005-2010 CIP, the Planning Board again must recalculate school capacity. If capacity at any level is projected to be inadequate, the Board must take the actions specified in the preceding paragraph in FY 2006.

S5 Senior Housing

If public school capacity in inadequate in any cluster, the Planning Board may nevertheless approve a subdivision in that cluster if the subdivision consists solely of multifamily housing and related facilities for elderly or handicapped persons or multifamily housing units located in the age-restricted section of a planned retirement community.

S6 Clusters in municipalities

If public school capacity will be inadequate in any cluster that is wholly or partly located in Rockville, Gaithersburg, or Poolesville, the Planning Board may nevertheless approve residential subdivisions in that cluster unless the respective municipality restricts the approval of similar subdivisions in its part of the cluster because of inadequate school capacity.

The final clause, S6, was written before Gaithersburg and Rockville adopted school tests that are more stringent than Montgomery County's. As a result, the provision can be read two completely different ways. It was intended to allow the Planning Board to continue to approve subdivisions in policy areas that the Growth Policy test showed as inadequate if the municipality did not honor the County-imposed moratorium. It can now be read to suggest that the Montgomery County Planning Board may not approve subdivisions in a cluster that overlaps a municipality if that municipality declares that schools are inadequate.

Gaithersburg and Rockville

The MCPS serves the entire county including the municipalities. School demographers incorporate new residential development from the municipalities with development approval authority into enrollment forecasts. Rockville and Gaithersburg have recently adopted adequate public facilities ordinances that include a schools adequacy test.

The City of Gaithersburg Ordinance No.01-107, approved in 2007, amends Chapter 24 of the City Code, and states "…. residential development shall not be approved if the subject property is within the attendance area … forecasted to have a student population that exceeds 110 percent of the Montgomery Public Schools Program Capacity two years in the future." Sharing of capacity between schools is not permitted.

The City of Rockville adopted an APFO with standards on November 1, 2005 that limits residential development where enrollment surpasses school program capacity. The determination of adequacy is based on program capacity as reported to the Board of Education with an increase of 105 percent for elementary and middle schools and 100 percent for high schools within a 2 year time frame, no borrowing permitted. Adequacy is determined by school, not cluster.

Both Rockville and Gaithersburg define adequacy as a percentage over school program capacity with no borrowing – in contrast to the County's school test, which uses "Growth Policy Capacity" and allows borrowing at the high school level. While Rockville and Gaithersburg's schools tests are stricter than the County's test, Rockville's is the stricter of the two and under current forecasts; a number of elementary schools serving the city are over capacity.[1]

Factors Considered by MCPS

Adequate school capacity is a calculation that compares projected enrollment numbers and existing and planned facility capacity based on program needs.

Enrollment

MCPS staff develops the enrollment numbers by using actual birth rates to establish a base kindergarten cohort for the year and then projects enrollment through 12th grade using a "cohort survivorship model." The forecast is adjusted for in/out migration; factors that apply to specific schools and growth from newly approved but not yet built development. Students from new development are added to the forecast when it appears that the development will be online during the six-year forecast period. The number of students generated from new development is calculated by housing unit type. Enrollment forecasts are developed every year in September and revised in March.

MCPS Program Capacity

The Superintendent's Recommended FY 2008 CIP contains modifications to the previous CIP school capacity calculations. The completion of phasing in full-day kindergarten eliminated the need to calculate half-day kindergarten. Middle school capacity had been calculated at a factor of 0.9, which apparently overstated capacity, and was adjusted to a capacity factor of 0.85.

Growth Policy Capacity

The Growth Policy school test uses its own capacity calculation based on a standard multiplier, which is then compared to the forecasts for enrollment for the 6th year of the CIP (5th year of the Growth Policy test). This Growth Policy capacity is multiplied by 105 percent to set elementary and middle school test capacities. High school capacity is 100 percent with borrowing allowed between clusters in the test. The Growth Policy capacity is greater than MCPS program capacity. The greatest amount of difference occurs when Growth Policy capacity is used for elementary schools with class-size reduction.

[1] September 12, 2005 Table, Enrollment Trends…Within the City of Rockville, page 17, APFO Ordinance.

Evidence of Change

The success of the school system is dependent on the quality of the facilities and services provided to students and the continuous improvements and adaptations to the learning environment. The School Board acknowledges this in their policy statement regarding facilities planning:

> *"Enrollment in MCPS is constantly changing. The fundamental goal of facilities planning is to provide a sound educational environment for changing enrollment. The number of students, their geographic distribution, and the demographic characteristics of this population all impact facilities planning. Net enrollment changes are driven by factors including birthrates, movement within the school system and into the school system from other parts of the United States and the world."*

Enrollment forecasts change for a number of reasons, both demographic and economic, and actual enrollment may differ from projected enrollment. One example of the possible influence of the local economic effects is the cost of housing. Median sales of single-family units (attached and detached) as well as rental housing rose dramatically between 2000 and 2005. School demographers think that this is contributing to a decline in enrollment in previously affordable areas of the county.

Changes to school capacity also reflect policy changes. For example, all day kindergarten requires more classroom space. The on-going initiative to reduce the inventory of relocatable classrooms translates into more school additions. Other policies have translated into smaller classroom size for elementary grades and gymnasiums in all elementary schools. Middle school policies are under current scrutiny.

MCPS staff briefed the Council regarding demographic trends earlier this year.[2] Findings in the report include:

- Total enrollment declined this year; net migration is variable; net immigration (foreign born students) is significant but declining.
- Percentage enrollment in public schools (rather than private schools) has been stable at 81 to 82 percent of county school population for the last 15 years.
- Enrollment in non-focus schools is up but down at focus schools (class-size reduction schools) since 2003, however focus school enrollment for ethnic groups other than white is increasing.
- FARMS (Free and Reduced Price Meals) enrollment is rising.
- The demographic composition of the student body is very different from that in 1970. This shift began in 1980s; since then, white enrollment has been steadily decreasing, while enrollment in all other race/ethnic categories has increased.

[2] January 29, 2007 *Education Committee Briefing on MCPS Demographic Trends*.

During the 2003 review of the schools test, MCPS staff prepared a report, *Factors Affecting Montgomery County Public Schools, Enrollment Change* (February 11, 2003). MCPS staff updated that report for this study and it was included in the second growth policy study interim report. A comparison between the 2003 and 2007 reports underscores the conclusion that the composition of enrollment is experiencing change: FARMS participation in 2003 was 22 percent compared to 23.5 percent in 2007 and ESOL enrollment in 2003 was 8.5 percent as compared to 10.7 percent in 2007. The projected births as compared to actual births for the same years were accurate, within 1 or 2 percent.

TABLE 1: Comparison of Projected and Actual Births

Years	2003 Births Projected	2007 Births Actual
2002	13,200	13,154
2003	13,250	13,529
2004	13,300	13,546
2005	13,350	13,507

Source: MCPS Staff Report, March 23, 2007

MCPS continually reviews the enrollment factors and finds that changes in enrollment stem from both new construction and turnover of existing housing. Examples of this observation are noted in the March 23, 2007 update. College Gardens and Rosemont Elementary Schools serve the King Farm in Rockville. Although more than 3,000 units were built in the King Farm development, enrollment remained at the same level as before development began, because enrollment was declining in other parts of the school's service area. When the existing housing in these neighborhoods turns over, however, there may be impacts on enrollment. In the case of Spark Matsunaga Elementary School, there was no older community and housing completions came on line faster than anticipated. Enrollment there is higher than anticipated even with the opening of a second elementary school.

Analysis

Is the current school test effective?

MNCPPC staff in 2003 conducted an extensive review of the school test and made five recommendations to the school test, which the County Council enacted.

- Continue to use the current definition of school capacity;
- Consider schools to be adequate at 105%of Growth Policy capacity for elementary and middle schools and 100 % of Growth Policy capacity for high schools;
- Discontinue the practice of borrowing for elementary and middle schools;

- Require developers to make a payment when projected enrollment exceed the standard (proposed 105% and 100%) but does not exceed 110%;
- Impose an absolute moratorium when enrollment exceeds 110%.

The analysis explained and reviewed the definition and calculation of capacity, including program capacity, adjusted Growth Policy capacity, state rated capacity and core capacity and concluded that standard multipliers were the best approach. The review included the standard of adequacy, the geography (cluster) the adjacent capacity (borrowing), point of application and exemptions/de minimis.

The FY 2007 Growth Policy schools test shows that all the clusters are adequate (Appendix 1); the same finding made in FY 2006. In fact, the test has resulted in only one finding of inadequacy since 1986. Perhaps the test is extremely effective – stimulating the construction of school facilities to a degree that keeps pace with growing demand – or perhaps the test is a paper exercise, designed to report a finding of adequacy no matter what the "real life" conditions.

There is some truth to both sides. The County has come close to failing the school test on several occasions and the public response was to program more school facilities, not relax the adequacy standard. On the other hand, there is a gap between the growth policy adequacy standard and the capacity standard used by the school system. That difference is the reason that the school test has (almost) always found every cluster to be adequate. If the MCPS program capacity were used, several clusters would be over capacity and would fail the Growth Policy test.

The school test calculation has been modified over the years and has gotten progressively tighter. In previous years, the Growth Policy test used a standard of 110 percent of capacity to accommodate over enrollment and allowed borrowing between school clusters at the elementary and middle school levels. In 2003, the school test was adjusted so that the capacity is set at 105 percent (except for high schools) and no borrowing is permitted at the elementary and middle school levels. That step would have brought several clusters into moratorium, if not for a huge increase in school capacity added to the County's CIP.

If there is a desire to have a school test that is more sensitive to the effects of new development and other changes in school enrollment, a logical option would be to tighten the schools test in some way, such as setting the adequacy standard at 100 percent of Growth Policy capacity (or switching to MCPS program capacity) and eliminating the provision for borrowing.

The enrollment figures indicate that the school test is not sensitive only to the effects of new development. Test results reflect change all over the County, including older, already-developed areas. In the Bethesda-Chevy Chase (BCC) cluster, for example, there is a projected elementary enrollment of 3,036 in 2011 and the cluster is deemed adequate under the school test. However, there is a need for CIP projects in the cluster to address overcapacity at the high school, middle and elementary school levels. In the

case of the B-CC cluster, the capacity issue can't be linked to growth from new development, because the cluster is in an established area where there has been little new development. The growth is related to a turnover in the neighborhoods or the tearing down and rebuilding of existing housing stock.

Are there aspects of the methodology that should be changed?

Capacity

One issue with the methodology is how classroom capacity is calculated, including what constitutes a "classroom" and whether to use *Growth Policy capacity* (standard multiplier) or MCPS *program capacity* (determined by each classroom's use). MCPS recently changed the calculation of the program capacity number for middle schools. According to the FY 2008 CIP, the multiplier for middle school program capacity was changed because it was found that the existing method overstated capacity. The multiplier was reduced from .9 to .85 (page3-1, 2008 CIP).

Current program capacity reflects the small classroom initiative for designated "Focus" schools. This initiative requires smaller classroom sizes for kindergarten and grades 1 and 2: kindergarten classes have 15 students per classroom and the first and second grades have 17 per classroom. This staffing level requires more classrooms per Focus school and many of those schools are currently overcapacity.

The gap between program capacity and Growth Policy capacity becomes clearer when the Growth Policy capacity is set at 100 percent or 105 percent (current test). Table 2 (Options 1A and 1B) prepared by MCPS, illustrates those different options. At 105 percent Growth Policy capacity, Clarksburg elementary school capacity is adequate. If capacity is calculated at 100 % Growth Policy capacity, Clarksburg fails. When MCPS program capacity is used (Table 2, Option 2A, 2B and 2C) for the Growth Policy test, many clusters fail. At 100% of MCPS program capacity, 15 clusters fail at the elementary level, two at the middle school level, two at the high school level (when no borrowing is allowed). As the percentage increases to 110% of MCPS program capacity, the failure rate decreases, but Clarksburg Middle School continues to fail and elementary schools in the Blake, Einstein and Kennedy clusters continue to fail. Of these clusters, only in Clarksburg can overcapacity be fully related to new housing growth. In other clusters, changing demographics in the built-up part of the County results in findings of inadequacy under the program capacity options. Table 2, Options 3A, 3B and 3 C show a Growth Policy test only for the Clarksburg cluster, illustrating an idea to apply the school test only in areas of the County where new development clearly plays the greatest rolls in students enrollment changes.

There has been discussion regarding using core capacity as the standard. Core capacity is the part of the school needed to support the school curriculum, such the lunchroom, and gymnasium and media center. For example, new elementary schools and ones undergoing modernization are designed with a core that can support

approximately 640 or 740 students. However, great variability of core size among older schools makes it impossible to use core capacity as a useful concept.

Accuracy of Forecasts

All forecasts are less accurate as the forecast horizon is extended. Inflection points (where a trend changes direction) are especially difficult to forecast. The forecast in 2003 for 2006 enrollment was 143,800 and actual 2006 enrollment was under 140,000.

Student Generation from New Developments

The Census Update Survey shows that fewer students are generated from higher density units, such as townhouses, apartments and condominiums. School demographers have evidence that neo-traditional/transit oriented development generates even fewer students. These student generation rate assumptions and the statistics underlying them are constantly reviewed, along with review of the changing nature of planned housing.

More detailed analysis of student generation from different housing types, and a comparison between student generations rates from new units and enrollments in older neighborhoods helps adjust these multipliers for local conditions. The MCPS staff conducts this type of sampling to refine enrollment forecasts.

MCPS staff and MNCPPC Research staff have discussed whether a special survey of neo-traditional/transit-oriented development is warranted to document the observed low student generation rates. At this time, we do not believe a survey would be helpful because of the small sample size and the somewhat loose definition of this type of development. However, staff is considering adding a question about house size or number of bedrooms to the next Census Update Survey, the answers to which would have uses beyond student generation rates.

Conclusions/Recommendations

Revise the test so that the definition of adequacy more closely conforms to the MCPS definition of capacity by lowering the threshold that triggers the School Facilities Payment. That threshold should be based on “MCPS program capacity,” not “Growth Policy capacity” but should be inflated to avoid the problems that have kept the County from using program capacity in the past.

In addition, for the purposes of determining if a School Facilities Payment is required, the practice of “borrowing” high school capacity should not be used. Staff recommends that the threshold be when enrollment reaches 110 percent of program capacity, which would cause development in the following clusters to pay the school facilities payment: Blake, Clarksburg, Einstein, Kennedy, Northwest, Wheaton, and Wootton. If policymakers prefer to continue to use “Growth Policy capacity,” staff would recommend that the threshold for the School Facilities Payment be set at the point when enrollment

reaches 95 percent of capacity. This would cause residential development to pay the School Facilities Payment in Bethesda-Chevy Chase, Blake, Clarksburg, Kennedy, Northwest, Quince Orchard, and Springbrook.

Staff understands that some may believe that a threshold be set at 110 percent of program capacity is too high and argue that any threshold over 100 percent of capacity is out of step with the best possible measurement of capacity. Staff considered this point of view because the school test already partially addresses the concern about using program capacity because it basically averages enrollment and capacity for all schools in the cluster. Staff remains with the 110 percent recommendation in large part to account for the relative effect of new and existing development on school capacity.

The purpose of this recommendation is two-fold: to have the adequacy test contribute toward understanding which schools require additional investments, and to trigger contributions from new development at a point closer to when schools are over-capacity. The current school test provides little in the way of information to guide capital investments, nor has it ever resulted in the School Facilities Payment being paid, despite the fact that subdivisions are being approved in clusters that are over capacity.

Increase the School Facilities Payment from $12,500 per student to $32,524 for each full-time equivalent elementary school student, $42,351 for each middle school student, and $47,501 for each high school student. This figure is derived from per-student costs for new schools, a calculation that is explained in some detail in the Infrastructure Financing section.

This is approximately the full cost-per-student of new school facilities. With this recommendation, staff is supporting a point of view that when facilities are inadequate, new development should not make the problem worse.

This recommendation would assess the school facilities payments separately for each level: elementary, middle, and high schools. If a development project were located in a cluster where only the *elementary* schools are inadequate, it would make the payment for each *elementary* school student generated. Each single-family detached home generates, on average, 0.32 elementary students, so the School Facilities Payment in this case would be $10,407.

Retain the upper limit so that when enrollment greatly exceeds capacity, development approvals in that cluster stop. This upper limit, which is the threshold for imposing a strict moratorium on new development that generates students, has very rarely been exceeded, but when it was, new school facilities were promptly programmed. This suggests to staff that there is some utility to retaining a standard that serves an “alarm” function when enrollment and capacity are *severely* out of balance. Currently, the strict moratorium threshold is based on “Growth Policy capacity.” If the threshold for a School Facilities Payment is changed to be expressed as program capacity, staff would suggest that a threshold for the strict moratorium, equivalent to the current threshold but expressed as program capacity, be found.

Consider capturing development that occurs outside the subdivision process. As smaller housing units are replaced with larger ones, or are expanded with additions, some additional student generation can be expected. There is sufficient academic study of this issue to legitimately link student generation to size of home. Although the total number of additional students is small, the County could consider applying the School Facilities Payment or the School Impact Tax to these properties. Staff is not yet ready to make a recommendation on this issue because we have not reviewed the number, type and location of these replacements/expansions. Possibly this issue could be studied along with the "mansionization" issue or in future Growth Policy studies.

It is clear from the MCPS data that change is occurring in older areas where no new or sizable development is occurring. GIS could be used to determine if changes in older neighborhoods are creating school capacity issues by tracking building permit and other data. Development such as teardowns, large additions including bedrooms, and minor subdivision approvals, may not add lots, but may generate new students

Make some technical corrections. The current Growth Policy Resolution *implies* that the Planning Board must continue to conduct the School test annually even if the Council fails to pass a new Growth Policy resolution, but explicit language is needed. The language in the Growth Policy concerning school clusters in municipalities did not anticipate that municipalities would pass APFOs that are more stringent than Montgomery County's. As a result, the provision can be read two completely different ways.

Monitor the Office of Legislative Oversight (OLO) review of indicators for Montgomery County Public Schools to see if they serve as a basis for further modification of the School Test.

The Office of Legislative Oversight (OLO), *Key Fiscal Indicators for Montgomery County Public Schools*, indicates that although enrollment has reached a plateau, the FY 07 MCPS operating budget was 31% larger than four years ago. The study focused on the operating budget and found that the increase in the number of teachers, costs of special education and costs associated with the salaries and benefits contributed to increased operating costs. The study included discussion of expanding the indicators to include measuring the efficiency and effectiveness of "successful' students in addition to the costs of educating each student. The OLO report recommended that the County Council consider assigning OLO a FY 08 Work Program project to develop a parallel package of key fiscal indicators for MCPS Capital Budget and Capital Improvements Program. Adaptations of the indicators study, as suggested by OLO, to measure the timing of the delivery of facilities included in the CIP, either by cluster or at the individual school level, would provide a more detailed picture of local and countywide conditions.

Water and Sewerage Facilities

Overview

The provision of water and sewer service in Montgomery County is comprehensively planned and provided. Policy guidance and comprehensive planning information is given by Park and Planning staff to the County Executive for preparation by the Montgomery County Department of Environmental Protection (DEP) of triennial ten year water and sewer plans. Geographic service area maps identify overall priority for service expansions. These maps are reviewed six times per calendar year through a category change process reviewed by the Planning Board. Service area priorities are also reviewed by Planning staff and the Planning Board during preparation of area master plans. County Council approval of the water and sewer plan guides the WSSC in scheduling and construction of the systems. Major water and sewer facilities are detailed in annual Washington Suburban Sanitary Commission (WSSC) Capital Improvement Plan (CIP) programs reviewed by the Planning Board and approved by the County Council. All funding is obtained and administered by the WSSC through a mix of federal, state, developer, applicant and customer charges for the construction, operation and maintenance of both networks.

At the time of development review, the WSSC evaluates development project submissions as a member of the Development Review Committee and approves the service extensions or not.

Current Adequacy Test

Based first on the Health Article and later the Environment Article in Maryland law, all of Montgomery County has been placed within one of six category areas for both water and sewerage service. The test for adequacy is identified in the subdivision regulations Chapter 50, Sec. 35, Montgomery County Code, as properties existing in either category 1, 2 or 3. No new subdivision dependent on community water and/or sewerage systems may be approved unless it is, at the time of Planning Board action, in one of these three categories. This, in effect, means that the water and/or sewerage system exists, either abutting the new property to be subdivided, or, generally, service will be provided within 2 years. If a more restrictive test were desired, approvals could be limited to areas in category 1, or to 1 and 2.

To apply a more restrictive policy to the entire county and capture properties not going through the subdivision process would require redrafting the current service area maps as part of the comprehensive water and sewer plan triennial update this year.

At the current time, the draft 2006-2015 *Comprehensive Water Supply and Sewerage Systems Plan* is in preparation by DEP. There should still be time to recommend inclusion of Growth Policy directives that would serve to implement County Council Resolution No. 16-17 in the final plan. The draft plan will be submitted for staff review and Planning Board action later in 2007.

State Involvement

State law (Environmental Article Title 9-Subtitle 5) and regulation (COMAR 26.03) require the preparation and processing of Water and Sewerage Plans by local and state government. Water and Sewerage (W&S) Plans are required to ensure the provision of safe and adequate water and wastewater systems to meet existing and future demands. The law and regulations specify information to be included and processes to be followed.

W&S Plans must be consistent with county and municipal comprehensive plans. In cases where the county and municipal comprehensive plans conflict, the Maryland Department of the Environment (MDE) will work with the affected local governments and Maryland Department of Planning (MDP) to resolve such conflicts with respect to the W&S Plan approval process.

The county planning agency must certify that the W&S Plan, revision or amendment is consistent with the county comprehensive plan. In accordance with the law, MDE seeks the advice of MDP on the consistency of the proposal with the local comprehensive plan and other appropriate matters. Where MDP and the local government disagree on the consistency of a plan, revision, or amendment, MDE requests that the state and local agencies meet to resolve the matter.

The law requires local governments to review the county plan annually and once every three years provide a report of this review to MDE. The county must adopt and submit to MDE a revision or amendment if the governing body deems a revision or amendment necessary or if MDE requires a revision or amendment. If a county is in the process of updating the plan but will not be able to complete the update in three years, a report to MDE indicating progress will suffice to meet the law.

Draft W&S Plan updates, revisions and amendments must be submitted to appropriate multi-county or regional comprehensive planning agencies, MDE, MDP and the Maryland Department of Natural Resources (DNR) prior to the local public hearing required by state law before local plan adoption. The submittal of plans in draft form to MDE and MDP helps avoid disagreements on a plan after the local governing body has formally adopted the plan, revision or amendment.

The water and sewerage regulations require the inclusion of information in the W&S Plans about existing and future projected populations, existing and planned water and wastewater facilities, compliance with state effluent limitations and protection of water uses, the water and wastewater system processes, levels and types of treatment, operation and maintenance costs, and means of financing improvements.

Many local governments have sophisticated capital improvement programs (CIP) that annually publish the budget and five year projections for all capital expenditures in the jurisdiction. MDE may accept the excerpted portion of the local CIP that meets the

requirements of the regulation, or incorporation by reference, of the entire adopted local CIP. Any documents incorporated by reference should be readily available to the public in the same location as the Water and Sewerage Plan.

System Constraints

Concern has been expressed to be sure that the current water and sewer systems are working as intended and that there is capacity for development that is approved. System capacities are determined by a combination of physical characteristics and policy directives. Extensive monitoring is required to provide the necessary information to make approval judgments before system failures. In the case of water and sewer systems, the WSSC is the operating, maintenance and monitoring agency responsible.

Some portions of the water and sewerage networks are currently constrained due to the physical attributes of the system. An example would be the sewage flow allowed to pass into the District of Columbia at Rock Creek. Another historical example would be the moratorium placed on the county due to inadequate sewage treatment capacity. For water systems, it might be inadequate pressure necessary for fire suppression requirements. System constraints are revealed through the WSSC. System constraints usually affect areas already developed, that are being redeveloped or modified in such a way as to increase demand for service.

The WSSC performs studies to determine what system improvements or modifications are needed to provide service or correct deficiencies. With Planning Department assistance in identifying the timing, location and demand for water and sewerage service, the WSSC can program and perform quantitative analyses and specify improvements and schedule necessary to implement County Council Growth Policy objectives.

The WSSC provides a reliable supply of safe drinking water, and has always met or exceeded United States Environmental Protection Agency health standards. As WSSC approaches 90 years of service, it is facing problems of decaying old pipes and valves. Aging and breaking pipes affect more than the skilled WSSC crews who respond 24 hours a day to fix broken water mains and sewer pipes. A major water main break results in a shut-down of water delivery to homes and businesses. It has the potential to flood roadways and affect electrical service. Streams and rivers are directly impacted when chlorinated water enters a waterway or when sewage discharges break through. Plans are already underway to speed up the replacement cycle for pipes, especially in established areas where the pipes are quickly reaching the end of their reliability.

WSSC System Extension (Formerly Authorization) Process

Applicants desiring water and/or sewer service provide necessary information to the WSSC. If approved by the Commission, the applicant is advised of the conditions of approval that must be met prior to construction. An authorization is valid as long as a preliminary plan is valid or indefinitely if the plat has been recorded. A description of the

funding of system improvements and extensions is quite detailed and beyond this very simplified abstract. Greater details can be obtained by referring to a current WSSC Capital Improvements Program which are prepared every year. If there is to be more consideration of the authorization and funding processes for water and sewer systems, there must be convened a group that included the WSSC and county DEP. Examination of these processes could include the program size facilities that appear in a capital improvement program, and/or the non-program size facilities that serve smaller areas.

WSSC CIP Process

The principal objective of the WSSC Capital Improvements Program is the programming of planning, design, land acquisition, and construction activities on a yearly basis for major water and sewerage facilities. These facilities may be necessary for system improvements and/or service to existing customers; to comply with federal and/or state environmental mandates; and to support new development in accordance with county approved plans and policies for orderly growth and development.

Expenditures for the six-year program are divided into three main categories; projects needed for growth, projects needed to implement environmental regulations, and projects needed for systems maintenance and reinforcement. The categories are defined as follows:

- *Growth* - Any water or sewerage project, or part of a project, that increases the demand for treatment and delivery of potable water and/or increases system requirements to collect and treat more sewage in response to new, first time, service hookups to WSSC's existing customer base.
- *Environmental Regulations* - Any improvement to an existing facility which is required to meet changes in federal regulations, such as the Clean Water Act, or in response to more stringent state operating permit requirements, but does not increase system capacity. Any part of this type of a project that provides for additional capacity is for growth.
- *System Improvements* - Any project which improves or replaces components of existing water and sewerage systems or provides for mainline relocations required in response to county or state transportation department road projects where the intended purpose is not to increase the capacity of any system components. This category also includes program-sized water main extensions for which the primary function is to provide water supply redundancy to pressure zones or smaller areas in the Sanitary District. Any part of this type of a project not dictated by maintenance or rehabilitation needs and that provides for additional capacity is for growth.

Funding Growth

The portion of the current WSSC CIP needed to accommodate growth is approximately $275 million, which equals 32% of all expenditures in the six-year program. The major

funding sources for this part of the program are the System Development Charge revenues, payments by applicants under system extension permits, and developer contributions. In the event that growth costs are greater than the income generated by growth funding sources, rate-supported water/sewer bonds may be used to close any gap.

The System Development Charge (SDC) was first approved by the Maryland General Assembly in 1993. This WSSC imposed charge is on new development to pay for that part of WSSC's CIP, which is needed to accommodate growth in their customer base. Subsequent modifications have established a process for approving partial and full exemptions for elderly housing and biotechnology properties, as well as exemptions for properties in designated economic revitalization areas. For FY 2007, the Montgomery County Council has maintained the current rate of $203 per fixture unit. Policies and information associated with the SDC can be found in WSSC CIP documents.

WSSC Service Extensions

Montgomery County plans for the extension of non-program size water and sewer lines as part of the *Comprehensive Water Supply and Sewerage Systems Plan* service area designations. This plan is used, in part, to designate properties that are eligible to apply to the WSSC for new main extensions. Properties that are in categories 4, 5 or 6 must be moved up in priority through a category change to area 3 to qualify for service. Neither the county nor the WSSC are responsible for initiating or financing these water or sewer extensions.

Recommendations

Planning Department staff recommends no changes to the adequacy test for water and sewerage systems. For purposes of the APFO, our primary concern is the potential for new development to be approved even when water and sewerage systems are not adequate to support that development. Staff believes the current test, backed up by planning and implementation of system improvements, is working as intended.

Police Services

Current Conditions

The majority of police services in the County are provided by the Montgomery County Department of Police, with critical services provided by other agencies including MNCPPC Park Police.

The Montgomery County Department of Police prepared a *Police Facilities Master Plan* in 1997. There is no statutory requirement for the police to prepare a master plan or to seek Council adoption of this plan. The 1997 plan envisions that Police Headquarters will be improved and relocated to a campus-like setting and proposes that a sixth district

be added to serve the County's needs through the year 2016. The current districts include: 1st District Rockville, 2nd District Bethesda, 3rd District Silver Spring, 4th District Wheaton, 5th District Germantown, and 6th District Gaithersburg.

Although not a requirement, the Department produces an annual Strategic Plan, the most recent of which is for 2007-2009. This plan outlines the goals and the objectives of the Department. The goals are as follows:

- Reduce crime and the fear of crime
- Improve traffic and pedestrian safety
- Strengthen departmental relationships
- Develop a more diverse, dedicated, and highly skilled workforce
- Provide the best available resources for the department's employees
- Emergency preparedness

Quarterly reports are planned through December 31, 2009, with an end of the year report due every December. A three-year summary of the Strategic Plan is scheduled to be completed by February 1, 2010.

Montgomery County Department of Police (MCPD) has an operating budget of $206 million. The majority of the budget supports the staffing needs of the Department. Currently there are about 1.2 patrol officers per 1,000 people, one of the lowest police/population ratios in the region. There are currently about 1,200 officers within the Department. The bulk of the work of a patrol officer involves responding to "calls-for-service." In 2006, the police responded to 246,263 calls-for-service. The largest call concentrations come from the 3rd District (Silver Spring), 4th District (Wheaton), and 6th District (Gaithersburg/Montgomery Village). The formula used to allocate patrol resources is based on community needs and calls-for-service. Due to changing community conditions, there is a constant need to rebalance patrol resources. This re-balancing can result in changes within the department as officers are re-assigned or shifted to another district.

Unlike fire and rescue, public schools, and public libraries that are facilities-driven, the Police Department relies on its operating budget to hire more patrol officers to supplement patrol strength and improve County police services. It should be noted, however, that MCPD occupies 30 different "fixed" facilities throughout the County that have operating needs as well. There are five general facility types: Headquarters, District Stations, Satellite Facilities, Leased Facilities, and other specialized facilities, such as the Public Services Training Academy, the 911 Center, and others. The FY07-12 Capital Improvements Program (CIP) for the Police Department contains eight ongoing projects which will total expenditures of $59.1 million over the next six years. Three new projects are proposed: the renovation/relocation of the 1st District (Rockville) and 2nd District (Bethesda) Police Stations and the Outdoor Firearms and Training Center.

Sources of Change in Demand

- Demographic, economic and social changes in the County.
- Number of calls-for-service/officer initiated calls within the districts.
- Development in rural areas.
- National security emergency status

Current Test

The current Growth Policy resolution addresses police, fire and health facilities in the same way. The following paragraph is from the current Growth Policy and constitutes the entire "test" for adequacy of these facilities:

> ***Guidelines for Police, Fire and Health Services***
>
> *The Planning Board and staff must consider the programmed services to be adequate for facilities such as police stations, firehouses, and health clinics unless there is evidence that a local area problem will be generated. Such a problem is one which cannot be overcome within the context of the approved Capital Improvements Program and operating budgets of the relevant agencies. Where such evidence exists, either through agency response to the Subdivision Review committee clearinghouse, or through public commentary or Planning staff consideration, a Local Area Review must be undertaken. The Board must seek a written opinion from the relevant agency, and require, if necessary, additional data from the applicant, to facilitate the completion of the Planning staff recommendation within the statutory time frame for Planning Board action. In performing this Local Area Review, the facility capacity at the end of the sixth year of the approved CIP must be compared to the demand generated by the "most probable" forecast for the same year prepared by the Planning Department.*

Recommendations

Planning Department staff recommends no changes to the adequacy test for police service. Planning staff reviewed public safety facilities and services in detail in 2005 and recommended no changes at that time. For police services in particular, staff noted that the number and location of police "facilities"—that is, police stations – is not closely related to levels of service. Staff suggests that there are benefits to having the Police Department participate in the Development Review Committee for Crime Prevention through Environmental Design (CPTED) review of new development.

Unlike the Fire and Rescue Service, the Police Department is not required to submit comments to the Planning Department on all preliminary plans reviewed by the Department. The police could contribute to the regulatory process by reviewing proposed developments for Crime Prevention through Environmental Design (CPTED) as a part of the Development Review Committee. MCPD could provide public safety expertise and design comments when new plans are reviewed which in turn may lead to the reduction of the fear of crime and incidence of crime. CPTED strategies such as natural surveillance, defining private and public spaces, designing public routes, and

reviewing safe building access can be very helpful to planners. Design concepts from police could keep intruders easily observable and promote visibility of people in parking areas and building entrances. Lighting and landscaping comments would also prove useful from the Department.

Fire and Rescue

Current Conditions

County Code Section 21-12 requires the Montgomery County Fire and Rescue Service (MCFRS) to maintain, review, and amend a Master, Fire, Rescue, and Emergency Medical Services Plan. The original Master Plan was approved in 1994. The stated purposes are:

- To describe how the Fire and Rescue Service fulfills its responsibilities
- To explain how changes in the County are likely to affect service delivery, and
- To provide direction for the future through recommendations that address the steps necessary to provide a desired level and of quality of service.

The original master plan addressed demographic and service demand trends, factors affecting service demand, and an overview of the service delivery system, life safety programs, and fire investigation program. The 1994 Master Plan also described the need for new facilities, apparatus, equipment, and communication/data systems. Considerable attention was given to describing the seven “Fire and Rescue Planning Areas” in terms of demographics, characteristics, service demand and service delivery trends, and resources (existing and future needs). The seven areas included: Down County Area, Route 29 Area, Potomac Area, I-270 Corridor, Poolesville Area, Damascus Area, and Georgia Avenue Area.

MCFRS facilities have not kept up with the pace of growth during the ten-year period following the approval of the master plan in 1994. During that 1994-2004 period, no additional stations were built. The last station to be built was Germantown Station 29, which was completed in 1980. The original master plan called for the construction of new stations in the Clarksburg and Travilah areas. Both stations have been programmed in the CIP as well as two others (W, Germantown and E. Germantown are included in the FY05-10 CIP).

Master Plan Update

Montgomery County Code requires that the master plan be updated every ten years. In addition to this mandate, there were other rationales for establishing a new plan: population growth (up by 17% since 1994) and an increase in diversity (minorities and elderly). Some parts of the County had experienced considerable growth, including Germantown, Gaithersburg, Rockville, North Potomac, Burtonsville, White Oak, Silver Spring, Bethesda, Aspen Hill, and the Layhill area. The 2004 plan was written to

address the demographic and growth related trends the County was facing. In addition to changes in growth and demographics, incident call load had increased to a much higher rate and the rate of certain call loads, mainly EMS, had risen sharply.

The *Fire, Rescue, Emergency Medical Service, and Community Risk Reduction Master Plan* serves as a guideline for the Executive, Council, and Fire Chief in making decisions regarding the delivery of fire and rescue services. The plan does not have the force of law nor does it impose legal obligation on any party. The County Council approved the current plan on October 11, 2005. It is currently being updated as the plan was developed between two organizational restructurings (a chief was hired on Jan 1, 2005).

The purpose of the plan is to set "forward thinking, rational, and attainable course for the continued delivery of effective and efficient fire, rescue, emergency medical services, and the community risk reduction services." The plan guides the MCFRS in how best the services "can meet the needs and expectations of its customers and address the overall level of fire-rescue related risk facing the County." The plan accomplishes this task by:

- addressing what emergency and non-emergency programs are needed,
- what apparatus and equipment are needed and where,
- what facilities are needed and where, and
- how to best train and deploy MCFRS personnel.

The MCFRS serves residents, business owners, visitors to the County, County departments and agencies, municipalities located in Montgomery County, private sector emergency service organizations serving the County, state departments/agencies, and federal departments/agencies.

Laws and Standards

Several laws and standards impact the MCFRS in terms of organizational structure, administration, authorities and responsibilities, legal matters, and service delivery. Laws that govern the MCFRS include Chapters 2, 21, and 22 of the County Code. Standards that impact the MCFRS include response time goals and deployment criteria are voluntary national standards to which Montgomery County plans to comply.

In addition to the master plan and any amendments, planning assumptions include:

- The MCFRS will remain a combination system of career and volunteer personnel.
- The MCFRS will receive adequate appropriations and support from the County that will allow the continued operation of existing programs/services, new programs deemed necessary by the Chief, and continued delivery of quality service to the public.

- The call load in the County will continue to increase in relation to population growth, pace of development and other socioeconomic factors.
- The ongoing trend of EMS incidents will continue to be the vast majority of incident responses.
- The Countywide risk for terrorism will remain. The MCFRS will continue to increase its level of preparedness to a level commensurate with the perceived threat and risk.
- Planning for large-scale emergencies will be addressed at a more regional scale than in the past to ensure the most effective means of protecting the public.
- The growth of people over 65 will outpace all other age groups by a sizable margin. Due to this increase in elderly population, the EMS call load will sharply rise.
- The trend of increasingly large numbers of ethnically diverse populations residing in the County will continue.
- Residential and business development throughout the County will continue to grow at a steady rate between 2005 and 2015, particularly along the I-270 corridor. Transportation infrastructure (highway and rail) will continue to expand within the County as well.

Demand projections are based on the following:

- Population projections (including age, income) using M-NCPPC Research & Technology Center and Census data
- Building density
- Location of healthcare facilities

MCFRS anticipates demand by charting (using GIS) incident reports, projected needs. It projects need based on land use (elderly facilities, nursing homes, etc.) and population statistics.

Supply is projected based on:

- Adding staff and flex units to areas of need.
- Assistance from the private sector.
- Automatic mutual aid or assistance from federal sites that provide their own fire and rescue services.

Sources of Change in Demand

- Demographic, economic and social changes in the county.
- Changes in intensity and types of uses in existing nonresidential buildings can alter service demands on both police and fire/rescue departments.

- Development trends (i.e., more high-rise development, reuse)
- Development in the agricultural areas.
- Changes in national standards that affect response times, etc.
- National security emergency status

MCFRS indicates that they have a good relationship with the federal facilities inside and outside the County and report that Federal partners assist the County whenever they can. After September 11, 2001, the relationship strengthened with added Homeland Security policies. MCFRS has specialty teams who are trained to respond to local and national disasters and they include: Hazmat, urban search and rescue team, dive team, evacuation and tactics teams, and bomb squad.

Current Test

The current Growth Policy resolution addresses police, fire and health facilities in the same way. The following paragraph is from the current Growth Policy and constitutes the entire "test" for adequacy of these facilities:

> ***Guidelines for Police, Fire and Health Services***
>
> *The Planning Board and staff must consider the programmed services to be adequate for facilities such as police stations, firehouses, and health clinics unless there is evidence that a local area problem will be generated. Such a problem is one which cannot be overcome within the context of the approved Capital Improvements Program and operating budgets of the relevant agencies. Where such evidence exists, either through agency response to the Subdivision Review committee clearinghouse, or through public commentary or Planning staff consideration, a Local Area Review must be undertaken. The Board must seek a written opinion from the relevant agency, and require, if necessary, additional data from the applicant, to facilitate the completion of the Planning staff recommendation within the statutory time frame for Planning Board action. In performing this Local Area Review, the facility capacity at the end of the sixth year of the approved CIP must be compared to the demand generated by the "most probable" forecast for the same year prepared by the Planning Department.*

Evaluation

The MCFRS is evaluated in the "*Montgomery Measures Up!*" initiative. This initiative focuses on reporting the performance of selected County programs and program elements using a "family" of measures – input, output, outcome, service quality, and efficiency measures. *Montgomery Measures Up!* is designed to provide departments with a powerful tool to help the County achieve its vision of "efficient, effective and responsive government that delivers quality services." Indeed, the regular measurement, reporting, and use of performance measures by County departments and programs are expected to play key roles in managing the County during the coming years. With a budget of over $180 million, the MCFRS will likely continue to need trained staff and facilities to provide the best emergency fire and rescue services that County residents expect.

Recommendations

Planning Department staff recommends no changes to the adequacy test for fire and rescue services. Planning staff reviewed public safety facilities and services in detail in 2005 and recommended no changes at that time. For fire and rescue services in particular, staff noted that the number and location of fire stations is correlated to adequacy (as measured in response times) because, unlike police, fire and rescue personnel are located at a station until a call comes in. Staff's 2005 research indicated that the major challenge for adding stations was finding suitable locations and that the master plan process is the best mechanism for designating those locations. Montgomery County Fire and Rescue Services representatives participate in the master plan process, and MCFRS has an up-to-date master plan.

During the course of our study this year, staff noted several aspects of fire and rescue services that may be useful for making land use recommendations during the master plan process. These include the fact that the great majority of calls are for emergency medical services, which suggests that Planning staff discuss with MCFRS the possibility of identifying locations for emergency medical units in master plans.

The observation that only 12 percent of calls are for fires, and that most of these are for brush and vehicle fires, suggests to Planning staff that there are opportunities to increase the use of smaller fire trucks in the fleet, which allows use of smaller fire stations and road turning radii. Planning staff raises this issue only from a land use perspective: larger parcels of land are becoming rare, and the future of neighborhood design depends in part on narrower streets with smaller turning radii.

Parks and Recreation

Current Procedures

The demand and supply for many park and recreational facilities is calculated as follows:

Demand

Every six years the M-NCPPC staff prepares the Land Preservation, Parks, and Recreation Plan (LPPRP) for Planning Board approval, as required by the State, in order to obtain Program Open Space funds. The calculation for each type of facility utilizes one of three different geographic units (countywide, community-based planning area, and master plan area); the geographic unit depends upon the type of facility being evaluated. There is currently no methodology for determining demand for smaller geographies.

Needs for a total of 19 facilities are estimated by the 2005 Plan to the year 2020. The methodology for most facilities is determined by using user estimates from surveys or permit data and population forecasts developed by the Research and Technology Center. This yields data reflecting the total demand for these public park and recreation facilities. Existing and programmed facilities are deducted in order to determine the remaining need. The formula does not apply per capita needs, as is done in some jurisdictions, except for dog exercise areas for which Parks staff has insufficient user data to develop a participation rate. Ball-field facilities are categorized by geometric shape and size (e.g., small diamonds, large rectangles) in order to build in flexibility for use by more than one sport.

Supply

Public facilities at parks and schools help meet needs for recreation facilities. School facilities are counted to the degree that they are available to the general public (aside from school use). As use of existing private facilities does not count in the participation rates, privately provided facilities that are obtained through the application of the recreation guidelines to new projects are not counted to meet public facility needs unless they will be on parkland and available to the general public. It is assumed that the private facilities provide neighborhood type facilities for the residents of the new development in combination with more regional facilities provided by the public sector[3]. Public parks shown on approved master plans are required from developers, and in large subdivisions, developers may also be required to develop the park. There are frequent park dedications required for protection of natural resources and trail connections.

The use of the recreation guidelines already provides most of the potential benefits of including park and recreation services in the Growth Policy. The guidelines allow the Planning Board to require park and recreation facilities at subdivision, and they, along with the LPPRP, provide standards and analysis as to where park and recreation facilities are needed. Inclusion within the Growth Policy would allow the Planning Board to deny subdivisions on the basis of inadequate park and recreation facilities.

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[3] *In 1989, the Montgomery County Planning Board requested that staff prepare recreation guidelines for use when the Board reviews site plans for proposed subdivisions. These private recreational facilities offer an important supplement to the public park system. The Guidelines were approved in 1992 with an advisory work group to assure the adequacy of recreation in terms of quantity, quality, location, linkages, and layout. They include a quantitative method as well as a site design and facilities criteria. The quantitative system is based on Montgomery County demographics and is intended to ensure a consistent and adequate level of recreation for the population of any project. The system provides a standard of measure for estimating the recreation demand of the future population of a proposed project and evaluating the supply of recreational opportunities within the proposed facilities. The provision of recreation facilities is considered adequate when the supply meets the demand.*

The estimate of demand for recreation is based on the demographics of Montgomery County. The demographic data are weighed against other factors, such as density. The demand is estimated for each population category: tots, children, teens, adults, and seniors. The demand is estimated for each housing type: single-family detached, townhouse, garden apartments, and high-rise apartments.

Sources of Change in Demand

- Changing participation rates
- Changing demographics (aging of population, increased diversity)
- Emerging park uses (e.g., BMX biking, dog parks, skate parks)
- Neighborhood life cycles
- Changing philosophy regarding the role of the public sector as a provider
- Policy changes
    - Environmental policies
    - Fiscal concerns leading to deferred maintenance
    - Policy regarding the portion of regional parks that can be developed (one-third)

Issues Related to Developing an Adequacy Test at Subdivision

A number of issues would likely be raised if parks and recreation facilities were to be considered for an adequacy test to be administered at subdivision through the Growth Policy. These are not necessarily problems, per se, but highlight subject areas where decisions or adjustments would need to be made. These include:

- Whether to use the survey results that are the basis for the LPPRP or per-capita park and recreation standards.
- The current formulas make no distinctions based on criteria that may be important when evaluating individual subdivisions:
    - Larger areas vs. smaller areas
    - Urban facility demands vs. suburban vs. rural
    - More vs. less diverse areas
- The scope of the LPPRP covers a wide range of issues that may not be directly related to the adequacy of local parks for daily use (e.g., agricultural land preservation, natural resources preservation, and cultural resources preservation).
- Would inclusion of parks and recreation facilities in the APFO further a shift from meeting demand through the provision of neighborhood walk-to parks that must be publicly maintained in favor of facilities that are provided and maintained privately?
- The Recreation Guidelines would have to be revised before they could be used as the basis for an adequacy test. Revised Recreation Guidelines may provide all of the important benefits of a APFO test for parks.
    - The application of Recreation Guidelines is essentially a local area test, conducted on a subdivision-by-subdivision basis, but we plan parks and recreation facilities using larger geographies and on the basis of participation data. Participation data is not available for privately provided facilities.

    - The Recreation Guidelines apply only to new development; they do not address changing needs in existing communities.
    - The guidelines have specific flaws. Developers can count existing facilities as available to satisfy the need from their development even though the facilities may be heavily utilized and physically removed from the new project. They have not been updated to account for emerging needs (e.g., for urban recreation facilities).
- The current measures of park and recreation facility capacity are insufficient for an adequacy test for new development.

Planning staff recommends that the Recreation Guidelines applied in the regulatory process be revised. This project is included in the Planning Department's requested FY08 work program. Among the issues to consider: whether to eliminate provisions that allow developers to count existing public facilities as part of satisfying the recreational requirements for new development.

Community Center Facilities

The Recreation Department began constructing larger recreation centers in the 1980s. The current prototype for these facilities meets resident's needs much more effectively. The Department currently has 17 Community and Neighborhood Recreation Centers located throughout the County which host programs for the Department as well as other County agencies and community organizations. These centers provide leisure activity, social interaction, family participation, neighborhood civic involvement, and promote community cohesion and identity. Programs for all ages are available in centers. These facilities are designed to support sports, fitness, dance, social activities, and arts programs. Activities include instructional programs, organized competitions, performances and exhibitions, recreational clubs and hobby groups, access initiatives for special populations, and summer camps/playgrounds. In addition, they offer important community meeting space. Center spaces are available for rentals, receptions, special events, and meetings. User fees are charged for rentals and other programs and services offered at each facility.

Future Needs for Community Centers

In the *FY07-12 Capital Improvements Program*, there are 9 new centers proposed, including one in Friendship Heights that will be built by a developer. Additionally, renovations are proposed for the older centers. In 2003, the Recreation Department proposed a larger prototype building to maximize efficiency in programming and operation. The new prototype will be 33,000 net square feet and will include more integrated space for senior citizen services. The LPPRP concentrates primarily on these larger centers operated by the Recreation Department. Additionally, it was suggested that the 33,000 square foot model serves an optimum population of approximately 30,000 or about 1,100 square feet of recreation space for every 1,000 individuals. A

coordinated effort has been conducted with the Recreation Department participation data to determine appropriate geographic service areas and capacities. Research has determined that most people attending recreation classes do not travel more than three to five miles to their activity. Beyond the three to five mile distance from a center, the participation rate of residents drops dramatically. When the service area of recreation is related to population density, gaps in existing service coverage are apparent.

Parking Facilities

Current Procedures

The Zoning Ordinance stipulates that each new development must provide sufficient parking to satisfy its own demand. Parking ratios are provided in the ordinance for each type of use (e.g., parking spaces per thousand square feet of commercial development). Generally speaking, the parking provided privately pursuant to the requirements in the Zoning Ordinance appears to be adequate in most cases to satisfy the demand from new development. As a result, the rest of this section will focus on the provision of parking in the urban areas of Montgomery County where the supply of parking is provided in part by the public sector using funds generated by new development plus fees from the users of public parking facilities.

Chapter 60 of the County Code permits development projects in the County's four Parking Lot Districts (PLDs) to pay a PLD tax in lieu of providing parking on-site. Each PLD uses the tax revenues, fees from the use of public parking facilities, and the revenues from fines to fund the provision, maintenance and operation of public parking facilities. The monies in each PLD fund can also be transferred within prescribed limits to other County uses, e.g., mass transit.

The Montgomery County Department of Public Works and Transportation (DPWT) manages the four PLDs and attempts to ensure that the supply of public parking in each district is sufficient to satisfy the demand. Each PLD is essentially a system to itself, although the County Council sets the parking rates and PLD tax rates.

Every five years, a supply and demand analysis is undertaken for each PLD. For analysis purposes, the PLDs are divided into quadrants. The analysis involves an inventory of privately provided parking within the district, an inventory of County-owned parking on- and off-street, and field observation of the turnover and utilization rates for public parking spaces. DPWT projects the total future demand for parking based on existing and approved development, additional development plans that have been submitted for approval by the Planning Board, other potential projects being considered by developers, and various economic indicators (e.g., job growth) that reflect regional economic health. DPWT then compares the projected parking demand to supply and determines whether and where additional facilities are needed.

This process is intended to ensure the provision of sufficient parking to support development in the PLDs, some of which are designated revitalization areas. However,

the ability of each PLD to provide the parking needed to satisfy demand is limited, particularly within each quadrant of a PLD. Obstacles include the following:

- Sites for new public parking facilities in the CBDs are scarce and expensive.
- The cost of constructing new facilities is high and increasing. The most recent parking facility in Bethesda cost $60,000 for each underground parking space, exclusive of the land cost. (The shallow bedrock in Silver Spring makes underground parking facilities particularly expensive.)
- Each PLD is also under some pressure to divert funds for other purposes. A significant portion of the PLD funds are diverted to fund mass transit and to support the County's Urban Districts.
- The construction of above-grade public parking limits the amount of private development that can be constructed on top of the parking because the height limits in the zone are generally not increased when buildings are constructed above parking.

Supporting the mass transit fund is consistent with the two seemingly contradictory objectives of the PLDs: In addition to providing parking for drivers, the PLDs are intended to encourage people not to drive. They accomplish the second objective by helping to fund mass transit; by providing parking for transit riders; and by restricting the supply of certain types of parking.

The County's provision of public parking at relatively low rates tends to discourage both the provision of private parking garages and the provision of parking in new projects in excess of Code requirements. This may work to constrain the total supply of parking. The reliance on shared-use public parking to support the mixed use urban environment is considered more efficient than requiring every developer to undergo an adequacy test and provide on-site parking for every project.

Sources of Change in Demand for Publicly-Provided Parking

- The various factors that are considered in the County's parking and supply and demand analyses, including the pace of new development.
- The changing mix of uses in new development due to market conditions.
- The ability of seemingly complimentary uses to share parking.
- The degree to which the parking ratios in the Zoning Ordinance reflect actual behavior.
- The County's success in encouraging transit use (i.e., encouraging people not to drive) affects parking utilization rates.
- New technology (e.g., electronic parking payment).
- Changing environmental standards (e.g., for storm water management or the application of chemicals).

- The disposition of PLD property for other uses (e.g., United Therapeutics and the Cameron Hills townhouses).

Issues for Further Investigation

The Planning Department is not recommending that parking be regarded as a "public facility" in the Adequate Public Facilities Ordinance, although parking policies have a clear relationship to the County's ability to manage traffic congestion and support vitality in the County's centers. Among the parking issues that may be suitable for further study:

- Should the parking requirements in the zoning ordinance be changed?
- Does the provision of "excessive" public or private parking encourage driving and road congestion, discourage production of private parking, or both? What is "excessive"?
- Should older, deteriorating facilities be demolished and replaced with new parking facilities in the quadrants of each PLD where underserved demand currently exists? Or are there other issues that need to be explored?
- How are specific PLD operating decisions, such as parking rates, PLD tax rates and the transfer of PLD funds to other purposes, supporting the County's transportation and other policy goals?
- Is there utility in a broader funding mechanism for public parking, such as a countywide parking tax?
- How can sites be obtained for the construction of new public parking facilities? Should there be incentives or requirements for private development to provide a public parking component ii instead of, or in addition to, private parking?
- How can street activating uses on the ground floor of public parking facilities be encouraged?
- Are new PLDs needed in places like Long Branch?

Libraries

Current Procedures

The *Montgomery County Public Libraries Strategic Facilities Plan 2004-2009* was prepared in March 2004. It makes no reference to an approval procedure either with the Executive Branch or the County Council. Further, there is no statutory requirement for the County's library system to prepare a master plan. The purpose of the current Strategic Plan is to serve as a guide to the County for renovating existing library facilities and assessing the need for new public library facilities. The plan profiles the current library system facilities and establishes a timetable for future renovations. It

also identifies areas where new facilities may be needed due to population growth or other programmatic factors.

Population projection information is supplied by the MNCPPC Research & Technology Center and is used to determine where to build new libraries or to expand existing libraries. According to the current Strategic Plan, the library system acknowledges the County's General Plan and expects the growth to be focused in the I-270 Corridor, at Metro stations, and infill in existing urban areas.

There are 22 library facilities in the County. Each library in the Montgomery County Department of Public Libraries system serves its immediate community. The population of the area and the distance from other library facilities determines the size of the library. The primary service radius for each facility is generally two miles. The following criteria are used when establishing a new facility: a minimum population of 5,000 people for a small storefront facility and 16,000 people for a full-size facility. Residents in the urban areas of the County should have a library no more than three miles from home. Residents in rural areas of the County should have no more than a 20-minute drive to a library.

The Montgomery County Department of Public Libraries has an approved operating budget for FY07 of $38 million. Personnel costs comprise 79.4 percent of the budget for 375 full-time positions and 252 part-time positions. Operating expenses account for the remaining 20.6 percent of the FY07 budget. Library services continue to be primarily facilities-based.

Sources of Change in Demand for Library Services

- Demographic, ethnic, economic and social changes in the county.
- Population growth occurring in areas of the County that do not presently have nearby libraries.
- Population growth in densely populated areas of the County that continue to grow with nearby libraries.
- Program/service changes due to changes in the information technologies
    - Demand for increased electronic areas in libraries,
    - Demand for new and emerging formats of information and materials, and
    - Routine activities, such as checkout, will continue to move toward self-service.

Recommendations

The Planning Department does not recommend applying an adequate public facilities test to new development for library facilities.

Time Limits of a Finding of Adequate Public Facilities

Background

In Montgomery County, proposed development is tested for the adequacy of public facilities serving that development. Typically, the testing of public facilities occurs at the time of the Planning Board's review of a preliminary plan of subdivision. Chapter 50 of the Montgomery County Code addresses the testing of subdivisions for public facilities adequacy, as does the Growth Policy resolution adopted by the County Council every two years.

Two years ago, staff was asked to address the issue of time limits of a finding of adequate public facilities as well as the issue of APF findings for recorded lots. Based on Planning staff's analysis (in Chapter 1 of the *Final Draft 2005-2007 Growth Policy)*, the Montgomery County Planning Board recommended changes to the Montgomery County Code. These were enacted by the County Council as SRA 05-03 (which clarified the conditions and limits for extending a finding of adequate public facilities) and Bill 28-05, which revised the standards and process for conducting APF reviews of recorded lots to be analogous to those used at subdivision.

Testing Public Facilities Adequacy at Subdivision

Year	Residential Subdivisions	Commercial Subdivisions
Prior to 7/25/1989	No time limits on APF finding	12 years*
7/25/1989 to 10/19/1999	12 years	12 years
Since 10/19/1999	No less than 5 and no more than 12 years, as determined by the Planning Board at the time of subdivision.	No less than 5 and no more than 12 years, as determined by the Planning Board at the time of subdivision.

When the Planning Board finds that public facilities are adequate to support a subdivision, that finding has a limited validity period. Regulations governing the length of this validity period have changed three times in the past 30 years, with the last change being in 1999.

Section 20 of Chapter 50 contains language setting the time limits of a finding of adequate public facilities by the Planning Board and the language that determines the conditions under which the Planning Board may grant an extension of the validity period for a finding of adequate public facilities. Time limits for an extension of a finding of adequacy public facilities are generally limited to one-half of the period of the original finding. A project with an original APF time limit of 5 years could receive an extension up to 2 ½ years long.

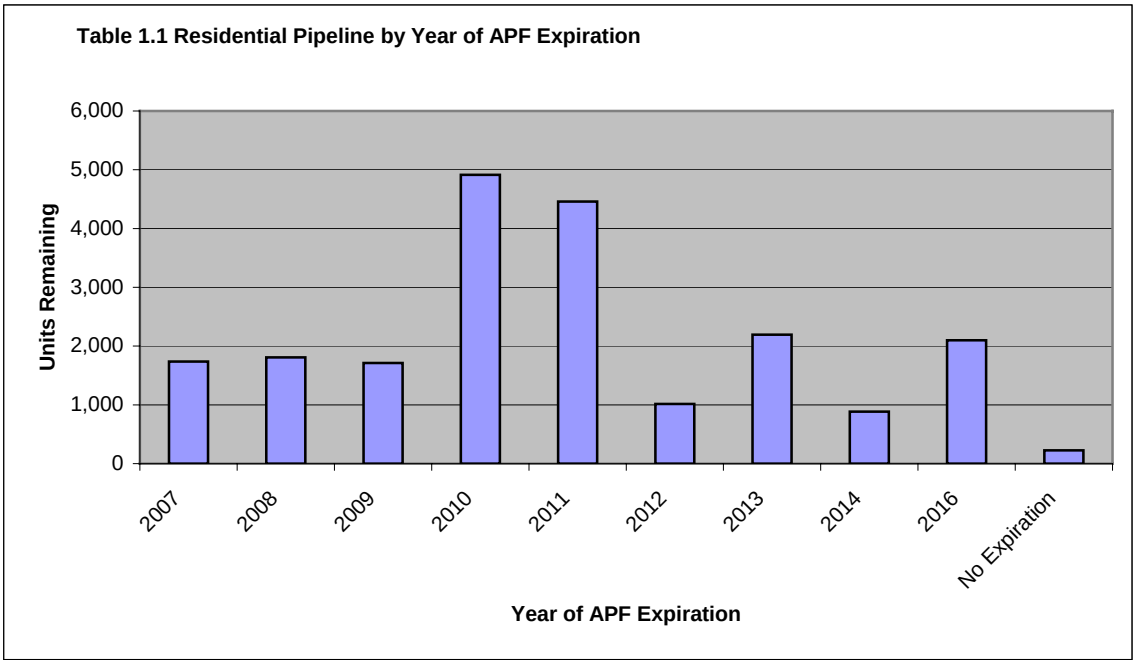
Development projects are eligible for an extension if they are partially complete and show recent development activity. In 2005, the Council added a provision that permits but does not require the Planning Board to extend an APF time limit for certain projects that have not yet begun construction. One project in Germantown has requested an extension under this provision and this request is pending before the Board.

In December 2006, the County Council passed a resolution requesting that the Planning Board include in its 2007 Growth Policy study an update of the 2005 review. This report contains that review.

Review of Pipeline of Approved Development

Planning Department staff reviewed the current pipeline of approved development to show how the current set of time limits has shaped the characteristics of approved development in Montgomery County.

Tables 1.1 and 1.2 show the year of expiration for housing units and non-residential square footage in the pipeline as of January 1, 2007. The majority of plans will expire by 2011, which is expected since most plans are now given a five-year expiration period. Eighty-seven percent of the residential pipeline and ninety-two percent of the commercial pipeline will expire within five years.



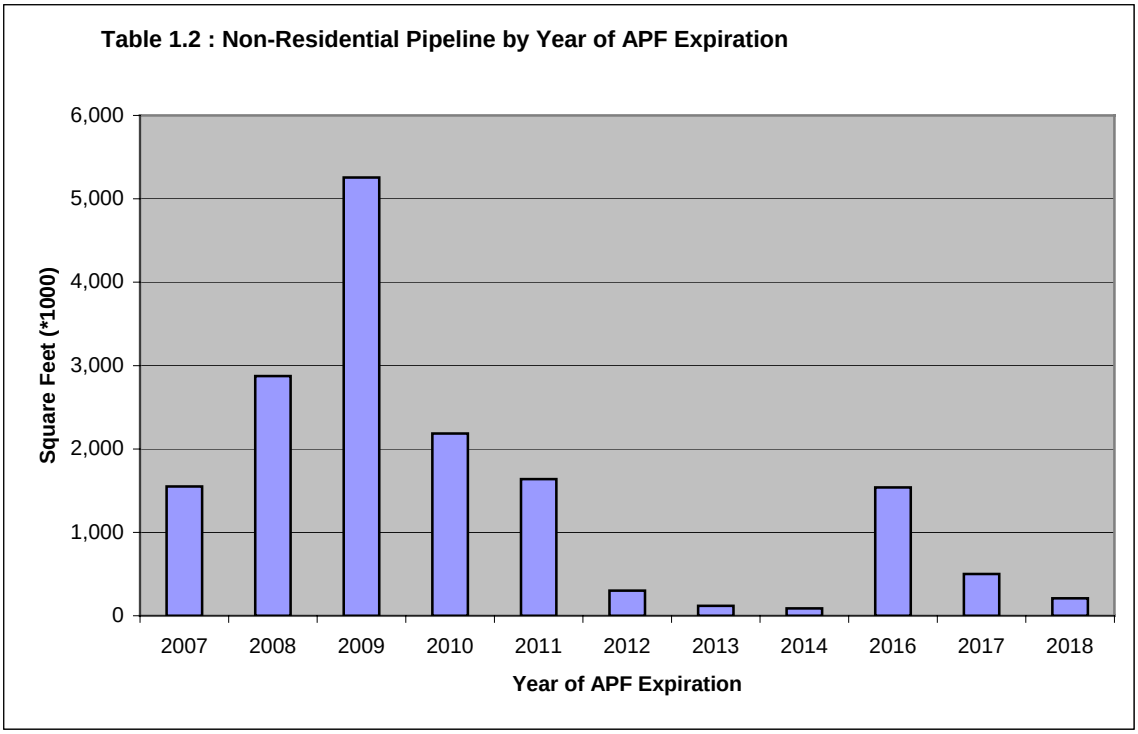


Table 1.3 shows the residential projects in the pipeline that were approved prior to July 25, 1989 do not have an expiration date the majority of these plans fall within the Fairland/White Oak, Potomac, and Rural Policy Areas, respectively.

Table 1.3: Residential Plans in the Pipeline with no Expiration Date

Policy Area	***Plans***	***Approved Units***
Aspen Hill	1	5
Cloverly	1	2
Damascus	1	1
Fairland/White Oak	3	146
Kensington/Wheaton	2	5
Montgomery Village/Airpark	1	2
North Potomac	1	2
Potomac	9	120
Rural Areas	11	99
Silver Spring/Takoma Park	1	1

APF Extensions

There are only a handful of plans each year that are granted extensions. All of the extensions granted thus far have been subdivisions that qualified under the rules

requiring a demonstration of “activity:” (40-60 percent complete, 5-10 percent completed within previous four years.)

Tables 1.4 shows that seventy-six percent of the total residential units in the pipeline have a five-year APFO limit. Twelve percent have APF periods of twelve years and thirty-one plans representing eight percent, are plans approved prior to July 25th 1989 and do not have an expiration date. The average size of these thirty-one plans is twelve units. In the commercial pipeline (Table 1.5) thirty-nine percent of the approved square footage expires in five years, thirty-two percent has a twelve-year expiration. Four plans constituting six percent of the square footage expires after twelve years. The average size of these four plans is 262, 793 sq ft.

Table 1.4: APF Limit for Residential Plans

Length of APF Period	*Plans Approved*	*Units Approved*	*Average Number of Units*
5	272	12,778	47
6	7	915	131
7	1	14	14
8	2	386	193
9	1	2,654	2,654
12	43	8,792	204
No expiration	31	383	12
Total	*357*	*25,922*	*73*

Table 1.5: APF Limit for Non-Residential Plans

Length of APF Period	*Plans Approved*	*Sq Ft Approved*	*Average Sq Ft*
5	62	6,314,842	101,852
6	25	2,814,912	112,596
7	4	800,670	200,168
12	17	5,280,669	310,628
18	4	1,051,172	262,793
Total	*112*	*16,262,265*	--

Years to Completion

A look at plans completed in the three years between 2004 and 2006 shows that the average time to completion for non-residential plans was 8.5 years and the average time to completion for residential plans was 8.6 years. The weighted average – calculated by taking the square footage or units, multiplying by number of years to completion, and then dividing by the total square footage or units – tells a different story. The 19 non-residential plans completed during this time had a weighted average time to completion of 9.3 years, which means that larger projects are taking longer to complete than the smaller projects. The reverse is true for residential development. The

weighted average of the 127 plans completed between 2004 and 2006 is 4.6 years, meaning that the bigger projects were completed faster than the small ones.

Tables 1.6 and 1.7 show the length of time between the approval and completion date for the pipeline. Eighty-one percent of the residential completions and fifty-eight percent of the commercial completions occurring between 2004 and 2006 occurred in less then 4 years. Between the fourth and fifth year after a plans initial approval there was only an increase in completions of six percent for residential units and five percent for commercial square footage. For completions between 2004 and 2006 the average length of time for residential completions was 8.5 years and 8.6 years for commercial completions. These average time frames are skewed due to 14% of the residential plans and 6% of the commercial plans completed had taken between 13 to 22 years to complete. These plans represented approvals that occurred prior to July 25th, 1989.

Table 1.6: Length of Time Between Non-Residential Plan Approval and Completion

(2004-2006 completions)

Years	***Number of projects***	***Percent of Plans Completed within this time frame***
2	8	42.11%
3	3	15.79%
5	1	5.26%
6	1	5.26%
7	2	10.53%
8	1	5.26%
14	1	5.26%
15	1	5.26%
17	1	5.26%
Total	*19*	*100%*

Table 1.7: Length of Time Between Residential Plan Approval and Completion

(2004-2006 completions)

Number of Years to Complete	*Number of Projects*	*% Plans Completed*
0	2	1.57%
1	15	11.81%
2	41	32.28%
3	27	21.26%
4	18	14.17%
5	7	5.51%
6	1	0.79%
7	3	2.36%
8	3	2.36%
12	1	0.79%
13	1	0.79%
14	1	0.79%
16	4	3.15%
17	2	1.57%
22	1	0.79%
Total	*127*	*100%*

Completion Status

Tables 1.8 and 1.9 show the completion status through October 31, 2006 of residential subdivisions approved between November 1, 1999 and October 31, 2006. The tables show that there were 27,966 housing units approved between November 1, 1999 and October 31, 2006. Plans approved before October 31, 2003 have more than sixty-four percent of the units completed. Plans approved after November 1, 2006 have less then seven percent of the units completed. The 5-year APF time limit went into effect in October 1999. Plans approved five years ago between November 1, 2001 and October 31, 2002 have over half of the units completed. Fifty-seven of the 92 subdivisions approved during that period are completely built, while 25 subdivisions were less than 50 percent built by January 1, 2007.

Table 1.8: Completion Status of Residential Subdivisions Approved 11/1/1999 to 10/31/2006

When Approved	Units Approved				Units Remaining				Percent Complete
	SF	TH	MF	Total	SFD	TH	MF	Total	
11/1/1999-10/31/2000	752	912	1,265	2,929	16	0	0	16	99.45%
11/1/2000-10/31/2001	1,833	1,411	1,976	5,220	237	19	685	941	81.97%
11/1/2001-10/31/2002	1,303	1,150	2,298	4,751	418	420	872	1,710	64.01%
11/1/2002-10/31/2003	717	484	2,493	3,694	197	249	450	896	75.74%
11/1/2003-13/31/2004	1,912	339	3,729	5,980	1,861	304	3,434	5,599	6.37%
11/1/2004-10/31/2005	1,111	626	1,154	2,891	1,091	617	1,154	2,862	1.00%
11/1/2005-10/31/2006	640	462	1,399	2,501	639	462	1,399	2,500	0.04%
Total	*8,268*	*5,384*	*14,314*	*27,966*	*4,459*	*2,071*	*7,994*	*14,524*	**--**

Table 1.9: Completion Status of Non-Residential Subdivisions Approved 11/1/1999 to 10/31/2006

When Approved	Plans Approved	Percent Complete			
		100%	75-100%	50-75%	0-50%
11/1/1999-10/31/2000	42	40	0	0	2
11/1/2000-10/31/2001	49	33	3	3	10
11/1/2001-10/31/2002	92	57	7	3	25
11/1/2002-10/31/2003	113	77	4	6	26
11/1/2003-13/31/2004	75	11	1	4	59
11/1/2004-10/31/2005	80	4	0	1	75
11/1/2005-10/31/2006	49	1	0	0	48

Tables 1.10 and 1.11 show the completion status through October 31, 2006 of non-residential subdivisions approved between November 1, 1999 and October 31, 2006. The tables show that 21,090,725 square feet of non-residential space was approved between November 1, 1999 (the first year that the 5-year rule was in effect) and October 31, 2006. Plans approved before October 31, 2003 have more then fifty-three percent of the square footage completed. Plans approved after November 1, 2003 have less then eight percent of the square footage completed. Plans approved five years ago between November 1, 2001 and October 31, 2002 have over fifty-six percent of the square footage completed. Thirty of the 31 commercial approvals during that period are completely built, while one of the commercial approvals is between 50-75% built as of January 1, 2007. Of the 34 plans approved four years ago between November 1, 2002 and October 31, 2003 thirty-two are complete, 1 is between 50-75% complete and the other is under 50% complete as of January 1, 2007.

Table 1.10: Completion Status of Residential Subdivisions Approved 11/1/1999 to 10/31/2006

When Approved	*Square Feet Approved*	*Square Feet Remaining*	*Percent Complete*
11/1/1999-10/31/2000	847,659	59,690	92.96%
11/1/2000-10/31/2001	3,417,168	530,400	84.48%
11/1/2001-10/31/2002	2,580,290	1,120,446	56.58%
11/1/2002-10/31/2003	3,226,411	1,503,547	53.40%
11/1/2003-13/31/2004	6,798,025	6,277,149	7.66%
11/1/2004-10/31/2005	2,900,884	2,897,604	0.11%
11/1/2005-10/31/2006	1,320,288	1,304,796	1.17%
Total	*21,090,725*	*13,693,632*	--

Table 1.11: Completion Status of Non-Residential Subdivisions Approved 11/1/1999 to 10/31/2006

When Approved	*Plans Approved*	*Percent Complete*				*Total*
		100%	75-100%	50-75%	0-50%	
11/1/1999-10/31/2000	14	13	0	0	1	14
11/1/2000-10/31/2001	22	20	1	0	1	22
11/1/2001-10/31/2002	31	30	0	1	0	31
11/1/2002-10/31/2003	34	32	0	1	1	34
11/1/2003-13/31/2004	23	2	1	1	19	23
11/1/2004-10/31/2005	18	0	0	1	17	18
11/1/2005-10/31/2006	28	2	0	0	26	28

Annual Growth Policy: Draft School Test Options

March 29, 2007

Option #	Description	Test Elements				FY 2008 Results	Possible Variations
		Capacity Applied in Test	Borrowing	School Levels Tested	Geography Tested		
Option 1A	Current AGP Test	105% GP Cap. ES and MS 100% GP Cap. HS	At HS Level	ES, MS, HS	All Clusters	No Cluster Fails	Only test clusters at elementary level where most impact of new development occurs.
Option 1B	Current AGP Test @ 100%	100% GP Cap. ES, MS, and HS	At HS Level	ES, MS, HS	All Clusters	Clarksburg Fails at ES Level	Only test clusters at elementary level where most impact of new development occurs.
Option 1C	Current AGP Test @ 95%	95% GP Cap. ES, MS, and HS	At HS Level	ES, MS, HS	All Clusters	B-CC, Blake, Clarksburg, Kennedy, Northwest, Quince Orchard, and Springbrook fail at elementary level. Clarksburg fails at middle school level.	Only test clusters at elementary level where most impact of new development occurs.
Option 2A	MCPS Pgm Capacity @ 100%	100% MCPS Cap. ES, MS, and HS	None	ES, MS, HS	All Clusters	B-CC, Blake, Clarksburg, Einstein, Walter Johnson, Kennedy, Magruder, Richard Montgomery, Northwest, Northwood, Quince Orchard, Rockville, Sherwood, Wheaton and Whitman all fail at elementary level. Churchill and Clarksburg fail at middle school level. Blake and Wootton fail at high school	Only fail an area if ES, MS and HS levels all fail test. Only test clusters at elementary level where most impact of new development occurs.
Option 2B	MCPS Pgm Capacity @ 110%	110% MCPS Cap. ES, MS, and HS	None	ES, MS, HS	All Clusters	Blake, Clarksburg, Einstein, Kennedy, Northwest, and Wheaton fail at the elementary level. Clarksburg fails at middle school level. Wootton fails at high school level.	Only fail an area if ES, MS and HS levels all fail test. Only test clusters at elementary level where most impact of new development occurs.
Option 2C	MCPS Pgm Capacity @ 115%	115% MCPS Cap. ES, MS, and HS	None	ES, MS, HS	All Clusters	Blake, Einstein, Kennedy fail at elementary level. Clarksburg fails at middle school level. No failures at high school level.	Only test clusters at elementary level where most impact of new development occurs.
Option 3A	Current AGP Test	105% GP Cap. ES and MS 100% GP Cap. HS	At HS Level	ES, MS, HS	Clarksburg only	No failures at any level.	Only test clusters at elementary level where most impact of new development occurs.
Option 3B	Current AGP Test @ 100% All	100% GP Cap. ES, MS, and HS	At HS Level	ES, MS, HS	Clarksburg only	Clarksburg fails at elementary level.	Only test clusters at elementary level where most impact of new development occurs.
Optoin 3C	MCPS Pgm Capacity @ 110%	110% MCPS Cap. ES, MS, and HS	None	ES, MS, HS	Clarksburg only	Clarksburg fails at elementary and middle school levels.	Only test clusters at elementary level where most impact of new development occurs.

Option 1A: Current AGP Test

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	3,023	2,753	-270
Blair	3,734	3,940	206
Blake	2,375	1,973	-402
Churchill	2,536	2,644	108
Clarksburg	3,586	3,153	-433
Damascus	2,513	2,429	-84
Einstein	2,235	1,758	-477
Gaithersburg	3,691	3,934	243
Walter Johnson	3,165	3,094	-71
Kennedy	2,355	1,798	-557
Magruder	2,545	2,523	-22
R. Montgomery	2,258	2,108	-150
Northwest	3,865	3,458	-407
Northwood	2,705	2,674	-31
Paint Branch	2,306	2,316	10
Poolesville	593	755	162
Quince Orchard	2,866	2,632	-234
Rockville	2,345	2,171	-174
Seneca Valley	2,098	2,187	89
Sherwood	2,506	2,464	-42
Springbrook	2,733	2,825	92
Watkins Mill	2,464	2,545	81
Wheaton	2,469	2,149	-320
Whitman	2,120	2,051	-69
Wootton	2,977	3,082	105

Growth Policy Test with Growth Policy (GP) Capacity

105% GP** Capacity With Council Amdended FY07-12 CIP	Growth Policy Test: Students Above or Below 105 % GP Cap.	Growth Policy Test Result - Capacity is:
3,258	235	Adequate
5,268	1,534	Adequate
2,539	164	Adequate
3,123	587	Adequate
3,677	91	Adequate
2,886	373	Adequate
2,838	603	Adequate
4,998	1,307	Adequate
3,507	342	Adequate
2,477	122	Adequate
3,416	871	Adequate
2,562	304	Adequate
4,249	384	Adequate
3,068	363	Adequate
2,778	472	Adequate
851	258	Adequate
3,159	293	Adequate
3,169	824	Adequate
2,752	654	Adequate
2,936	430	Adequate
3,757	1,024	Adequate
3,334	870	Adequate
2,956	487	Adequate
2,365	245	Adequate
3,425	448	Adequate

Middle School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	999	1,037	38
Blair	1,916	2,260	344
Blake	1,130	1,304	174
Churchill	1,347	1,336	-11
Clarksburg	1,340	1,146	-194
Damascus	919	937	18
Einstein	851	1,408	557
Gaithersburg	1,373	1,784	411
Walter Johnson	1,492	1,778	286
Kennedy	1,149	1,295	146
Magruder	1,135	1,611	476
R. Montgomery	965	973	8
Northwest	1,875	1,964	89
Northwood	1,013	1,308	295
Paint Branch	1,147	1,308	161
Poolesville	350	472	122
Quince Orchard	1,291	1,647	356
Rockville	828	972	144
Seneca Valley	1,182	1,408	226
Sherwood	1,244	1,475	231
Springbrook	1,046	1,165	119
Watkins Mill	1,075	1,200	125
Wheaton	1,399	1,570	171
Whitman	1,170	1,266	96
Wootton	1,443	1,493	50

Growth Policy Test with Growth Policy (GP) Capacity

105% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 105 % GP Cap.	Growth Policy Test Result - Capacity is:
1,181	182	Adequate
2,622	706	Adequate
1,536	406	Adequate
1,630	283	Adequate
1,465	125	Adequate
1,134	215	Adequate
1,796	945	Adequate
2,292	919	Adequate
2,244	752	Adequate
1,607	458	Adequate
1,890	755	Adequate
1,229	264	Adequate
2,339	464	Adequate
1,725	712	Adequate
1,536	389	Adequate
543	193	Adequate
1,914	623	Adequate
1,205	377	Adequate
1,701	519	Adequate
1,701	457	Adequate
1,488	442	Adequate
1,370	295	Adequate
2,032	633	Adequate
1,465	295	Adequate
1,748	305	Adequate

In cases where elementary or middle schools articulate to more than one high school, enrollments and capacities are allocated proportionately to clusters.

High School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	1,622	1,656	34
Blair	2,410	2,840	430
Blake	1,800	1,733	-67
Churchill	1,885	1,985	100
Clarksburg	1,479	1,629	150
Damascus	1,437	1,625	188
Einstein	1,556	1,602	46
Gaithersburg	2,035	2,126	91
Walter Johnson	2,068	2,131	63
Kennedy	1,422	1,705	283
Magruder	1,757	1,999	242
R. Montgomery	1,895	1,966	71
Northwest	2,146	2,214	68
Northwood	1,361	1,526	165
Paint Branch	1,697	2,148	451
Poolesville	1,065	1,094	29
Quince Orchard	1,743	1,809	66
Rockville	1,125	1,598	473
Seneca Valley	1,391	1,497	106
Sherwood	2,054	2,054	0
Springbrook	1,947	2,148	201
Watkins Mill	1,634	1,836	202
Wheaton	1,404	1,472	68
Whitman	1,815	1,909	94
Wootton	2,308	2,018	-290

Growth Policy Test with Growth Policy (GP) Capacity

100% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Borrowing Necessary?	Growth Policy Test Result - Capacity is:
1,710	88	no	Adequate
2,993	583	no	Adequate
1,778	**-22**	Paint Branch 396	Adequate
2,115	230	no	Adequate
1,643	164	no	Adequate
1,688	251	no	Adequate
1,800	244	no	Adequate
2,340	305	no	Adequate
2,363	295	no	Adequate
1,935	513	no	Adequate
2,115	358	no	Adequate
2,093	198	no	Adequate
2,295	149	no	Adequate
1,710	349	no	Adequate
2,093	396	no	Adequate
1,058	**-7**	Northwest 149	Adequate
1,980	237	no	Adequate
1,778	653	no	Adequate
1,665	274	no	Adequate
2,183	129	no	Adequate
2,273	326	no	Adequate
2,025	391	no	Adequate
1,643	239	no	Adequate
2,025	210	no	Adequate
2,183	**-125**	R. Montgomery 198	Adequate

Option 1B: Current AGP Test @ 100% GP Capacity All Levels

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	3,023	2,753	-270
Blair	3,734	3,940	206
Blake	2,375	1,973	-402
Churchill	2,536	2,644	108
Clarksburg	3,586	3,153	-433
Damascus	2,513	2,429	-84
Einstein	2,235	1,758	-477
Gaithersburg	3,691	3,934	243
Walter Johnson	3,165	3,094	-71
Kennedy	2,355	1,798	-557
Magruder	2,545	2,523	-22
R. Montgomery	2,258	2,108	-150
Northwest	3,865	3,458	-407
Northwood	2,705	2,674	-31
Paint Branch	2,306	2,316	10
Poolesville	593	755	162
Quince Orchard	2,866	2,632	-234
Rockville	2,345	2,171	-174
Seneca Valley	2,098	2,187	89
Sherwood	2,506	2,464	-42
Springbrook	2,733	2,825	92
Watkins Mill	2,464	2,545	81
Wheaton	2,469	2,149	-320
Whitman	2,120	2,051	-69
Wootton	2,977	3,082	105

Growth Policy Test with 100% Growth Policy (GP) Capacity

100% GP** Capacity With Council Amdended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Growth Policy Test Result - Capacity is:
3,103	80	Adequate
4,417	683	Adequate
2,418	43	Adequate
2,974	438	Adequate
3,502	**-84**	**Inadequate**
2,749	236	Adequate
2,703	468	Adequate
4,760	1,069	Adequate
3,340	175	Adequate
2,359	4	Adequate
3,253	708	Adequate
2,440	182	Adequate
4,047	182	Adequate
2,922	217	Adequate
2,646	340	Adequate
810	217	Adequate
3,009	143	Adequate
3,018	673	Adequate
2,621	523	Adequate
2,796	290	Adequate
2,646	-87	Adequate
3,175	711	Adequate
2,815	346	Adequate
2,252	132	Adequate
3,262	285	Adequate

Middle School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	999	1,037	38
Blair	1,916	2,260	344
Blake	1,130	1,304	174
Churchill	1,347	1,336	-11
Clarksburg	1,340	1,146	-194
Damascus	919	937	18
Einstein	851	1,408	557
Gaithersburg	1,373	1,784	411
Walter Johnson	1,492	1,778	286
Kennedy	1,149	1,295	146
Magruder	1,135	1,611	476
R. Montgomery	965	973	8
Northwest	1,875	1,964	89
Northwood	1,013	1,308	295
Paint Branch	1,147	1,308	161
Poolesville	350	472	122
Quince Orchard	1,291	1,647	356
Rockville	828	972	144
Seneca Valley	1,182	1,408	226
Sherwood	1,244	1,475	231
Springbrook	1,046	1,165	119
Watkins Mill	1,075	1,200	125
Wheaton	1,399	1,570	171
Whitman	1,170	1,266	96
Wootton	1,443	1,493	50

Growth Policy Test with 100% Growth Policy (GP) Capacity

100% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Growth Policy Test Result - Capacity is:
1,125	126	Adequate
2,498	582	Adequate
1,463	333	Adequate
1,553	206	Adequate
1,395	55	Adequate
1,080	161	Adequate
1,710	859	Adequate
2,183	810	Adequate
2,138	646	Adequate
1,530	381	Adequate
1,800	665	Adequate
1,170	205	Adequate
2,228	353	Adequate
1,643	630	Adequate
1,463	316	Adequate
518	168	Adequate
1,823	532	Adequate
1,148	320	Adequate
1,620	438	Adequate
1,620	376	Adequate
1,418	372	Adequate
1,305	230	Adequate
1,935	536	Adequate
1,395	225	Adequate
1,665	222	Adequate

In cases where elementary or middle schools articulate to more than one high school, enrollments and capacities are allocated proportionately to clusters.

High School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	1,622	1,656	34
Blair	2,410	2,840	430
Blake	1,800	1,733	-67
Churchill	1,885	1,985	100
Clarksburg	1,479	1,629	150
Damascus	1,437	1,625	188
Einstein	1,556	1,602	46
Gaithersburg	2,035	2,126	91
Walter Johnson	2,068	2,131	63
Kennedy	1,422	1,705	283
Magruder	1,757	1,999	242
R. Montgomery	1,895	1,966	71
Northwest	2,146	2,214	68
Northwood	1,361	1,526	165
Paint Branch	1,697	2,148	451
Poolesville	1,065	1,094	29
Quince Orchard	1,743	1,809	66
Rockville	1,125	1,598	473
Seneca Valley	1,391	1,497	106
Sherwood	2,054	2,054	0
Springbrook	1,947	2,148	201
Watkins Mill	1,634	1,836	202
Wheaton	1,404	1,472	68
Whitman	1,815	1,909	94
Wootton	2,308	2,018	-290

Growth Policy Test with Growth Policy (GP) Capacity

100% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Borrowing Necessary?	Growth Policy Test Result - Capacity is:
1,710	88	no	Adequate
2,993	583	no	Adequate
1,778	**-22**	Paint Branch 396	Adequate
2,115	230	no	Adequate
1,643	164	no	Adequate
1,688	251	no	Adequate
1,800	244	no	Adequate
2,340	305	no	Adequate
2,363	295	no	Adequate
1,935	513	no	Adequate
2,115	358	no	Adequate
2,093	198	no	Adequate
2,295	149	no	Adequate
1,710	349	no	Adequate
2,093	396	no	Adequate
1,058	**-7**	Northwest 149	Adequate
1,980	237	no	Adequate
1,778	653	no	Adequate
1,665	274	no	Adequate
2,183	129	no	Adequate
2,273	326	no	Adequate
2,025	391	no	Adequate
1,643	239	no	Adequate
2,025	210	no	Adequate
2,183	**-125**	R. Montgomery 198	Adequate

Option 1C: Current AGP Test @ 95% GP Capacity All Levels

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	3,023	2,753	-270
Blair	3,734	3,940	206
Blake	2,375	1,973	-402
Churchill	2,536	2,644	108
Clarksburg	3,586	3,153	-433
Damascus	2,513	2,429	-84
Einstein	2,235	1,758	-477
Gaithersburg	3,691	3,934	243
Walter Johnson	3,165	3,094	-71
Kennedy	2,355	1,798	-557
Magruder	2,545	2,523	-22
R. Montgomery	2,258	2,108	-150
Northwest	3,865	3,458	-407
Northwood	2,705	2,674	-31
Paint Branch	2,306	2,316	10
Poolesville	593	755	162
Quince Orchard	2,866	2,632	-234
Rockville	2,345	2,171	-174
Seneca Valley	2,098	2,187	89
Sherwood	2,506	2,464	-42
Springbrook	2,733	2,825	92
Watkins Mill	2,464	2,545	81
Wheaton	2,469	2,149	-320
Whitman	2,120	2,051	-69
Wootton	2,977	3,082	105

Growth Policy Test with 95% Growth Policy (GP) Capacity

95% GP** Capacity With Council Amdended FY07-12 CIP	Growth Policy Test: Students Above or Below 95 % GP Cap.	Growth Policy Test Result - Capacity is:
2,948	**-75**	**Inadequate**
4,196	462	Adequate
2,297	**-78**	**Inadequate**
2,825	289	Adequate
3,327	**-259**	**Inadequate**
2,612	99	Adequate
2,568	333	Adequate
4,522	831	Adequate
3,173	8	Adequate
2,241	**-114**	**Inadequate**
3,090	545	Adequate
2,318	60	Adequate
3,845	**-20**	**Inadequate**
2,776	71	Adequate
2,514	208	Adequate
770	177	Adequate
2,859	**-7**	**Inadequate**
2,867	522	Adequate
2,490	392	Adequate
2,656	150	Adequate
2,514	**-219**	**Inadequate**
3,016	552	Adequate
2,674	205	Adequate
2,139	19	Adequate
3,099	122	Adequate

Middle School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	999	1,037	38
Blair	1,916	2,260	344
Blake	1,130	1,304	174
Churchill	1,347	1,336	-11
Clarksburg	1,340	1,146	-194
Damascus	919	937	18
Einstein	851	1,408	557
Gaithersburg	1,373	1,784	411
Walter Johnson	1,492	1,778	286
Kennedy	1,149	1,295	146
Magruder	1,135	1,611	476
R. Montgomery	965	973	8
Northwest	1,875	1,964	89
Northwood	1,013	1,308	295
Paint Branch	1,147	1,308	161
Poolesville	350	472	122
Quince Orchard	1,291	1,647	356
Rockville	828	972	144
Seneca Valley	1,182	1,408	226
Sherwood	1,244	1,475	231
Springbrook	1,046	1,165	119
Watkins Mill	1,075	1,200	125
Wheaton	1,399	1,570	171
Whitman	1,170	1,266	96
Wootton	1,443	1,493	50

Growth Policy Test with 95% Growth Policy (GP) Capacity

95% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 95 % GP Cap.	Growth Policy Test Result - Capacity is:
1,069	70	Adequate
2,373	457	Adequate
1,390	260	Adequate
1,475	128	Adequate
1,325	**-15**	**Inadequate**
1,026	107	Adequate
1,625	774	Adequate
2,074	701	Adequate
2,031	539	Adequate
1,454	305	Adequate
1,710	575	Adequate
1,112	147	Adequate
2,117	242	Adequate
1,561	548	Adequate
1,390	243	Adequate
492	142	Adequate
1,732	441	Adequate
1,091	263	Adequate
1,539	357	Adequate
1,539	295	Adequate
1,347	301	Adequate
1,240	165	Adequate
1,838	439	Adequate
1,325	155	Adequate
1,665	222	Adequate

In cases where elementary or middle schools articulate to more than one high school, enrollments and capacities are allocated proportionately to clusters.

High School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
B- CC	1,622	1,656	34
Blair	2,410	2,840	430
Blake	1,800	1,733	-67
Churchill	1,885	1,985	100
Clarksburg	1,479	1,629	150
Damascus	1,437	1,625	188
Einstein	1,556	1,602	46
Gaithersburg	2,035	2,126	91
Walter Johnson	2,068	2,131	63
Kennedy	1,422	1,705	283
Magruder	1,757	1,999	242
R. Montgomery	1,895	1,966	71
Northwest	2,146	2,214	68
Northwood	1,361	1,526	165
Paint Branch	1,697	2,148	451
Poolesville	1,065	1,094	29
Quince Orchard	1,743	1,809	66
Rockville	1,125	1,598	473
Seneca Valley	1,391	1,497	106
Sherwood	2,054	2,054	0
Springbrook	1,947	2,148	201
Watkins Mill	1,634	1,836	202
Wheaton	1,404	1,472	68
Whitman	1,815	1,909	94
Wootton	2,308	2,018	-290

Growth Policy Test with 95% Growth Policy (GP) Capacity

95% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 95 % GP Cap.	Borrowing Necessary?	Growth Policy Test Result - Capacity is:
1,625	3	no	Adequate
2,843	433	no	Adequate
1,689	**-111**	Paint Branch 291	Adequate
2,009	124	no	Adequate
1,561	82	no	Adequate
1,604	167	no	Adequate
1,710	154	no	Adequate
2,223	188	no	Adequate
2,245	177	no	Adequate
1,838	416	no	Adequate
2,009	252	no	Adequate
1,988	93	no	Adequate
2,180	34	no	Adequate
1,625	264	no	Adequate
1,988	291	no	Adequate
1,005	**-60**	Clarksburg 82	Adequate
1,881	138	no	Adequate
1,689	564	no	Adequate
1,582	191	no	Adequate
2,074	20	no	Adequate
2,159	212	no	Adequate
1,924	290	no	Adequate
1,561	157	no	Adequate
1,924	109	no	Adequate
2,074	**-234**	Churchill 124 and Q.O. 138	Adequate

Option 2A: MCPS Program Capacity @ 100%

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity @ 100%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	3,023	2,753	**-270**	**Inadequate**
Blair	3,734	3,940	206	Adequate
Blake	2,375	1,973	**-402**	**Inadequate**
Churchill	2,536	2,644	108	Adequate
Clarksburg	3,586	3,153	**-433**	**Inadequate**
Damascus	2,513	2,429	**-84**	**Inadequate**
Einstein	2,235	1,758	**-477**	**Inadequate**
Gaithersburg	3,691	3,934	243	Adequate
Walter Johnson	3,165	3,094	**-71**	**Inadequate**
Kennedy	2,355	1,798	**-557**	**Inadequate**
Magruder	2,545	2,523	**-22**	**Inadequate**
R. Montgomery	2,258	2,108	**-150**	**Inadequate**
Northwest	3,865	3,458	**-407**	**Inadequate**
Northwood	2,705	2,674	-31	Inadequate
Paint Branch	2,306	2,316	10	Adequate
Poolesville	593	755	162	Adequate
Quince Orchard	2,866	2,632	**-234**	**Inadequate**
Rockville	2,345	2,171	**-174**	**Inadequate**
Seneca Valley	2,098	2,187	89	Adequate
Sherwood	2,506	2,464	**-42**	**Inadequate**
Springbrook	2,733	2,825	92	Adequate
Watkins Mill	2,464	2,545	81	Adequate
Wheaton	2,469	2,149	**-320**	**Inadequate**
Whitman	2,120	2,051	**-69**	**Inadequate**
Wootton	2,977	3,082	105	Adequate

Middle School Enrollment and MCPS Capacity @ 100%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	999	1,037	38	Adequate
Blair	1,916	2,260	344	Adequate
Blake	1,130	1,304	174	Adequate
Churchill	1,347	1,336	**-11**	**Inadequate**
Clarksburg	1,340	1,146	**-194**	**Inadequate**
Damascus	919	937	18	Adequate
Einstein	851	1,408	557	Adequate
Gaithersburg	1,373	1,784	411	Adequate
Walter Johnson	1,492	1,778	286	Adequate
Kennedy	1,149	1,295	146	Adequate
Magruder	1,135	1,611	476	Adequate
R. Montgomery	965	973	8	Adequate
Northwest	1,875	1,964	89	Adequate
Northwood	1,013	1,308	295	Adequate
Paint Branch	1,147	1,308	161	Adequate
Poolesville	350	472	122	Adequate
Quince Orchard	1,291	1,647	356	Adequate
Rockville	828	972	144	Adequate
Seneca Valley	1,182	1,408	226	Adequate
Sherwood	1,244	1,475	231	Adequate
Springbrook	1,046	1,165	119	Adequate
Watkins Mill	1,075	1,200	125	Adequate
Wheaton	1,399	1,570	171	Adequate
Whitman	1,170	1,266	96	Adequate
Wootton	1,443	1,493	50	Adequate

In cases where elementary or middle schools articulate to more than one high school, enrollments and capacities are allocated proportionately to clusters.

High School Enrollment and MCPS Capacity @ 100%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	1,622	1,656	34	Adequate
Blair	2,410	2,840	430	Adequate
Blake	1,800	1,733	**-67**	**Inadequate**
Churchill	1,885	1,985	100	Adequate
Clarksburg	1,479	1,629	150	Adequate
Damascus	1,437	1,625	188	Adequate
Einstein	1,556	1,602	46	Adequate
Gaithersburg	2,035	2,126	91	Adequate
Walter Johnson	2,068	2,131	63	Adequate
Kennedy	1,422	1,705	283	Adequate
Magruder	1,757	1,999	242	Adequate
R. Montgomery	1,895	1,966	71	Adequate
Northwest	2,146	2,214	68	Adequate
Northwood	1,361	1,526	165	Adequate
Paint Branch	1,697	2,148	451	Adequate
Poolesville	1,065	1,094	29	Adequate
Quince Orchard	1,743	1,809	66	Adequate
Rockville	1,125	1,598	473	Adequate
Seneca Valley	1,391	1,497	106	Adequate
Sherwood	2,054	2,054	0	Adequate
Springbrook	1,947	2,148	201	Adequate
Watkins Mill	1,634	1,836	202	Adequate
Wheaton	1,404	1,472	68	Adequate
Whitman	1,815	1,909	94	Adequate
Wootton	2,308	2,018	**-290**	**Inadequate**

Option 2B: MCPS Program Capacity @ 110%

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity @ 110%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	110% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	3,023	2,753	3,028	5	Adequate
Blair	3,734	3,940	4,334	600	Adequate
Blake	2,375	1,973	2,170	**-205**	**Inadequate**
Churchill	2,536	2,644	2,908	372	Adequate
Clarksburg	3,586	3,153	3,468	**-118**	**Inadequate**
Damascus	2,513	2,429	2,672	159	Adequate
Einstein	2,235	1,758	1,934	**-301**	**Inadequate**
Gaithersburg	3,691	3,934	4,327	636	Adequate
Walter Johnson	3,165	3,094	3,403	238	Adequate
Kennedy	2,355	1,798	1,978	**-377**	**Inadequate**
Magruder	2,545	2,523	2,775	230	Adequate
R. Montgomery	2,258	2,108	2,319	61	Adequate
Northwest	3,865	3,458	3,804	**-61**	**Inadequate**
Northwood	2,705	2,674	2,941	236	Adequate
Paint Branch	2,306	2,316	2,548	242	Adequate
Poolesville	593	755	831	238	Adequate
Quince Orchard	2,866	2,632	2,895	29	Adequate
Rockville	2,345	2,171	2,388	43	Adequate
Seneca Valley	2,098	2,187	2,406	308	Adequate
Sherwood	2,506	2,464	2,710	204	Adequate
Springbrook	2,733	2,825	3,108	375	Adequate
Watkins Mill	2,464	2,545	2,800	336	Adequate
Wheaton	2,469	2,149	2,364	**-105**	**Inadequate**
Whitman	2,120	2,051	2,256	136	Adequate
Wootton	2,977	3,082	3,390	413	Adequate

Middle School Enrollment and MCPS Capacity @ 110%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	110% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	999	1,037	1,141	142	Adequate
Blair	1,916	2,260	2,486	570	Adequate
Blake	1,130	1,304	1,434	304	Adequate
Churchill	1,347	1,336	1,470	123	Adequate
Clarksburg	1,340	1,146	1,261	**-79**	**Inadequate**
Damascus	919	937	1,031	112	Adequate
Einstein	851	1,408	1,549	698	Adequate
Gaithersburg	1,373	1,784	1,962	589	Adequate
Walter Johnson	1,492	1,778	1,956	464	Adequate
Kennedy	1,149	1,295	1,425	276	Adequate
Magruder	1,135	1,611	1,772	637	Adequate
R. Montgomery	965	973	1,070	105	Adequate
Northwest	1,875	1,964	2,160	285	Adequate
Northwood	1,013	1,308	1,439	426	Adequate
Paint Branch	1,147	1,308	1,439	292	Adequate
Poolesville	350	472	519	169	Adequate
Quince Orchard	1,291	1,647	1,812	521	Adequate
Rockville	828	972	1,069	241	Adequate
Seneca Valley	1,182	1,408	1,549	367	Adequate
Sherwood	1,244	1,475	1,623	379	Adequate
Springbrook	1,046	1,165	1,282	236	Adequate
Watkins Mill	1,075	1,200	1,320	245	Adequate
Wheaton	1,399	1,570	1,727	328	Adequate
Whitman	1,170	1,266	1,393	223	Adequate
Wootton	1,443	1,493	1,642	199	Adequate

In cases where elementary or middle schools articulate to more than one high school, enrollments and capacities are allocated proportionately to clusters.

High School Enrollment and MCPS Capacity @ 110%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	110% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	1,622	1,656	1,822	200	Adequate
Blair	2,410	2,840	3,124	714	Adequate
Blake	1,800	1,733	1,906	106	Adequate
Churchill	1,885	1,985	2,184	299	Adequate
Clarksburg	1,479	1,629	1,792	313	Adequate
Damascus	1,437	1,625	1,788	351	Adequate
Einstein	1,556	1,602	1,762	206	Adequate
Gaithersburg	2,035	2,126	2,339	304	Adequate
Walter Johnson	2,068	2,131	2,344	276	Adequate
Kennedy	1,422	1,705	1,876	454	Adequate
Magruder	1,757	1,999	2,199	442	Adequate
R. Montgomery	1,895	1,966	2,163	268	Adequate
Northwest	2,146	2,214	2,435	289	Adequate
Northwood	1,361	1,526	1,679	318	Adequate
Paint Branch	1,697	2,148	2,363	666	Adequate
Poolesville	1,065	1,094	1,203	138	Adequate
Quince Orchard	1,743	1,809	1,990	247	Adequate
Rockville	1,125	1,598	1,758	633	Adequate
Seneca Valley	1,391	1,497	1,647	256	Adequate
Sherwood	2,054	2,054	2,259	205	Adequate
Springbrook	1,947	2,148	2,363	416	Adequate
Watkins Mill	1,634	1,836	2,020	386	Adequate
Wheaton	1,404	1,472	1,619	215	Adequate
Whitman	1,815	1,909	2,100	285	Adequate
Wootton	2,308	2,018	2,220	**-88**	**Inadequate**

Option 2C: MCPS Program Capacity @ 115%

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity @ 115%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	115% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	3,023	2,753	3,166	143	Adequate
Blair	3,734	3,940	4,531	797	Adequate
Blake	2,375	1,973	2,269	**-106**	**Inadequate**
Churchill	2,536	2,644	3,041	505	Adequate
Clarksburg	3,586	3,153	3,626	40	Adequate
Damascus	2,513	2,429	2,793	280	Adequate
Einstein	2,235	1,758	2,022	**-213**	**Inadequate**
Gaithersburg	3,691	3,934	4,524	833	Adequate
Walter Johnson	3,165	3,094	3,558	393	Adequate
Kennedy	2,355	1,798	2,068	**-287**	**Inadequate**
Magruder	2,545	2,523	2,901	356	Adequate
R. Montgomery	2,258	2,108	2,424	166	Adequate
Northwest	3,865	3,458	3,977	112	Adequate
Northwood	2,705	2,674	3,075	370	Adequate
Paint Branch	2,306	2,316	2,663	357	Adequate
Poolesville	593	755	868	275	Adequate
Quince Orchard	2,866	2,632	3,027	161	Adequate
Rockville	2,345	2,171	2,497	152	Adequate
Seneca Valley	2,098	2,187	2,515	417	Adequate
Sherwood	2,506	2,464	2,834	328	Adequate
Springbrook	2,733	2,825	3,249	516	Adequate
Watkins Mill	2,464	2,545	2,927	463	Adequate
Wheaton	2,469	2,149	2,471	2	Adequate
Whitman	2,120	2,051	2,359	239	Adequate
Wootton	2,977	3,082	3,544	567	Adequate

Middle School Enrollment and MCPS Capacity @ 115%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	115% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 115% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	999	1,037	1,193	194	Adequate
Blair	1,916	2,260	2,599	683	Adequate
Blake	1,130	1,304	1,500	370	Adequate
Churchill	1,347	1,336	1,536	189	Adequate
Clarksburg	1,340	1,146	1,318	**-22**	**Inadequate**
Damascus	919	937	1,078	159	Adequate
Einstein	851	1,408	1,619	768	Adequate
Gaithersburg	1,373	1,784	2,052	679	Adequate
Walter Johnson	1,492	1,778	2,045	553	Adequate
Kennedy	1,149	1,295	1,489	340	Adequate
Magruder	1,135	1,611	1,853	718	Adequate
R. Montgomery	965	973	1,119	154	Adequate
Northwest	1,875	1,964	2,259	384	Adequate
Northwood	1,013	1,308	1,504	491	Adequate
Paint Branch	1,147	1,308	1,504	357	Adequate
Poolesville	350	472	543	193	Adequate
Quince Orchard	1,291	1,647	1,894	603	Adequate
Rockville	828	972	1,118	290	Adequate
Seneca Valley	1,182	1,408	1,619	437	Adequate
Sherwood	1,244	1,475	1,696	452	Adequate
Springbrook	1,046	1,165	1,340	294	Adequate
Watkins Mill	1,075	1,200	1,380	305	Adequate
Wheaton	1,399	1,570	1,806	407	Adequate
Whitman	1,170	1,266	1,456	286	Adequate
Wootton	1,443	1,493	1,717	274	Adequate

In cases where elementary or middle schools articulate to more than one high school, enrollments and capacities are allocated proportionately to clusters.

High School Enrollment and MCPS Capacity @ 115%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	115% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 115% MCPS capacity	Growth Policy Test Result Capacity is:
B- CC	1,622	1,656	1,904	282	Adequate
Blair	2,410	2,840	3,266	856	Adequate
Blake	1,800	1,733	1,993	193	Adequate
Churchill	1,885	1,985	2,283	398	Adequate
Clarksburg	1,479	1,629	1,873	394	Adequate
Damascus	1,437	1,625	1,869	432	Adequate
Einstein	1,556	1,602	1,842	286	Adequate
Gaithersburg	2,035	2,126	2,445	410	Adequate
Walter Johnson	2,068	2,131	2,451	383	Adequate
Kennedy	1,422	1,705	1,961	539	Adequate
Magruder	1,757	1,999	2,299	542	Adequate
R. Montgomery	1,895	1,966	2,261	366	Adequate
Northwest	2,146	2,214	2,546	400	Adequate
Northwood	1,361	1,526	1,755	394	Adequate
Paint Branch	1,697	2,148	2,470	773	Adequate
Poolesville	1,065	1,094	1,258	193	Adequate
Quince Orchard	1,743	1,809	2,080	337	Adequate
Rockville	1,125	1,598	1,838	713	Adequate
Seneca Valley	1,391	1,497	1,722	331	Adequate
Sherwood	2,054	2,054	2,362	308	Adequate
Springbrook	1,947	2,148	2,470	523	Adequate
Watkins Mill	1,634	1,836	2,111	477	Adequate
Wheaton	1,404	1,472	1,693	289	Adequate
Whitman	1,815	1,909	2,195	380	Adequate
Wootton	2,308	2,018	2,321	13	Adequate

Option 3A: Current AGP Test

Test Only Clarksburg Cluster Where New Development is Primary Reason for Enrollment Increases

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
Clarksburg	3,586	3,153	-433

Growth Policy Test with Growth Policy (GP) Capacity

105% GP** Capacity With Council Amdended FY07-12 CIP	Growth Policy Test: Students Above or Below 105 % GP Cap.	Growth Policy Test Result - Capacity is:
3,677	91	Adequate

Middle School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
Clarksburg	1,340	1,146	-194

Growth Policy Test with Growth Policy (GP) Capacity

105% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 105 % GP Cap.	Growth Policy Test Result - Capacity is:
1,465	125	Adequate

High School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
Clarksburg	1,479	1,629	150

Growth Policy Test with Growth Policy (GP) Capacity

100% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Borrowing Necessary?	Growth Policy Test Result - Capacity is:
1,643	164	no	Adequate

Option 3B: Current AGP Test @ 100% GP Capacity All Levels

Test Only Clarksburg Cluster Where New Development is Primary Reason for Enrollment Increases

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
Clarksburg	3,586	3,153	-433

Growth Policy Test with 100% Growth Policy (GP) Capacity

100% GP** Capacity With Council Amdended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Growth Policy Test Result - Capacity is:
3,502	**-84**	**Inadequate**

Middle School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
Clarksburg	1,340	1,146	-194

Growth Policy Test with 100% Growth Policy (GP) Capacity

100% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Growth Policy Test Result - Capacity is:
1,395	55	Adequate

High School Enrollment and MCPS Capacity

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 100% MCPS capacity
Clarksburg	1,479	1,629	150

Growth Policy Test with Growth Policy (GP) Capacity

100% GP** Capacity With Council Amended FY07-12 CIP	Growth Policy Test: Students Above or Below 100 % GP Cap.	Borrowing Necessary?	Growth Policy Test Result - Capacity is:
1,643	164	no	Adequate

Option 3C: MCPS Program Capacity @ 110%

Test Only Clarksburg Cluster Where New Development is Primary Reason for Enrollment Increases

Reflects Amended FY 2007-2012 Capital Improvements Program (CIP) and MCPS Enrollment Forecast

Elementary School Enrollment and MCPS Capacity @ 110%

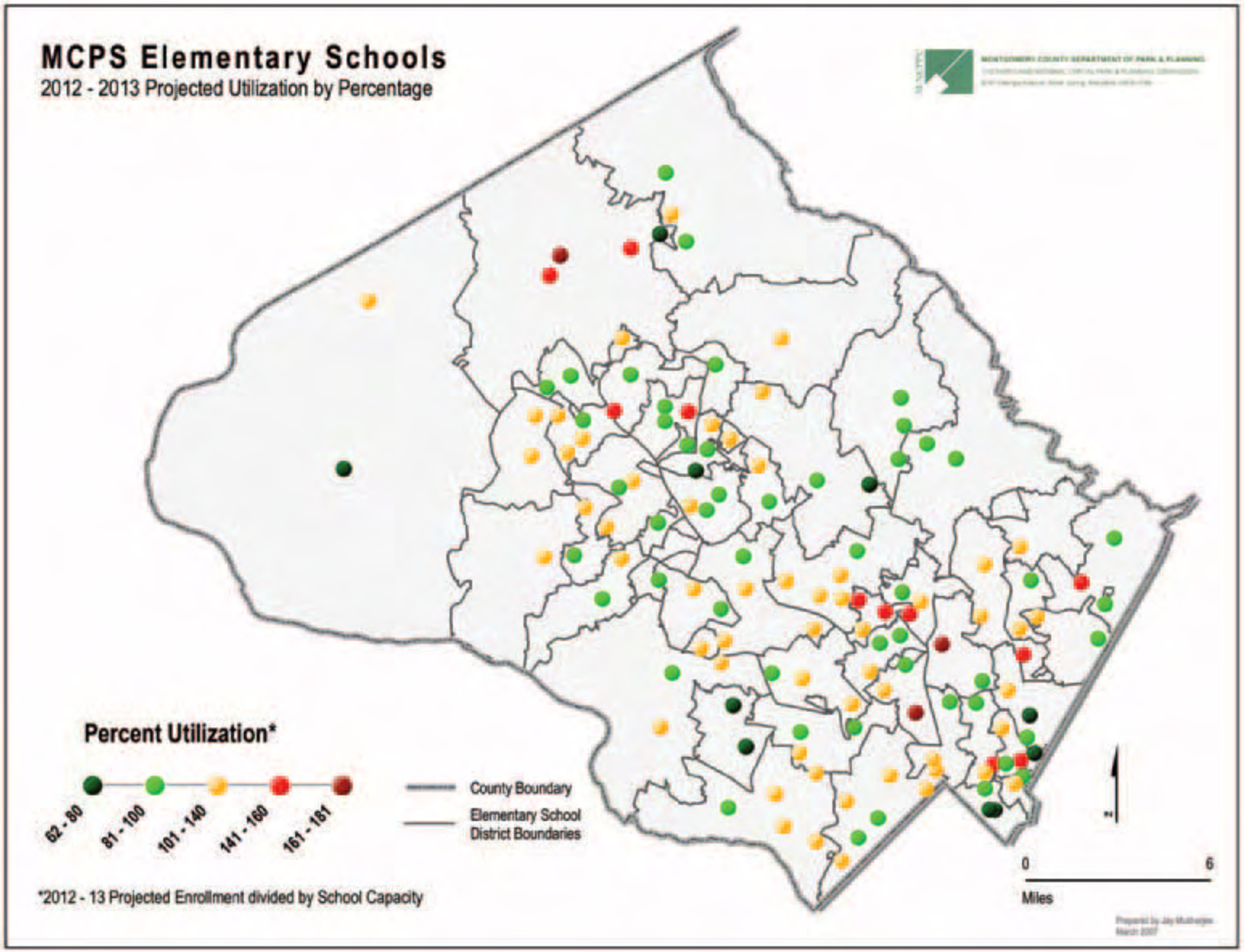
Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	110% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
Clarksburg	3,586	3,153	3,468	**-118**	**Inadequate**

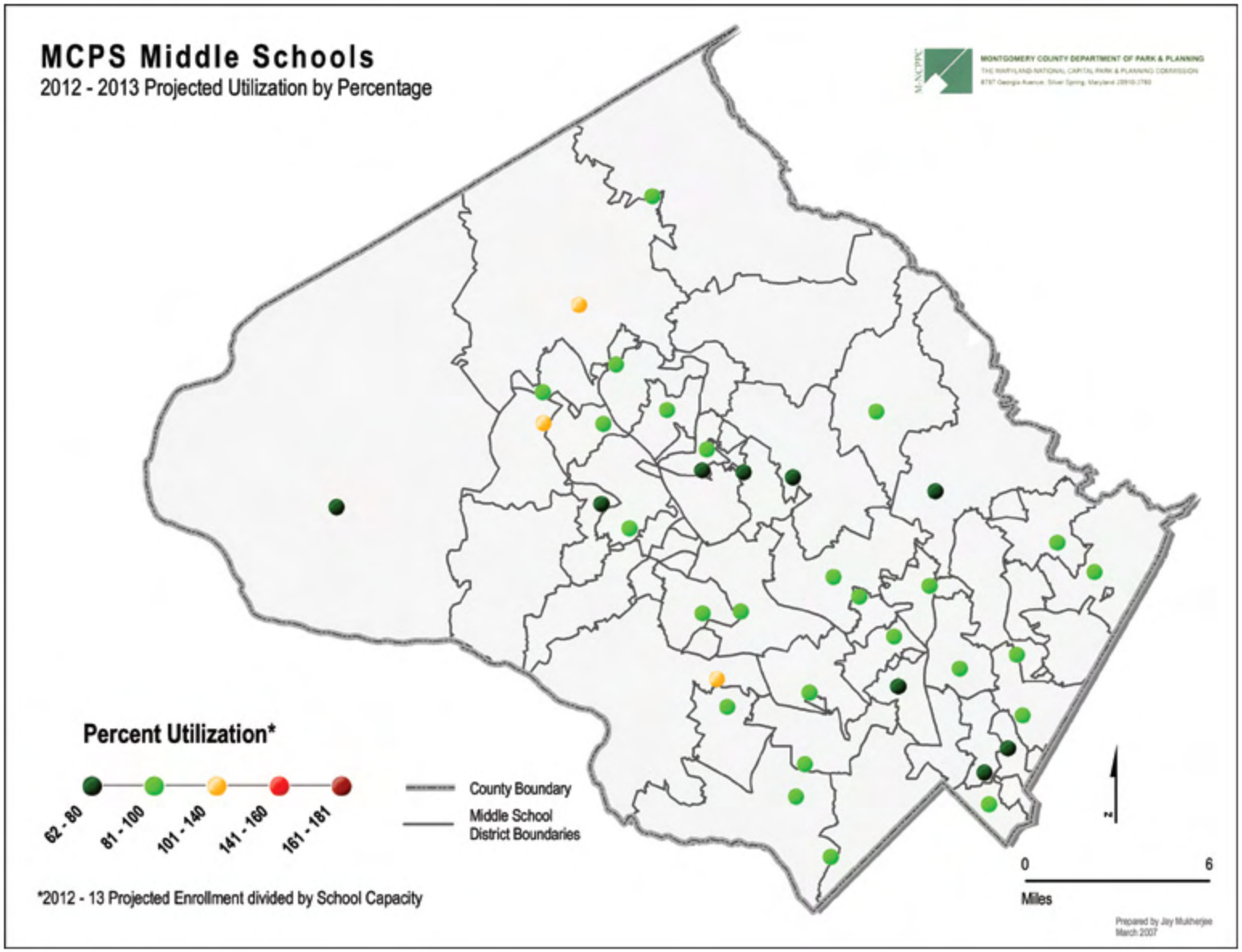
Middle School Enrollment and MCPS Capacity @ 110%

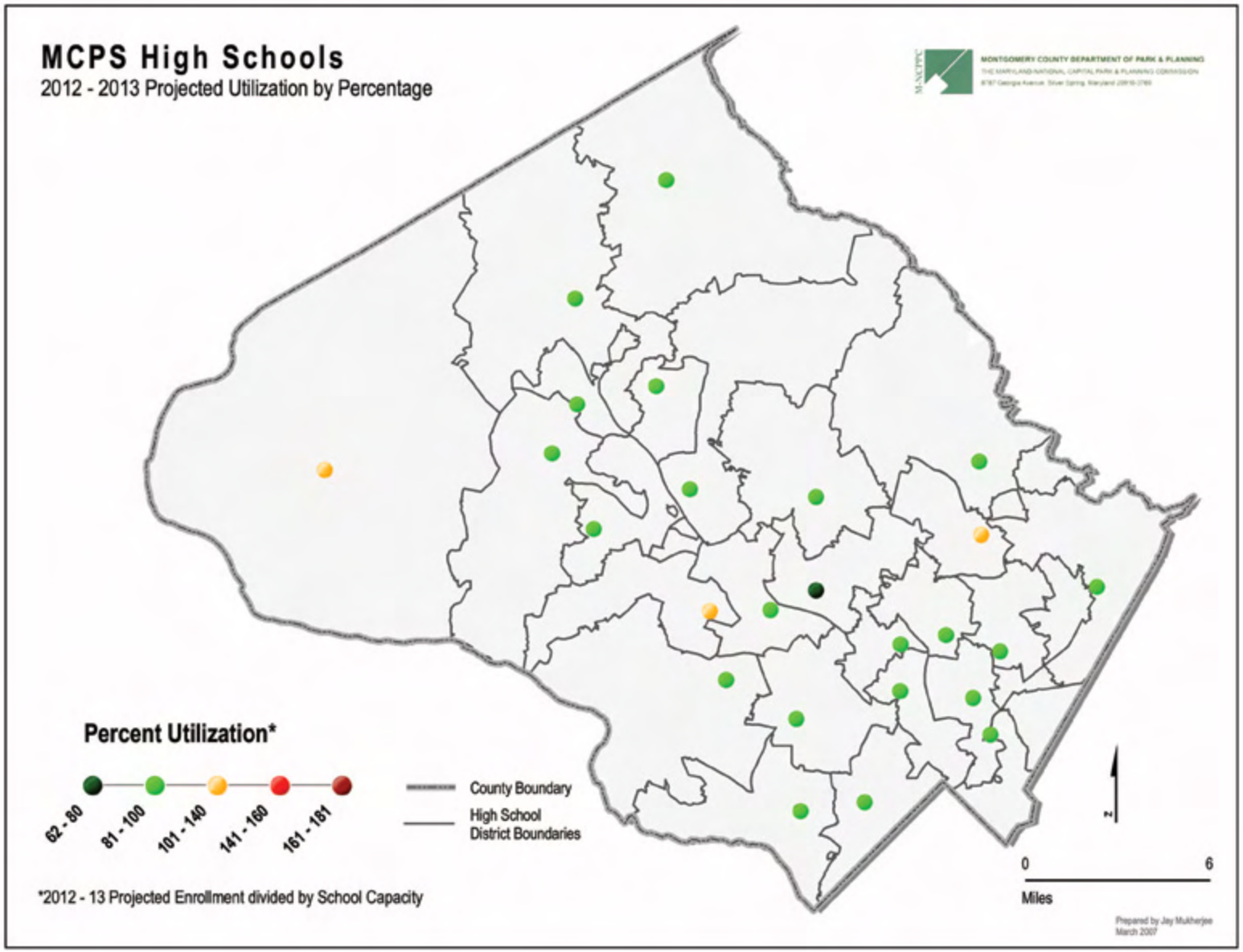
Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	110% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
Clarksburg	1,340	1,146	1,261	**-79**	**Inadequate**

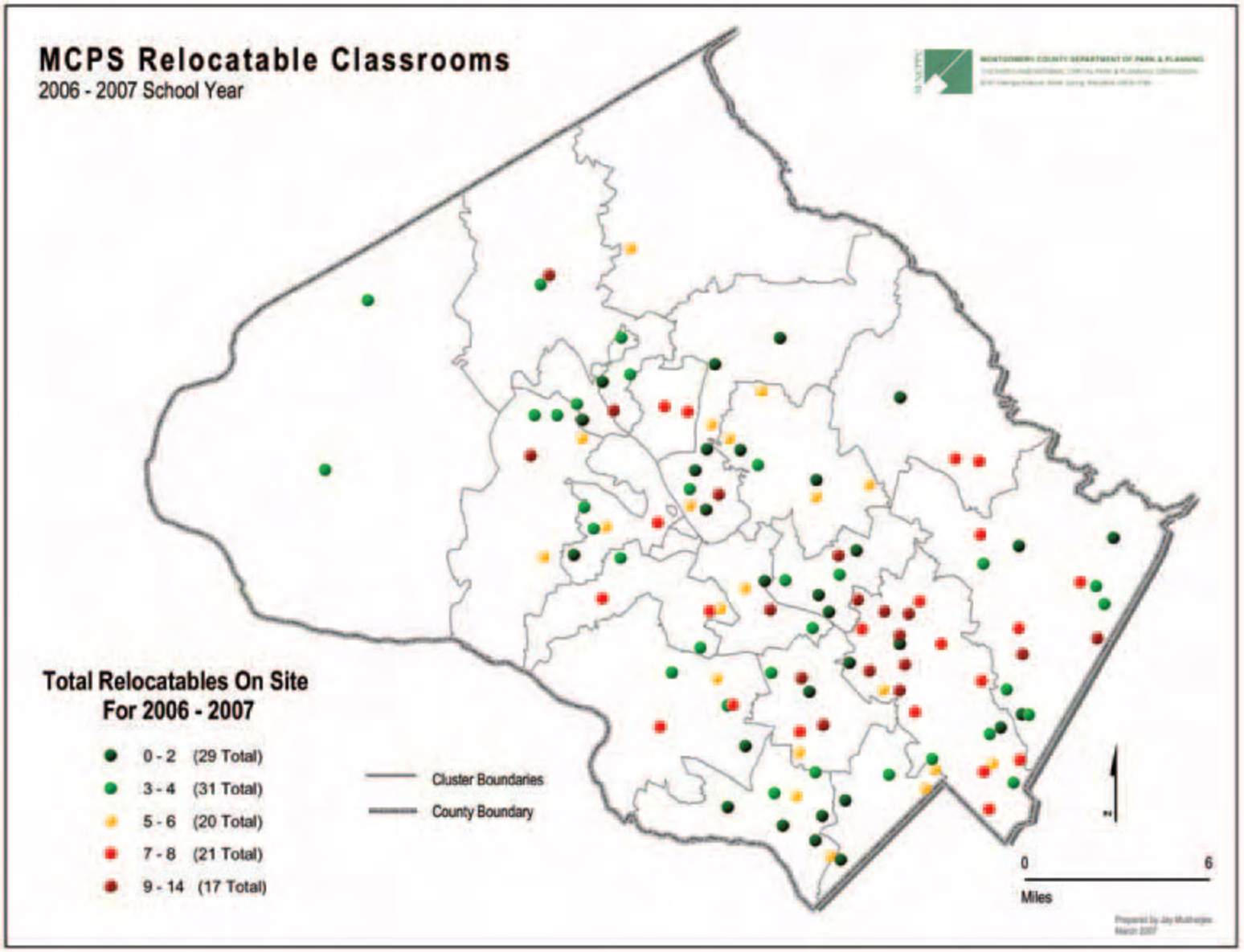
High School Enrollment and MCPS Capacity @ 110%

Cluster Area	Projected Sept. 2012 Enrollment	100% MCPS* Capacity With Council Amended FY07-12 CIP	110% MCPS* Capacity With Council Amended FY07-12 CIP	Capacity Remaining @ 110% MCPS capacity	Growth Policy Test Result Capacity is:
Clarksburg	1,479	1,629	1,792	313	Adequate


MCPS Elementary Schools
2012 - 2013 Projected Utilization by Percentage
Percent Utilization*
62 - 80
81 - 100
101 - 140
141 - 160
161 - 181
County Boundary
Elementary School District Boundaries
*2012 - 13 Projected Enrollment divided by School Capacity
0
6
Miles


MCPS Middle Schools
2012 - 2013 Projected Utilization by Percentage
MONTGOMERY COUNTY DEPARTMENT OF PARK & PLANNING
Percent Utilization*
62 - 80
81 - 100
101 - 140
141 - 160
161 - 181
County Boundary
Middle School District Boundaries
0
6
Miles
*2012 - 13 Projected Enrollment divided by School Capacity


MCPS High Schools
2012 - 2013 Projected Utilization by Percentage
MONTGOMERY COUNTY DEPARTMENT OF PARK & PLANNING
Percent Utilization*
62 - 80
81 - 100
101 - 140
141 - 160
161 - 181
County Boundary
High School
District Boundaries
0
6
Miles
*2012 - 13 Projected Enrollment divided by School Capacity
Prepared by Jay Mukherjee
March 2007


MCPS Relocatable Classrooms
2006 - 2007 School Year
Total Relocatables On Site
For 2006 - 2007
0 - 2 (29 Total)
3 - 4 (31 Total)
5 - 6 (20 Total)
7 - 8 (21 Total)
9 - 14 (17 Total)
Cluster Boundaries
County Boundary
0
6
Miles

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.

Exhibit 2-13 LATR Intersection Congestion Standards

2003	2007	Difference	Policy Areas	
1450	1400	-50	Rural Areas	
1500	1450	-50	Clarksburg Damascus Gaithersburg City Germantown Town Center	Germantown West Germantown East Montgomery Village/ Airpark
1525	1475	-50	Cloverly Derwood North Potomac	Olney Potomac R & D Village
1550	1500	-50	Aspen Hill Fairland/ White Oak	Rockville City
1600	1550	-50	North Bethesda	
1650	1600	-50	Bethesda/ Chevy Chase Kensington/ Wheaton	Silver Spring/ Takoma Park
1800	1800	0	Bethesda CBD Friendship Heights CBD Glenmont Grosvenor Shady Grove	Silver Spring CBD Twinbrook Wheaton CBD White Flint

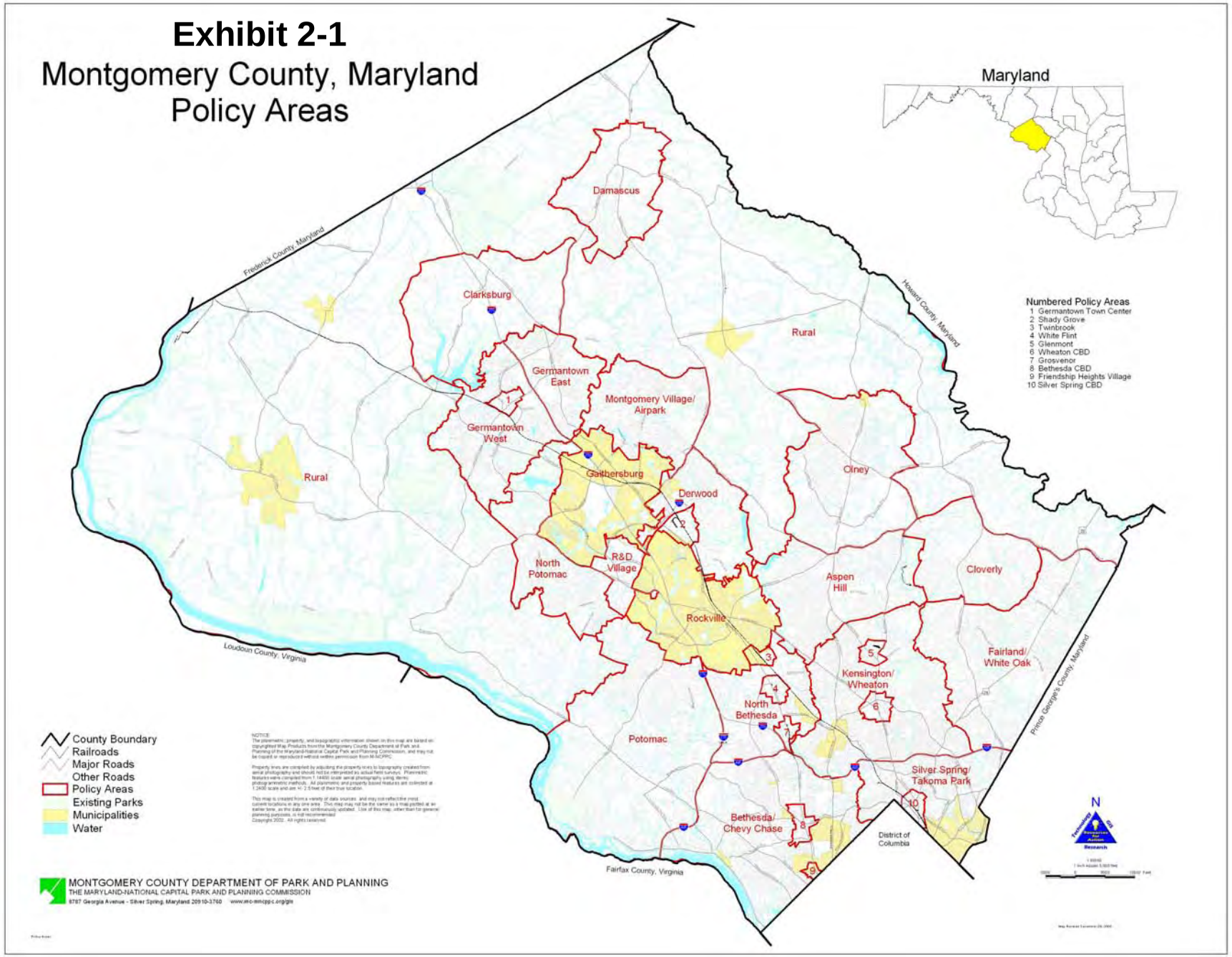


Exhibit 2-1
Montgomery County, Maryland
Policy Areas
Maryland
Numbered Policy Areas
1 Germantown Town Center
2 Shady Grove
3 Twinbrook
4 White Flint
5 Glenmont
6 Wheaton CBD
7 Grosvenor
8 Bethesda CBD
9 Friendship Heights Village
10 Silver Spring CBD
Damascus
Clarksburg
Rural
Germantown East
Montgomery Village/ Airpark
Germantown West
Gaithersburg
Derwood
Olney
Rural
North Potomac
R&D Village
Aspen Hill
Cloverly
Rockville
Fairland/ White Oak
Kensington/ Wheaton
North Bethesda
Potomac
Silver Spring/ Takoma Park
Bethesda/ Chevy Chase
District of Columbia
Frederick County, Maryland
Howard County, Maryland
Loudoun County, Virginia
Prince Georges County, Maryland
Fairfax County, Virginia
County Boundary
Railroads
Major Roads
Other Roads
Policy Areas
Existing Parks
Municipalities
Water
MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
8787 Georgia Avenue - Silver Spring, Maryland 20910-3760 www.mc-mncppc.org/gis

Exhibit 2-2. PAMR Transit Level of Service Standard

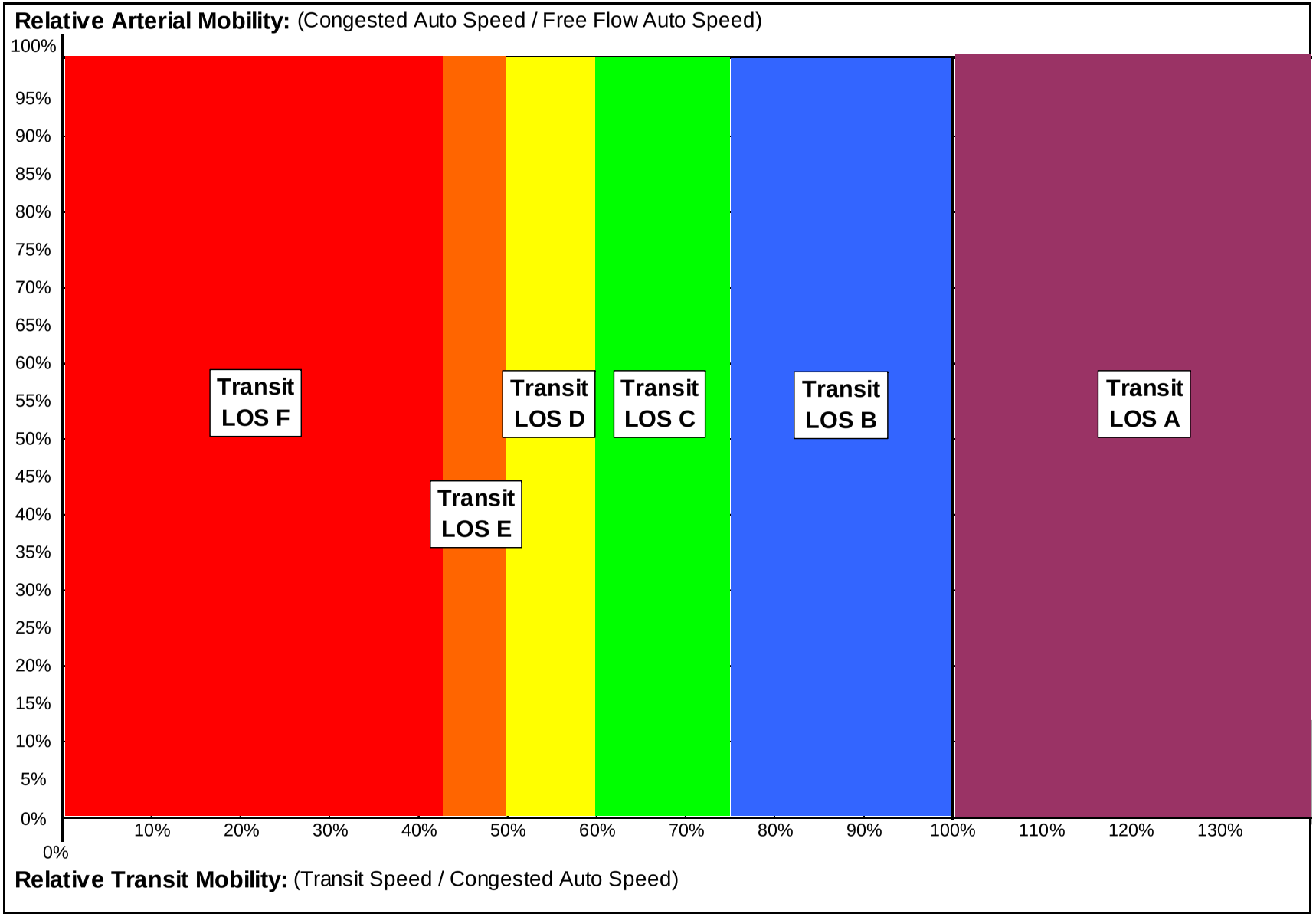


Exhibit 2-3. PAMR Arterial Level of Service Standard

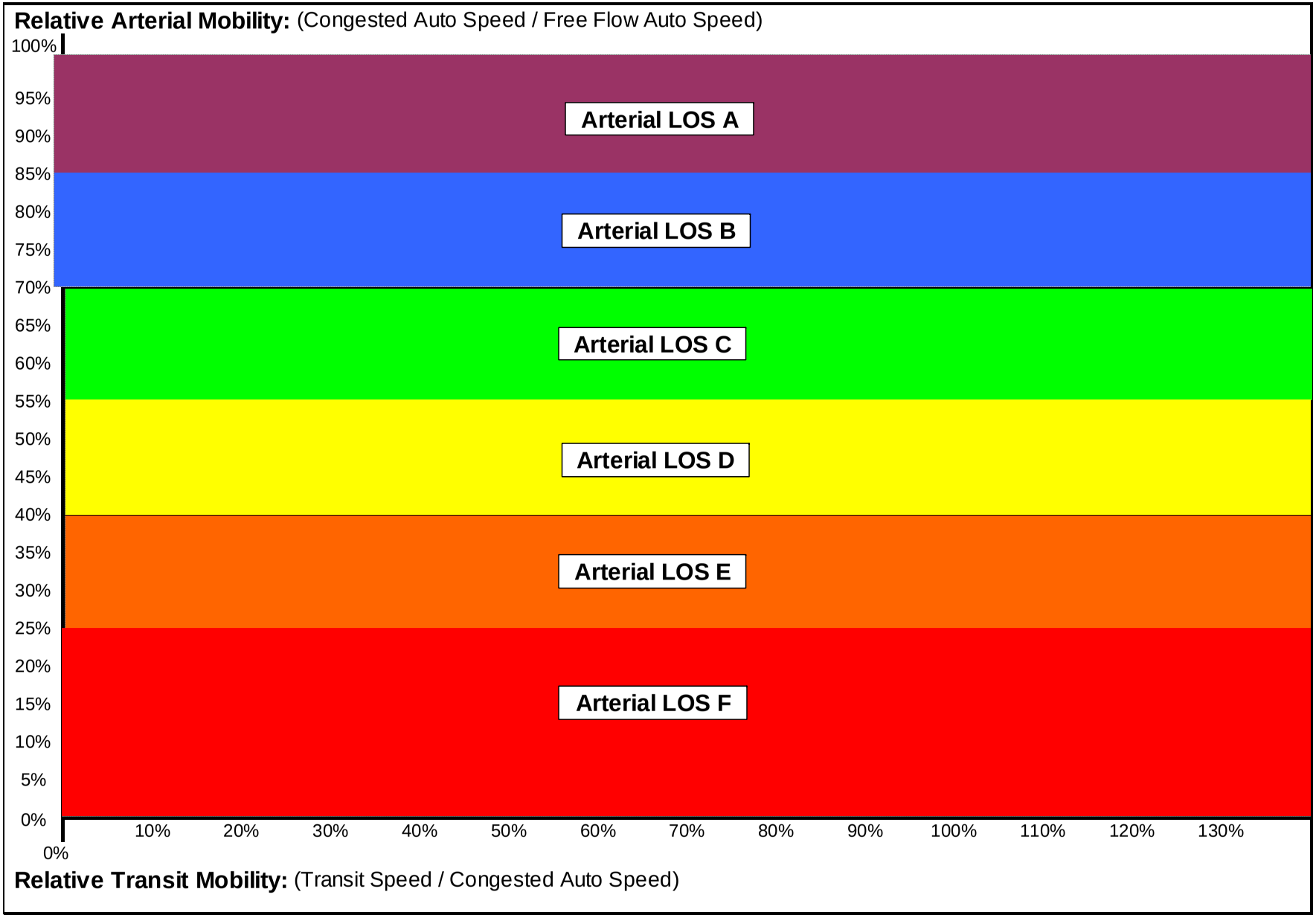


Exhibit 2-4. PAMR Adequacy Standard

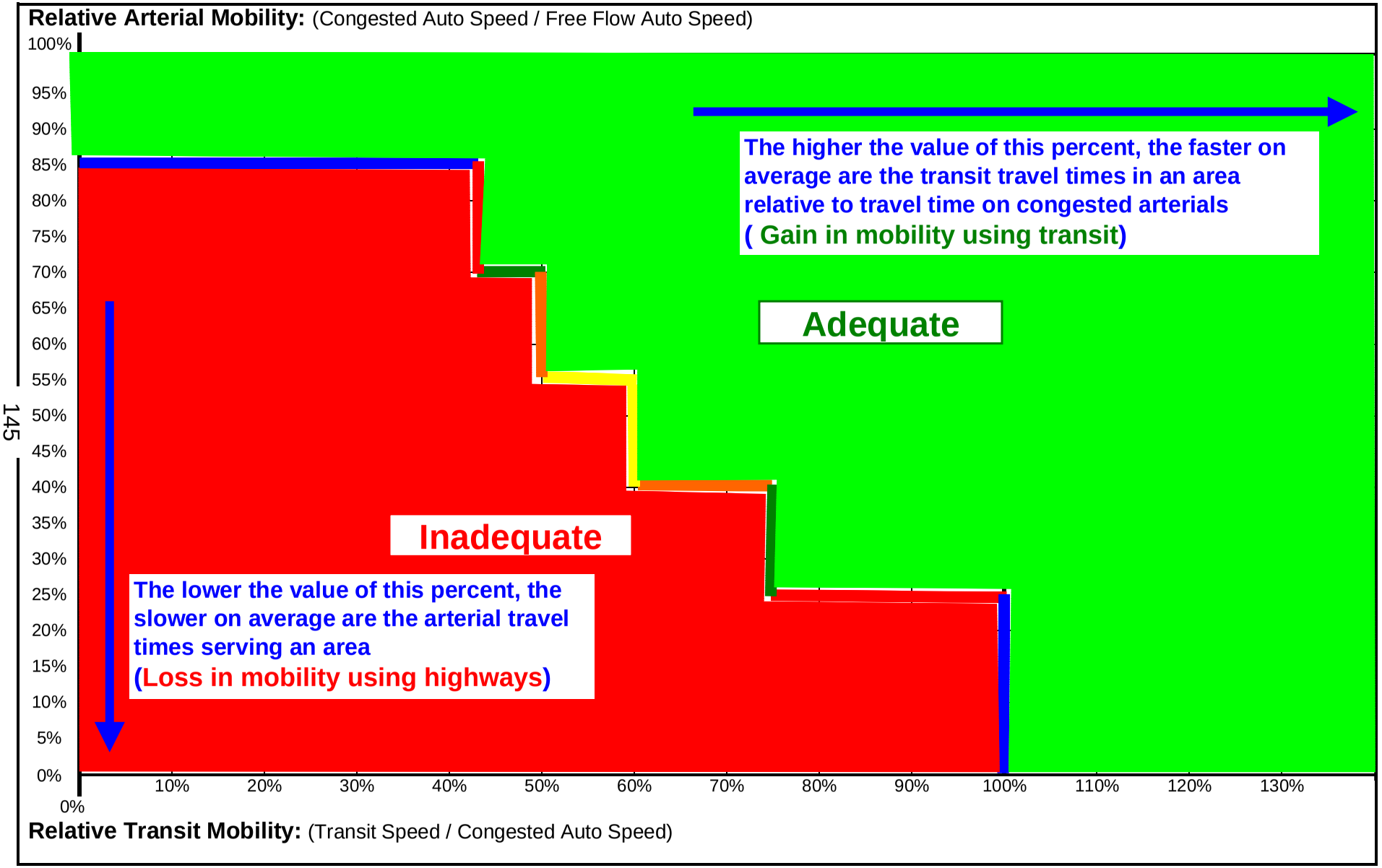


Exhibit 2-5. Year 2013 PAMR Chart

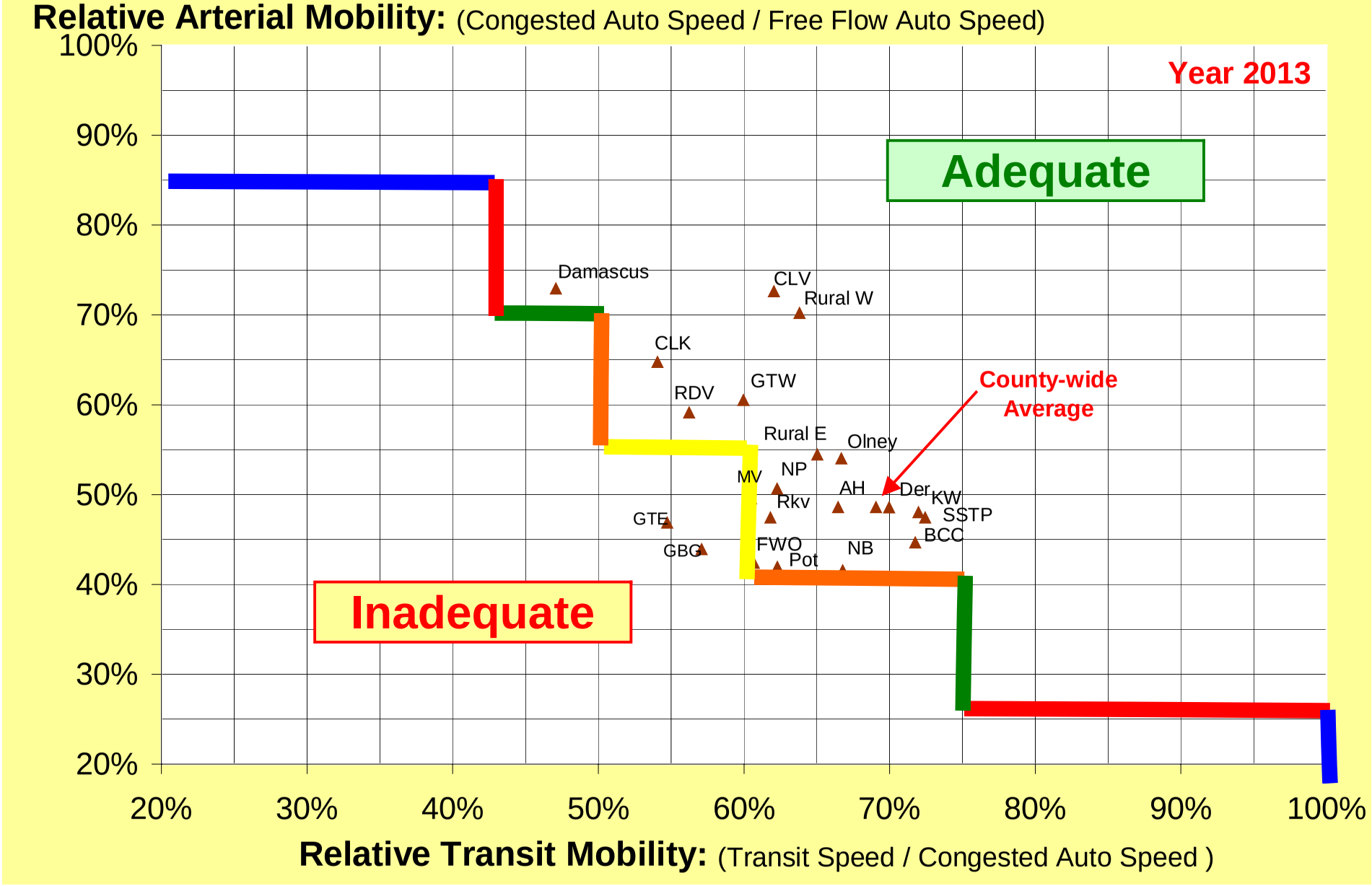


Exhibit 2-6. Year 2013 PAMR Tabulation

Policy Area	Exhibit 2-5 Key	Forecasted Relative Transit Mobility	Transit LOS Standard	Arterial LOS Standard	Relative Arterial Mobility Standard	Forecasted Relative Arterial Mobility	Difference Between Forecast and Standard	Adequacy Finding
Aspen Hill	AH	66%	C	D	40%	49%	9%	Adequate
Bethesda Chevy Chase	BCC	72%	C	D	40%	45%	5%	Adequate
Clarksburg	CLK	54%	D	C	55%	65%	10%	Adequate
Clovery	CLV	62%	C	D	40%	73%	33%	Adequate
Damascus	Damascus	47%	E	B	70%	73%	3%	Adequate
Derwood	Der	70%	C	D	40%	49%	9%	Adequate
Fairland/White Oak	FWO	61%	C	D	40%	42%	2%	Adequate
Gaithersburg	GBG	57%	D	C	55%	44%	-11%	Inadequate
Germantown East	GTE	55%	D	C	55%	47%	-8%	Inadequate
Germantown West	GTW	60%	D	C	55%	61%	6%	Adequate
Kensington/Wheaton	KW	72%	C	D	40%	48%	8%	Adequate
Montgomery Village/Airpark	MVA	60%	C	D	40%	50%	10%	Adequate
North Bethesda	NB	67%	C	D	40%	42%	2%	Adequate
North Potomac	NP	62%	C	D	40%	51%	11%	Adequate
Olney	Olney	67%	C	D	40%	54%	14%	Adequate
Potomac	Pot	62%	C	D	40%	42%	2%	Adequate
R&D Village	RDV	56%	D	C	55%	59%	4%	Adequate
Rockville	Rkv	62%	C	D	40%	47%	7%	Adequate
Silver Spring/Takoma Park	SSTP	72%	C	D	40%	47%	7%	Adequate
Rural Area East	Rural E	65%	C	D	40%	54%	14%	Adequate
Rural Area West	Rural W	64%	C	D	40%	70%	30%	Adequate
Montgomery County Total		69%				49%		

Exhibit 2-7. Year 2005 PAMR Chart

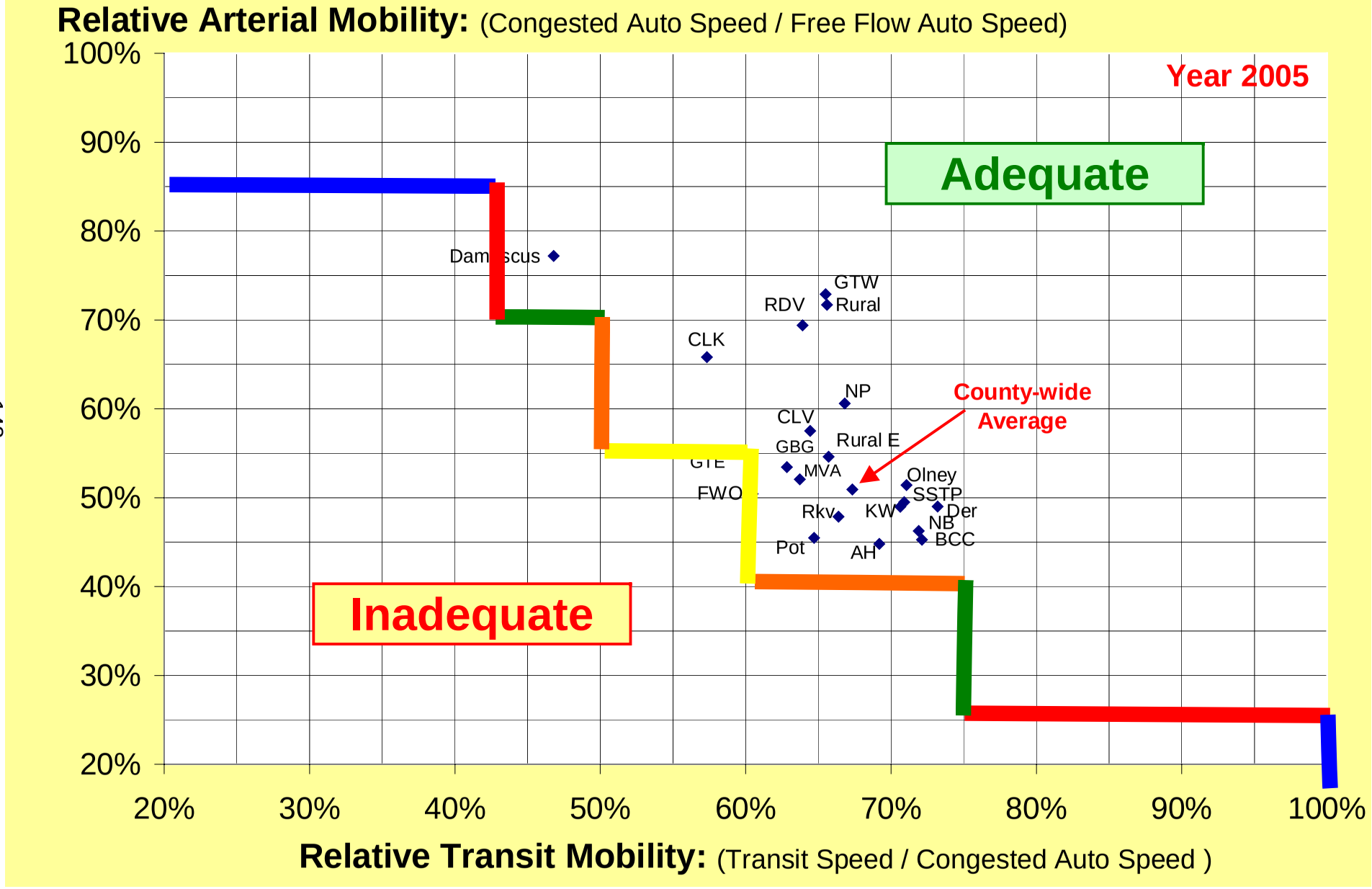


Exhibit 2-8. Year 2030 CLRP PAMR Chart

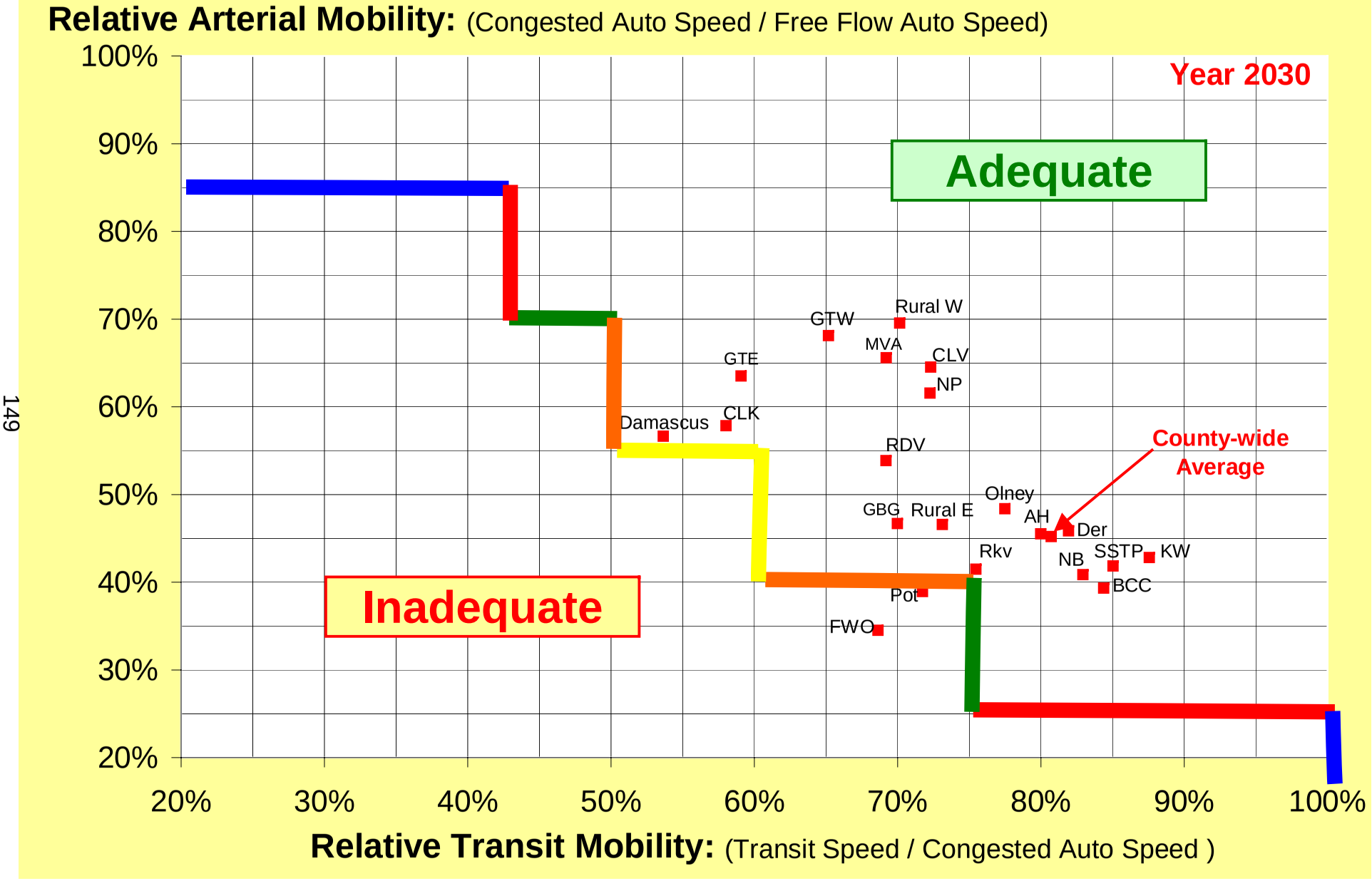


Exhibit 2-9. LATR Mitigation Options for Non-Auto Amenities

Non-Automobile Transportation Amenity	Trip Credit vs Congestion Standard		
	1400-1500	1550-1600	1800
100 linear feet of five-foot sidewalk	0.5	0.75	1.0
100 linear feet of eight-foot bike path	0.5	0.75	1.0
Curb Extension/Pedestrian Refuge Island/Handicap Ramp	2.0	3.0	4.0
LED Traffic Signals/ Intersection	4.5	6.75	9.0
Accessible or Countdown Pedestrian Signals/ Intersection	1.0	2.0	3.0
Bus Shelter	5.0	7.5	10.0
"Super" Bus Shelter	10.0	15.0	20.0
Bus Bench with Pad	0.5	0.75	1.0
Information Kiosk	1.5	3.0	4.5
Bike Locker (set of eight)	2.0	3.0	4.0
Real-Time Transit Information Sign	10.0	15.0	20.0
Static Transit Information Sign	0.25	0.4	0.5
Maximum Trip Credits	60	90	120

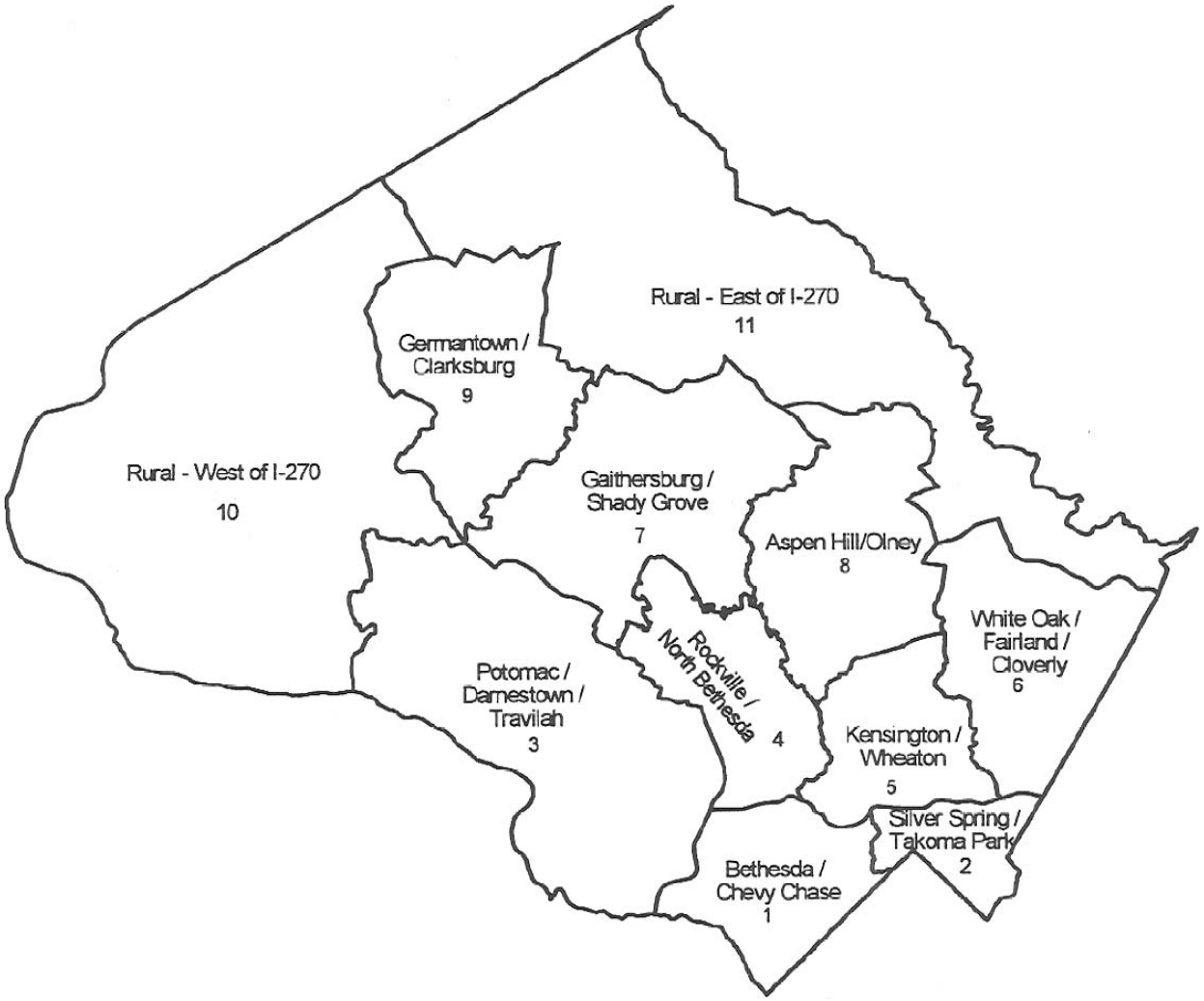
Exhibit 2-10. PAMR Mitigation Options for Providing Roadway Capacity

Minimum Length of Roadway Construction
(Lane-miles of widening or new construction per 100 vehicle trips generated)

Land Use Type	Facility type			
	Freeway	Major Highway	Arterial	Primary Residential
Office	0.38	0.51	0.77	1.54
Retail	0.24	0.31	0.47	0.94
Other Commercial	0.31	0.41	0.62	1.23
Residential	0.31	0.41	0.62	1.24

Notes:
Arterial class also includes industrial and business streets
Construction must be recommended in a master plan and have logical termini

Exhibit 2-11. LATR Superdistricts



APPENDICES FOR APFO REFORM PART 2: TRANSPORTATION

The Sections below provide additional information on topics related to the recommendations and findings in the report. These include:

1. **Review of current transportation forecasting model process**
2. **Details of proportional staging analysis**
3. **Staff recommendations on LATR Guidelines**
4. **Report to Council on appropriate standards and CLV procedures, 1999**

1. Review of the Current Transportation Modeling Process

M-NCPPC has historically been at the forefront in developing and applying travel demand forecasting procedures. For many years Montgomery County maintained a travel forecasting model, called Travel/2, that was separate from the regional MWCOG travel model. Travel/2 was used for a variety of planning applications, including area master plan studies, countywide planning studies and PATR growth policy analyses. M-NCPPC developed this separate modeling tool, in part, because of perceived weaknesses in the Metropolitan Washington Council of Governments (MWCOG) model that staff was able to address by developing Travel/2. In 2002, staff determined that the MWCOG transportation model had evolved to the point where the previous weaknesses no longer existed. Staff also determined that there were many benefits if the Department adopted the MWCOG process. In the final analysis, it was clear that a transition to the MWCOG model would allow staff to focus the Department's forecasting resources on applications, while benefiting from the huge investment by the region and USDOT in the MWCOG model development and maintenance.

Staff has now developed a Montgomery County-focused version of the MWCOG transportation model, called **Travel/3.** This model has replaced Travel/2 as the Department's regional transportation analysis tool.

What components of the MWCOG modeling process have been adopted?

It should be noted that what is often referred to as "The Model" is really an analytical **process** that includes many components such as:

- **Software to run the model** – Travel/2 used a software package called EMME/2, along with other GIS and database software for post-processing and analysis. MWCOG uses a software package called TP+/Viper, the same software used by the Baltimore Metropolitan Council.

- **Mathematical parameters and equations** (these are the "real" models).

- **Inputs to the model**. Montgomery County land use and socio-economic data come from the Department's Research and Technology Center staff. Montgomery County transportation network data come from the Department's Transportation Planning staff. Regional land use, socio-economic data and transportation network data come from MWCOG.

- **Analysts** (real people) to develop, maintain, and apply the model, and to analyze the results to answer difficult planning questions.

Travel/3 has adopted the TP+/Viper software and the MWCOG model's mathematical parameters and equations, while recognizing the critical role that our own staff have in developing population and job forecasts as inputs to the model, and applying the model for numerous transportation studies that the Department conducts.

2. Proportional Staging Method Analysis

Methodology and Alternatives Tested

The proportional staging method compares the percentage of planned development that has been built to the percentage of existing/programmed[1] transportation infrastructure for the various study areas[2] of the County. The calculation process involves a number of process assumptions for existing and planned capacity for roads, interchanges, and transit. The calculated percentages are then used to determine whether or not there is remaining development capacity to allow for additional planned development to be approved.

*For example, if **75%** of planned development in an area has been built, and **95%** of planned transportation infrastructure is on the ground, then the result would be a remaining capacity of **20%** for additional planned development to be approved.*

In this application "planned development" is defined as the jobs and households from the County Adopted Forecasts. Built development will come from our Planning Department totals of current development plus the pipeline of approvals.

The remaining capacity figures vary significantly depending on the method selected for estimating the percent-built for transportation infrastructure. This is arrived at by taking the total of (existing network + programmed additions), and dividing by the total master-planned network

[1] New infrastructure/additional capacity that is funded for construction within the first six years of the Consolidated Transportation Program (CTP) and the Capital Improvement Program (CIP)
[2] Geographies used for the 2002 Transportation Policy Report (TPR) II

The analysis for this report used 3 scenarios for estimating the transportation infrastructure percent-built figure. The percent-built calculations considered each of the following scenarios:

- Inclusion of the arterial system interchanges (scenario A)
- Exclusion of the arterial system interchanges (scenario B)
- Inclusion of the arterial system interchanges, excluding the US 29 interchanges (scenario C)

Summary of Findings

After initial development of this procedure, staff has looked more closely and finds that it has a logic "fatal flaw" that make its application problematic for regulatory process. Defining the "total build out" of jobs, housing or the transportation system is trying to hit a moving target, with zoning, redevelopment and other changes occurring often that change the total amount of future development in an area. Similarly, the transportation network is constantly undergoing refinement, and can be expanded in many ways, even within master planned constraints. However the biggest concern is that the findings of remaining development capacity run counter to the normal public policy directions. In this process, adding transportation capacity to a master planned network will actually decrease the ability to approve more development until it is fully funded, even thought the actual capacity of the programmed network could possibly accommodate more development. Similarly, taking pieces out of the future network would add to the ability to approve development, since the percent of the (smaller) future total would be larger.

It may be that this procedure can be a useful tool in looking at the need for capital programming among areas of the County, so we have developed the findings described below.

Scenario B of the methodology, which excludes the arterial system interchanges from the analysis, would result in the most capacity (3.5% countywide) for new development to be approved. Scenario A, the most stringent of the staging concept, would result in the least amount of capacity (-0.5% countywide) for new development to approved. In its current state, the proportional staging method favors the approval of new jobs over housing, for several areas of the County. All three scenarios of this staging concept would allow for the approval of new jobs in the Georgia Ave Corridor, and Eastern Montgomery County. All three scenarios would allow for the approval of new housing Inside the Beltway. Furthermore, the application of all three scenarios of the methodology results in capacity deficits in either jobs or housing in three of the five study areas (Georgia Ave, Eastern Montgomery County, and Rural).

Under scenario A of this staging concept, Eastern Montgomery County would have a net remaining capacity for new jobs of 15.7%. Conversely, this area

would have the greatest capacity deficit for new housing at –15.2%. The Georgia Ave Corridor and Inside the Beltway study areas would have remaining capacity for housing (6.5%) and jobs (6.6%) respectively. The I-270 Corridor would have a capacity deficit for both housing and jobs at -0.7% and -1.0% respectively.

Scenario A - Capacity Surplus/Deficit by Study Area

	Capacity Surplus		Capacity Deficit	
	Housing	Jobs	Housing	Jobs
Inside The Beltway	*			*
Georgia Ave		*	*	
Eastern Mont. Co.		*	*	
I-270 Corridor			*	*
Rural			*	*

Scenario B of the proportional staging method results in more capacity for the approval of new development, particularly jobs, more so than that of scenario A. Eastern Montgomery County would have a net remaining capacity of 22.8%, which is 7.1% higher than what the remaining capacity would be under scenario A. In contrast, this area would have the greatest capacity deficit for new housing at –8.8%. This scenario would yield a capacity surplus for new housing in the I-270 Corridor and Inside the Beltway at 1.6% and 7.3% respectively. In addition, the scenario results would yield a net remaining capacity for new jobs in the Georgia Ave Corridor (8.8%) and the I-270 Corridor (1.2%). The Rural study area would have a capacity deficit for both housing (–1.0%) and jobs (–6.5%).

Scenario B - Capacity Surplus/Deficit by Study Area

	Capacity Surplus		Capacity Deficit	
	Housing	Jobs	Housing	Jobs
Inside The Beltway	*			*
Georgia Ave		*	*	
Eastern Mont. Co.		*	*	
I-270 Corridor	*	*		
Rural			*	*

Scenario C of the analysis involves a slight modification of scenario A, in that the planned and programmed interchanges in Eastern Montgomery County are removed from the capacity assumptions, since these are dependant upon Council approval for the “later phases of the interchanges”. . Therefore, the remaining capacity totals are very similar to those seen in scenario A. Moreover, the area Inside the Beltway would have a capacity surplus of 6.5% for new housing. The Georgia Ave Corridor and Eastern Montgomery County would have a net remaining capacity of 5.5% and 21.4% respectively for new jobs. Similar to the results seen with scenarios A and B, Eastern Montgomery County would have the greatest capacity deficit for housing (-9.5%). Under this scenario,

both the I-270 Corridor and the Rural areas would have a capacity deficit for both housing and jobs.

Scenario C - Capacity Surplus/Deficit by Study Area

	Capacity Surplus		Capacity Deficit	
	Housing	Jobs	Housing	Jobs
Inside The Beltway	*			*
Georgia Ave		*	*	
Eastern Mont. Co.		*	*	
I-270 Corridor			*	*
Rural			*	*

Additional refinements

Currently, the study areas used in this analysis are aggregates of the County's growth policy areas. Ideally, the study areas used in this analysis should more closely resemble the growth policy area boundaries. However, staff feels that performing this type of analysis for all 34 of the County's policy areas may produce misleading results since many larger projects span several area, and cannot be built in small pieces.

The staging methodology involves a number of calculations, process and capacity assumptions that may require some additional refinement in order to obtain the most relevant and accurate results possible. For instance, a weighting[3] component could be introduced to the calculation process to alter the way in which the percent-built figures for jobs, housing, and transportation infrastructure are calculated taking into account the travel expected on each part of the network. In addition, the process and capacity assumptions may need to be modified as new transit policy initiatives are introduced, and/or as the region's travel demand model capacities are refined.

Additional Staff Recommendations for the LATR Guidelines

Transportation Planning staff and consultants who work with the Planning Board LATR Guidelines on a daily basis are often confronted with situations that are not covered or where the Guidelines no longer reflect the best procedures. The following are changes staff expects to be proposing in the Guidelines when they are updated next, probably in the context of reflecting any changes made by the Council in the overall Growth Policy. These are not felt to be of a nature that the Council would need to adopt them, as with the ones identified in the LATR Recommendations section of this report. These are included to inform the Board

[3] Adjustment of a calculated figure(s) based on the relevance/importance of an equation's inputs.

Annual Growth Policy Study (AGP) - March 2007
Proportional Staging Method - Illustrative Example

Scenario A. Includes Arterial System Interchanges

	Housing*	Jobs	Transportation
Inside The Beltway			
Percent Built	81.1%	89.6%	87.6%
2030 Forecast	93,108	160,821	
Gross Capacity	81,570	140,892	
Existing Development	75,528	144,076	
Pipeline	4,795	7,427	
Net Remaining Capacity	1,247	-10,611	
Old Growth Policy	*4,835*	*11,783*	
Georgia Avenue			
Percent Built	92.2%	82.4%	87.9%
2030 Forecast	80,668	42,312	
Gross Capacity	70,944	37,211	
Existing Development	74,376	34,883	
Pipeline	1,575	636	
Net Remaining Capacity	-5,007	1,692	
Old Growth Policy	*4,924*	*3,929*	
Eastern Montgomery County			
Percent Built	96.9%	65.9%	81.7%
2030 Forecast	35,589	42,312	
Gross Capacity	29,061	34,551	
Existing Development	34,476	27,902	
Pipeline	1,464	6,461	
Net Remaining Capacity	-6,879	188	
Old Growth Policy	*1,939*	*1,245*	
I-270 Corridor			
Percent Built	74.3%	74.7%	73.7%
2030 Forecast	147,240	244,072	
Gross Capacity	108,448	179,768	
Existing Development	109,428	182,204	
Pipeline	14,906	56,621	
Net Remaining Capacity	-15,886	-59,057	
Old Growth Policy	*14,270*	*11,281*	
Rural			
Percent Built	86.9%	92.4%	85.9%
2030 Forecast	25,197	12,990	
Gross Capacity	21,639	11,156	
Existing Development	21,903	12,001	
Pipeline	712	891	
Net Remaining Capacity	-976	-1,736	
Old Growth Policy	*4,539*	*3,950*	
Countywide			
Percent Built	82.7%	79.8%	80.9%
2030 Forecast	381,802	502,507	
Gross Capacity	311,661	403,578	
Existing Development	315,711	401,066	
Pipeline	23,452	72,037	
Net Remaining Capacity	-3,490	-21,079	
Old Growth Policy	*28,715*	*28,588*	

*Total Housing Units

Annual Growth Policy Study (AGP) - March 2007
Proportional Staging Method - Illustrative Example

Scenario B. Excludes Arterial System Interchanges

	Housing*	Jobs	Transportation
Inside The Beltway			
Percent Built	81.1%	89.6%	88.5%
2030 Forecast	93,108	160,821	
Gross Capacity	82,360	142,257	
Existing Development	75,528	144,076	
Pipeline	4,795	7,427	
Net Remaining Capacity	2,037	-9,246	
Old Growth Policy	*4,835*	*11,783*	
Georgia Avenue			
Percent Built	92.2%	82.4%	91.2%
2030 Forecast	80,668	42,312	
Gross Capacity	73,598	38,604	
Existing Development	74,376	34,883	
Pipeline	1,575	636	
Net Remaining Capacity	-2,353	3,085	
Old Growth Policy	*4,924*	*3,929*	
Eastern Montgomery County			
Percent Built	96.9%	65.9%	88.1%
2030 Forecast	35,589	42,312	
Gross Capacity	31,352	37,275	
Existing Development	34,476	27,902	
Pipeline	1,464	6,461	
Net Remaining Capacity	-4,588	2,912	
Old Growth Policy	*1,939*	*1,245*	
I-270 Corridor			
Percent Built	74.3%	74.7%	75.9%
2030 Forecast	147,240	244,072	
Gross Capacity	111,714	185,183	
Existing Development	109,428	182,204	
Pipeline	14,906	56,621	
Net Remaining Capacity	-12,620	-53,643	
Old Growth Policy	*14,270*	*11,281*	
Rural			
Percent Built	86.9%	92.4%	85.9%
2030 Forecast	25,197	12,990	
Gross Capacity	21,639	11,156	
Existing Development	21,903	12,001	
Pipeline	712	891	
Net Remaining Capacity	-976	-1,736	
Old Growth Policy	*4,539*	*3,950*	
Countywide			
Percent Built	82.7%	79.8%	83.0%
2030 Forecast	381,802	502,507	
Gross Capacity	320,664	414,474	
Existing Development	315,711	401,066	
Pipeline	23,452	72,037	
Net Remaining Capacity	746	-14,232	
Old Growth Policy	*28,715*	*28,588*	

*Total Housing Units

Annual Growth Policy Study (AGP) - March 2007
Proportional Staging Method - Illustrative Example

Scenario C. Includes Arterial System Interchanges, Excluding the US 29 Interchanges

	Housing*	Jobs	Transportation
Inside The Beltway			
Percent Built	81.1%	89.6%	87.6%
2030 Forecast	93,108	160,821	
Gross Capacity	81,570	140,892	
Existing Development	75,528	144,076	
Pipeline	4,795	7,427	
Net Remaining Capacity	1,247	-10,611	
Old Growth Policy	*4,835*	*11,783*	
Georgia Avenue			
Percent Built	92.2%	82.4%	87.9%
2030 Forecast	80,668	42,312	
Gross Capacity	70,944	37,211	
Existing Development	74,376	34,883	
Pipeline	1,575	636	
Net Remaining Capacity	-5,007	1,692	
Old Growth Policy	*4,924*	*3,929*	
Eastern Montgomery County			
Percent Built	96.9%	65.9%	87.4%
2030 Forecast	35,589	42,312	
Gross Capacity	31,100	36,975	
Existing Development	34,476	27,902	
Pipeline	1,464	6,461	
Net Remaining Capacity	-4,840	2,612	
Old Growth Policy	*1,939*	*1,245*	
I-270 Corridor			
Percent Built	74.3%	74.7%	73.7%
2030 Forecast	147,240	244,072	
Gross Capacity	108,448	179,768	
Existing Development	109,428	182,204	
Pipeline	14,906	56,621	
Net Remaining Capacity	-15,886	-59,057	
Old Growth Policy	*14,270*	*11,281*	
Rural			
Percent Built	86.9%	92.4%	85.9%
2030 Forecast	25,197	12,990	
Gross Capacity	21,639	11,156	
Existing Development	21,903	12,001	
Pipeline	712	891	
Net Remaining Capacity	-976	-1,736	
Old Growth Policy	*4,539*	*3,950*	
Countywide			
Percent Built	82.7%	79.8%	81.4%
2030 Forecast	381,802	502,507	
Gross Capacity	313,700	406,002	
Existing Development	315,711	401,066	
Pipeline	23,452	72,037	
Net Remaining Capacity	-3,490	-18,655	
Old Growth Policy	*28,715*	*28,588*	

*Total Housing Units

and others on these potential changes, and to show the evolving state of the LATR analysis. (Page numbers refer to the 2004 Adopted LATR Guidelines).

1. **Inclusion of pass-by trips in defining significantly sized project (p. 5&7).** Pass-by trips are to be included in establishing the 30-vehicle trip threshold requiring a traffic study. The page 5 definition is correct and the page 7 definition should be amended.

2. **Citation that LATR may apply building permit review (p. 5)** for cases not requiring an APF finding without subdivision, and that in limited cases (less than 12 months vacancy, no increase in square footage, and fewer than 30 peak-hour trips) the APF test may be approved administratively by staff

3. **Clarification of submittal and review processes (p. 5, 11, 12, 17, 37).** Clarify timelines, including:

   a. Transportation Planning staff have 15 working days to develop a study scope after receipt of a written request

   b. Transportation Planning staff have 15 working days to review a submitted study for completeness (retain p. 11 text, revise p. 5

   c. SHA and DPWT have 30 calendar days to review an approved study and comment on the feasibility of the recommendations, however

   d. The applicant must obtain comments from SHA and DPWT and transmit them to Transportation Planning staff four weeks prior to a scheduled Planning Board hearing.

4. **Clarifying the definition of "all land at one location" (p. 7).** The LATR Guidelines require consideration of all land at one location in considering the size of total (existing plus proposed) development in traffic study scoping. The LATR guidelines allow professional judgment. Staff judgment in the past has generally, but not always, been that parcels separated by unbuilt roadways or local subdivision streets remain "land at one location" but that parcels separated by business district streets, arterial roadways, major highways, or freeways cease to be "land at one location" even if still in common ownership.

5. **Clarifying the definition of "mitigating 50% of their total weekday morning and evening peak-hour trips" (p. 9)**. The LATR Guidelines should define how both the "non-mitigated" and "mitigated" trips should be calculated. In both cases the applicant must explicitly document the conversion between person-trips and vehicle-trips to account for transit use, vehicle occupancy, walk/bike use, internal site trip capture, and telecommute options. The estimates should document the effect of home-based work trips separately from all other trips. Special trip rates, such as for office uses within 1,000 feet of Metrorail stations outside the Beltway (p. 48), or rates for any uses within the Bethesda, Silver Spring, and Friendship Heights CBDs (p. 54) should not be used in either "non-mitigated" or "mitigated" trip rate calculations.

6. **Clarifying the LATR study area (p. 13).** There are several clarifications required to this study scope parameter:

   a. The number of signalized intersections in each direction should be described as a "minimum" rather than a "maximum".

   b. The Guidelines should indicate that the term "each direction" applies at every study intersection. For instance, in a hypothetical perfect rectangular grid, the first "ring" would include four intersections. The second "ring" would include not only the next four intersections along the streets serving the site, but also the four intersections among the cross streets encountered in the first "ring". In this manner, as the number of intersections in each direction grows linearly from one to five, the number of total study area intersections grows exponentially.

   c. The site access driveways are not included in the "first ring" of intersections.

   d. Intersections in jurisdictions for which the Planning Board does not have subdivision authority will not be included in the traffic study.

   e. Unsignalized intersections may be included in the definition of "rings" if they are between two master-planned roadways.

   f. Intersections distant enough so that fewer than 5 peak hour vehicle trips from the site will travel through the intersection need not be included in the traffic study, even if they would otherwise be identified as candidate locations.

   g. The statement that the background development to be considered will be in "the same geographic area as the intersections to be studied" should be clarified to indicate that generally a polygon should be drawn connecting the intersections furthest from the site and the background development should be included in that area.

   h. Individual background developments that generate less than five peak hour trips (i.e., subdivisions of four or fewer single family detached dwelling units) should not be included, as tracking those trips is not pragmatic.

7. **Addressing the effects of the ICC (p. 14)**. The applicant and staff must agree upon the impact of transportation projects fully funded for construction within the first four years of the CIP or CTP. The FY 2007-2012 CTP identifies the ICC as a single project that will be 99% complete in FY 2012. Staff recommends that the ICC continue to be considered as a single project, even though it will be constructed in stages, and that once the entire project is fully funded within four years its effects be considered by application of a proportional volume change (either reductions or increases) to background traffic conditions on intersection approaches based on the impacts identified in the ICC EIS.

8. **Clarification of pedestrian and bicycle impact statement requirements (p. 15)**. The Guidelines should require that the pedestrian and bicycle impact statement cover an area within a ¼ mile radius of the site, regardless of the LATR study area size. Information on bus route numbers and service frequency should be included. An inventory map of sidewalks and off-road shared-use paths within the ¼ mile radius should be included.

9. **Clarification of queue length analysis (p. 21)**. The generally accepted practice for evaluating queue lengths in CBDs and MSPAs is to observe the existing maximum queue during the peak hour and add background and site-generated traffic, assuming LATR lane distribution factors, a 25' average vehicle length, and a division of hourly approach volumes equally among the number of signal cycles in the hour. These factors should be identified in the Guidelines, as well as a statement that alternatives methods, such as simulation using Synchro or CORSIM, may be accepted if all simulation parameters are agreed to by staff.

10. **Guidance regarding pass-by trips and internal capture rates (p. 31)** should be included directing the user to the current ITE Trip Generation Handbook.

11. **Clarification of unusual CLV processes.** The discussion regarding CLV calculation should address:

    a. Right turn overlaps can be assumed where an exclusive right turn lane exists.

    b. Five leg intersections: The CLV for these intersections should be assessed according to the individual signal phases identified in the field

    c. Pedestrian crossing time: In MSPA cases where pedestrian crossing time criteria are not met (per p. 22), the applicant must inform DPST of the condition and request them to revise the signal timing.

    d. Identifying a CLV process for roundabouts. The LATR Guidelines should state that a CLV for a roundabout calculation should be performed by calculating the sum of the approach flow and circulating flows, as defined by the Highway Capacity Manual, for each approach and comparing the highest sum to the LATR standards.

12. **Addressing effects of nearby traffic constraints**. A continuing community concern relates to the degree to which observed traffic volumes may be reduced by either upstream or downstream congestion. Staff notes that the purpose of the LATR is not to establish delay-free conditions, but rather to assess the appropriate degree of responsibility applicable to private sector applicants. Staff recommends that the studies require a qualitative statement regarding observed traffic conditions if during the time period that the counts were obtained any queueing from downstream locations or other operational issues were observed. The

Guidelines should also clarify that traffic counts affected by adverse weather or nearby traffic incidents will not be accepted.

13. **Clarification of impacts assessment for special exception cases where the current operations exceed the permitted parameters**. In some cases, a special exception modification may be submitted wherein the observed traffic reflects a level of activity greater than that already permitted. In such cases, the petitioner must estimate the reduction in traffic activity that would be caused by reducing the operations to the permitted level, and use those conditions for establishing adequate public facility impacts.

4. MARCH 2, 1999 LETTER TO THE COUNCIL FROM THE PLANNING BOARD ON LATR GUIDELINES

This presents the detailed review that the Board and a citizen panel did on the LATR procedures, including Critical Lane Volume analysis, in the late 1990's. The Board, and subsequently the Council, endorsed the standards and procedures after an in-depth review. Staff finds the basic validity of the process remains sound.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
8787 Georgia Avenue • Silver Spring, Maryland 20910-3760
(301) 495-4605

Montgomery County Planning Board
Office of the Chairman

March 2, 1999

The Honorable Isiah Leggett, President
Montgomery County Council
100 Maryland Avenue
Rockville, MD 20850

Dear Mr. Leggett:

We are writing in response to Council's concern regarding the Planning Board's decision in April 1998 to adopt revisions to the *Local Area Transportation Review (LATR) Guidelines*, including specifically the adoption of revised lane-use factors used in the Critical Lane Volume (CLV) methodology for calculating intersection congestion. We have completed an in-depth staff review and Board discussion of this topic, and are pleased to report to you on our process and decisions.

Concerns about the effect of the revised lane-use factors on the Annual Growth Policy (AGP) congestion standards adopted by the Council in 1994 were raised by citizens, including two who were members of the Intersection Congestion Working Group (ICWG) that had confirmed the appropriateness of those standards in a report to the Council in April 1997.Their concern was that the current lane-use factors might suggest a revision to the congestion standards.

In response, our staff has undertaken an in-depth review of the current lane-use factors and their relationship to the congestion standards. In doing so, staff considered whether other factors, such as a peak-hour factor, should be included in our CLV methodology for planning level analysis of the traffic impacts of proposed development. A working group that included John Viner, Dan Wilhelm, representatives of academia and the County Executive, our staff and other transportation professionals reviewed this issue in great detail.

Staff presented a report and recommendations to the Planning Board at public sessions held on January 7 and February 18, 1999. Testimony from interested citizens, including Mr. Viner and Mr. Wilhelm, was received at both sessions. There was consistent testimony from staff, citizens, and transportation professionals at the January 7 public hearing that the current lane-use factors are the "correct" factors, as substantiated by field data and as recommended in the *Highway Capacity Manual*. The question of including a peak-hour factor in our CLV methodology was raised at the January 7 public hearing; the Planning Board requested staff to consider that option.

At the February 18 public hearing, staff recommended that the lane-use factors adopted by the Planning Board in April 1998 should be retained and that a peak-hour factor should not be added to the planning level of analysis in the LATR Guidelines. The Planning Board concurred with those recommendations.

Further, and perhaps more importantly from the Council's perspective, the Planning Board unanimously supported staff's recommendation that the congestion standards adopted by the County Council in 1994 are valid and conservative standards upon which to base decisions regarding the approval of development in Montgomery County and should not be changed. Those standards continue to reflect our understanding of the intent of the Council to permit different levels of traffic congestion in policy area groups. Those standards are not affected by the change in lane-use factors. One effect of adopting the new and correct lane-use factors is that the Planning Board has provided intersection capacity for a very small increment of additional development at a few intersections before reaching the congestion standard. The total level of development in an area continues to be governed by both zoning limits and staging ceiling.

There is no increased risk of excessive delay in using the current lane-use factors. In fact, local data strongly suggests that signalized intersections in Montgomery County are handling traffic better today than they were in 1994. This can be attributed in part to the efficiencies gained from the County's Advanced Transportation Management System (ATMS).

On a very practical level, the Planning Board was convinced that using the new lane-use factors would have only a marginal effect on the decisions made at subdivision approval. The typical impact on CLV calculations is 50 to 90. Even so, only about 20 intersections are close to the standard where some minimal additional development would be permitted.

A copy of our staff's report is enclosed for your information and reference. We consider this report to be a very comprehensive and understandable discussion of a very complex subject. You may wish to contact Ron Welke in our Transportation Division at (301)495-4525 for further clarification of the recommendations and our decision.

Sincerely,

Arthur Holmes/GAP

Arthur Holmes
Vice Chairman

WHH:RCW:cmd
Enclosure

ltr to leggett re LATR.wpd

M-NCPPC

MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING

THE MARYLAND-NATIONAL CAPITAL
PARK AND PLANNING COMMISSION

8787 Georgia Avenue
Silver Spring, Maryland 20910-3760

MCPB
Item No. 11
02-18-1999

February 12, 1999

MEMORANDUM

TO: The Montgomery County Planning Board

VIA: Jeffrey Zyontz, Acting Chief
County-Wide Planning Division

FROM: Richard C. Hawthorne, P. E., Chief RCH

Ronald C. Welke, Coordinator
Transportation Planning

SUBJECT: Review of the Local Area Transportation Review (LATR) Guidelines Adopted by the Planning Board in April 1998 and Their Relation to the Congestion Standards Adopted by the County Council in 1994

In January, after a staff presentation, citizen comment, and considerable discussion on the issue of lane use factors, the Planning Board decided the following:

1. The revisions to the lane use factors are appropriate and their use in the planning level of analysis using the Critical Lane Volume (CLV) methodology should continue,

2. Staff will analyze whether a "peak hour factor" is appropriate to use in the CLV calculation, and

3. If staff recommends that a "peak hour factor" is not appropriate, should there be changes in the congestion standards adopted by the County Council?

In order to respond to these issues, staff has reviewed thoroughly the origin of the LATR Guidelines and the CLV methodology, and their relationship to both the congestion standards and the *Highway Capacity Manual* (HCM). Staff requests that you, as decision makers, follow closely the discussion that follows, as it is the basis upon which you make decisions each week as to the transportation conditions tied to your approval of subdivision development.

CONCLUSIONS AND RECOMMENDATIONS

1. The lane use factors adopted by the Board in April 1998 are the correct factors, as substantiated by local field data, are consistent with those in the HCM, and should be retained.

2. A "peak hour factor" should not be added to the planning level of analysis, i.e. the CLV methodology, in the LATR Guidelines. This is based on at least three considerations.

   a. A peak hour factor does not improve the accuracy of the CLV calculations.

   b. The difficulty of determining a peak hour factor for a future condition (consider forecasting the peak 15 minutes in a peak hour five to 20 years in the future).

   c. It adds complexity to the CLV procedure, and opens up the process to other "adjustment" factors. These have not proven to be useful in previous attempts by others to add such adjustments.

3. The congestion standards recommended by the Planning Board and adopted by the County Council in 1994 should not be changed.

POLICY IMPLICATIONS OF CONCLUSIONS AND RECOMMENDATIONS

The congestion standards adopted by the County Council in 1994 have not changed. By adopting the new and correct lane use factors, the Board has allowed a very small increment of development to be approved before reaching the congestion standard in a given policy area.

To assist you in visualizing CLVs relative to the congestion standards and relating them to conditions as they exist today, a listing of intersections where the existing CLVs (using the new lane use factors) are close to the congestion standard follows. In some cases, they are slightly over the standard which would suggest that mitigation is needed at this time. In other cases, they are slightly under the standard and would suggest that mitigation is not needed at this time. Staff believes that this list will assist you in judging the validity of staff's conclusions and recommendations.

Intersection	Policy Area	Standard	CLV	Comment
Aspen Hill Rd & Veirs Mill Rd	Aspen Hill	1550	1591(PM)	Needs improvement
Bauer Dr. & Norbeck Rd	Aspen Hill	1550	1640(PM)	Needs improvement
Beach Dr & Connecticut Av	Beth/ChChase	1650	1677(AM)	Needsimprovement
Frederick Rd & Redland Rd	Derwood	1525	1523(AM)	OK but close
Elton Rd & New Hampshire Av	Fair/WO	1550	1526(AM)	Metered flow
Columbia Pk & Fairland Rd	Fair/WO	1550	1526(AM) 1509(PM)	OK
Briggs Chaney Rd & Columbia Pk	Fair/WO	1550	1609(AM) 1567(PM)	Improve

New Hampshire Av & Pdr Mill Rd	Fair/WO	1550	1634(PM)	Improve
Georgia Av & Plyers Mill Rd	Ken/Wh	1650	1577(AM)	OK
Dennis Av & Georgia Av	Ken/Wh	1650	1579(AM) 1528(PM)	OK
Fieldcrest Rd & Woodfield Rd	MV/Airpark	1500	1525(PM)	Improve
Democracy Bl & Fernwood Rd	N.Beth	1600	1603(PM)	Improve
Twinbrook Pk & Rockville Pk	N.Beth	1600	1621(AM)	Improve
Old Grgtn Rd & Tuckerman Ln	N.Beth	1600	1651(PM)	Improve
Executive Bl & Old Grgtn Rd	N. Beth	1600	1681(AM)	Improve
Georgia Av & MD 108	Olney	1525	1551(PM)	Improve
Emory Ln & Georgia Av	Olney	1525	1497(AM)	OK
Democracy Bl & Seven Locks Rd	Potomac	1525	1618(PM)	Improve
Colesville Rd & Sligo Creek Pk	SS/TakPk	1650	1698(PM)	Improve

DISCUSSION

There are five basic questions to be asked, answered and understood relative to this issue:

1. What is "capacity" and how does capacity relate to the CLV analysis in the LATR Guidelines? How is "capacity" measured? Has it changed over time?

2. What "volume" of traffic is "acceptable" within Montgomery County? Is it different in different policy areas? What is the relationship of "volume" to the congestion standards adopted by Council?

3. What is the relationship between "capacity" (c) and "volume (v)? What is the "v/c ratio" and how does this ratio relate to the congestion standards, HCM method of planning analysis and the CLV methodology used in Montgomery County?

4. Does the change in lane use factors permit more development than was permitted with the old lane use factors? Should the congestion standards be changed or another factor, the "peak hour factor," be added to our methodology to "offset" the effect of the new lane use factors?

5. Has adoption of the new lane use factors increased the risk of excessive delay at signalized intersections in Montgomery County?

In order to understand the relationship of capacity, volume and the congestion standards, a discussion of these critical elements of the LATR process will precede discussion of the "peak hour factor" and its relevance to the planning level of analysis used in the CLV methodology.

What is "Capacity?"

"Capacity" is the number of vehicles that can pass a given point in a given time. It is expressed in "vehicles (or passenger cars) per lane per hour." This is a value that has been measured at locations throughout the United States and can be measured here in Montgomery County. In contrast, the factors used in our CLV analysis procedure, i.e. lane use factors, that initiated these questions have no bearing on "capacity," but rather are related to the calculation of "volume" as discussed later in this memorandum.

The recognized source for defining "capacity" is the *Highway Capacity Manual* (HCM) published by the Transportation Research Board (TRB). The HCM defines capacity for intersections using the "saturation flow" of a lane.

In the 1960s, the saturation flow for a lane at a signalized intersection was considered to be 1,400-1,500 vehicles per lane per hour. That value has increased steadily since that time, as vehicles have become more efficient and traffic engineering knowledge, understanding and application has improved.

In 1985, the HCM recognized a saturation flow rate for a lane at a signalized intersection of 1,800 passenger cars per hour of green. In 1994, the HCM value for saturation flow increased to 1,900. There is consideration to increasing the saturation flow to 2,000 or higher in the Year 2000 edition of the HCM.

What Is Theoretical "Capacity" at a Traffic Signal?

What is the relationship of "capacity" of a lane with 3600 seconds of green time to "capacity" of a lane when a traffic signal is installed? At a traffic signal, there is something called "lost time" which is the time when the indications change from green to yellow to red on each approach to the intersection. Generally, three to four seconds per signal phase or about 10% of the time available to move traffic is assumed to be "lost" at a traffic signal. For example, if saturation flow is 1,900 vehicles per lane per hour, then the capacity of a lane at a traffic signal would be about 1,700 vehicles per hour (90% of 1,900.)

What Is the Real World "Capacity" of a Traffic Signal in Montgomery County?

The capacity of a lane at a traffic signal in Montgomery County is assumed to be 1,700 vehicles per hour. However, actual calculations of critical lane volumes at over 25 intersections in the County using the adopted lane use factors indicate that the saturation flow may be approaching 2,000 vehicles per hour, suggesting that the "capacity" of a lane at a signalized intersection in Montgomery County may be closer to 1,800 vehicles per hour (90% of 2,000) rather than 1,700 (See Appendix A). The measured CLVs at these intersections all are above 1,800 and range from 1,800 to over 2,200 vehicles per lane per hour. Deployment of new technologies associated with the County's Advanced Transportation Management System (ATMS), as well as more aggressive drivers, account for these increased flow rates.

Research studies have verified that the deployment of state-of-the-art technology can increase the efficiency or "capacity" of an arterial road network by about 10%. Montgomery County began installing their computer-controlled traffic signal system in the early 1980s. That system is now fully deployed but is not running "real time," (i.e. signal timing is not yet being adjusted cycle-by-cycle as data is received from detectors.) Also, the County is installing cameras at intersections and providing traveler information to motorists. It is estimated that their system as it exists today has achieved about one-half of the efficiency possible with today's technology. It is important that we recognize and understand the increased "capacity" that has and will be achieved.

Staff is not suggesting that the congestion standards be reevaluated at this time. However, as there is increasing factual evidence that the capacity of our signalized intersections has increased, and as the County continues to deploy more transportation management and traveler information technology, it may be appropriate to consider raising the congestion standards in the future to reflect the levels of congestion desired by policy makers in different areas of the county.

How Is "Volume" Measured at a Signalized Intersection?

Traffic volume at a signalized intersection is measured by manually counting the traffic approaching the intersection from all directions for a period of time, usually four, six or 12 hours, and how much of the total traffic goes through, turns right or turns left. The calculation that is made has become identified in Montgomery County as the "critical lane volume technique." It is a procedure that calculates the "critical lane volume" on each approach to the intersection.

In April 1998, the Board adopted revised LATR Guidelines that included a change in the "lane use factors," i.e. the percent of traffic in the most-used lane of each approach. Specifically, for a two-lane approach, the lane use factor was changed from 0.55 to 0.53, and for a three-lane approach, the lane use factor was changed from 0.40 to 0.37. The change reflected measurements from local video data and is consistent with changes made in the 1994 edition of the HCM.

The new lane use factors resulted in a 1-6% reduction in calculated CLVs compared to use of the old lane use factors, or about 20-100 CLVs. To put this change in perspective, a change of 50 CLVs is equivalent to about 30,000 to 100,000 square feet of office, 7,000 to 20,000 square feet of retail, or 50 to 150 single family residences, depending on whether it is spread over one, two or three lanes. Whereas theoretical changes in CLVs of up to 120 are possible, in practice this magnitude of change is rare since such a change would require that each "critical lane" be a three-lane approach. As an example, the decrease in CLVs using the current lane use factors at ten intersections studied for the Hecht's site in Friendship heights ranged from 0 to 72 and averaged 41 less than they would have been with the previous lane use factors.

The lane use factors originally adopted by the Board (0.55 and 0.40) were the product of work done in the early 1970s. My observations during the 1980s and 1990s suggested that we were doing a better job of moving traffic with the advent of the computer. Particularly at congested intersections, we were making more efficient use of green time and queues were more evenly distributed over the approach lanes. This was confirmed in mid-1998 by actual field data from video cameras that are part of the County's ATMS (Advanced Transportation Management System).

A comparison of CLV calculations to the HCM planning method of analysis indicates that use of the adopted lane use factors, i.e. 0.53 and 0.37, more closely matches the HCM planning method results and can be considered to produce comparable results. Use of flat lane use factors, i.e. 0.50 and 0.333, in the CLV methodology as recommended for intersections at or near capacity in the HCM, produces results that are too optimistic, whereas use of the previous lane use factors, i.e. 0.55 and 0.40, produces results that are too conservative. (See table below)

Procedure	Alternative	Morning Peak Hour		Evening Peak Hour	
		Result (v)	v/c	Result (v)	v/c
HCM	"Standard"	1654	0.97	1212	0.71
Critical	LUF - 50/33	1592	0.94	1170	0.69
Lane	LUF - 53/37	1644	0.97	1204	0.71
Technique	LUF - 55/40	1678	0.99	1226	0.72

What Is the Relationship Between "Capacity" and "Volume"?

The relationship between capacity and volume, as described in the HCM, is defined as the "volume to capacity ratio," or v/c ratio. Simply stated, as it relates to the LATR Guidelines, it is the relationship between a desired maximum volume for a given policy area and the "capacity" of a signalized intersection as defined by the HCM and measured in the field, and is reflected by the congestion standards adopted by Council.

The adopted Congestion Standards for Montgomery County are as follows:

1450	Rural Areas
1500	Clarksburg, Damascus, Gaithersburg, Germantown East and West, Germantown town center, Montgomery Village/Airpark
1525	Cloverly, Derwood, North Potomac, Olney, Potomac, R&D Village
1550	Aspen Hill, Fairland/White Oak, Rockville
1600	North Bethesda
1650	Bethesda/Chevy Chase, Kensington/Wheaton, Silver Spring/Takoma Park

1800	Bethesda CBD, Friendship Heights CBD, Grosvenor, Shady Grove, Silver Spring CBD, Twinbrook, Wheaton CBD, White Flint

The HCM relates v/c values to capacity as follows:

V/C Ratio	Relationship to Capacity
= or < 0.85	Under
0.85 to = or < 0.95	Near
0.95 to = or < 1.00	At
> 1.00	Over

When the County Council adopted the congestion standards in 1994, it was understood that policy areas with a 1,600-1,650 CLV standard were near but not at capacity and that policy areas with a CLV standard of 1,800 were at or slightly above capacity. Assuming a saturation flow of 1,900 vehicles per lane per hour, as the 1994 HCM stated, the "capacity" of a lane at a traffic signal would have been 1,700 vehicles per hour, and the v/c ratios would have been between 0.94 and 0.97 for CLVs between 1,600 and 1,650 and between 1.00 and 1.06 for CLVs between 1,700 and 1,800. **These comparisons of the congestion standards to expected acceptable volumes in different policy areas confirm that the adopted congestion standards conform to national norms, are valid and should not be adjusted.**

If, in fact, the capacity of a lane at a signalized intersection has increased to 2,000 vehicles per hour, as discussed above, then the current congestion standards are conservative and have an inherent safety factor built into them. For example, assuming that saturation flow has increased from 1,900 to 2,000 vehicles per lane per hour, the "capacity" of a lane at a traffic signal has increased from 1,700 to 1,800 vehicles per hour. The v/c ratios would then be between 0.89 and 0.92 for CLVs between 1,600 and 1,650 and between 0.94 and 1.00 for CLVs between 1,700 and 1,800. This would suggest that the congestion standards are more conservative than originally intended when adopted by Council. Based on this evaluation, staff concludes that a "peak hour factor" should not and does not need to be added to the planning level of analysis used in the LATR Guidelines.

What Is the Impact of Use of the New (Correct) Lane Use Factors?

I suggest that you visualize the adopted congestion standards as the height of a bridge under which a truck must pass. The height of the truck is the CLV for a development that includes existing, background and site traffic. With the new lane use factors, the height of the truck is slightly lower than it had been with the old lane use factors. As discussed above, the new lane use factors resulted in a 1-5% reduction in calculated CLVs compared to use of the old lane use factors, or about 20-90 CLVs.

As a result, Developer A may now get under the bridge if total traffic is close to the congestion standard, whereas Developer A would not have cleared the bridge before. However, Developer B who comes along after Developer A will not get under the bridge and will have to mitigate his trips. So it is not a question of allowing more development but rather a question of which developer gets caught under the bridge. What has happened is that a small increment of additional development has been permitted before reaching the congestion standard. Most of the major intersections in the county are already above the applicable congestion standards and are not affected by the change in lane use factors (See Appendix B). Only a very few intersections, as discussed above under "Policy Implications," may be affected by the change.

Should A "Peak Hour Factor" Be Added to the CLV Methodology?

Staff recommends that a "peak hour factor" not be included in the planning level of analysis in the CLV methodology. There is consensus among members of the Traffic Growth Working Group (TGWG) with this recommendation. This is based on at least three concerns.

- A peak hour factor does not improve the accuracy of the CLV calculations.
- The difficulty of determining a peak hour factor for a future condition (consider forecasting the peak 15 minutes in a peak hour five to 20 years in the future).
- It adds complexity to the CLV procedure, and opens up the process to other "adjustment" factors. These have not proven to be useful in previous attempts by others to add such adjustments.

What is the "peak hour factor?" The "peak hour factor" converts peak hourly traffic volumes to flow rates for the peak 15-minute period within that peak hour. This is done by dividing the hourly volume by the peak 15-minute volume multiplied by four. The conversion of hourly volumes to peak flow rates assumes that all movements peak during the same 15-minute period, and is, therefore, a conservative approach. Essentially, it is a "safety factor" to account for peaking of traffic within the peak hour.

If a peak hour factor were used in our process, it would basically increase all CLV's by the amount of the factor. So a 0.95 factor would take the current 1,500 CLV to 1,575. This would "undo" the accuracy gained from the new lane use factors.

An "additional finding" from the Intersection Congestion Working Group (ICWG) report prepared in April 1997 was that "some fine-tuning of the CLV procedures could be tested based on adjustment factors found in the 1994 *Highway Capacity Manual.* These factors could include calculating a peak hour factor accounting for the peaking within the peak hour, and modifying the lane use factors on multiple lane roadways to account for spreading of vehicles more uniformly in congested situations."

In developing the recommendations for the LATR Guidelines in April 1998, staff did consider this issue in recommending the adjustment to lane use factors that were adopted by the Board. The

Highway Capacity Manual (HCM) planning method for calculating delay or congestion at signalized intersections indicates that as the volume approaches the capacity of the intersection, lane use becomes uniform. Staff could have recommended uniform lane use factors and a peak hour factor at that time. This was not considered appropriate.

The HCM recognizes default lane use values when average conditions exist or traffic distribution on a lane group is not known. The default values for two and three lane approaches are 0.525 and 0.367, respectively. Staff believed that it was reasonable and conservative to adopt lane use factors that were consistent with the HCM's default values, i.e. 0.53 and 0.37, even though the HCM would suggest flat lane use factors, i.e. 0.500 and 0.333. Lane use data collected from video cameras at several signalized intersections in Montgomery County confirm that the adopted lane use factors are representative of existing conditions.

In the late 1970's, a national research publication (TRB Circular 212) proposed a CLV procedure with a number of adjustment factors. Applications in real world situations showed the forecast CLV's to be much higher than observations of congestion reflected. These adjustment factors were not well received, and the more complex procedure faded from the technical scene.

Staff believes, and, after some detailed review, most members of the TGWG concur, that there is no technical basis to modify the current planning level of analysis in the CLV methodology to include a peak hour factor. It does not improve the accuracy of the calculations, exceeds the ability of the procedure to be accurate, and makes the procedure more complex. Peak hour factors will move toward 1.0 as volumes increase, so even knowing the current number, there is no practical way to estimate what they will be in the future. The CLV methodology was adopted in Montgomery County in the early 1970s because it was relatively simple and easy to understand, and only needed data always available for a planning-type analysis, i.e. volumes and lane configurations. These are important characteristics to retain.

Has the Risk of Excessive Delay Increased?

The answer simply is NO. A small increment of development can now be approved **before** reaching a congestion standard, but the standards have not changed. In fact, the standards adopted by the Council in 1994 have a safety factor built into them if we assume that the "capacity' of a signalized intersection has increased.

CONCLUSION

In conclusion, a) the lane use factors adopted by the Board in April 1998 are correct, b) it is not appropriate to include a "peak hour factor" in the LATR Guidelines planning level of analysis using the CLV methodology, and c) the congestion standards adopted by Council in 1994 are valid and indeed conservative standards upon which to base decisions regarding the approval of development in Montgomery County.

RW:RCH:cmd

LATR Guidelines Adopted by PB - memo3.wpd

Appendix A

EXISTING CRITICAL LANE VOLUMES ABOVE 1800
(WITH ADOPTED LANE USE FACTORS)

Intersection	Critical Lane Volume		Congestion Standard
	AM Peak	PM Peak	
Twinbrook Pkwy & Veirs Mill Rd	1815		1550
Arcola Ave & Georgia Ave		1820	1650
Lost Knife Rd & Montgomery Village Ave	1821	1828	1500
New Hampshire Ave & Powder Mill Rd	1832		1550
Democracy Blvd & Old Georgetown Rd		1833	1600
Montrose/Randolph Rds & Rockville Pike		1834	1800
Colesville Rd & Sligo Creek Pkwy	1840		1650
Wisconsin Ave & Jones Bridge Rd		1847	1650
Twinbrook Pkwy & Rockville Pike		1851	1800
East Jefferson St & Montrose Rd		1852	1600
Midcounty Hwy & Shady Grove Rd	1853		1800
Georgia Ave & Norbeck Rd	1876		1550
Cedar Ln & Rockville Pike		1875	1650
Ednor/Layhill Rds & Norwood Rd	1910	1816	1525
Executive Blvd & Old Georgetown Rd		1923	1800
Aspen Hill Rd & Connecticut Ave		1955	1550
Columbia Pike & Spencerville Rd	1973	1961	1550
Lockwood Dr & New Hampshire Ave	1912	2003	1550

Democracy Blvd & Seven Locks Rd	2007		1525
Connecticut Ave & East West Hwy		2053	1650
East West Hwy & 16th St		2083	1650
Midcounty Hwy & Woodfield Rd		2089	1525
Georgia Ave & Randolph Rd	2101	1935	1650
Piney Branch Rd & University Blvd	2213	2154	1650
East Jefferson St & Montrose Rd		2268	1600
Connecticut Ave & Jones Bridge Rd		2013	1650

Appendix B

EXISTING CRITICAL LANE VOLUMES BY POLICY AREA (WITH ADOPTED LANE USE FACTORS)

Intersection	Critical Lane Volume AM Peak	PM Peak
POLICY AREA - ASPEN HILL		
Congestion Standard - 1550		
Aspen Hill Rd & Veirs Mill Rd		1591
Bauer Dr & Norbeck Rd		1640
Georgia Ave & Norbeck Rd	1876	
Aspen Hill Rd & Connecticut Ave		1955
POLICY AREA - BETHESDA/CHEVY CHASE		
Congestion Standard - 1650		
Beach Dr & Connecticut Ave	1677	
Wisconsin Ave & Jones Bridge Rd		1847
Cedar Ln & Rockville Pike		1875
Connecticut Ave & East West Hwy		2053
Connecticut Ave & Jones Bridge Rd		2013
POLICY AREA - BETHESDA CBD		
Congestion Standard - 1800		
Bradley Blvd & Wisconsin Ave	1644	1690

POLICY AREA - CLOVERLY

Congestion Standard - 1525

Ednor/Layhill Rds & Norwood Rd	1910	1816

POLICY AREA - DERWOOD

Congestion Standard - 1525

Needwood Rd & Redland Rd	1691	1663
Midcounty Hwy & Shady Grove Rd	1853	
Midcounty Hwy & Woodfield Rd		2089

POLICY AREA - FAIRLAND/WHITE OAK

Congestion Standard - 1550

Briggs Chaney Rd & Columbia Pike		1567
Elton Rd & New Hampshire Ave	1526	
Columbia Pike & Fairland Rd	1526	1509
Briggs Chaney Rd & Columbia Pike	1609	
New Hampshire Ave & Powder Mill Rd	1832	1634
~~New Hampshire Ave & Powder Mill Rd~~		~~1634~~
Lockwood Dr & New Hampshire Ave	1912	2003

POLICY AREA - KENSINGTON/WHEATON

Congestion Standard- 1650

Georgia Ave & Plyers Mill Rd	1577

Dennis Ave & Georgia Ave	1579	1528
Connecticut Ave & Randolph Rd	1551	1514
Georgia Ave & Plyers Mill Rd	1689	
Arcola Ave & Georgia Ave		1820
Georgia Ave & Randolph Rd	2101	1935

POLICY AREA - MONTGOMERY VILLAGE/AIRPARK

Congestion Standard - 1500

Fieldcrest Rd & Woodfield Rd	1682	1525
Centerway Rd & Snouffer School Rd	1662	
Lost Knife Rd & Montgomery Village Ave	1821	1828

POLICY AREA - NORTH BETHESDA

Congestion Standard - 1600

Democracy Blvd & Old Georgetown Rd	1502	1833
Democracy Blvd & Fernwood Rd		1603
Twinbrook Pkwy & Rockville Pike	1621	1851
Old Georgetown Rd & Tuckerman Ln		1651
Executive Blvd & Old Georgetown Rd	1681	1923
Twinbrook Pkwy & Veirs Mill Rd	1815	
Montrose/Randolph Rds & Rockville Pike		1834
East Jefferson St & Montrose Rd		1852

POLICY AREA - OLNEY

Congestion Standard - 1525

Georgia Ave & MD 108		1551

POLICY AREA - POTOMAC

Congestion Standard - 1525

River Rd & Seven Locks Rd	1641	
Democracy Blvd & Seven Locks Rd	2007	1618

POLICY AREA - SHADY GROVE

Congestion Standard - 1800

Frederick Rd & Shady Grove Rd	1590	1575
Frederick Rd & Redland Rd	1523	

POLICY AREA - SILVER SPRING CBD

Congestion Standard - 1800

Colesville Rd & Georgia Ave	1676	1631
Colesville Rd & East West Highway		1684
Colesville Rd & 16th St		1664
East West Hwy & 16th St		2083

POLICY AREA - SILVER SPRING/TAKOMA PARK

Congestion Standard - 1650

Colesville Rd & Dale Dr		1509
Colesville Rd & Sligo Creek Pkwy	1840	1698
Piney Branch Rd & University Blvd	2213	2154

POLICY AREA - WHEATON CBD

Congestion Standard - 1800

University Blvd & Veirs Mill Rd		1583
Georgia Ave & University Blvd	1506	

POLICY AREA - WHITE FLINT

Congestion Standard - 1800

Nicholson Ln & Rockville Pike		1592

F 2-18-99

To: Planning Board
VIA FAX 301 495 1320

February 5, 1999

From: John G. Viner, P.E.

Subject: February 18th Agenda Item 'Lane Use Factors in LATR Guidelines'

I think it would be helpful for the Planning Board to review the July 14, 1998 letter from the County Council President to Mr. Hussman on this topic. A copy is enclosed for your convenience. Note the concern of the Council on the question has the new Lane Use Factor (LUF) caused a significant de-facto change in congestion standards?

We now know the answer. The new LUF lowers calculated CLV by 70-120, for multi-lane intersections where congestion is a concern. County congestion standards have been degraded by 50% to 80% of an entire Level of Service (LOS) as LOS levels cover a 150CLV band. This is obviously a significant degradation in standards requiring corrective measures as outlined in the last paragraph of Mr. Leggett's letter.

2/15

MONTGOMERY COUNTY COUNCIL
ROCKVILLE, MARYLAND

OFFICE OF THE COUNCIL PRESIDENT

July 14, 1998

Mr. William H. Hussmann, Chairman
Montgomery County Planning Board
8787 Georgia Avenue
Silver Spring, Maryland 20910-3760

Dear Mr. Hussmann:

We received a copy of your response to John Viner's letter raising concerns about the Planning Board's having revised the lane-use factors utilized in the calculation of intersection capacity under the Local Area Transportation Review (LATR) Guidelines. We have received similar letters from the Montgomery County Civic Federation and the Greater Colesville Citizens Association (attached).

We appreciate your willingness to review this matter again. While it is clear to us that the Board has full authority to adjust the lane-use factors or any of factors or rates used to calculate the critical lane volume at intersections, we need to understand how the calculated CLV relates to the LATR standards, which we have the responsibility to adopt. In particular, the Intersection Congestion Working Group attempted to draw a mathematical relationship between the calculated CLV and actual travel delay in order to determine whether the LATR standards we had adopted (1800 CLV in Metro Station policy areas, ranging from 1650 to 1450 CLV elsewhere) were appropriate. In the review of the ICWG's work as part of the Policy Element of the FY 98 Annual Growth Policy, the Council decided to confirm the current standards. However, adjusting the lane-use factor in some instances would change the calculated CLV, and in those instances the relationship to actual travel delay would be altered.

Therefore, in your review we request that the Board pay particular attention to the relationship between the calculated CLV and actual delay. If the Board finds that relationship is sufficiently changed to the point where the LATR standards should be adjusted, then we would entertain a proposed amendment to the Policy Element that would allow us to effect such an adjustment. Alternatively the Board may wish to consider other factors in the LATR Guidelines, such as the inclusion of a peak-hour factor suggested by GCCA.

Sincerely,

Isiah Leggett
Council President

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Attachments

Infrastructure Financing

I-270/495 Interchange

INTRODUCTION

Montgomery County finances the provision of infrastructure through several mechanisms. Development impact taxes are the primary mechanism used to raise revenue for the infrastructure needs of new development. Development impact taxes are a charge on new development to pay for the construction or expansion of off-site capital improvements that are necessitated by and benefit the new development. Impact taxes provide a useful mechanism for financing the development of undeveloped land.

However, growth in Montgomery County is changing, and fewer large *greenfield* developments on raw land will be created. More and more of the growth will be infill and redevelopment. Where former growth was primarily single-family homes on raw land, much of the future growth will be multi-family units in existing developed areas.

To finance the infrastructure needs of the County, attention must be paid to the true cost of new development and to the cost of redevelopment. Although Montgomery County has been a leader in growth management, the current system of impact taxes has not proven to be a substantial source of revenue in recent years with actual revenue received below projected estimates.
When the County Council approved the schools impact taxes in 2003, it did so with certain assumptions about how much money the taxes would generate. The estimates were that the taxes would generate $24 million in fiscal year 2005 and $28 million annually thereafter. The assumptions were detailed and included estimates of the number of additional units; the percentage of each housing type; the number of units in each of the tax districts; and the percentage of units that would be exempt from the impact taxes.

The assumptions proved to be optimistic. The taxes generated less than $8 million in fiscal 2005 and less than $7 million in fiscal 2006. A *permit rush* in which developers raced to submit building permit applications prior to the effective date of the impact taxes can explain much of the fiscal 2005 shortfall;

about 1,700 permits approved in fiscal 2005 were not subject to the impact tax, about half the assumed number of additional units. There is no similar explanation for the fiscal 2006 shortfall.

It is estimated that 72% of the growth in residential development for Montgomery County between 2005 and 2030 will be in multi-family dwellings. This phenomenon will further reduce the expected income stream from school impact taxes since multi-family dwellings are taxed at a lower rate than single-family homes.

The rates selected in 2003 for both the transportation and schools impact taxes were not explicitly tied to assumptions about the cost of needed transportation and school facilities or new development's appropriate share in paying for those facilities. Planning staff has reviewed options for revising the impact tax rates for both schools and transportation.

The impact tax for schools can more accurately reflect the true cost associated with school construction and expansion. When school impact taxes were introduced in 2003, the cost per household for building new schools was estimated to be $10,300. The rate established in 2003 was set at $8,000 for a single-family home. Bringing the impact tax closer to the cost of development will not only improve the program's revenue raising capacity, but will also better fulfill the County's goal of encouraging new development to pay for itself.

Another mechanism used to fund infrastructure is the recordation tax. The current recordation tax in Montgomery County is applied to the transfer in ownership of residential property. Revenue raised from the recordation tax is used to supplement General Obligation bond funding of the Capital Improvement Program for Schools.

In high growth areas, such as Clarksburg, school population growth is the result of new construction; therefore impact taxes are an effective financing tool. However in most of the County, much of the enrollment pressure on schools comes from changes within the community due to neighborhood turnover, which is when the neighborhood evolves from one with an aging population to one with more school age children. The financial transaction that accompanies such turnover is the home sale, so the revenue captured by the recordation tax appears appropriate to fund school improvements necessitated by the increased pressure on existing infrastructure. In recent years, the recordation tax has generated much more revenue than the impact tax; in 2006, the recordation tax generated $44 million compared to $6.9 million for school impact taxes.

The development impact tax for transportation and schools and the recordation tax contribute much needed revenue to support growth in Montgomery County. After review and further research into infrastructure financing, it is recommended that revision be made to both of these programs. Planning staff has also

identified issues that we suggest merit further study. These include alternative financing methods, and/or more extensive remodeling of these programs, both of which we discuss in the report.

SCHOOLS

Impact Taxes

Impact taxes are designed to provide a mechanism whereby new development or growth can pay for the infrastructure needed to support itself. To determine what level of impact taxes are a realistic reflection of the cost of growth for schools, three methods were considered.

- By using current school construction costs and student generation rates for new housing by type, costs per housing unit by type can be estimated.

  MCPS report that current construction costs per student are $32,524 for an elementary student “seat”, $42,351 for a middle school student “seat” and $47,501 for a high school student “seat”.

  Single family, townhouse, and multi-family student generation rates for new housing, by housing type can be applied to calculate per pupil construction costs.

  Student Generation Factors

Housing Type	Elementary	Middle	High
SFD	0.320	0.144	0.131
SFA	0.211	0.122	0.107
Multi-family garden apt.	0.153	0.056	0.073
High/Low Rise w/parking	0.042	0.039	0.033

  For example, a new single-family detached house on average generates 0.320 elementary students (and 0.144 middle school students and 0.131 high school students.) By multiplying the cost per an elementary student seat, $32,524, by 0.320, we can assume that a single family detached house’s share of an elementary seat totals $10,408. Similarly, the per pupil costs for each school level can be estimated and totaled to produce the cost per housing type.

Cost per housing type	Elementary	Middle	High	Total
SFD	$10,408	$6,099	$6,223	$22,729
SFA	$6,863	$5,167	$5,083	$17,112
Multi-family garden apt	$4,976	$2,372	$3,468	$10,815
High/Low Rise w/parking	$1,366	$1,652	$1,568	$4,585

This cost can be referred to as the marginal cost of one more unit of housing, in this case, a single-family home. Marginal cost pricing is an efficient pricing mechanism, whereby the incremental user pays his incremental costs rather than average cost pricing where all users pay the same proportion of total cost.

- The second method is to use the cost of school construction and expansion based on projected costs and growth through 2012.

  The Capital Improvements Program (CIP) for Montgomery County Public Schools (MCPS) provides detailed expenditure requests for the years 2007 through 2012. Expenditures for projects that add capacity to the system reflect the cost of growth over these six years, totaling approximately $270,666,000.

  The Montgomery County Round 7.0 Cooperative Forecast provides estimates for the growth in households through 2030. Using these estimates, the number of households to be constructed through 2012 totals 27,000. Of these 27,000 housing units, 8,100 are expected to be single-family units and 18,900, multi-family units. MCPS calculates student generation rates by type of household. These generation rates are applied to the number of expected single and multi-family units. Approximately 7,934 new students will be enrolling in the Montgomery County School system during 2007-2012 as a result of new development. The cost per housing unit by type would be approximately:

  $ 20,298 single-family detached
  $ 15,011 single-family attached
  $ 9,620 multi-family non high-rise
  $ 3,889 multi-family high-rise

  For single-family detached homes, 0.595 students per unit are generated. This translates into a household cost of $20,298 for households living in single-family detached units. The generation rates for single-family attached, multi-family garden and high-rise units are 0.440, 0.282, and 0.114 respectively.

- An alternate way to calculate future school costs is to base the costs on growth and school construction costs forecasted to 2030. The total household growth forecast between 2007 and 2030 is 94,300. Assuming that approximately one-third of the units will be single-family attached and detached units and two-thirds will be multi-family, this growth in households could generate 27,185 students.

In preparation of the biennial CIP, MCPS maintains data on the standards for school construction, such as the recommended size (student capacity) and market cost of building school facilities. Using these figures, the forecasted growth in student population from new development will generate the following number of elementary, middle and high school students. The number of additional schools needed to serve these students is also shown.

	Elementary	Middle	High
Students generated by school type	13,670	6,758	6,767
Number of schools needed	18.5	6.8	3.4

Using current construction costs and proportioning the costs per housing type, costs would be approximately:

$23,020 single-family detached
$17,023 single-family attached
$10,910 multi-family non high-rise
$ 4,411 multi-family high-rise

One drawback to this method is that it doesn't factor in students graduating out of the school system over the 25-year time horizon. This leads to a slight over estimation of the number of schools generated by student growth through 2030.

In spite of the different time horizons, the estimated costs of school growth associated with new development produced by the above calculations are quite similar. Any one of these methods provides a realistic representation of the costs of school construction and expansion generated by new development. The first method does not incorporate forecasted growth figures, through 2012 or 2030. It is the closest approximation to the marginal cost of an additional dwelling unit in 2006 dollars.

As noted above, in 2003 when school impact taxes were introduced, the cost per household for building new schools was estimated to be $10,300. The rate established in 2003 ($8,000) was less than the calculated cost. Subsequently, the Council passed legislation allowing for biennial updates to the current impact tax schedule to reflect changes in the cost of living. If the Council does not take action to change the current school impact tax schedule, the rates that will become effective in July 2007 are approximately:

$ 9,111 single-family detached*
$ 6,833 single-family attached
$ 4,555 multi-family non high-rise
$ 1,822 multi-family high-rise

* For single-family units there is a surcharge of $1 per square foot of gross floor area above 4,500 square feet to a maximum of $8,500 square feet (gross floor area includes basement)

Short Term School Impact Tax Recommendation

In light of the above cost calculations, a simple cost of living adjustment to the current taxes would not appear to represent the true cost of providing sufficient school infrastructure to support growth in Montgomery County. The Planning Department staff recommends that the County adopt the approach that school impact tax rates reflect the full cost of infrastructure. Our suggested schedule of tax rates to accomplish that approach is the following:

$ 22,729 single-family detached*
$ 17,112 single-family attached
$ 10,815 multi-family non high-rise
$ 4,585 multi-family high-rise

* For single-family units there is a surcharge of $1 per square foot of gross floor area above 4,500 square feet to a maximum of $8,500 square feet (gross floor area includes basement)

This impact tax rate schedule more accurately reflects the cost of school construction and expansion associated with new development. In comparison to the current fee, revenue generated from this tax will fund school buildings and additions in a more timely fashion.

Recordation Tax

The development impact tax for schools is a mechanism designed to have new development pay for the infrastructure it requires. The recordation tax is a tax applied to new housing sales, resales, and the recordation of other transactions involving housing. A portion of the revenue from the recordation tax funds school improvements, modernizations and additions. (Currently $2.50 of the $6.90 per $1,000 is dedicated to Montgomery County Schools and Montgomery College).

The recordation tax has been a more consistent generator of revenue for schools than the school impact taxes. In 2006 the recordation tax generated $44,860,925 and $142 million in revenue has been collected from the recordation tax for 2003-2006, approximately $35 million per year for schools.

As the County continues to grow, some of the change that will occur will simply be changes in population characteristics within existing neighborhoods. As certain neighborhoods “age”, older residents will move out, younger ones in, and the school age population within the neighborhood will increase – without new development. For this source of school enrollment change, the revenue captured by a recordation tax appears appropriate to fund school improvements necessitated by the increased pressure on existing infrastructure.

The 2005 Census Update Survey found that those who have moved within the past 5 years, either into the County or within the County, have an average of 0.78 children, while those who did not move had an average of 0.62.[1] Thus, 25.9% more children are generated by households moving within, and into the County than by those households who have stayed in the same house more than 5 years. In 2006, 89% of all housing sales were resales of existing homes. These resales can be thought of as turnover of the housing stock. Turnover, like new development, places a burden on school infrastructure, requiring accelerated modernization or additions to existing schools. The marginal costs associated with housing turnover are approximately 25.9% of that for new construction. For a single-family detached home, 25.9% of the marginal costs would equal $5,887.

Given the recordation fee is based on home value and not a set fee, to determine what the recordation fee would need to be to produce $5,887, median home value can be used as a proxy. The median price of the 8,017 single-family detached houses sold last year (new and resale) was $575,000. For the average priced home to contribute its marginal cost for school facilities, the school portion of the recordation fee on home sales needs to equal $11.21. Basically, for a home value of $575,000, an $11.21 school recordation fee will generate $5,887 to cover that household's estimated share of school maintenance and capacity. Therefore, staff is recommending that the rate of $11.20 be applied, with the total amount collected dedicated to schools.

As a point of reference, most (13) Maryland jurisdictions currently levy higher recordation tax rates than Montgomery's current rate: Baltimore City, Calvert, Caroline, Carroll, Charles, Dorchester, and Frederick counties charge $10 per $1,000, Cecil County charges $8.20, St. Mary's County, $8.00, Washington County, $7.60, and Anne Arundel, Garrett, and Wicomico counties charge $7.00.

Short Term Recordation Tax Recommendation

Planning staff suggests increasing the recordation tax to $11.20 per thousand to fund the renovation and added capacity needs associated with turnover.

TRANSPORTATION

Impact Taxes

Transportation impact taxes remain a valuable tool to equitably distribute transportation infrastructure costs among stakeholders. Substantial changes to the transportation impact rate structure could be used to raise additional revenues and support a variety of land use policies while retaining or improving equity.

[1] Note that this is different from the "Student Generation Factor" in that includes all children 18 and under, not just school age children.

The motivation for changes to the transportation tax structure is based on the goal for the new development to pay more of the full cost of transportation infrastructure and reflects a refinement of the independent variables and rates to both better estimate future capital costs and apportion them to available growth. The revised transportation impact tax schedule incorporates the overall degree of financing appropriate considering current information on development costs and impacts, and the relative impact of different types of development on the transportation system.

More specifically, the County's *Adopted 07-12 Capital Budget* includes $493.8M for transportation projects, or 18.5% of the total (excluding WSSC). Of this amount, $229.0M is estimated to be for transportation system capacity expansion projects in the region's *Constrained Long Range Plan* (CLRP) (attachment 1). Another $54.7M is for projects that are not in the FY 2007-2012 Transportation Improvement Program of the CLRP but could arguably be considered capacity expansion. It appears that over half of the local transportation budget is for operations and maintenance as compared to system expansion. The $283.7M budgeted over the next six years equals an average annual expenditure of $47.3M.

The 2007-2030 CLRP contains total expenditures for Montgomery County of approximately $7.4B, of which only $2.6B is for CLRP-type capital expenditures.[2] About $3.8B is for operations and maintenance, the remainder is for system preservation or other types of projects. From a regional perspective, therefore, only about a third of the transportation budget in Montgomery County is for system expansion.

The local agency costs in the CLRP are heavily front-loaded, however. All of the projects that are both in the CLRP TIP and the CIP are assumed to be completed in a six-year timeframe. Experience indicates that in subsequent years, additional local projects will be added to the TIP as they come online through the Facility Planning process. Therefore, the 25-year cost of facility expansion projects in the CIP is estimated at $47.3M per year for 25 years, or a total of $1,182B.

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[2] http://www.mwcog.org/regionaltransportationplan/documents/Draft_Final_Financial_Analysis_report_9_06.pdf, Table A.2

Table 3.1. Derivation of Recommended Transportation Impact Tax Rates

	Single-family residential	Multi-family residential	Office	Retail	Industrial	Other commercial
A. Forecast growth, 2005-2030	26,645 DU	67,655 DU	119,533 jobs	18,232 jobs	12,208 jobs	20,027 jobs
B. Square footage of commercial space			29,883,250	7,292,800	5,493,600	10,013,500
C. Vehicle trip generation rates	9.57 per DU	6.72 per DU	3.30 per job	21.47 per KGSF[3]	2.77 per job	2.77 per job
D. Daily vehicle trip ends by land use type	254,993	454,642	394,459	156,577	33,816	55,475
E. Percentage of total daily vehicle trip ends	18.9%	33.7%	29.2%	11.6%	2.5%	4.1%
F. Proportional allocation of $1,182M estimated local capital cost for facility expansion, 2005-2030	$223M	$398M	$345M	$137M	$30M	$49M
G. Resultant unit impact tax rates	$8,380 per DU	$5,884 per DU	$11.56 per GSF	$18.80 per GSF	$5.39 per GSF	$4.85 per GSF

[3] Assumes a 50% pass-by trip percentage

Short Term Transportation Recommendation

Recover County portion of CLRP projects over 25-year timeframe

A starting point for the recommended comprehensive transportation impact tax rate study is described below and shown in Table 3.1. This proposal uses the relative trip generation rates from various land uses to proportionally allocate the estimated $1,182B cost of the 25-year County program of transportation system improvements according to the relative trip generation of each type of land use. Table 1 shows the following information:

- Line A shows the Round 7.0 forecast demographic growth
- Line B converts the projected job growth to estimated building square footage
- Line C shows the vehicle trip rates assumed for this exercise
- Line D shows the total vehicle trip ends (Line C times Line A or Line B as appropriate)
- Line E shows the proportion of vehicle trip ends within all categories (each cell in Line D divided by the sum of all cells in Line D)
- Line F shows the distribution of capital costs apportioned to each land use type ($1.182B times Line E)
- Line G shows the resulting per-unit Transportation Impact Tax rates

For the short term, staff has applied the general findings in Table 1 to develop a recommendation for amending the impact tax rate structure that could be implemented in 2007 by Council resolution.

Table 3.2 presents the recommended transportation impact tax rates, developed using the process described below. The following rates from Table 1 were inserted into the general category of Table 2 as follows:

- The single family residential rate ($8,380/DU) as single-family detached,
- The multi-family residential rate ($5,884/DU) as multi-family non-high rise,
- The square footage rates for office ($11.56), industrial ($5.39), retail ($18.80), and other non-residential ($4.85) were used directly (with rounding to the nearest five cents)

Each of the other values in Table3. 2 were based on applying the categorical ratios (for types of land use and geographic areas) in the current rate structure to the six values described above. For instance, the current tax rate for a single-family attached house in Clarksburg ($7,142) is 22.7% higher than that for a single-family detached house in the general category ($5,819), so the recommended tax rate for a single-family attached house in Clarksburg ($10,286) is also 22.7% higher than the recommended tax rate for a single-family attached

house in the general category ($8,380). The recommended rates for houses of worship and private schools are based on the "other non-residential" category.

Consideration of Exemptions

Staff considered several means for balancing the theoretical purity of trip generation, the precision of available data, and the value of considering exemptions for desirable land uses that achieve a variety of public policy goals. The derivation of short-term transportation impact tax recommendations in the April 30 Staff Draft report assumed that certain uses would be exempt, most significantly some levels of affordable and workforce housing and government employment. The April 30 recommendations reallocated the "cost" of those trips proportionately across all other land uses. Based on further review and discussions, the Planning Board supported a revised staff recommendation to:

- first, identify the tax rates that would occur without any exemptions, and
- second, consider exempting individual land uses from paying the established taxes.

This revised process is "purer" from a technical standpoint in that the relative cost of vehicle travel is identified first, prior to the consideration of whether the transportation impacts should be exempted from a tax because the land use achieves another public policy goal such as providing affordable housing or emergency medical care.

The Planning Board recommends that affordable housing units continue to be exempt from transportation impact taxes. The Planning Board also recommends retaining the current exemption for hospitals, on the grounds that emergency medical care services are more a necessary community facility required for quality of life than a private enterprise. However, the Planning Board finds that bioscience facilities do not provide a similar common good to the community and therefore the current exemption should be repealed. Table 2 removes the line-item for bioscience facilities from the recommended tax rate structure. As bioscience facilities typically tend to be a mix of office and industrial space, the transportation impact tax for such uses should be calculated based on the square footage of contributing uses, similar the procedure applied to other mixed-use structures.

In terms of considering affordable housing and buildings housing government offices, one way of thinking about the rates in Table 2 is that these are the rates that should be charged to all development in the County based on the proportional impact to the transportation system. When a use is determined to be tax-exempt for any reason, the County should, in essence, pay itself the impact tax and consider that payment as a cost of the broader public policy goal achieved by the tax exemption.

In summary, the recommended rates in Table 2 reflect a synthesis of considerations from three sources:

- The decisions regarding relative geographic and land use impacts established as County policy in our current tax rate structure,
- The establishment of higher rates for all categories of uses, based on the readily available projections of marginal capacity needed to accommodate growth, and
- Consideration of specific exemptions for certain land uses in the current tax rate structure.

In general, this exercise demonstrates that overall, transportation impact tax rates should be significantly higher than current rates, generally by a factor of two. Retail rates in particular, should be increased by a factor of four if they are to account for their proportional impact on vehicle trip generation. The study described in the Long Term Transportation Recommendations discussion below would provides a opportunity for further analysis and consensus building regarding the second and third bullets above.

The current tax schedule for transportation will expire on June 30, 2007. If the Council takes no action to revise the current rates, an automatic increase to reflect an increase in the cost of living will be applied to the current rates. Table 3 shows the currents rates with a 7.64% increase due to inflation.

Table 3.2. Application of Table 1 to Current Rate Structure

CURRENT RATES (THROUGH 6/30/07)

	General	Metro Station	Clarksburg
Residential (per dwelling unit)			
Single-family detached	$5,819	$2,910	$8,729
Single-family attached	$4,761	$2,381	$7,142
Multi-family attached (except high-rise)	$3,703	$1,852	$5,555
High-rise residential	$2,645	$1,323	$3,968
Multi-family senior residential	$1,058	$529	$1,587
Non-residential (per square foot GFA)			
Office	$5.30	$2.65	$6.35
Industrial	$2.65	$1.30	$3.15
Bioscience facility	$0.00	$0.00	$0.00
Retail	$4.75	$2.40	$5.70
Place of worship	$0.30	$0.15	$0.35
Private elementary and secondary school	$0.40	$0.20	$0.55
Hospital	$0.00	$0.00	$0.00
Other non-residential	$2.65	$1.30	$3.15

PROPOSED RATES

	General	Metro Station	Clarksburg
Residential (per dwelling unit)			
Single-family detached	$8,380	$4,191	$12,572
Single-family attached	$6,856	$3,429	$10,286
Multi-family attached (except high-rise)	$5,884	$2,943	$7,591
High-rise residential	$4,204	$2,102	$5,422
Multi-family senior residential	$1,682	$840	$2,169
Non-residential (per square foot GFA)			
Office	$11.55	$5.80	$13.90
Industrial	$5.40	$2.65	$6.40
Retail	$18.80	$9.50	$22.55
Place of worship	$0.55	$0.30	$0.65
Private elementary and secondary school	$0.75	$0.35	$1.00
Hospital	$0.00	$0.00	$0.00
Other non-residential	$4.85	$2.40	$5.80

Table 3. CPI Escalation

CURRENT RATES (THROUGH 6/30/07)

	General	Metro Station	Clarksburg
Residential (per dwelling unit)			
Single-family detached	$5,819	$2,910	$8,729
Single-family attached	$4,761	$2,381	$7,142
Multi-family attached (except high-rise)	$3,703	$1,852	$5,555
High-rise residential	$2,645	$1,323	$3,968
Multi-family senior residential	$1,058	$529	$1,587
Non-residential (per square foot GFA)			
Office	$5.30	$2.65	$6.35
Industrial	$2.65	$1.30	$3.15
Bioscience facility	$0.00	$0.00	$0.00
Retail	$4.75	$2.40	$5.70
Place of worship	$0.30	$0.15	$0.35
Private elementary and secondary school	$0.40	$0.20	$0.55
Hospital	$0.00	$0.00	$0.00
Other non-residential	$2.65	$1.30	$3.15

ESCALATED RATES 7.64% CPI adjustment

	General	Metro Station	Clarksburg
Residential (per dwelling unit)			
Single-family detached	$6,264	$3,132	$9,396
Single-family attached	$5,125	$2,563	$7,688
Multi-family attached (except high-rise)	$3,986	$1,993	$5,979
High-rise residential	$2,847	$1,424	$4,271
Multi-family senior residential	$1,139	$569	$1,708
Non-residential (per square foot GFA)			
Office	$5.70	$2.85	$6.85
Industrial	$2.85	$1.40	$3.40
Bioscience facility	$0.00	$0.00	$0.00
Retail	$5.10	$2.60	$6.15
Place of worship	$0.30	$0.15	$0.40
Private elementary and secondary school	$0.45	$0.20	$0.60
Hospital	$0.00	$0.00	$0.00
Other non-residential	$2.85	$1.40	$3.40

Long Term Transportation Recommendations

Planning staff notes that the impact tax rate structure suggested above is based on some relatively simple, but valid, assumptions and calculations. The County Council may wish to have a more sophisticated analysis conducted to support additional changes to the transportation impact tax structure. If the Council were to request a comprehensive transportation impact tax rate study, Planning staff suggests that the study accomplish the following objectives:

- Consider a time horizon based on the regional Constrained Long Range Plan (CLRP) assumptions for development and funded transportation capital projects that increase transportation system capacity.
- Establish a figure for total anticipated revenue based on the expected County expenditures toward both those projects in the CLRP as well as a factor that reflects both the County expenditure on capital projects that increase system capacity but that are "below the radar" of the CLRP, as well as an estimate of projects likely to be added to the CLRP in the out years.
- Distribute the total construction costs among forecasted land use growth based on the relative amount of vehicle trips generated by each land use type.
- Explicitly incorporate estimates of the amount of revenue lost due to both exemptions for desirable land uses such as affordable housing as well as credits for developer-constructed infrastructure. Re-examine the extent to which developer-constructed infrastructure is credited against the impact tax.
- Consider revising the current relationship between transportation impact tax revenues and the amounts and deadlines applied to the appropriation of public funds.

The process provided in Table 1 could be the subject of further examination, perhaps in a consultant study, to address the following:

- Consideration of using vehicle-miles of travel (VMT) rather than vehicle-trips, as a better measure of transportation system impact
- Disaggregation of the land use categories to the extent feasible in the forecasting process. In particular, office and retail categories should be disaggregated.
- Elimination of the credit for providing most LATR study off-site improvements. If an applicant provides an improvement in the then-current CLRP, that improvement should be credited. Further, if an applicant dedicates property for a master planned roadway that would otherwise not be required due to the lack of a rational nexus, such dedication should also be credited.

- Consideration of a different geographical structure to which this system could be applied.
- Consideration of incorporating forecast escalation in transportation system construction costs (relative to total inflation) due to increasing global demand for products such as steel.
- Examination of legislative changes that would be required. For instance, the Council must change the County law to change the definition of categories for which the transportation impact tax is to be charged. Staff has intended that this effort not require changes to state enabling legislation, but further research would be needed to confirm whether this proposal, or a slightly different proposal developed during the next year, required any changes to state legislation.
- Providing sufficient time to consider comments from all stakeholders during the study process.

In addition, future impact taxes could be based on an estimate of growth and transportation system needs through the most distant horizon year in the MWCOG Cooperative Forecasting arena, currently 2030. This long-range, regional approach affords us several advantages:

- The impact tax structure can be revised on a regular, periodic basis to reflect demographic, transportation system, or funding changes that occur on the regional level.
- A long-range perspective means that substantial changes to the six-year capital program (such as the initiation or close-out of a project like Montrose Parkway) would be buffered during the periodic reconsideration of impact taxes.
- A finite horizon year (rather than a master plan horizon) means that changes in land use, zoning, or master planned transportation infrastructure can be coordinated regionally and that the effects of improved information (such as our residential capacity estimate of 2005) are buffered.

Long-term General Infrastructure Financing Recommendations

The Planning Department has identified several initiatives that the County could take to improve its ability to finance needed infrastructure in a timely fashion.

First, a review and analysis of the structure and methodology of impact taxes may be warranted. Planning staff's long term transportation impact tax recommendations identified issues that can be explored further. Staff also suggests that there is potential benefit in examining the merit of collecting

schools taxes and/or some type of tax for affordable housing on some kinds of non-residential land uses.

Currently, taxes are based on housing type: single-family detached, single-family attached, multi-family and garden apartment. Basing the school impact taxes on residential square footage may be more appropriate, for example new large townhouses may be more attractive to families than older smaller townhouses. Additionally, residential construction in the County is changing with innovative housing types (*two-over-two townhouses, piggyback townhouses)* that may have differing student generation factors.

Additional study could also look at applying impact taxes for more than schools and transportation. To do this, a fiscal analysis of the costs of growth would be prepared that includes the costs of other facilities and services such as libraries, parks and recreation facilities. As mentioned before, the recordation tax could be used to provide funding for capital costs for more than schools.

Tax Increment Financing (TIF) districts and *development districts* were both considered as funding mechanisms for costs associated with growth. The classic application of TIFs is to stimulate economic development in blighted urban areas. Development districts usually impose a property tax surcharge on new development to pay off public bonds that financed growth-related infrastructure. Application of development districts saves the general taxpayer money, but shifts costs to new residents in a way that impact taxes do not. Where development districts are the best alternative, it may be useful to explore requiring developer(s) to pursue private bonding, which may streamline the timing and creation of the district. Planning staff believes that special taxing districts remain a useful tool, especially to finance facilities that have benefits that are geographically limited, and when everyone who benefits from the facility is taxed in proportion to the benefit received.

As Montgomery County moves towards build out,[4] there are several anticipatory infrastructure analyses that its local government can perform. One analysis would *determine the amount of infrastructure needed at the time of build out*. This could be a long-range capital facilities plan and would reflect the infrastructure and other facilities and services that will be needed to support County residents by the time most of the planned development has occurred. A second, related analysis would *establish a relationship between the expected long-term pace at which the private sector builds out the development in the master plan and the pace at which the public sector provides the infrastructure needed to support that growth*. A long-term capital facilities plan tied explicitly to growth projections would find utility when considering the growth policy, capital improvements programming, and infrastructure financing.

[4] Acknowledging that *build out* is a theoretical concept similar to the *asymptote*: a destination to which one may move ever-closer but one never reaches.

The County should also consider ways to monitor the actual delivery of infrastructure. Individual master plans make development recommendations that must be supported by construction of "bricks and mortar"—improved roads, new or rebuilt schools, new libraries, bigger fire stations. These projects—thousands of them—go into the Capital Improvement Program, but the CIP doesn't indicate when a specific project should be finished so that it can support recommended development or redevelopment in its area. In the APFO Reform report, Planning staff recommends that the Growth Policy include master plan status reports and other analysis to review how well infrastructure is meeting the evolving needs of existing communities as well as the increased demands brought by new development.

Options for Phasing In Impact Tax Rate Increases

The phasing-in of the increases in impact tax rates may be warranted. Of the options below, Option 3, a medium phase in, is recommended.

Phasing Background

- In 2003, new rates were adopted in late October and imposed in early March. There was a run-up in permits just prior to the effective date of the new rates.
- In 2003, some specific multi-family projects made an appeal and were granted a grandfather provision, so they were not subject to the new rates.
- The goal is to develop a phasing schedule that limits the effect of the fees in market behavior, such as a run-up in permit activity, or harming those development projects that may have little financial latitude to absorb new costs.
- A healthy development market provides developers with a greater ability to absorb cost increases. The most recent housing price data show new home sales are down in number but home prices are increasing. New single-family homes were still experiencing double-digit price increase in the fourth quarter of 2006; new townhouses were increasing at about 4 percent annually. At a recent ULI conference, regional experts stated that they expect the housing market to rebound by the end of 2007. In the office market, rents are increasing, albeit slowly, and vacancy rates are healthy. Office construction is now being spurred as much by the building's sales potential as by demand for leased space.
- The Council may not take up impact taxes until the fall. If so, this provides the market with additional notice that increases may be coming.

Option 1: No phasing. This assumes that development projects have some latitude to absorb new costs, that the tax increases – while large – are absorbable.

Option 2: Rapid Phase-in. This assumes that the projects that are ready to move forward very soon are those that would be the most affected by the rate increases, but can absorb some increase now.

- Impose 50 percent of the increase within 3 months.
- Impose 100 percent of the increase 6 months.

Option 3: Medium Phase-in. This assumes that near-term projects are especially cost-sensitive, but that the most cost-sensitive projects can move forward fairly soon.

- Impose 25 percent of the increase within 3 months
- Impose 50 percent in 6 months.
- Impose 100 percent in 12 months.

Option 4: Slow Phase-In. This assumes that the main problem to avoid is imposing unanticipated costs on development, and that the resulting revenue lost is acceptable.

- Impose 10 percent of the increase within 3 months
- Impose 25 percent of the increase in 6 months
- Impose 75 percent in one year.
- Impose 100 percent in 18 months.

INFRASTRUCTURE FINANCING: BACKGROUND INFORMATION

Direction from the County Council

At the March 12th PHED Committee meeting, the committee requested several items to be included in the April 15th Interim Report. The items pertaining to the Infrastructure Financing section of this report include: a history of impact taxes/taxes in Montgomery County including a calculation of the tax to home value ratio for the County and for other local jurisdictions, a summary of the changes in demographics and growth within the County, and an investigation into current changes in legislation at the state level that impact growth policy.

History of Impact Taxes in Maryland and Montgomery County

In order to impose a development impact tax or an excise tax in a Maryland jurisdiction, that jurisdiction must have explicit authority from the state's General Assembly to do so. Sixteen Maryland counties, listed on the accompanying

table, impose either a development impact tax or an excise tax. These charges support public school construction, transportation, parks and recreation projects, utilities and public safety.

Jurisdictions imposing a development excise tax may set the tax amount at any reasonable level, and a connection, or nexus, between where the money is collected and where it is spent is not necessary. The General Assembly can authorize the amount of the tax and specify activities on which the tax can be imposed.

Impact taxes are more complex. Jurisdictions must study the impact of the taxes on public services and establish a connection between the amount of the tax and the new development's impact. They must also collect and spend the impact taxes in the same place.

Montgomery County and Impact Taxes

Montgomery County established an impact tax structure in 1986 for Germantown and Eastern Montgomery County. The Council and the Executive opted for this structure because they believed it could be imposed without state enabling legislation. The taxes applied to all development projects except those undertaken by the government, but could be used only for specific transportation projects. The elected officials planned to issue bonds to pay for the projects, then use the impact tax proceeds to pay a portion of the bond debt. They believed that existing residents would benefit from new transportation facilities along with new residents, so impact taxes charged as part of development should not represent the entire cost of the new facility. In Germantown, officials expected impact taxes to support half the cost of designated projects.

To calculate the taxes, which were assessed as building permits were approved, county staff determined, for Eastern Montgomery County and for Germantown, the cost of the designated transportation project and the percentage of development in each area that was yet to occur. This fraction:

$$\frac{\text{Project cost}}{\text{Percentage of remaining development}}$$

allowed for the calculation of a factor used to assess the taxes on each unit of a residential development or on the square footage of a non-residential development. Receipts from the impact taxes totaled about $1 million a year. The tax structure included credits against the impact taxes for improvement projects that were required as conditions of development approvals, this reduced impact tax receipts. The County has since updated the taxes every two years.

Developers who objected to the tax took the matter to court, and in 1990, the state Court of Appeals held that Montgomery County had imposed a tax, not a fee, on development, and that the County had no authority under state law to impose the tax. The Council quickly re-imposed the taxes under a different section of state law, which grants jurisdictions additional taxing powers, including the right to impose development impact taxes. The legislation re-imposing the taxes was subsequently upheld by the Court of Appeals, which found that the taxes constituted an excise tax, which the county had the right to impose under the law granting jurisdictions additional taxing powers.

The County continued to collect the impact taxes in Germantown and Eastern Montgomery County until the mid-1990s, when the Council expanded the impact taxes to Clarksburg. In 2002, the Council and the Executive expanded both the scope of the impact tax structure and the areas to which it would be applied.

The Council approved the Executive's proposal to expand impact taxes to the entire County over an 18-month period. This legislation created three sets of districts in which impact taxes would be collected: policy areas around existing Metro stations; the Clarksburg policy area; and a general district, which included all areas, including municipalities, not part of the other two categories. The taxes would continue to be collected for transportation projects, but the projects would no longer be specific. Instead, a broader range of projects, including road projects that added capacity; transit centers or park-and-ride lots; new Ride On buses; and transit or trip reduction programs, could be funded using impact taxes. The taxes were lowest in Metro Station Policy Areas and highest in Clarksburg. The taxes are adjusted every two years, based on changes in the Consumer Price Index.

The Council also increased the rate of the County's recordation tax and specified that the increment of the increase would be devoted to school projects that were part of the county's Capital Improvements Program.

In 2003, the Council approved a separate development impact tax for schools, to take effect in March 2004. This tax applied throughout the County to residential development, with a specified rate for each housing type. The taxes could be used to fund new schools or any other project that added teaching stations.

Montgomery County's Impact Tax Structure

The development impact taxes for transportation improvements and for school improvements are similarly structured. The laws recognize that growth must be accommodated through improvements to the County's transportation facilities and its schools and find impact taxes to be a reasonable method of raising funds for those purposes. Each program sets a specific time—the issuing of building permits—for the collection of the fee. Each exempts Moderately Priced Dwelling

Units, and other dwelling units meeting standards based on affordability, from the impact taxes. In some cases, the transportation impact tax requires money collected to be spent where it is collected; Metro Station Policy Area funds must be spent in the same Policy Area or an adjacent Policy Area; money collected in Clarksburg must be spent in Clarksburg; and Rockville and Gaithersburg funds must be spent in those cities. General district impact taxes may be spent anywhere in the general district. The schools impact taxes may be used anywhere in the county.

Both rate structures allow developers to apply for refunds of impact taxes if the County has not appropriated the funds for a project within six fiscal years after the tax has been collected. Each impact tax allows credits if the developer constructs or contributes to a specific improvement of the type covered by the taxes (although dedications of land for new schools do not warrant a credit).

The following tables list the transportation and school impact taxes for Montgomery County.

TABLE 3.4 Rates for the Development Impact Tax for Transportation

Residential Units

	Rates (Prior to 7/01/05)	New Rates (Expire 7/01/07)
General		
Single-family detached	$5,500	$5,819
Single-family attached	$4,500	$4,761
Multi-family residential (except high-rise)	$3,500	$3,703
High-rise residential	$2,500	$2,645
Multi-family senior residential	$1,000	$1,058
Metro Station		
Single-family detached	$2,750	$2,910
Single-family attached	$2,250	$2,381
Multi-family residential (except high-rise)	$1,750	$1,852
High-rise residential	$1,250	$1,323
Multi-family senior residential	$ 500	$ 529
Clarksburg		
Single-family detached	$8,250	$8,729
Single-family attached	$6,750	$7,142
Multi-family residential (except high-rise)	$5,250	$5,555
High-rise residential	$3,750	$3,968
Multi-family senior residential	$1,500	$1,587

Non-Residential (per square foot of gross floor area)

	Rates (Prior to 7/01/05)	New Rates (Expire 7/01/07)
General		
Office	$5.00	$5.30
Industrial	$2.50	$2.65
Bioscience facility	$0.00	$0.00
Retail	$4.50	$4.75
Place of worship	$0.30	$0.30
Private elementary and secondary schools	$0.40	$0.40
Hospital	$0.00	$0.00
Other non-residential	$2.50	$2.65
Metro Station		
Office	$2.50	$2.65
Industrial	$1.25	$1.30
Bioscience facility	$0.00	$0.00
Retail	$2.25	$2.40
Place of worship	$0.15	$0.15
Private elementary and secondary schools	$0.20	$0.20
Hospital	$0.00	$0.00
Other non-residential	$1.25	$1.30
Clarksburg		
Office	$6.00	$6.35
Industrial	$3.00	$3.15
Bioscience facility	$0.00	$0.00
Retail	$5.40	$5.70
Place of worship	$0.35	$0.35
Private elementary and secondary schools	$0.50	$0.55
Hospital	$0.00	$0.00
Other non-residential	$3.00	$3.15

TABLE 3.5
Rates for the Development Impact Tax for Schools
Residential Units

	2003 Rates	Current Rates
General		
Single-family detached	$8,000	$8,464
Single-family attached	$6,000	$6,348
Multi-family residential (except high-rise)	$4,000	$4,232
High-rise residential	$1,600	$1,693
Multi-family senior residential	$0	$0

Impact tax for single–family units is increased by $1.00 for each square foot of floor area over 4,500 sq. ft. up to 8,500 sq. ft.

Impact Taxes in Other Jurisdictions

The PHED Committee asked for a discussion of impact taxes or similar taxes levied by other jurisdictions, and the ability of these programs to generate revenue. In addition, the Committee is also interested in the rate of growth and the characteristics of development of these jurisdictions.

Nationwide, there are 213 jurisdictions that impose a transportation impact fee. The average transportation impact tax across the nation for roads is $2,305 on a single-family unit. On a multi-family unit the average is $1,568, on retail (per 1000 square feet) it is $4,562, on office it is $2,564, and on industrial it equals $1,587. The ratio of impact tax to median home value may provide a better idea of the relative expense of such a fee. Nationally, for single-family homebuyers a transportation impact tax is on average 1.4% of the median home value. In Montgomery County, a transportation impact tax of $5,819 on a single-family unit represents 1.2% of the median home value.

School impact taxes, having become increasingly popular in the past decade, can appear to be quite high. Nationally, the average school impact tax is $4,138. This represents a 2.5% tax to home value ratio. Florida and California have the highest number of impact tax programs in the country.

Florida has not only the highest number of jurisdictions that impose a development impact tax for schools, but also the highest tax to home value ratio. In Florida, the impact tax for schools can be as high as $9,981 and as low as $196 per single-family detached unit. Yet, the county with the highest school impact tax in Florida is not the county with the highest tax to home value ratio. The impact tax in Polk County is over $1,000 less than the tax in Osceola, but the tax to median house value in Polk County is 8.1%. In Osceola, the tax to home value ratio is 4.7%. The average school impact tax for the state of Florida is $4,456, which represents a 2.4% tax to home value ratio, practically equal to the national average.

California has the second highest number of school impact tax programs. But, the state legislature limits the rate of increase in these taxes. In California the range in tax to home value ratio is only 0.3% to 2.1%.

Closer to the Washington region, Richmond, Virginia imposes a school impact tax of $2,828, which equals 1.9% of the median home value. In Jefferson County, West Virginia a $9,877 school impact tax represents 6.6% of the median home value.

Locally, several Maryland counties impose school impact taxes. Calvert County has the lowest impact tax to home value ratio. In Calvert County, a $3,000 school impact tax represents .9% of the median home value. In Prince George's County, an impact tax of $12,000 represents 4.4% of the median home value. While in Montgomery County, an impact tax of $8,464 represents 1.8% of the median home value. Montgomery County falls below 5 other counties within the State in terms of the relative expense of its school impact fee. Only three other Maryland counties have a tax to home value ratio below Montgomery's.

Table 3.6
Ratios of School Impact Tax to Median Home Value
Owner-Occupied Housing Units[1]

	Median Home Value[2]	Impact Fee[3]	Ratio of Fee-to-Home Value
California			
Alameda County[4]	$531,300	$7,300	1.4%
El Dorado County	$497,800	$5,008	1.0%
Kern County	$210,700	$4,480	2.1%
Los Angeles[5]	$273,100	$800	0.3%
San Joaquin	$379,600	$5,460	1.4%
Santa Barbara	$646,300	$3,075	0.5%
Florida			
Brevard County	$193,700	$4,445	2.3%
Citrus County	$127,900	$1,917	1.5%
Hillsborough	$171,100	$196	0.1%
Lake County	$149,000	$7,055	4.7%
Osceola County	$186,900	$9,981	5.3%
Polk County	$106,600	$8,596	8.1%
Seminole County	$213,300	$1,384	0.6%
Volusia County	$159,500	$5,744	3.6%
Maryland[6]			
Anne Arundel	$329,500	$3,587	1.1%
Calvert County	$349,500	$3,000	0.9%
Carroll County	$313,400	$6,303	2.0%
Charles County	$290,800	$10,247	3.5%
Frederick County	$336,100	$10,868	3.2%
Harford County	$243,700	$7,442	3.1%
Montgomery	$466,100	$8,464	1.8%
Prince George's	$273,600	$12,000	4.4%
St. Mary's County	$265,700	$3,375	1.3%
Virginia			
Richmond	$149,400	$2,828	1.9%
West Virginia			
Jefferson County	$149,500	$9,877	6.6%

[1] Selected counties from California and Florida are presented, the counties with the highest and lowest school impact taxes are shown, as well as a random sampling of other counties in those states.
[2] Median House Value data is from the 2005 American Community Survey, U.S. Census Bureau.
[3] Impact Tax data is from the 2006 National Impact Tax Survey, Duncan and Associates.
[4] Hayward City, in Alameda County, California.
[5] Lancaster City, in Los Angeles County, California.
[6] No housing data for Queen Anne County is provided in the 2005 American Community Survey.

Compared to other Maryland jurisdictions charging impact taxes, Montgomery County's rate represents a lower tax-to-median-house-value ratio than other comparable jurisdictions, as noted above. For example, Prince George's County charges almost $5,000 more in school impact taxes for a single family house outside the Beltway than Montgomery County charges. And, the tax-to-median-house-value ratio for Prince George's County is more than three times higher than in Montgomery County. The table below illustrates the total impact fee/excise tax imposed in each Maryland county and the revenue this tax generates.

Table 3.7
Impact Fee/Excise Tax Rates and Revenues
Maryland

County	Type	FY 2007 Rate Per Dwelling[1]	FY 2006 Revenues
Anne Arundel	Impact Fee	$4,781	$11,127,876
Calvert	Excise Tax	12,950	5,302,300
Caroline[2]	Excise Tax	5,000	966,402
Carroll	Impact Fee	6,836	3,436,236
Charles	Excise Tax	10,859	8,649,532
Dorchester[3]	Excise Tax	3,671	1,265,851
Frederick[4]	Both	11,595	15,064,080
Harford	Impact Fee	7,442	3,400,200
Howard[5]	Excise Tax	*See note.*	13,605,188
Montgomery[6]	Excise Tax	14,283	13,212,000
Prince George's[7]	Excise Tax	19,361	43,102,486
Queen Anne's	Impact Fee	6,606	2,474,740
St. Mary's	Impact Fee	4,500	3,789,525
Talbot[8]	Impact Fee	5,347	1,378,430
Washington	Excise Tax	13,000	7,745,961
Wicomico[9]	Impact Fee	5,231	96,000
Total			**$134,616,807**

Reviewing Table 4, it becomes apparent that there is not a simple one-to-one correspondence between fee/tax rates and revenue across the region. Although the rates listed are generally those applicable to single-family detached dwellings, the table is followed by eight footnotes that denote program details. Several of the counties have a transportation fee that varies either by size of the dwelling or by location. A few of the school fee rates vary by location as well.

[1] Rates listed are generally those applicable to single-family detached dwellings.
[2] A $750 development excise tax for agricultural land preservation is also imposed on single-family lots
[3] A slightly higher rates applies outside of the Cambridge and Hurlock areas.
[4] Roads tax ranges from $0.10/sq.ft. to $0.25/sq.ft.
[5] Roads tax is $0.80/sq.ft. School surcharge is $1.07/sq.ft.
[6] Excise tax is $5,819 for transportation and $8,464 for schools. School rate increases by $1 for each square foot between 4,500-8,500 gross square feet. Transportation rates vary for Metro Stations and Clarksburg.
[7] Excise tax is $13,151 for schools and $6,210 for public safety. School rate is $7,671 inside the beltway, public safety rate drops to $2,070 inside the "development tier".
[8] A lower rate, $4,620, applies to "in-town" development.
[9] Approximate revenue figure. Impact tax in effect for less than 1 month at the end of fiscal 2006.

Source: State of Maryland Department of Legislative Services

This variation in rates and mode of application has a significant effect on revenue generation. Montgomery County imposes a combined impact tax rate that is 75% of the amount charged per dwelling unit in Prince George's County. Yet, Prince George's County raised almost four times more revenue from its taxes in 2006. In Anne Arundel County, the tax is only about 50% of the tax charged in Montgomery County, but the revenue collected there is almost 85% Montgomery County's revenue.

In Montgomery County, the school impact tax does not vary by location, but across dwelling types. Townhouse and multi-family units are charged a significantly lower rate than single-family detached units. Table 5 shows the construction of new housing units in several Maryland counties. Montgomery County built the most units overall, with Prince George's County not too far behind. The striking difference between these two counties is that Montgomery County built the most multi-family units by far, more than 17 times the number of units built in Prince George's County. Prince George's County, in contrast, built the most single-family units overall, almost three times as many units as any of the other counties. In addition, in Prince George's County, the school impact tax is the same across all housing types. Therefore, the level of construction as well as the rate and application of the taxes all contributed to the revenue generating capacity of the various impact tax programs.

Additionally relevant is the regional housing market. Not only which jurisdictions are building what type of unit and how many but also the market prices. To compare the regional housing market, we looked at housing sales and construction in the Maryland portion of the Washington region: Anne Arundel, Frederick, Howard, Montgomery, Prince George's Counties, (Table 6). The 2005 housing sales data[5] show that while Montgomery County led this area (and state) in total number of housing sales, Prince George's County had more single family sales than Montgomery County, while Montgomery County had more townhouse and condo sales than the other jurisdictions. Sales prices in Howard County were very close to Montgomery County prices while Anne Arundel and Frederick County prices were similar. One reason for the large number of condo sales in Montgomery County is that 59% of the multi-family units built in the region were built in Montgomery County (these units could be either *for sale condos* or *for rent apartments*. (Table 5).

[5] Source: Maryland Department of Planning

Table 3.8
Housing Unit Growth (2000 to 2006) – Selected Maryland Counties
By County and Unit Type

County	Existing Units (2000)	New Residential Construction Permits								Existing + New	Annual Growth Rate
		2000	2001	2002	2003	2004	2005	2006	2000 to 2006		
Anne Arundel											
Single-Family	151,959	2,470	2,013	2,026	2,164	1,769	1,565	1,115	13,122	**165,081**	**1.19%**
Multi-Family	31,074	608	479	333	837	595	930	319	4,101	**35,175**	**1.79%**
Total Units	**183,033**	**3,078**	**2,492**	**2,359**	**3,001**	**2,364**	**2,495**	**1,434**	**17,223**	**200,256**	**1.29%**
Frederick											
Single-Family	60,483	2,695	1,721	1,352	1,605	1,718	1,414	1,098	11,603	**72,086**	**2.54%**
Multi-Family	11,813	52	262	226	232	55	458	202	1,487	**13,300**	**1.71%**
Total Units	**72,296**	**2,747**	**1,983**	**1,578**	**1,837**	**1,773**	**1,872**	**1,300**	**13,090**	**85,386**	**2.41%**
Howard											
Single-Family	69,313	1,631	1,327	1,341	1,010	1,284	1,340	1,040	8,973	**78,286**	**1.75%**
Multi-Family	21,664	551	-	206	469	553	438	527	2,744	**24,408**	**1.72%**
Total Units	**90,977**	**2,182**	**1,327**	**1,547**	**1,479**	**1,837**	**1,778**	**1,567**	**11,717**	**102,694**	**1.75%**
Montgomery											
Single-Family	231,228	2,931	3,191	2,909	2,339	2,376	1,700	1,240	16,686	**247,914**	**1.00%**
Multi-Family	102,779	2,019	2,058	2,104	2,089	1,445	1,891	1,798	13,404	**116,183**	**1.77%**
Total Units	**334,007**	**4,950**	**5,249**	**5,013**	**4,428**	**3,821**	**3,591**	**3,038**	**30,090**	**364,097**	**1.24%**
Prince George's											
Single-Family	197,254	3,179	3,049	2,485	2,808	1,875	3,255	2,918	**19,569**	**216,823**	**1.36%**
Multi-Family	103,551	277	-	78	130	73	170	115	**843**	**104,394**	**0.12%**
Total Units	**300,805**	**3,456**	**3,049**	**2,563**	**2,938**	**1,948**	**3,425**	**3,033**	**20,412**	**321,217**	**0.94%**

Note: Single-family units include detached single-family homes and townhouses. Multi-Family units include units in buildings with 2-, 3-, 4- and 5+ family units.

Source: Maryland Department of Planning, Planning Data Services.

Table 3.9
Housing Sales and Values – Selected Maryland Counties (2005)
By County and Unit Type

	Median Sales Price*	Residential Sales*	Median Housing Value**
Anne Arundel County			
All Residential Units	**$319,308**	**12,490**	**$329,500**
Single-family	n/a	11,547	
Detached Single-family	*$370,000*	*7,300*	
Townhouse	*$275,000*	*4,247*	
Condo	$244,450	920	
Howard County			
All Residential Units	**$390,000**	**6,218**	**$425,400**
Single-family	n/a	5,415	
Detached Single-family	*$532,900*	*2,999*	
Townhouse	*$326,600*	*2,416*	
Condo	$231,070	797	
Frederick County			
All Residential Units	**$318,000**	**6,239**	**$336,100**
Single-family	n/a	5,676	
Detached Single-family	*$415,000*	*3,272*	
Townhouse	*$275,000*	*2,404*	
Condo	$211,615	553	
Montgomery County			
All Residential Units	**$419,000**	**21,707**	**$466,100**
Single-family	n/a	16,883	
Detached Single-family	*$560,000*	*10,530*	
Townhouse	*$347,000*	*6,353*	
Condo	$275,000	4,823	
Prince George's County			
All Residential Units	**$281,500**	**18,762**	**$273,600**
Single-family	n/a	16,000	
Detached Single-family	*$325,000*	*11,929*	
Townhouse	*$246,000*	*4,071*	
Condo	$157,000	2,755	

*** Source**: Maryland Department of Planning, Planning Data Services. Mobile homes and unclassified residential units removed.
** Owner-occupied units. **Source**: U.S. Census, *2005 American Community Survey*.

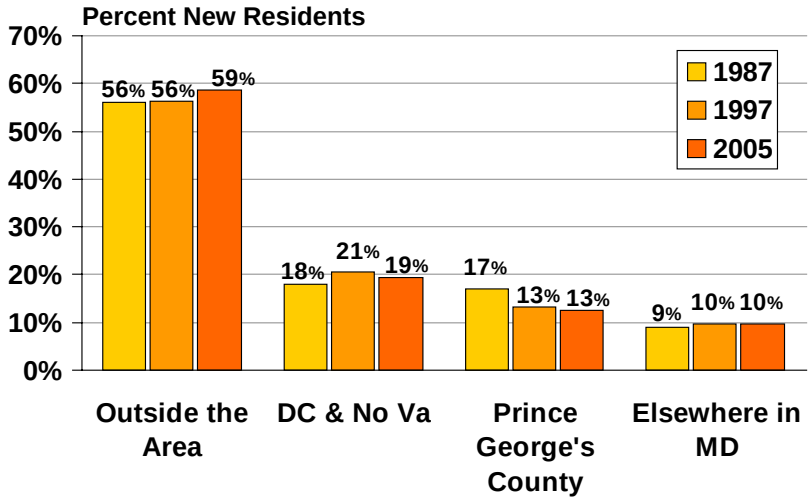
Changes in Demographics and Growth Within the County

New Residents to Montgomery County

One out of 5, or approximately 72,000 households, moved into Montgomery County between 2000 and 2005. The majority of newcomers (59%) are from outside the Washington metropolitan region and the remainder, in about equal numbers, hail from elsewhere in Maryland or from the District of Columbia and Northern Virginia areas.

In-movers

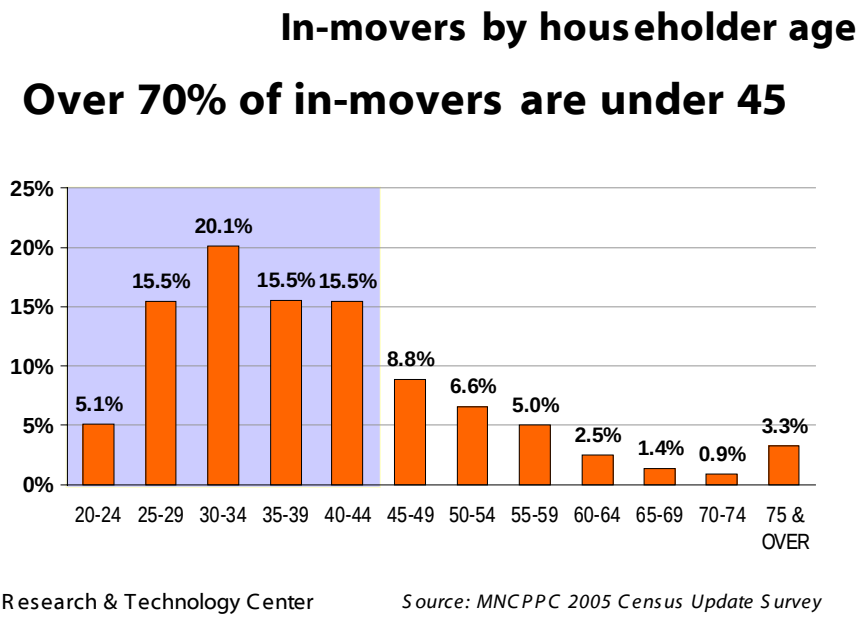
More than half from outside the area



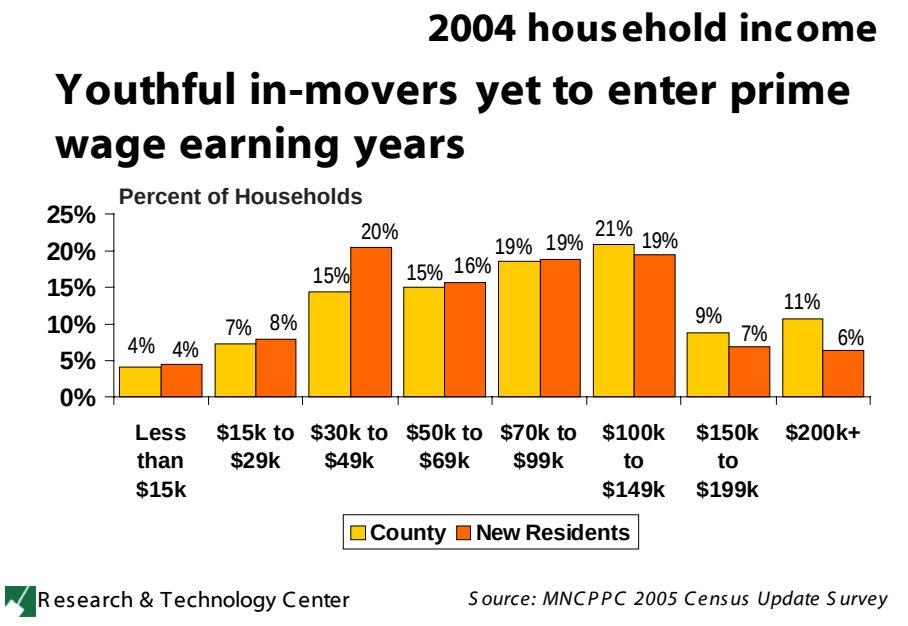
Research & Technology Center

Source: MNCPPC 2005 Census Update Survey

Most of the new households, 37%, choose garden apartments as their first residence with single-family detached houses the second favorite option at 28%. The majority of households new to the area (55%) rent their first home and are twice as likely to rent their dwelling than the County's households overall (26%). The 2004 median household income of the new resident households at $72,035 is about $12,000 below the median for the County ($83,880). This difference may be attributed to the relative youthfulness of the in-comers who have not entered the prime wage earning years of ages 45 and older. The average new householder age is 40 years old compared to 51 across the County.New Residents to Montgomery County



Approximately 181,000 people, or 20% of the population, are new Montgomery County residents since 2000. Moving, for the most part is an occupation of the young, as the propensity to move decreases with age. This is illustrated in the accompanying chart detailing the age ranges of the in-mover head of household. In the total in-mover population, more than one-third of the newcomers range in ages between 30 and 44 and many are in families bringing toddlers and school age children (respectively, 11% and 17% of the in-movers). Less than 4% of the in-movers are ages 65 and older.



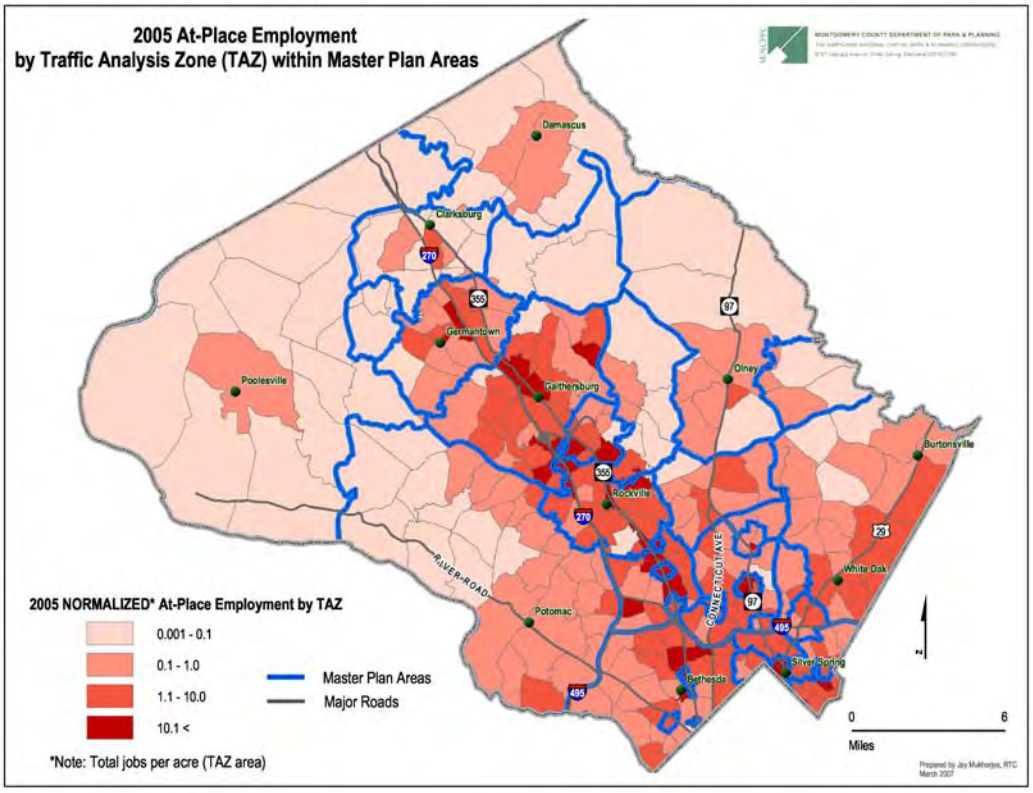
Montgomery County grew increasingly racially diverse during the 1990s and this trend continues into this decade. Of the new residents, 20% are Black or African American, 17% are Hispanic/Latino, and 15% are Asian or Pacific Islander.

These percentages are only slightly higher than what characterizes the County overall (17%, 14%, and 13%, respectively). The new foreign-born residents (and new residents in general) are usually highly educated with 72% of foreign-born adults ages 25 and older having a Bachelor's, Graduate, or Doctoral degree. The 2004 median income for the foreign-born, in-movers is $67,400 compared to $83,880 for the County.

Montgomery County Round 7.0 2005 and 2030 Forecasts by Master Plan Areas

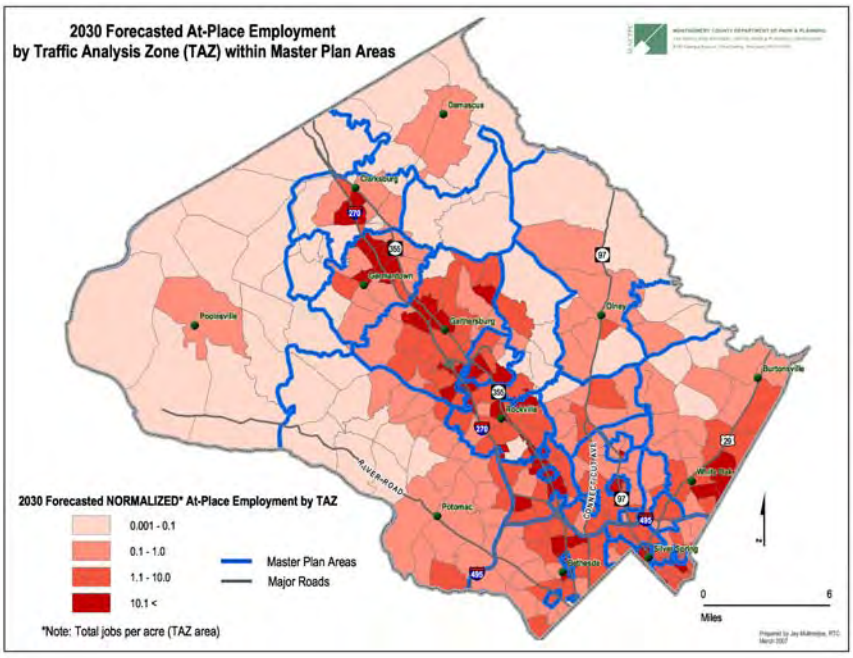
Jobs

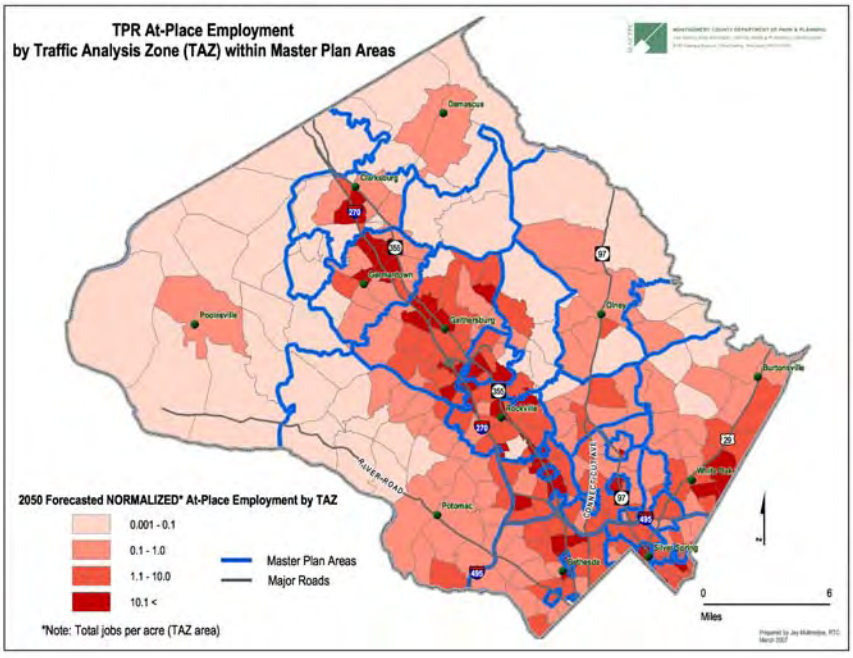
In 2005, there were 500,000 jobs in the County. Almost 70 percent of these jobs were in two planning areas, about 37 percent in the I-270 Corridor and about 32 percent in Bethesda Chevy Chase/North Bethesda.



By 2030 the County's jobs are expected to reach 670,000, an increase of 34 percent or 170,000 jobs compared to 2005. The I-270 Corridor will have 60 percent of this growth, 102,000 jobs. The Bethesda Chevy Chase/North Bethesda Planning Area ranks second with 21 percent of the County's job growth, almost 36,000 jobs. These two areas are projected to have 81 percent of the County's job growth.

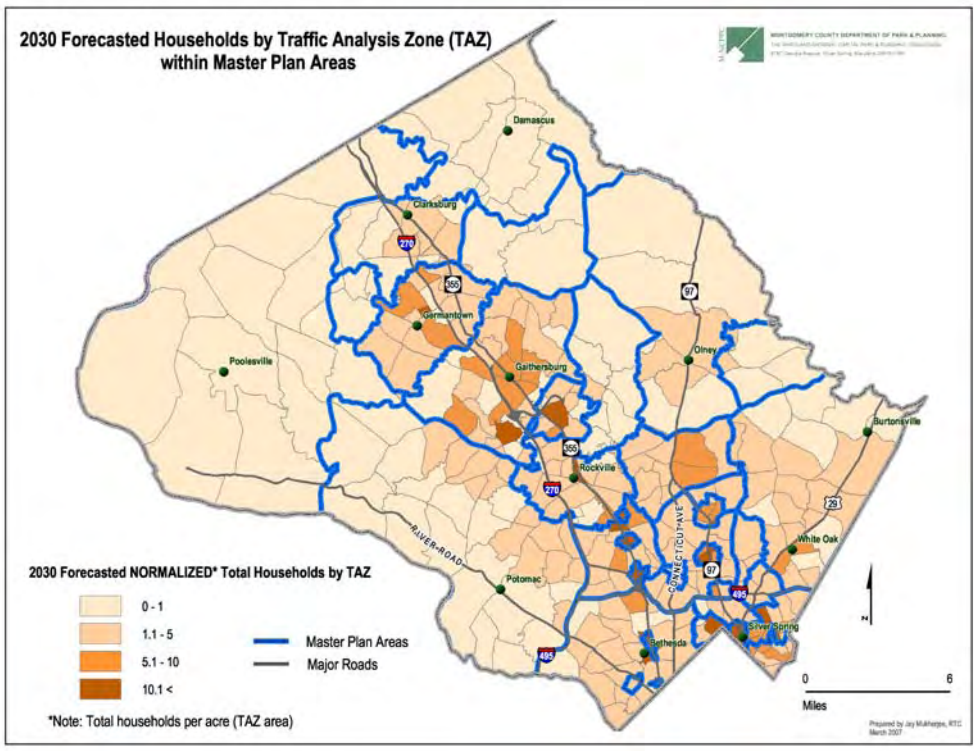
The following maps show jobs per acre in 2030 and as suggested in the Transportation Policy Report.



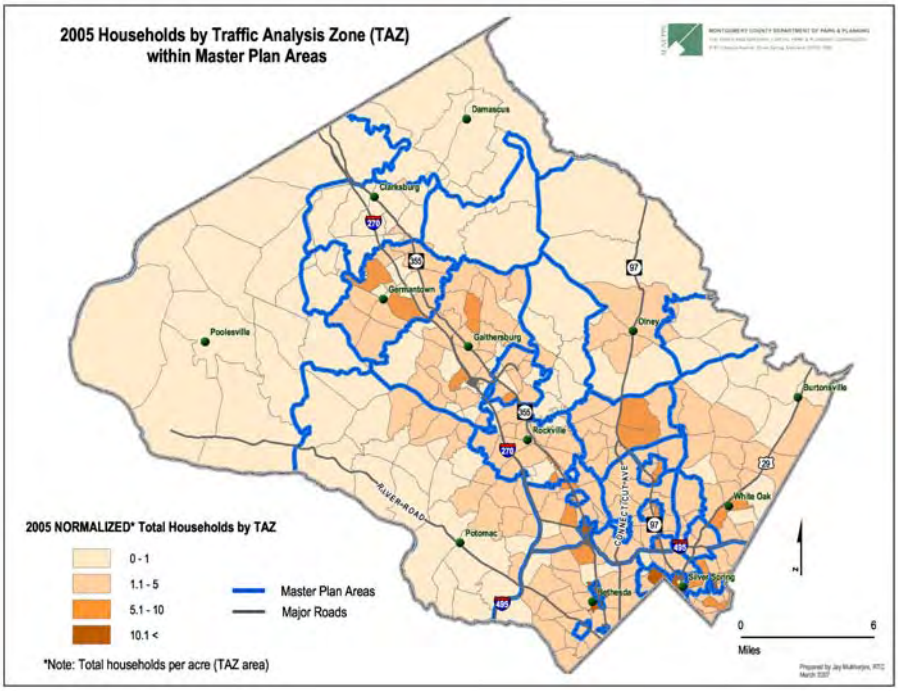


Households

The County's households are not as concentrated as the County's jobs. In 2005, the I-270 Corridor had about 102,000 of the County's 347,000 households, about 29 percent. The Georgia Avenue planning area ranks second with almost 23 percent of the County's households.



Forecasts show the County's households increasing to 441,300 by 2030, an increase of 27 percent or 94,300 households. Most of the County's household growth, 68 percent, will be in the same two areas that will lead in job growth. The I-270 Corridor ranks first with 46 percent of the County's household growth, 43,500 households. Bethesda Chevy Chase/North Bethesda ranks second with 22 percent of the County's household growth, 21,000 households.



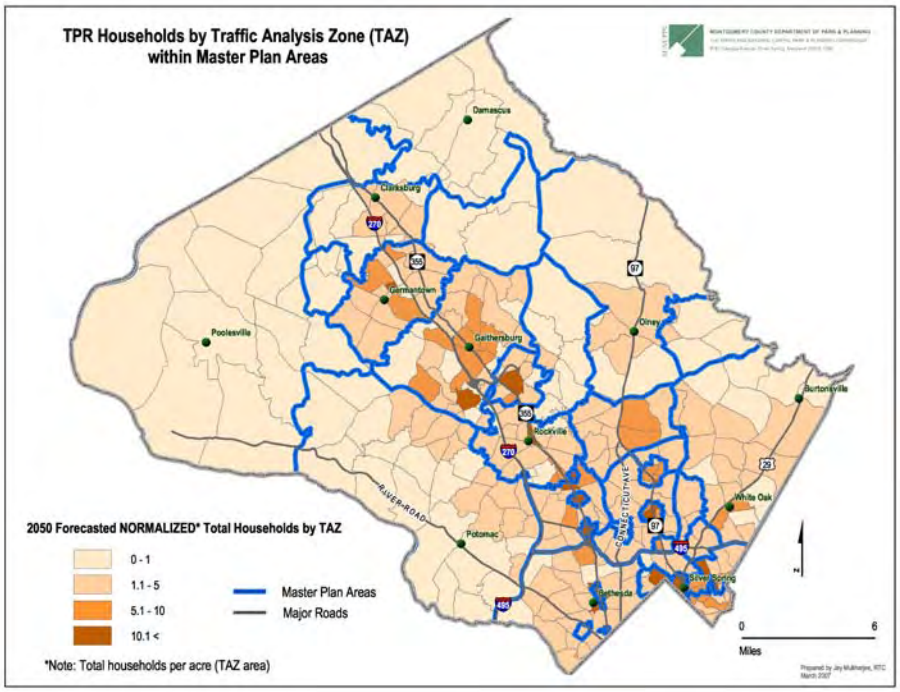


Table 3.10

Round 7.0 Cooperative Household Forecast

Montgomery County, MD

Household Growth by Unit Type (2000 to 2030)

	2000	2005	2010	2015	2020	2025	2030
Single-Family	226,737	239,321	247,525	256,385	262,610	264,935	265,966
Multi-Family	97,828	107,679	122,475	133,615	145,290	159,865	175,334
Total Households	**324,565**	**347,000**	**370,000**	**390,000**	**407,900**	**424,800**	**441,300**

New Households by Unit Type

	2000	2005	2010	2015	2020	2025	2030	2000 to 2030
Single-Family	-	12,584	8,204	8,860	6,225	2,325	1,031	**39,229**
Multi-Family	-	9,851	14,796	11,140	11,675	14,575	15,469	**77,506**
Total New Households	-	**22,435**	**23,000**	**20,000**	**17,900**	**16,900**	**16,500**	**116,735**

Share of New Households by Unit Type

	2000	2005	2010	2015	2020	2025	2030	2000 to 2030
Single-Family	-	56%	36%	44%	35%	14%	6%	**33.6%**
Multi-Family	-	44%	64%	56%	65%	86%	94%	**66.4%**

Source: Montgomery County Planning Department, Research and Technology Center, July 2005.

Population

The household population forecasts mirror the household forecasts. The I-270 Corridor and Bethesda Chevy Chase/North Bethesda areas are expected to have most of the County's population growth.

Jobs Housing Ratio

A jobs-to-housing ratio of 1.5 to 1.6 jobs per household is considered balanced. In 2005, the County's jobs-to-housing ratio was 1.44 indicating that the County is slightly imbalanced toward housing. None of the master planning areas have a balanced jobs-to-housing ratio. The Bethesda Chevy Chase/North Bethesda and I-270 Corridor are the County's employment areas with jobs housing ratios of 2.76 and 1.84 respectively. Silver Spring/Takoma Park's 1.32 jobs-to-housing ratio is close to balanced but is more housing oriented. Potomac, Georgia Avenue, and Eastern County all have jobs-to-housing ratios less than 1 indicating that these areas are serving as a labor force pool for the I-270 Corridor and Bethesda Chevy Chase/North Bethesda employment areas as well as employment areas in other jurisdictions.

Between 2005 and 2030, job growth is projected to exceed household growth enough so that that the County's jobs-to-housing ratio will be 1.52, a better balance between jobs and housing. In 2030, none of the areas have a balanced jobs-to-housing ratio. Bethesda Chevy Chase/North Bethesda and the I-270 Corridor remain the employment areas with jobs-to-housing ratios of 2.48 and 1.99 respectively. The Bethesda Chevy Chase/North Bethesda area is becoming more balanced, its jobs-to-housing ratio dropping from 2.76 in 2005 to 2.48 in 2030. The I-270 Corridor is expected to become slightly more job oriented going from a jobs-to-housing ratio of 1.84 in 2005 to 1.99 in 2030. The other areas remain predominately housing areas but in 2030, Eastern County's ratio exceeds 1 indicating it will become more of a job center.

Examining jobs-to-housing ratios based on the forecast growth between 2005 and 2030 shows that the County's jobs-to-housing ratio is 1.80. Eastern County and the I-270 Corridor will be adding far more jobs than housing. The Eastern County's is forecast to add 5 times more jobs than households, a jobs-to-housing ratio of 5.11. Much of this expected job growth is due to the Food and Drug Administration's consolidation in White Oak and the proposed Technology Park near Calverton. The I-270 Corridor is forecast to add more than twice as many jobs as households, a jobs-to-housing ratio of 2.34. In the northern areas of the I-270 Corridor; Gaithersburg, Germantown, and Clarksburg; housing growth has exceeded employment growth. The 2005 to 2030 forecast expects job growth to catch up to the housing that has already been built in these areas.

Possible Changes in Legislation that Impact Growth Policy

House Bill 1220 – The Chesapeake and Coastal Bays Green Fund

House Bill 1220, creating a Chesapeake and Atlantic Coastal Bays Green Fund, is currently under consideration in the 2007 Maryland State legislative session. The Fund is intended to ensure that the State can, and will, meet its commitments to reduce pollution to the State's rivers, streams, and the Bay, by funding essential Tributary Strategy practices. This bill would establish the Fund and prohibit local governments from granting specified permits for new development until an impervious surface tax is paid. All new impervious surfaces will be subject to the fee, with exemptions for specified projects. Local jurisdictions will be required to collect the tax, based on the imperviousness associated with building permit requests. The bill will require the Comptroller to distribute the Fund to specified units of State government and the Chesapeake Bay Trust, to be made available to local governments through matching grants. In addition, the bill would establish a Chesapeake and Atlantic Coastal Bays Green Fund Oversight and Accountability Committee, made up of state and nongovernmental representatives, which will establish performance benchmarks and monitor financial and other accountability measures.

The Chesapeake and Atlantic Coastal Bays Green Fund is expected to generate, on average, about $130 million per year, providing critical funding for implementing restoration and pollution-reduction practices within the Tributary Strategies. It will also provide critical planning and technical assistance tools, consistent with nutrient pollution reductions and Smart Growth policies. It is intended to benefit all Marylanders, including, but not limited to: farmers, local governments, conservation groups, watermen, citizens, and academic institutions.

HB 1220 has passed the House and is now in the Senate. In its original form, the rate of the impervious surface tax depended, according to a simple formula, on whether new development is in a Priority Funding Area (PFA), or not. The version that passed the House, however, is significantly more complicated in how the tax would be assessed, and in the tax rate structure. Depending on Senate action, it may be modified extensively yet again. Many observers at present, however, do not expect it to pass.

Transportation Impact Tax Methodology

The transportation impact tax rate structure in Montgomery County is generally progressive and most of the general approaches used are also used in other urbanized areas to both raise revenues and guide growth. Some jurisdictions have adopted innovative tools to calculate taxes based on more complex

modeling approaches and focus tax application to specific modal or project initiatives.

In establishing transportation impact taxes, Montgomery County includes certain elements in its program that are commonly used by other jurisdictions:

- The impact tax amounts are considered a pro-rata share of the cost of needed area wide improvements, rooted in an estimate of the costs of unbuilt roadway capacity distributed among estimated development growth.
- Developers are typically required to address localized impacts by providing additional transportation infrastructure and the cost of that infrastructure is counted as a credit against their impact tax payment.

The literature review conducted to date identifies two areas, however, where other jurisdictions are following more aggressive, or progressive, transportation impact tax procedures:

- Many jurisdictions have established rates based on more finely grained vehicle trip generation and or vehicle trip-length assessments, and
- Some jurisdictions have notably higher impact taxes than we do, in part due to the fine-grained process noted in the prior bullet.

An August 2006 survey of taxes from Duncan Associates contains summary comparisons of impact taxes for some 200 jurisdictions nationwide. While Montgomery County's transportation impact tax rates remain higher than the national average, as a percentage of median home value, the rate on single-family detached units was lower than the national average. The survey provides a fairly simplistic comparison of rates across jurisdictions. Most jurisdictions, including Montgomery County, have a more complex impact tax rate structure. Some jurisdictions are shifting to more innovative means for establishing impact tax rates. For instance, Broward County, Florida, has established a separate Transit Oriented Concurrency (TOC) tax in eight of their ten concurrency districts, based on a pro-rata share of implementing a five-year adopted Transit Development Plan.

ISSUES

The Council has raised a number of interesting questions regarding the proportion of travel in the County due to a variety of causes, including through traffic and federal government facilities. These issues will be addressed first, followed by additional issues affecting the current transportation impact tax program.

Through Traffic

Through traffic consists of automobile trips that pass through a jurisdiction without having either an origin or destination in that jurisdiction. They create a quandary because these trips are beyond the reach of local growth management and infrastructure financing programs. Prior analyses have estimated that about one-third of the traffic entering the County is through traffic, primarily associated with the Capital Beltway.

Regardless of the actual amount of through travel in the County, staff finds that there is no effective way other than user taxes (such as tolls collected at the County boundary) to reduce the impact of through traffic. Some limits have been placed on traffic entering the County through the agricultural reserve by adopting master plans that constrain roadway widening (limiting I-270 to six lanes at the Frederick County line, US 29 to four lanes at the Howard County line, and all other roadways to two lanes). Most techniques to constrain through traffic, however, including capacity constraints and toll facilities, work equally to impede both traffic destined to jobs or housing *within* the County as well as *through* traffic.

Government Employment

Table 8 provides an estimate of the proportion of office employment in Montgomery County due to federal, state, and local government. This estimate is derived by comparing Maryland DLLR government employment data for 2006 to our Cooperative Forecast total office employment for 2005.

As indicated in Table 8, total government employment in Montgomery County accounts for about a third of our office workforce, divided evenly between federal and local government employees. While the combination of these two sources may not be completely accurate, the conclusion remains that we owe a significant portion of our economy to the government workforce.

Table 8
Government and Private Sector Employment
Montgomery County

Office Employment Type	Number	Percent
Federal Government	39,642	16%
State Government	1,006	<1%
Local Government	38,661	16%
Government Subtotal	79,309	32%
Private Sector	168,472	68%
Total Employment	**247,781**	**100%**

The 2006 *Economic Forces* report estimates that the projected growth rate in employment (both federal and civilian contractors) at Montgomery County federal facilities from 2006 to 2020 is 18%. Our estimate of total county employment for

the period 2005 to 2020 is 23%. Thus, it appears that the proportion of government employment will remain fairly constant over time. By 2030, the office workforce in Montgomery County may include:

- 19,100 additional federal government employees
- 500 additional state government employees
- 18,600 additional local government employees
- 81,300 additional private-sector employees

Funding Apportionments, Impacts, and Responsibilities

Most local jurisdictions base transportation impact taxes on projected demographic growth and the local government share of transportation system capacity expansion. This practice is generally limited by enabling state legislation which generally allows the assessment of an impact tax or excise tax to cover the cost of adequate public facilities, but not to cover operating or maintenance costs or to raise general revenues.

In the 2003 document "A New Vision for Managing Growth in Montgomery County", staff noted that if the total cost for providing master-planned infrastructure in Montgomery County (then estimated at $5.9B) were divided evenly among every new job and new dwelling unit, the cost per job and cost per unit would be about $26,000. However, the delegation of transportation system responsibilities among federal, state, and local agencies is complex. The consideration of how new development impact taxes in Montgomery County might be used to subsidize federal highway system funding or enable renegotiation of the WMATA Compact would be an interesting academic exercise, but probably not very pragmatic.

Therefore, our analysis does not anticipate major changes in the apportionment of transportation system funding among federal, state, regional and local agencies, which reflects existing agreements regarding impacts and responsibilities. Planning staff leaves identifying opportunities to increase state and federal funding to another forum, and focuses on the analysis of the impact tax system that can strengthen local funding of needed transportation system improvements.

Analysis Timeframe

In an effort to "think regionally; act locally", any analyses on impact taxes could be based on work prepared for the Metropolitan Washington Council of Governments (MWCOG) from both the demographic forecasting and transportation system perspectives. Future impact tax rates could be based on an estimate of growth and transportation system needs through the most distant

horizon year in the MWCOG Cooperative Forecasting arena, currently 2030. This long-range, regional approach provides several advantages:

- The impact tax rate structure can be revised on a regular, periodic basis to reflect demographic, transportation system, or funding changes that occur on the regional level.
- A long-range perspective means that substantial changes to the six-year capital program (such as the initiation or close-out of a project like Montrose Parkway) would be buffered during the periodic reconsideration of impact tax rates.
- A finite horizon year (rather than a master plan horizon) means that changes in land use, zoning, or master planned transportation infrastructure can be coordinated regionally and that the effects of improved information (such as our residential capacity estimate of 2005) are buffered.

Revision to developer credits for transportation impact taxes

Predicting revenues from Montgomery County's transportation impact taxes is complicated by the developers' ability to take impact tax credits for projects they must construct or contribute to as a condition of a development approval. Although the County assesses a developer the entire calculated impact tax for each unit he builds, the Planning Board may also require him to construct specific transportation improvements. A key question is whether these improvements should be instead of, or in addition to, the impact taxes assessed.

The Planning Board referenced this issue in its discussion of the first interim report of the Growth Policy Study. The Planning Board discussed a policy basis for establishing that new development has a responsibility to contribute to the existing network of public facilities. Board members noted that the Washington Suburban Sanitary Commission charges new development a "systems development charge" – a concept that could be applied to other public facilities. That idea recognizes that much of the development potential of any parcel of land is the result of previous, and massive, public investments in infrastructure. Land that is not served by roads, transit, schools, water and sewer, or public safety is land with modest development potential. A development excise tax could be structured as a means of recapturing some of the added land value resulting from previous public investments.

The uncertainty associated with impact tax credits contributed to a Council decision in September 2005 to reduce the revenue projections for the impact tax from $12.5 million in fiscal 2007 to $8 million, and to adjust its projections for the remaining CIP years accordingly.

SCHOOL IMPACT TAX ISSUES

Funds Generated from Impact Taxes

When the County Council approved the schools impact taxes in 2003, it did so with certain assumptions about how much money the taxes would generate. The Council was advised that the taxes would generate an estimated $24 million in fiscal year 2005 and $28 million annually thereafter. The assumptions were detailed and included estimates of the number of additional units; the percentage of each housing type; the number of units in each of the tax districts; and the percentage of units that would be exempt from the impact taxes.

The revenue assumptions proved to be optimistic. The taxes generated less than $8 million in fiscal 2005 and less than $7 million in fiscal 2006. A *permit rush* in which developers raced to submit building permit applications prior to the effective date of the impact taxes can explain much of the fiscal 2005 shortfall; about 1,700 permits approved in fiscal 2005 were not subject to the impact tax, about half the assumed number of additional units. Of course, this effect does not extend to the fiscal 2006 shortfall.

It is estimated that 72% of the growth in residential development for Montgomery County between 2005 and 2030 will be in multi-family dwellings. This phenomenon will further limit the expected income stream from school impact taxes since multi-family dwellings are taxed at a lower rate than single-family homes.

Other jurisdictions base their impact tax rates differently. Rather than base the rate on the type of dwelling unit (single-family detached, single- family attached, etc.), the rate is based on the number of bedrooms or size of the unit. The literature on impact taxes has suggested that there are benefits to using this approach. It allows a closer correlation to actual impact, because student generation does vary by number of bedrooms and size of housing unit, with some manageable limitations (a locality that charged by the bedroom has found an increase in the number of rooms called “dens;” student generation increases as square footage increases, but only up to a point). It is also less regressive.

In addition, the Council could consider the imposition of some type of development related tax on commercial property. This revenue could be used for a variety of programs, including schools. Any development, including infill and redevelopment, that brings jobs to an area also brings workers. These workers will use the transportation network, their children will go to school, and their families will use parks and libraries and other public services. But, most importantly, employees for the jobs created by development and redevelopment will need housing they can afford.

Funds Generated from the Recordation Tax

The current recordation tax in Montgomery County is applied to the transfer in ownership of residential property. A major source of the pressure on schools comes from changes within a community due to neighborhood turnover whereby the neighborhood evolves from one with an aging population to one with more school age children. For this source of school enrollment change, the revenue captured by a recordation tax appears appropriate to fund school improvements necessitated by the increased pressure on existing infrastructure.

In high growth areas, such as Clarksburg, school population growth is the result of new construction; therefore impact taxes can effectively finance a large proportion of school capacity needs. However, in most of the County, school population growth is due to turnover in existing housing stock and redevelopment of existing homes. The recordation tax does a better job of capturing revenue for schools from this growth and turnover. In recent years, the recordation tax has generated much more revenue than the impact tax; in 2006, the recordation tax generated $44 million compared to $6.9 million for school impact taxes.

The relatively modest revenue raising capacity of impact taxes and the expected future growth within the County attributable to redevelopment or infill suggest that, changes in the recordation tax on residential property transfers should be included among the options for increasing revenues for financing school capacity.

CONSIDERATION OF ALTERNATIVE FINANCING

Two alternative methods for financing infrastructure growth are Tax Increment Financing and Development Districts.

Tax Increment Financing

The Infrastructure Financing team researched literature related to *Tax Increment Financing (TIFs)* and had discussions about *TIFs* with the Montgomery County Department of Finance. *TIF*s are often used to stimulate economic development in blighted urban areas. Capital improvements are financed by selling bonds that are paid off using the additional tax revenue (the tax increment) generated by the improvements. In Maryland, all counties and municipalities, other than Baltimore City, are authorized by the *Tax Increment Financing Act* to use tax increment financing for the purposes of financing the development of industrial, commercial or residential areas.

The use of *TIFs* seems fairly straightforward. Essentially, the local government determines the property tax revenue it is collecting in a given area before redevelopment occurs. Bonds are issued to the local government, and the

proceeds of this are used to improve and redevelop the area. As redevelopment occurs, tax revenue increases, and the excess tax revenue above the pre-redevelopment state is used to pay off the loans or bonds.

However, there are potential problems with *TIFs*. If tax increment financing is imposed where it is not needed to encourage development – where development would have occurred in the absence of the *TIF* – then the tax increment cuts into general tax revenue that the local government would have otherwise received. This is especially true when the program is set up to freeze property valuations for general tax assessment at the pre-*TIF* level. The tax increment also deprives other governmental bodies that receive property tax revenue – school districts, other special districts, and so forth – of the increase they would have otherwise received.

Another potential problem is the possibility that increased development within the district will fail to generate sufficient revenue to retire the bonds, leaving the government with the responsibility of servicing the debt from the general fund.

Development Districts

In 1994 the Montgomery County Council enacted legislation to authorize the creation of development districts and the issuance of County bonds to finance the construction of certain infrastructure improvements in development districts. As stated in the legislation, the purpose of the development district is to create a method to finance infrastructure improvements necessary for the development of land areas of the County identified for new development. The bill authorizes taxes and assessments on the property within the district to pay for the bonds, which finance the construction of the improvements. Development districts have been used in Germantown and in Clarksburg. In Clarksburg, two districts are under review and a third one has been formed, however, the third district has not yet sold any bonds to finance infrastructure improvements.

The development district concept, particularly as it is used to finance infrastructure required by the adequate public facilities ordinance, is typically applied to large areas of mostly-vacant parcels that the owners are ready to develop. It is seen as “fair” if all or most residents within the district are both paying to retire the bonds and also benefiting from the infrastructure that has been built. In areas where new growth is interspersed among existing development, it can be more problematic to assess some landowners an added increment on their tax bill and not their next door neighbor.

It has become evident that development districts raise a number of other issues, including the transparency of the process and “who pays” for the infrastructure to support growth. Impact taxes are probably more transparent than development districts – developers should be adept at incorporating an impact tax into their construction *pro formas*, but potential homebuyers will have more difficulty

comparing the initial price and future tax burden of a home *inside* a development district to the initial price and future tax burden of a home *outside* of a development district. Because of greater transparency, and because of the backwards capitalization effect mentioned at the beginning of this paper, the use of impact taxes are therefore more likely to achieve a result where the "developer pays" rather than the homebuyer. Development districts are, of course, much more complicated to implement than an impact tax.

Although Planning staff is generally less enthusiastic about these two district-level taxing mechanisms (TIFs and development districts) than we are about impact taxes, we note that district-level taxing mechanisms or fee-supported district level programs can be effective. If, for example, the County were considering a new Metro stop somewhere along the Red Line, it could be appropriate to assess an added tax on landowners near the new station that would benefit from it.

CONCLUSION

The current system of impact taxes is yielding a fairly modest revenue stream – in the case of transportation, modest compared to needs; in the case of schools, modest compared to expectations. Given the forecasts of future growth within the County, revenues from impact taxes will not increase substantially without changes to the program.

The number of households in Montgomery County is expected to increase approximately 27% by 2030. It is further estimated that 72% of the growth in residential development for the same time period will be in multi-family dwellings. With respect to schools, this type of growth will result in less revenue than was once predicted. As stated earlier, multi-family dwellings are taxed at a lower rate than single-family units. Thus school impact taxes cannot generate the revenue once predicted whereby many more single-family units were forecast. The recordation tax has proven to be a more dependable source of revenue for schools.

Transportation impact taxes have provided a more predictable stream of revenue than the school impact tax. Transportation impact tax rates vary by region within the County and across various land uses. These program characteristics are based on the same findings and objectives as the County's growth management systems. The current tax rate structure varies rates by geography and land use, primarily, to reflect the variations in auto trip generation that also occur by geography and land use. Rates vary geographically because development in close proximity to Metro generates fewer auto trips, and because in Clarksburg the amount of needed transportation infrastructure is large. In theory, a variation in impact tax rates can help steer development to lower-rate locations provide an

incentive to developers when making location decisions, although it is not clear that the current variation is sufficient to influence developer decisions.

The transportation impact taxes could be based on an estimate of growth and transportation system needs through a long-range approach using a more distant horizon year. Predicting revenues from the transportation impact taxes is particularly difficult because of developers' ability to take impact tax credits for projects they must construct or contribute to as a condition of a development approval. Although the County assesses a developer the entire calculated impact tax for each unit he builds, his project may also include a requirement to construct millions of dollars in intersection improvements, which can offset his impact taxes on a dollar for dollar basis.

The goal of analyzing both the school and transportation impact tax programs is to improve our ability to efficiently and equitably fund the infrastructure needs of the County, either by modifying the rates and/or application of the taxes for both school and transportation programs. In addition, if improving the revenue raising capacity of the program is also a goal, alternative-financing mechanisms should be considered.

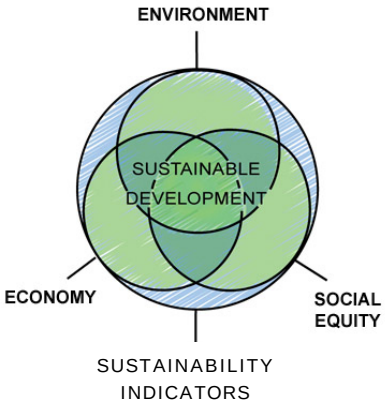
Attachment 1. CIP and CLRP Capital Expansion Projects

PROJECT	In CLRP	In CIP, but not in CLRP
509928: Brookville Service Park		14456
500522: North County Maintenance Depot	21703	
500433: Equipment and Maintenance Operations Center (EMOC)	2962	
500552: Glenmont Metro Parking Expansion	17094	
500714: Montgomery Mall Transit Center	750	
500723: Northern Damascus Park and Ridge Lot		860
509974: Silver Spring Transit Center	67222	
500715: Takoma/Langley Park Transit Center		2500
500602: White Oak Transit Center		1476
509525: Facility Planning: Parking		3086
509976: Forest Glen Pedestrian Bridge	405	
500718: MacArthur Blvd Bikeway Improvements	1100	
500400: Matthew Henson Trail	2867	
500600: Shady Grove Access Bike Path	2328	
509975: Silver Spring Green Trail	4975	
500500: Burtonsville Access Road	5392	
500719: Chapman Avenue Extended	620	
500310: Citadel Avenue Extended	2104	
509337: Facility Planning-Transportation		17549
500402: Fairland Road Improvement	8007	
500516: Father Hurley Blvd. Extended	15389	
500100: Greencastle Road	2056	
500717: Montrose Parkway East	2287	
500311: Montrose Parkway West	32343	
500528: Montrose Road Extended (Land Acquisition)		2716
500401: Nebel Street Extended	7281	
507310: Public Facilities Roads		3048
500502: Quince Orchard Road	1609	
500434: Rockville Town Center	6960	
500403: Stringtown Road Extended	2999	
500101: Travilah Road	6018	
509944: Valley Park Drive	211	
500151: Woodfield Road Extended	8990	
509995: Conference Center Intersection Improvements		846
500322: Friendship Heights Pedestrian-Transit Enhancement	396	
507017: Intersection and Spot Improvements		5099
500010: Redland Rd From Crabbs Branch Way to Needwood Rd	3720	
508716: Silver Spring Traffic Improvements		3041
Rockville Town Center Loop Shuttle vehicles (in CLRP, but not CIP)	1230	
SUBTOTALS	229018	54677

Sources:
http://www.montgomerycountymd.gov/content/omb/FY07/appr/vol3/transportation_cip230.pdf
http://www.mwcog.org/regionaltransportationplan/documents/FY2007-2012TIP.pdf

A Vision of Sustainable Development for Montgomery County

Executive Summary and Recommendations



Sustainability became a common term through a 1987 United Nation's World Commission on Environment and Development report titled *Our Common Future.* [1] Since its inception, the notion of "Sustainability" has provided a holistic worldview of how social equity, economic, and environmental forces work together to create the world in which we live and, more importantly, how we may harness these forces to create something better. This paper proposes that we use this definition to guide future growth and development in Montgomery County:

> *Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs. It recognizes the fundamental inextricable interdependence between the economy, the environment, and social equity, and works to promote each to the benefit of all.*

The concept of sustainability allows us to discuss policies and plans in relationship to one another as plans and development proposals are considered. In this way, we can explore the advantages, conflicts and trade-offs associated with each proposal. Without this examination and measures or targets for sustainability, we will continue to approve development based on the rules it doesn't violate rather than on the goals, objectives and targets it achieves.

The growth management policy in Montgomery County should incorporate sustainability as a guiding principle. The growth it guides should contribute to the sustainability of the county's environment, economy and social well-being, and it should be updated regularly to account for better information as well as changes in people's concerns and priorities. The sustainability principle should be applied to both new growth and changes in existing development.

The risk of not including sustainability in the growth policy is that growth will continue to be managed only in terms of how and when infrastructure is provided rather than on how well it serves the county's overall needs as a community and as a responsible part of the national effort to address the sustainability problem

This paper discusses how well the General Plan Refinement (GPR) expresses principles and goals that support sustainability, and finds that the General Plan

[1] Report of the Brundtland Commission, Our Common Future, Oxford University Press, 1987.

already identifies most, although not all, of the principles needed to guide Montgomery County towards coming to the forefront of the sustainability movement. We suggest how the goals of the GPR can be modified to reflect sustainability more comprehensively.

Our survey of what other local governments are doing to implement sustainability plans around the country shows that many use “indicators” to establish specific targets and evaluate progress in meeting specified goals. Indicators allow residents and decision makers to track and monitor select social, economic and environmental conditions by measuring progress toward specific quantifiable goals or targets. Indicators simplify vast amounts of information and data, and thus provide a common ground on which communities create relationships, build trust and consensus, and base decisions.

Communities take different approaches in developing suitable indicators, but the dialogue between stakeholders both informs the process and engages the public to offer clear direction for the future. Generating a sustainability indicators program offers a logical compliment to effective growth policy. These tools provide a means to accurately gauge the economic, environmental and social conditions within a community over the long term, allowing for more effective and informed decision-making. The Planning Board developed a set of illustrative indicators that could be incorporated into the growth policy and for which the County could commence monitoring immediately.

The Planning Department currently is exploring how the broader perspective of the sustainability principle may be applied to the 355/I270 Corridor Study. Of necessity, this initial effort at applying this broad principle to a local land use exercise will be conceptual in nature. But it is expected that the product will yield some insights useful to the further refinement and practical application of this new approach.

The Water Resources Element required by state law (HB 1141) presents another opportunity to explore sustainability. This law requires that we demonstrate how planned growth will be supplied with drinking water and wastewater treatment capacity and show how our streams can accommodate the anticipated stormwater runoff while protecting local streams and the Chesapeake Bay.

Recommendations

We face a tremendous challenge in the next decade: how to assure that all policy changes and physical investments in Montgomery County direct growth and development in a way that is sustainable. We suggest the following actions to begin meeting that challenge:

- Work towards adopting a definition of sustainability tailored to the needs of Montgomery County for use in our County programs.
- Expand the goals of the General Plan Refinement to include appropriate sustainability principles.

- Incorporate into the Planning Board's existing 2007 work program initial efforts at further refining sustainability principles for application to land use related plans and studies, such as the 355/I270 Corridor Study and the State mandated Water Resources Element, to be undertaken in FY 2008.
- Using this experience, undertake a public involvement process to establish countywide indicators and targets as soon as feasible within upcoming fiscal year budgets.
- In the interim, use the illustrative sustainability principles in this report (see Table 2) to assess growth policy and the Capital Improvement Program.
- Apply sustainability principles and goals to the analysis and evaluation of trends and actions that are part of the ongoing Growth Policy and Capital Improvements Program evaluation process.

Introduction to Growth and Sustainability

This report holistically addresses the specific questions raised by the County Council in the Growth Policy resolution to include a concept that extends beyond growth to the development and well being of the county, its residents and its relationship to larger systems. It contains specific recommendations, some of which may be appropriate in the short term, but some that will require further study and interaction with the community. The concept of sustainability is examined in the context of the General Plan Refinement. We examined the overall concepts, goals and objectives in terms of sustainability and sought examples from other jurisdictions about how to adapt the General Plan Refinement and its implementing mechanisms to achieve sustainability.

Sustainability and the General Plan

In order for growth in Montgomery County to be sustainable, new development should reflect the principles of sustainability and be measured in those terms. The General Plan Refinement contains most of the elements of a plan for sustainability, but is not focused clearly on that goal.

The County's General Plan, "On Wedges and Corridors," first adopted in 1964, set the County on a visionary path to preserve open space while channeling growth into carefully defined areas. Updated in 1993, the General Plan Refinement (GPR) explicitly recognizes the connections between transportation and land use, between the built environment and the natural, between employment and housing. To balance these at times competing concerns, the 1993 General Plan Refinement (GPR) established goals objectives and strategies intended to guide the County's land use and development.

But since the refinement and numeration of these goals, the concepts it was based on have been refined as communities throughout the world struggle to holistically improve quality of life. Now called sustainable development or sustainable prosperity, the concept can really be viewed as a different way of looking at achieving the goals and objectives that County has sought for decades.

The Agricultural Reserve and the Priority Funding Areas have reinforced the geographic components of the Wedges and Corridors plan to serve smart growth principles. These principles are similar in many ways to elements of sustainable development, making the transition from the GPR to a more comprehensive sustainability program a relatively small step.

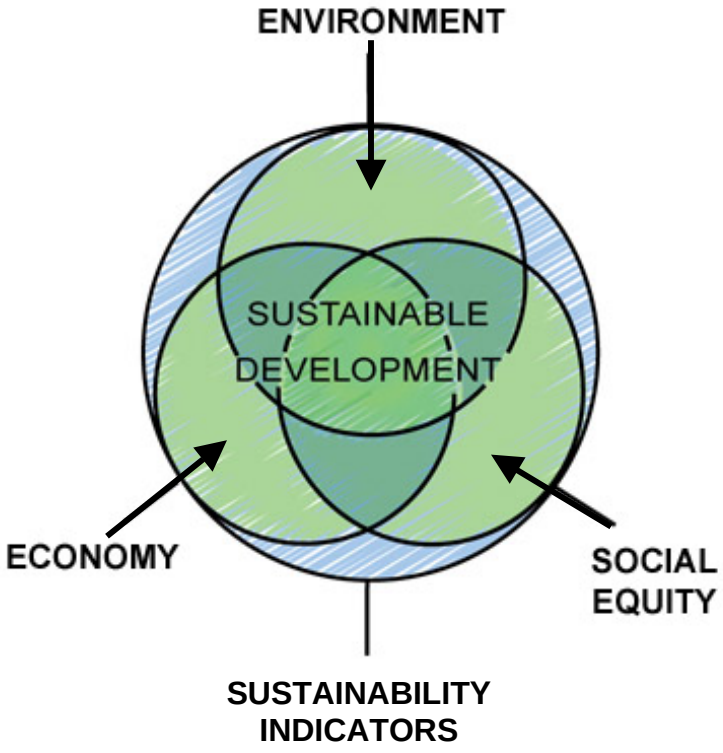
Definition of Sustainability

Since its inception, the notion of "Sustainability" has been nothing less than a holistic worldview of how social, economic, and environmental forces work together to create the world in which we live and, more importantly, how we may harness these forces to create something better. Sustainability is not a thing, but rather *a way of looking at things*.

With this in mind, we propose that the County, as a first step, adopt the following basic definition of Sustainable Development

> *Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs. It recognizes the fundamental inextricable interdependence between the economy, the environment, and social equity, and works to promote each to the benefit of all.*

This definition builds upon the Brundtland definition[2], incorporating lessons learned from jurisdictions around the nation and highlighting the essential elements of economy, environment, and social equity. The graphic below illustrates this relationship, and shows how indicators can measure the larger context.



Examples of Sustainable Development

Though the fundamental basis of sustainable development is the recognition of the interdependence of the three elements, the three "E's", it is helpful to look at some county programs that already promote elements of sustainable development. Programs that are currently addressing only one "E" (depicted in the lighter shaded parts of the circles) include actions like tax breaks for certain kinds of businesses

[2] Report of the Brundtland Commission, Our Common Future, Oxford University Press, 1987.

(economy), health screening (equity) and fish migration barrier removal (environment). Programs that address two "E's" (the darker shaded portions of the circles) include stormwater management charges (environment and economy), MPDU's (economy and equity) and air pollution control (environment and equity). But the most progress towards balanced sustainability results from solutions that address all three "E's" at once:

- Walkable, bikeable, transit friendly concentrations of mixed income housing and employment and services with pleasant green open spaces linked to the countywide green infrastructure.
- Rural areas with limited development around small communities, profitable farms that offer employment and support food production, agricultural activities, green infrastructure and protected water supplies.

While the GPR embraces most of these concepts, the inherent difficulties of meeting all its goals and objectives at the same time are not reconciled. We have included smart growth principles such as the Agricultural Reserve, TDR's, the Priority Funding Area, Forest Conservation and environmental guidelines to provide reinforcement of our "sustainability" goals. Each master and sector plan determines the emphasis, balance and compromise among the many objectives of the GPR. Decision makers determine the unique mix of actions recommended in these plans with input from stakeholders. In order for growth to be sustainable, sustainability should also be expressly addressed in master and sector plans.

Why Include Sustainability in the Growth Policy?

Sustainability should be a goal for both growth and the improvement of existing developed areas. The preferred term is "sustainable development" which does not pre-suppose growth, but looks at all changes in a community to improve sustainability. Regardless of growth, sustainability requires changes to existing development as well. Just regulating new development cannot attain improvements in sustainability, but new development and redevelopment should be together in the vanguard, demonstrating principles of sustainability and forming the foundation for the future.

The concept of sustainability allows the functional areas of the GPR and master plans to be discussed in relationship to one another as development proposals are considered. In this way, we can explore the advantages, conflicts and trade-offs associated with each proposal. Without this examination and measures or targets for sustainability, we will continue to approve development based on the rules it doesn't violate rather than on the goals, objectives and targets it achieves.

The risk of not including sustainability in the growth policy is that growth will continue to be managed only in terms of how and when infrastructure is provided rather than on how well it serves the county's larger future needs as the implications of global warming and the global economy are increasingly understood. Here are a few examples of questions that the sustainability perspective can bring to our attention:

- Will we be able to maintain or reduce our electricity demand in the future to avoid the need for new major transmission lines?
- Can the older infrastructure of the developed areas sustain the increased density needed to accommodate growth? When and where do we reach a tipping point and who pays?
- Can we continue to develop on the edges of the sewer envelope using pressure sewers? Do we want to expand the gravity sewer system into whole new stream valleys?
- Should we be spending money on building a new water supply intake in the Potomac River or cleaning up the tributaries that are causing us to move the intake?
- How can we balance parking and transit in ways that reduce automobile use and provide increased accessibility for residents, workers and visitors?

How Are We Doing?

In order to examine how well the County's existing and projected development adheres to Smart Growth principles and the County's General Plan, we produced two sets of maps. The County's household and employment 2005 existing development and 2030 Round 7.0 Forecast is mapped showing households or jobs per acre by traffic zone with the Priority Funding Area and Agricultural Reserve boundaries as well as the boundaries of the five General Plan Areas.

The maps show that the County's densities of existing and future household and employment development are in sync with the goals of the General Plan. The denser development is occurring within the Urban Ring, the I-270 Corridor, and villages like Olney and Damascus and less dense development is occurring in the Suburban Communities, Residential Wedge, and the Agricultural Wedge as defined in the General Plan.

Households

- Almost all of the traffic zones with household densities greater than one household-per-acre are within or partly within the Priority Funding areas.
- Most of the densest household development, traffic zones with densities greater than five households-per-acre, is within the Urban Ring and the I-270 Corridor as defined in the General Plan.
- This density improves multi-modal serviceability and can support local-serving retail and community facilities, significantly reducing the need to drive.[3]
- These areas are scattered within the Priority Funding Area, not forming a consistent pattern.

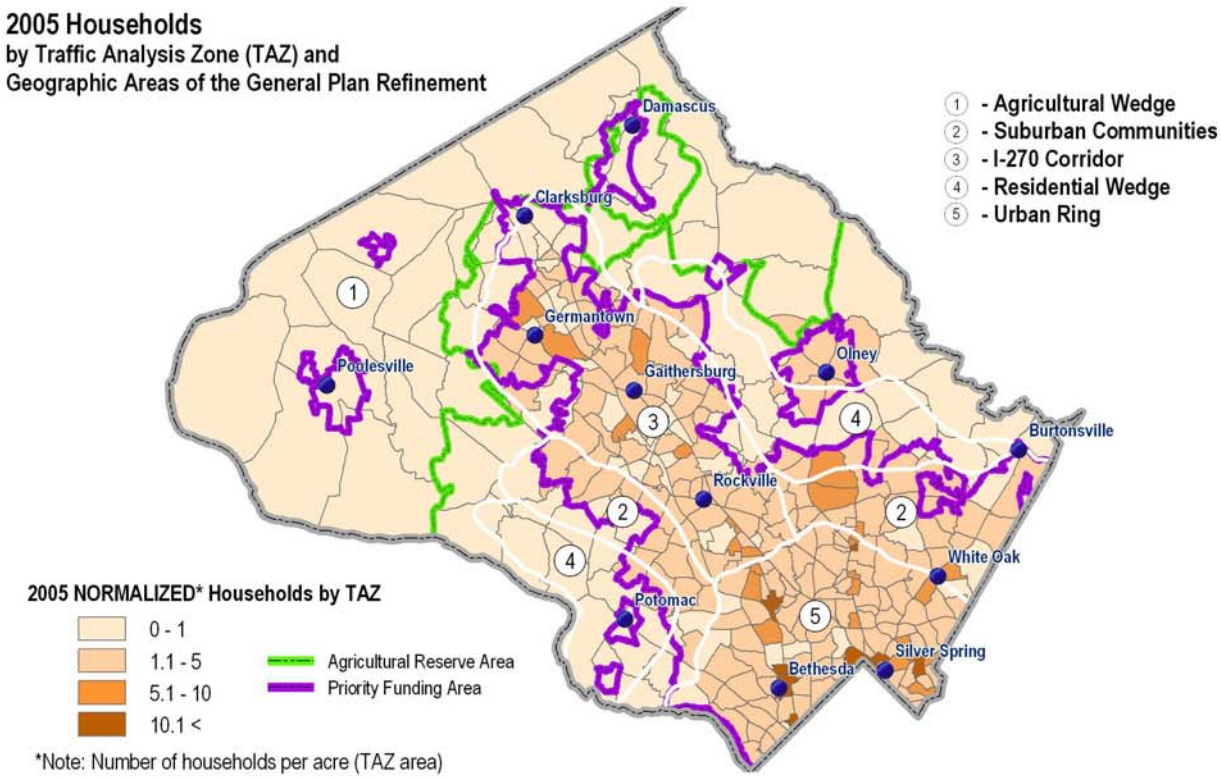
[3] Gordon Price, Simon Frasier University, Vancouver British Columbia. Partners for Smart Growth Conference, 2007.

- In 2030, the County's 441,000 households are likely to have a similar pattern under existing trends.
    - Between 2005 and 2030 the County has traffic zones increasing in density within the Priority Funding areas, especially within the Urban Ring and the I-270 Corridor.
    - Some areas increasing in household density are: the Silver Spring CBD, the Wheaton Metro Station area, White Flint, Twinbrook, Rockville Town Center, the Shady Grove Metro Station area, the Crown Farm, Watkins Mill Town Center, and Clarksburg.

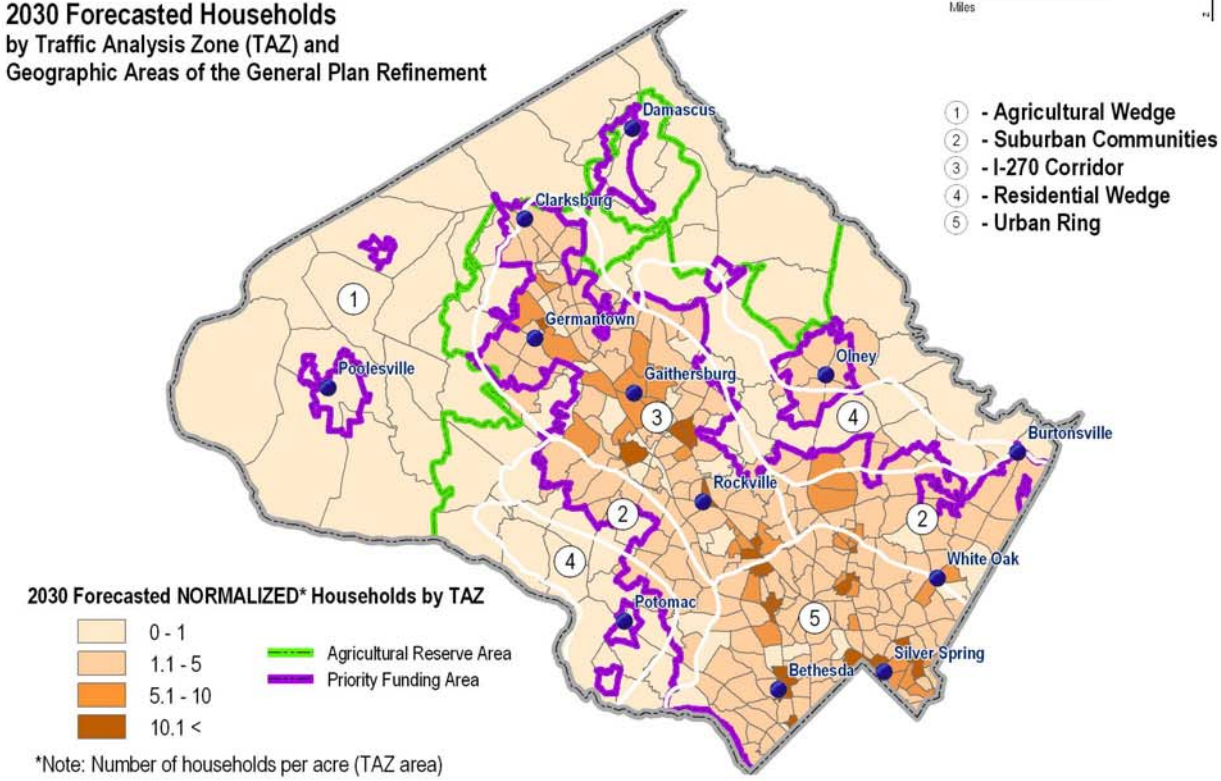
Employment

- In 2005, the highest concentrations of the County's 500,000 jobs are located within the Priority Funding areas and as defined in the General Plan; the Urban Ring, I-270 Corridor, and the eastern Suburban Communities (along MD 29).
- The highest job densities, greater than 10 jobs-per-acre, are found within the Urban Ring and the I-270 Corridor.
- In 2030, the highest concentrations of the County's 670,000 jobs remain in the Priority Funding areas, mainly in the Urban Ring and the I-270 Corridor.
    - By 2030, more traffic zones in the northern I-270 Corridor, Gaithersburg, Germantown, and Clarksburg have job densities greater than 10 jobs-per-acre.
    - The Food and Drug Administration's consolidation at White Oak and the development of the proposed Technology Park in Calverton will created job densities greater than 10 jobs-per-acre at the fringe of the Urban Ring and in the eastern Suburban Communities along MD 29.

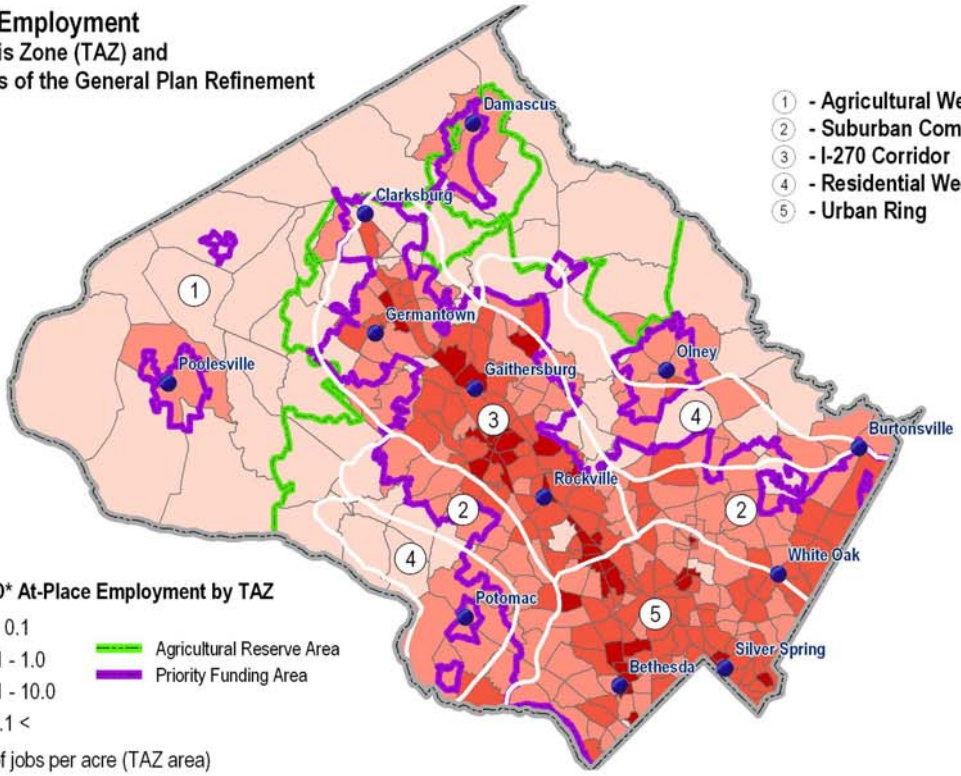
2005 Households
by Traffic Analysis Zone (TAZ) and
Geographic Areas of the General Plan Refinement



2030 Forecasted Households
by Traffic Analysis Zone (TAZ) and
Geographic Areas of the General Plan Refinement



2005 At-Place Employment
by Traffic Analysis Zone (TAZ) and
Geographic Areas of the General Plan Refinement



1 - Agricultural Wedge
2 - Suburban Communities
3 - I-270 Corridor
4 - Residential Wedge
5 - Urban Ring

2005 NORMALIZED* At-Place Employment by TAZ

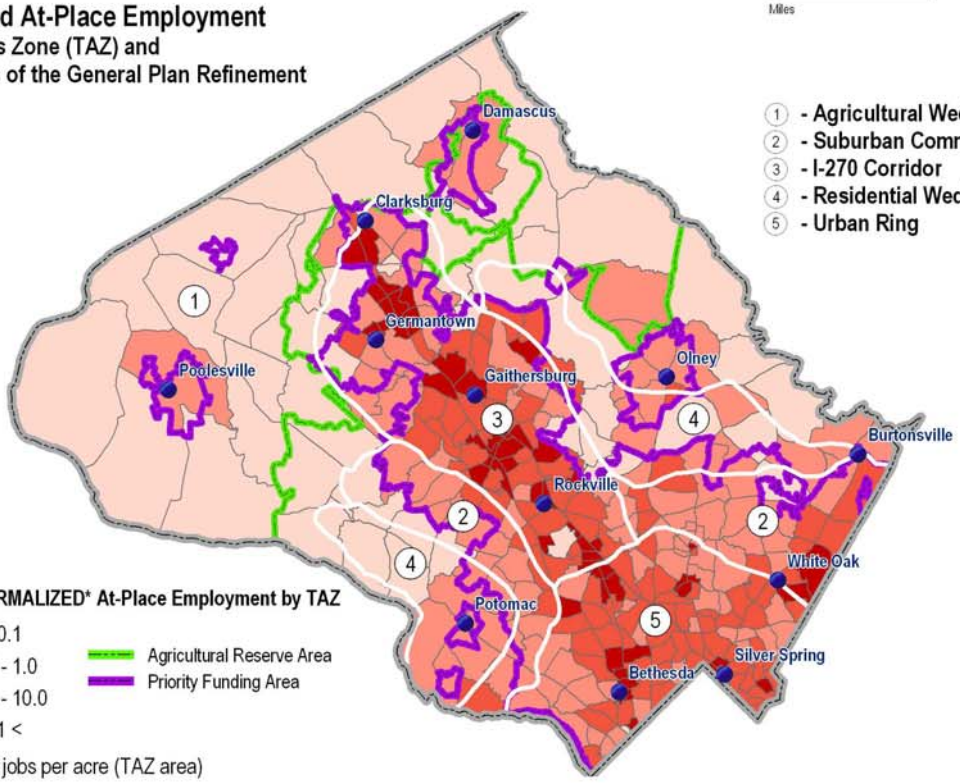
0 - 0.1
0.1 - 1.0
1.1 - 10.0
10.1 <

Agricultural Reserve Area
Priority Funding Area

*Note: Number of jobs per acre (TAZ area)

0 6
Miles

2030 Forecasted At-Place Employment
by Traffic Analysis Zone (TAZ) and
Geographic Areas of the General Plan Refinement



1 - Agricultural Wedge
2 - Suburban Communities
3 - I-270 Corridor
4 - Residential Wedge
5 - Urban Ring

2030 Forecasted NORMALIZED* At-Place Employment by TAZ

0 - 0.1
0.1 - 1.0
1.1 - 10.0
10.1 <

Agricultural Reserve Area
Priority Funding Area

*Note: Number of jobs per acre (TAZ area)

Other Jurisdictions: Common Themes and Elements

Our staff investigation included an examination of plans of other local jurisdictions that are focused on sustainability and/or smart growth. Our review focused on how other communities define the concept, how it is applied, and how it guides planning efforts. The communities we reviewed offer a useful starting point for any future discussion; closer review is needed to determine how applicable the approaches used by other jurisdictions are to Montgomery County. These plans featured several common themes and elements. They universally recognize the interconnectivity and interdependence of the economy, the environment, and the community, and the need for an integrated holistic approach to development planning to promote the sustainability of each of these forces.

For a definition of Sustainable Development, many included some version of the original from the Brundtland Commission -, i.e., development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Beyond this, many included the Three E's – Economy, Environment, and Equity – as a shorthand way of recognizing their inextricable overlapping links.

The principles of sustainable development contained in the reviewed plans represented two approaches: the conceptual commitment and the call to action. For example, Marin County, California's principles offer an excellent model of a broad-based, yet policy-area-specific approach that is able to address concept, policy, and implementation. The concepts of sustainability are incorporated explicitly in the County's General Plan.

From there, Marin offers its residents policies aimed at improving sustainability, particularly in terms of reducing environmental impact. The County also examines housing affordability, transportation and land use within the context of sustainability using a graphic very similar to that provided here. Marin's General Plan also instructs the County to develop design guidelines to foster development that complements community character and provides walkable, livable spaces.

King County, Washington does not explicitly recognize sustainability. However, it does offer a growth policy that includes design, environmental considerations and social equity considerations (such as housing affordability). Cities are also quite active in developing sustainability policies. For example, a non-profit organization in Seattle developed a set of sustainability criteria to help guide Seattle, and ultimately the surrounding King County, towards sustainability. Sustainable Seattle offers a complex set of community indicators to measure progress towards this goal.

Santa Monica also instituted a sustainability initiative. It centers on nine guiding principles articulated through eight goal areas (e.g., resource conservation, environment and public health, and economic development, etc.). For each goal, Santa Monica offers indicators and targets that it uses to evaluate its success with advancing sustainability.

The definitions of sustainability in our reviewed materials generally offer an overarching vision, an end-state, to which communities strive. That vision addresses all aspects of a community: the built and natural environment, economy and community. These three broad areas provide sufficient breadth to include the multitude of aspects determining community quality of life. But the specific policies and mechanisms to achieve these goals vary. For example, while San Mateo County provides broad policy statements to achieve sustainability, King County explicitly includes housing, and historic preservation, transportation, and environmental protection as part of its growth management policy.

Our research to date hasn't identified, at the County level, any policies or plans that consistently apply the concepts of sustainability to the full range of applicable growth policies. Though King County offers the most comprehensive growth policy by addressing such topics as transportation, environment, land use, affordable housing and design, and includes performance indicators, it does not explicitly pursue its goals under the concept of sustainability. And while many jurisdictions pursue smart growth, focusing on the location and design of development, this doesn't necessarily reflect the broader vision of sustainability, examining concepts such as whether or not suitable employment opportunities exist or whether housing remains affordable.

What Are the Obstacles to Sustainable Development?

By exploring what success looks like, impediments to that success emerge. The County should understand these obstacles and work together to overcome them.

- Lack of shared vision of Sustainable Development
- Lack of understanding of interdependence of economy, environment, and equity
- Limited transit access and choice
- Centers without sufficient mix and density
- Single-use development/Euclidean zoning
- Lack of affordable housing and transit options
- Development that does not respect community context.

How Can We Use the General Plan to Promote Sustainable Development?

The 1993 General Plan Refinement and the subsequent Master and Sector Plans embody Montgomery County's on-going commitment community development, smart growth, and environmental protection. Each of the elements of sustainable development is already to be found, implicitly or explicitly, in the General Plan Refinement (GPR), especially in the Guiding Principles and the Goals, Objectives and Strategies.

The Guiding Principles of the GPR

1. *Wedges and Corridors Concept*
   The Wedges and Corridors concept has shaped the County by channeling growth into the development corridors and an Urban Ring around Washington, DC. At the same time, Wedges of open space, farmland, and lower density residential uses have been preserved.

2. *Master and Sector Plans*
   The spirit and intent of the General Plan Refinement (GPR) is embodied and embellished by these plans. Each plan should attempt to provide a unique balance among all the goals of the GPR that are appropriate to its specific location and character within the composite framework of the county as a whole.

3. *Physically Concentrated Centers*
   The GPR encourages an efficient land use pattern of jobs, housing, and other uses within centers. The Refinement promotes mixed-use development and sensitive increases in intensity within appropriate boundaries in centers to control sprawl, to reduce energy consumption and pollution, to contain infrastructure needs, and to reduce development pressure on rural open space areas and farmland.

4. *Community Identity*
   The GPR recognizes the human need for social interaction and for communities that create a sense of pride, a sense of place, and a hometown atmosphere. It encourages public and private development whose architecture and design address these needs by incorporating individuality, civic features, and the opportunity for social interaction.

5. *Transit Serviceability*
   The GPR encourages land use patterns that can be served effectively by the County's integrated multi-modal transportation system. It emphasizes increased opportunities for alternatives to single-occupant auto travel and attention to the needs of pedestrians. Favoring transit can make more efficient use of the existing roadway network, reduce air pollution and increase access.

6. *Compatibility*
   The GPR encourages new development that will harmonize with the existing built environment and the natural environment. In some cases, this is a matter of scale and intensity. In other cases, compatibility is a question of location, function, or style.

7. *Variety and Choice in Housing, Jobs, and Transportation*
   The GPR supports the concepts of variety and choice to promote a strong and diverse economy, to meet the housing and employment needs of

current and future Montgomery County citizens, and to encourage effective and efficient transportation options.

8. *Resource Management*
   The GPR seeks to attain the most efficient and socially beneficial management of all Montgomery County resources, ranging from the natural environment to public and private finances, and the land itself.

9. *Environmental Protection*
   The GPR calls on development to protect the land, air and water resources that provide vital services, avoiding or mitigating potential negative impacts in order to balance the human need for places to live, work, and play.

10. *Public Investment*
    The GPR recognizes the importance of public investment to implement the Wedge and Corridor concepts of the Refinement.

Goals, Objectives, and Strategies

The Goals, Objectives, and Strategies of the GPR build upon the foundation of the guiding Principles, fleshing out their intent to define a position of growth directed and controlled to serve a larger public vision. When compared against the definition and elements of Sustainable Development, many of the goals and objectives fall short of the mark. This section reviews the GPR goals and objectives, and suggests a way to restate them that helps bridge the gap. The first part of each section quotes the specific wording of the GPR goal, then the relevant objectives are reviewed along with comments about missing sustainability elements and finally, a potential restatement of the goal is indicated in italics that better reflects issues of sustainability for that subject.

Land Use

> Achieve a wide variety of land use and development densities consistent with the “Wedges and Corridors” pattern. (p. 45)

This goal promotes sustainable development by focusing development at locations where infrastructure and density efficiencies begin to promote mixed-use, transit-oriented, and pedestrian-friendly communities. Several of the objectives begin to move towards a vision of sustainable communities by encouraging “identifiable centers of community activity” (Objective 2), the preservation of farmland and rural open space (Objective 4), and the provision of parks, recreation, and open space within developments (Objective 8). Objective 7, which encourages the coordination of housing, jobs, and retail in mixed-use areas, needs only to add transit to the mix to achieve the goal.

What is missing is a definitive statement of preference to focus future development at centers that combine housing, jobs, transit and recreation. Though implicit in the objectives, the development of mixed-use centers is essential to guiding sustainable development within the wedges and corridors scheme. The following principle of sustainable development makes that commitment explicit:

> *The County will reinforce sustainable land use patterns, promoting sustainable development as appropriate everywhere in the County, refining the "wedges and corridors" concept to a "wedges, corridors, centers," and links approach that focuses an active mix of uses in pedestrian friendly n community, town, and city centers that are interconnected with multi-modal transportation linkages.*

Housing

> Encourage and maintain a wide choice of housing types and neighborhoods for people of all incomes, ages, lifestyles, and physical capabilities at appropriate densities and locations. (p. 52)

It is supported by several objectives that encourage sustainable development by promoting affordable housing (Objective 4), housing options sufficient to allow aging-in-place (Objective 2), and mixed-use (again minus the essential transit component) communities (Objective 3).

Our proposed refinement makes explicit the need for affordable housing, but looks closer at the housing to make sure it responds well to its environment, both built and natural. Beyond the "sticks and bricks" of the housing itself, this principle of sustainable development emphasizes the necessity of that housing's proximity to transit and places to work and play:

> *A full range of housing options is vital to sustainable development. County development regulations, programs, and policies will seek to realize a diversity of well-designed, energy-efficient housing types and densities, linked closely to jobs, transit, and services for a mix of incomes and needs.*

Employment/Economic Activity

> Promote a healthy economy, including a broad range of business, service, and employment opportunities at appropriate locations. (p. 57)

Economic development is an essential component to sustainable development. Objective 3 encourages mixed-use opportunities to improve proximity between work and home and to promote small business. The proposed principle of sustainable

development elevates these essential concerns and specifies which are the most "appropriate" locations. It reinforces the idea that economy, environment, and social equity are inextricably linked:

> *The County continues to support a broad range of economic opportunities, from local entrepreneurs and national firms, by closely linking jobs with transit, housing, and services.*

Transportation

> Enhance mobility by providing a safe and efficient transportation system offering a wide range of alternatives that serve the environmental, economic, social, and land use needs of the County and provide a framework for development. (p. 63)

The expansion and integration of multi-modal transit opportunities linking housing, jobs, and retail is another key component of sustainable development. Three of the objectives in the GPR begin to actively support this goal by providing a transit system that is a viable alternative to single-occupant vehicle travel (Objective 4), includes pedestrian- and bike-friendly transportation and recreation options (Objective 6), and prevents further degradation of the overall quality of the air, land, and water in the provision and use of the transportation system (Objective 7). These goals and objectives work, as far as they go. Our proposed principle of sustainable development focuses on linking mixed-use civic centers, making central previously secondary ideas about convenience and affordability and begins to address the shared public/private responsibility for implementing sustainable development:

> *The County will work cooperatively with the private sector and all relevant public agencies to expand and enhance our public transit system to better connect jobs, housing, shopping, and recreation, focusing especially on community, town, and civic centers. Affordable and convenient multi-modal transportation and mobility options should be enhanced to reduce our dependence on single-occupancy driving, conserve resources, improve air quality, and reduce traffic congestion.*

Environment

> Conserve and protect natural resources to provide a healthy and beautiful environment for present and future generations. Manage the impacts of human activity on our natural resources in a balanced manner to sustain human, plant, and animal life. (p. 70)

Protection, maintenance, restoration, and enhancement of the natural environment are well defined and supported within the Goals, Objectives and Strategies. . The

proposed principle of sustainable development refines these goals by highlighting some of the central impediments to environmental sustainability and how sustainable development policies, programs, and projects might address them:

> *The County will protect the biological integrity of our natural resources to maintain a healthy and diverse ecosystem for present and future generations. County policies and projects will utilize the Principles of Sustainable Development, including resource efficiency, and land and resource conservation and protection to promote biodiversity, limit greenhouse gas emissions, and improve water and air quality.*

Community Identity & Design

> Although the role of government in creating community is limited, Montgomery County can establish the framework on which communities can evolve. This goal is one that guides the County's physical development so that it is conducive to the nurturing of community pride, social interaction, and identity. (p. 74)

Essential to creating sustainable communities is fostering a sense of place, an identity that encourages more day-to-day activities to occur locally. Each of the Objectives under this Goal strongly supports this. The GPR does not contain a Goal for Community Identity and Design as such, but the text begins to define a direction and intent about the role good design plays in supporting and building (literally and figuratively) sustainable communities. This proposed principle of sustainable development makes explicit the importance of this central role:

> *Design is the process by which we shape the built environment for living, working, and playing. Design excellence ensures that the form of the public realm not only facilitates function, but also creates an identity of place and a sense of community. This identity helps realize vibrant, sustainable communities, creating streets, neighborhoods, and cities where people can afford to live and want to live.*

Regionalism

> Promote regional cooperation and solutions to problems of mutual concern to Montgomery County, its neighbors, and internal municipalities. (p. 81)

As with some of the other goals, this one is strong in direction but limited in scope, both at the smaller and larger scales. At the smaller scale, many of the elements of sustainable development are administered by multiple agencies that have not established a common vision about the development in general, let alone

sustainable development. Their coordination and cooperation will be indispensable to implementing these principles. At the larger scale, we can no longer ignore the fact that development decisions we make in Montgomery County have impacts far beyond neighboring counties, indeed to the country and by extension the world. This proposed principle again refines and makes explicit the recognition of these relationships and shows a path forward:

> *The sustainable development of Montgomery County cannot be separated from its broader regional, national, and global contexts. The County recognizes the need for cooperation between County agencies addressing the diversity of issues involved in implementing sustainable development, and continues coordination and cooperation with its internal and neighboring municipalities in the Baltimore-Washington-Northern Virginia region and beyond.*

How Can We Move Forward?

To move closer to realizing sustainable development, the County should take three steps:

- Prepare principles of Sustainable Development to guide future review and revision of regulations, programs, and policies
- Identify a toolbox of opportunities to suggest how these principles can be realized
- Develop a set of indicators to provide an understanding of what is working and what is not

The previous section showed how the GPR principles could be redefined to focus on sustainability (see Table 4.1).

Table 4.1. Principles of Sustainable Development

1. Land Use
The County will reinforce sustainable land use patterns, promoting sustainable development everywhere in the County, refining the "wedges and corridors" concept to a "wedges, corridors, and centers*" approach that focuses density, transit, and an active mix of uses on community, town, and city centers.*

2. Housing
A full range of housing options is vital to sustainable development. County development regulations, programs, and policies will realize a diversity of well-designed, energy-efficient housing types and densities, linked closely to jobs, transit, and services for a mix of incomes and needs.

3. Economic Development
The County continues to support a broad range of economic opportunities, from local entrepreneurs and national firms, by closely linking jobs with transit, housing, and services.

4. Transportation
The County will work cooperatively with the private sector to expand and enhance our public transit system to better connect jobs, housing, shopping, and recreation, focusing especially on community, town, and civic centers. Affordable and convenient multi-modal transportation and mobility options help reduce our dependence on single-occupant driving, conserve resources, improve air quality, and reduce traffic congestion.

5. Environment
The County will protect the biological integrity of our natural resources to maintain a healthy and diverse ecosystem for present and future generations.. County policies and projects will utilize these Principles of Sustainable Development, including resource efficiency and land and resource conservation and protection, to promote biodiversity, limit greenhouse gas emissions, and improve water and air quality.

6. Design Excellence
Design is the process by which we shape the built environment for living, working, and playing. Design excellence ensures that the form of the public realm not only facilitates function, but also creates an identity of place and a sense of community. This identity helps realize vibrant, sustainable communities, creating streets, neighborhoods, and cities where people can afford to live and want to live.

7. County and Regional Cooperation
The sustainable development of Montgomery County cannot be separated from its broader regional, national, and global contexts. The County recognizes the need for cooperation between County agencies addressing the diversity of issues involved in implementing sustainable development, and continues coordination and cooperation with its internal and neighboring municipalities in the Baltimore-Washington-Northern Virginia region and beyond.

Sustainability and Growth Policy

One of the more challenging aspects of growth management is insuring: (1) that principles of sustainability are reflected in both policy and implementation, (2) that there is a mechanism for measuring the extent of our success in accomplishing that objective, and (3) that the process for accomplishing (1) and (2) is straight-forward and understandable.

In our work on sustainability, our group has reviewed this issue and is of the general opinion that growth management is one “bridge” between policy and implementation and is influenced over time by the principles of sustainability derived from our Community Based Plans *on a broader policy level* and by an established and credible indicator monitoring program *at a more narrow level closer to implementation*.

Applying Sustainability to Planning Policy

Currently the master and sector planning process is guided by the principles established in the General Plan Refinement and earlier generations of master plans. Historically, master and sector plan recommendations have mirrored the GPR format with recommendations by functional area (Land Use, Transportation, etc.). However, as the County progresses, master and sector plans should provide comprehensive and strategic guidance to address growth, specifically emphasizing sustainable development, to rationalize how multiple objectives are achieved and priorities chosen from among the many competing goals of the GPR.

A specific section or chapter that focuses on sustainable development should be included in all master and sector plans. This dedicated focus on sustainable development addresses specific choices made in each geographic area when implementing public projects and private development. Having master and sector plans address sustainability also provides the added emphasis that any anticipated growth in the future will be sustainable.

But growth policy also centers on the provision of adequate public facilities. So the question remains: how can the County best apply the concepts of sustainability to provide infrastructure that simultaneously addresses environmental, economic and equity concerns? The research suggests that measurable and incremental indicators play an important role as communities embrace sustainability, providing the opportunity to establish specific targets and evaluate progress in meeting specified goals. The indicators employed necessarily vary depending on the scale of application. In other words, the sustainability indicators relevant at the County level may be broader than those used at the city or neighborhood level.

Toolbox of Opportunities

Opportunities exist for the County to apply sustainability in a number of policies and ordinances that to ensure practical application of this broad concepts. Examples include:

County Wide Initiatives

- Capital Improvement Program
- Forest Conservation Program
- Green Infrastructure Functional Plan (including parks and conservation areas)
- Water Resources Element (required by HB 1141)
- Moderated Price Dwelling Units (MPDUs) and Workforce Housing
- Transferable Development Rights (TDRs) and Agricultural easements
- Local, Regional and Recreational parks
- Stream valley and conservation parks
- Jobs to housing balance
- Roadway system: highways, residential primary, arterials etc.
- Bikeway and path system: Class I (Shared Use), Class II etc
- Environmental Resource Inventories

Community/Neighborhood

- *Community Master and Sector Plans*: Specific areas in the County with recommendations on land use, transportation, public facilities, parks and open space, environment and implementation procedures.
- *Urban design*: Specific designs for streets and public spaces
- *Historic resources*: Preserving local and regional buildings, vitas or open spaces for future generations
- *Public facilities*: New facilities that serve existing and future communities
- *Transportation management*: Efforts to encourage residents use of transit-rail and bus-and reduce single-occupancy travel
- *Road network*: Proposed new roads or expanded street standards

Indicators

Many communities pursuing sustainability measure progress towards their goals using specific community indicators. The American Planning Association[4] defines community indicators as bits of information that, when combined, generate a picture of what is happening in a local system. They provide insight into the overall direction

[4] *Community Indicators.* Planning Advisory Service Report 517. December, 2003.

of a community, whether it is improving, declining, staying the same, or varying depending on a given measure. A combination of indicators offers a measuring system to provide information about past trends, current realities, and future direction to facilitate decision-making.

The APA report identifies four broad categories of community indicators:

1) Quality of life: indicators that can be used to monitor what constitutes a "good life" or "good society."

2) Sustainable development: indicators that measure progress toward sustainable development (as defined by the *Brundtland Commission*[5] in 1987), offering an opportunity to move beyond standard economic indicators, such as gross domestic product, to fully assess well-being.

3) Performance Evaluation: indicators that measure how efficiently an organization, such as local or state government, provides specific services or addresses key issues.

4) Healthy Communities: indicators that build on the World Health Organization's (WHO) Healthy Cities program that evaluates air quality, access to health care, and nutrition to compare citizens' health in different areas.

What Indicators Provide

A survey by the American Planning Association identified several key benefits that from the development and use of indicators. For example, indicators democratize information for its use by many constituencies. They also can embody the inherent values of a community, encouraging public sector responses that reflect these values.

Indicators represent a method to accurately gauge the economic, environmental and social conditions within a community over the long term, allowing for more effective and informed decision-making. Lastly, indicator systems or projects, when effectively designed and implemented, can improve evaluation of planning policy and actions by helping establish causality between planning interventions and outcomes.

Developing Community Indicators

While many communities have already developed community indicators, these are generally local initiatives that should reflect the specific attributes and concerns of a community. Based on the experiences of other jurisdictions, developing useful indicators requires extensive public involvement. Sustainability also requires

[5] The *Brundtland Commission* defined sustainable development as: development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

governmental support. For example, Santa Monica established an expert task force of community and business leaders appointed by the City Council. For Seattle, a non-profit organization leads development of indicators, with a board of directors composed of civic and business leaders and Seattle city government staff. In short, while different models may be used, each had support and participation from business, citizens, and the highest levels of local government.

But while communities take different approaches in developing suitable indicators, the dialogue between stakeholders both informs the process and engages the public to offer clear direction for the future. Generating a sustainability indicators program offers a logical compliment to effective growth policy by offering a means to accurately gauge the economic, environmental and social conditions within a community over the long term. And this ultimately allows for more effective and informed decision-making.

Creating an Indicator Program

A useful set of indicators should be able tell us whether urban quality and performance is improving or deteriorating in relation to desired targets. While it sounds simple, developing an indicators program that reflects the environmental, social and economic values of our residents, business leaders and politicians can be daunting, especially given our diverse population. First and foremost, creating a program should be as grassroots as possible with numerous opportunities for public input and involvement.

The County initially should establish a committee comprised of a broad cross-section of stakeholders to support the program's development and implementation. It is desirable that the County select core indicators for which data will be continually available and that allows the County to compare its progress to other jurisdictions, especially those in the Washington D.C. area. However, data availability should not be a limiting factor. Sustainable Seattle stresses that a lack of data on a key sustainability or livability issue may itself be an indicator that the issue has to-date received insufficient attention.

Generating a sustainability indicators program offers a logical compliment to effective growth policy. An indicators program could be used in many different ways including:

- Providing the basis for addressing issues of global climate change
- Improving the process for achieving the proper balance among the many county plans and policies
- Providing a compilation of information to be used by decision makers on an informal basis
- Becoming an extension of the Growth Policy trends analysis to monitor how well projects are assisting progress towards sustainability goals.

The Planning Department currently is exploring how the broader perspective of the sustainability principle may be applied to the 355/I270 Corridor Study. Of necessity, this initial effort at applying this broad principle to a local land use exercise will be conceptual in nature. But it is expected that the produce will yield some insights useful to the further refinement and practical application of this new approach.

Another place where sustainability principles have relevance is the Water Resources Element (WRE) of HB 1141. This legislation requires the County to amend its General Plan to address water resources-related planning issues. As the County's land use and zoning authority in Montgomery County, M-NCPPC will be the lead agency in coordinating and developing a Water Resources Functional Master Plan that will amend the General Plan and serve as an umbrella for all the area and sector master plans.

The plan will need to address how expected growth, as described in the General Plan will affect and be affected by local water-related limiting factors such as water supply, wastewater, stormwater, non-point source pollution, and water quality of receiving streams. Phasing of growth, changes in growth plans, or changes in methods to address deficiencies may be necessary if there are growth limitations based on water resources-based considerations. This presents an opportunity to further explore sustainability as it relates to water resources and planned growth.

During Growth Policy worksessions, the Planning Board developed a set of illustrative indicators that could be incorporated into the growth policy and for which the County could commence monitoring immediately. The Board identified five criteria for indicator selection:

1) Is data available to monitor the indicator?
2) Are we confident that the data is accurate and is measuring the indicator?
3) Can the data be used to compare conditions in different areas of the County? Are data available at geographic levels that allow such comparisons?
4) Can the indicator be influenced by changes to Growth Policy?
5) Is the indicator related to community livability?

The Planning Board recommends the indicators in this table be incorporated as illustrative examples into the growth policy. These indicators measure basic public policy issues related to growth management and achieve a rating of "good" or "fair" for at least three of the five criteria for indicator selection. The Planning Board views these initial indicators as a mechanism to establish the utility and value of indicators for effective public policy, articulated through both growth policy and the Capital Improvements Program. This inaugural set of indicators should be used to initiate a broader, more inclusive public process to create a countywide sustainability indicators program to influence a wider scope of public policies. One indicator that is also considered important is air quality, although staff would like to work with the Washington Metropolitan Council of Government staff, state and local agencies to look for a measure that can be indicative of the changes to air quality related to growth policy.

Table 4.2. Illustrative Sustainability Indicators

	Name	Confidence – Data Accuracy	Data Avail-ability	Geographic Sensitivity	Influenced by Growth Policy?	Relation to Community Livability
FACILITY ADEQUACY	**Mobility-** Policy Area Mobility Score	Fair	Good	Good	Good	Good
	Accessibility – Number of Jobs within a 30 minute commute	Fair	Good	Good	Good	Good
	Access to Parks – Population within ½ mile of parkland	Good	Good	Good	Good	Good
	School Capacity -	Good	Good	Good	Good	Good
ECONOMY	**Balance-** Jobs to Housing ratio	Good	Good	Good	Good	Good
	Cost of Debt- Per Capita Debt Service	Good	Good	Fair	Fair	Fair
	Deferred Costs- Deferred capital projects	Fair	Good	Fair	Good	Good
ENVIRONMENT	**Green Area –** Ratio of Pervious to Impervious Surface	Fair	Good	Good	Good	Good
	Stream Health- Index of Biological Indicators	Good	Fair	Good	Good	Fair
SOCIAL EQUITY	**Affordability -** Percent of Households paying more than 30% of income for housing*	Good	Good	Good	Fair	Good
	Income Gap – Difference between the household income for the top and bottom 20% of population	Good	Good	Poor	Fair	Good
	Job Availability – Labor Force Participation	Good	Good	Poor	Fair	Good
	Education – Percent of population with post-secondary education	Good	Good	Good	Good	Good
	Public Health- Obesity and Asthma Rate	Fair	Good	Poor	Good	Good

Recommendations

We face a tremendous challenge in the next decade: how to assure that all policy changes and physical investment in Montgomery County direct growth and development that is sustainable. We suggest the following actions to begin meeting that challenge:

- Work towards adopting a definition of sustainability tailored to the needs of Montgomery County for use in our County programs.
- Expand the goals of the General Plan Refinement to include appropriate sustainability principles.
- Incorporate into the Planning Board's existing 2007 work program initial efforts at further refining sustainability principles for application to land use related plans and studies, such as the 355/I270 Corridor Study and the State mandated Water Resources Element, allowing for varied or divergent challenges in individual master plans.
- Using this experience, undertake a public involvement process to establish countywide indicators and targets as soon as feasible within upcoming fiscal year budgets.
- In the interim, use the illustrative sustainability principles in this report (see Table 2) to assess growth policy and the Capital Improvement Program.
- Apply sustainability principles and goals to the analysis and evaluation of trends and actions that are part of the ongoing Growth Policy and Capital Improvements Program evaluation process.

APPENDIX

What have other American communities done?
Montgomery County is not alone in considering "growth" within the larger community-based framework of Sustainable Development. Indeed, it was the United Nations World Commission on Environment and Development that first undertook to demonstrate the interdependence of economic growth, social development, and environmental protection by defining Sustainable Development in the 1987 Brundtland Commission Report Our Common Future:

> Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.

In the United States, several large municipalities have utilized this basic definition to guide their development in more holistic terms. Below are five examples, three from California, one from Florida and one from Colorado. These examples illustrate how sustainability has been defined and how it can be used to guide planning decisions.

Marin County, CA
Marin Countywide Plan
Marin County defines Sustainability as:

> Aligning our built environment and socioeconomic activities with the natural systems that support life. In the long run, sustainability means adapting human activities to the constraints and opportunities of nature. Central to this definition is meeting the needs of both the present and the future.[6]

To implement this definition, the plan states twelve Guiding Principles "to design a sustainable future":

1. **Link equity, economy, and the environment locally, regionally, and globally.**
   We will improve the vitality of our community, economy, and environment. We will seek innovations that provide multiple benefits.

2. **Minimize the use of finite resources and use all resources efficiently and effectively.**
   We will reduce overall and individual consumption, and reuse and recycle resources. We will reduce waste by optimizing the full life-cycle of products and processes.

3. **Reduce the use and minimize the release of hazardous materials.**

[6] http://www.co.marin.ca.us/pub/fm/CWP05_WEB/CWP_Intro.pdf

We will continue to make progress toward eliminating the release of substances that cause damage to natural systems. We will use a precautionary approach to prevent environmentally caused diseases.

4. **Reduce greenhouse gas emissions that contribute to global warming.**
   We will join other communities addressing climate change by lowering our greenhouse gas emissions. We will increase the use of renewable resources, which do not have a negative impact on the earth's climate.

5. **Preserve our natural assets.**
   We will continue to protect and restore open space, wilderness, and damaged ecosystems, and enhance habitats for bio-diversity.

6. **Protect our agricultural assets.**
   We will protect agricultural lands and work to maintain our agricultural heritage. We will support the production and marketing of healthy, fresh, locally-grown food.

7. **Provide efficient and effective transportation.**
   We will expand our public transportation system to better connect jobs, housing, schools, shopping and recreational facilities. We will provide affordable and convenient transportation alternatives that reduce our dependence on single-occupancy vehicles, conserve resources, improve air quality, and reduce traffic congestion.

8. **Supply housing affordable to the full range of our members of the workforce and diverse community.**
   We will provide and maintain well-designed, energy-efficient, diverse housing close to job centers, shopping and transportation links. We will pursue innovative opportunities to finance senior, workforce, and special needs housing, promote infill development, and reuse and redevelop underused sites.

9. **Foster businesses that create economic, environmental, and social benefits.**
   We will support locally owned businesses and retain, expand, and attract a diversity of businesses that meet the needs of our residents and strengthen our economic base. We will partner with local employers to address transportation and housing needs.

10. **Educate and prepare our workforce and residents.**
    We will make high-quality education, workforce preparation, and lifelong learning opportunities available to all sectors of our community. We will help all children succeed in schools, participate in civic affairs, acquire and retain meaningful employment, and achieve economic independence.

11. **Cultivate ethnic, cultural, and socioeconomic diversity.**
    We will honor our past, celebrate our cultural diversity, and respect human dignity. We will build vibrant communities, and foster programs to maintain, share and appreciate our cultural differences and similarities.

12. **Support public health, safety, and social justice.**
    We will live in healthy, safe communities and provide equal access to amenities and services. We will particularly protect and nurture our children, our elders, and the more vulnerable members of our community.

Marin County provides an excellent example of aggressive visionary Sustainable Development Principles that address the conceptual as well as the policy area issues.

City of Santa Monica, CA

Santa Monica Sustainable City Plan

Santa Monica uses the Brundtland Commission definition of Sustainable Development as part of their Guiding Principles to "provide the basis from which effective and sustainable decisions can be made."[7]

1. **The Concept of Sustainability Guides City Policy**
   Santa Monica is committed to meeting its existing needs without compromising the ability of future generations to meet their own needs. The long-term impacts of policy choices will be considered to ensure a sustainable legacy.

2. **Protection, Preservation, and Restoration of the Natural Environment is a High Priority of the City**
   Santa Monica is committed to protecting, preserving and restoring the natural environment. City decision-making will be guided by a mandate to maximize environmental benefits and reduce or eliminate negative environmental impacts. The City will lead by example and encourage other community stakeholders to make a similar commitment to the environment.

3. **Environmental Quality, Economic Health and Social Equity are Mutually Dependent**
   Sustainability requires that our collective decisions as a city allow our economy and community members to continue to thrive without destroying the natural environment upon which we all depend. A healthy environment is integral to the city's long-term economic and societal interests. In achieving a healthy environment, we should ensure that inequitable burdens are not placed on any one geographic or socioeconomic sector of the population and that the benefits of a sustainable community are accessible to all members of the community.

[7] http://santa-monica.org/epd/scp/guiding.htm

4. **All Decisions Have Implications to the Long-term Sustainability of Santa Monica**
   The City will ensure that each of its policy decisions and programs are interconnected through the common bond of sustainability as expressed in these guiding principles. The policy and decision-making processes of the City will reflect our sustainability objectives. The City will lead by example and encourage other community stakeholders to use sustainability principles to guide their decisions and actions.

5. **Community Awareness, Responsibility, Participation and Education are Key Elements of a Sustainable Community**
   All community members, including individual citizens, community-based groups, businesses, schools and other institutions must be aware of their impacts on the environmental, economic and social health of Santa Monica, must take responsibility for reducing or eliminating those impacts, and must take an active part in community efforts to address sustainability concerns. The City will therefore be a leader in the creation and sponsorship of education opportunities to support community awareness, responsibility and participation in cooperation with schools, colleges and other organizations in the community.

6. **Santa Monica Recognizes Its Linkage with the Regional, National, and Global Community**
   Local environmental, economic and social issues cannot be separated from their broader context. This relationship between local issues and regional, national and global issues will be recognized and acted upon in the City's programs and policies. The City's programs and policies should therefore be developed as models that can be emulated by other communities. The City will also act as a strong advocate for the development and implementation of model programs and innovative approaches by regional, state and federal government that embody the goals of sustainability.

7. **Those Sustainability Issues Most Important to the Community Will be Addressed First, and the Most Cost-Effective Programs and Policies Will be Selected**
   The financial and human resources which are available to the City are limited. The City and the community will reevaluate its priorities and its programs and policies annually to ensure that the best possible investments in the future are being made. The evaluation of a program's cost-effectiveness will be based on a complete analysis of the associated costs and benefits, including environmental and social costs and benefits.

8. **The City is Committed to Procurement Decisions which Minimize Negative Environmental and Social Impacts**
   The procurement of products and services by the City and Santa Monica residents, businesses and institutions results in environmental, social and economic impacts both in this country and in other areas of the world. The City will develop and abide by an environmentally and socially responsible

procurement policy that emphasizes long-term values and will become a model for other public as well as private organizations. The City will advocate for and assist other local agencies, businesses and residents in adopting sustainable purchasing practices.

9. **Cross-sector Partnerships Are Necessary to Achieve Sustainable Goals** Threats to the long-term sustainability of Santa Monica are multi-sector in their causes and require multi-sector solutions. Partnerships among the City government, businesses, residents and all community stakeholders are necessary to achieve a sustainable community.

These principles function largely as a statement of commitment to the goals and general implementation of Sustainable Development. While the guiding principles remain conceptual, Santa Monica has developed eight areas for which it has set performance goals and measurement indicators:

1. Resource Conservation
2. Environmental and Public Health
3. Transportation
4. Economic Development
5. Open Space and Land Use
6. Housing
7. Community Education and Civic Participation
8. Human Dignity

The structure of these goal areas and indicators will be addressed later in the discussion of indicators.

San Mateo County, CA

Sustainable San Mateo County Initiative

San Mateo County provides a definition of Sustainable Development and follows up with measurement Indicators. For San Mateo:

> Sustainability is a shorthand term for viewing the relationship between our actions today and their affect on the future. Living sustainably means that we meet today's needs without compromising the ability of future generations to meet their needs.
>
> Sustainable planning recognizes the interconnections between the environment, economy, and society. A disruption in any one area affects the health of the other two. Discussions of sustainability often cite the three Es: Environment, Economy, and social Equity. At Sustainable San Mateo County, we focus on how all these areas affect the health of our region.[8]

[8] www.sustainablesanmateo.org

In addition to this definition, the Initiative explicates each of the "three Es":

Environment

Vital communities have clean air, water, and are free from pollution. A healthy environment is one where resources are replaced, not depleted. Healthy environments include natural spaces where non-humans can thrive.

Economy

Vital communities have strong economies. They foster sound businesses, government, and non-profit entities. They provide jobs, meet basic community needs, and offer a ground for innovation. A strong economy creates a solid foundation for society.

Social Equity

Vital communities meet the needs of all their citizens. They provide good schools, affordable housing, and the basic services that enable even the least affluent to live comfortably. A healthy society fosters a wide sense of individual responsibility for the community.

Denver, CO

Greenprint Denver Initiative

The Greenprint Denver Initiative was launched by the city's mayor to address issues of Sustainable Development. The Initiative defines Sustainable Development to:

> Balance economic, social and environmental impacts of our actions. Greenprint Denver is an effort to fully integrate sustainability as a core value and operating principle in Denver city government. [9]

The Initiative has seven Guiding Principles:

- Communicate sustainability as a public value and expanding the concept of the city as a steward of public resources.
- Support sustainability as a core business value to improve efficiencies in resource use, reduce environmental impact and invoke broad cultural changes.
- Incorporate "triple bottom line" analysis (seeking to balance economic, social and environmental considerations) into all city policy and program decisions.
- Set clear metrics of success and report on our progress moving forward through annual report cards.
- Pursue activities that support environmental equity and health for all citizens.
- Partner with community organizations, cultural institutions and businesses to achieve broad Impact.

[9] www.greenprintdenver.org

- Lead by example in City practice wherever possible.

The Austin Matrix for Evaluating the Capital Improvement Program

Austin's Sustainability Matrix was devised to help provide an indication to the community of whether or not a project would help move towards identified sustainability goals and objectives. After establishing these goals, Austin developed it matrix to equally evaluate environmental, economic and equity concerns. The matrix included the following 13 criteria:

Public Health/Safety (13 points)
Maintenance (13 points)
Socioeconomic Impact (10 points)
Neighborhood Impact (11 points)
Social Justice (12 points)
Alternative Funding (5 points)
Coordination with Other Projects (6 points)
Land Use (10 points)
Air Impact (4 points)
Water Impact (4 points)
Energy Impact (4 points)
Biota Impact (4 points)
Green Building (4 points)

Austin developed these criteria to evaluate, and assigned specific weighting to each. City government departments scored projects, while a City Sustainability Officer appointed by the City Manager reviewed scores. This ensured some consistency in what Austin recognized was a largely subjective process.

In discussing lessons learned, Austin did not view the matrix as a likely final determinant to project selection. However, the dialog resulting from the matrix served to greatly further understanding of sustainability within various city departments. For example, departments followed certain building guidelines more closely in order to achieve higher matrix scores.

The key points from Austin are that the concepts of sustainability, themselves subjective, can be systematically included to better evaluate capital improvement projects. And by creating greater dialogue between departments, the Austin example illustrates that tools like a matrix, which attempt to both identify and quantify impacts, effectively encourage the use of more sustainable practices. By articulating sustainability in its policies, by establishing clear sustainability goals and objectives in master plans, and by supplementing these policy efforts with analytic processes to evaluate capital improvement projects, the County could potentially direct development and provide infrastructure to more effectively balance economic, environmental and equity concerns.

Common Indicators from Around the U.S.

An indicator presents a trend over time to allow residents and decision makers to track and monitor select social, economic and environmental conditions. Indicator programs recognize that communities are complex, dynamic natural and human settlements and, therefore, attempt to measure progress toward specific quantifiable goals or targets. Indicators simplify vast amounts of information and data, and thus provide a common ground on which communities create relationships, build trust and consensus, and base decisions.

Numerous jurisdictions across the county have successful indicator programs, several of which were studied by the sustainable growth team: Sustainable Seattle; King County, Washington; Santa Monica, California; San Mateo, California; and Marin County, California. With the exception of Sustainable Seattle, which is run by a citizen-managed non-profit organization, these programs are operated by government entities.

These programs are successful largely because they represent the values, interests and concerns of key stakeholders in their respective jurisdictions. Redefining Progress, a non-profit organization based in California that tracks indicator programs nationwide, identifies 11 important characteristics of indicators:

1. Relevant. The indicator tells you something about the system you need to know, and it is meaningful to your community.
2. Valid. Understandable rationales exist for using both the specific indicator and for drawing conclusions from it.
3. Credible. Community members must believe it important to measure.
4. Measurable. Data must exist that are relevant and linked to goals/targets.
5. Consistent and Reliable. The data must be available over time.
6. Comparable. Community and civic leaders should be able to use the data to compare progress to other jurisdictions.
7. Understandable. Indicators must be simple and logical
8. Leading. Like the canary in the coalmine, an indicator should forewarn of developing problems.
9. Compelling and interesting. Remember, you must be able to communicate results and grab people's attention.
10. Engaging to local media.
11. Accessible and affordable.

Generating a sustainability indicators program, or at least identifying the framework for developing such a program, offers a logical compliment to effective growth policy. Indicators, developed by stakeholders from the community, business and government, provide an opportunity to clearly measure progress and evaluate success. Ultimately, indicators provide an additional tool for better policy formation, allowing decision makers to establish causal links between planning interventions and outcomes. Any developed indicators would then function as the backbone for the forthcoming Energy and Environment Functional Master Plan Process, during which additional quality of life indicators not necessarily limited to growth policy could be identified.

Common Indicators from Around the U.S.

The indicators included in this table represent those indicators we found most relevant to growth policy issues and for which Planning Board or County Council decisions on growth and development could alter an indicator's progress or trend. We broadly grouped similar indicators based essentially on the pillars of sustainability described above—environment, social/equity and economy—and further subdivided them to improve organization and readability. The table shows which indicators repeat and where categories of indicators are similar and at times identical. With the current county focus on green building, we added the draft Leadership for Energy and Environmental Design (LEED) for Neighborhood Design to illustrate measurable attributes of community design that could support sustainability.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
Environment – Land Use and Transportation						
New Construction in Urban Areas		Urban Center Residential Permits As Percentage of Total Permits	Percent of residential, mixed use projects within ¼ mile of transit nodes			
Land Consumption		Ratio of Land Development and Population Growth Percentage of New Housing Built on Redevelopable Land				A variety of housing sizes and types that achieves 0.5 according to the Simpson Diversity Index
Parks and Open Space	Number of city residents within 1/8 mile of open space	Acres Per 1,000 Residents	Acres of public open space by type Percent of	Acres per 1000 residents	Acres of county-owned neighborhood parks	Parks, green plazas or squares are at least 1/6 acre in area, and at least 150' in widthActive open space (playfields etc): of at

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
			households and population within ¼ and ½ mile of a park			least 1 acre lies within ½ mile walk distance of 90% of dus and non-residential projects larger than 7 acres-all parks shall average at least ½ acre in size
Modes of Travel		Percent of Population By Mode Choice For Work Trips Percent Change In Jobs & Bus Ridership Change In Average Commute Time For County Residents Percent Increase In Use – Commercial vs Non Commercial Vehicles	Number of trips by type Average vehicle ridership Annual bus and transit ridership Average Vehicle Ridership of businesses with greater than 50 employees Percent of residents who have used a sustainable mode in the last month	Commute in County By Mode	Modal travel split Countywide Modal split by County employees	Implement a TDM program that reduces weekday peak period by at least 20% compared without any TMD requirements Sites with transit service of 20 or more accessible transit service per day; in a MPO and transportation analysis zone where VMT per capita or SOV driving mode share is no more than 80% of the average of the metro region as a whole

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
Vehicle Miles Traveled		Vehicle Miles Traveled In County – Total & Per Capita	Total VMT	VMT Within County		Development within MPO and within Traffic Analysis Zones where VMT per capita or SOV driving mode share has been demonstrated to be no more than 80% of the average of the region as a whole
Bicycle Lanes and Paths			Percent of arterial streets with bike lanes, Total miles of bike paths		Miles of Class I and Class II bicycle paths	50% of dwelling units and business entrances are within 3 miles of at least 4 or more diverse uses using an existing biking network; or 50% of all buildings are located within ¼ mile walk to multi-use trail or Class I bicycle trail of at least 3 miles in length
Bicycle and pedestrian safety			Annual number of bicycle and pedestrian collisions with motor vehicles			
Traffic Congestion – Level of Service			Number of signalized intersections and local streets with LOS D or lower		Average congestion delay	

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
Residential/Mixed Use Projects in proximity to transit			Percent of Residential/Mixed Use Projects within ¼ or ½ mile of transit			Locate development that is near existing or planned transit service so that at least 50% of dwellings and business entrances are within ¼ mile walk distance of bus or streetcar stops or within ½ mile walk distance of bus rapid transit stops
Environment – Ecology, Energy and Public Health						
Air Quality		Number of Days In A Year In Each Air Quality Category		Number of Days Over California Standard	Greenhouse gas emissions from county government sources	Supports the design and construction of energy efficient buildings to reduce air pollution and environmental impacts from energy production; Demonstrate a minimum 10% of proposed building performance compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1.2004
Energy Consumption		Per Capita Energy Consumption – BTU's Per Year			Fuel consumption by County vehicles Number of zero or low-emission County vehicles	Reduce energy consumption and production by increasing the efficiency of the power delivery system; onsite energy generation system with peak electrical

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
					Electricity use per employee in County buildings Total MW of County photovoltaic systems	generating capacity of at least 5%; incorporate on-site nonpolluting renewable energy
Water Consumption		Total & Per Capita Consumption – Gallons Per Day		Per Capita Water Consumption	Water usage by County facilities	*Non-residential:* Employ strategies that in aggregate use 20% less water than the water use baseline *Residential:* Average flow rate of all lavatory faucets and shower heads must be <2.0 GPM; landscaping does not require permanent irrigation systems
Surface and Groundwater Water Quality		Proportion of Streams In Each Biotic Status Levels of Arsenic, Nitrate & Lead		Number of and amount of Organic Chemicals Found in Drinking Water	Water quality (Macro – invertebrate diversity)	
Impervious and Pervious Surfaces	Percent of land identified as urban or		Percent of Permeable land area		Percent of land preserved Miles of open	*Non-Roof*: Shade trees; paving materials with a Solar Reflectance Index (SRI) of

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
	residential		Percent of open space that is permeable		space trails	at least 29; open grid pavement system; place a minimum of 50% of parking spaces *Roof*: Use roofing materials that have a SRI of 29 or 78 depending on the roof slope; Green-vegetated-roof for at least 50% of roof area
Biodiversity				Total Number of Plant and Animal Species Listed as Rare Threatened and Endangered	Presence of key indicator species	Protect species and ecological communities-comply with Habitat Conservation Plan under Endangered Species Act
Tree Protection and Conservation			Percent of tree canopy coverage by neighborhood Percent of newly planted and total trees that meet defined sustainability criteria			Use native trees and plants

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
Social Equity						
Supply and Demand for Rental Units		Number of Affordable Rental Units By Income Group				15% of total rental units priced for 50% of area median income; at least 30% of rental units should meet 80% area median income
Home Purchase Affordability	% Market price of housing that is above affordable level	Gap Between Affordable Price For Median HH and First Time Buyer HH Compared To Median Home Value	Average cost of home ownership	Average cost of home ownership		10% of new for-sale housing is priced for households up to 80% of area medial income; 20% of households up to 120% median income
Existing Housing Units Affordable to Low Income Households		% of Countywide Housing Affordable to Low Income Groups	Percentage of households who can afford average cost of housing			
Economy						
Location of Employment		Percentage of New Jobs Created In Urban Centers	Percent of county employers who live in County			

Common Indicators from Around the U.S.

Indicator Category	Sustainable Seattle	King County	Santa Monica	San Mateo County	Marin County	LEED-ND
New Housing Units Built Through Redevelopment						
Balance of jobs and housing		Change In Jobs Per Housing Units In King & Surrounding Counties	Ratio of housing to jobs			Include a residential component equaling at least 25% of the development's total building sq.ft.; locate development within ½ mile walk distance of a # pre-development jobs;
Agriculture	Number of traditional farms Number of organic farms and Number of farmer's markets and vendors Acres in King County with Agricultural Zoning		Percentage of local produce served at County-owned facilities Annual number of farmers markets			Dedicate permanent and viable growing space and/or related facilities per square feet-related to residential development; alternative is to purchase shares in Community Supported Agriculture program; proximity to a farmer's market-1/4 mile

Design Excellence: Tools to Improve Growth's Contribution to Our Quality of Life

Bethesda

INTRODUCTION

The following discussion of design excellence is intended to address methods to achieve the objectives identified in the other papers included in the Growth Policy report. Design is not an end unto itself; it is the means by which we use the forces of growth and change to achieve objectives that we mutually set. As an example, if the report on sustainability identifies a set of objectives for the preservation of the environment, design excellence provides the tools to achieve those objectives in the best possible manner.

Planning in Montgomery County in the next century will require significant attention to design quality in community building. Directing development to more dense Metro station areas and the I-270 Corridor and away from rural areas is a hallmark of the General Plan …on Wedges and Corridors for Montgomery County. The County has a limited amount of available land for development. Preserving the Ag Reserve and the character of the existing communities continues to be a challenge. A significant portion of the growth in the future will occur through redevelopment of currently developed properties including the older retail centers. Another challenge would be to preserve and enhance the character of the major transportation routes. From an economic point of view, design excellence should also be part of maintaining the County's competitive edge in attracting quality businesses in the 21st century global market place. All of these are primarily design issues and require attention to design in community building for success as part of a comprehensive growth policy.

RECOMMENDATIONS

This report provides both short-term and long-term recommendations for achieving design excellence through sustainability goals, enhancing the public realm, improving our public infrastructure, and encouraging non-motorized mobility mainly by improving our planning and regulatory tools such as master planning, regulatory planning, public facilities and the CIP, and the promotion of good design and staff training.

Short-term Recommendations

Growth Policy-related recommendation

The language in the growth policy should include emphasis on design excellence when reviewing and measuring the impact of a development on the pedestrian facilities on the adjoining area. Any traffic mitigation measures should take into account not only the objective traffic standards but also give priority to the pedestrian environment with a focus on design excellence and creating safe, comfortable and attractive public realm for all users, especially when it comes to pedestrian and transit access to schools, libraries, recreations centers and other neighborhood facilities. *[Language to this effect has been added to the draft growth policy resolution.]*

CIP and Design Excellence

The County CIP process should be reviewed to identify opportunities to foster a greater focus on design excellence and better coordination among different agencies involved in the design and development of public infrastructure – roads, schools, libraries, recreation centers and other public facilities. Currently, the design of these facilities, and the impact of a proposed design on the adjoining community and the environment, is reviewed as part of the final mandatory referral review by the Planning Board. Due to the iterative nature of facility implementation, in most cases decisions about facility location and scope are made by the Planning Board and County Council prior to mandatory referral. When resources are available to pay attention to design details, it is too late to make changes without causing delays and adding extra costs. Early design coordination between Park and Planning and other agencies, starting by inserting design goals into the purpose and need (along with items such as environmental protection and improved safety and mobility) for the project should help reduce conflicts and create better design while saving time and money by eliminating successive redesigns and changes necessitated by the last minute reviews.

> The County Council could direct the Planning Board and the County Executive, to convene a design summit among different agencies involved in the design and development of public facilities to develop a consensus and commitment to design excellence as a core value in all public projects, and focus on how to improve design of public facilities through various means but more specifically through better coordination among agencies. *[Language to this effect has been added to the draft growth policy resolution.]*
>
> An outcome of this design summit could be the designation of one or more upcoming CIP projects as a demonstration project to help create a CIP process that fosters design excellence.

Mid-term Recommendations

Zoning Ordinance Reform

Emphasize design excellence and provide more focused and clearly articulated standards for better design in the new zones and the proposed rewrite of the Zoning Ordinance. Zoning Ordinance reform is already one of the work program items for the Planning Department. The Department intends to pursue design excellence as one of the major goals of the rewrite of the Zoning Ordinance, including development of new zones.

Design Protocol for the Planning Department Staff

Creating a design protocol for the staff and the applicants that would further elaborate on the design controls in the Zoning Ordinance and cover different situations as well as provide a set of best urban design practices. Currently, the zones in the Zoning Ordinance vary in the specificity of design controls, and the interpretation and application of these controls varies from project to project depending upon the intent of the applicant and the ability of the staff to negotiate certain level of design excellence through the review process (for example, are sidewalks part of the public use space?). This is partly due to the fact that the zoning text has to cover many different site conditions through the same language for all. Even when new zones are developed with more detailed design guidance, the issue of interpretation and the clarity in application of design controls remains. A design protocol for the staff and the applicants would help clarify the intent of the regulations and how to apply the controls in different site conditions. It would serve the same function as the current recreation guidelines used by the Site Plan review staff. But it would be different from recreation guidelines or typical design guidelines in that it would not specify a certain type of open space for each location, or level of fenestration on each façade. Rather, it would provide best practices for each type of open space, building type, or walkability factors. For example, it may provide the most desirable proportions of an urban open space (between 1:2 and 1:3), or the appropriate building height to street width ratios. It may also describe best example of urban design from around the country as a reference source and serve as a staff training tool.

Urban Design Compendiums to Master Plans for Mixed-use Centers

Prepare design guidelines for high-density areas targeted for compact, mixed-use developments. New master plans are providing more design guidance than the older plans. However, because master plans are long-term documents for larger areas they may not be the appropriate tools to provide the more detailed design guidance that is needed on a block-by-block basis, the kind that is provided in the new form-based codes. Also, the context may change as new developments occur in an area requiring modifications and adjustments to already approved design concepts and guidelines over time, something that is not easily done through master plan amendments.

We recommend that the Planning Department prepare design guidelines for high density areas targeted for compact, mixed-use developments. These design guidelines — urban design compendiums — would provide design guidance more detailed than the master plans for CBDs, town centers, metro station areas, and other mixed-use centers. They would be reviewed by the Planning Board and the County Council along with the master plans but would not be part of the approved master plans. The Planning Board would have the authority to make changes and adjustments to these documents as needed without the need for master plan amendments.

Sustainability

Take a leadership role in reviewing the LEED for neighborhood pilot program to develop standards in the design of green communities. LEED- ND (Leadership in Energy and Environmental Design for Neighborhood Development) standards have been proposed as part of a pilot program for developing standards for planning and development of more environmentally sensitive and sustainable communities. Planning for sustainability is best done early in the design of communities. Montgomery County could participate in this voluntary program and help develop new standards for sustainable neighborhood planning.

Quality of the Public Realm

Focus design excellence on the quality of the public realm. The quality of the public realm—streets, parks and open spaces, and the layout of blocks and buildings—forms the basis of our perception of a place. Although the quality of the private realm is important in that it impacts the health and welfare of its inhabitants, the use of energy, building materials and other resources, the public realm is the context in which the private realm exists. Achieving design excellence in the public realm would significantly improve the quality of all man-made environment in Montgomery County. The following three areas of the public realm should be the focus of design excellence:

- **Streets and Highways: emphasize design excellence in the proposed revisions to the County's Road Code.** The design of streets (the area of the public right-of-way) is a major determinant of the function and character of a place. The revisions to the County's road code currently underway represent a great opportunity to emphasize better design for walkability of our streets.
- **Public Spaces: enhance the design of public use spaces, green areas, and active and passive recreation areas required by the Zoning Ordinance.** The design of public spaces and space between buildings has a significant impact on the character of any development. Open areas should be the focus of design excellence in the development review processes.
- **Blocks and Buildings: enhance the findings for compatibility and provision of adequate, safe and efficient layout of buildings and open space specified in the Zoning Ordinance.** The layout of blocks and buildings provides the form and structure for the space between buildings. In most cases the experience of the public realm is impacted more by the spaces between the buildings than the buildings and plazas alone.

Pedestrian Access

Improve walkability in neighborhoods through pedestrian connections and enhancing the pedestrian experience. As the development pattern gets more compact in the future, especially in the redevelopment of shopping centers and mixed-use developments near high-density residential areas, the pedestrian accessibility and the quality of pedestrian experience will become more important. Improving walkability in our communities provides the opportunity to significantly benefit the overall health of the residents by encouraging alternatives to automobile travel.

DISCUSSION

Design excellence in the built environment is the tool to create high quality (safe, functional, attractive, and sustainable) places for living, work, leisure and transportation. A program of needs and constraints guides the design process, and the quality of the end product depends upon the shared vision and goals of all participants but especially the decision makers. Toady, the overarching vision of sustainability has emerged as a significant guiding principle and objective for design excellence in the built environment. Before discussing how to achieve design excellence, concrete terms should define the goals of design excellence in Montgomery County under the umbrella of sustainable design, and in ways that are understood by all stakeholders and participants in the development process. Sustainability should be defined at different scales (countywide, neighborhood, streets, block, buildings, and open spaces); and the most sustainable development pattern at each scale. A well-defined and clear set of objectives should set priorities and resolve conflicts among competing and conflicting goals.

Achieving design excellence is a complex and long-term undertaking that involves numerous stakeholders in both the public and the private sectors. This report focuses on how to achieve design excellence mainly through the public review process and better design of the public infrastructure. We propose that the following four principles guide the design excellence initiative in Montgomery County:

- Design excellence is a core value in the process of community building in Montgomery County
- Sustainability is a guiding principle for land use planning and design
- The public realm is an important concern for design excellence
- Pedestrian access should be a major focus of community development

Importance of Design

Design Excellence and the Growth Policy

This growth policy document proposes a new way to look at growth management. It has been developed with the belief that growth policy should not be about the adequacy of infrastructure alone. It should also address the quality of that infrastructure, and reflect the fact that good design is the tool to achieve all the other goals of the growth policy

including sustainability and better quality of life. More than that, it is about expanding our focus beyond the characteristics of things – roads, schools, etc – to more broadly include the experience of the people going about their daily lives. In some ways, Montgomery County is a pioneer in this approach since we have not found many other jurisdictions that have taken such a comprehensive approach to growth management. Therefore, some of the ideas presented here may need to be modified and refined as we implement this broader view of growth management. Even though it adds more complexity to the growth policy, we still believe that a comprehensive approach is the right way to go about managing growth.

Quality of Life

Good design is a growth management issue because growth is fundamentally a quality of life issue. Growth is never neutral. It is going to have an effect on the community's quality of life—positive or negative. Growth management is avoiding, minimizing, and mitigating the negative impacts and maximizing the positive aspects of growth. Good design is one of the tools to help manage the desired growth and improve the quality of life of the community. We want good growth, not bad growth, and design quality is more often the only difference between the two.

Economic edge

From a purely economic point of view good design is extremely important in terms of what it can do to help increase the County's competitive edge in attracting quality businesses and workers in the twenty-first century global market. Good design is one of the most cost effective ways to achieve that edge. Now that Montgomery County is moving from the green field development phase to a redevelopment phase, the design and character of that development is going to be even more important than it has been in the past. Research has shown that a better-educated professional segment of the population is attracted to places that have the energy and vibrancy associated with well-designed places for living, working and leisure activities. The new generation of workers is looking for more diverse and attractive places to live and work. And this group can move to other places that offer such qualities far more easily than their parents' generation did.

Walkability

In the past the County's approach to growth management has generally been concerned primarily with the quantity and timing of infrastructure delivery needed to support certain levels of growth and redevelopment. The design quality of the growth and especially the quality of the needed infrastructure was not evaluated as part of biennial growth policy discussions. We believe that we need to look at growth management in a more comprehensive manner and analyze not just one factor such as traffic congestion or school crowding but also the overall quality of life. While pedestrian amenities are considered in detail during mandatory referral reviews and subdivision cases, pedestrian consideration in growth management has historically been performed by policy-level tradeoffs among traffic congestion levels, pedestrian crossing times, and the equivalency between vehicle trips and non-auto amenities. In addition to providing an assessment of the adequacy of the infrastructure, growth policy should more proactively evaluate how walkable and safe our communities are for pedestrians and

other non-motorized transportation, and how more walkable places can reduce our reliance on single-occupancy vehicles and increase pedestrian accessibility to schools and other neighborhood facilities.

Well-designed transit

Transit must be well designed to compete with the single occupancy car travel. It must be well designed in every way possible including time advantage over private auto travel. The *relative transit mobility* index introduced in this growth policy is a step in the right direction to addressing this need. Productive ways to address (not eliminate) congestion include giving people more choices through better transit and land use coordination — by making land use and transit work with each other, not against each other.

Cost and benefit

All development has certain costs and benefits: economic, cultural, social, and environmental. These costs and benefits can be: intentional and unintentional; tangible and intangible; explicit and implicit; short-term and long-term; avoidable and unavoidable. Bad design has additional costs. It is very expensive in the long-term, more so for the community than the developer since a larger share of these costs is borne by the community. For example, an owner can get rid of a building that doesn't have economic value anymore (sell at a loss, or even abandon it). But the community doesn't have that option, and suffers the negative consequences (loss of value for adjoining properties, unsafe conditions) for a much longer period. Even the short-term costs to the developer are ultimately passed on to the community in higher rents, prices of goods and services and other ways. That is why we should be more concerned about the costs of bad design.

The other side of that coin is benefits of good design. Good design can bring some additional benefits to both the developers and the community. For the developer the benefits might be more short-term and purely economic. For the community a good project can be a benefit to the surrounding properties (economic), a source of affordable housing (social) and may have a great open space or amenity (cultural) that would be there for a very long time.

The Growth Policy is an appropriate tool

Although our master plans and the Zoning Ordinance are forward looking and based on the up-to-date planning and design thinking when written, advances and new techniques occur at a more rapid pace. With a shelf life of 15-20 years, the master plan timing is not flexible enough to respond to development demands and advances in current sustainability thinking. Growth policy is a more flexible tool than some other controls, is reviewed more often, and can be used to supplement our master planning and zoning tools. Also, as development gets more complex, we will need all the tools available to us in order to manage growth in the best possible way. Growth policy is one of the tools and we should take full advantage of its potential uses in creating better communities.

TOOLS AND PROCESSES

Our efforts to manage growth and achieve design excellence must occur within the existing framework of various laws, policies and past practices. This framework consists of tools and processes each of which is appropriate for certain purposes, and is applied at various geographic scales and stages of the development process. Some of them are more general in nature while others are more detailed oriented. The following discussion outlines these tools and processes available to us for managing land use and development in Montgomery County.

Tools: Master Plans, Zoning Ordinance, Road Code, and Design Guidelines

Master Plans
At the countywide and regional level, the County's master plan, *the General Plan … on Wedges and Corridors*, defines the land use and design vision of the county. It provides a very broad-brush macro-level vision and land use guidance. This vision is further refined in forty-four area master plans and sector plans. These master plans provide the next in-depth level of land use and planning guidance. They vary in terms of their style and degree of design guidance - some are very detailed while others are more policy and land use oriented. CBDs, Metro stations, and certain areas with special issues have sector plans, which cover a smaller geographic area and therefore provide the next more detailed level of planning framework.

Zoning Ordinance
After the area wide recommendations on land use are set in the master and sector plans, a significant portion of the implementation of the recommendations occurs through the Zoning Ordinance. The design guidance in the Zoning Ordinance is more detailed—on the site plan and building level even though it varies depending upon when each zone was created and what the prevailing best practice on designing development controls at the time was. Today, new techniques such as form-based codes or smart codes include higher design emphasis than the typical traditional Euclidean zones.

Road Code
The County's road code specifies the width, type and character of all public and private streets, including sidewalk areas, in the County. It is the major regulatory tool that deals with a significant portion of the public realm—the streets and sidewalks. To a large extent it determines the character of a place and how walkable and pedestrian-oriented it is going to be. The County is currently in the process of revising its road code. The level and the degree of emphasis on design guidance in the final road code will have a major impact on the quality of public realm in future developments.

Design guidelines
Design Guidelines can provide the most detailed level of design guidance for a limited area. They have been used in Montgomery County to provide detailed design guidance generally not possible, and sometimes not desirable, through master or sector plans, or even the Zoning Ordinance. They could be used to supplement master and sector plans in providing design guidance, which may be too detailed for master plans and

may be more flexible than allowed by the constrained legal structure of the Zoning Ordinance. Planning Board could approve guidelines for staff use to provide detailed guidance for streetscape, open spaces, recreational needs, compatibility of buildings, and environmental protection.

Processes: Development Plans, Preliminary Plans, Site Plans, and Mandatory Referral

In Montgomery County, the regulatory tools of Master Plans, Zoning Ordinance, the Road Code, and design guidelines are applied through the regulatory processes of project plans, development plans, preliminary plans, and site plans for private developments. Mandatory referral is the review process used only for public projects and can use the guidance provided in the master plans, the Zoning Ordinance, or the design guidelines. Design excellence for projects going through any of these processes can be achieved by including more focused design guidance in the findings that any project must make before the Planning Board or the Council can approve it. The existing findings required for approval could be expanded to emphasize design excellence. These findings could be tailored to the specific needs of an area starting with two broad geographic categories: inside the Ag Reserve; and outside the Ag reserve.

Inside the Ag Reserve

The following considerations could augment the goal of preserving agriculture in the Ag Reserve:

- Is the proposed use consistent with the intent of preserving agriculture?
- Are the proposed uses and structures clustered to save agricultural land?
- Does the proposal preserve rural character of the area by preserving view sheds and unique vistas, rustic roads, historic resources and their settings, and the setting and character of small towns?

Outside the Ag Reserve

The areas of high density such as CBDs, Metro stations areas, mixed-use town centers, and other commercial areas should be the focus of design excellence outside the Ag Reserve. For projects going through any of the regulatory processes (project plans, preliminary plans, site plans, or mandatory referral) existing findings should be augmented to include a greater emphasis on design excellence. These findings could focus on three major areas:

- Streets and highways (coordinate with the revised Road Code with standards for urban, suburban, rural and rustic roads):
- Public spaces (local parks and open spaces, public use spaces and amenities, spaces between structures); and
- Blocks and buildings

ATTRIBUTES OF GOOD DESIGN

The required findings in the project plans, preliminary plans, site plans and mandatory referral could be refined based on the following considerations, or attributes of design excellence. Although design excellence can mean many different things to different people, there are attributes of good design that research has consistently shown to be associated with good design in community building. These attributes generally fall in the following broad categories: economic strength; accessibility; affordability; healthy environment; diversity; safety; and urban design. The staff recommends the following six attributes as the most appropriate considerations for achieving design excellence through regulatory processes in Montgomery County.

1. **Safety:** Crime Prevention Through Environmental Design (CPTED) type review of streets and highways including sidewalks, trails, pedestrian bridges and other pedestrian facilities, individual building sites, and open spaces.
2. **Walkability** - interconnected street network with adequate and convenient sidewalks to public facilities, and the surrounding neighborhoods.
3. **Identity/character** - Unique design features for various types of streets, buildings and open spaces that give a special character to a place. Buildings and open spaces should have local character and be pleasing to see, feel, and be in. Major civic buildings should have distinctive architecture.
4. **Sustainability** - The design of our buildings, public spaces, and infrastructure should be guided by the best environmental stewardship principles including LEED standards for neighborhood planning, imperviousness caps, forest conservation, street tree standards, and best practices for stormwater management in high-density areas.
5. **Durability** - Our built environment must be durable and adoptable through better design with quality materials and workmanship, especially when it comes to the public realm.
6. **Context Sensitivity** - street design appropriate to its context (rural, rustic, urban, suburban), relationship of buildings and open spaces to their context, setback from adjoining uses and other considerations. As the development becomes denser in the future, context will become more significant since the potential conflicts between different uses and building forms may be more intense and would require better design skills on the part of the designers. A deeper understanding of the context helps identify when it is appropriate to blend in with the surroundings (AFI in Silver Spring) and when it may be appropriate to stand out (the Discovery Headquarter in Silver Spring).

DESIGN EXCELLENCE IN PLANNING FOR PUBLIC FACILITIES

Design excellence can also be achieved by improving the County's infrastructure planning and development process, and the Capital Improvement Program (CIP). This can be done by employing high quality designers, through competitions for major civic

projects, adopting stricter design standards for County facilities, and by including design guidance in the mandatory referral process. Another possibility would be to designate one project in each of the following areas in the County's CIP as a demonstration project with the idea of using this exercise to develop a rigorous design excellence program for public projects:

- Office building (Park and Planning headquarter building)
- Urban open space
- Library, recreation center or another community facility
- Road project
- Public parking garage
- Renovation of a county facility

PROMOTION AND TRAINING

A design excellence initiative would benefit from a promotional and training program to raise awareness of good design for developers, elected officials, professional staff, and the community. It could include the following items:

- Annual design awards program (results of project plans, preliminary Plans and site plans)
- Staff training on how to analyze a project from a public interest and regulatory perspective.
- Develop three dimensional design tools and standards for use in regulatory and master planning.
- Study existing projects and learn what works, what doesn't. Analyze built spaces, buildings and open spaces. Create an electronic library of good design in the County and elsewhere

APPENDIX A:
HOW TO MEASURE DESIGN EXCELLENCE

Measuring design quality is somewhat like measuring a community's quality of life. Except for some quantitative indicators, (economic health, affordable housing, average travel times, etc.) the qualitative measures for the design quality of a place, that give a place its local flavor, are specific to each community and are hard to distill and not widely available in the literature. The hard part in developing good design indicators is that it requires that we first define what we are trying to achieve, and what the desired quality of that end product is. Walkability, for example can be measured by measuring just the linear feet of sidewalk in a community, but measuring walkability should also assess sidewalks are lined with retail, building entrances, and open spaces to make walking a safer and more interesting experience.

The following is a list of design measures commonly used to evaluate some aspects of the design quality of the built environment. These and other indicators should be considered as Montgomery County develops its own measures of design excellence.

Measures of Design Excellence

1. Qualitative indicators that can be evaluated:

a. Quality of life indicators
b. Polling and sampling data
c. Public space use
d. Diversity of architects/landscape architects
e. Diversity of styles and projects
f. Recognition and awards by professional organizations

2. Quantitative indicators that can be evaluated:

a. Quality of life indicators
b. Walkability indicators
c. Health statistics
d. Design review timelines
e. Travel times
f. Public transportation use
g. Public parks use
h. Standard economic indicators
i. Diversity statistics
j. Housing market statistics
k. Pollution measurements
l. Environmental measurements
m. Public art projects

APPENDIX B:
IMPEDIMENTS TO GOOD DESIGN

Bad design does not just happen; it requires a lot of work. It is the result of a series of bad decisions made during a complex process by different participants at various times. These decisions are made not necessarily in bad faith, but they are certainly misguided and controlled by conflicting priorities and requirements of the various parties involved. Since nobody disagrees with the general notion that all developments should be well designed, the fact that there is so much bad design indicates that there must be some impediments to good design in the typical development process. Following are some of the factors that may hinder achieving the best possible design of a development.

1. **Lack of commitment to design excellence.** This impediment exists both in the public and the private sectors. It probably is rooted in the lack of awareness of the costs of bad design and the benefits of good design, especially when some upfront work on design can save significant money and time and create both short and the long-term benefits. On the private side it prevents developers from hiring good designers. On the public side it shows up in public land use policy and CIP process, which sometimes favors initial cost over long-term value.

2. **Upfront Costs**. Creating well-designed buildings, open spaces and public facilities requires higher upfront costs in terms of time, money and resources. In the design phase, the extra cost may come from higher consulting fees from better designers, larger multi-disciplinary design team, and more time needed to study and evaluate various options including new materials and building techniques. In the construction phase, higher cost may be due to better and more expensive materials, shortage of skilled labor for specialized or new construction techniques, and extra time and cost added by a more complex construction process such as saving adjoining trees or wetlands during construction.

3. **Lack of knowledge and design skills**. Designers and those reviewing and approving their projects may not have the knowledge or skills to raise questions that would lead to exploration of better design alternatives.

4. **Lack of a comprehensive design-oriented review process.** The current public review process often does not consider overall design questions and therefore does not require that better design alternatives be explored and evaluated.

5. **Lack of consensus or a shared vision**. The participants and decision makers come to the table with their own vision of what the appropriate form of development is, which creates conflicts in the development process. Most storeowners, for example, want parking right in front of their stores, and for stores to be visible from the highway. The community, on the other hand, may prefer stores more integrated into the community and oriented to pedestrians.

6. **Conflicting priorities of different stakeholders.** A developer may define the problem in terms of maximizing units and profits, while the community planner defines the problem as compatibility and environmental protection. Similarly, the developer's priority may be to deliver the project quickly and cheaply to reduce carrying costs and to capture the market before the demand changes. Achieving better design, however, may require more time to explore other design options.

7. **Regulatory controls and guidelines do not provide adequate checks when short-term market conditions prevail.**
Development based on market economics alone can lead to disposable or short-lived, less sustainable buildings and infrastructure. For example, high density mixed use development is desirable next to metro stations, but market conditions in some areas of the county support medium density townhouses resulting in far less green open space than would be provided with a more compact footprint of a mid to high-rise condominium building pattern.

8. **Lack of good design indicators.** Design by its very nature is subjective, and the results of any effort to achieve design excellence are not easily quantifiable, especially the intangible values of aesthetics, balance, composition and other purely design related components of the built form. The benefits of good design may be more readily apparent in a large signature-type project. But in most cases such benefits are subtler and require a certain critical mass of good examples over a period of time to have a material impact. The difficulties are summarized in "the value of urban design" by the Commission on Architecture and the Built Environment (CABE) as follows:

    a. "The problem of defining urban design on simple scale from good to bad, and within that coping with the fact that urban design is both a product and a process.

    b. The problem that good urban design-even more than good architectural design-generates benefits for adjoining sites and areas; therefore only a proportion of the benefit created by good design is enjoyed by those working in a particular development or visiting it as customers.

    c. Even those benefits enjoyed by workers and customers may not be transmitted as profits to companies, to the rents paid by occupiers, or the valuations placed on buildings by investors.

    d. Different stakeholders have different expectations regarding value."

APPENDIX C:
AIA COMMUNITIES BY DESIGN: 10 PRINCIPLES FOR LIVABLE COMMUNITIES

1. **Design on a Human Scale**
   Compact, pedestrian-friendly communities allow residents to walk to shops, services, cultural resources, and jobs and can reduce traffic congestion and benefit people's health.

2. **Provide Choices**
   People want variety in housing, shopping, recreation, transportation, and employment. Variety creates lively neighborhoods and accommodates residents in different stages of their lives.

3. **Encourage Mixed-Use Development**
   Integrating different land uses and providing a variety of building types creates vibrant, pedestrian-friendly and diverse communities.

4. **Preserve Urban Centers**
   Restoring, revitalizing, and infilling urban centers takes advantage of existing streets, services and buildings and avoids the need for new infrastructure. This helps to curb sprawl and promote stability for city neighborhoods.

5. **Vary Transportation Options**
   Giving people the option of walking, biking and using public transit, in addition to driving, reduces traffic congestion, protects the environment and encourages physical activity.

6. **Build Vibrant Public Spaces**
   Citizens need welcoming, well-defined public places to stimulate face-to-face interaction, collectively celebrate and mourn, encourage civic participation, admire public art, and gather for public events.

7. **Create a Neighborhood Identity**
   A "sense of place" gives neighborhoods a unique character, enhances the walking environment, and creates pride in the community.

8. **Protect Environmental Resources**
   A well-designed balance of nature and development preserves natural systems, protects waterways from pollution, reduces air pollution, and protects property values.

9. **Conserve Landscapes**
   Open space, farms, and wildlife habitat are essential for environmental, recreational, and cultural reasons.

10. **Design Matters**
    Design excellence is the foundation of successful and healthy communities.

APPENDIX D:
THE BUILDING FOR LIFE QUESTIONS
(FROM CABE, THE VALUE HANDBOOK)

Character

1 Does the scheme feel like a place with a distinctive character?
2 Do buildings exhibit architectural quality?
3 Are streets defined by a well-structured Building layout?
4 Do the buildings and layout make it easy to find your way around?
5. Does the scheme exploit existing buildings, landscape or topography?

Roads, Parking and Pedestrianization

6 Does the building layout take priority over the roads and car parking, so that the highways do not dominate?
7 Are the streets pedestrian, cycle and vehicle friendly?
8 Is the car parking well integrated and situated so it supports the street scene?
9 Does the scheme integrate with existing roads, paths and surrounding development?
10 Are public spaces and pedestrian routes overlooked and do they feel safe?

Design and Construction

11 Is the design specific to the scheme?
12 Is public space well designed and does it have suitable management arrangements in place?
13 Do buildings or spaces outperform statutory minima, such as Building Regulations?
14 Has the scheme made use of advances in construction or technology that enhance its performance, quality and attractiveness?
15 Do internal spaces and layout allow for adaptation, conversion or extension?

Environment and Community

16 Does the development have easy access to public transport?
17 Does the development have any features that reduce its environmental impact?
18 Is there a tenure mix that reflects the needs of the Local community?
19 Is there an accommodation mix that reflects the needs and aspirations of the local community?
20 Does the development provide for (or is it close to) community facilities, such as a school, parks, play areas, shops, pubs or cafes?

APPENDIX E:
WHITE PAPER ON DESIGN EXCELLENCE

November 8, 2006

MEMORANDUM

TO: Montgomery County Planning Board

FROM: John Carter, Chief
Community-Based Planning Division

PARTICIPANTS: Khalid Afzal, Marion Clark, Marilyn Clemens, Robert Kronenburg, David Lieb, Michael Ma, Calvin Nelson, Mary Beth O'Quin, Margaret Rifkin

SUBJECT: Design Quality in Community Building

PROBLEM STATEMENT

Planning in Montgomery County in the next century will require significant attention to design quality in community building. Directing development to more dense Metro station areas and the I-270 Corridor and away from rural areas is a hallmark of the General Plan …on Wedges and Corridors for Montgomery County. Montgomery County has a limited amount of available land for development. Redevelopment of existing areas including older retail centers is a focus of development. Preserving the character of the existing rural communities continues to be a challenge. The character of the major transportation travel routes could be significantly improved. These development conditions require attention to design in community building for success.

Existing regulations already provide a bonus density for including moderately priced dwelling units, work force housing, and amenities and facilities as an accepted practice in Montgomery County. Providing bonus densities requires quality design to establish compatibility with existing neighborhoods.

AUTHORIZATION IN THE ZONING ORDINANCE

The Montgomery County Zoning Ordinance provides some authorization for the Planning Board to address design issues. The CBD Zones provide the most significant opportunity for the review of buildings in central business districts. The Montgomery County Zoning Ordinance also provides authorization in select zones for the review of the layout of buildings, structures, and open spaces as part of the compatibility finding necessary during the review of site plans. The development standards (e.g. standards for building height, setback and open space) specified in all the zones provide another more limited method to address design standards.
The following paragraphs summarize the existing authorization in the Montgomery County Zoning Ordinance for the Planning Board to review design issues.

1. Section 59-C-6.212. Intent of the CBD Zones

(c) To encourage designs which produce a desirable relationship between buildings in the central business district, between buildings and the circulation system and between the central business district and adjacent areas.

2. 59-D-2.42. Findings for Approval of Project Plans

(b) It would conform to the approved and adopted sector plan or an urban renewal plan approved under Chapter 56.

(c) Because of its location, size, intensity, design, operational characteristics and staging, it would be compatible with not detrimental to existing or potential development in the general neighborhood.

3. 59-D-3.4 Action by the Planning Board Concerning Site Plans

(a) (3) The locations of the buildings and structures, the open spaces, the landscaping, recreation facilities, and pedestrian and vehicular circulation systems are adequate, safe, and efficient

(4) Each structure and use is compatible with other uses and other site plans and with existing and proposed adjacent development

(b) The Planning Board shall not approve the site plan if it finds that the development would not achieve the maximum of compatibility, safety, efficiency and attractiveness; and the fact that the site plan complies with all the stated general regulations, development standards or specific requirements of the zone shall not, by itself, be deemed to create a presumption that the proposed site plan is, in fact, compatible with the surrounding land uses and, in itself, shall not be sufficient to require approval of the site plan.

4. Development Standards in all Zones

The Development Standards for setback, building height, green space, public use space, and pedestrian facilities in the existing zones provide a limited set of design standards.

OTHER TECHNIQUES AND AUTHORIZATION

The following paragraphs summarize the techniques established by the Planning Board to address design issues outside the Zoning Ordinance.

Guidelines Established by the Planning Department

The Planning Department has addressed design quality by providing design guidelines for public art in central business districts, establishing guidelines for the provision of streetscape in central business districts, and guidelines for development in areas such as the Germantown Town Center. The Planning Department has also provided design services to other departments including the design for the relocation of Montgomery College in Silver Spring, and the selection of sites for public facilities.

Standards for Streets and Highways and Other Requirements

The approved Road Code with the Published Design Standards establishes the requirements for streets and highways in Montgomery County. In addition, standards for stormwater management facilities, forest conservation, and the preservation of historic structures and environmental settings have also been established.

DISCUSSION AND RECOMMENDATIONS

The following recommendations are intended to augment and enhance design quality in community building in Montgomery County.

1. Master Plan Recommendations

The master plan process provides a significant opportunity for the Planning Department to emphasize design quality in community building. The next set of master plans include portions of two corridor cities, three Metro station areas, and three neighborhoods. These small area plans need a significant emphasis on design quality. These master plans should include extensive use of design guidelines, and reliance on the use of three dimensional visualization techniques. The master plan outreach process could be supplemented by establishing advisors or focus groups from the design fields to assist the Planning Board and staff in preparing design recommendations.

2. Create New Zones with Expanded Design Expectations

To implement the recommendations in the new set of master plans, new zones should be created. These new zones would replace the existing TS-M and TS-R Zones at Metro stations with four Euclidean zones with expectations for high quality design. In addition, a new floating zone could be created for use in large commercial areas. The new zones include the following:

- Create one mixed-use floating zone for large, commercial centers with requirements and standards based on design (form based codes and performance zoning (0.5 to 3.0 FAR)
- Create four Euclidean Zones for transit station areas with the use of a Project Plan with specific requirement for consistency with master plan recommendations concerning quality design (0.5, 1.0, 2.0 and 3.0 FAR)

3. Design Guidelines

The Planning Department could expand the use of streetscape standards. Bethesda, Friendship Heights and Silver Spring have long established streetscape standards. Streetscape standards will be necessary for the Shady Grove, Twinbrook and White Flint areas to allow the use of special street lighting, special sidewalk paving, closely spaced street trees and other elements that will substantially improve the character of these areas. Streetscape standards should also be considered for other areas in Montgomery County.

4. Expanding the Site Plan Review Process

The site plan review process is authorized to consider compatibility. The use of the compatibility finding could be used in appropriate cases to consider building materials, location of windows in addition to the more traditional reliance on

massing of buildings, setback and building height.

5. Design and Performance Measures Included in Master Plans

Specific design and performance measures could be included in master plans. Examples of performance measures include the following:

- Amount of open space and public use space
- Imperviousness
- Number of trees planted
- Length of streetscape

5. Community Design Presentations to the Planning Board

Recent presentations of the status of public and private development in Clarksburg and Silver Spring provided the Planning Board with an opportunity to assess the quality of design in community building. This post planning and post occupancy evaluation practice should be extended to other areas.

6. Expanded Visualization Techniques

An emphasis on quality design will require extensive use of visualization tools including the following:

- Three dimensional computer techniques
- Computer animation
- Rendering and delineation
- Photo library of high quality public and private projects
- Public use space examples and evaluations
- Documentation for the public art program

7. Newspaper Articles by Staff Members Concerning Community Design Issues and Ideas

The staff could be encouraged to prepare articles concerning community design issues to be included in both national and local publications. These articles could be used to both advocate and publicize high quality design in Montgomery County.

8. Community Design Awards Program

A design awards program could be established to publicize private projects approved by the Planning Board. A list of approved projects would include participating architects, landscape architects and planners involved in the design.

9. Create a Design Summit

A design summit could be established to review the authorization, techniques and approach to improving the design quality in community building for Montgomery County. This summit could be a joint effort with a respected design organization such as the American Institute of Architects or a university such as the College of design of the University of Maryland.

STAFF DRAFT 2007 GROWTH POLICY
MONTGOMERY COUNTY PLANNING DEPARTMENT
STAFF CONTACTS

Gwen Wright, Acting Planning Director

Growth Policy Steering Committee

Khalid Afzal, Community-Based Planning
Melissa Banach, Strategic Planning
John Carter, Community-Based Planning
Mary Dolan, Countywide Planning
Roselle George, Research & Technology Center
Rick Hawthorne, Countywide Planning
Rose Krasnow, Development Review
Karl Moritz, Research & Technology Center

APFO Reform Team

Rick Hawthorne (Team Leader), Neil Braunstein, Cathy Conlon, Shahriar Etemadi, Eric Graye, Glenn Kreger, Karl Moritz, Kristin O'Connor, Jorge Valladares, Ronald Vaughn, and Piera Weiss.

Infrastructure Financing Team

Roselle George (Team Leader), Bill Barron, Fred Boyd, Pamela Dunn, Dan Hardy, Barbara Kearney, John Schlee, and Mark Symborski

Sustainable Growth Team

Mary Dolan (Team Leader), Malaika Abernathy, Tom Autry, Elza Hisel-McCoy, Chuck Kines, Wayne Koempel, Jay Mukherjee, Callum Murray, Tina Schneider, Nkosi Yearwood, and Matt Zisman.

Design Excellence Team

Khalid Afzal (Team Leader), Marion Clark, Larry Cole, Clare Kelly, David Lieb, Marybeth O'Quinn, and Joshua Sloan

Notable Contributors

Faroll Hamer led the Montgomery County Planning Department through most of the initial work on the 2007 Growth Policy. Staff of the Research and Technology Center (principally Lisa Tate and Pamela Zorich) prepared the *Montgomery County and Growth* report. The Strategic Planning Division (Melissa Banach, Bridget Stesney and Matt Zisman) coordinated the Growth Management Speaker's Series and the public forum. Bob Winick consulted on transportation modeling and Dick Tustian advised the Growth Policy Sterring Committee on numerous issues. Nancy Lineman and Valerie Berton provided community outreach and media relations.

Toward Sustainable Growth for Montgomery County:
A Growth Policy for the 21st Century

Final Draft 2007-2009 Growth Policy

Prepared by the Montgomery County Planning Board
The Maryland-National Capital Park and Planning Commission

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