CITY OF ROCKVILLE

ADEQUATE PUBLIC FACILITIES STUDY COMMITTEE

AGENDA

May 12, 2011
7:00 P.M.; Black-Eyed Susan Conference Room
City Hall

Time	Topic
7:00 pm	**Meeting Convenes**
7:02 pm	**Agenda Review and Modifications**
7:05 pm	**Discussion/Approval of the May 5, 2011 Meeting Minutes**
7:10 pm	**Discussion of Rockville Pike Plan recommendations and relationship with APFO/APFS –** Invited guests: David Levy, Chief of Long Range Planning, City of Rockville; Emad Elshafei, Chief of Traffic and Transportation, City of Rockville • Draft Rockville's Pike Executive Summary • Draft Rockville's Pike Appendix B: Research Summary • Draft Rockville's Pike Appendix E: CLV Analysis • Rockville's Pike Memo
9:00 pm	**Briefing on Corridor Cities Transitway (CCT) and other planned transportation improvements**
9:45 pm	**Discussion of future meeting agendas – input from Dennis and Soo**
10:00 pm	**Adjourn**

Note: Times shown are approximate

Executive Summary

INTRODUCTION

In the spring of 2007, the City of Rockville retained the services of ACP Visioning+ Planning (ACP), AECOM (formerly Glatting Jackson Kercher Anglin and Economics Research Associates), and Kim Littleton, AICP, to conduct an extensive public involvement program and develop *Rockville's Pike: Envision a Great Place*.

Rockville's Pike is an update to the Rockville Pike Corridor Neighborhood Plan that was adopted by the City as part of the Master Plan in 1989. The primary goal of the plan update is to establish a vision for the future of Rockville Pike and to recommend policies and implementation steps to turn that vision into reality. The vision in *Rockville's Pike* represents a major shift in the perception of transportation and land use in the study area, proposing a balanced use of travel modes, which will result in a more efficient transportation network and attractive community space.

1. The Study Area

The study area contains approximately 410 acres surrounding a 2.2 mile-long portion of Rockville Pike (Route 355). The study area is bounded on the north by Richard Montgomery Drive and on the south by Bou Avenue. To the north, the western boundary of the study area falls at the rear of the properties facing Rockville Pike; in the middle, it intersects the Woodmont Country Club property; and, to the south, it follows the eastern edge of Jefferson Street. The eastern boundary of the study area is located on the western edge of the Metrorail right-of-way.

2. The Process

From November 2007 to July 2008, the consultant team carefully orchestrated a public involvement process that incorporated several components: public workshops to receive community input; presentations to the community to report findings of the technical analysis; and a five-day charrette to integrate the input from citizens, stakeholders, and community leaders with the technical findings. The team also conducted interviews with stakeholders, special interest groups, the Mayor and Council, property owners, and the public. The plan created through this process will undergo further public review and is scheduled for adoption in 2011.

3. Why a Plan and Why Now?

The updated plan for the Pike is very timely, and not simply because the previous plan is 20 years old. Planning for the Pike is important for a variety of reasons:

- Traffic congestion is likely to get worse as the current roadway system is close to saturation at certain times of the day.
- City traffic standards for development review are likely to inhibit the continued redevelopment of the Pike.
- Rockville Pike remains an important retail destination located in a strong regional economic market with significant long-term growth potential.
- The undistinguished appearance of the Pike will make it less economically competitive with large-scale growth and development that is expected nearby, such as the White Flint area. Places along the Pike are aging, are designed primarily to accommodate cars, and are unfriendly to the pedestrian.

The combination of these four factors—the need to address traffic congestion, policy constraints on large redevelopment, the strength of the Pike's potential, and the opportunity to turn the Pike into a signature address for Rockville and the region—make *Rockville's Pike: Envision a Great Place* such a timely and vital undertaking. The Pike will redevelop gradually over time. This plan is intended to give community direction to property owners who want to redevelop.

More information on findings can be found in Appendix B: Research Summary. Please note that the data contained in this chapter was gathered in the fall of 2007 and in the spring and summer of 2008. Market conditions have changed since the beginning of the study. While these changes affect short-term considerations, they do not affect the long-term economic outlook for the Rockville Pike study area, which remains strong.

A. SUMMARY OF FINDINGS

The *Rockville's Pike* planning process incorporated detailed technical analysis about the transportation, land use, and economic conditions on the Pike. This section highlights several of the key findings that arose from the analysis:

1. Transportation

- Rockville Pike serves a dual transportation role in terms of mobility and access. It is both a regional corridor through Montgomery County, as well as an access road for local traffic trying to reach commercial land uses.

- Neighborhoods in the study area have few connections to the Pike itself. On the eastern side of the road, access is limited due to the Metrorail tracks. Woodmont Country Club obstructs the western side.
- Traffic congestion on the Pike is the worst when the demand for travel to retail establishments is highest.
- Rockville Pike is approaching its vehicle-moving capacity. It carries about 54,000 cars per day and, in peak travel directions, approximately 3,000 cars per hour.
- Local bus transit service provides coverage to most of the Pike study area, but it is largely compromised by a lack of a connected street network.
- Rockville Pike is paralleled by Metrorail's Red Line service, which includes one station, Twinbrook, in the Pike planning area and another, Rockville, immediately north of the planning area but within city limits. The Red Line services provide high-capacity transit connections to other parts of the metropolitan Washington region and, coupled with existing local bus services, offer outstanding potential as a means of mobility for people traveling to and from the Pike corridor.
- Safety is a concern for pedestrians, cyclists, and motorists alike. The overall crash rate on the Pike is significantly higher than the statewide average. Pedestrians and cyclists face barriers to movement due to heavy traffic volumes, high design speeds, limited pedestrian crossings, and insufficient signal timings.

2. Land Use

- The predominant land use pattern in the Rockville Pike corridor is in the form of individual parcels containing a single use (primarily retail), and surrounded by extensive surface parking. This development pattern uses a tremendous amount of land and forces multiple vehicle trips for anyone attempting to complete even the simplest errands. The commercial nature of the Rockville Pike corridor and an emphasis on movement by car has resulted in a place that lacks any type of open public spaces for gathering, such as parks, plazas, or squares.
- Impervious surfaces cover approximately 60 percent of the study area, with pavement covering more than 70 percent of the impervious surface area.
- The Pike has extremely long blocks that create a barrier between the east and west sides of the Pike and limit development opportunities.
- The Pike lacks a sense of place; it has the undistinguished look of generic suburban strip developments characterized by one to two story buildings. The undistinguished appearance of the study area is likely to affect the corridor's economic competitiveness in the region.
- The widely separated buildings along the Pike fail to create an attractive or walkable place and make walking (and the use of public transportation) challenging, unsafe, and unpleasant.

- Low density development along the Pike fails to take advantage of the proximity to the Twinbrook Metro Station. Low densities combined with poor walking conditions hinder the ability of Metro to become a viable alternative to the private automobile.

3. Economic Analysis

- Rockville Pike is a destination retail center for the surrounding region. It is located in a strong regional economic market with high average household incomes and good long-term growth potential. An analysis of market demand indicates that retail will continue to serve as the economic base for the corridor.
- Residential use is emerging along the Pike. The Twinbrook Station development is providing an important market test for development potential along Rockville Pike and will further adapt the market to a higher density product type.
- Office demand is limited along the Pike, and office uses will likely serve as a secondary component to development in areas that are not immediately adjacent to the Metro station. The I-270 corridor will continue to be the primary Class A office draw in the region.

4. Critical Lane Volume Analysis

The Critical Lane Volume Analysis conducted in the fall of 2010 revealed that the combination of the City's traffic standards and the existing and projected traffic (based on approved development projects) will not readily allow development consistent with the recommendations of this plan. Five of the key intersections in the corridor are already "failing", using the City's current approach, thereby effectively preventing development along the corridor.

5. School Capacity

Similarly, the City's Adequate Public Facilities Ordinance (APFO) establishes that no child-generating development can take place if the new residences will be within the boundaries of a school that has enrollment of 110% or more of the school's program capacity. At this time, Montgomery County Public Schools (MCPS) data show that all four elementary schools and the middle school in the Richard Montgomery cluster, which serves the majority of the Pike, either exceed 110% or are projected to exceed 110% within the next five years.

B. DEVELOPMENT PRINCIPLES

The *Rockville's Pike* public process led to the identification of ten principles that have consistently guided the formulation of this plan. They are:

1. Quality architecture and urban design will create a visually appealing environment along the Pike.

2. Roadway and intersection improvements on the Pike will allow for smooth, safe vehicular flow.
3. The Pike will feature a safe and pleasant environment for walking and biking.
4. Additional open space, landscaping, and environmentally friendly development will contribute to a "greener" Pike.
5. The Pike will feature vibrant, walkable mixed-use developments.
6. New public spaces on the Pike will provide a pleasant environment for community gathering and outdoor activity.
7. The economic success of Rockville Pike will be maintained by supporting both local and national retail and encouraging property redevelopment.
8. Rockville's Pike will be well connected with surrounding areas, providing choices for cars and pedestrians to access and move between properties along the Pike.
9. The Pike will feature efficient and reliable public transportation options.
10. Appropriate signage, lighting, and wayfinding tools will make the Pike an inviting and easily navigable environment.

References to the ten development principles are presented throughout this chapter as sidebars which link them to various components of Rockville Pike corridor plan.

C. A PLAN FOR THE ROCKVILLE PIKE CORRIDOR

Rockville's Pike represents a fundamental shift in thinking about transportation and land use in the study area. It is aimed at balancing travel modes (automobile, transit, bicycling, and walking) along Rockville Pike and at creating an attractive place that is able to support this balance. Key recommendations and considerations included in the plan are listed below.

1. The Core Recommendation: Redesign and Reconstruct Rockville Pike as a Multi-Way Boulevard

The proposed redesign and reconstruction of Rockville Pike as a multi-way boulevard meets the transportation, quality-of-place, and economic goals of the Plan. The multi-way boulevard will expand the palette of transportation options for visitors and residents traversing the corridor (i.e., the modal split). It will create a vibrant, attractive, and pedestrian-friendly place: a signature place for the community. Additionally, it will position the corridor to continue as a premier retail center in the region. The mechanics of the functionality of the boulevard are described below.

2. Principal Transportation Elements of the Multi-Way Boulevard

The multi-way boulevard is a time-tested way to address the transportation and land use conditions found in the corridor today. From a transportation standpoint, the multi-way boulevard will:

Development Principle #2: Roadway and intersection improvements on the Pike will allow for smooth, safe vehicular flow.

- Maintain the same 84' curb-to-curb section that accommodates the current six travel lanes as the primary roadway to move through traffic.
- Expand the current roadway to include a two-lane access road in each direction, parallel to and separated from the primary roadway, with one lane devoted to buses and bicycles and the other used as a general vehicle lane to accommodate local traffic movements.
- Enable traffic to move smoothly at intersections and between access lanes and the primary roadway.
- Protect bicycle and pedestrian movements.
- Relocate bus stops within 200' of intersections to facilitate access to pedestrian crossings.
- Realign both the Rockville Pike and Twinbrook Parkway intersection and the Edmonston Drive and Rockville Pike intersection to facilitate traffic flow and ease congestion.

3. The Benefits of the Boulevard Approach

The boulevard design benefits the study area in several ways. It will:

- Separate local and regional trips.
- Make the Pike safer for pedestrians and cyclists.
- Reinforce the role of the corridor as a significant retail center in the region.
- Integrate the Twinbrook Metro Station into the corridor and make public transit a more attractive option.
- Bring transit, walking, and bicycle user closer to the land uses of the Pike.
- Facilitate the transformation of the corridor into an attractive place.
- Create a healthier community in terms of a reduced carbon footprint, better air quality, and the promotion of more active lifestyles.
- Create the conditions for a shift in the transportation modal split along the Pike, from a high degree of reliance on the private automobile to more diverse transportation choices.

Development Principle #8: Rockville's Pike will be well connected with surrounding areas, providing choices for cars and pedestrians to access and move between properties along the Pike.

Development Principle #10: Appropriate signage, lighting, and wayfinding tools will make the Pike an inviting and easily navigable environment.

4. Study Area Transportation Elements

Beyond the creation of the multi-way boulevard, the Plan addresses additional transportation needs in the study area as a whole. It proposes to:

- Expand the street network to create a regular pattern of developable urban blocks.
- Space intersections to enable a greater number of safe pedestrian crossings.
- Establish a street functional hierarchy to support development standards and to determine how buildings relate to the street network. (The street hierarchy is the foundation of the form code proposed for the corridor.)

- Reduce parking requirements to enable residents and shoppers to park once and walk to their desired destinations.
- Facilitate movement through a coordinated and hierarchical signage system to guide vehicles approaching at different speeds, as well as bicycles and pedestrians.

5. Principal Land Use Elements

The Rockville Pike corridor plan integrates the transportation elements with a set of rigorous land use elements to guide the transformation of the corridor from an undistinguished suburban strip to a place that meets the excellence in design desired by the City. The proposed land use elements will:

Development Principle #3: The Pike will feature a safe and pleasant environment for walking and biking.

- Make the Pike walkable and provide safety and shelter to pedestrians in a vibrant and aesthetically pleasing environment. This will be accomplished by:
    - Moving buildings forward and providing a continuous yet varied enclosure at the sidewalk level;
    - Establishing height standards for different parts of the study area to respond to the characteristics of the street frontage in which buildings are located;
    - Creating a continuous sidewalk on both sides of the Pike, extending to all side streets;
    - Reducing the size of existing blocks as part of the redevelopment process; and
    - Changing the treatment of building frontages at special intersections.

Development Principle #6: New public spaces on the Pike will provide a pleasant environment for community gathering and outdoors activity.

- Mix uses, vertically whenever possible, in a single building and within individual blocks with ground floors reserved for retail uses and upper floors dedicated to living or working spaces.

Development Principle #5: The Pike will feature vibrant, walkable mixed-use developments.

- Make the Pike green through tree planting and landscaping that will turn the multi-way boulevard into the primary public green space in the study area.
- Expand green areas beyond the Pike through the creation of plazas, parks, and squares accessible to residents living in and near the study area.
- Make the Pike environmentally friendly through location-efficient land uses and development incentives tied to LEED certification, or equivalent.

Development Principle #4: Additional open space, landscaping, and environmentally friendly development will contribute to a "greener" Pike.

6. Redevelopment and Congestion Management Elements

The *Rockville's Pike* plan presents a transformative set of design elements intended to offset the demand for vehicle trips by favoring land development patterns that make the area more walkable and better able to capitalize on the potential for transit use. Redevelopment of the corridor is crucial to making this happen. At present, the City's system of growth management and the development review process may hinder the transformation envisioned by the plan. The Rockville Pike corridor plan

addresses these fundamental issues by introducing: a. mechanisms to affect development capacity and b. mechanisms to address congestion management.

a. Mechanisms to Affect Development Capacity

These include:

- Implementing engineering-based changes that increase traffic capacity as a result of the physical redesign of roadways and intersections.
- Increasing the Critical Lane Volume standard together with adopting a more flexible system of capacity allocation to reduce the number of intersections along the Pike that exceed the Comprehensive Transportation Review threshold, thereby permitting more development.
- Developing a broader set of transportation review measures that are focused more on the corridor and the study area as a whole than on specific intersections.

b. Mechanisms to Address Congestion Management

These include:

- Managing demand through the creation of a Transportation Management Association, an organization of businesses and employers created to foster travel options beyond single occupancy vehicles.
- Adopting and enhancing the existing City Transportation Demand Management program to reduce the use of single occupancy vehicles and encourage new alternative modes of transportation.

Development Principle #9: The Pike will feature efficient and reliable public transportation options.

- Improving transit service in the corridor through such means as better placement of transit stops and measures to improve service and enhance riders' safety.

7. Funding Mechanisms

Recommended funding mechanisms to pay for the public improvements include:

- Ensuring that the multi-way boulevard is a funding priority for Montgomery County and the State of Maryland.
- Creating Tax Increment Financing districts to provide the City with substantial bonding capacity to provide needed public enhancements and improvements in the redevelopment, such as streetscape, public amenities, and other development components.
- Expanding the City's use of in-lieu contributions to allow the construction of improvements at once and not merely rely on property development to generate small portions of this infrastructure.

8. Economic Strategies

Recommended mechanisms to maintain the viability of the Pike through the redevelopment process include creating Public-Private Partnerships and addressing retail and small business, office, and housing strategies.

D. THE ROCKVILLE PIKE DISTRICT FORM CODE

The Rockville Pike District Form Code presents the development regulations that govern building form and land use within the study area. The District Form Code is intended to be adopted into the Zoning Code of the City of Rockville (adopted December 15, 2008). Several of the recommendations related to the land use elements of the plan—including the height of buildings, their position on the site, their relationship to the sidewalks, and the design characteristics of the public realm—will be regulated and implemented through the District Form Code.

Development Principle #1: Quality architecture and urban design will create a visually appealing environment along the Pike.

E. IMPLEMENTATION

Rockville's Pike includes an extensive set of recommendations to facilitate the complex undertaking of plan implementation. Implementing this plan will require strong collaboration and cooperation among the City, Montgomery County, the State of Maryland, the private sector, and other organizations. It will also require a careful evaluation of appropriate funding mechanisms and options.

Overarching recommendations needed to implement the plan are organized as follows:

- General policy recommendations that set the stage for the implementation of the plan itself, including: adopting *Rockville's Pike: Envision a Great Place*; adopting the Rockville Pike District Form Code; and establishing strong regional partnerships to coordinate planning for areas outside of the boundaries of the Rockville Pike corridor.
- Recommendations on how to implement the transportation elements of the multi-way boulevard, including: partnering with Montgomery County to present the concept to the Maryland Department of Transportation and the Metropolitan Washington Council of Governments; developing a fully engineered street plan for the reconstruction of Rockville Pike; acquiring rights-of-way; and phasing construction.
- Recommendations on implementing the study area transportation elements, including: developing a fully engineered plan of street expansion and realignment and developing a wayfinding plan.
- Recommendations that facilitate the implementation of the land use elements of the plan, including: streamlining the development approval process, establishing the position of Town Architect, developing a streetscape plan, reviewing relevant regulations and policies for conformity with the plan, assessing other study area needs.
- Recommendations to enable redevelopment and address congestion management, including: acting upon the recommendations of the critical lane volume analysis report, forming and administering a transportation management association, adopting and enhancing city Transportation Demand Management (TDM) activities, and optimizing transit service through the corridor.

Development Principle #7: The economic success of Rockville's Pike will be maintained by supporting both local and national retail and encouraging property redevelopment.

- Recommendations to adopt funding strategies to implement the plan, including: securing State and Federal funds to create the multi-way boulevard, creating a tax increment financing district, and expanding the use of in-lieu contributions.
- Recommendations to sustain economic diversity, including: establishing public private partnerships, enhancing retail & small business opportunities, assisting small businesses to relocate in the study area, and continuing the inclusion of moderately priced units along the corridor.

F. CONCLUSION

The bold vision for the Rockville Pike corridor articulated by community residents and presented in this plan is a complex undertaking. It is likely to have a transformative impact on the physical ambiance of the corridor, on the flow of local and regional traffic, and on the economic vitality of the area.

Through physical and land use improvements and a new approach to regulation, the Rockville Pike corridor has the potential to become a signature place for the City and a great place for residents and visitors to enjoy. Through a great number of roadway design and congestion management improvements and the addition of some new streets, the Pike and streets throughout the study area have the potential for improved traffic flow, increased safety, and a better balance of transportation choices for private vehicles, transit and bicycle users, and pedestrians.

This close integration and mutually beneficial relationship of land use and transportation improvements gives strength and boldness to the community vision. It is the key to transforming the Rockville Pike into the thriving and vital place the community wants and the prosperous economic engine the community needs.

Appendix B – Research Summary

INTRODUCTION

This chapter outlines the findings of the research conducted by the consultant team. It is organized in the following sections:

A. Transportation
B. Land Use
C. Economic Analysis
D. School Capacity

A. TRANSPORTATION

1. Overview

Rockville Pike serves a dual role—it is an arterial road designed to move traffic from one part of the region to another, and it is also a significant retail center that attracts customers from throughout the region and generates numerous local trips.

Rockville Pike has been well built and engineered to perform its role as a traffic arterial during the work week. Even in the afternoon commute time, traffic congestion (as measured by overall delay at intersections) falls within reasonable levels of service. This occurs in spite of heavy traffic volume because many of the Pike's intersections have been engineered through turn lanes and timing of traffic signals to move traffic along the road. Corridor-wide movement is slowed down considerably by increased delays at intersections, mostly a function of intersections needing to accommodate traffic into and out of retail establishments. When this begins to happen, the crossing movements compete for traffic signal time; the longer cross traffic has to move (allowing access from retail establishments), the longer

Please note that the data contained in this chapter was gathered in the fall of 2007 and in the spring and summer of 2008. Market conditions have changed since the beginning of the study. While these changes affect short-term considerations, they do not affect the long-term economic outlook for the Rockville Pike study area that remains strong.

traffic on Rockville Pike must wait. Public perception of Rockville Pike includes concern over this phenomenon.

The true dual nature of the corridor begins to appear in the afternoons and is most notable on Saturdays, when the greatest amount of retail activity complicates the aforementioned traffic engineering efforts to move traffic along the Pike and contributes to greater corridor-wide congestion. The heavy regional movement of the corridor does not stop on Saturdays, but a greater number of retail customers (even greater than afternoons in the work week) entering and exiting from shopping centers means the traffic moving along the Pike waits longer at intersections.

Following this overview, the analysis of transportation in the corridor focuses on street network, traffic, transit, safety, and conditions of travel for bicyclists and pedestrians.

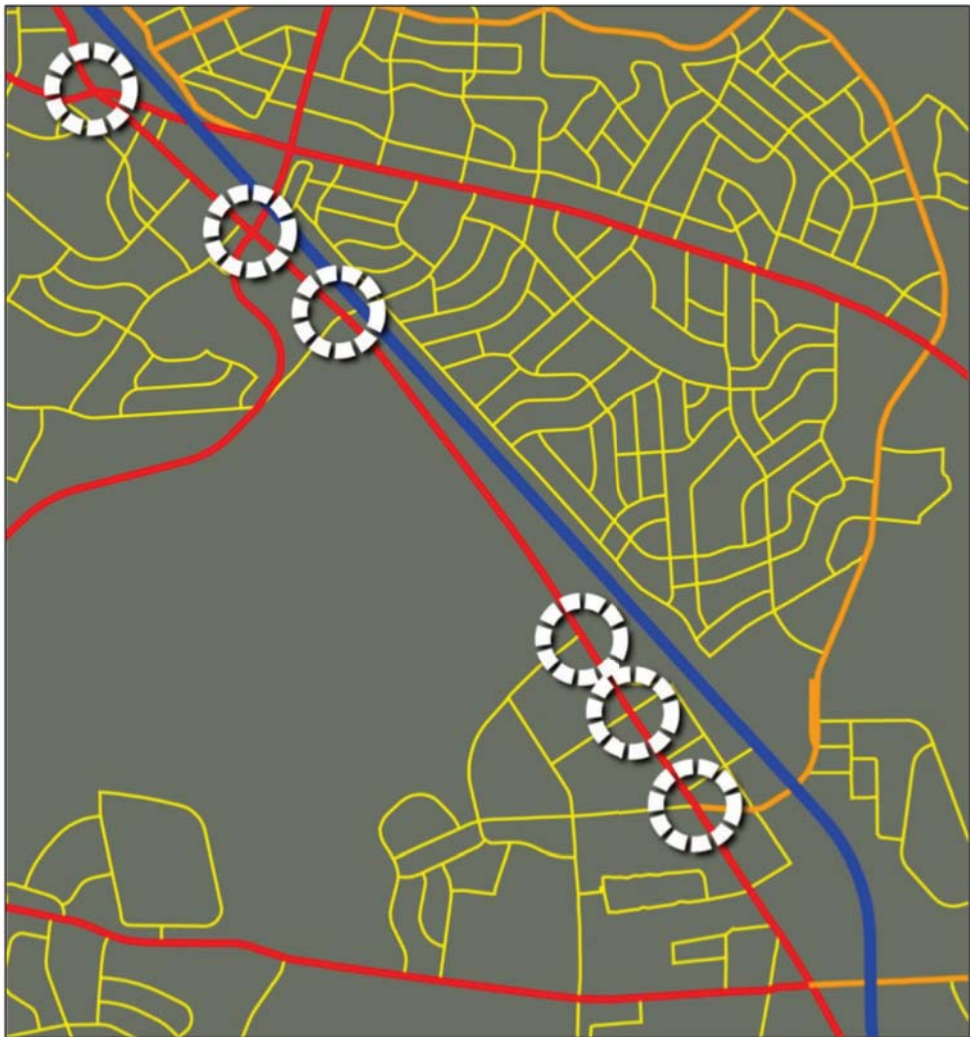


Figure 9.1: Street Connectivity Diagram *– This diagrammatic representation of the street network surrounding the Pike shows: the barrier created by the Metrorail right-of -way (in blue); the rich pattern of connected residential streets (in yellow); and the dramatic vacuum of connectivity along the Pike (limited East – West connectors are circled in white).*
Source: AECOM

2. Street Network

In the study area, the neighborhoods have few connections to the Pike itself. On one side of the road, access is limited due to the Metrorail right-of-way; on the other side, it is obstructed by Woodmont Country Club. While these features directly limit access to street network and Rockville Pike alternatives, the sections of the Pike to the north and south of the Country Club are also surrounded by neighborhoods to which they are not well-connected. East-west connections from the Pike do serve these residential areas, but it is along major thoroughfares such as Wootton and Montrose Parkways, causing a concentration of vehicular traffic on these arterial roadways. Although the north and south districts of the Rockville Pike corridor may have a greater physical envelope in which to add street network, their connections to street network are currently limited.

3. Traffic

Traffic can be viewed on two different levels: a 'micro' level, related to turning movements at intersections, and a 'macro' level, related to larger travel patterns through regional roads. In general, the primary direction of travel on weekday mornings is southbound toward Bethesda and Washington. Major Rockville Pike employment centers, such as the National Institutes of Health and the Bethesda Naval Medical Center, and the major employment center of Washington, D.C. all contribute to this movement. However, there is also notable morning peak travel moving northbound toward Rockville. Examining traffic counts at intersections over the last four years reveals that movements into Rockville have increased, due partly to employment in the City as well as in employment centers further north, such as Gaithersburg and Germantown.

Traffic movement is reversed in the afternoon peak period, with most traffic moving northbound and some moving southbound. In the afternoon, however, retail becomes an issue. While few establishments are open on the Pike during the morning peak period of 7:00-9:00 a.m., the afternoon peak period sees many more turning movements off Rockville Pike in both directions. This suggests that shopping centers, during retail hours, form a significant part of the overall regional travel pattern.

4. Corridor Performance

Additional information on corridor capacity can be found in Appendix E: Critical Lane Volume Analysis.

Overall, the corridor works primarily as an arterial roadway in the weekday mornings and plays more of a dual role in the afternoon periods and Saturdays. Its general performance (by mobility standards) is stronger in the morning, but this comes at the expense of connectivity, cross-street movements, and perhaps most notably, pedestrian and bicycle movements. What is notable here is that in the morning peak period, intersections are mostly doing well. This includes some of the larger intersections, such as Twinbrook Parkway.

The primary finding about this operational pattern is that traffic congestion, as measured by delay at intersections, is not always as present a condition as simple traffic volume. The timing of traffic signals along the corridor can be configured in a way to optimize traffic flow and efficiency of movement, even if the corridor is carrying large volumes of traffic. However, when movements other than peak period commute patterns are introduced to intersections, more time is needed in traffic signal cycles to handle these movements and high volumes on Rockville Pike experience longer delays.

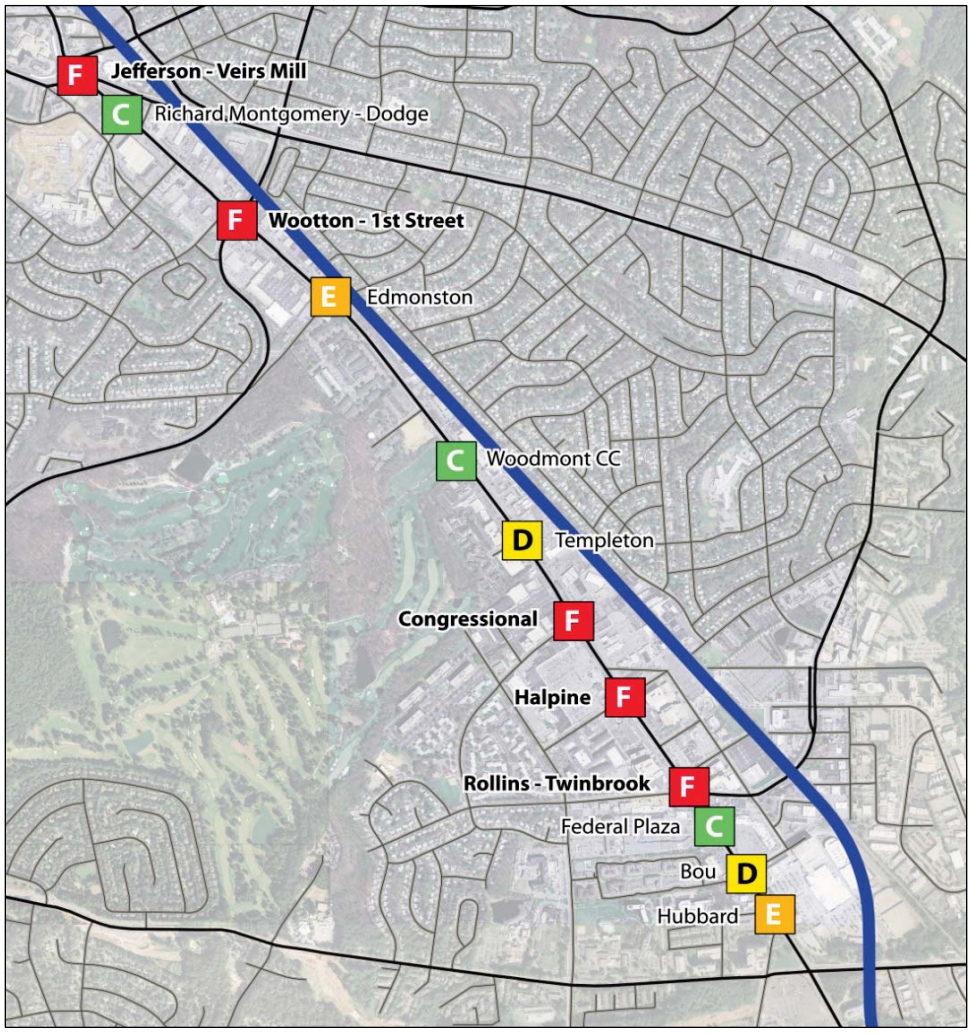


Figure 9.2: PM Peak Hours Statistics *– Planners use level of service as a tool for measuring the performance of transportation infrastructure, tying it to numerical measures that are expressed in terms of letter grades (A through F, with A representing the highest performance in a given measurement). In thinking of traffic congestion, this is a simple tool in summarizing the complex factors that create congestion in the first place and ties performance to a very comprehensible phenomenon for the end-user: delay, or time spent waiting in traffic.*

Though it carries heavy volumes, Rockville Pike generally performs well as a corridor in the mornings due to coordination of traffic signals. Rockville Pike begins to experience intersection levels of congestion in afternoon peak periods due to the presence of retail uses on the corridor.

Source: AECOM

The issue of congestion resulting from crossing and turning traffic becomes more pronounced in the afternoon peak period and highly pronounced on Saturdays. This is due to Rockville Pike's concentration of retail uses, in which many businesses are not open during traditional morning commute hours but are open on afternoons and Saturdays. The road's ability to handle traffic moving through the corridor is challenged when there are demands to move across it and from one part of it to another. The lack of a parallel street network means that nearly all trips must traverse Rockville Pike.

However, new growth and development lead to a demand for transportation, seen most notably in vehicular traffic. To the present, a responsive program of traffic engineering has been able to manage the seemingly contradictory conditions of a road near saturation and relatively good levels of service at intersections. Yet this approach has limitations and as Rockville Pike continues to mature, it is not reasonable to expect that the current levels of service reported earlier in this chapter can be preserved. It is also not reasonable to continue to emphasize expensive and exclusively vehicle-based, capacity-based improvements at intersections as mitigation strategies. Instead, level of service-based standards for development review should consider the true nature of a corridor: that it features many local destinations along a roadway serving a larger regional area, and that a need for movement should be evaluated hand-in-hand with the need for access that a corridor inevitably brings.

5. Transit Service

Transit service in the Rockville Pike corridor is a combination of local bus routes and heavy rail rapid transit. Montgomery County's Ride On transit provides the majority of bus service along the corridor. This includes Route 46, which follows Rockville Pike directly through the study area. The Washington Metropolitan Area Transit Authority (WMATA) serves Rockville Pike with bus and rail transit, with the Metro Red Line rail serving as a major parallel corridor to the Pike and offering two stations, Rockville and Twinbrook, that anchor each end of the corridor. Rockville is also served by the Maryland Rail Commuter (MARC) Brunswick line, and Amtrak stops at the Rockville Metro station, connecting Rockville to the national passenger rail network.

Examining service frequency and coverage shows that the Rockville Pike corridor area generally has reliable access to transit throughout the day. The proximity to the Metro Red Line is a particular asset to the corridor in providing options for regional mobility, especially as it is a direct parallel to Rockville Pike in leading to Bethesda and Washington. However, the Red Line uses a pair of at-grade tracks that allow limited crossings to the north and east, creating constraints for access to and from the Pike corridor. The Metrorail Red Line is a vitally important

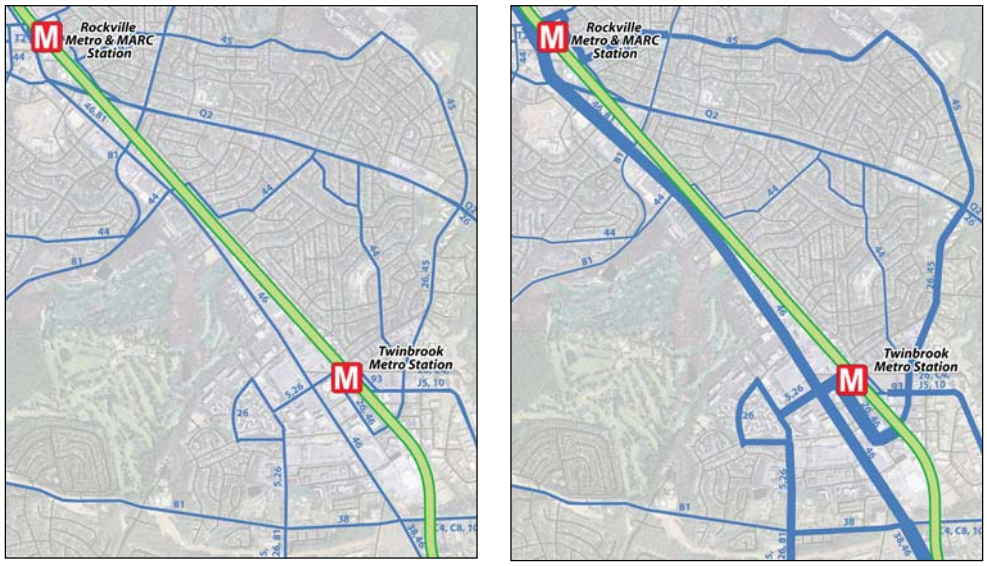


Figure 9.3: Transit Service *– Transit service in the Rockville Pike corridor is generally even and balanced, with a combination of routes serving neighborhoods and routes oriented to the main Rockville Pike corridor (left). Examining the service based on frequency (right, with wider lines representing more frequent service) shows that the disconnected network of the corridor limits frequent, direct service to Rockville Pike and Veirs Mill Road.*
Source: AECOM

component in the plan's policy recommendations for Rockville to focus on increasing the share of mobility handled by transit.

It is also useful to look at what path each transit route must follow. In general, the high number of turns along bus routes suggests that it is difficult to operate service efficiently; in addition, the long signal waits for crossing Rockville Pike imply that transit operations may be compromised in trying to access Metrorail stations. This suggests that street design and network connections make the direct regional connection of Metrorail more difficult to access.

The multi-way boulevard recommendation for shared bicycle and transit lanes allows transit service to utilize the Pike more regularly. Instead of a single transit route serving it, the dedication of transit lanes is intended to facilitate the increase in transit service up and down the Pike, allowing more frequent service to capture the higher ridership expected from increased development density and a mix of uses. This is a critically important component in the plan's recommendation for increased use of public transit, walking, and bicycling to manage travel demand: frequent bus service within the corridor (even if a bus route's final destination is outside of the corridor) will help Pike residents and visitors to travel more easily within the Pike and connect to the two Metrorail stations that provide greater access to the region.

Transit service will need to serve a fundamentally different role in urban mobility for the Rockville Pike corridor than it does today. The Metrorail Red Line is a high-capacity transit service but serves the entire Washington metropolitan area and as such is unlikely to be used for service from one Rockville Pike destination to another. Currently, bus routes are focused on neighborhood and regional connections to the Rockville and Twinbrook Metrorail stations and only one local route (Ride-On's Route 46) provides transit service up and down Rockville Pike itself. These transit services meet transportation needs of the area and reflect

Rockville Pike's current nature as a primarily retail corridor with automobile-oriented land uses.

As Rockville Pike evolves into a multi-use activity center based on the Plan's recommendations, transit will need to serve two primary roles:

1. Connecting the Pike to other parts of the Washington region, giving people working or doing business in the Pike corridor reliable transit-based commuter access;
2. Connecting destinations internal to the Pike with one another, including connecting the high-capacity regional transit nodes at the Rockville and Twinbrook stations to other locations along the Pike.

The Plan's emphasis on seeking a greater share of person trips being accommodated by non-single occupant vehicle travel modes means that transit to and from the Rockville Pike corridor must be complemented by reliable and frequent transit service within the corridor. Although specific operational plans of the Pike's two current providers of scheduled transit are not currently established, the vision of the Rockville Pike plan sees transit as a convenient way to move throughout the corridor, especially for distances longer than a half-mile. Bus transit routes that currently terminate at one of the two Metro stations could continue through the Pike corridor to the other station, adding another run of bus service to the Pike and decreasing frequencies by bundling routes along the street. As an alternative, a more conventional shuttle service could be used that serves the length of the corridor at frequent time intervals. Rockville will need to continue coordination with its transit agencies to ensure that transit service helps to meet the needs of the Rockville Pike corridor as it matures.

6. Safety

From 2004-2006, 350 crashes occurred along the Pike. No single location stands out as considerably more dangerous than another; crashes have occurred somewhat evenly along the Pike. However, the overall crash rate is significantly higher than the statewide average per Maryland State Highway Agency statistics. Over 140 of these crashes are rear-end collisions, implying that the speed differential between the arterial function and the commercial access expectation adds to overall hazards in traveling Rockville Pike.

Crashes involving pedestrians have occurred throughout the corridor as well, with 19 injuries from 2004-2006. Though pedestrian-related crashes have occurred the entire length of the corridor, a relatively high number has occurred at or near the intersection of Halpine Road. In most cases, the crashes were caused by a right-turning vehicle failing to pay attention as a pedestrian was crossing an intersection or driveway.

Only two crashes from 2004-2006 involved fatalities, and these did not involve pedestrians. During peak hours, especially in the afternoon, slower average corridor

travel speeds suggest that crashes may not be as severe. Nonetheless, the 45 mile-per-hour design speed of the road does lead to potentially greater severity of crashes in the off-peak hours. In fact, both fatal crashes occurred at night.

Table 9.4: Crashes and Severity at Selected Corridor Intersections from 2004-2006

Intersection	Total Number of Crashes	Number Involving Personal Injury	Number Involving Pedestrians	Number Involving Rear-End Collisions
Wootton Parkway	43	20	1	13
Edmonston Drive	42	17	3	21
Templeton Drive	23	8	1	16
Halpine Road	26	16	8	14
Bou Avenue	43	29	2	22

Source: Maryland State Highway Administration Accident Data

7. Bicycle Conditions

Rockville currently has a plan for a network of bicycle facilities, either through on-street bicycle lanes, signed bicycle routes where bicycle traffic is intended to share the main street with automobile traffic, or off-street paths and trails. While the full plan has not yet been implemented, it has established a framework through which remaining routes can be added or designated. Rockville's Bicycle Committee is actively engaged in promoting bicycle transportation and has expressed that the community is a generally bicycle-friendly environment.

The primary concern in the study area is Rockville Pike itself. In addition to being a crossing barrier for pedestrians, which complicates access from west of the Pike to the Metrorail stations and commercial land uses, the Pike's design, speed, and heavy traffic volume make cycling along the road unappealing. As traffic congestion and longer vehicle waits at Pike crossings suggest that vehicle travel may not always be an ideal choice, especially for short trips, the unwelcoming characteristics of the Pike—both from speed and roadway design—imply that this main commercial street cannot help 'complete' these bicycle trips.

However, the overall corridor study area is an important regional cycling link. Chapman Avenue connects directly to Montgomery County's Bethesda Trolley Trail, a part of the County's cycling network. The Centennial Trail along Wootton Parkway is a major component of Rockville's cycling master plan, tying a large residential area of the City to commercial land uses along Rockville Pike. These regional connections are important, but the lack of a bicycle route along Rockville Pike is a missing link between them.

General development policies have historically not accommodated cyclists in the study area, either. Bicycle parking is limited throughout the corridor, sometimes

provided by private property owners or managers but not always in easily accessible locations. The Metrorail stations also have limited bicycle parking, implying that commuters wishing to use Metro for longer-distance regional commuting may be limited in their abilities to rely on cycling for the Rockville-based portion of their commute.

8. Pedestrian Conditions

Pedestrian concerns are pressing as well. Presently, few of the intersections along the corridor have signal timing plans that allow for safe pedestrian crossing. This is a particular concern in the afternoon, when more traffic crosses or turns onto Rockville Pike. Pedestrians share crossing times with vehicles, meaning not only that they are given short times at intersections where signal timing has been optimized to favor Rockville Pike's flow, but also that the risk of accidents increases as turning traffic movements cross the pedestrian's path.

One principal complication here is that these intersections are the only crossing opportunities. Rockville Pike's heavy traffic volumes have led to a configuration of traffic signals to keep this traffic moving. Frequent crossing opportunities that are protected with traffic signals are counter to this concept: they stand to increase vehicular delay. As such, safe crossing opportunities are limited to the already-signalized intersections, some of which are far apart.

Pedestrian access to transit is another concern. In addition to the barrier presented by the Pike, access to Metro is complicated by the rail line itself. Metrorail is constructed on at-grade tracks, with crossings in the area limited to six streets. Even though the general study area includes both the Twinbrook and Rockville stations, such physical barriers make the effective walk shed from both of these stations fairly short.

Pedestrians face challenges even away from the public right-of-way of the Pike. The predominantly commercial land uses of the Pike have been developed in a way that allows easy vehicular access to buildings, including parking and circulation. This is typical of suburban environments throughout North America, but it does not provide a safe environment for pedestrians to reach buildings.

Figure 9.5: Existing Bicycle and Pedestrian Conditions – *Rockville Pike's pedestrian environment is limited. Pedestrians encounter narrow sidewalks, sometimes only four feet in width, and complicated intersection crossings that present challenges to disabled persons.*

B. LAND USE

1. Overview

Rockville Pike is a well-established and economically viable shopping corridor. It is also the main commercial core for the City of Rockville and a major source of revenue for the City, in terms of property and income taxes. Well-established national and local retailers are located there, together with car showrooms, ancillary automotive businesses, offices, hotels, and a limited number of residences.

In addition to the transportation challenges previously described, a number of issues and problems related to the physical character, appearance, and patterns of development along the Pike are now coming to the forefront of the community's awareness and are casting doubts on the ability of the Pike to sustain its success in the future.

2. Existing Land Use

The predominant land use pattern in the study area is in the form of single uses on single parcels (rather than multiple uses mixed horizontally or vertically on one parcel).

Land uses that fall under the umbrella of the Rockville Pike Corridor Mixed-Use Development designation include retail, office and industrial. Retail makes up over 58 percent of the total developed land. Transportation rights-of-way such as roads and the railway make up 20 percent of the total. Residential uses (shades of orange) account for 12 percent of the total. There are several multi-family residential developments located within the study area, including Congressional Towers,

Woodmont Park, and Woodmont Overlook. Private recreational uses (comprised of the Woodmont Country Club, shown in light green) make up the rest of the land use in the study area. Table 9.7, next page, shows the current breakdown of uses.

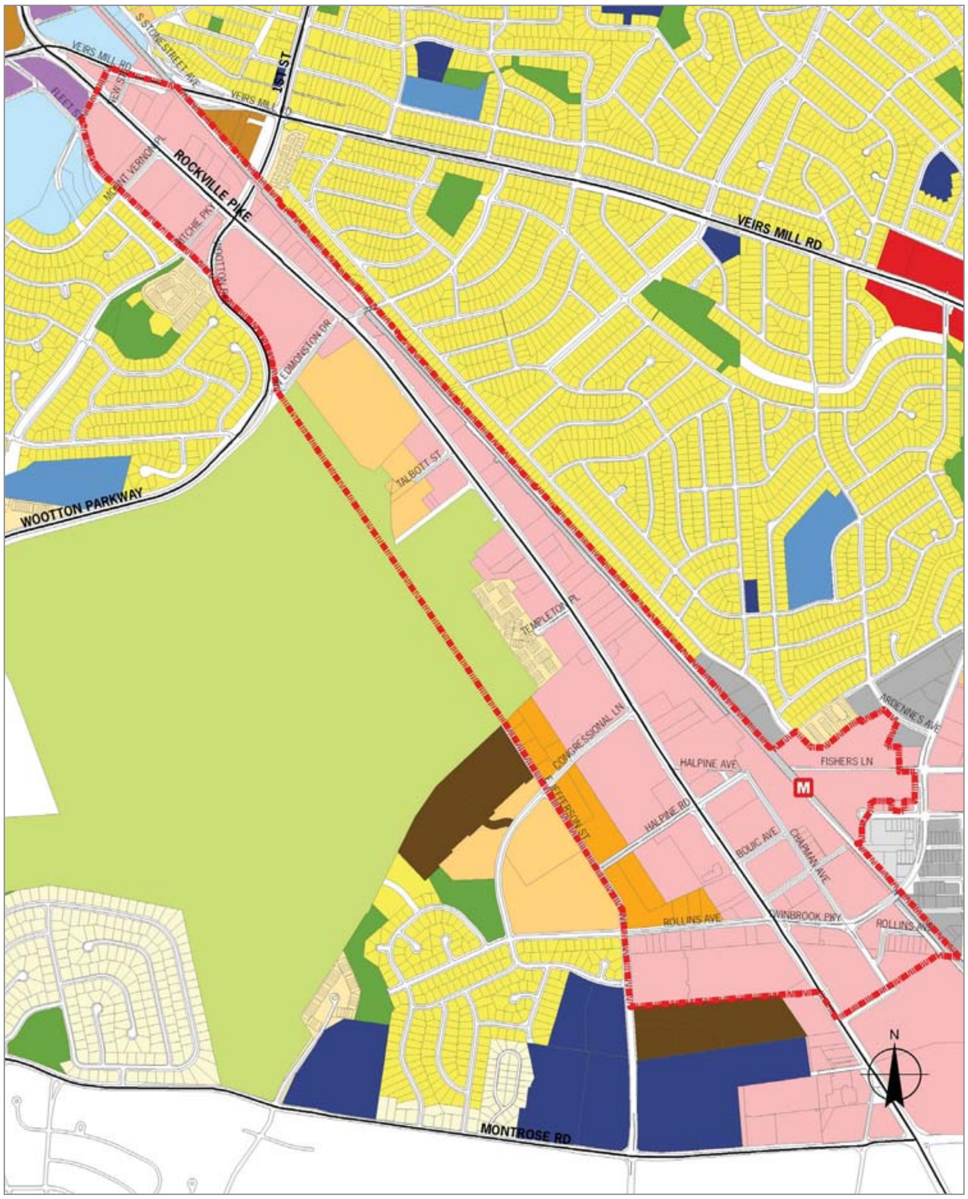


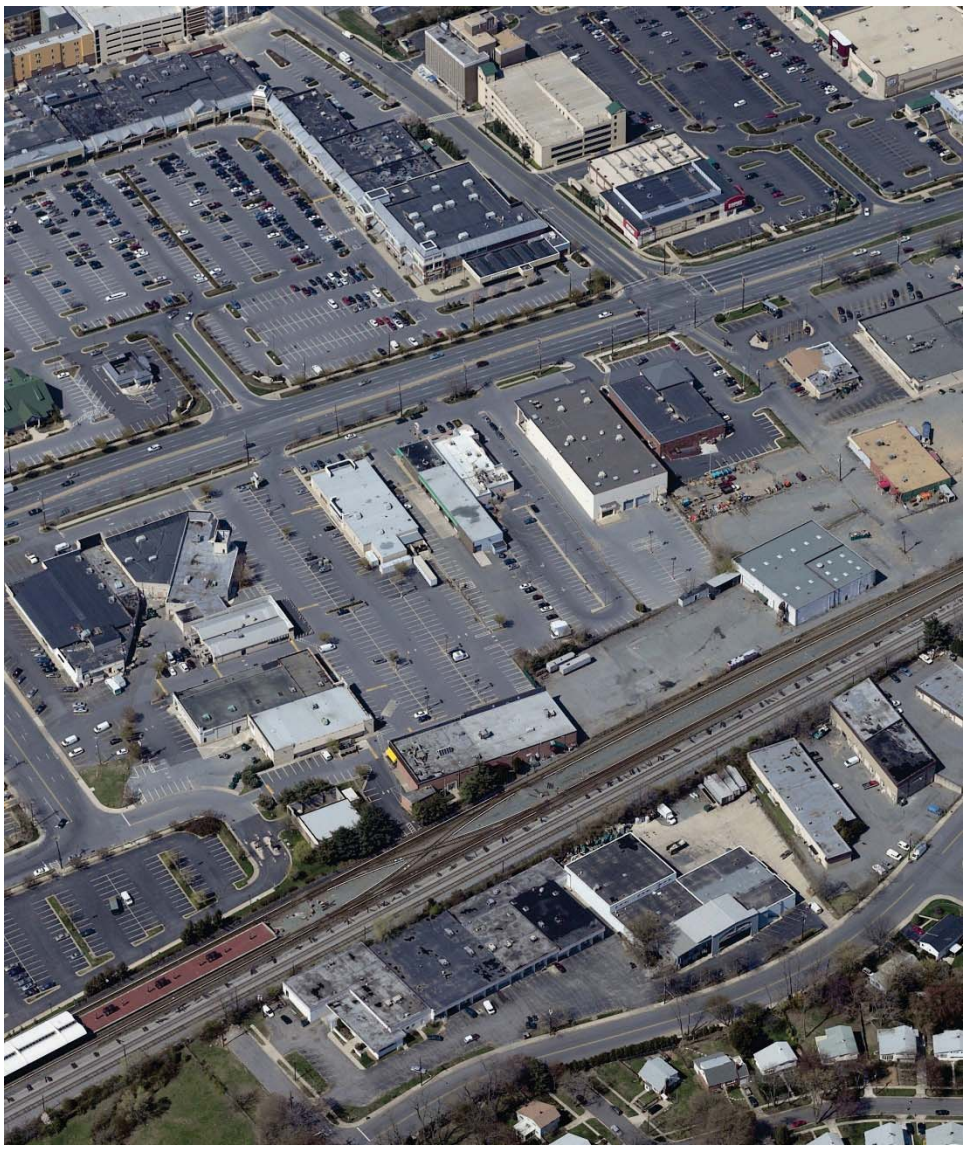
Figure 9.6: Existing Land Use Map – The map shows conditions that exist along the Pike today.
Source: ACP

Table 9.7: Land Use Breakdown in the Study Area

Land Use Category	Acres	Percent
Residential	49.46	12.1 %
Office	0.18	0.0 %
Retail	239.36	58.5 %
Private Recreational	37.69	9.2 %
Transportation	82.73	20.2 %
Total Land Use	**409.42**	**100 %**

Source: ACP

Figure 9.8: The Pike at Congressional Plaza – *Figure 9.8 provides a dramatic snapshot of the physical character that land uses along the Pike create: single use buildings surrounded by extensive surface parking.*



3. Topography

Grade changes are a minor factor along the Pike. The overall grade changes subtly, ranging from a high of 460 feet to a low of 370 feet above sea level. The highest elevation is located at the Village Green Condominiums and the lowest elevation is less than ¼ mile south within the Woodmont Country Club Property. This condition creates a dip in the roadway, and offers a scenic long view for residents at the peak elevation.

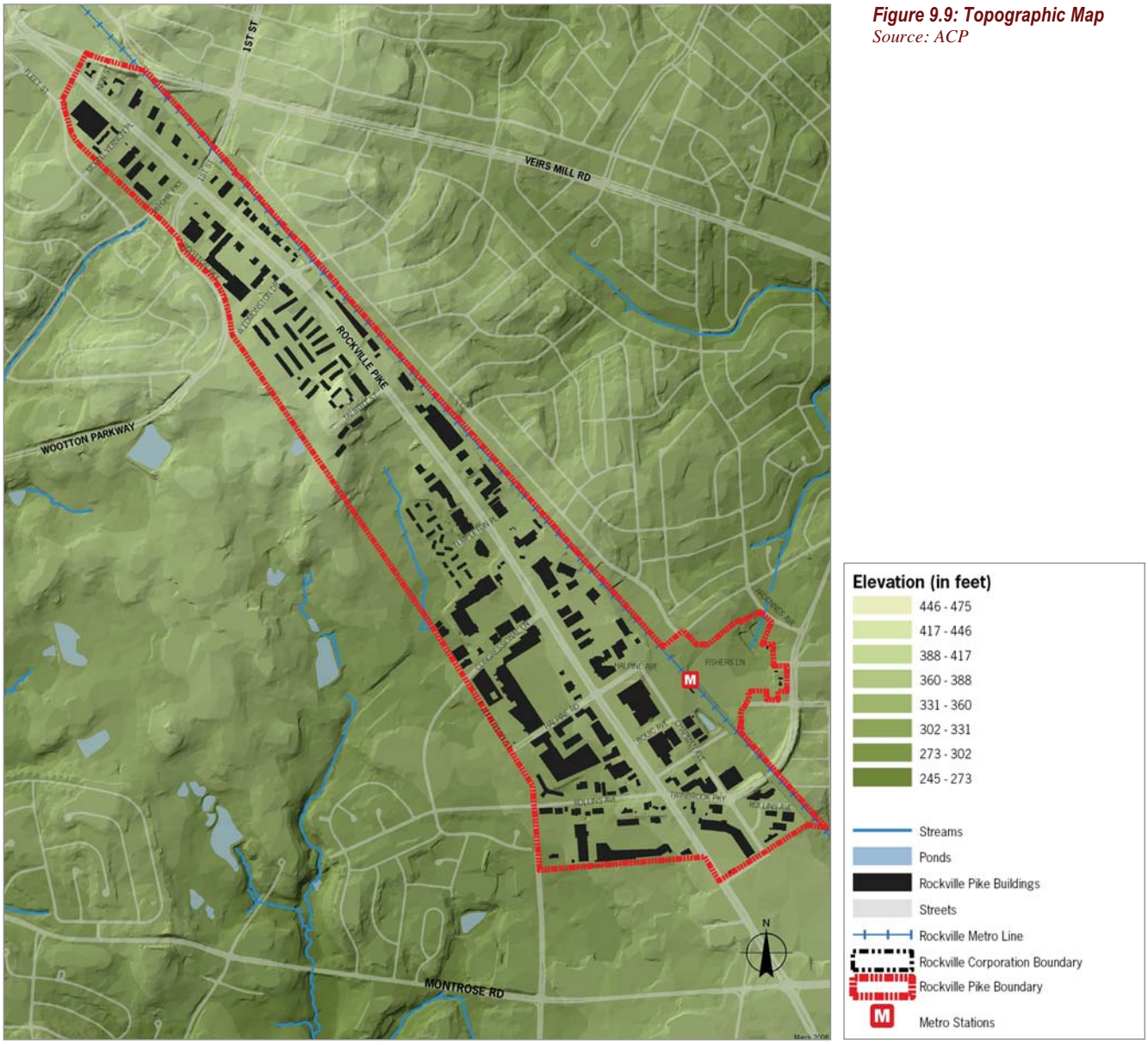
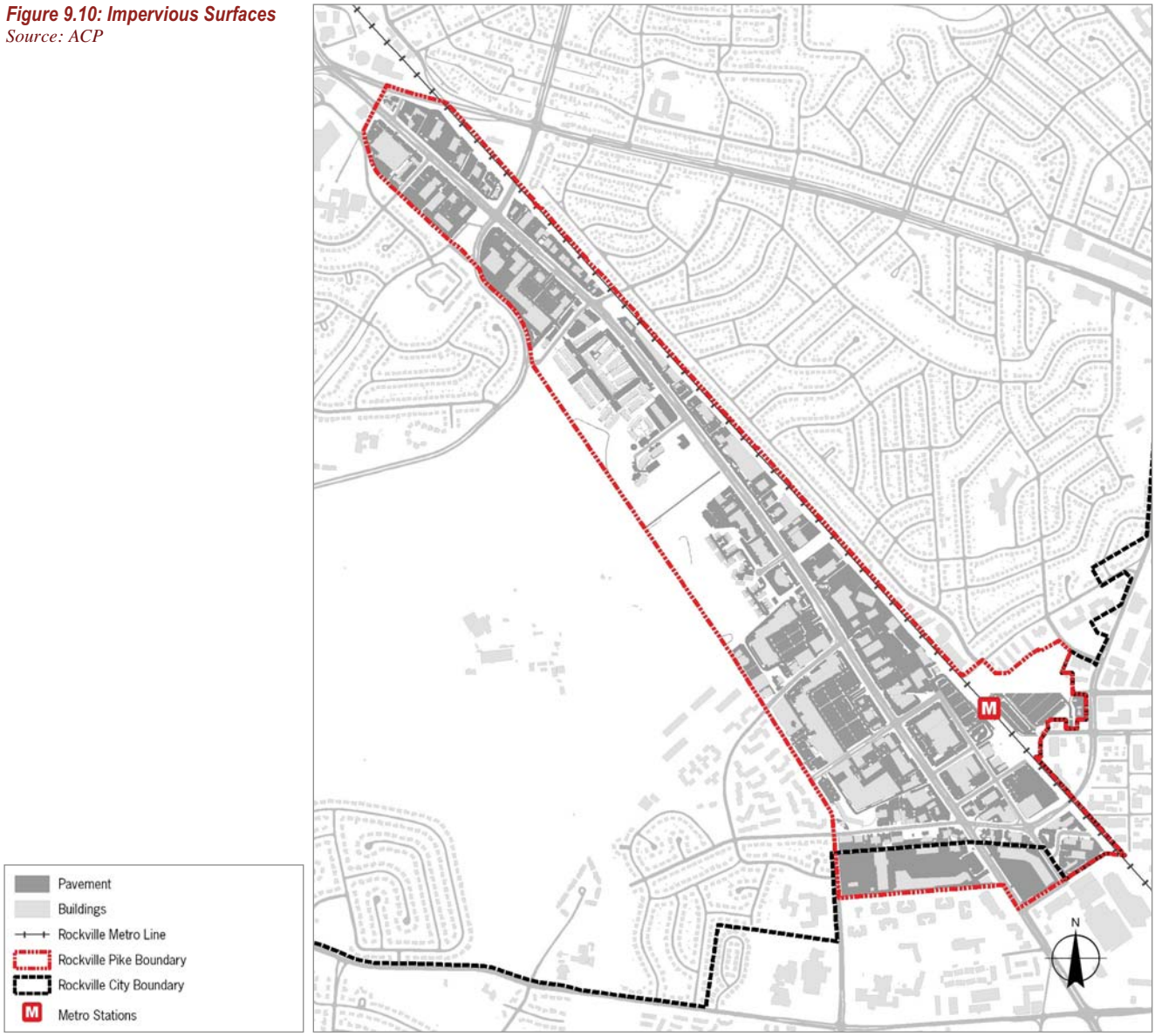


Figure 9.9: Topographic Map
Source: ACP

4. Impervious Surfaces

The amount of impervious surface contributed by buildings, parking, and roadways dramatically affects the Corridor's visual appearance. In fact, impervious surfaces cover 60 percent of the study area. Pavement covers nearly 71 percent of the impervious surface area (approximately 43 percent of the total study area) and buildings make up approximately 29 percent of impervious surfaces (or 17 percent of the total study area). The plan below shows the extent of the impervious surfaces along the pike. Buildings are represented in light gray and surface parking in dark gray.

Figure 9.10: Impervious Surfaces
Source: ACP



5. Block Size

The Pike features very long blocks, which restrict opportunities for pedestrian and vehicular connectivity and limit opportunities for linking the east side of the Corridor with the west side.

On the east side of Rockville Pike, the alignment of the Metro line parallel to the Pike has limited the number of roadway access points, resulting in an extended block length of almost 7,000 feet between Edmonston Drive and the next intersection to the south at Halpine Road. The next longest block (approximately 1,500 feet) lies between the intersections of Edmonston Drive and First Street with the Pike. Block depths range from 150 feet at the Edmonston Drive intersection to 625 feet at the intersection with Twinbrook Parkway. On the west side of Rockville Pike, more frequent intersections reduce block length and improve connectivity.

Figure 9.11: Study Area Map *– On the east side of Rockville Pike, there is a block length of almost 7,000 feet between Edmonston Drive and Halpine Road, equivalent to the length of the National Mall.*
Source: ACP

6. The Regulatory Context

The Mayor and Council of Rockville adopted a revised zoning ordinance and a comprehensive rezoning to implement the new zones on December 15, 2008. The new ordinance and zoning map are effective as of March 16, 2009.

The new Zoning Ordinance includes two Mixed-Use Districts within the Rockville Pike Corridor Study area: the Mixed-Use Transit District (MXTD) Zone and the Mixed-Use Corridor District (MXCD) Zone. The MXTD and MXCD zones also apply to other areas of Rockville, and thus are not customized to the conditions of Rockville Pike, though they do include some form-based principles. The Code recommendations offered in Chapter 6: Rockville Pike District Form Code would replace the existing zoning for the study area.

C. ECONOMIC ANALYSIS

Overview

This section examines the economy of the Rockville Pike study area. Analysis was conducted using several geographic levels. In addition to analyzing City of Rockville, Montgomery County, and metropolitan area demographic trends, the

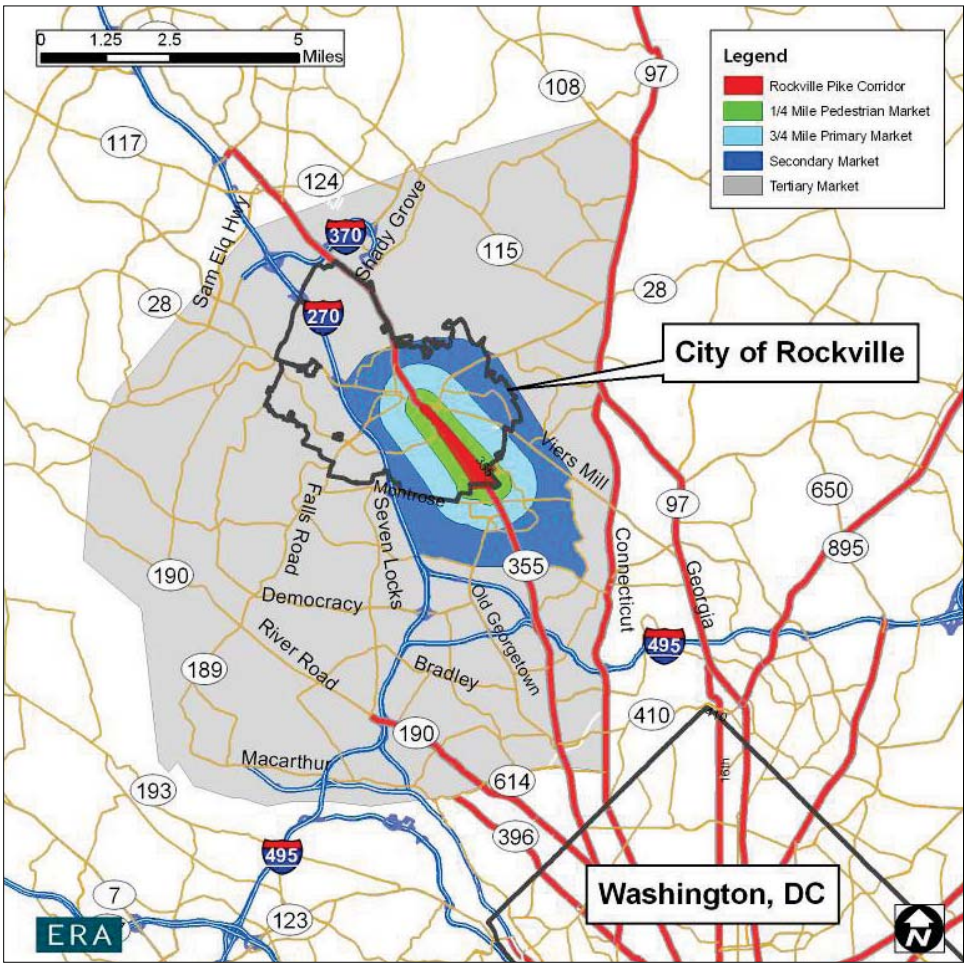


Figure 9.12: Study Area Map – *Figure 9.12 shows the four trade areas that are discussed in this section: the ¼-mile Pedestrian Market immediately surrounding the Pike, the ¾-mile Primary Market, the Secondary Market, and the Tertiary Market, which represents the Pike's regional geographic draw.*
Source: ESRI; AECOM

analysis concludes more focused analysis on the four "trade area" rings around the Rockville Pike corridor. (See Figure 9.12, previous page.)

Following this overview, the economic analysis is divided into three parts: 1) The Demographic and Economic Profile; 2) Real Estate Trends; and 3) Market Demand. Detailed information is provided for each part. Though current economic conditions are challenging, the overall economic outlook for the Rockville Pike study area is strong. Long-term projections are flattened to account for the unknown timing of economic growth and recession. The depth and duration of the current economic downturn can be expected to slow down the timing of near-term opportunities and actions, due to constrained capital markets and consumer caution affecting the retail sector. This does not mean that the general planning directions of the Rockville Pike Master Plan should change, but that the projected period of implementation may be adjusted in response to changing market conditions.

1. Demographic and Economic Profile

a. Population and Households

The Washington, D.C. metropolitan area has enjoyed economic growth that has attracted more residents to the area. According to projections, this prosperity will continue. As a preferred residential location in the metro area, Montgomery County has shared in this growth. Rockville, too, has grown in the past several years, and is projected to continue this growth in the next five years. This growth will fuel additional real estate development.

In the last seven years, according to data from ESRI, the metro area added an additional 655,000 residents, representing an overall increase of 13.7 percent and a compound annual growth rate of 1.8 percent (CAGR). Rockville has grown at the same pace of 1.8 percent annually since 2000, which is at a faster rate than that of the County. (See Table 9.13, below.) This pace is expected to continue through 2012 for both Rockville and the MSA. If projections are correct, Rockville's population will grow by 5,000 residents in the next five years.

Table 9.13: Population Growth Trends, 2000-2012

	Total			Change		CAGR	
	2000	2007	2012	2000-07	2007-12	2000-07	2007-12
City of Rockville	47,169	53,420	58,487	6,251	5,067	1.8%	1.8%
Montgomery County	873,341	949,347	996,106	76,006	46,759	1.2%	1.0%
Washington D.C. MSA	4,796,183	5,451,302	5,954,314	655,119	503,012	1.8%	1.8%

Source: ESRI, 2007: AECOM, 2008

The area immediately surrounding Rockville Pike experienced similar performance, as shown in Table 9.14 on the following page. Growth does not occur equally across the entire City or County. The area around the Pike - designated as a ¼-mile radius -has grown at 1.5 percent in the last seven years. The pace of growth in the next five years is expected to increase to 1.7 percent, adding an additional

almost 1,200 residents. Other trade areas are not experiencing as fast a rate of growth, reflecting that they are located in largely built-out neighborhoods. The ¾ mile radius market and secondary market have grown at only 0.4 percent annually in the last 7 years. The tertiary area market, a larger area surrounding the Pike, has grown at a rate of 1.2 percent. Though the rate of growth is expected to increase slightly in the primary transit market and the secondary market in the next five years, it will not achieve the same rate as the Pike and its immediate environs.

Table 9.14: Rockville Pike Retail Trade Areas Population Growth Trends, 2000-2012

	Total			Change		CAGR	
	2000	2007	2012	2000-07	2007-12	2000-07	2007-12
1/4 Mile Primary Pedestrian Market	12,106	13,407	14,587	1,301	1,180	1.5%	1.7%
3/4 Mile Primary Transit Market	17,914	18,430	19,326	516	896	0.4%	1.0%
Secondary Market	30,722	31,550	32,726	828	1,176	0.4%	0.7%
Tertiary Market	231,488	250,912	263,733	19,424	12,821	1.2%	1.0%
Total	292,230	314,299	330,372	22,069	16,073	1.0%	1.0%

Source: ESRI, 2007: AECOM, 2008

Household incomes in Rockville and Montgomery County are consistently above the U.S. average. In 2007, Rockville's median income was $85,911, which (although lower than Montgomery County's) is over $30,000 greater than the U.S. median of $53,154. Between 2007 and 2012, Rockville's median income is expected to increase at a rate slightly above that of inflation: 3.2 percent. (See Table 9.15, below.) By comparison, inflation between 2000 and 2007 had a compound annual growth rate of 2.6 percent.

Table 9.15: Median Household Incomes, 2007-2012

	Total			CAGR	
	2000	2007	2012	2000-07	2007-12
City of Rockville	$67,539	$85,911	$100,675	3.5%	3.2%
Montgomery County	$71,476	$90,063	$106,197	3.4%	3.4%
Washington D.C. MSA	$62,971	$80,082	$94,806	3.5%	3.4%
USA	$42,164	$53,154	$62,503	3.4%	3.3%

Source: ESRI, 2007: AECOM, 2008

Looking at the number of households in each income range in detail, the largest percentage of households in 2007 was in the $100,000-$149,999 range in Rockville, Montgomery County, and the MSA. A full 43 percent of Rockville's households earn $100,000 or above, which is higher than the MSA's 39 percent in the same income range but lower than Montgomery County's 45.1 percent. (See Table 9.16, on the following page.) These are also the categories that are expected to have the largest gains in shares of households between 2007 and 2012. Rockville is expected to have an 80.7 percent increase in households earning over $200,000 per year, thus gaining 6.2 percent in overall share.

Table 9.16: Households by Household Income, 2007

	City of Rockville	Montgomery County	Washington D.C. MSA
< $15,000	6.6%	4.7%	6.3%
$15,000 – $24,999	4.7%	3.8%	4.7%
$25,000 – $34,999	5.6%	5.1%	6.1%
$35,000 – $49,999	9.3%	9.6%	10.8%
$50,000 – $74,999	16.6%	16.9%	18.2%
$75,000 – $99,999	14.1%	14.8%	15.2%
$100,000 – $149,999	21.8%	21.4%	20.3%
$150,000 – $199,999	11.5%	10.6%	9.2%
$200,000 +	9.8%	13.1%	9.2%
Median Income	$85,911	$90,063	$80,082

Source: ESRI, 2007: AECOM, 2008

b. Employment

In 2008, the greatest percentage of people employed in Montgomery County worked in Services (48 percent). This amount is higher than the share of people employed in this field in the U.S. (36 percent). The Services industry is a growing industry expected to maintain or grow its share in coming decades. The County also has a large amount of workers in government - a total of 13 percent in Federal, State, and Local levels. (See Table 9.17.)

Not surprisingly, given its proximity to Washington, there is a greater percentage

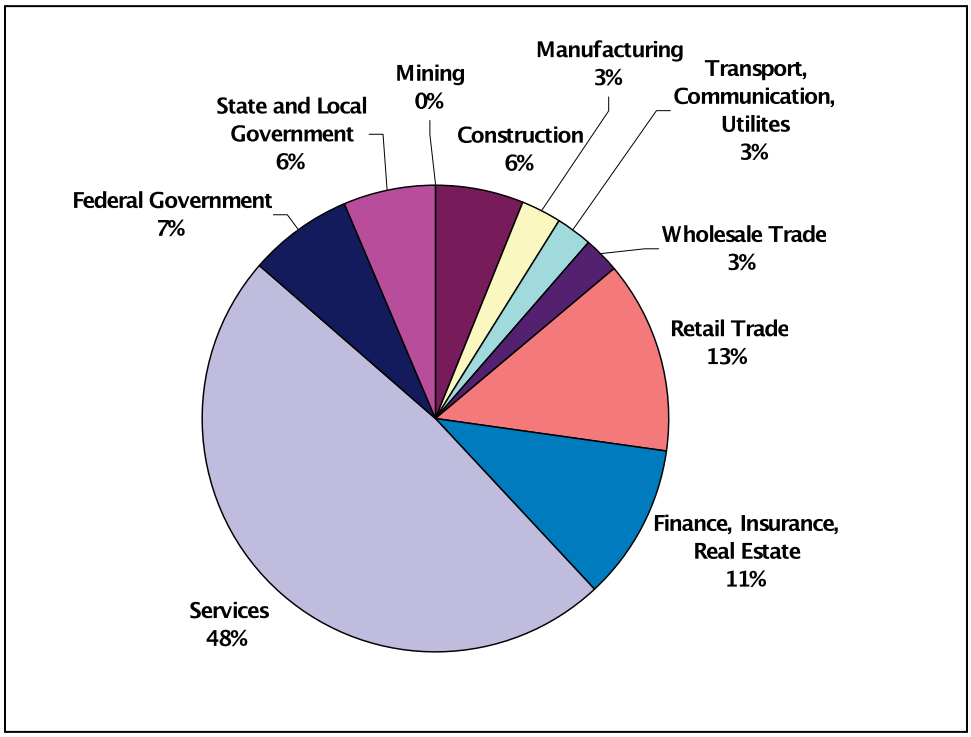


Figure 9.17: Montgomery County Estimated Share of Employment by Industry, 2008
Source: AECOM

of Federal jobs than in the U.S. as a whole. These industries typically have high percentages of office users and, along with Construction, have been the industries that have driven regional growth since 2000. The services industry added approximately 45,000 jobs in Montgomery County between 2000 and 2007, an increase of 2.1 percent annually, a rapid rise. Employment in the finance, insurance, and real estate sectors grew at a similar pace, adding 11,000 jobs. However, in the area surrounding Rockville Pike, Services, and Retail are dramatic drivers, accounting for nearly three quarters of employment and anticipated to continue growing in the years ahead. Services are a broad category that includes many types of employers typically associated with retail environments or offices in retail areas.

2. Real Estate Trends

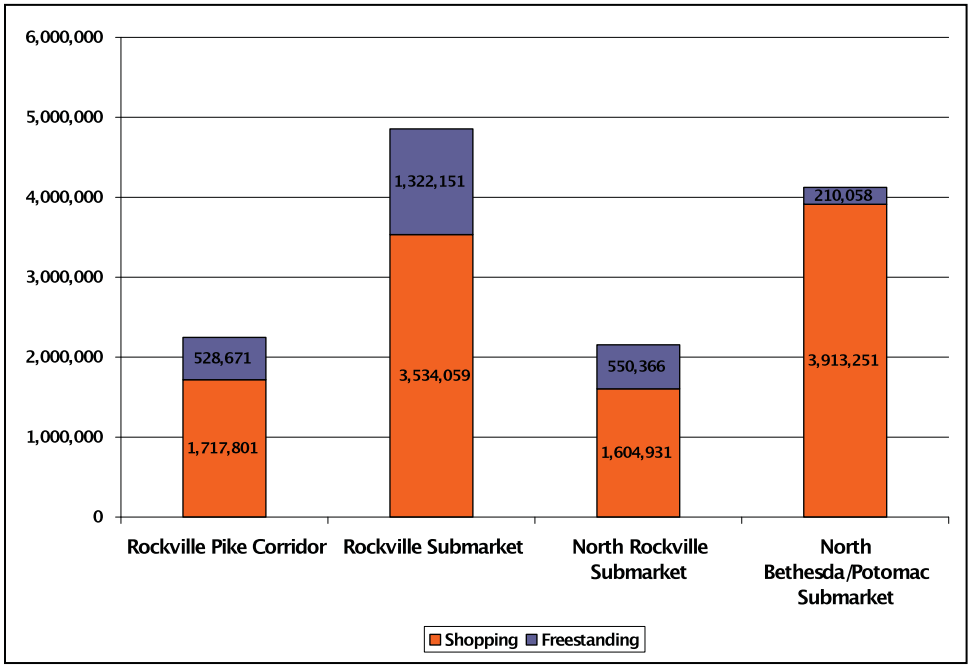
a. Retail

Rockville Pike is best known in the Washington Area as a retail destination. Therefore, it is important to assess the available data for performance of space on the Pike and how it compares to neighboring areas. (See Figure 9.18, below.)

Rockville Pike is in the Rockville Submarket. The data is divided between space that is within shopping centers and freestanding retail.

First, the performance of retail space overall was examined, followed by type of retail. Overall, the Rockville Pike area has approximately 2 million square feet, which is 18 percent of the Rockville Submarket. The average retail rental rate for the most recent quarter was $34.20 per square foot, higher than any average rate in proximate submarkets, and suggesting that sales productivities most likely average around $350 per square foot. In the last 5 years, the Pike's average annual vacancy rate was 1.7 percent, lower than the submarket as a whole. Notable within the Pike,

Figure 9.18: Retail Supply in Square Feet by Type, Rockville Pike and Proximate Submarkets
Source: AECOM



the south Pike area is comprised of predominantly national retail tenants that pay higher rents and often have larger footprints. Middle and north Pike have many more small, locally owned tenants with smaller store sizes and lower average rents.

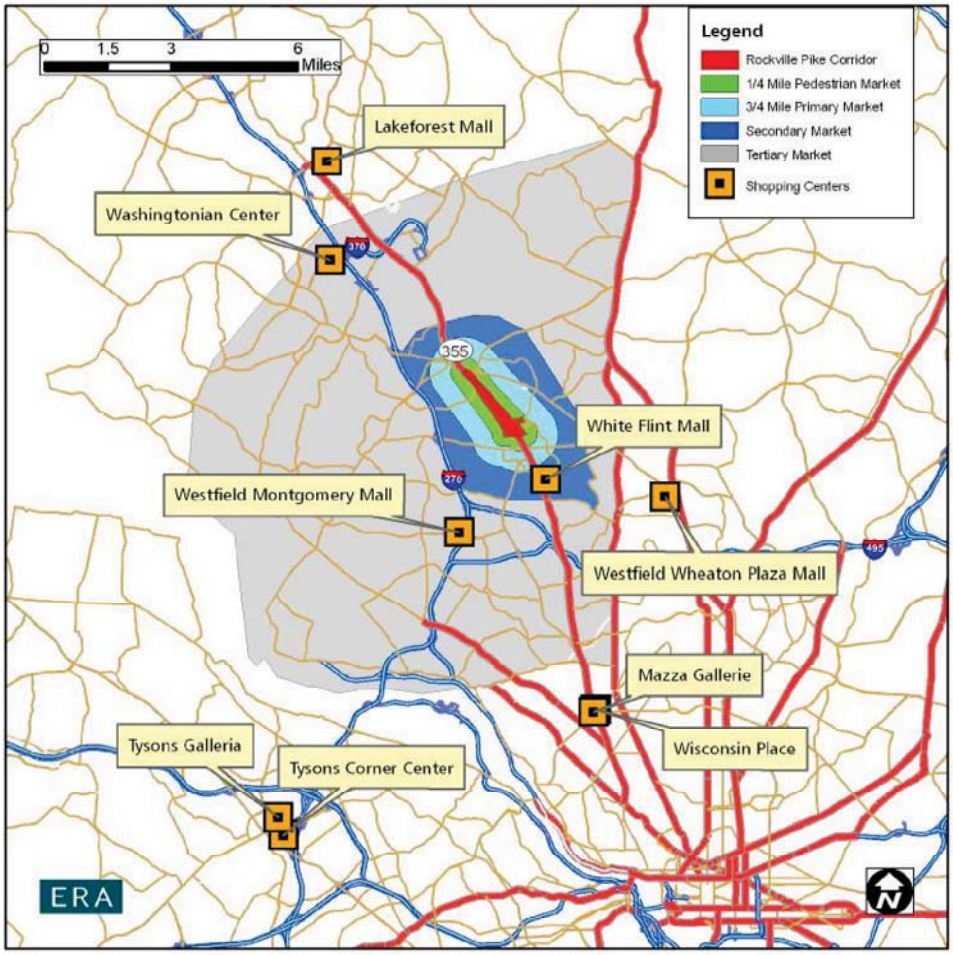


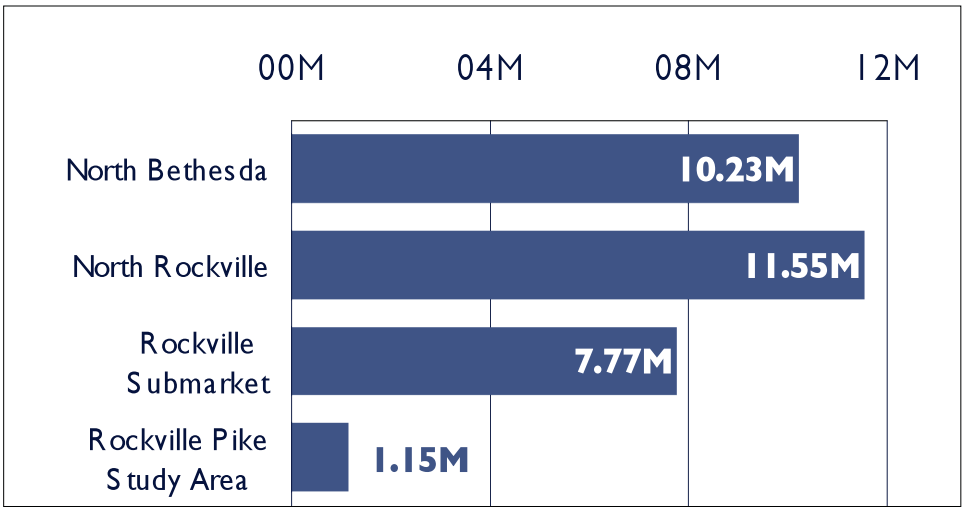
Figure 9.19: Rockville Pike Trade Areas with Major Regional Shopping Centers
Source: ESRI; CoStar; AECOM

b. Office

CoStar, a real estate database, was used to assess the office market in and around the Rockville Pike Study Area. Rockville Pike is a part of the Rockville Submarket. It is bordered to the north by the North Rockville Submarket and to the south by the North Bethesda/Potomac Submarket, and because of the two areas' comparable geographic locations and competitive aspects, they will be used as a point of comparison for the Rockville Submarket's performance.

The Rockville Submarket contained 7,765,737 square feet in 148 buildings at the end of the fourth quarter of 2007. This represents 12.2 percent of Montgomery County's office inventory of 63.6 million square feet in the same quarter. Of the submarket's share, 1.5 million (19.8 percent) is located in the ¾-mile area surrounding the study area. (See Figure 9.20.)

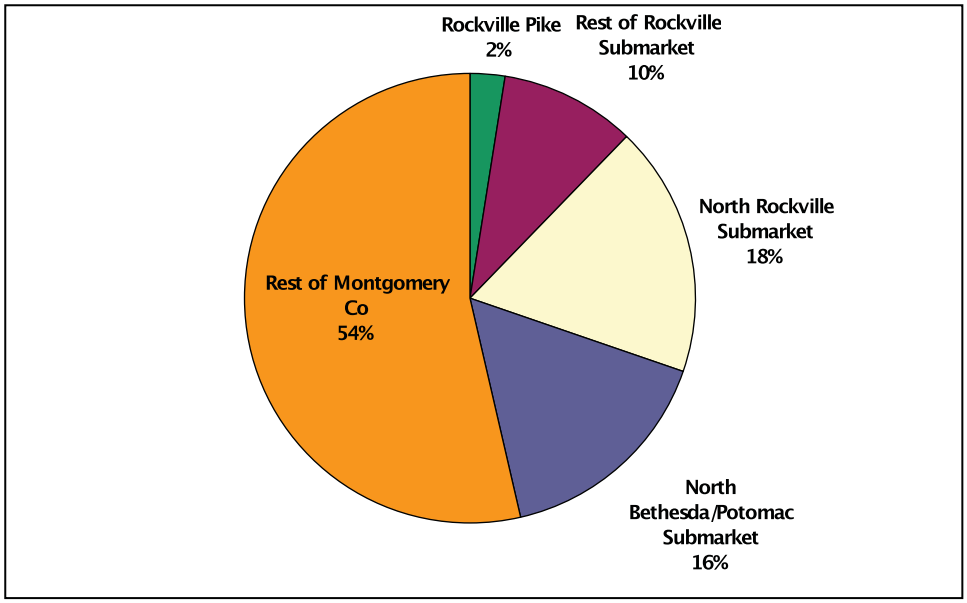
Figure 9.20: Share of Montgomery County Office Supply, Q1 2007 (Square Feet)
Source: CoStar; ERA



Vacancy in the Rockville Submarket was at 8.6 percent at the end of 2007, which is in line with the 8.3 percent vacancy experienced by the County as a whole. Along the Rockville Pike Corridor area, the vacancy was higher: 14.6 percent.

The Rockville Pike corridor has experienced an overall negative absorption in the last five years, including a negative absorption of 172,000 square feet in 2007. This loss likely contributed to the submarket's negative net absorption of 101,000 square feet. The County had a positive direct net absorption of approximately 283,000 square feet.

Figure 9.21: Share of Montgomery County Office Supply, 2007
Source: CoStar; AECOM, February 2008.



c. Residential

Overall, the housing market has experienced a slowdown. This is evident in projects near the study area, although the area has not been as hard hit as other areas of the country. To assess the current state of the market, ERA examined residential building permits, sales data, and project performance for primarily rental and for-sale multifamily product. (See Figure 9.22.)

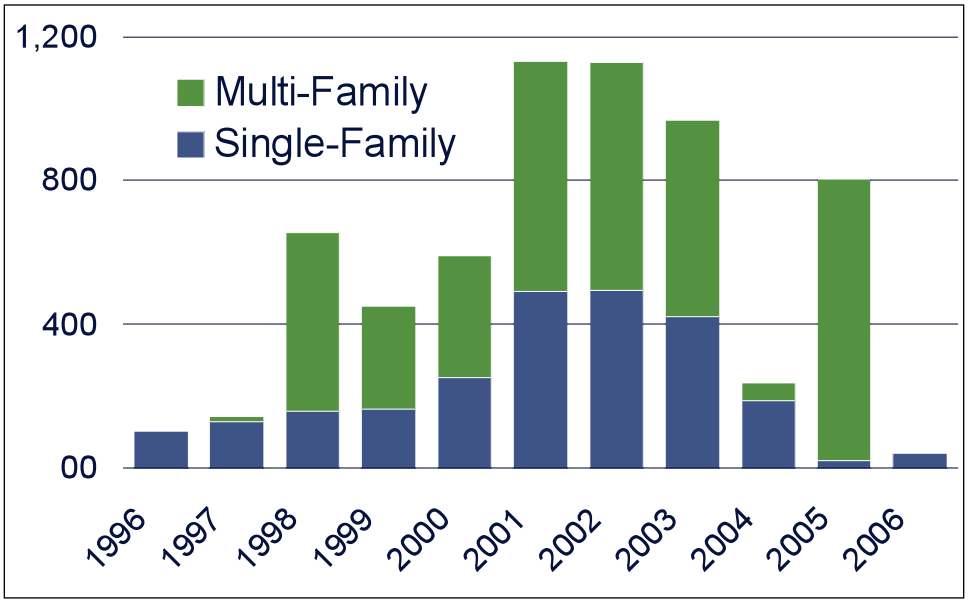


Figure 9.22: City of Rockville Residential Building Permit Activity, 1997-2006
Source: HUD; ERA

Approved residential units peaked in Rockville in 2001, with 1,131 units permitted. In the last available year of data, 2006, there were only 43 units, all single family. Between 1997 and 2006, the majority of units in Rockville were multifamily (62 percent). This contrasts with Montgomery County as a whole where the inverse is true - 60 percent of all residential permits were single family - and in the metro area, where nearly three-quarters of all permits are single-family. The total permits in the County have steadily declined since 2001, when 5,249 units were approved. Residential activity has been strong, and though the recent economic slowdown in the housing market will lower growth in the short term, long-term prospects for the region and corridor remain strong.

3. Market Demand

a. Retail

Retail is the primary use in the study area of Rockville Pike. This use will likely remain a key strength of the Pike as it adapts and changes to meet additional needs in the future. The demographics of the trade area were assessed to determine the likely demand for retail in the near and longer term, and the quantity and type of retail. Drawing reasonable trade areas based on competitive projects and customer behavior, the total retail expenditures of these trade area households by store type

was assessed and capture rates for the Rockville Pike corridor was estimated to determine potential sales. Using average productivity rates expressed as sales per square foot, there will be an estimated 2.7 million to 3.3 million supportable square feet in the corridor by 2012. This represents an increase from the existing market totals of 2.2 million square feet and will be driven by continued growth in regional household incomes and development in the northwest DC and Montgomery County corridor. Realistically, constraints on the traffic network may restrict and limit some of that additional growth in the coming years, although a large part of that demand has been addressed in development planning and will be absorbed by the Twinbrook Station.

The size of individual retail developments depends on the type of retail, and on evolving retail trends. "Big box" stores range from 25,000 square feet to over 200,000 square feet. Retail formats, however, are constantly changing to keep pace with advances in technology and consumer behavior and preferences. For example, specialty retail stores have decreased in size as delivery services have eliminated the need for 80-100 foot deep stores to store seasonal inventory on site. Most specialty store depths now average 60-70 feet, translating into somewhat smaller stores than in the 1950s and 60s. The recent significance of big box retail formats is also likely to change as the economic downturn has affected the number of big box store tenants.

b. Office

The need for new workplace uses is determined by increases in employment—or users of that space—and by the relative attractiveness of the area as a workplace destination, as determined by historic trends in office real estate performance and share of employment growth. Based upon projections, there will be approximately 225,000 square feet of annual office demand - a total of 821,700 square feet between 2007 and 2012 - in Montgomery County. To determine what share of this demand may apply to the Pike, an assessment was done of the proportion of existing office space occupied by the Rockville Submarket and the Pike study area within Montgomery County. At the present, the Rockville office submarket has 12 percent of Montgomery County's office space and the corridor has 2 percent. It is assumed that the area will augment its share of the overall market over time, as the area transitions to new uses. However, the office market is slow to adapt, so this is unlikely to happen rapidly. This process resulted in a small amount of Class A, large-scale office demand in Rockville Pike, largely due to the demand generated in the White Flint area and along Interstate 270. This demand suggests office space in redeveloped areas should focus on small footprint, small business offices that will serve local residents and employees and will fit within a retail, foot-traffic environment. Large-scale office space can be incorporated into developments but should be analyzed on a project-by-project basis to determine demand potential.

c. Residential – For-Sale Multifamily

To determine the market for new, market-rate housing, household change in the defined trade areas was examined using data from ESRI. The primary trade area is expected to add 1,502 new households between 2007 and 2012, and the secondary trade area will add an additional 15,705 new households. The analysis considers both demand from new households, demand from existing households that will be moving, and households that currently rent but will convert to home ownership. Each market segment was income-qualified to those households that can afford to purchase a unit, to those who own, and to those with a propensity for multifamily housing. A move rate, based on U.S. Census data, is applied to determine the number of households moving within designated areas. The total available households were then narrowed down to a reasonable capture for Rockville Pike. This methodology yielded an annual absorption potential of 70 for-sale multifamily units for the corridor. Considering the potential for investors or second homeowners, the annual potential could reach 73 units per year.

d. Residential – For-Rent Multifamily

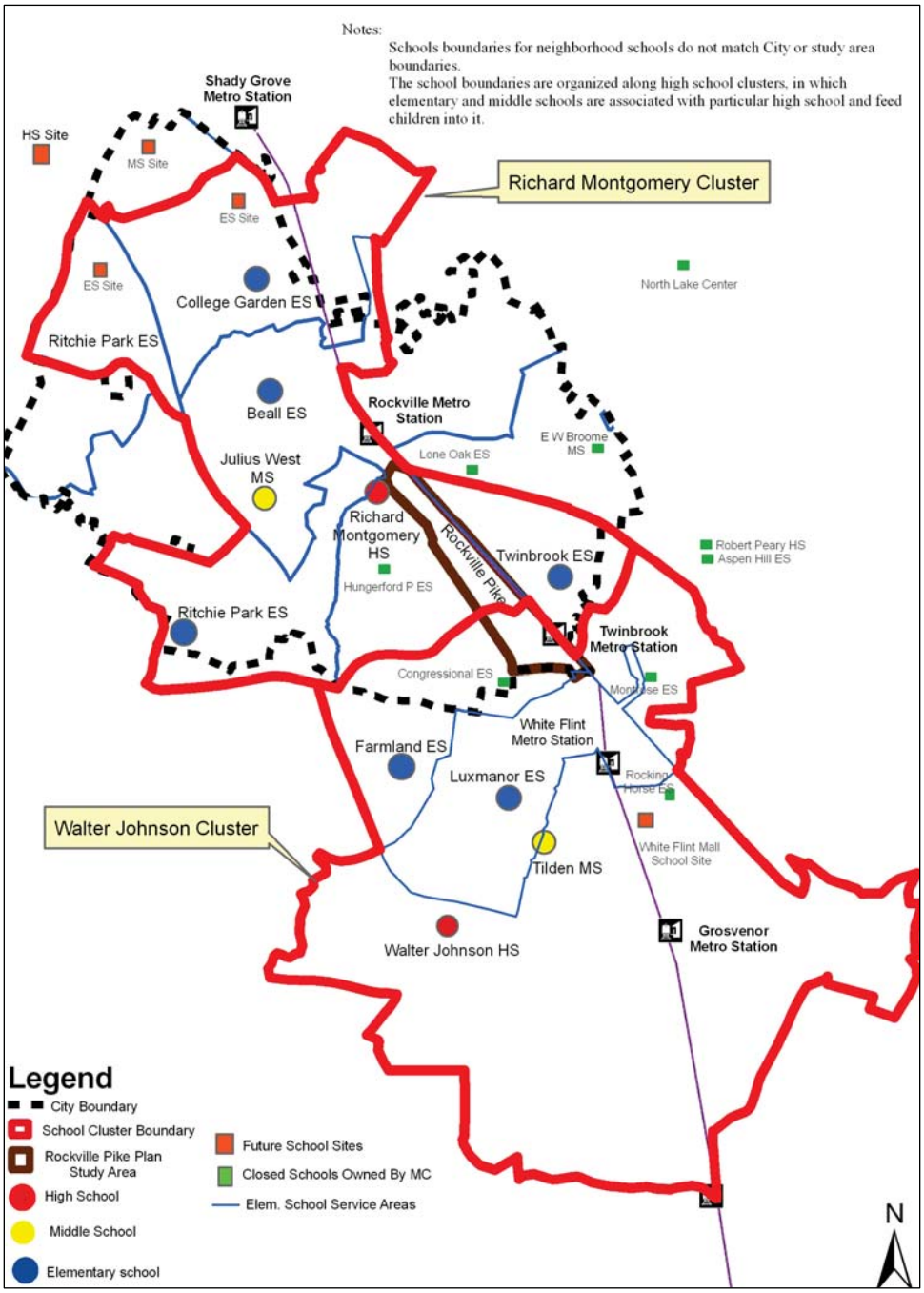
A similar analysis to determine the support for new for-rent multifamily properties was conducted. Within the trade areas, there will be a total of 6,241 new households—1,248 annually—between 2007 and 2012. It is estimated that Rockville Pike could achieve a 25 percent capture of households in the primary trade area and 5 percent from the secondary. Through a similar process as with for-sale residential, this analysis derives an annual absorption of 154 households for a for-rent multifamily project. If demographic patterns continue for the next 20 years as they are expected to in the next five years, there will be demand for a total of 1,577 for-sale multifamily units and 3,312 for-rent multifamily units in the study area by 2027.

D. SCHOOL CAPACITY

Along with the traffic analysis and its relationship to the City's APFO, there is a similar situation with school capacity. The City's APFO establishes that no child-generating development can take place if the new residences will be within the boundaries of a school that has enrollment of 110% or more of the school's program capacity, as defined by Montgomery County Public Schools (MCPS). The Rockville Pike Plan study area is located within two school clusters: The Richard Montgomery and Walter Johnson High School clusters. (Please see Table 9.23 on the following page). The northern and middle sections of the Pike Plan study area are within the Richard Montgomery High School cluster, which includes four elementary schools, one middle school, and one high school. The southernmost section is within the Walter Johnson School cluster, which has more capacity.

MCPS data show that *all four elementary schools either exceed 110% or are projected to exceed 110% within the next five years*. The middle school is also projected to exceed 110% within five years.

Table 9.23: Study Area School Clusters



Source: Montgomery County Public Schools, 2010

Table 9.24: School Enrollment Capacity

School	2010-2011 Enrollment/Capacity	2016-2017 Projected Enrollment/Capacity
Beall ES	136%	155%
College Gardens ES	118%	123%
Ritchie Park ES	133%	150%
Twinbrook ES	104%	117%
Julius West MS	104%	136%
Richard Montgomery HS	93%	95%

Source: Montgomery County Public Schools, 2010.

If Rockville Pike's redevelopment is to accommodate residences for families, school capacity must be addressed. Montgomery County Public Schools Board of Education has approved studying expansion of three of the four elementary schools and Julius West Middle School, as well as the potential to build a fifth elementary school within the Richard Montgomery cluster.

The form code for the Rockville Pike Plan study area is, by its nature, flexible and is based on street frontage rather than on land use. Both the balance of residential and commercial uses and the sizes of residential units that will be built in the corridor will be driven by prevailing market conditions. The timing and locations for future or expanded schools cannot be accurately projected but it is expected that students will be generated by redevelopment within the Pike corridor. The City will need to negotiate with developers, Montgomery County, and the state for funding to produce the additional school space that will be needed.

This page left intentionally blank.

Appendix E: Critical Lane Volume Analysis

The Critical Lane Volume Analysis from Current Traffic and Approved Development on Rockville Pike Technical Memorandum was prepared by AECOM for the City of Rockville on November 9, 2010

1.0 PURPOSE AND INTRODUCTION

The purpose of this memorandum is to describe an analysis undertaken in conjunction with the *Rockville's Pike: Envision a Great Place* neighborhood redevelopment plan. The analysis used the locally-accepted Critical Lane Volume (CLV) method of calculating intersection capacity to estimate an order-of-magnitude level of development that could be permitted under the City of Rockville's existing Comprehensive Transportation Review system of concurrency management. In a somewhat unconventional use of the CLV method, the consulting team estimated available capacity.

The City opted to pursue this analysis in order to understand the practical limits of plan implementation under current systems of review and infrastructure concurrency requirements. One of the key reasons for this analysis was because AECOM's original analysis in the first iterations of the draft plan showed some intersections in the planning area at or close to failing levels of service under existing (2008) conditions. This did not take into account the additional traffic expected to be generated by approved developments. The outcomes of this memorandum are not intended to serve as Rockville's Pike plan recommendations, but rather to identify the potential (based on existing traffic conditions) that the City has for allowing development as envisioned under the Plan and to present general conclusions in guiding next steps.

2.0 PRIMARY ANALYSIS

The analysis used intersection turning movement counts from February 2008, originally collected for the Rockville's Pike plan traffic analysis work undertaken in advance of and during the May 2008 design workshop.

Per City staff recommendation, one traffic count (for the intersection of Congressional Lane and Rockville Pike) was substituted with a 2004 count from the Maryland State Highway Administration to correct for a northbound through movement volume that was significantly and unusually higher than comparable movements at nearby intersections.1 To these volumes, it added traffic estimated to be generated from currently approved but as-of-yet unconstructed development along the Pike. The analysis of capacity and development potential followed four principal steps. Each of these is detailed in the following sections.

2.1 Generation of Trips from New Development

The City provided the planning consulting team with formal Transportation Reports for 11 approved developments. Because of the scale of most of these developments, the majority was not expected to generate 30 or more peak-hour trips and as such was not required to submit full Transportation Reports for review, providing only a total number of generated trips. The planning team used the balance of inbound and outbound trips for appropriate land uses in the peak hour as defined in the Institute for Transportation Engineers (ITE) Trip Generation Handbook to determine this balance for traffic distribution onto the roadway network.

In addition, the City and planning consulting team considered the proposed Mid-Pike Plaza development which, although outside of the Rockville city limits, is relatively large in scale and could be expected to generate significant impact even within the City. The effects of this development on the overall network were determined separately from those developments entirely within the City; this is discussed in more detail in Sections 3 and 4.

2.2 Distribution of Traffic onto the Roadway Network

The planning team used the two Transportation Reports with distribution patterns as the basis for applying rates of distribution to traffic added through the trip generation step described in Section 2.1. One of these patterns was from the Wootton Crossing Bank development report and the other was from the Twinbrook Station development report. The first of these was termed Pattern A and any development occurring in the area of the Pike north of Congressional Lane was distributed on this basis (with this set of developments referred to generally as Group A). The second was termed Pattern B and was applied to any development occurring south of Congressional Lane.

This division was made in order to account for the potential differences in east-west traffic dispersion. In the case of each distribution model, east-west streets closer to the given development site are used more heavily to distribute traffic than east-west streets farther away in the corridor. For example, the Woottons Crossing Bank is assumed to distribute more traffic to streets such as Wootton Parkway and Edmonston Drive than it is to Twinbrook Parkway. By considering both and dividing the corridor accordingly, the traffic impacts of each particular development (and particularly turning movements from Rockville Pike that they generate) can be better understood and evaluated.

The City recommended that certain distribution factors from these Transportation Reports be adjusted to more closely match real-world conditions. The planning team made these adjustments per the City's recommendations as follows:

---

[1] The 2008 turning movement was unusually high compared to other data, especially the counts representing the intersections immediately to the north and south of that intersection at the same time. Traffic counts on Rockville Pike can change from year to year (and even day to day). For example, another count taken at the same location in 2009 was lower than the 2004 count referenced and used in the analysis. The planning consulting team used the 2004 count as a median value because it was generally consistent with the through-moving volumes at adjacent points on the corridor.

Table 2.2.1 Intersection CLV Based on Current Traffic and Approved Development

Group A Movement Pattern	Previous Assumption (from Twinbrook Station TR)	Revised Assumption (per City staff advisory)
To/from the North along Rockville Pike-Hungerford Drive	25%	30%
To/from the North along First Street/Norbeck Road	10%	10%
To/from the West along Wootton Parkway	10%	10%
To/from the East along Veirs Mill Road	10%	20%
To/from the East along Ritchie Parkway	25%	10%
To/from the South along Rockville Pike	20%	20%

Table 2.2.2 Intersection CLV Based on Current Traffic and Approved Development

Group B Movement Pattern	Previous Assumption (from Twinbrook Station TR)	Revised Assumption (per City staff advisory)
To/from the North along Rockville Pike	25%	20%
To/from the North along First Street/Norbeck Road	6%	6%
To/from the West along Wootton Parkway	3%	3%
To/from the Northwest along Jefferson Street	2%	2%
To/from the East along Veirs Mill Road	1%	1%
To/from the South along Aspen Hill Road	8%	8%
To/from the East along Randolph Road	12%	12%
To/from the South along Rockville Pike	16%	21%
To/from the West along Montrose Road	27%	27%

Each of these distribution movement patterns was tied to the related turning movements at a given intersection. If a portion of a particular development project's anticipated traffic generation passed through one of these points, that number was assigned to the relevant traffic movements in each of the Pike study area intersections through which it would pass.

2.3 Aggregation of New Traffic Volumes

The traffic volumes resulting from the trip generation and distribution in Sections 2.1 and 2.2 were added back to the February 2008 to estimate the actual traffic likely to use the roadway system once this development is constructed. The volumes to be added were calculated by applying the regional distribution factors to specific turns at each intersection studied and adding the resulting turn movements to the current intersection volumes. Tables 2.3.1 and 2.3.2 (on the following pages) depict existing and new volumes for AM and PM peak hours, respectively.

2.4 Calculation of Critical Lane Volumes

The planning team used the Critical Lane Volume method described in the City of Rockville's *Comprehensive Transportation Review Guidelines* (CTR) to calculate critical lane volume for each intersection in the Pike study area in both AM and PM peak hours. The team compared this volume to the City's accepted thresholds, which may vary from intersection to intersection and even from one peak hour to the other based on the specific signal timing and phasing, to determine remaining capacity in terms of CLV.

The City's description of its methodology uses a two-phase signal timing scheme as its example. Many of the study area signals' use more complex phasing than this, often allowing lead-lag phasing to give left turn movements at least partial protection. In the cases where a left turn movement is given protected-permissive phasing, the number of left turns to be counted against the opposite direction's through movements was modified based on an assumption of free-flow turn lanes. This assumption was that 1,200 vehicles per hour can clear a free-flow turn lane, and the number of peak-hour left turning vehicles able to clear during a protected left turn phase would be that fraction of the hour given to all occurrences of this phase multiplied by 1,200.

CLV was calculated in this manner for both AM and PM peak hours. Several intersections show a deficiency of capacity suggesting that they cannot accommodate added traffic through development. The significant portions of traffic moving to and from locations outside of the immediate Rockville Pike study area further suggest that the corridor in general is limited in accommodating new traffic as well. This is discussed in greater detail in Section 4 of this memorandum.

Table 2.3.1 AM Traffic Counts with Additions for Approved Development

	Rockville Pike and Jefferson (MD 28) - Veirs Mill											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	0	422	471	0	953	796	252	645	0	497	2722	48
Added Counts from Development	0	5	14	9	79	15	199	105	5	14	173	0
Total Counts with Development	0	427	485	9	1032	811	451	750	5	511	2895	48
	Rockville Pike and Richard Montgomery - Dodge											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	30	63	84	32	83	9	65	859	15	0	3310	37
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	30	63	84	32	83	9	65	859	15	0	3310	37
	Rockville Pike and Wootton Parkway - 1st Street											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	163	278	32	382	559	47	45	935	151	32	1706	160
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	163	278	32	382	559	47	45	935	151	32	1706	160
	Rockville Pike and Edmonston Drive											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	0	213	345	115	361	110	96	1058	24	30	2093	10
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	0	213	345	115	361	110	96	1058	24	30	2093	10
	Rockville Pike and Country Club-Best Buy Entrance											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	3	0	6	9	2	9	15	601	6	31	3012	25
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	3	0	6	9	2	9	15	601	6	31	3012	25
	Rockville Pike and Templeton Place											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	31	5	24	38	5	5	75	1061	12	12	2486	17
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	31	5	24	38	5	5	75	1061	12	12	2486	17

	Rockville Pike and Congressional Lane											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	163	10	62	29	19	16	50	1137	10	38	2568	208
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	163	10	62	29	19	16	50	1137	10	38	2568	208
	Rockville Pike and Halpine											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	51	76	77	27	45	140	34	851	16	200	2489	28
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	51	76	77	27	45	140	34	851	16	200	2489	28
	Rockville Pike and Twinbrook-Rollins											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	3	232	95	1	343	52	71	890	119	180	1935	29
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	3	232	95	1	343	52	71	890	119	180	1935	29
	Rockville Pike and Federal Plaza Entrance											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	2	1	55	5	2	17	25	1012	18	18	2265	18
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	2	1	55	5	2	17	25	1012	18	18	2265	18
	Rockville Pike and Bou Avenue											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	2	1	55	5	2	17	25	1012	18	18	2265	18
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	2	1	55	5	2	17	25	1012	18	18	2265	18
	Rockville Pike and Hubbard Drive											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	15	2	13	84	7	28	33	1412	98	56	2476	25
Added Counts from Development	0	0	0	0	0	0	0	0	0	0	0	0
Total Counts with Development	15	2	13	84	7	28	33	1412	98	56	2476	25

Table 2.3.2 PM Traffic Counts with Additions for Approved Development

	Rockville Pike and Jefferson (MD 28) - Veirs Mill											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	0	640	370	0	484	460	425	1543	1	629	1480	77
Added Counts from Development	0	73	181	14	25	24	64	306	17	22	231	0
Total Counts with Development	0	713	551	14	509	484	489	1849	18	651	1711	77
	Rockville Pike and Richard Montgomery - Dodge											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	111	101	190	43	36	9	146	1841	25	0	1882	31
Added Counts from Development	0	0	0	0	0	0	0	387	0	0	426	0
Total Counts with Development	111	101	190	43	36	9	146	2228	25	0	2308	31
	Rockville Pike and Wootton Parkway - 1st Street											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	182	492	5	244	323	53	115	1681	405	88	1421	89
Added Counts from Development	60	2	30	51	1	26	40	301	71	46	278	102
Total Counts with Development	242	494	35	295	324	79	155	1982	476	134	1699	191
	Rockville Pike and Edmonston Drive											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	0	332	231	67	158	103	270	2099	104	214	1427	40
Added Counts from Development	0	0	0	1	0	0	0	412	1	0	359	0
Total Counts with Development	0	332	231	68	158	103	270	2511	105	214	1786	40
	Rockville Pike and Country Club-Best Buy Entrance											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	9	1	4	59	0	16	13	2315	30	43	2177	18
Added Counts from Development	0	0	0	0	0	0	0	411	0	0	358	0
Total Counts with Development	9	1	4	59	0	16	13	2726	30	43	2535	18
	Rockville Pike and Templeton Place											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	108	3	71	66	3	12	33	2757	22	20	1587	30
Added Counts from Development	0	0	0	0	0	0	0	411	0	0	358	0
Total Counts with Development	108	3	71	66	3	12	33	3168	22	20	1945	30
	Rockville Pike and Congressional Lane											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	417	31	124	106	31	78	348	3081	7	59	1707	206
Added Counts from Development	-1	0	-3	0	0	0	-6	412	0	0	361	-3
Total Counts with Development	416	31	121	106	31	78	342	3493	7	59	2068	203

Rockville Pike and Halpine

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	122	73	112	63	169	308	153	3088	25	148	1645	32
Added Counts from Development	0	0	0	3	0	0	0	406	0	1	357	0
Total Counts with Development	122	73	112	66	169	308	153	3494	25	149	2002	32

Rockville Pike and Twinbrook-Rollins

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	3	303	112	2	364	134	89	2508	182	200	1556	31
Added Counts from Development	-13	-3	-27	0	-3	72	-27	619	0	98	865	-13
Total Counts with Development	-10	300	85	2	361	206	62	3127	182	298	2421	18

Rockville Pike and Federal Plaza Entrance

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	97	14	158	18	23	47	188	2142	40	47	1707	23
Added Counts from Development	0	0	0	0	0	0	0	592	0	0	838	0
Total Counts with Development	97	14	158	18	23	47	188	2734	40	47	2545	23

Rockville Pike and Bou Avenue

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	31	43	46	307	34	15	43	1912	437	116	1444	8
Added Counts from Development	0	0	0	0	0	0	0	592	0	0	838	0
Total Counts with Development	31	43	46	307	34	15	43	2504	437	116	2282	8

Rockville Pike and Hubbard Drive

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Counts	49	14	39	161	7	129	42	2500	252	132	2004	17
Added Counts from Development	0	0	0	0	0	0	0	592	0	0	838	0
Total Counts with Development	49	14	39	161	7	129	42	3092	252	132	2842	17

3.0 OUTCOMES OF CLV ANALYSIS

The results of the CLV analysis are given in the table below. Highlighted items represent those intersections exceeding the City-adopted CLV standard for that intersection. CLV standards vary by intersection based on the number of phases and cycle lengths. The maximum intersection capacity MD 355 does not exceed 1600 and 1700 vehicles per hour in the A.M. and P.M. peak hours, respectively.

Table 3.0.1 Intersection CLV Based on Current Traffic and Approved Development

TAZ	Intersection	AM CLV	Intersection CLV Standard	AM Remaining CLV	AM V/C	AM LOS	PM CLV	Intersection CLV Standard	PM Remaining CLV	PM V/C	PM LOS
714	Jefferson - Veirs Mill	**1908**	**1500**	**-408**	**1.27**	**F**	**1695**	**1650**	**-45**	**1.03**	**F**
	Richard Montgomery - Dodge	1507	1600	93	0.94	E	1184	1700	516	0.70	C
695	Wootton Parkway - 1st Street	**1425**	**1400**	**-25**	**1.02**	**F**	**1594**	**1550**	**-44**	**1.03**	**F**
	Edmonston	1447	1600	153	0.90	E	1637	1650	13	0.99	E
	Templeton	1134	1500	366	0.76	C	1355	1650	295	0.82	D
696	Country Club - Best Buy	1233	1500	267	0.82	D	1149	1650	501	0.70	C
691	Congressional Lane	1231	1400	169	0.88	D	**1731**	**1550**	**-181**	**1.12**	**F**
	Halpine	1141	1500	359	0.76	C	**1682**	**1650**	**-32**	**1.02**	**F**
	Rollins - Twinbrook	1093	1500	407	0.73	C	**1688**	**1650**	**-38**	**1.02**	**F**
Outside of City	Federal Plaza - Pike Center	1017	1500	483	0.68	B	1185	1650	465	0.72	C
	Bou	1100	1400	300	0.79	C	1266	1550	284	0.82	D
	Hubbard - Flagship Center	1152	1600	448	0.72	C	1594	1700	106	0.94	E

As the table shows, several intersections already exceed available capacity under the CLV calculation method. And although an intersection may have available CLV capacity in one peak period, the lesser capacity of the two peak hours is effectively what it can accommodate, as built development and physical street infrastructure cannot be changed from one peak hour to the other. This does not mean that these intersections absolutely cannot handle more development. It is worth bearing in mind that CLV is derived from the dominant direction of movement in each traffic signal phase, and in several cases there is significant 'space' left in the non-dominant direction to handle more traffic before balance of CLV between different component phases of an intersection is changed. Nonetheless, the CLV method is the City's adopted standard, and intersections already unable to add traffic capacity may be considered effective constraints on new development.

Although the minimum scale of development review requires consideration of only four adjacent intersections to a particular development's site, the distribution of intersections already exceeding CLV complicates the selection of any site that would be able to avoid consideration of at least one of them.

4.0 ADDITION OF MID-PIKE PLAZA

Montgomery County is in the process of approving a major development to the south of the Rockville city limits, Mid-Pike Plaza. Although not in the City of Rockville's municipal jurisdiction, the scale of this development suggests that it will have noticeable impact on the Pike and other transportation facilities nonetheless. The original

development potential estimated through the steps described in Sections 2.1 through 2.4 was recalculated with this development in mind. The intent of this was to demonstrate the difference in potential between the smaller-scale developments that the Rockville portion of the Pike currently supports (as a function of potential site yield, itself a balance of parking requirement and useable floor area) and the development potential that would remain if a major project outside of Rockville's city limits is approved and constructed.

The Mid-Pike Plaza trip generation was calculated based on the ITE *Trip Generation Handbook*. It assumed a development program equivalent to 90 percent of each of the specific land use categories as specified by Federal Realty in its initial program estimates; this slightly reduced program was assumed to account for constraints and inefficiencies in site layout that may keep a developer from realizing the fully entitled program. In addition, a 10 percent internal capture rate and 10 percent pass-by trip rate were assumed for the development to recognize its variety of complementary land uses and its large retail component. Trips were assigned to the roadway network using the Pattern B distribution, meaning that any southbound trips from the development were not counted in the Rockville Pike corridor.

The following table details the resulting CLV of Rockville Pike intersections after the addition of Mid-Pike Plaza traffic.

Table 4.0.1 Intersection CLV Based on Current and Approved Traffic, including Mid-Pike Plaza

TAZ	Intersection	AM CLV	Intersection CLV Standard	AM Remaining CLV	AM V/C	AM LOS	PM CLV	Intersection CLV Standard	PM Remaining CLV	PM V/C	PM LOS
714	Jefferson - Veirs Mill	**1931**	**1500**	**-431**	**1.29**	**F**	**1813**	**1650**	**-163**	**1.10**	**F**
	Richard Montgomery - Dodge	1531	1600	69	0.96	E	1251	1700	449	0.74	C
695	Wootton Parkway - 1st Street	**1474**	**1400**	**-74**	**1.05**	**F**	**1651**	**1550**	**-101**	**1.07**	**F**
	Edmonston	1482	1600	118	0.93	E	**1718**	**1650**	**-68**	**1.04**	**F**
	Templeton	1168	1500	332	0.78	C	1436	1650	214	0.87	D
696	Country Club - Best Buy	1268	1500	232	0.85	D	1231	1650	419	0.75	C
691	Congressional Lane	1265	1400	135	0.90	E	**1813**	**1550**	**-263**	**1.17**	**F**
	Halpine	1175	1500	325	0.78	C	**1763**	**1650**	**-113**	**1.07**	**F**
	Rollins - Twinbrook	1127	1500	373	0.75	C	**1846**	**1650**	**-196**	**1.12**	**F**
Outside of City	Federal Plaza - Pike Center	1051	1500	449	0.70	C	1297	1650	353	0.79	C
	Bou	1135	1400	265	0.81	D	1378	1550	172	0.89	D
	Hubbard - Flagship Center	1187	1600	413	0.74	C	**1706**	**1700**	**-6**	**1.00**	**F**

The addition of this development suggests that Rockville is likely to experience additional traffic and impacts as expressed in CLV, even if it no longer approves its own development. The regional nature of traffic and travel patterns in Montgomery County means that traffic typically passes through multiple jurisdictions, and that traffic impacts may be experienced by communities not immediately responsible for approving the development that generated these impacts.

5.0 POTENTIAL ADDITIONS OF FUTURE DEVELOPMENT

The City's Comprehensive Transportation Review (CTR) only requires measurement of intersection capacity and determination of development traffic impact when a development is expected to generate at least 30 trips in the peak travel hour. Although it is theoretically possible for development to be permitted when it generates traffic below this threshold, such a pattern of development is not consistent with the vision of the *Rockville's Pike* plan, nor is it likely to occur given the current land values of the corridor and the costs of development. In particular, this kind of an approach to allowing development is potentially threatening to larger developments proposed at future dates along the Rockville Pike corridor—when those developments undertake the CTR process in conjunction with their applications, the traffic counts they collect as the basis for their analysis will reflect the impacts and reduction in available intersection capacity coming from this added small-scale development. The City's CTR also emphasizes an acknowledgement of the potential impacts of small-scale development:

> *"The intent of the off-site threshold may not be circumvented through the submission of piecemeal development and permit applications or other approval requests. Upon submitting a preliminary plan of subdivision that generates less than 30 total peak hour site trips, the applicant must agree in writing that if future applications or approval requests result in 30 or more total peak hour site trips generated at one location, then the applicant will be required to complete and submit all TR components for the cumulative development package."*

5.1 Testing a Sample Development Project

To consider the conditions that a development more representative of the plan's vision would face, a hypothetical concept development project in the middle section of the Pike study area was tested for impact. Based on the critical lane volumes of intersections as reported in Table 3.0.1, at first glance it may appear that the area near the Best Buy entrance and Templeton Place intersection is the best suited to accommodate additional traffic impact. This location includes the portion of TAZ 696 within the Pike study area, the only TAZ not to have a currently failing intersection. Using a conceptual development program featuring vertical mixed uses such as those envisioned in the *Rockville's Pike* plan, a development in this area could feasibly include between 50,000 and 100,000 square feet of retail space and between 400 and 600 residential dwelling units. Considering either end of these ranges for both land uses, this would result in such potential traffic additions as shown in the table below:

Table 5.1.1 Potential Development Scenarios from Conceptual Development Program for Middle Pike development

Development Increment	AM Peak Hour Trips	PM Peak Hour Trips	Total Daily Trips
Concept A: 50K SF retail, 400 dwelling units	303	627	6,881
Concept B: 50K SF retail, 600 dwelling units	401	733	8,196
Concept C: 100K SF retail, 400 dwelling units	356	857	9,345
Concept D: 100K SF retail, 600 dwelling units	454	962	10,659

One important factor to consider in the CLV method of capacity calculation is that not all trips 'added' to an intersection will impact that intersection's composite CLV measure. This is because the composite CLV is a sum of the 'heaviest' directional volumes in each major set of movements through the intersection. For example, if a northbound movement is heavier than its opposing southbound movement but these two movements occur during

the same signal phase (which is a common occurrence and the typical model of signal timing on Rockville Pike), traffic volume added to the southbound movement through new development does not factor into the CLV measure unless it causes the southbound volume to exceed the northbound volume, thus becoming the new critical volume for that phase.

The City of Rockville's CTR requirements list the following as the minimum number of intersections to be studied in a Transportation Review. These numbers of intersections are determined by the peak hour trip generation from a proposed development.

Table 5.1.2 City CTR Requirements for Traffic Impact Study Area

New Peak Hour Site Trips	Minimum Number of Intersections to be analyzed (or all intersections within specified distance radius, whichever is greater)
0-29	No intersection study needed (Transportation Review not required)
30-150	4
151-350	8
351-700	12 or all intersections within a 0.45-mile radius
More than 700	16 or all intersections within a 0.5-mile radius

As the table of expected trip generation illustrates, even the minimum-intensity scenario as described in the concept development would generate 627 peak hour trips, enough to warrant study of 12 signalized intersections along Rockville Pike (the greater number of the two choices, as a 0.45-mile radius from the site only includes intersections along Rockville Pike). In the PM peak hour, assuming that this development follows the traffic distribution Pattern A, this sends 80 percent of exiting trips northbound (which is the peak direction of travel and usually defines the critical lane volume for the northbound/southbound signal phase) from this section of the Pike. The intersections of Templeton and Edmonston currently have capacity to absorb additional northbound development, although Edmonston has only 13 CLV vehicles remaining in its capacity. As the northbound movements determine capacity in the overall CLV measure, the expected addition of northbound vehicles would exceed this number, causing the intersection's overall CLV to exceed its threshold amount and fall to a failing level of service. Beyond this, the requirement of examining 12 intersections also needs to include Wootton Parkway and Maryland SR 28, which do not have capacity under existing conditions. Addition of northbound traffic to this intersection will only increase its overall CLV, as the northbound movement is already one of the critical volumes used to generate the component CLV.

The analysis of this minimum-intensity scenario is detailed in Table 5.1.3 on the following page, using the PM peak hour as the basis for analysis due to its higher impact from the proposed development program and because the PM peak hour already has a higher number of capacity limitations. The sample development discussed used Concept A from Table 5.1.1 and compared it to the available capacity in Table 3.0.1, or Rockville Pike traffic with approved development but *not* including the Mid-Pike Plaza in Montgomery County.

Table 5.1.3 PM Peak Hour Trips Generated from Middle Pike Concept Development

	Volume	Intersections where this volume can be absorbed in critical northbound/ southbound volume (with remaining CLV capacity)	Intersections where this volume cannot be absorbed in critical northbound/southbound volume
Inbound Trips	347		
Coming from South per Pattern A	69	Hubbard (up to 106) Bou (up to 284) Federal Plaza (up to 465) Country Club-Best Buy (NBL + EBL + EBR can equal up to 501)	Templeton (up to 295) Congressional (CLV determined by northbound, already exceeded by 181) Halpine (CLV already exceeded by 32) Twinbrook-Rollins (CLV already exceeded by 38)
Coming from North per Pattern A	278	Richard Montgomery-Dodge (up to 516) Edmonston (up to 292 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV)	Jefferson-Veirs Mill (CLV determined by both northbound and southbound movements; already exceeded by 45) Wootton Parkway (northbound is greater by 104 trips and currently determines intersection CLV; Pattern A would assign 60 percent of all inbound trips, or 208 trips, to SBT and thus increase existing CLV over threshold)
Outbound Trips	280		
Traveling South per Pattern A	56	Templeton (up to 295) Congressional (up to 527 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV) Halpine (up to 552 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV) Twinbrook-Rollins (up to 261 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV) Federal Plaza (up to 70 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV; 465 CLV vehicles remain in capacity beyond that) Bou (up to 82 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV; 284 CLV vehicles remain in capacity beyond that) Hubbard (up to 179 SB vehicles before SB becomes dominant movement in phase and determines intersection CLV; 106 CLV vehicles remain in capacity beyond that)	None
Traveling North per Pattern A	224	Country Club-Best Buy (NBL + EBL + EBR can equal up to 501)	Edmonston (CLV determined by northbound, only has capacity for 13 vehicles) Wootton Parkway (CLV already exceeded by 44) Jefferson-Veirs Mill (CLV already exceeded by 45)

It is worth noting that even the lowest-intensity scenario has several limitations relative to intersection CLV capacity. Although the CLV capacity measurement method can allow intersections to add traffic without affecting overall CLV (only if that traffic movement does not occur in the direction of critical volume), the traffic distribution models used in this analysis have both assigned traffic in both directions. In some cases, this sample development would add trips that would directly affect overall CLV of some intersections, many of which are already in excess of their CTR-determined thresholds. Traffic added to the peak direction in intersections that are already failing under the CLV method will only increase their volume-to-capacity ratio past 1.00 which, according to the City CTR process, either requires that the development applicant will need to mitigate this impact through costly physical improvements to the Pike intersections or suggests that the development cannot be permitted. For this reason, even the traffic analysis zone summaries of capacity do not necessarily reflect if and where development can be accommodated: based on the City's CTR requirements, the area of analysis is all but guaranteed to include intersections already unable to accept more vehicle trips in the peak hour.

6.0 RESULTS AND CONCLUSIONS

The City's current CLV standard results in several intersections not having adequate capacity for traffic movement. This effectively limits development along the Rockville Pike corridor and presents challenges in implementation of the Rockville's Pike plan.

6.1 Conclusions

The City's CTR system of development review does not readily allow development consistent with the *Rockville's Pike* plan vision to occur in the planning area. Development on a small scale (i.e. generating fewer than 30 vehicle trips in the peak travel hour) may occur, but this development does not serve to implement the vision plan and further reduces the corridor's capacity to accommodate new development. The City may consider the following alternative approaches if it wishes to accommodate new growth and development.

a. Implement engineering-based changes that increase intersection capacity. In many cases on Rockville Pike, intersection congestion occurs not only because of the volume of traffic using the intersection but also the ways in which that traffic is operating.

These changes can include physical changes to the roadway and intersection design, such as the addition of turn lanes. They can also include changes to traffic control, such as the replacement of signal infrastructure to allow different turning movement patterns and the re-phasing and retiming of signals to improve efficiency. Throughout the *Rockville's Pike* planning process, the planning team noted constraints to right-of-way, although these are not universally located along the corridor and some intersections may have opportunities to use this approach.

Increases in capacity from engineering-based solutions will allow additional traffic to pass through the intersection while maintaining acceptable levels of service. For this reason, any such approaches should be considered in tandem with an increase in CLV, primarily so that any commitment of resources to implement engineering changes is not foregone by a standard of measurement that does not recognize them.

b. Increase the CLV standard. As demonstrated in Table 3.0.1, certain intersections already exceeding the CTR-determined CLV threshold would not be in excess if the standard were to be raised. This would not require physical changes to street and roadway infrastructure but would rather adjust the City's adequate public facility policy to permit additional traffic in dominant movements.

As the City CTR specifies different CLV thresholds dependent on a specific intersection's signal cycle length and phasing, the amount by which standards could be increased would vary. However, if Mid-Pike Plaza is not considered, increasing CLV thresholds by 100 for each cycle length-phasing combination would restore each intersection except Congressional Lane to an acceptable level of service and open a greater range of the corridor to accommodating new development. If Mid-Pike Plaza is considered, this would need to be raised by a greater amount.

c. Develop a broader set of concurrency review measures, focused more on the corridor and the Plan area than on specific intersections. A focus on intersections as a basis for concurrency and adequate public facility management may pose problems when certain intersections reach their capacity limits. This is especially true in corridor-based districts, where the principal thoroughfare inevitably carries a large share of local traffic generated within the corridor. In these cases, traffic impact from new development is often reviewed over a greater length of the corridor than simply at the single intersection where development is located.

The draft Plan introduces a variety of techniques in use in other communities across the United States in order to introduce such an alternative system. Among other suggestions, it proposes the establishment of an infrastructure capacity tracking system where land uses—even after development is approved and the use is permitted occupancy—that demonstrate a reduction in vehicle impact restore capacity to the system. Most notably, the draft Plan recommends developing policies that strive for a greatly reduced share of trips related to the Pike being made by single-occupant vehicles, pointing to the Pike's two Metrorail stations, Montgomery County Ride On Transit, and an enhanced street network and the potential for pedestrian access that it suggests as ways to achieve this modal transfer. This in turn is intended to allow development projects to seek a greater program yield by creating an environment in which parking requirements can be relaxed or reduced in conjunction with a multimodal approach to travel demand management. Although the draft Plan's suggestions have been used in environments similar to the Rockville Pike corridor, they should be refined and vetted against complementary policies and current political will in order to develop a formal policy of multi-modal, place-based concurrency review.

6.2 Substitution of Development Program through Traffic Impact Equivalency

In the course of its development review process, the City may wish to use a traffic impact equivalency system to work with applicants to try to mitigate impact by pursuing different development program components. Table 6.2.1 on the following page is a sample matrix to facilitate the application of such a system. It is based on rates of PM peak hour traffic impact for a variety of land uses as reported in the ITE *Trip Generation Handbook* and provides multipliers to determine 'exchange rates' for different land uses based on an equal amount of traffic impact. Its intent is to allow a development applicant flexibility in changing components of the land use program once development has been approved without requiring the applicant to undergo further review of the modification. In short, once a certain level of traffic generation has been reviewed and approved, the applicant may use the equivalency system to substitute land uses provided that the resulting traffic generation stays within the approved amount.

Table 6.2.1 Equivalency Matrix for Substituting Development Program on Traffic Impact[2]

TO / FROM	Single Family (DU)	Multi-Family (DU)	Townhouse/ Condo (DU)	Senior Housing, Detached (DU)	Senior Housing, Attached (DU)	Hotel (Rooms)	Retail (0-49 KSF)	Retail (50-99 KSF)	Retail (100-199 KSF)	Retail (200-299 KSF)	Retail (300-399 KSF)	Retail (400-499 KSF)
Single Family (DU)	1.00 DU	1.08 DU	1.29 DU	2.58 DU	6.09 DU	0.94 Rms	0.07 KSF	0.10 KSF	0.12 KSF	0.15 KSF	0.16 KSF	0.18 KSF
Multi-Family (DU)	0.93 DU	1.00 DU	1.19 DU	2.38 DU	5.64 DU	0.87 Rms	0.06 KSF	0.09 KSF	0.11 KSF	0.13 KSF	0.15 KSF	0.16 KSF
Townhouse/Condo (DU)	0.78 DU	0.84 DU	1.00 DU	2.00 DU	4.73 DU	0.73 Rms	0.05 KSF	0.08 KSF	0.10 KSF	0.11 KSF	0.13 KSF	0.14 KSF
Sr. Housing, Detached (DU)	0.39 DU	0.42 DU	0.50 DU	1.00 DU	2.36 DU	0.37 Rms	0.03 KSF	0.04 KSF	0.05 KSF	0.06 KSF	0.06 KSF	0.07 KSF
Sr. Housing, Attached (DU)	0.16 DU	0.18 DU	0.21 DU	0.42 DU	1.00 DU	0.15 Rms	0.01 KSF	0.02 KSF	0.02 KSF	0.02 KSF	0.03 KSF	0.03 KSF
Hotel (Room)	1.06 DU	1.15 DU	1.37 DU	2.73 DU	6.45 DU	1.00 Rms	0.07 KSF	0.10 KSF	0.13 KSF	0.15 KSF	0.17 KSF	0.19 KSF
Retail (0-49 KSF)	15.04 DU	16.26 DU	19.38 DU	38.77 DU	91.64 DU	14.20 Rms	1.00 KSF	1.46 KSF	1.84 KSF	2.19 KSF	2.46 KSF	2.68 KSF
(50-99 KSF)	10.33 DU	11.16 DU	13.31 DU	26.62 DU	62.91 DU	9.75 Rms	0.69 KSF	1.00 KSF	1.27 KSF	1.50 KSF	1.69 KSF	1.84 KSF
(100-199 KSF)	8.16 DU	8.82 DU	10.52 DU	21.04 DU	49.73 DU	7.70 Rms	0.54 KSF	0.79 KSF	1.00 KSF	1.19 KSF	1.33 KSF	1.45 KSF
(200-299 KSF)	6.87 DU	7.42 DU	8.85 DU	17.69 DU	41.82 DU	6.48 Rms	0.46 KSF	0.66 KSF	0.84 KSF	1.00 KSF	1.12 KSF	1.22 KSF
(300-399 KSF)	6.12 DU	6.61 DU	7.88 DU	15.77 DU	37.27 DU	5.77 Rms	0.41 KSF	0.59 KSF	0.75 KSF	0.89 KSF	1.00 KSF	1.09 KSF
(400-499 KSF)	5.61 DU	6.06 DU	7.23 DU	14.46 DU	34.18 DU	5.30 Rms	0.37 KSF	0.54 KSF	0.69 KSF	0.82 KSF	0.92 KSF	1.00 KSF
Fast Food Rest.	49.97 DU	54.00 DU	64.38 DU	128.77 DU	304.36 DU	47.15 Rms	3.32 KSF	4.84 KSF	6.12 KSF	7.28 KSF	8.17 KSF	8.90 KSF
High Turnover Rest.	16.21 DU	17.52 DU	20.88 DU	41.77 DU	98.73 DU	15.30 Rms	1.08 KSF	1.57 KSF	1.99 KSF	2.36 KSF	2.65 KSF	2.89 KSF
Quality Rest.	11.18 DU	12.08 DU	14.40 DU	28.81 DU	68.09 DU	10.55 Rms	0.74 KSF	1.08 KSF	1.37 KSF	1.63 KSF	1.83 KSF	1.99 KSF
Bank (KSF)	81.75 DU	88.34 DU	105.33 DU	210.65 DU	497.91 DU	77.14 Rms	5.43 KSF	7.91 KSF	10.01 KSF	11.91 KSF	13.36 KSF	14.57 KSF
Convenience w/Gas (KSF)	90.46 DU	97.76 DU	116.56 DU	233.12 DU	551.00 DU	85.37 Rms	6.01 KSF	8.76 KSF	11.08 KSF	13.18 KSF	14.78 KSF	16.12 KSF
Movie Theater (Seats)	0.21 DU	0.23 DU	0.27 DU	0.54 DU	1.27 DU	0.20 Rms	0.01 KSF	0.02 KSF	0.03 KSF	0.03 KSF	0.03 KSF	0.04 KSF
Medical Office (KSF)	5.46 DU	5.90 DU	7.04 DU	14.08 DU	33.27 DU	5.15 Rms	0.36 KSF	0.53 KSF	0.67 KSF	0.80 KSF	0.89 KSF	0.97 KSF
Medical Clinic (KSF)	7.73 DU	8.35 DU	9.96 DU	19.92 DU	47.09 DU	7.30 Rms	0.51 KSF	0.75 KSF	0.95 KSF	1.13 KSF	1.26 KSF	1.38 KSF
Hospital (beds)	0.31 DU	0.33 DU	0.40 DU	0.80 DU	1.88 DU	0.29 Rms	0.02 KSF	0.03 KSF	0.04 KSF	0.04 KSF	0.05 KSF	0.05 KSF
Asst. Care Living Facility (units)	0.26 DU	0.28 DU	0.34 DU	0.67 DU	1.59 DU	0.25 Rms	0.02 KSF	0.03 KSF	0.03 KSF	0.04 KSF	0.04 KSF	0.05 KSF
Office (0-49 KSF)	3.19 DU	3.45 DU	4.12 DU	8.23 DU	19.45 DU	3.01 Rms	0.21 KSF	0.31 KSF	0.39 KSF	0.47 KSF	0.52 KSF	0.57 KSF
(50-99 KSF)	3.24 DU	3.50 DU	4.17 DU	8.35 DU	19.73 DU	3.06 Rms	0.22 KSF	0.31 KSF	0.40 KSF	0.47 KSF	0.53 KSF	0.58 KSF
(100-199 KSF)	2.46 DU	2.66 DU	3.17 DU	6.35 DU	15.00 DU	2.32 Rms	0.16 KSF	0.24 KSF	0.30 KSF	0.36 KSF	0.40 KSF	0.44 KSF
(200-299 KSF)	2.15 DU	2.32 DU	2.77 DU	5.54 DU	13.09 DU	2.03 Rms	0.14 KSF	0.21 KSF	0.26 KSF	0.31 KSF	0.35 KSF	0.38 KSF
(300-399 KSF)	2.01 DU	2.18 DU	2.60 DU	5.19 DU	12.27 DU	1.90 Rms	0.13 KSF	0.20 KSF	0.25 KSF	0.29 KSF	0.33 KSF	0.36 KSF
(400-499 KSF)	1.94 DU	2.10 DU	2.50 DU	5.00 DU	11.82 DU	1.83 Rms	0.13 KSF	0.19 KSF	0.24 KSF	0.28 KSF	0.32 KSF	0.35 KSF
Fitness Center	3.08 DU	3.33 DU	3.97 DU	7.94 DU	18.78 DU	2.91 Rms	0.20 KSF	0.30 KSF	0.38 KSF	0.45 KSF	0.50 KSF	0.55 KSF

[2] Units of development for each use are expressed in abbreviations as follows: 'DU' is dwelling unit; 'KSF' is thousands of square feet.

To take the conceptual Middle Pike development as an example, Concept A projected a trip generation of 627 PM peak hour trips, based on 400 multi-family dwelling units and 50,000 square feet of retail. If the City chose to permit this development—leaving aside, for purposes of this discussion, the aforementioned traffic impacts and CLV capacity—it could allow the developer to substitute, for example, 25,000 square feet of retail for 279 additional residential units. Likewise, if the developer desired to add retail beyond this scenario and had already been permitted, s/he could add 10,000 square feet of retail by reducing the residential portion of the program by 112 units. These calculations are detailed as follows:

Table 6.2.2 Example Equivalency-Based Substitutions from Conceptual Middle Pike Development

Substitution Desired	Amount of Adjustment	Equivalent of Component Land Use In Terms of Traffic
Less retail, additional residential	25,000 fewer SF of retail	279 units (1,000 SF of retail is equal to 11.16 multi-family units; 11.16 x 25 = 279)
More retail, less residential	10,000 additional SF	Reduction of 112 units of residential (1,000 SF of retail is equal to 11.16 multi-family units; 11.16 x 10 = 111.6, rounding up a unit as not to exceed agreed-upon traffic amount)
Added office, less residential	20,000 SF of office added to program	Reduction of 69 units of residential (1,000 SF of office is equal to 3.45 multi-family units; 3.45 x 20 = 64.8, rounding up a unit as not to exceed agreed-upon traffic amount)

6.3 Concluding Points on CLV

Revisions to the CLV standard or engineering-based changes, whether related to roadway design or signal timing, may help to realize additional efficiency under the current CLV-based traffic concurrency review system. However, any new development that these changes enable is likely eventually to exhaust the added margin of capacity and introduce a similar set of challenges to those documented in this memorandum. The following points are worthy of attention when considering changes of this nature.

1. CLV is derived based on the dominant travel movements at a given time. For this reason, an intersection near the limits of an adopted CLV standard may actually add more traffic than what appears feasible, provided it is not in the dominant direction and therefore does not alter the balance of individual signal phase CLVs. However, when this occurs, the actual operations of the signal are likely to appear more congested and burdened, mostly because they require a greater share of green time in the signal timing scheme. Many of the heavy northbound and southbound through movements on Rockville Pike are allowed equal signal time, regardless of which is dominant in a given peak hour. However, turning movements and cross-street movements are not necessarily timed in the same way; additions to these movements are likely to require added signal time in order to reduce delay, and this may come at the expense of major movements such as those on Rockville Pike.

2. Increases in CLV may also be exhausted by traffic generated from developments outside of Rockville. If an intersection-specific policy approach is to be retained in the City, it is important to coordinate development review with neighboring jurisdictions to understand the scale of impact and the threshold for concurrency that is acceptable and allows the City to realize added development.

City of Rockville

M E M O R A N D U M

May 12, 2011

TO: Members of the APFO Advisory Committee

FROM: David Levy, Chief of Long Range Planning

RE: Draft Rockville Pike Plan and the APFO

This brief memorandum and the attachments provide brief background to discussion on the draft Rockville Pike Plan, which the APFO Advisory Committee has requested take place at the meeting of Thursday, May 12.

Overview

As you may know, in 2007 the Mayor and Council directed staff to revisit the 1989 Rockville Pike Plan, which is a part of the City's Master Plan. The Mayor and Council approved a contract with a consulting team consisting of ACP Visioning & Planning as the lead firm with the responsibilty for land use recommendations; Glatting Jackson Kercher Anglin for transportation; and Economic Research Associates (ERA) for economic and market analysis. The latter two firms have since both been purchased by AECOM.

The draft Plan was released in December 2010. The draft and other information can be viewed on the City's Web site, at http://www.rockvillemd.gov/rockvillespike/. For your reference, attached is the Executive Summary of the draft Plan.

Public hearings with the Planning Commission were held on March 9 and March 16, and the Planning Commission is accepting written testimony during this phase of the process through May 27, 2011, though it has indicated that it may wish to reopen the record for more testimony at a later date. The submitted testimony can be viewed on the Web site listed above.

Relevance to APFO

The draft Plan identifies two components of the APFO that provide a challenge to reaching the vision and goals of the plan.

1. Schools – The draft Plan identifies that the Richard Montgomery Cluster is over capacity in all of its elementary schools. As the plan vision involves accommodating redevelopment in a mixed-use setting, with additional residential units, the lack of space in the elementary schools and middle school will not permit child-generating residential development until more space is added. The plan does not recommend changing the APF standards for schools. It states that, for the plan vision to become reality, more school capacity must be provided. The discussion can be found in Appendix B – Research Summary, on pages B25-27, which is also attached.

2. Traffic – The draft Plan also identifies traffic congestion as a potential constraint to the realization of the Plan goals. There is a significant discussion of existing conditions and the consultants' interpretation of their implications in Appendix B – Research Summary, on pages B1-9. In particular, there are specific intersections within the Plan area that, at certain times of the day and week, are at or near "failing" conditions according to the City's current standards. Additional analysis is presented in Appendix E – CLV Analysis. In contrast to the recommendations for schools, the consultants do recommend that the City consider amending its approach to traffic within the APFO; and they offer a few different possible approaches.

Both Emad Elshafei, Chief of Traffic and Transportation, and I will be available on Thursday to discuss the consultant recommendations and the implications for the Rockville Pike Corridor. We encourage you to watch the Transportation discussion with the consultant at the Planning Commission Wednesday evening, May 11.

Figure II-1: Original CCT Alignment

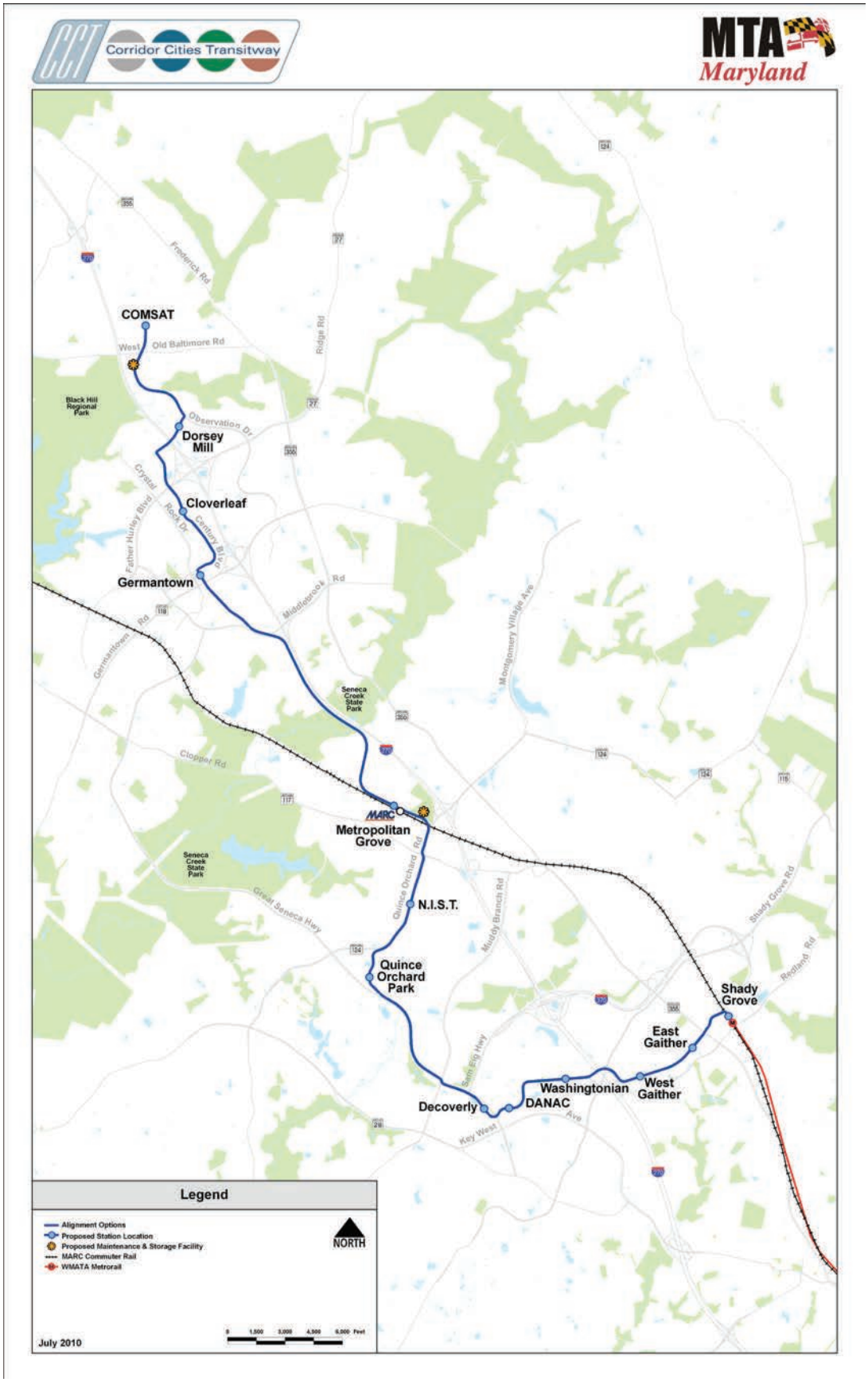


Figure II-2: Alternative Alignments