CONTENTS

INTRODUCTION

This document supplements the information in the Planning Board Draft of the White Flint 2 Sector Plan. These appendices contain technical analysis of demographic data, housing, redevelopment finance, schools and transportation that supplements the recommendations in the Planning Board Draft Plan.

The first appendix illustrates demographic information derived from the 2010 United States Census Update and American Commuter Survey. Appendix two provides an overview of housing within the Plan area, including affordable housing. Existing market-rate affordable of existing multi-family residential is also included this appendix. The third appendix contains financial analysis of the potential redevelopment of two properties along Executive Boulevard.

The Bolan Smart Adaptive Reuse Study, appendix four, analyzes several factors that pertain to potentially reusing office buildings along Executive Boulevard in the Plan area and the Rock Spring office park. A case study of a property on Executive Boulevard is provided. The larger Adaptive Reuse Study examines office buildings in Rock Spring Park; economics of adaptive reuse; and regional examples of office buildings conversions. The Urban Land Institute's Technical Assistance Panel Report, "What Next For Office Parks in Montgomery County" highlights the portion of the report on Executive Boulevard is also in appendix four.

The merits of expanding the White Flint Special Taxing district is highlighted in appendix five. Transportation analysis and improvements necessary to accommodate the recommended development, including applicable transportation standards, such as Highway Capacity Manual (HCM), forecasting measures and other mobility re addressed in appendix six. The Parklawn South Industrial District is examined in appendix seven, including countywide industrial analysis, market analysis of industrial properties and composition of the workforce in industrial areas.

An analysis of existing environmental resources and impacts are included in appendix eight. Appendix nine has information regarding parks and open spaces recommendations, including existing parks that surround the plan area. Details on schools are addressed in appendix 10 and the final appendix highlights the recent history of the plan area and adjacent plan areas, including the 2009 *Twinbrook Sector Plan* area and the City of Rockville's *Rockville Pike Plan*.

APPENDIX 1: DEMOGRAPHIC AND ECONOMIC SUMMARY

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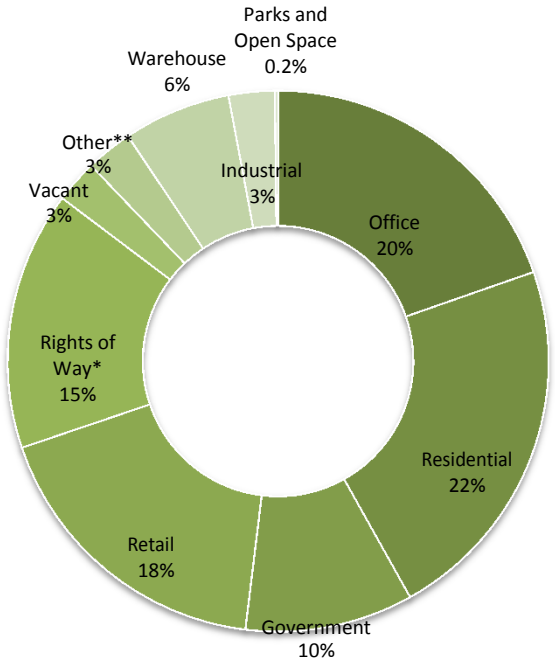
Research and Special Projects

Montgomery County Planning Department

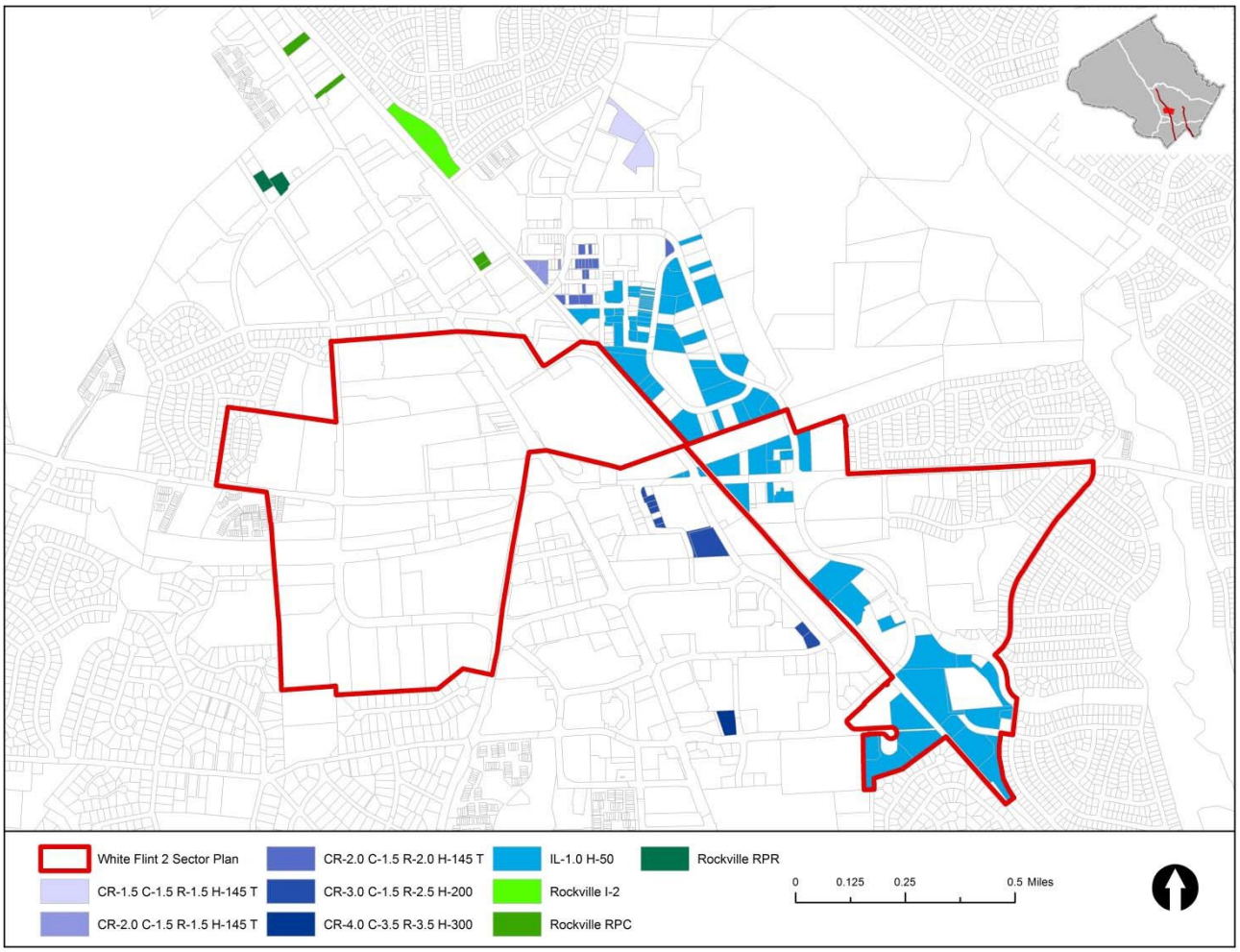
Land use is a mix of office, retail and residential

- Of the 547 acres in the White Flint 2 Sector Plan, more than half is used as commercial property
- Office is the primary land use in the sector plan area, accounting for 20 percent of the land area. Government uses account for 10 percent of the land area and include community centers, schools, churches and other institutional uses.
- Nine percent of the land area is used for warehouses or industrial land use.



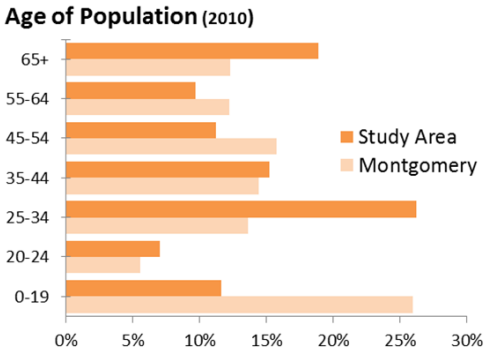
* Rights of Way also include land use "Unknown"

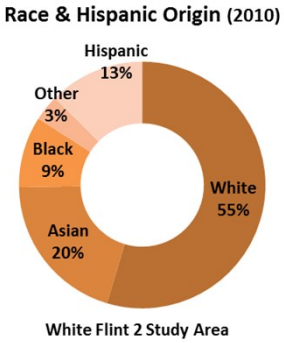
** Other includes land uses "Parking and Transportation" and "Utilities"



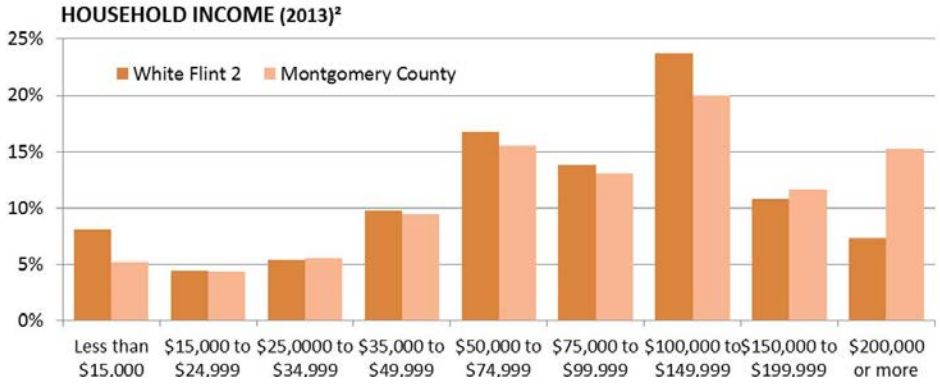
Mix of Millennial and Senior Residents

- The residential population in the White Flint 2 Study Area increased by 39 percent from 5,850 people in 3,200 households in 2000 to 8,140 in 4,490 households in 2010.[1] The average household size at 1.81 is below the 2.70 persons per household countywide.[1] The majority of households are non-family, 59 percent, in contrast to only 31 percent of households countywide.[2]
- The population in the Sector Plan area is forecasted to add 9 percent or about 700 people by 2020, and 33 percent or about 2,500 people by 2040.[3]
- The two largest age cohorts in the area are 25 to 34 years old (26 percent) and 65 years and older (19 percent).[1] The availability of senior housing in the area is reflected in the higher percentage of residents ages 65 and older compared to 12 percent countywide.[1]





- The White Flint 2 Study Area has a higher percentage of non-Hispanic Whites (55 percent) and Asians (20 percent) and a lower percentage of African Americans (9 percent) and Hispanics (13 percent) than Montgomery County (respectively, 49 percent, 14 percent, 17 percent, and 17 percent).[1]
- This is a highly educated area where 33 percent of adults age 25 years and older have a graduate degree comparable to 31 percent countywide.[2]
- The average household income is $93,683, 41percent lower than the County's at $132,222 in 2013. The area's high percentage of single-person households (46 percent of households compared to 25 percent countywide), and senior households with low income (45 percent of senior households have incomes below $35,000) contribute to the lower average household income.[2]



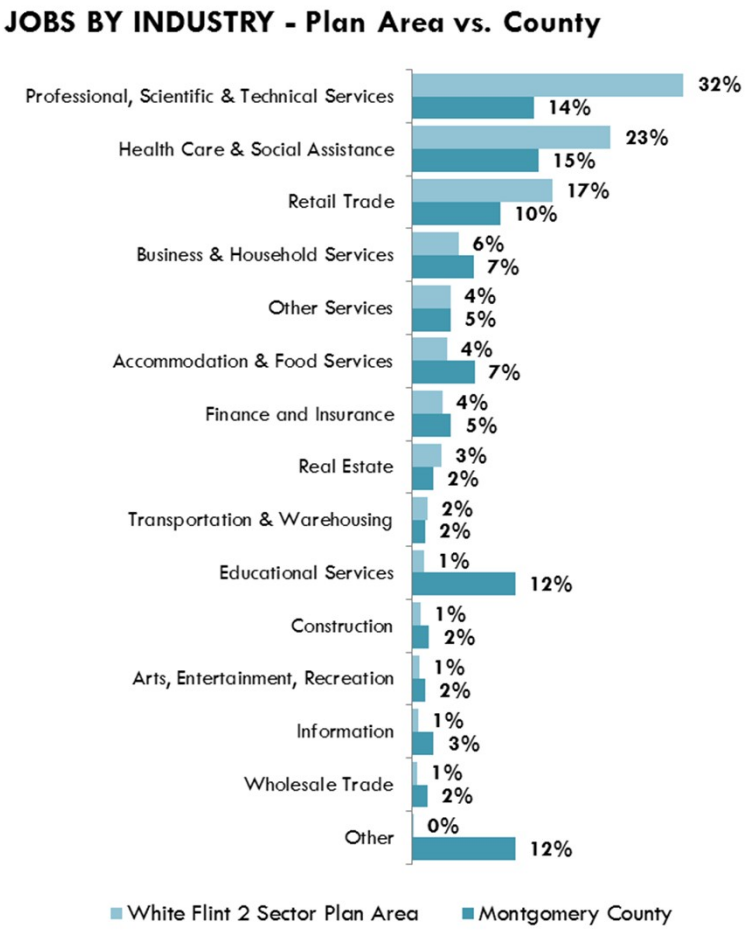
Note: The White Flint 2 Study Area is defined by two U.S. Census tracts, 12.16 and 12.18, and block group 2 in tract 12.01 approximately the White Flint 2 Sector Plan, but not exactly aligning with the Sector Plan boundaries.

1. 2010 U.S. Decennial Census complete count data.

[2] 2009-2013 American Community Survey, 5-year estimates. [3] Round 8.3 Forecast, Metropolitan Washington Council of Governments.

White Flint 2 is a job destination

- There are 600 employers providing 17,500 jobs in the White Flint 2 Sector Plan Area, accounting for 1.9 percent of employers and 3.4 percent of all jobs in Montgomery County.
- Employment in the plan area is forecasted to increase by 4.4 percent by 2020 and 6.4 percent by 2040. Majority of this growth will be office employment, adding about 700 employees by 2020 and about 800 employees by 2040.
- The largest economic sector is professional, scientific and technical services. It accounts for 1 in 5 business establishments; 1 in 3 jobs; and nearly half (46 percent) of all wages paid within the plan area. Health care and social services is the second largest sector, with 4,100 jobs in an array of medical and service centers.
- Small businesses with less than 50 employees comprise 97 percent of area establishments. Three out of four area jobs are in larger establishments.



WHITE FLINT 2 SECTOR PLAN

Industry	Jobs	Average Annual
Professional, Scientific & Technical	5,600	$111,279
Health Care & Social Assistance	4,100	$94,500
Retail Trade	2,900	$27,297
Business & Household Services	1,000	$23,766
Other Services	800	$36,525
Accommodation & Food Services	700	$22,903
Finance and Insurance	600	$120,033
Real Estate	600	$86,425
Transportation and Warehousing	300	$46,981
Educational Services	300	$42,571
Construction	200	$85,778
Arts, Entertainment, Recreation	200	$9,424
Information	100	$100,292
Wholesale	10	$66,116
Trade Other	0	
Total	**17,500**	**$76,993**

Note: Does not include sole proprietorships or the self-employed.
Source: Maryland Department of Labor, Licensing, and Regulation, establishment-level records

4% of the county's retail sales occur within White Flint 2

- Nearly $470 million per year is spent on retail within White Flint 2, outpacing consumer spending of residents in the Plan area by $372 million. This indicates that outside residents are coming to White Flint 2 to shop.
- The retail capture rate is 491 percent and it represents the ratio of local retail sales to spending by the study area residents. A capture rate over 100 percent indicates a retail surplus.
- The type of retail with the most sales in White Flint 2 is neighborhood services, which includes grocery stores and convenience stores, with more than $157 million in sales and a 559 percent capture rate.
- The second largest category of sales is automotive retail – comprised of motor vehicle and parts dealers and gasoline stations- with $153 million in sales and a 620 percent capture rate.
- Destination retail, including apparel, electronics, furniture, and general merchandise, rank third with $115 million in sales and a 443 percent capture rate.

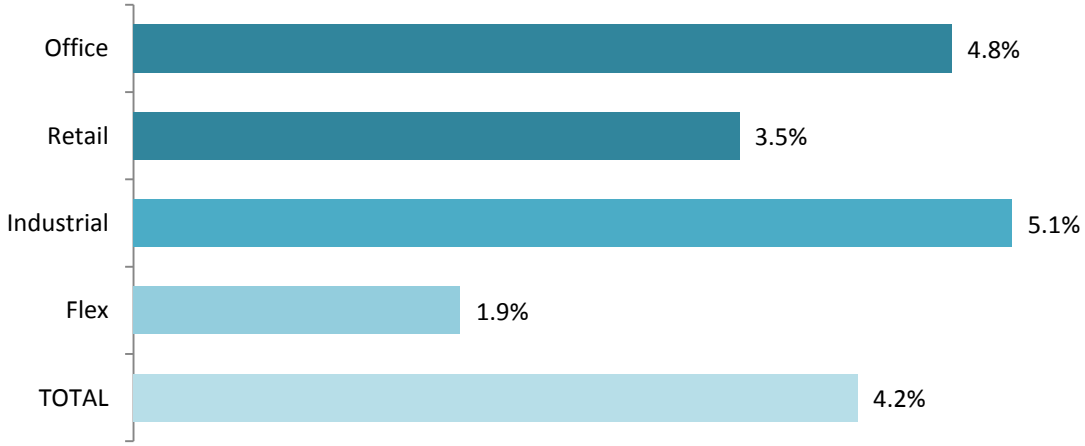
	RETAIL GAP		CAPTURE RATE	
	Plan Area	*Montgomery County*	*Plan Area*	*Montgomery County*
Total Retail	**-$371,796,694**	**$5,171,218,582**	**491%**	**62%**
Destination retail	**-$89,198,560**	**$2,396,617,881**	**443%**	**52%**
Clothing and Clothing Accessories Stores	-$4,819,653	$557,814,089	177%	73%
Electronics and Appliance Stores	-$26,908,244	$133,149,470	1167%	75%
Furniture and Home Furnishings Stores	-$14,175,345	$96,235,312	804%	41%
General Merchandise Stores	-$29,574,686	$1,437,518,224	329%	60%
Sporting Goods, Hobby, Book, Mus ic Stores	-$13,720,632	$171,900,786	699%	51%
Eating and drinking places	**-$15,908,667**	**$651,900,459**	**252%**	**66%**
Food Service and Drinking Pl aces	-$15,908,667	$651,900,459	252%	66%
Neighborhood services	**-$129,435,702**	**$426,508,358**	**559%**	**72%**
Building Ma teri al, Garden Equip Stores	$113,967	$426,508,358	96%	29%
Food and Beverage Stores	-$52,728,249	$971,804,468	413%	69%
Health and Pe rs onal Ca re Stores	-$74,929,092	-$109,632,681	1348%	109%
Mi scellaneous Store Retailers	-$1,892,328	$238,057,324	169%	56%
Automotive	**-$128,491,783**	**$784,377,892**	**620%**	**70%**
Motor Vehicle and Pa rts Dealers	-$97,898,388	$784,377,892	665%	77%
Gasoline Stations	-$30,593,395	$658,668,912	514%	53%
Online, vending machines, etc.	**-$8,761,982**	**$911,813,992**	**255%**	**18%**
Non-Store Retailers	-$8,761,982	$911,813,992	255%	18%

Source: Montgomery County Planning Department; 2015 ESRI Business Analyst Online Source: Montgomery County Planning Department; 2011 Claritas SiteReports

White Flint 2 has 5.8 million leasable square feet with a 15.7% vacancy rate

- About 60 percent of the leasable commercial space in White Flint 2 are offices with 3.5 million square feet of space, followed by retail with 1.4 million square feet, industrial with 716,000 square feet and flex space with 209,000 square feet.
- Rents in White Flint 2 are below the county average. Retail space commands the highest rents at
- $27 per square foot, which is the same as the county average. Office commands $24.50 per square foot, $3 below the county average.
- The highest vacancy rates are for office space with 22 percent (776,000 square feet of vacant space), followed by industrial with a 14 percent vacancy rate (103,000 square feet of vacant space).

Sector Plan Share of County Leased Commercial Space



White Flint 2

			Under Construction		Vacancy Rate		Rent	
Type	**Buildings**	**Leasable Square Feet**	*buildings*	*square feet*	*2Q 2015*	*1 year ago*	*2Q 2015*	*1 year ago*
Offi ce	59	3,498,832	0	0	22.2%	24.4%	$24.50	$25.28
Retail	41	1,407,309	0	0	2.4%	2.3%	$27.44	$19.17
Indus tri al	22	716,054	0	0	14.4%	13.9%	$11.28	$11.08
Flex (a)	6	209,252	0	0	0.0%	8.6%	$17.50	$17.50
Total	**128**	**5,831,447**	**0**	**0**	**15.7%**	**17.2%**	**$20.19**	**$20.49**

Montgomery County

			Under Construction		Vacancy Rate		Rent	
Type	**Buildings**	**Leasable Square Feet**	*buildings*	*square feet*	*2Q 2015*	*1 year ago*	*2Q 2015*	*1 year ago*
Offi ce	1,517	73,394,375	6	400,021	15.0%	14.9%	$27.82	$27.85
Retail	2,326	39,913,783	4	68,742	3.9%	4.7%	$27.33	$25.72
Industrial	623	13,995,275	3	200,000	7.6%	7.7%	$11.67	$10.94
Flex	280	11,000,081	0	0	10.3%	11.8%	$14.53	$15.62
Total	**4,746**	**138,303,514**	**13**	**668,763**	**10.7%**	**11.0%**	**$22.28**	**$22.48**

Notes:

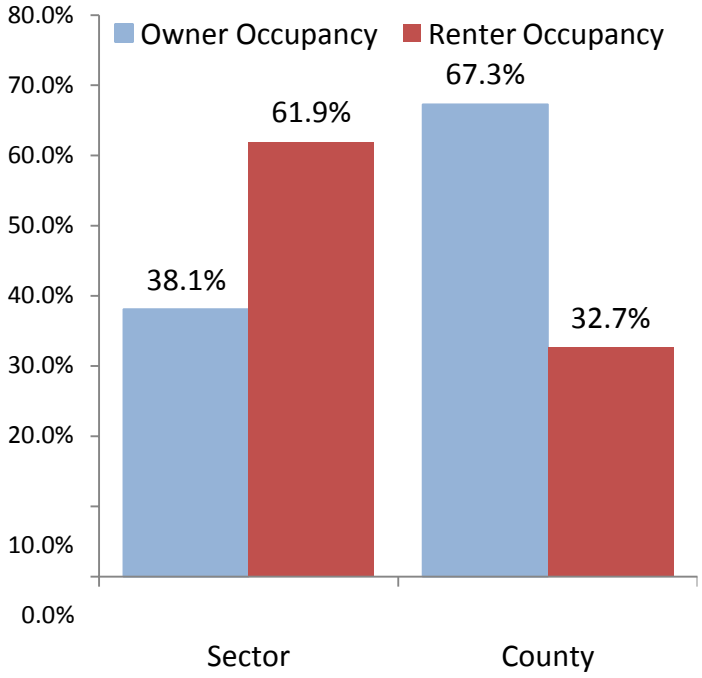
(a) Flex space is defined as a versatile space that may combine office, research and development, quasi-retail sales, and industrial, warehouse or distribution uses. At least half the rentable area of the building must be used as office space and typically has ceiling heights of 18'.

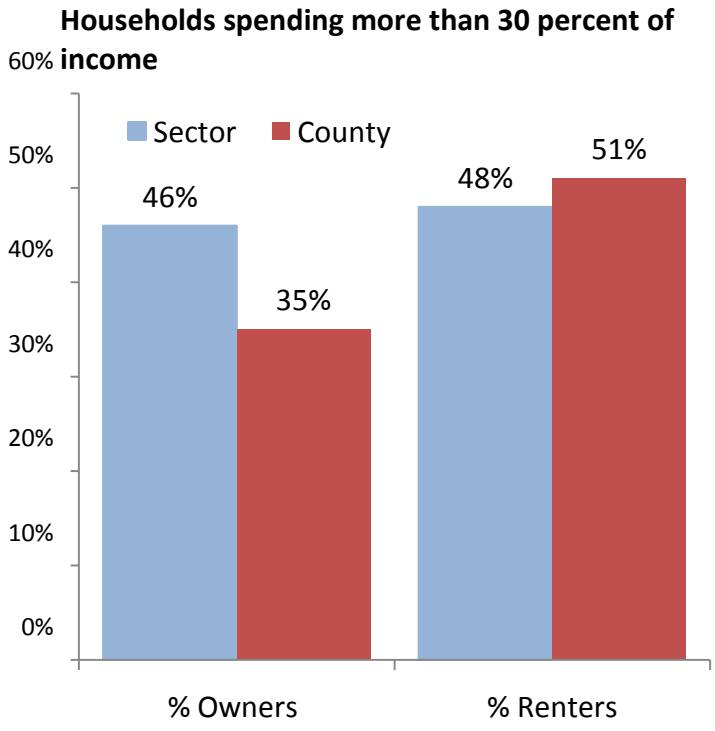
Source: Montgomery County Planning Department analysis of CoStar data, downloaded 6/2015.

White Flint 2 has a high percentage of renters and higher rents than the county average

- Most of the housing in White Flint 2 is multifamily.[1]
- The sector's properties include 172 single-family detached homes, 103 single-family attached homes (such as townhomes) and at least 490 condominiums.[2]
- The sector offers 1,425 rental units in six large apartment developments. These developments include a mix of garden-style and high-rise apartments.[3]

- Almost 62 percent of households in the sector are renters.[1]
- Rents are generally higher in the sector than the county average. The median rent in the sector is $1,824. The countywide median is $1,568.[1]
- 48 percent of renter households and 46 percent of owner households spend more than 30 percent of their monthly household income on housing costs.[1]



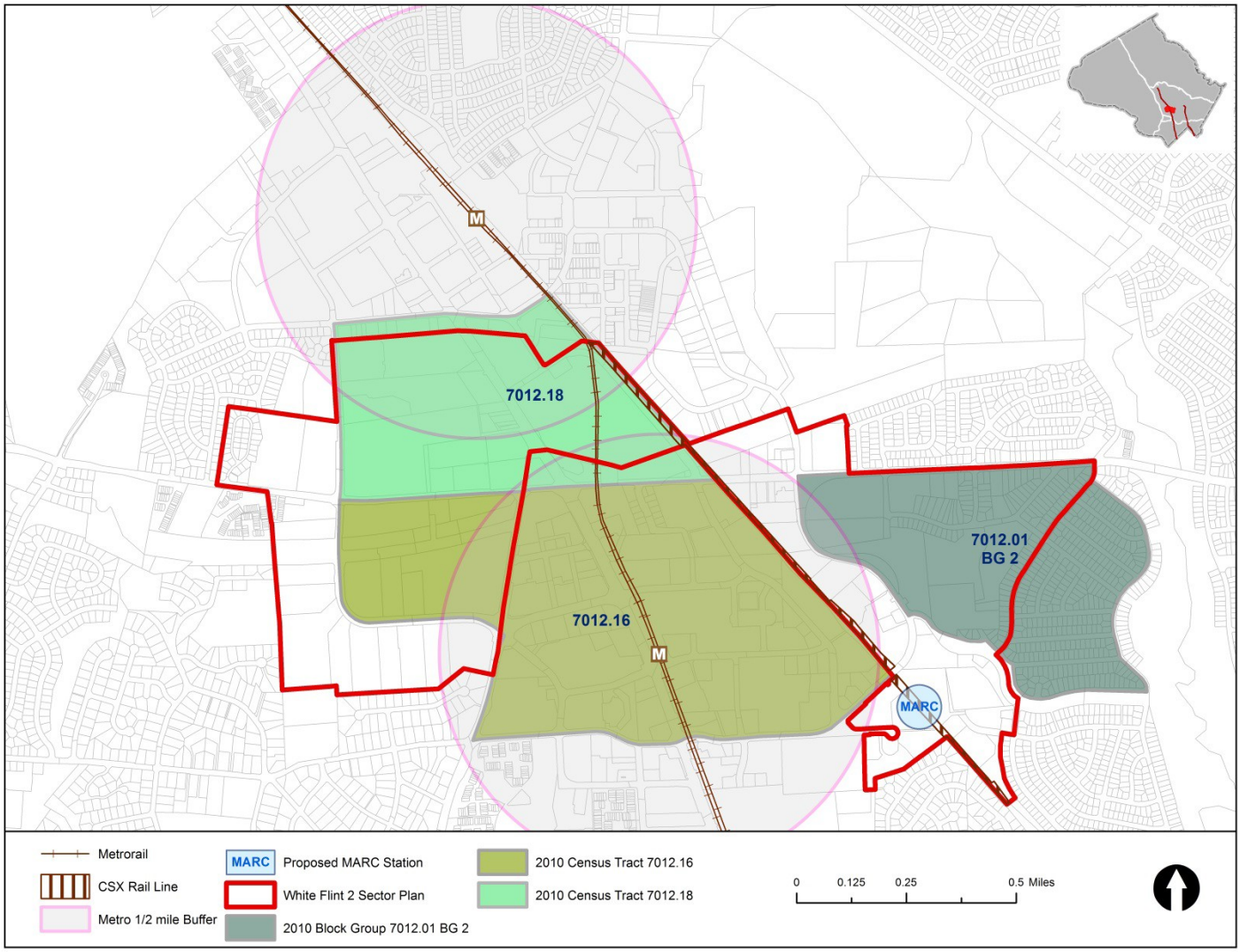


- For 2013 and 2014, the median sales price for a single family detached house in the sector was $367,450, lower than the county median of $530,000.[2]
- For 2013 and 2014, the median sales price of a single-family attached house in the sector was $690,000, higher than the county median of $306,710.[2]
- The sector has 269 rent-restricted affordable housing units, 20 of which are Moderately Priced Dwelling Units (MPDUs).[3]
- The sector has 328 market-rate apartments affordable for low-income households and 768 market-rate apartments affordable for moderate-income households.[3]

Sources: [1] U.S. Census Bureau, American Community Survey, 2009-2013; [2] MD Dept of Assessments and Taxation; [3] DHCA Rental Facilities Survey (2012).

APPENDIX I

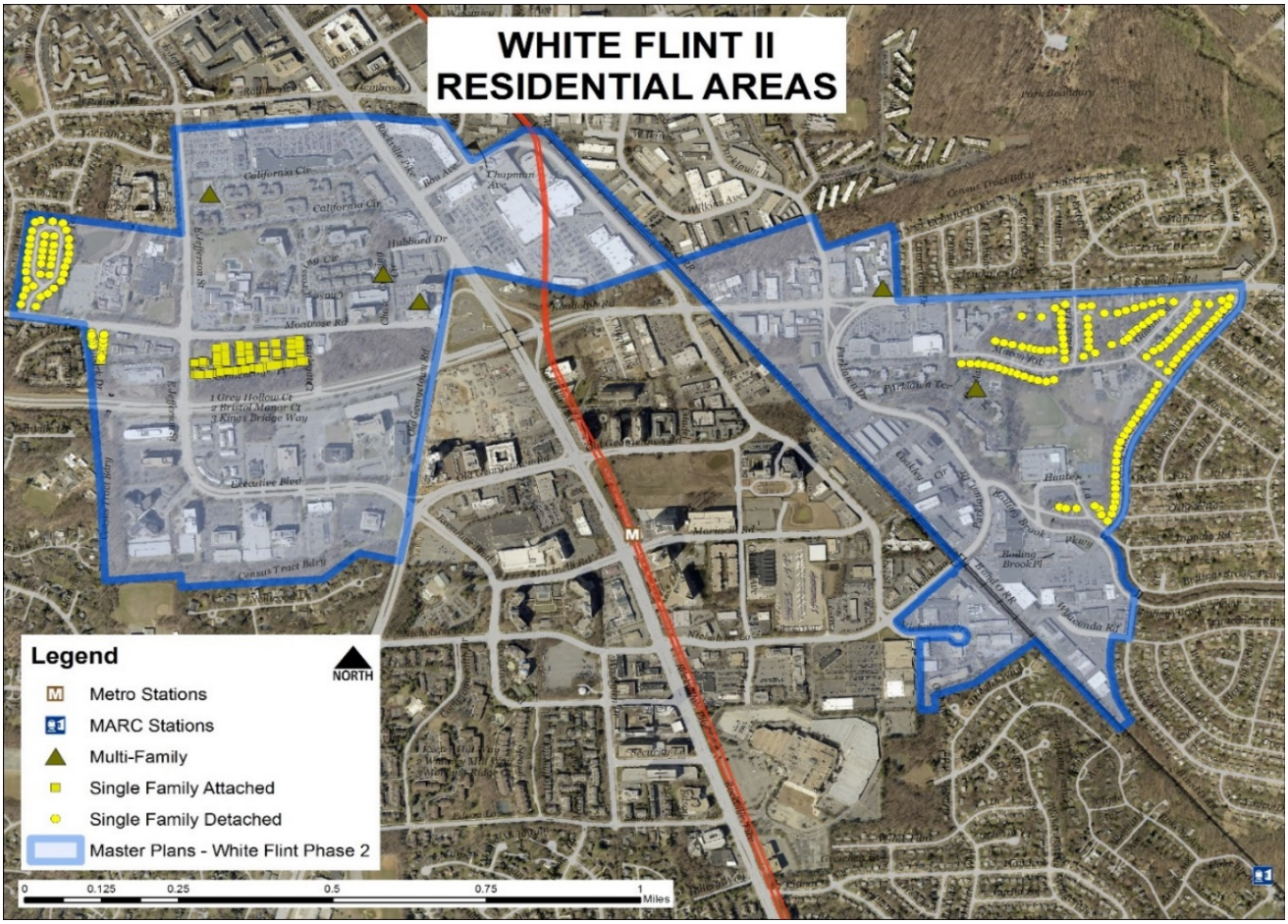
Sector Plan Area Map



Note:
(a) The Sector Plan Area includes census tracts 7012.16, 7012.18, and census block group 7012.01 BG2

APPENDIX 2: HOUSING

Prepared by: Lisa Govoni, Lisa.Govoni@montgomeryplanning.org, Montgomery County Planning Department, Research and Special Projects



White Flint 2 Housing Conditions

White Flint 2 has a diverse housing landscape populated with multi-family, townhomes and single-family detached dwelling units.

Townhomes and Single-Family Homes

White Flint 2 contains 103 townhomes and 172 single-family detached units. Given the Plan boundaries, townhome and single-family detached neighborhoods are located in pockets across the area. Montrose Village, located north of Montrose Road and west of E Jefferson St, has a housing stock of 41 single-family detached homes. East of E. Jefferson Street and south of Montrose Road, there are 99 single-family attached units. Randolph Farms is located south of Randolph Road and east of Parklawn Drive, and is home to 77 single-family detached housing units. White Flint 2 is also home to 43 of Randolph Hills' single-family detached units. North of

Montrose Parkaway and south of Montrose Road in Grayrob, there are 4 single-family attached units, and 12 single-family detached units.

Multifamily Homes

White Flint 2 has five multi-family rental dwelling buildings, four of which are garden style (low-rise), and one of which is a high-rise. building. The facilities are on average 38 years old, although three of the facilities (Oxford Square, Randolph Square and The Monterey) are more than 45 years old.

Table 1 – White Flint 2 Current Conditions

NAME	ADDRESS	CITY	STRUCTURE TYPE	BUILDING AGE	VACANCY
APARTMENTS AT MIRAMONT	6040 California Cir	Rockville	Garden	28	1.3%
OXFORD SQUARE	11902 Parklawn Pl	Rockville	Garden	49	7.2%
RANDOLPH SQUARE	5307 Randolph Rd	Rockville	Garden	47	0.8%
THE MORGAN	12000 Chase Crossing Cir	Rockville	Garden	19	2.4%
THE MONTEREY	5901 Montrose Rd	Rockville	High-Rise	48	5.6%

Source: 2014 DHCA Rental Housing Survey

White Flint 2 multi-family rental housing stock currently contains 1,133 units. More than half of all units are 2-bedroom units (51 percent), followed by 1-bedrooms (36 percent), 3-bedrooms (8 percent), and efficiencies/studios (5 percent). Due to the age of the structures, only one facility has MPDU units. Two facilities note that they accept Federal subsidies for low-income tenants, but the Department of Housing and Community Affairs (DHCA) does not identify units by subsidy.

Table 2 – White Flint 2 Current Units

NAME	SUBSIDY PROGRAM	SUBSIDIZED UNITS	EFFICIENCIES	1-BEDROOMS	2-BEDROOMS	3-BEDROOMS	TOTAL UNITS
APARTMENTS AT MIRAMONT	S8	*	60	157	77		294
OXFORD SQUARE				44	101	22	167
RANDOLPH SQUARE	S8	*		33	72	15	120
THE MORGAN	MPDU	20			120		120
THE MONTEREY				174	210	48	432
TOTAL		20*	60 (5%)	408 (36%)	580 (51%)	85 (8%)	1133

*The DHCA Rental Housing Survey does not identify the units by subsidy; facilities are only asked what types of subsidies are accepted.

Source: 2014 DHCA Rental Housing Survey

Rent levels for the Sector Plan's multi-family dwelling units are affordable to households who earn 60 percent to 109 percent of the Washington Metropolitan Region's Area Median Income (AMI)[1]. Using a weighted average based on the units and bedroom size per facilities, the average apartment in White Flint 2 is affordable to a household earning 83 percent AMI. Of the five multi-family buildings within White Flint 2, two are wholly market-rate affordable and two are partially market-rate affordable, meaning they are affordable to households earning less than 80 percent AMI.

The Morgan is the only affordable to households earning more than 100 percent of the AMI. The Morgan, which houses 120 2-bedroom units, would require an income of around $96,635, based on the Planning Department's assumptions based on household size and bedroom mix.[2] The Apartments at Miramont is market-rate affordable for efficiencies at 80 percent of AMI, but skews higher as units become larger (85 percent AMI for 1-bedrooms and 96 percent for 2-bedrooms). The Monterey follows a similar pattern with affordability greatest in the smaller units, with market-rate affordability for its 1-bedroom units at 75 percent AMI, and its 2-bedroom units and 3-bedroom units at 84 percent and 89 percent of AMI.

Table 3 – White Flint 2 Affordability Conditions

NAME	EFFICIENCY AVG RENT	AMI	1-BEDROOM AVG RENT	AMI	2-BEDROOM AVG RENT	AMI	3-BEDROOM AVG RENT	AMI
APARTMENTS AT MIRAMONT*	$1,241	80%	$1,467	85%	$1,782	96%		
OXFORD SQUARE			$1,331	65%	$1,565	71%	$1,623	60%
RANDOLPH SQUARE			$1,266	61%	$1,447	65%	$1,680	63%
THE MORGAN*					$2,013	109%		
THE MONTEREY			$1,541	75%	$1,857	84%	$2,386	89%

*Affordability was calculated using 25% of AMI due to utilities not being included
Source: 2014 DHCA Rental Housing Survey

Apartments in White Flint 2 have lower rents and are more affordable than apartments in 2010 White Flint Sector Plan area (White Flint 1). This is largely because 2010 Plan area's multifamily facilities are closer to Rockville Pike/Metro Red Line and are newer (the average building age is only 8 years old). White Flint I has approximately 2,296 multifamily residential units, with 378 units, or 16 percent of units in rent-restricted programs. Typical of newer construction, multifamily in White Flint 1 skews to smaller units: 60 percent of White Flint 1 units are 1-bedrooms, 36 percent 2-bedrooms, 8 percent efficiencies, and only 5 percent, or 99 units are 3-bedroom units. While rents are higher across the board than in White Flint 2, the contrast in affordability is greatest in larger units, with 2-bedrooms units in White Flint I

[1] Area Median Income (AMI) limits are set by the U.S. Department of Housing and Urban Development (HUD) across metropolitan regions to measure housing affordability. These AMI levels are often used to measure target income levels for Federal, State, and local housing programs and subsidies.
[2] For a detailed breakdown of Planning Department's Affordability Assumptions, see the attached "Appendix-Affordable Rental Housing Methodology".

affordable to households earning between 103 to 198 percent of AMI, requiring an income between $91,361 to $176,228. The relatively small number of 3-bedroom units in White Flint 1 has the largest gap in affordability, with units affordable only to households earning at least 184 percent of AMI, or an income of at least $197,278 and up to 292 percent of AMI, or $314,063.

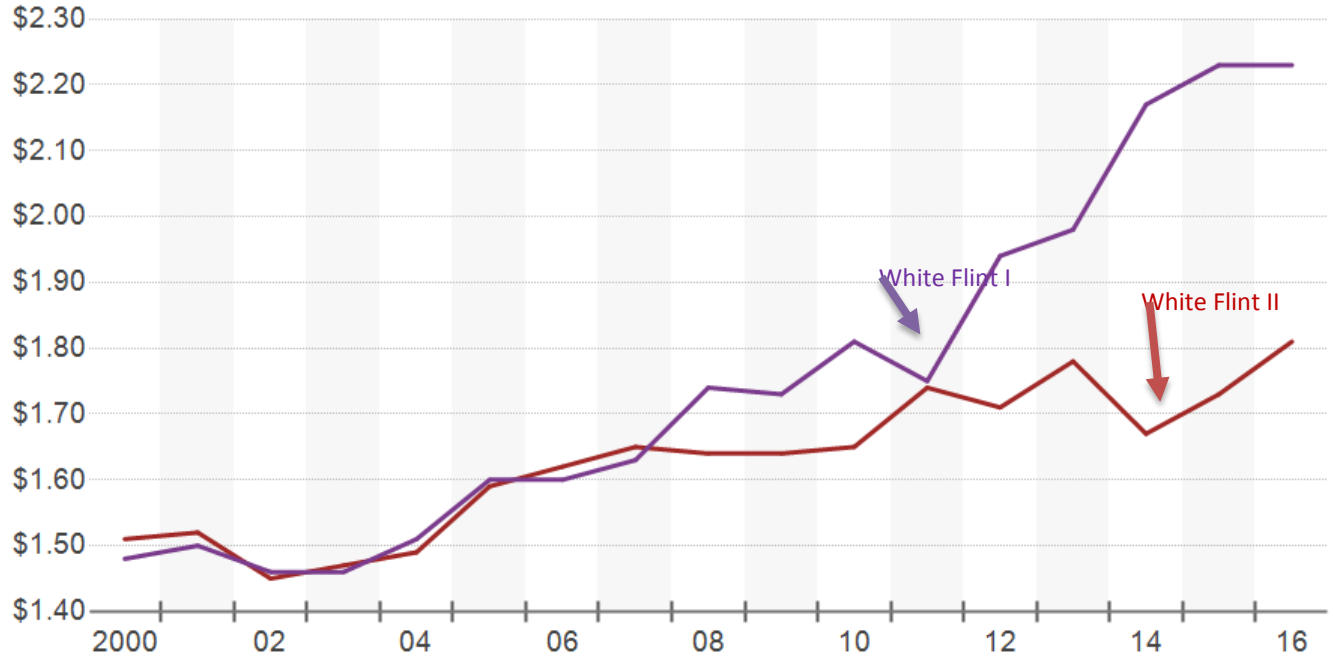
Table 4 – White Flint I Affordability Conditions

NAME	EFFICIENCY AVG RENT	AMI	1-BEDROOM AVG RENT	AMI	2-BEDROOM AVG RENT	AMI	3-BEDROOM AVG RENT	AMI
THE GRAND*			$1,490	87%	$2,286	124%	$4,109	184%
STRATHMORE COURT AT WHITE FLINT*			$1,419	83%	$1,903	103%		
AURORA APARTMENTS AT NORTH BETHESDA CENTER*	$1,459	94%	$1,695	99%	$2,290	124%		
WENTWORTH HOUSE APARTMENTS*	$1,316	84%	$1,608	94%	$2,116	114%		
NORTH BETHESDA MARKET*	$1,445	93%	$1,757	102%	$2,450	132%	$4,290	192%
PALLAS AT PIKE AND ROSE	$1,950	125%	$2,439	142%	$3,671	198%	$6,542	292%
PERSEI			$1,851	108%	$2,547	138%		

*Affordability was calculated using 25% of AMI due to utilities not being included
Source: 2014 DHCA Rental Housing Survey and CoStar

The difference in affordability can also be seen in the effective rent per square foot change over the past 10 years. White Flint 2's effective rent per square foot has increased an average of 1.15 percent over each of the past 10 years, or around 9 percent total. It has not outpaced inflation, which has averaged around 1.79 percent over each of the past 10 years, suggesting rents in White Flint 2 have slightly declined in the past 10 years. White Flint I, however, has had an average effective rent per square foot increase of about 3.44 percent per year, or a growth of over 37 percent total over the past ten years. White Flint I has also increased its total units in its inventory by over 1,500 units, or a 207 percent growth in past 10 years, while White Flint 2 has not added any new units.

Chart 1 – Effective Rent Per Square Foot in White Flint I and White Flint 2: 2000-Current



Source: CoStar

Affordable Housing Methodology

To determine affordability, households are first categorized by their income relative to the Area Median Income (AMI). AMI is adjusted for household size. Low-to-moderate income households are those earning up to 65 percent of AMI. The income limits in the table below are based on income requirements for Montgomery County's Moderately Priced Dwelling Unit (MPDU) program and US Department of Housing and Urban Development (HUD) standards.

Table 1 - 2014 Income Limits

HOUSEHOLD SIZE	65% AMI	80% AMI (MARKET RATE AFFORDABLE)	100% AMI (MEDIAN)	120% AMI
1	48,685	59,920	74,900	89,880
2	55,640	68,480	85,600	102,720
3	62,595	77,040	96,300	115,560
4	69,550	85,600	107,000	128,400
5	75,140	92,480	115,600	138,720

Source: Montgomery County DHCA, HUD

Second, rather than just count the number of households, the number of rental units affordable to these households are counted to understand the inventory of low-cost housing. Therefore, the need to assume the number of bedrooms that a household of a particular size needs. Households of different sizes will have different needs with respect to bedrooms. And households of the

same size will even have different bedroom needs. For example, two unrelated adults would typically need two bedrooms, while a married couple would need one.

The following table provides the Planning Department's standard assumptions regarding the distribution of household sizes by number of bedrooms.

Table 2 – Household-Size Distribution by Number of Bedrooms

	NUMBER OF BEDROOMS				
HOUSEHOLD SIZE	**Efficiency**	**1**	**2**	**3**	**4**
1	100%	30%			
2		70%	10%		
3			60%	20%	
4			30%	50%	40%
5				30%	60%

Third, based on the previous two tables of household income limits and our assumptions about the distribution of household sizes by the number of bedrooms, we estimate income limits by number of bedroom rooms. This calculation is a weighted average of household-income limits for each bedroom size. For example, for one-bedrooms occupied by households up to 65 percent of AMI, the maximum weighted income is .3 x $48,685 + .7 x $55,640 = $ 53,554

Table 3 – Income Limits by Number of Bedrooms

# OF BEDROOMS	**65% AMI**	**80% AMI**	**100% AMI**	**120% AMI**
0	$48,685	$59,920	$74,900	$89,880
1	$53,554	$65,912	$82,390	$98,868
2	$57,727	$74,472	$88,810	$106,572
3	$69,836	$83,032	$107,440	$128,928
4	$72,904	$90,416	$112,160	$134,592

Fourth, affordable housing is defined as housing that costs no more than 25 percent of household income, if utilities are not included, or 30 percent of household income if utilities are included. This definition is similar to the rent requirement for MPDUs set by the County Department of Housing and Community Affairs (DHCA). The maximum affordable rent by number of bedrooms is listed in Table 4.

Table 4 – Affordable Limits at 30 Percent of Income

# OF BEDROOMS	65% AMI	80% AMI	100% AMI	120% AMI	FMR
0	$1,217	$1,498	$1,873	$2,247	$1,176
1	$1,339	$1,648	$2,060	$2,472	$1,239
2	$1,443	$1,862	$2,220	$2,664	$1,469
3	$1,746	$2,076	$2,686	$3,223	$1,966
4	$1,823	$2,260	$2,804	$3,365	$2,470

Table 5 – Affordable Limits at 25 Percent of Income

# OF BEDROOMS	65% AMI	80% AMI	100% AMI	120% AMI
0	$1,014	$1,248	$1,560	$1,873
1	$1,116	$1,373	$1,716	$2,060
2	$1,203	$1,552	$1,850	$2,220
3	$1,455	$1,730	$2,238	$2,686
4	$1,519	$1,884	$2,337	$2,804

Affordable Housing Definitions

Income Restricted Affordable Housing: A Moderately Priced Dwelling Unit (MPDU) or a dwelling unit built under government regulation or a binding agreement requiring the unit be affordable to households at or below the income eligibility for the MPDU program.

Income Restricted Workforce Housing: Defined in Chapter 25B as housing that is affordable to households at or below 120 percent area wide median income (AMI). When a master plan refers to workforce housing as a part of its affordable housing goals or requirements, incomes are limited to 100 percent of AMI.

Market-Rate Affordable Housing. There is no definition in the County code or elsewhere. The term is used to describe rents that occur in the marketplace and not subject to government rules or requirements (and therefore not income-restricted).

Market-rate affordable dwelling units are affordable to households earning no more than 80 percent of area median income, adjusted as MPDUs for household and unit size, and must not exceed the median rent for the planning area.

Rent-Restricted Affordable Housing: This term is not currently defined in the County code or commonly used, but appears to be the best term to describe housing where rent increases will be limited and there is no income test for the tenant. The preservation of market-rate affordable housing may require an agreement that both establishes the baseline rent (priced to be affordable at 80 percent of AMI) and rent restrictions (such as requiring that rents increase by only the voluntary rent guideline.)

APPENDIX 3: FINANCE AND OFFICE PARK REDEVELOPMENT

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EXECUTIVE SUMMARY

The Research and Special Projects (R&SP) Division was asked by the Area 2 planning team to evaluate the economic feasibility of redevelopment concepts proposed by Willco and Eagle Bank, two property owners in the White Flint 2 Sector Plan area. First, the Area 2 planning team chiefly wanted to understand the economic implications of the density and building height limits for redeveloping these two properties and, secondly, to estimate how the scale of these developments would impact the surrounding market.

R&SP performed an economic analysis on two sets of zoning parameters for each of the properties: one requested by the property owners through their concept plans and a scaled-down version preferred by the Area 2 team. The zoning parameters are listed in the following table.

Requested and Preferred Zoning – Willco and Eagle Bank Properties						
	Willco			**Eagle Bank**		
	Zoning Designation	FAR	Bldg Height	Zoning Designation	FAR	Bldg Height
Requested by Property Owner	Commercial – Residential (CR)	3.0	200 ft	Commercial – Residential (CR)	2.0	150 ft
Area 2 Initial Recommendation	Commercial – Residential (CR)	2.0	200 ft	Commercial – Residential (CR)	2.0	120 ft

The analysis discovered that redevelopment is economically feasible under both the more modest zoning regulations preferred by Area 2, as well as those requested by the property owners. This feasibility is aided by the fact that each property owner plans to demolish few, if any, or their existing improvements on-site. Thus, the economic value each owner would lose is relatively insignificant compared to the value they could create through additional development. Finally, population and growth forecasts suggest market demand is adequate to support the proposed development on these properties, as well as future development desired in the surrounding area (based on approved density in White Flint 1).

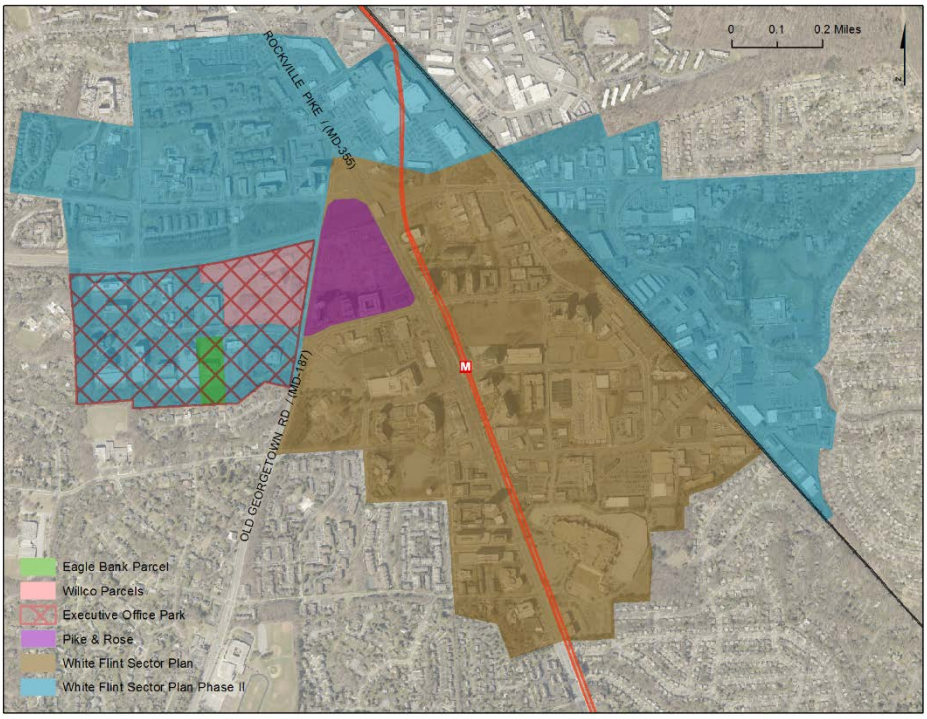
PURPOSE

The Research & Special Projects (R&SP) Division was asked by the Area 2 team to evaluate the economic feasibility of redevelopment concepts proposed by Willco and Eagle Bank, two property owners in the White Flint 2 Sector Plan. As part of the analysis, the Planning Department wants to understand how the proposed density and building height limits for these two properties will affect the viability of their redevelopment.

INTRODUCTION AND CONTEXT

Willco and Eagle Bank are two large property owners in the Executive Boulevard Office Park, which is near the intersection of Old Georgetown Road and Executive Boulevard. Each of their properties are improved with office buildings and surface parking: Willco owns a 21.9-acre property that includes office buildings 6001, 6003, and 6011 Executive Boulevard, while Eagle Bank owns a 5.4 acre property which includes 6010 Executive Boulevard (see Figure 1). The Executive Boulevard Office Park is located in White Flint, a mature retail and employment center that is expected to undergo large-scale redevelopment in the near future. The properties are about one-half mile from Rockville Pike/MD 355, less than a mile from the White Flint Metro station, and adjacent to Pike & Rose, one of the first mixed-use centers transforming White Flint.

Figure 1: Willco and Eagle Bank Properties - Map



As part of the White Flint 2 Sector Plan area– in which both properties are located– Willco and Eagle Bank have requested zoning changes which they claim will help enable infill development[3] and redevelopment in accordance with their proposed vision. Their properties are currently zoned primarily for office use, with a floor-area ratio (FAR)[4] of 0.75 and a building height limit of 100 feet (zoning designation is represented as EOF-0.75, H-100' T). They are each requesting their zoning be changed to Commercial-Residential (CR) designations – which allow greater flexibility of uses – as well as greater density and building heights. During the course of the planning outreach process, Willco and Eagle Bank met with the Area 2 planning team, and shared their development concepts for their sites. Although the Area 2 Planning Team shares their view for CR zoning, planners believe a slightly scaled-down density and height than requested would better alleviate concerns about the developments' impact on public infrastructure, neighborhood compatibility and future development of nearby properties. Figure 2 shows the zoning restrictions that are 1) existing 2)

[3] Infill development is the process of further developing under-used properties, without removing the existing improvements on the site.

[4] FAR, or Floor-Area Ratio, is a measure of density. It is the ratio of a building's total floor area to the size of the piece of land upon which it is built.

requested by the property owners, and 3) being considered by the Area 2 Team.

Figure 2: Existing and Proposed Zoning – Willco and Eagle Bank Properties

	Willco			Eagle Bank		
	Zoning Designation	FAR	Bldg Height	Zoning Designation	FAR	Bldg Height
Existing	Employment-Office (EOF)	0.75	100 ft	Employment-Office (EOF)	0.75	100 ft
Requested (by Property Owner)	Commercial – Residential (CR)	3.0	200 ft	Commercial – Residential (CR)	2.0	150 ft
Initial Planning team recommendations[5]	Commercial – Residential (CR)	2.0	200 ft	Commercial – Residential (CR)	2.0	120 ft

The Area 2 team principally wishes to understand whether the proposed zoning designation, FAR, and building height for these two properties could be onerous to the property owner's development visions and render them economically infeasible, and to understand the economic value created from this rezoning. The Area 2 team also wishes to understand its market impact to surrounding properties, primarily related to its residential element. Thus, R&SP conducted an analysis to estimate the economic value of these properties under the proposed regulatory conditions and, secondly, reviewed population and growth forecasts, which would provide future market support.

[5] These represented building heights and densities Planning staff were contemplating as of July 2016. The Planning staff report ultimately recommended greater densities and heights for the two properties. The Planning Board Draft Plan recommended 2.75 FAR for the Willco property and 2.0 FAR for the Eagle Bank property.

ECONOMIC ANALYSIS - METHODOLOGY AND APPROACH

Static Development Pro Forma

A "static development pro forma" process was used to evaluate the economic feasibility of a project at stabilized occupancy. This point-in-time evaluation estimates the remaining value, if any, after accounting for land value, development costs, profits, and standard public exactions.[6] The development feasibility analysis methodology builds an understanding of the relationships between site constraints, land use regulations and the real estate market. The approach is intended to generate order-of-magnitude estimates that can provide general insight into whether a typical project with certain characteristics is economically feasible. In reality, however, no economic model can capture the full range of variables that differs from owner to owner - such as one's investment objectives, financial situations, and appetite for risk – to accurately determine feasibility of any individual project.

The residual value of a development can generally be calculated using the following formula:

Residual Value =

Market value of the building improvements

- *Cost of the building improvements (including development, construction, soft costs, and profit)*
- *Cost of public exactions (such as impact fees, affordable housing and open space)*
- *Cost of land (if not yet acquired) or Change in value of land[7] [8] (if owned)*

Essentially, the residual value in this analysis represents the additional value remaining after the full range of costs and required returns on investment are accounted for. For new development (i.e. vacant property), a positive residual value is normally added to the developer's targeted return and suggests the project is feasible. A negative residual value – especially by a large order of magnitude – normally suggests a property owner is less likely to develop/redevelop without some form of economic assistance. Residual value is affected by physical factors that impact a development's revenue and costs, such as location, permitted land uses, lot coverage, building heights and density. Typically, residual value is greatest when development potential on a property can be maximized.

However, the economics of redevelopment are more complicated because there are existing improvements that are income producing. The costs of both the existing improvements and land are generally "sunk," meaning the owner of the property usually does not need to invest much

[6] The "static development pro forma" accounts for and deducts the cost of land from its residual value. This is different from a traditional Residual Land Value analysis, which represents the maximum amount a developer would be willing to pay for land.
[7] Change in value is the difference between the cost basis (what the land was originally purchased for) and the current market value. This value can be affected by rezoning, capital appreciation (or depreciation), or investment/ disinvestment into the surrounding environs. This change in land value is factored into decisions on whether or not to redevelop, as an increase or decrease can affect the developer's rate of return.
[8] This report factors in the potential increase in land value as a result of upzoning. However, the strength of the correlation between a property's land value and zoning can be tempered by many factors, such as physical constraints on the property, market demand, change in the surrounding environs, etc. that may result in differences greater or less than what is projected. Although the report believes this relationship to important, the most reliable figures remain in residual value from improvements only.

capital to receive that income stream. If redevelopment requires replacement of existing buildings, the owner must decide which is more valuable: the existing improvements (receiving the income stream with little to no attendant capital cost), or the new improvements net of the capital cost of building those improvements (including the costs of demolition, relocating tenants, business interruption costs, etc.). *Essentially, in order for redevelopment to be feasible, the RESIDUAL value of the redevelopment should be greater than the TOTAL value of the existing improvements that are lost as a result of the redevelopment.* The owner would not need to incur additional land costs for redevelopment, unless the project involves acquisition of adjacent land.

Proposed Development Programs

Willco and Eagle Bank met with the planning team to propose a development program[9] and vision for their properties as a basis for a zoning change. Proposals included a mix of new retail, residential apartments, and new hotel and/or office space. Their proposals are largely characterized as infill development rather than redevelopment: with an exception of one of Willco's two options, all of the existing office buildings were preserved.[10]

As previously mentioned, the Area 2 team is contemplating zoning that is slightly lower in the densities and heights than requested by the owners. Figure 3 shows the development programs proposed by the owners, as well as modified development programs that conform to densities and heights contemplated by the Area 2 team. These modified programs will be tested in the static development pro forma and used as the basis to determine whether the densities and heights under consideration by the planning team enable economically feasible development opportunities. As the development programs in Figure 3 represent maximum development capacity, program elements can also be removed or curtailed in the pro forma should they generate a higher residual economic value.

[9] "Development Program" is defined as a development consisting of specific quantities of retail, office, and/or residential space.

[10] Willco submitted two development options: Option A kept two of the three existing office buildings, and Option B maintained all three buildings.

Figure 3: Proposed Development Programs (Square Feet)					
	Willco			Eagle Bank	
	Proposed (A)	Proposed (B)	Area 2	Proposed	Area 2
FAR	2.54	2.54	2.0	2.0	2.0
Building Height	200 ft	200 ft	200 ft	150 ft	120 ft
Demolition	140,000	-	140,000	-	-
Retail - New Development	150,500	129,000	109,961	25,213	25,213
Retail – Existing Renovation	20,500	28,500	19,284	-	-
Residential Rental	1,875,000	1,750,000	1,426,146	117,394	117,394
Office – New Development	-	-	-	226,913	226,913
Office – Existing Renovation	302,000	442,000	292,704	100,126	100,126
Hotel	75,000	75,000	59,013	-	-
TOTAL	2,423,150	2,424,650	1,907,220	469,646	469,646

- "Proposed" programs are those submitted by the property owner/developer. Willco submitted two concepts, which are represented as Proposed (A) and Proposed (B). "Area 2" represents adjusted programs based on Area 2 planning team recommendations; adjustments were made to FAR (Willco) and height (Eagle Bank).
- To arrive at the Area 2 Team's modified version of Willco's development program, each land use component was averaged between Willco's two proposed programs, then scaled down 21.31% in size (% difference between 2.54 and 2.0 FAR).
- Willco assumed the demolition of one of their office buildings in Proposed (A) – the modified development program accounted for the demolition costs in efforts to arrive at a more conservative estimate.

ECONOMIC ANALYSIS - FINDINGS

R&SP conducted economic analysis of the Willco and Eagle Bank properties using current, localized market and construction data for revenue and cost assumptions. The residual value that each of the modified development programs needs to exceed for redevelopment to occur is shown in Figure 4.

Figure 4: Required Threshold for Redevelopment		
	Willco	Eagle Bank
Threshold for Redevelopment (estimated value of forgone existing improvements*)	$38,524,138	$0

**Based on the capitalized value of the existing net operating income stream. Average annual rents were estimated at $30/PSF, vacancy rates were estimated at 5%, operating expenses estimated at 30% of effective annual income, and office capitalization rate was estimated at 7.25%. CoStar, CBRE.*

The figure above represents the total value of the existing improvements that would be lost through redevelopment, **today**.[11] In one of Willco's two development scenarios, they plan to demolish one of their three office buildings, and Eagle Bank has no plans for demolition. As a result, full-scale redevelopment would likely be feasible on Willco's property – in the scenario where the owner demolishes one office building – only if residual value is more than an estimated $38.5 million. Assuming any positive residual value at all, infill development would be

[11] It is of course possible that should the office building proposed for replacement continue to age, resulting in lower rents and lower market value, the redevelopment threshold is lowered, meaning smaller opportunity cost and making redevelopment even more economically "feasible".

feasible (on paper) on both 1.) Willco's property (under the scenario where all three office buildings are kept), and 2.) Eagle Bank's property.

Figure 5 is a summary table expressing the key figures and calculations in the pro forma for each of the proposed development programs.[12] More detailed tables as well as sources and references for key assumptions can be found in the Appendix.

[12] This report incorporates a revision to market assumptions based on input from one of the property owners from May 2017. The property owner noted that while the initial 1.) market capitalization rates and 2.) required rates of return used by R&SP were not incorrect, they represented a five year historical low at the time R&SP conducted the market research (July 2016). These rates had increased in the intervening 10 months to a more historical norm, and as such Planning staff incorporated these revisions into the report.

Figure 5: Modified Pro Forma, Willco and Eagle Bank Properties				
	Development Assumptions	**Willco**	**Eagle Bank**	**Eagle Bank (w/o new office development)***
	Development Revenues			
A	Square Feet	1,907,810	469,646	242,733
B	Net Operating Income (NOI)	$ 47,854,230	$ 12,157,195	6,423,094
C	Blended Capitalization Rate[1]	5.77%	6.58%	6.1%
D	Stabilized Value of Property [B/C]	$ 829,675,504	$ 184,770,318	105,679,265
	Development Costs			
E	Demolition	$ 980,000	$ -	$ -
F	Hard Costs (Building)[2]	$ 307,474,255	$ 76,212,069	$ 36,261,477.04
G	Hard Costs (Parking)[3]	$ 82,620,821	$ 34,811,508	$ 14,843,134.72
H	Soft Costs (Including Leasing, Financing, and Contingency)	$ 124,403,758	$ 35,406,113	$ 16,297,580.09
I	***Total Hard and Soft Costs***	$ 515,478,834	$ 146,429,689	$ 67,402,191.85
J	Public Exaction Costs (Standard Development Method)[4]	$ 70,306,427	$ 8,785,117	$ 6,298,065.82
K	***Total Hard, Soft, and Public Exaction Costs***	$ 585,785,261	$ 155,214,807	$ 73,700,257.67
	Change in Land Value			
L	Current Land Value Assessment	$ 12,819,500	$ 3,456,000	$ 3,456,000
M	Estimated Future Land Value[5]	$ 31,003,830	$ 7,616,466	$ 7,616,466
N	Potential Land Value Change from Rezoning [M-L]	$ 18,184,330	$ 4,160,466	$ 4,160,466
	Profit and Residual Value			
O	Blended Developer Required Rate of Return[1] (as % of NOI)	7.65%	8.58%	8.05%
P	NOI capitalized at Developer Return [B/O]	$ 625,696,607	$ 141,769,064	$ 79,778,778
Q	Developer "Profit" [D-P]	$ 203,978,897	$ 43,001,255	$ 25,900,486
R	***Residual Value (w/o Land Value Change) [P-K]***	**$ 39,911,346**	**$ (13,445,743)**	**$ 6,078,521**
S	***Residual Value (with Land Value Change) [R+N]***	**$ 58,095,676**	**$ (9,285,277)**	**$ 10,238,987**
	Leftover Acreage	11.15	0.64	3.02

[1] Capitalization rates and developer rates of return are blended and weighted across each market segment (retail, residential, office, hotel) within the project for one consolidated rate. Discussions with developers and industry knowledge assume developer rates of return at approximately 1.5% -2.5% above the prevailing capitalization rate, depending on land use and market conditions.

[2] Hard costs include site preparation, construction, and tenant improvements as needed.

[3] Parking arrangements assumed one-third would be structured parking, and two-thirds would be underground parking.

[4] Public exaction costs are public benefits required under the standard development method, which comprise of public infrastructure improvements, transportation impact fees, school fees, moderately-priced dwelling units (MPDUs), and open space.

[5] The owners are expected to realize an increase in land value from the rezoning of EOF to CR, given its greater development potential based on increased flexibility of land uses and higher densities.

*An additional development program that removed new office development as a program element was tested for Eagle Bank to demonstrate that a positive residual value could be attained. This was because new office development was estimated to be economically unfeasible at this time, which fully accounted for the negative residual value of Eagle Bank's full buildout scenario.

Because the development programs did not propose large-scale demolition and replacement of existing buildings, the threshold for redevelopment is relatively low compared to their development potential. For instance, Willco's total development potential under the initial zoning recommendations proposed by Planning staff is 1.9 million square feet, which is nearly 14 times greater than the building they are proposing for replacement, which is about 140,000 square feet. Owners of both properties can generally receive proceeds from new development

without sacrificing a significant portion of their current income stream. Furthermore, owners of both properties would likely be aided from an increase in their land values through the rezoning, as they each own the underlying land under their respective properties. *Both Willco and Eagle Bank should be able to realize economically feasible development opportunities under the zoning, density and height regulations considered by the Area 2 team*. This is true even if land values do not increase as a result of the rezoning. The economic case for redevelopment or infill development is further strengthened if market conditions improve (e.g. ability to command even higher rents) and/or existing office buildings become less competitive, resulting in a greater "upside" to redeveloping them.

Although the initial Eagle Bank development program generated a negative residual value (-$13.5 million, assuming no increase in land value), this is because new Class A office construction is currently economically prohibitive in this location based on projected rents.[13] However, a revised program without new office development resulted in a positive residual value of $6.1 million (with land value increases it would be higher, at $10.2 million), demonstrating its feasibility. This value could be even higher if office development is replaced with market-supported uses, such as a hotel or in-line retail, or delayed until stronger office market conditions emerge in the future.

[13] Market rents for new office in Executive Boulevard projected at $35 per square foot annually (CoStar). Additional assumptions in Appendix.

MARKET DEMAND – IMPACT ON SURROUNDING AREA

The Willco and Eagle Bank properties, at full build-out under the Area 2 zoning recommendations, will create approximately 1,544 new dwelling units.[14] This number is in addition to the approximately 9,800 dwelling units that can potentially be built in the White Flint I Sector Plan (see Figure 1), the vast majority of which has yet to be developed. Because properties in White Flint I are closer to the Metro stations, Rockville Pike (MD 355) and key to funding many of the area's capital improvements, the planning team wishes to understand whether the development potential for these properties will inhibit or delay anticipated development in White Flint 1.

While there is no method to ensure that development in White Flint I progresses before these properties are constructed, aside from staging mechanisms, R&SP believes that residential market demand should be strong in this area over the next 30 years. R&SP analyzed the total development potential within the White Flint I Sector Plan (measured as unfulfilled capacity of CR-zoned properties)[15] as a share of the County, and found that there is still sufficient market and population demand (see Figure 6).

Figure 6: Population Growth and Development Forecast	
Undeveloped CR Zoning Capacity (White Flint I)	39,600,877 SF (21% of County total)
County Population Growth (2015-2045)	208,000
County Household Growth (2015-2045)	87,100
Source: Metropolitan Washington Council of Government Regional Cooperative Forecast - Round 9.0, Maryland Department of Assessments and Taxation	

White Flint 1's development capacity represents 21 percent of the County's share (39.6 million Square Feet). As the County is already largely built out, most of the population growth will occur in areas targeted for infill development or redevelopment such as White Flint; areas without targeted investment or CR zoning are generally assumed to remain stable. Thus, if White Flint were to obtain its "fair share" of County household growth – a corresponding 21 percent – it should benefit from market demand for 18,291 new households, nearly 8,500 more dwelling units than what is currently proposed in the White Flint I Sector Plan. This housing demand will also provide market support for additional dwelling units contemplated in White Flint 2, and such zoning would bring a better balance between population growth and development Countywide.

[14] Assumes an average of 1,000 gross SF per dwelling unit, which is in line with current market conditions and Willco/Eagle Bank's assumptions.

[15] This metric was used since CR zoning (as well as CRT and CRN) is usually the Planning Department's primary means to stimulate redevelopment with greater flexibility in uses, form, and design regulations. CR properties are the primary properties expected to redevelop.

CONCLUSIONS

R&SP's preliminary analysis indicates the density and building heights contemplated by the planning team for Willco and Eagle Bank's properties are reasonable. Since the development concepts do not propose to remove many (or any) of the existing office buildings, the redevelopment threshold to realize these concepts is relatively modest. Thus, *assuming market conditions in the future continue to support new retail, office, residential or hotel development in general*, the zoning should provide sufficient development potential on each property to realize the owners' proposed visions as presented to Planning staff. In addition, there appears to be sufficient market demand over time to support both the residential component of these projects, as well as expected future development in the White Flint 1 Sector Plan.

Another common concern in these economic analyses is whether the development will be able to support structured or underground parking, as a way to promote compact development and a more walkable environment. This analysis suggests that a mix of structured and underground parking to serve the proposed uses is economically feasible on both properties.

However, the analysis revealed some key areas in Area 2's recommendations that warrant additional consideration. As mentioned earlier, "ground up" office construction in Executive Boulevard area is likely to be economically prohibitive at the current time, given its lower rates and overall leasing challenges in suburban office parks. If the Area 2 team designates nonresidential uses for a large part of Eagle Bank's property, the property could experience delayed development until market conditions change (i.e. office) or underdevelopment (one-story retail, small hotel, other) that may not be Area 2's desired vision for the area. Greater provision for residential uses should be considered, assuming that adequate infrastructure – such as school capacity – can be reliably provided.

Secondly, the preliminary analysis indicates that a full build-out on Eagle Bank's property would leave less than three-quarters of an acre remaining on its 5.4 acre property. Since Eagle Bank's official development application will undoubtedly be subject to the Optional Development Method,[16] there will be less bargaining power to negotiate additional parks and open space, alternative building configurations, or better site designs due to space constraints. The planning team may want to consider increasing its building height limit of 120 feet to the developer requested 150 feet, in order to free up additional acreage. This increased height would also have the effect of making the office properties more marketable, as greater floor-to-floor ceiling heights are a key feature desired by new office tenants.

Lastly, the analysis revealed that Willco's entire development program could fit well within its site, leaving about 11 acres remaining on its 21.9 acre property, after all structured/underground parking and open space requirements are accounted for.[17] Area 2 planners have discussed the need for additional school capacity in this area to relieve potential overcrowding in the future, most notably for a new elementary school. As new urban elementary schools in the County

[16] Optional Development Method is a process used by the Planning Department where a development approval is contingent on the developer providing a set of agreed upon public benefits. This method applies to CR properties when development applications request any floor-area ratio that is larger than 1.

[17] Internal roads, streets, and sidewalks are not accounted for and would be represented in a final site design.

typically require a minimum of four to five acres of land, the Willco site presents a good opportunity to fit an elementary school and, thus, should be considered when negotiating for public benefits in the CR zone.

APPENDIX

Figure A1 - Willco Property Pro Forma - By Market Component							
	Development Assumptions	**Retail - New Development**	**Retail - Existing Renovation**	**Residential Rental**	**Office - Existing Renovation**	**Hotel**	**Total**
	Development Revenues						
A	Square Feet	110,004	19,284	1,426,691	292,796	59,035	1,907,810
B	Net Operating Income (NOI)	$ 4,284,666	$ 751,102	$ 33,784,047	$ 7,398,951	$ 1,635,464	$ 47,854,230
C	Capitalization Rate	5.50%	5.50%	5.50%	7.25%	7.50%	5.77%
D	Stabilized Value of Property [B/C]	$ 77,903,012	$ 13,656,400	$ 614,255,398	$ 102,054,502	$ 21,806,190	$ 829,675,504
	Development Costs						
E	Demolition						$ 980,000
F	Hard Costs (Building)	$ 17,979,507	$ 1,157,025	$ 247,450,651	$ 33,215,861	$ 7,671,211	$ 307,474,255
G	Hard Costs (Parking)	$ 11,293,759	$ 1,979,796	$ 41,849,566	$ 25,766,013	$ 1,731,688	$ 82,620,821
H	Soft Costs (Including Leasing, Financing, and Contingency)	$ 9,335,427	$ 1,000,352	$ 92,259,647	$ 18,809,688	$ 2,998,643	$ 124,403,758
I	**Total Hard and Soft Costs**	$ 38,608,692	$ 4,137,173	$ 381,559,865	$ 77,791,561	$ 12,401,542	$ 515,478,834
J	Public Exaction Costs (Standard Development Method)	$ 618,125.03	$ 89,088.82	$ 67,784,882	$ 1,352,685.11	$ 461,646.23	$ 70,306,427
K	**Total Hard, Soft, and Public Exaction Costs**	$ 39,226,818	$ 4,226,262	$ 449,344,746	$ 79,144,246	$ 12,863,189	$ 585,785,261
	Profit and Residual Value						
L	Developer Required Rate of Return (as % of NOI)	8.00%	8.00%	7.25%	9.25%	9.75%	7.65%
M	NOI capitalized at Developer Return [B/L]	$ 53,558,321	$ 9,388,775	$ 465,986,854	$ 79,988,664	$ 16,773,993	$ 625,696,607
N	Developer "Profit" [D-M]	$ 24,344,691	$ 4,267,625	$ 148,268,544	$ 22,065,838	$ 5,032,198	$ 203,978,897
O	**Residual Value before Land Value Changes [M-K]**	$ 14,331,503	$ 5,162,513	$ 16,642,108	$ 844,418	$ 3,910,804	$ 39,911,346
P	Current Land Assessment						$ 12,819,500
Q	Estimated Future Land Value						$ 31,003,830
R	Potential Land Value Change from Rezoning [Q-P]						$ 18,184,330
T	**Residual Value (with Potential Land Value Change) [O+R]**						$ 58,095,676

Figure A2 - Eagle Bank Property - By Market Component						
	Development Assumptions	**Retail - New Development**	**Residential Rental**	**Office - New Development**	**Office - Existing Renovation**	**Total**
	Development Revenues					
A	Square Feet	25,213	117,394	226,913	100,126	469,646
B	Net Operating Income (NOI)	$ 982,031	$ 2,910,879	$ 5,734,101	$ 2,530,184	$ 12,157,195
C	Capitalization Rate	5.50%	5.50%	7.25%	7.25%	6.58%
D	Stabilized Value of Property [B/C]	$ 17,855,105	$ 52,925,071	$ 79,091,054	$ 34,899,089	$ 184,770,318
	Development Costs					
E	Demolition					$ -
F	Hard Costs (Building)	$ 4,120,662	$ 20,360,420	$ 40,408,738	$ 11,322,248	$ 76,212,069
G	Hard Costs (Parking)	$ 2,588,493	$ 3,443,556	$ 19,968,374	$ 8,811,085	$ 34,811,508
H	Soft Costs (Including Leasing, Financing, and Contingency)	$ 2,139,592	$ 7,591,237	$ 19,254,638	$ 6,420,646	$ 35,406,113
I	**Total Hard and Soft Costs**	$ 8,848,747	$ 31,395,213	$ 79,631,750	$ 26,553,979	$ 146,429,689
J	Public Exaction Costs (Standard Development Method)	$ 259,951	$ 5,576,499	$ 2,487,051	$ 461,616	$ 8,785,117
K	**Total Hard, Soft, and Public Exaction Costs**	$ 9,108,698	$ 36,971,712	$ 82,118,802	$ 27,015,596	$ 155,214,807
	Profit and Residual Value					
L	Developer Required Rate of Return (as % of NOI)	8.00%	7.25%	9.25%	9.25%	8.58%
M	NOI capitalized at Developer Return [B/L]	$ 12,275,385	$ 40,150,054	$ 61,990,285	$ 27,353,340	$ 141,769,064
N	Developer "Profit" [D-M]	$ 5,579,720	$ 12,775,017	$ 17,100,768	$ 7,545,749	$ 43,001,255
O	**Residual Value before Land Value Changes [M-K]**	$ 3,166,687	$ 3,178,343	$ (20,128,516)	$ 337,744	$ (13,445,743)
P	Current Land Assessment					$ 3,456,000
Q	Estimated Future Land Value					$ 7,616,466
R	Potential Land Value Change from Rezoning [Q-P]					$ 4,160,466
T	**Residual Value (with Potential Land Value Change) [O+R]**					$ (9,285,277)

Figure A3 - Eagle Bank Property w/o New Office Development - By Market Component						
	Development Assumptions	**Retail - New Development**	**Residential Rental**	**Office - New Development**	**Office - Existing Renovation**	**Total**
	Development Revenues					
A	Square Feet	25,213	117,394	-	100,126	$ 242,733
B	Net Operating Income (NOI)	$ 982,031	$ 2,910,879	$ -	$ 2,530,184	$ 6,423,094
C	Capitalization Rate	5.50%	5.50%	7.25%	7.25%	6.08%
D	Stabilized Value of Property [B/C]	$ 17,855,105	$ 52,925,071	$ -	$ 34,899,089	$ 105,679,265
	Development Costs					
E	Demolition					
F	Hard Costs (Building)	$ 4,201,662	$ 20,737,567	$ -	$ 11,322,248	$ 36,261,477
G	Hard Costs (Parking)	$ 2,588,493	$ 3,443,556	$ -	$ 8,811,085	$ 14,843,135
H	Soft Costs (Including Leasing, Financing, and Contingency)	$ 2,165,423	$ 7,711,511	$ -	$ 6,420,646	$ 16,297,580
I	**Total Hard and Soft Costs**	$ 8,955,578	$ 31,892,635	$ -	$ 26,553,979	$ 67,402,192
J	Public Exaction Costs (Standard Development	$ 259,951	$ 5,576,499		$ 461,616	$ 6,298,066
K	**Total Hard, Soft, and Public Exaction Costs**	$ 9,215,528	$ 37,469,133	$ -	$ 27,015,596	$ 73,700,258
	Profit and Residual Value					
L	Developer Required Rate of Return (as % of NOI)	8.00%	7.25%	9.25%	9.25%	8.05%
M	NOI capitalized at Developer Return [B/L]	$ 12,275,385	$ 40,150,054	$ -	$ 27,353,340	$ 79,778,778
N	Developer "Profit" [D-M]	$ 5,579,720	$ 12,775,017	$ -	$ 7,545,749	$ 25,900,486
O	**Residual Value before Land Value Changes [M-K]**	$ 3,059,856	$ 2,680,921	$ -	$ 337,744	$ 6,078,521
P	Current Land Assessment					$ 3,456,000
Q	Estimated Future Land Value					$ 7,616,466
R	Potential Land Value Change from Rezoning [Q-P]					$ 4,160,466
T	**Residual Value (with Potential Land Value Change) [O+R]**					$ 10,238,987

Figure A4 - Sources and Assumptions		
Development Assumptions	**Values**	**Sources and Assumptions**
Development Revenues		
Net Operating Income (NOI)	• $41/PSF Retail • $35.40 Residential • $35/PSF Office • $86.36/PSF Hotel (Room) • $25.91/PSF Hotel (Other) ***Retail, Residential, Office*** 5% vacancy 30% operating costs ***Hotel*** 30% vacancy Departmental Expenses (40%), Undistributed Operating Expenses (24%) Fixed Charges (15%)	• CoStar (area comparables) • Dollars and Cents of Multifamily Housing 2001, plus CPI • Smith Travel Research Report 2014
Capitalization Rate	See Figure A1	• Integra Realty Report 2015 • Delta Associates 2017
Development Costs		
Demolition	$7/PSF	• Adaptive Reuse/Conversions: Executive Boulevard & Rock Spring Office Markets (2016)
Hard Costs (Building)	***Retail*** $100/PSF Construction $60/PSF Tenant Allowance ***Residential*** $170/PSF Construction ***New Office*** $125/PSF Construction $50/PSF Tenant Allowance ***Office Renovation*** $60/PSF Construction $50/PSF Tenant Allowance ***Hotel*** $126.50/PSF	• RS Means • Colliers International - The Cost of an Office Buildout • White Flint Sector Plan: Financial Analysis, Economic Benefits & Infrastructure Financing (2009) • Economic Feasibility of the DC Height Master Plan: Construction Costs (2013) • Adaptive Reuse/Conversions: Executive Boulevard & Rock Spring Office Markets (2016)
Hard Costs (Parking)	Structured (Above grade): $18,000/space Underground (Below grade): $35,000/space	• RS Means • The High Cost of Minimum Parking Requirements (2014) • Carl Walker Parking Solutions, Parking Structure Cost Outlook 2015 • White Flint Sector Plan: Financial Analysis, Economic Benefits & Infrastructure Financing, (2009)
Soft Costs (Including Leasing, Financing, and Contingency)	Hard Cost Contingency 5% Soft Costs: 20% Financing: 7.875% @ 70% LTV	• Urban Land Institute
Public Exaction Costs (Standard Development Method)	***On-Site Transportation Infrastructure*** $250,000/acre ***Transportation Impact Fees*** Retail: $5.70/PSF Residential: $3,174/DU Office: $6.35/PSF Hotel: $3.20/PSF ***School Fees*** $5,412/DU ***MPDU Subsidy*** $41.04/PSF Residential SF (calculated) ***Open Space (10% Requirement)*** $35/PSF of Land Area	• Montgomery County Planning Department • Montgomery County Department of Permitting Services • Montgomery County Department of Housing and Community Affairs • Montgomery County Public Schools
Change in Land Value		
Current Land Value Assessment		• Maryland Department of Assessments and Taxation
Estimated Land Cost	$32.50/PSF	• Maryland Department of Assessments and Taxation - Estimated cost for CR properties in North Bethesda with similar density and height restrictions
Figure per square foot are based on total improvement SF, unless otherwise noted.		

APPENDIX 4: ADAPTIVE REUSE STUDY-EXECUTIVE BOULEVARD FOCUS

Prepared by Bolan Smart Associates, this study examines adaptive reuse opportunities for office markets in Rock Spring Park and Executive Boulevard. The findings of this study were presented to the Planning Board in June 2016.

I. Executive Summary

Bolan Smart Associates, a real estate consulting firm based in Washington, D.C, was asked to analyze factors pertaining to possible adaptive reuse of office properties at Executive Boulevard and Rock Spring in North Bethesda. The study looked at retaining and converting an existing building, demolishing a structure and redevelopment for alternative use, or redefining planned but unbuilt office spaces for other use. The study was conducted as part of the County's planning process, focusing on these office submarkets as part of the White Flint 2 Sector Plan and Rock Spring Master Plan. Since office uses in both these submarkets have recently experienced higher than historical market vacancies, the analysis also addresses if office conversions are imminent and appropriate.

Montgomery County has already witnessed office building conversions primarily in central business district locations, such as Silver Spring and Wheaton, and redevelopment of generally isolated and abandoned office properties in other suburban locations. Although this is common practice for a large and diverse economy such as Montgomery County, recent concern has been raised that some office parks are becoming obsolete.

While this Technical Report concentrates on specific conditions contributing to the feasibility of office conversions, Bolan Smart was also asked to consider wider public economic interests. Summarized below are findings and observations on the market viability of conversions in Executive Boulevard (EB) and Rock Spring (RS), office park dynamics and public policy implications.

<u>Adaptive Reuse / Conversion Prospects</u>

1. Existing office buildings in Executive Boulevard and Rock Spring are generally not ripe for near to medium term residential conversions.

   Continued office reinvestment is still market viable, most existing buildings are not physically conducive to residential conversion, and the cost threshold is prohibitive. Precedents reviewed elsewhere underscore that all conversions are very circumstance-specific, (truly obsolete structures, secondary locations / isolated properties, common ownership of multiple properties, etc.), and not submarket generic. Reuse of medical offices and institutional uses is more akin to the original office use, and thus more feasible.

2. Surface parking lots and vacant land planned for office represent the strongest prospects for reuse.

Existing parking structures, however, are less suited for conversion, as the cost of parking structure replacement is generally not offset by the value of the underlying land reallocated to an alternative use.

3. There is strong market demand for lower to medium density residential use in both Executive Boulevard and Rock Spring, less so for destination retail uses.

   Given the lack of other comparably situated vacant land, these downcounty central locations are highly coveted for residential use. While there is also potential demand for medical or institutional (i.e. school) use, retail demand is more limited due to plentiful surrounding offerings.

4. Land values relative to existing improvements are key to inducing conversions.

   The higher the land value relative to the existing building improvement, the more likely a building will be converted or demolished. One land use may have a significantly higher value per permitted unit of floor area than another. In the subject locations, over the past few years, land values for residential use have started to match, if not eclipse, office and use.

5. Underdeveloped office properties with older buildings and excess unused permitted floor area are

well suited to adaptive use, with sites on Executive Boulevard closest to the Pike District being immediate prospects.

The spike in interest for conversion to mixed-use of "gateway" sites at the eastern entry to EB is

underpinned by the prospect of higher density new construction piggy-backing on the newly emergent Pike District.

6. Over the next few years, select single-user purpose-built existing office buildings, especially in RS, may be facing functional obsolescence.

Depending on the current occupants future plans (or corporate changes), possible obsolescence in these cases (i.e. Marriott headquarters) may or may not translate into physical reuse, with redevelopment most likely focusing on combined building and unused permitted building area reconfigurations.

Executive Boulevard and Rock Spring Office Submarket Context

1. The recent increase in submarket office vacancies is largely due to one-time federal Government-related shifts.

Office vacancies spikes in Executive Boulevard and Rock Spring are not systemic market-wide, having been primarily due to NIH-related government users moving to new properties at other locations in Montgomery County. These relocations were reportedly

primarily related to price and expanding space needs, and not related to any regional locational shortcomings of Executive Boulevard or Rock Spring.

2. Office landlords (and investors) and are generally positive about the office market dynamics and platform for added mixed-use densities at the subject locations in the future.

Apart from the uncertainty posed by the relocation of the Marriott headquarters, landlords actually vested in these submarkets, as well as prospective outside institutional owners, remain committed to the future of Rock Spring and Executive Boulevard as primarily office investments, with mixed-use additions.

3. Location, value pricing and parking convenience are still marketable.

Despite a popularized wish list featuring more walkability, restaurants, transit and new construction, the aging existing office buildings on Executive Boulevard and in Rock Spring are still sustainable for office use. The EB and RS locations are highly viable, convenient to a broad base of employees served by a regional road network near a range of retail and lodging amenities, and most of the non-special purpose buildings have substantial, continued economic life.

4. Executive Boulevard is a sustainable office market for regional and sub-regional users.

Maybe no longer an office park per se, but Executive Boulevard, has new energy emanating from the adjacent mixed-use Pike District (including improved overall connectivity).

5. If only the location mattered, Rock Spring would continue to be a preeminent, cost-competitive suburban office park serving regional and national oriented users.

Rock Spring is bracketed by an array of retail, including Montgomery Mall, and is surrounded by generally premier residential neighborhoods. Moreover, Rock Spring is Maryland's closest rival to suburban Northern Virginia, relegating its competitive position to one distinguished more by regional jurisdictional differences than office park characteristics (though now tempered somewhat by the arrival of Metro in the Tysons / Dulles corridor). To the extent that the success of RS is undercut, the long planned Rock Spring Center remains a missing link.

<u>The Mixed-Use Equation</u>

1. While marketable and widely advocated, residential uses added internally to an office park are not considered key to office user locational decisions.

Executive Boulevard and Rock Spring are surrounded by accessible residential alternatives, albeit with less affordable options than might be desired. Though adding 18-

hour, seven-day-a-week street life helps support added retail use, this impact is very limited unless supported by a large volume of new people increasing market demand.

2. Street visible retail (and food service) helps, but is not critical to office park success**.**

Both Executive Boulevard and Rock Spring are proximate to an enviable range (by suburban standards) of retail alternatives, albeit autocentric. Less noticed at both locations is the internal food service and convenience retail that is generally present in the larger office buildings. New office or mixed-use construction that might have integrated street-oriented retail has been non-existent at EB and RS, and mixed-use is not necessarily consistent with the mission and security concerns of larger, single-use occupants.

3. Not all alternative uses may be compatible with office uses.

Retail uses are generally compatible with office use, residential uses are mixed and institutional uses depend on the nature of the use.

Public Policy Choices

1. Private sector property owners want a combination of a positive local business environment and flexibility to add value in the future.

Attracting real estate investment commitments is facilitated by letting the market determine the building type and price points, along with public investments in long-term planning and updated infrastructure.

2. Office conversions can help add to the sense of activity and vitality, but will not singularly transform these submarkets, nor may there be countywide benefits.

Reuse may eliminate a very limited amount of office inventory compared with the County total, but there may be no net County benefit if it means reducing office availability where it is in demand (even at reduced levels) or translates into higher cost office space.

3. Executive Boulevard and Rock Spring represent some unique office related assets that could merit being preserved.

While experiencing some basic aging and constant office user changes, Executive Boulevard, and in particular Rock Spring, represent the last and only down-county suburban type locations with their unique set of local and regional locational characteristics. Montgomery County (and its incorporated cities) already has a plentiful supply of transit-served potential density office sites and a virtually unlimited supply of underdeveloped traditional office park land in mid-county and locations beyond.

4. Municipal land use regulation and policies effect conversions scenarios in a variety of ways.

Adaptive reuse by its very nature involves revisiting the original premise of property planning and use. Clearly, zoning and building envelope stipulations are direct influences. In Montgomery County, how adequate public facility impacts are compared between land uses are an added complexity.

5. Possible other countywide economic benefits from permitting or even incentivizing office use conversions in the subject office parks are unclear.

With the exception of accommodating townhome development down-county, there is an ample supply of retail and multi-family development opportunities elsewhere in Montgomery County. If highest and best use implies conversion to medical office or institutional use, then the economic benefit should be evident based on the need to locate such facilities in the subject office parks.

II. Technical Report Approach / Methodology

The approach to this targeted analysis of possible adaptive reuse of office properties comprised the following tasks:

1. Project Reconnaissance - review of prior studies, conducting site visits and data collection.

2. Precedent Office Market Conversion Conditions / Case Studies
   a) Residential Reuse - Crystal Plaza, Crystal City, Virginia
   b) Demolition / Residential Redevelopment – Altaire, Crystal City, Virginia
   c) Hotel Reuse - Homewood Suites Hilton / Hampton Inn, Silver Spring, Maryland

Supplemental case study information was conducted regarding general practices associated with medical office conversions, the Bailey's Upper Elementary School in Falls Church (Fairfax), Virginia, and the Montgomery Row for-sale town homes in Rock Spring.

3. Office Park Impact Assessment

   a) Profiling the characteristics of individual office submarkets concerning location, the needs of office users and landlords, relationships with other Montgomery County submarkets, possible shortfalls in submarket amenities, assessing broader objectives of economic development for the County at large and, as applicable, constraints on office conversions.

   b) Assessment of appropriateness for mixed-use development in the subject submarkets.

c) Interviews with select building owners and tenants in each submarket to discuss general office park and submarket dynamics, and to validate possible conversion modeling metrics and parameters.

d) Categorization of the existing property inventory based on broad conversion parameters/metrics.

4. Modeling Implementation and Applicability – A conversion checklist / matrix and illustrative economic model were created that identify the key drivers, factors, and conditions to estimate the likelihood of an office building to be: a) retained and adaptively used or b) demolished and redeveloped.

5. Architectural Implications – The international architecture firm HOK prepared graphic illustrations highlighting primary physical opportunities and constraints for property owners to consider conversion. Executive Plaza on Executive Boulevard is analyzed in detail.

6. Public Policy Factors –Possible public policy influences that could impact the prospects for office conversions were summarized.

III. Recent Montgomery County Office Market Report Highlights

An *Office Market Assessment* study prepared for M-NCPPC in 2015 by Partners for Economic Solutions (PES) reported that the office markets in Montgomery County and the Washington metro region are currently facing unprecedented challenges. Trends such as telecommuting, advances in technology and increasingly efficient space utilization are all reducing needs for office space. This downsizing impact has been further accelerated by reduced work force requirements for both larger private and Federal government employers. At the same time, workers increasingly have an affinity for walkable, transit-accessed mixed-use districts offering a variety of restaurants, retail, entertainment and housing.

The study points out another possible trend on the horizon related to the fact that vacant office buildings often have declining property values that could contribute to the start of a down-cycle. This phenomenon is evidenced by current property tax assessed values for vacant office buildings at more than 50 percent below the cost to replace these buildings. These buildings may eventually sell at prices 40 to 60 percent below their replacement cost. Buildings that transact at below market prices can often afford to offer discounted rents, which undercut the ability of other building owners to achieve desired rents, further contributing to a down-cycle.

While both the Executive Boulevard and Rock Spring office parks have positive office market attributes, neither possess the mixed-use qualities that characterize competitive office space noted in the PES's *Office Market Assessment*. The study suggests that retrofitting office environments by adding amenities, a mixture of uses and improved transportation connections should induce increased employee and employer interests in existing office parks. Although the study notes that conversion of office buildings can reduce the vacant space inventory, there are

few buildings that are suitably designed and located to justify the investment. Among the range of options that could impact office vacancies, the study recommends:

a) Incentives to convert, renovate or redevelop office buildings near transit or in mixed-use areas.
b) Policies that facilitate site assembly to help owners of older, small office buildings to redevelop.
c) Revisiting plans for approved but unbuilt office properties.
d) Concentrating and redirecting development capacity to more competitive locations.
e) Removing zoning impediments to redevelopment and land use diversification.
f) Providing enhanced transit access and roadway improvements to better serve pedestrians.

Although the subject submarkets are still anchored by predominantly Class A and Class B buildings, the PES study notes that it is lesser Class B and C buildings that are typically being converted, most often to residential and hotel uses and in downtown settings. Of nine conversions identified in Montgomery County, the three building conversions were located in the older central business districts (CBD) of Silver Spring and Wheaton. The other conversions involved unbuilt office space and wholesale property redevelopment in a variety of locations.

The PES study also identified two case study examples located in Burlington, Massachusetts, and
another in Henrico County, Virginia, related to the repositioning of office parks. Adaptive reuse of these office parks did not contemplate building conversions. Adding a mix of uses to these office parks was effectuated by demolition and redevelopment as well as converting planned but unbuilt office space to alternative uses. Implementation was facilitated by factors including, but not limited to, zoning changes, financial incentives, consolidated / single ownership, grocery retail anchors and infrastructure improvements.

Also in 2015 as part of the master planning process, M-NCPPC commissioned the Urban Land Institute (ULI) to conduct a Technical Assistance Panel to help determine how to make Executive Boulevard and Rock Spring more economically competitive. Released in March 2016, ULI's *What's Next for Office Parks in Montgomery County* described both study areas as being auto-centric, large superblocks that lack a sense of place. A summary of recommendations includes:

<u>Executive Boulevard</u>

a) Enhancing connectivity to area amenities (i.e. accelerating the implementation of the new White Flint Metro Station entrance and implementing the planned Old Georgetown Road and Executive Boulevard realignment).
b) Encouraging smaller, street-facing retail spaces.
c) Considering converting some existing properties to residential use (i.e. Executive Plaza, a profiled illustration included in this appendix).

As part of a larger county-wide initiative, County Executive Isiah Leggett (D) tasked the County government in 2015 to work in a concerted partnership with private sector leaders to address the health of the local office market. An *Office Market Working Group* was established with the charge of developing recommendations to stimulate the leasing of vacant space, evaluating the viability of converting commercial structures into other uses, considering possibilities for retrofitting suburban office parks into more dynamic mixed-use settings and looking at ways to enhance the economic climate in Montgomery County. The Office Market Working Group produced a report in early 2016 with the following office submarket/conversion related comments and recommendations:

> a) The single-use, suburban office park model is out-of-date and a drag on the County's office market. This issue is a priority and should be addressed by:
>
> - Encouraging ground level-retail to come out to the street.
> - Providing as much flexibility in uses as possible, including residential uses.
> - Offering more convenient transportation to Metro stations.
> - Programming outdoor spaces.
> - Creating updated identities for these communities in the marketplace.
>
> b) While there are possibilities associated with converting office buildings to other uses, these opportunities are limited, and are not likely to occur on a scale that would substantially impact overall countywide office vacancies. Where possible, the transformation of obsolete office buildings and their properties into other uses should reflect current market conditions, encouraged through such vehicles as:
>
> - Converting office buildings into schools in school districts experiencing over-crowding, provided the space to be converted is in the right location and is the correct configuration.
> - Transforming older office buildings into residential uses by providing conversion incentives and addressing possible code issues.

IV. Precedent Conditions for Office Conversions

Regional Economies and Large Employer Based Factors

There are many factors contributing to the possible feasibility of adaptive use. On a macroeconomic level, office demand may have diminished or relocated to such a degree that there is no viable financial model for maintaining office use. This condition has been observed in many older downtowns across the country, as well as suburban environments where general economic vitality has diminished. In these more evident and dramatic environments, alternative uses may emerge, either underpinned by market investment, or often assisted by commitment of public resources.

Office properties in established submarkets, or even individual office properties in otherwise thriving regional economies may also be prone to conversion, usually due to a single or collection of microeconomic factors, such as the departure of a dominant industry or employer, or a change in the local transportation network. Prominent examples in the Washington region include Crystal City, which has experienced the wholesale relocation of large and dominant federal government agencies (U.S. Patent and Trademark Office and U.S. Navy), as well as one-off employer properties, such as the former Vitro site in Aspen Hill and the COMSAT complex in Clarksburg.

For reasons discussed in Section V of this report, neither of these general submarket conditions describe the subject office parks. The regional economies supporting the Executive Boulevard and Rock Spring submarkets are diverse and generally growing. Further, the Executive Boulevard and Rock Spring office parks are not one-industry or one-employer dominant, having a substantial number of buildings serving a range of tenants.

Building Specific Conversion Examples

Notwithstanding the relative economic health and sustainability of a given office submarket, individual office properties may still be candidates for possible adaptive use. For this Technical Report, three illustrative case studies were selected for detailed profiles, representing two office-to-residential conversions (one using the existing building and the other redeveloping the site) and a hotel conversion. These comprehensive case studies are supplemented with discussion of conversions to medical office buildings and a school. In addition, office land converted to for-sale residential townhomes within Rock Spring (EYA's Montgomery Row) is reviewed.

While most conversion examples are defined case-by-case by their own special circumstances, and thus may not be readily replicable, some of the generally applicable principles and lessons learned include the following:

1. Building Age – 1960s vintage buildings are more likely to be obsolete (primarily due to building design parameters identified below) for continued use as office compared with the predominate 1980s+ buildings (i.e. like some buildings on Executive Boulevard and most in Rock Spring).

2. Building Design Parameters – There are several key factors impacting conversions:

   a) building floor plate depths should ideally be between 65 to 85 feet to facilitate residential reuse, allowing for a central corridor and perimeter windows; to a degree, architectural design solutions, such as inset balconies can help mitigate this issue.

   b) lower floor-to-ceiling heights (less than 8.5 to 9.0 feet) may inhibit contemporary office, and while not ideal, may be suitable for residential reuse.

   c) narrow building column support spacing greater than 30 feet by 30 feet inhibits efficient residential floor plans / layouts.

3. More Urban / Transit Proximate Conversions – Regional conversion examples have been more probable in downtown environments, such as Silver Spring, Wheaton and Crystal City and not in suburban environments.

4. The Density Equation – Most conversions increase the existing property density and/or maximize property density via reuse.

5. Value in Parking – Retaining parking garages, especially below grade, is both a cost savings and expedites construction delivery. Above grade surface and/or structured parking lots also often have reuse potential (i.e. by building on top of parking platform and or reducing the parking space footprint to allow for new construction).

6. Distressed Property Values – Obsolete office buildings often experience declining property values over time and are typically sold at prices that may make conversion economically feasible.

7. Smaller Redevelopment Conversions Easier to Implement – Smaller single-use redevelopment conversions are generally less complicated and easier to implement than larger-scale mixed-use projects.

8. Alternative Use Market Support for Land Conversions – Unbuilt but planned office sites are being converted to alternative uses, particularly residential (i.e. EYA's Montgomery Row at Rock Spring).

V. Executive Boulevard and Rock Spring Submarket Suitability for Office Conversions

The interests and motivations of actual landlords and users in each submarket need to be understood as a preliminary step to contemplating the possible importance of office conversions to other uses and possible merit of directing public efforts toward that end. What has made the subject office park successful in the past; what is the range of its prospective futures, and what may be necessary to advance any preferred scenario?

The Big Picture

To varying degrees, and for different reasons, Executive Boulevard and Rock Spring both remain very viable office markets. They both have distinct histories and relative competitive positions in the hierarchy of office concentrations in the Washington metropolitan area. Respectively, they play a vital continuing role in the wider Montgomery County economy, providing space for a range of office users in central locations well served by transportation. The subject submarkets, while aging, have not experienced chronic building vacancies or overall decline. Landlords with major institutional investors remain committed to ongoing office use, albeit influenced by always evolving market factors. For the foreseeable future, the majority of office owners will continue to compete for office tenants based on location, price and periodic building updates. Discussions with industry participants affirm investment interest remains positive, motivated in some cases

by longer term market driven redevelopment prospects. Potential new investment is encouraged by already evident signs of public policy direction supporting enhanced connectivity links and possible future flexibility regarding added mixed-use.

Though attention on market success can be pinned on the specific aging suburban character of the subject office parks, clearly other factors are affecting the range of potential futures. Executive Boulevard and Rock Spring are competing with new office locations, some supported by a broad range of public policies, in an environment of limited overall office employment growth countywide. Emergent and resurgent locations Metrowide, also reinforced by layers of public policy incentives, continue to dilute the pool of employer interest. Added, and very significant, large employer preference (and site availability) for new office buildings is trumping older properties regardless of neighborhood amenities or access factors.

Future Scenarios

The Executive Boulevard and Rock Spring locations, and most if not all of the existing buildings (with a few special exceptions) continue to be too valuable for prospective office use to be converted to other uses or outright demolished. Current and pending office vacancies in these submarkets are more concentrated in the Class A type buildings serving large corporate users; not so much in Class B and C buildings. Class B and C buildings, including some Class A buildings, have and can default to more of a regional or local service office function, anchored by the still premium central location, and made more attractive by a tenant value equation compared to competing locations and newer buildings. Backfill office demand for Class B and C space at the subject locations is supported by a combination of background market growth, users displaced from redeveloping properties elsewhere (i.e. downtown Bethesda) and, to some extent relocation from elsewhere for reasons of aging space, inferior locations and competitive pricing.

Overlaid on this office use background are public and private motivations to add value and update the prior office park model by adding a wider mix of uses. While in principle the merit of adding a mix of uses seems simple enough to comprehend, prioritizing specific public sector policy and actions toward this end raises more detailed considerations:

- how does adding alternative uses actually help stabilize the subject office markets?
- what is the basis for assumed results from adding alternative uses?
- what are possible ripple effects on other existing and planned submarkets?
- what is justified as a public response to private sector requests?
- how does a near term land use change advance, or perhaps compromise, an overall long- term planning vision?

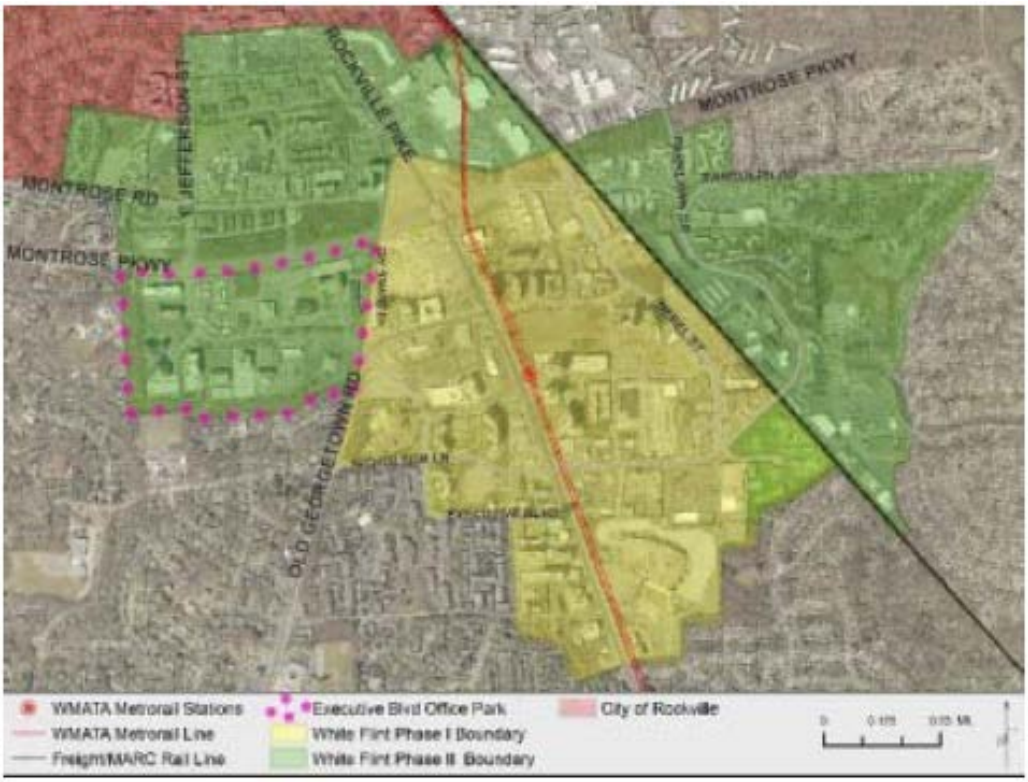
While it is not the charge of this Technical Report to address all these questions in detail, important caveats should be noted. First, the success of office parks is driven by many factors that have little or anything to do with the internal presence of residential or a broad spectrum of retail opportunities. Second, and perhaps for future study, adding an incremental residential component has not been documented as actually key to office success in the subject planning areas, nor has an added internal retail focus been proven market feasible. Third, not unlike for

office use, the markets for residential (in particular multi-family county-wide) and retail uses are finite. Encouraging them in one location in some way or another is likely to undercut demand to some extent for one use over another. And finally, there is the ongoing question of balancing public responses to private interest objectives. The significance of this public stewardship role entails many concerns, including, for example, understanding how possible opportunistic responses to accommodate land use changes based on short-term market conditions may or may not be conducive to a longer term thriving office market vision.

VI. Executive Boulevard

Office buildings within the White Flint 2 Sector Plan Area are concentrated along Executive Boulevard, roughly bounded by Montrose Parkway and Old Georgetown Road. Executive Boulevard was originally designed to accommodate mostly single-use suburban office buildings with large setbacks and a combination of surface parking and above-grade parking garages. Retail amenities were generally nearby, focused on Rockville Pike, but organized in a manner that presumed vehicular access. In years past, this proximity to retail, including the prior premier White Flint Mall, as well as the arrival of a Metrorail Red Line Station, contributed to Executive Boulevard being viewed as highly amenitized.

Exhibit 1 – White Flint II Plan Area



Source: M-NCPPC

The Executive Boulevard Office Park, comprising 15 buildings totaling more than 2.1 million square feet (net of the office condominiums), accounts for three percent of the County's office inventory. Executive Boulevard has historically attracted regional and local office users drawn to its accessible down-county location with good vehicular and transit accessibility. For example, Bethesda-based NIH currently occupies an estimated 525,000 square feet in four buildings equating to 25 percent of the Executive Boulevard inventory. Kaiser Permanente has its mid-Atlantic headquarters anchoring the western entrance onto Executive Boulevard from Montrose Road, another example of a large regional / local tenant. This building comprises approximately 250,000 square feet, equating to 12 percent of the Executive Boulevard inventory. An example of a smaller but still substantial regional user is the Jewish Federation of Greater Washington, which occupies 67,000 square feet (82 percent) of its owner-occupied building at 6101 Executive Boulevard. There are some 100 other tenants on Executive Boulevard that include adjuncts of the federal government and local oriented healthcare and finance users who typically occupy smaller spaces (i.e. averaging less than 7,500 square feet).

As of year-end 2015, overall Executive Boulevard vacancy rates had risen to close to 30 percent, attributed almost exclusively to the 2013 / 14 relocation of the National Cancer Institute (NCI) to Medical Center Drive west of I-270. NCI had been a long-term tenant comprising 535,500 square feet in three buildings (6116 Executive Boulevard and Executive Plaza at 6120 and 6130 Executive Boulevard). As of year-end 2015, this vacancy represented 85 percent of overall Executive Boulevard vacancy.

Focusing attention on the significance of NCI's relocation is critical to understanding the ongoing status of the Executive Boulevard office market. Net of the three vacated former NCI buildings, the Executive Boulevard vacancy rate is close to five percent, well below the countywide average approximating 15 percent. At its peak, NCI and NIH-related tenants occupied more than 1.0 million square feet on Executive Boulevard, accounting for half of Executive Boulevard's inventory. It is vital to note that NCI's move is reported to have been driven primarily by space requirements and price, and not locational or neighborhood deficiencies associated with the EB submarket.

A summary of key Executive Boulevard office submarket factors:

Submarket Factor	**YE 2015**
Inventory SF	2,142,800
Vacant SF	630,300
Vacant %	29.4%
Vacancy % (net of NCI bldgs)	< 5.0%
Rent (full service per SF)	$27.00+
Metro Proximate	0.5 miles

Source: CoStar and Bolan Smart, 3/2016

1. Average building size is in the 140,000 to 145,000 square-foot range

2. Class A space totals more than 1.2 million square feet equating to more than half the Executive Boulevard inventory. Class A space accounts for the majority of the

vacant space (more than 550,000 square feet of 630,000+ vacant square feet, accounting for 88 percent of the EB vacancy).

3. Although institutional users have dominated this submarket, there is a mix of institutional and local landlords each with different investor objectives.

4. While Executive Boulevard rents can be higher than the County average, they are 20 to 30 percent less than in the nearby Pike District.

Future Office Scenarios

Prospects for the future of the Executive Boulevard office market remain positive, being rejuvenated by the adjacent new Pike & Rose development as well as the upcoming White Flint transformations. Although the Executive Boulevard office cluster is today only one-half to one mile from the White Flint Metrorail Station, plans for a new Metrorail entrance at Pike & Rose, combined with the Old Georgetown and Executive Boulevard street re-alignment will make Executive Boulevard even more transit-accessible.

Although it is unlikely that a single large user will backfill NCI's vacated space, these three buildings in particular remain modern, well maintained and marketable office properties. Due to the aforesaid nearby enhanced amenity base and expected better connectivity, combined with the likelihood of some pricing discount compared with the Pike District, re-leasing for office use is probable. The initial leasing effort, however, is compromised by the necessary landlord strategic decision of when to open up leasing of a 100 percent vacant building to smaller tenants. Once one or more relatively larger users are secured, the infill of the rest of the office space can commence[18].

Once stabilized post-NCI, the overall Executive Boulevard office submarket is well positioned to cater to regional and local serving non-corporate users drawn to a central location proximate to both transit and retail options. The ability of aging but still functional buildings to compete with other office submarkets on price, plus offering ample cost-effective parking, underpins this evolving office market dynamic.

The future competitiveness of the Executive Boulevard submarket will be impacted by the following:

1. Positive energy finally flowing from the immediately adjacent Pike & Rose mixed-use complex (after more than a decade of planning, demolition of prior uses and completion

[18] As of mid-May 2016, Abt Associates, a global consulting firm, signed a full building lease (150,000+ square feet) at 6130 Executive Boulevard, one of two buildings comprising Executive Plaza. Abt Associates will be relocating and expanding its footprint from smaller older space it has been occupying for over 10 years in downtown Bethesda. The landlord recently spent roughly $10.0 million on Executive Plaza common areas renovations, including installing new mechanical systems and adding amenities such as a café, fitness center and a 3,500 square foot conference center. Although the Executive Plaza buildings might be physically suited to residential conversion (see Appendix A), market affirmation supports investment for continued use as office.

of new construction), plus spillover from the updating and arrival of new users to the overall greater Pike District submarket.

2. Implementation and completion of transportation upgrades (Executive Boulevard and Old Georgetown Road intersection and new Metrorail entrance in the Pike District, plus the extended impact of the prior completed Montrose Parkway and Randolph Road / Rockville Pike interchange and still be finished related road distribution network).

3. Retenanting/ reenergizing the large three buildings of the Executive Plaza office complex recently vacated by NCI, reflecting in part recent landlord investment in building improvements.

4. Updated Executive Boulevard property improvements, including significant new mixed-use construction likely at the two gateway sites flanking the eastern entrance to Executive Boulevard.

VIII. Conversion Modeling

The Montgomery County Planning Department is concerned about the large volume and perhaps systemic character of office vacancies in the county. It wishes to understand the prospects that property owners may face in converting their office buildings on a broad basis. While the current master
planning effort impacting land use planning and zoning in both Executive Boulevard and Rock Spring areas provides the impetus and focus for this Technical Report, the Planning Department has asked the consultant to organize contributing factors using a model that could have generic application.

There are two fundamental economic factors that must converge for office conversions to become feasible: market returns after conversion costs for alternative uses need to exceed the likely market returns from retaining a property for productive office use. Reaching this tipping point typically requires that an existing or planned office property experiences a substantial dilution of value relative to alternative uses.

While this relative reduction in (or unfulfilled) economic value for office use can occur for many reasons, the required conditions are not generally common to Executive Boulevard and Rock Spring. Simply put, the value equation (potential income vs. cost) in these submarkets for continued office use, though perhaps reduced from prior achieved rent levels, still exceeds that of the substantial cost of converting to alternative uses.

The cost differentials are pretty basic. Converting an office building to residential use requires demolition and replacement of existing interiors, extending plumbing throughout the building, changing electrical and heating, air conditioning and ventilation systems. It also may mean installing new fire stairs to meet building codes and invariably will include major exterior alterations. These costs are on top of the base value for the same building before possible renovation costs are needed to attract and sustain office use.

Even if market conditions might merit repurposing, not every building is suited to conversion. Residential markets (and building codes) require access to light and air, which may be difficult to achieve in large and wide office buildings where much of the interior space is too far from windows. Micro locational factors, such as land use adjacencies and viewscapes, may not be optimal. As evidenced by the case study examples, not every owner of a possibly obsolete office building will actually be interested in or easily able to effectuate a change of use. Notwithstanding interim office vacancy, until the current owners are willing to value (or sell) the building at a reasonable price that will allow profitable reuse, conversion is unlikely to proceed.

Conversion Feasibility Checklist Model

The Sample Building Conversion Checklist catalogues a range of property specific factors that can be assessed to determine likely adaptive reuse probabilities. The checklist is intended as a starting point from which to evaluate a property for preliminary likely suitability for conversion. Note, it is not a progress flow chart to make go / no decisions, but a means to compile and organize a combination of factors that collectively need to be understood. Basic model parameters / metrics include:

1. **Location / Neighborhood** - proximate to existing residential and access to retail amenities.
2. **Market Potential** – marketability, redevelopment value.
3. **Property Characteristics** – age, footprint, light / air for residences, building structural factors, possible building code issues, etc.
4. **Unused Permitted Building Area (FAR)**
5. **Occupancy** – vacancy rate and tenant factors (how many, lease terms, etc.).
6. **Economic** – land and building values, office vs. non-office income thresholds.
7. **Regulatory** – policy, zoning, overlay requirements, incentives.

While the majority of possible adaptive reuse metrics need to be found positive to establish preliminary conversion feasibility, some factors are less important, while others are critical. Clearly, even if all the contributing feasibility parameters suggest there is potential for conversion implementation, in the end, the fundamental economics need to work.

The attached checklist includes a range of physical and economic criteria meant to be answered with a “yes” or “no” check, or with a qualified response as appropriate. The example illustrates how the checklist can be completed in this case for the locational factors relevant to both EB and RS. The color coding ranks the relative importance of different factors, with the red boxes representing the most critical hurdles (or opportunities). In short, if the red boxes do not check as positive (or “yes”), the prospects for a building conversion are very low. Note that in cases where the evaluated building does not pass basic feasibility tests, the default alternative may or may not be continued office use and reinvestment, leading at some point to possible abandonment and ultimate demolition.

The conversion checklist column titled **Potential for Policy Impact** suggests where public oversight or intervention may be a variable. With two exceptions (policy and zoning), these possible public policy related factors are not highlighted in color because they do not or cannot impact the building feasibility, or where they may convey influence, such influence is a matter for public determination.

SAMPLE BUILDING CONVERSION CHECKLIST

Office-to-Residential / Hotel (EB and RS)

Yellow = some importance *Green = important* *Red = critically important*

Criteria	Near Term	Future	Potential for Policy Impact
1. Location			
a) mixed-use proximate	*yes*	*yes*	*possible*
b) office growth	*possible*	*possible*	*limited*
2. Market for alternate uses	*yes*	*yes*	*limited*
3. Property / Buildings			
a) age / when reinvested > 25 years			*no*
b) < 85 feet wide bldg depth			*no*
c) bldg frame (> 30 foot column spacing)			*no*
d) window line open space views			*limited*
e) mostly bldg code compliant			*limited*
d) some conversion value			*no*
4. Underused FAR			*possible*
5. Occupancy			
a) vacant			*no*
b) single-user			*no*
c) multi-tenant (possible complicated)			*no*
6. Economic			
a) land to building value ratio > 1.0			*no*
b) non-office rents > office rents			*no*
c) value recovery > repositioning costs			*no*
7. Regulatory			
a) policy supported			*possible*
b) zoning compatible			*possible*
c) requirement factors (i.e. MPDUs)			*possible*
d) incentives (reg. relief, financial)			*possible*
8. Future infrastructure / other change			*possible*
Conversion Prospect			*maybe*

*Note ownership motivations are also key, vary widely, but are not considered in this generic "checklist"

Office-to-Medical or Institutional / School Criteria

Though the Sample Building Conversion Checklist targets the most dramatic existing building changes from office-to-residential or hotel uses, many of the most critical evaluation metrics are

similar when applied to possible medical or institutional / school use. The primary differences are that medical and school adaptive reuse criteria are generally more akin to office use. Building footprint and light and air access issues are more relaxed, and while added plumbing is important, some of the existing HVAC systems and other common area building functions may be salvageable. In some respects, parking provisions (medical offices typically require more than 1.5 times the number of parking spaces for a unit of building area than traditional office uses) and outdoor spaces for recreational use and possible bus staging for school reuse readily exceed original office use space configurations.

Economic Test

Assuming an existing office building meets the majority of the feasibility parameters identified in the Conversion Checklist, the next step a private owner would take is to test the basic income and cost equation. The attached Existing Office Property Reinvestment Illustration uses estimated generic cost and value assumptions, applicable more or less comparably to both Executive Boulevard and Rock Spring, to depict variables that determine the ultimate cost equation of possible conversions.

Primary economic test measures include:

1. **"As-is" Acquisition Cost** – an existing office building has an initial value comprising the land and usually some residual value for the improvements. This "as-is" value represents the base market value of the property in its current condition regardless of its ultimate use, which in the case of Executive Boulevard and Rock Spring is still some form of office use (albeit at possibly very low rents to attract users). Where the building is so obsolete as to render no prospect of office re-use, most, if not all, of the "as-is" value is attributable to the underlying value of the land.

2. **Additional Investment** – the cost of delivering an existing property to produce future income represents the investment in addition to the underlying "as-is" value. These extra costs may range from relatively minimal to substantial if for continued office use or virtually equivalent to 100 percent for new development construction for new uses. The cost components include various degrees of possible re-use of existing building components, plus soft cost and contingencies that also vary based on the magnitude and complexity of change. (See Reinvestment Illustration for examples.) (Note the reuse and the type of parking provided in place of former office use is assumed to be the same regardless of the type of residential construction, with a totally new residential scenario – i.e. only land, no prior office building or parking – being accommodated primarily with a new parking structure).

3. **Required Return-on-Costs** – the minimum investor yield (or return) on project costs needed to justify the commitment of capital and time given the risks of construction costs, achieving budgeted project revenue and future financial market variables. If

this minimum return is not projected based on reasonable budget and market assumptions, a prospective redevelopment will not qualify for financing.

4. **Market Supported Value** – what a developer investor could expect to be paid for a completed redevelopment. For rental properties, the value is what the property is worth, when the net annual income after all operating costs are deducted, provides for a specified rate of annual return on the total required upfront investment. (For the illustration below, the indicated Market Supported Values are based on estimated industry comparables for the subject type of development at an Executive Boulevard or Rock Spring type location.)

5. **Positive Gain / (Economic Loss)** – if the investor required project value after all cost factors is more than the projected value, the considered redevelopment would not typically be able to be financed. Highest and best use is, therefore, the development scenario which supports a neutral to positive economic gain.

Property Ownership and Financing Variables

Additional to the economic tests discussed previously are specific property ownership motivations and financing impacts, which may heavily influence a possible reinvestment scenario. A given property owner may have broader or perhaps alternative business objectives of which a particular property represents only one part. Existing financing liabilities may restrict the resolve of near-term property reuse options. The existence of a ground lease – relatively common in Rock Spring for example – may include use and redevelopment provisions, which alter reinvestment assumptions.

Existing Office Property Reinvestment Illustration

(per building square foot / FAR)

	Re-Leasing Vacant Building		Office Reinvestment and Lease-up		Residential Conversion		New Residential Stick-Built		New Residential High-Rise		Total New Residential Stick-Built	
"As-is" Acquisition Cost												
Land (supporting existing bldg)						$50						$0
Existing Building						$75						$0
Unused FAR						$0						$50
total value "as is"						***$125***						***$50***
	minimal expense		*bldg updates*		*reuse of existing*		*demo existing*		*demo existing*		*no existing bldg*	
Additional Investment												
demolition		$0		$0		$0		$5		$5		$0
site prep / utilities / access		$0		$0		$5		$10		$10		$20
excavation / basement		$0		$0		$0		$10		$10		$10
parking		$0		$0		$5		$5		$5		$15
base building		$10		$40		$75		$60		$90		$60
building finishes		$60		$70		$60		$60		$60		$60
total construction cost		$70		$110		$145		$150		$180		$165
Soft Costs [1]	*10.0%*	$20	*12.0%*	$28	*25.0%*	$68	*25.0%*	$69	*25.0%*	$76	*25.0%*	$54
Contingencies (on add'l invest)	*5.0%*	$4	*5.0%*	$7	*15.0%*	$32	*10.0%*	$22	*10.0%*	$26	*10.0%*	$22
Total Additional Investment		***$94***		***$145***		***$244***		***$241***		***$282***		***$241***
Total Direct Investment		$219		$270		$369		$366		$407		$291
Required Return-on-Cost	*18.0%*	$39	*18.0%*	$49	*18.0%*	$66	*18.0%*	$66	*18.0%*	$73	*18.0%*	$52
Total Required Value		***$258***		***$319***		***$436***		***$431***		***$480***		***$343***
Market Supported Value [2]		$260		$320		$350		$360		$400		$360
Profit / (Loss)		***$2***		***$1***		***($86)***		***($71)***		***($80)***		***$17***

[1] A&E, fees, marketing, etc., on total of "as-is" acquisition cost and construction cost

[2] New base building investment typically will provide for more revenue and efficiencies, resulting in a higher overall market value per gsf

Source: Bolan Smart, 5/2016

The Conversion Investment Tipping Point

When comparable office and non-office use valuations are close to being equal, the market will produce a mix of uses. Within a band of five percent variance in proforma value estimates, (after market appropriate risk adjustments for respective property class income characteristics), the decision of whether to go in the direction of office or with another use gets down to investor preference and not fundamental economics. Discussion of incentives to help offset valuation gaps between continued office use and alternative development. These gaps are of minimal consequence if the value difference being considered is less than at least 5 percent, with a value delta more like 10+ percent being a minimum threshold target to induce conversions (or $30 to $40 per square foot to help incentivize non-office use).

IX. Conversion Candidates

How many properties in Executive Boulevard and Rock Spring may actually be prospective candidates for near or medium term conversions, and how much of the overall existing office submarket might this represent? To find out, Bolan Smart Associates conducted an inventory data analysis and limited property tours to assess possible near and medium-term conversion prospects (for residential use) in the subject office submarkets.

Using the Conversion Checklist, very few existing office buildings met the probable conditions for outright conversion. For a variety of reasons, the list of candidate properties based on the criteria of unbuilt or potential additional FAR (100+ percent more FAR than existing used) is larger. The potential for preserving or wrapping around existing parking garages was considered, but not quantified. (Note that this analysis does not factor for the current Employment Office (EOF) zoning in both Executive Boulevard and Rock Spring that limit residential, retail or other uses.)

Executive Boulevard

Market Potential

Although Executive Boulevard is currently dominated by office use, it is surrounded by residential neighborhoods and is proximate to retail. The residential market potential is evidenced by new construction at Pike & Rose and elsewhere along Rockville Pike. The market potential for multifamily and attached residential uses is assumed to be positive (central location, Metro / amenity proximate). It is more marginal for neighborhood convenience retail; hotel use is possible but more likely Pike District centric, not likely for school use and could possibly support medical offices.

Buildings

There is one vacant office property that has a narrow enough footprint to be conducive for conversion to residential, Executive Plaza (see Appendix B for detailed analysis). Conversion of these two buildings would likely also be accompanied by new multifamily construction to capture unused FAR.

Underdeveloped / Added FAR / Demolition

There are several properties that are well positioned for redevelopment, particularly those sites close to the Pike District. These properties have a substantial amount of existing or potential unused FAR relative to their existing improvements, which in some cases are also considerably aged. Examples include:

1. The Washington Science Center is a large site and currently includes a planned but unbuilt office building; landlord is focusing on redevelopment plans.

2. 6000 Executive Boulevard has significant unused FAR (approximately 100,000 square feet).
3. 6006 Executive Boulevard has significant unused FAR (approximately 100,000 square feet).
4. Kaiser's lab at 6111 Executive Boulevard also has unused FAR and possible redevelopment potential.

Other Sites

A substantial area of existing low-rise office condominiums are not likely candidates for redevelopment due to their ownership structure. Other existing office sites, such as the owner occupied Kaiser Permanente regional headquarters, are also unlikely nearer term conversion candidates.

X. Public Policy Considerations

Market Findings and Observations

a) Office markets (larger users in particular) going through change; locations still dynamic.
b) Landlords focused on reinvestment / market pricing adjustments to continue office use.
c) Smaller to medium sized properties can serve multi local and regional oriented tenants.
d) Building conversions unlikely, FAR conversions likely, driven by premium down county locations.
e) Some near-term building demolition linked with additional FAR mixed-use redevelopment.
f) Over time, some bigger buildings may be demolished / divided per expanded FAR mixed use.
g) Limited destination retail potential; areas surrounded by retail of all sorts.
h) Residential can reduce vacant office land, but not large enough to sustain retail (but helps).
i) The market for new townhomes is essentially unlimited (central locations with little competition).
j) No shortage of alternatively located new multi-family development.
k) Executive Boulevard likely to adapt / evolve based on success of Pike District.
l) Rock Spring has key large project development hurdles that will only be closed as they can be financed (RSC today and possible Marriott site in the future).
m) Desire for mixed-use / outwardly visible vibrancy, transformation of underused spaces, new private investment and positive rebranding.

Policy Constraints

While the Executive Summary highlights significant public policy factors, additional study considerations are summarized below:

a) Density caps can equal shorter term economic use, perhaps not longer-term market contributing.
b) Lack of permissible building flexibility can mean less investor commitment.
c) Zoning mandates (particularly the EOF zone use restrictions in both submarkets), heights, setbacks, etc. all important, but also assumed somewhat open to district-wide and / or case-by-case recasting.
d) Ability to prioritize public investments across multiple office markets countywide.

Possible Actions

a) Enhance connectivity at planning / public level, reinforced with zoning and site planning.
b) Zone to encourage kind of residential wanted (Note low density zoning = townhomes).
c) Maybe only able to require retail if land value bonus for other market use can subsidize the retail.
d) Incentives should focus on area-related retail, not just property specific.
e) Scale streets for pedestrian and possible convenience retail (but suburban model).
f) Be sympathetic to private economic solutions (i.e. combo of surface and above-grade parking).
g) Selective category tax abatements (especially for large office users).
h) Prioritize if funding incentives are appropriate per competing countywide economic development.
i) Executive Boulevard could focus on eastern gateway profile properties.
j) Rock Spring could focus on catching some internal retail and challenge of big buildings / large assemblages.
k) Should wait on specific planning details for Marriott relocation and adapt RSC per market

APPENDIX A
Office-to-Residential Conversion Feasibility Analysis of Executive Plaza

Executive Plaza (6120 and 6130 Executive Boulevard)

Caveat: For economic and zoning reasons (Employment Office zone limits residential uses), Executive Plaza is not a probable nearer term prospect for conversion. However, the following illustration depicts some of the physical opportunities that this conversion example could offer.

From an implementation standpoint, Executive Plaza is a good candidate for residential conversion:

1. Location is adjacent to open space and residential uses, and close to schools, retail and transit (see Exhibit 1).

2. Current building configuration/footprint lends itself to residential use.

3. Large site (13.0 acres, including a portion of shared common entry with the adjacent office building) with underused allowed FAR (0.58 FAR existing vs. 0.75 allowed) and excessive parking for residential use (four-level, 625-space parking structure, 525 surface spaces) suggests the possibility to add building area.

4. Currently vacant (as of May 2016).

Exhibit 1 – Executive Plaza Adjacent Land Uses

Building Conversion Design Factors

Executive Plaza is an approximately 355,000 gross square foot, 30-year old office complex comprising two virtually identical, eight-story buildings (plus penthouse and a lower level). The pair of V-shaped buildings is organized around a central plaza with vehicular drop-off. Each building has a central core with four elevators and two wings with a fire stairwell near each end. The building wings have relatively narrow widths by office standards at approximately 68 feet wide, almost ideal for residential unit conversion. Common practice for supplying residential units is a floor plat in the range of 65 feet wide (two, 30-foot deep units served by a 5+ foot corridor). Where unit depths would exceed 30 feet at building corner locations, depths can be easily reduced by moving back the exterior windows, thereby converting some of the interior space into exterior balconies.

The existing building configuration and excess available parking provide flexibility to yield 250 to 400 units, depending on what is deemed market optimal size. (Note market assumption for this illustration is that the location and building setting would support relatively high priced, large condominiums.)

Key components to convert the office building to residential would require:

Building Support Systems

1. No structural issues are expected regarding the conversion from office to residential as normal office buildings require more floor load.
2. Not likely to add height (though physically conceivable) if extension of current zoning provisions (100 feet, adjacent to single family residential area) is assumed.
3. Contemplate adding living and amenity spaces to an expanded existing mechanicals penthouse.
4. Column spacing at 30+ feet works; floor-to-ceiling heights at 9.5+ feet are ample.
5. Reconfigure / remove some of the building core function space.

    a) Remove one or two passenger elevators, depending on final unit count.
    b) Only two stairs at both ends are required per code (do not need existing central stairs well)
    c) Replace the HVAC systems, addition of plumbing, other electrical.

Façade Treatment

1. Consideration of replacing or painting the existing precast aggregate concrete exterior.
2. Window replacement and infill of portions of the continuous window line.
3. Possible lowering of some of the existing window sill heights.

Common Areas

1. Subdivision of the lower level / below grade space for amenity use, though still excessive; option of providing extensive unit auxiliary storage space (and maybe garage parking conversion for north tower).

2. Preserve 350 existing semi-underground parking deck and additional surface spaces, converting excess parking areas into additional residential space (parking structure perimeter) and into amenity and additional landscaped areas.

3. Consider connecting the entrances of the two buildings to form a single lobby to maximize.

   operational functionality (and consolidate common amenities – see Exhibit 2).

Exhibit 2: Possibility of Creating a Single Entrance/Lobby

Floorplate (see Exhibit 3)

1. Subdivision of the ground and typical floors into residential units.

2. The addition of inset balconies that would reduce depth of building at select corner locations.

3. 3. Take advantage of existing stepped terraces at the both ends of the buildings to provide premium residential units on the upper three floors (see Exhibit 4 for highlighted balconies).

Exhibit 3: Office Floorplate (Blue) and Residential Floorplate (yellow)

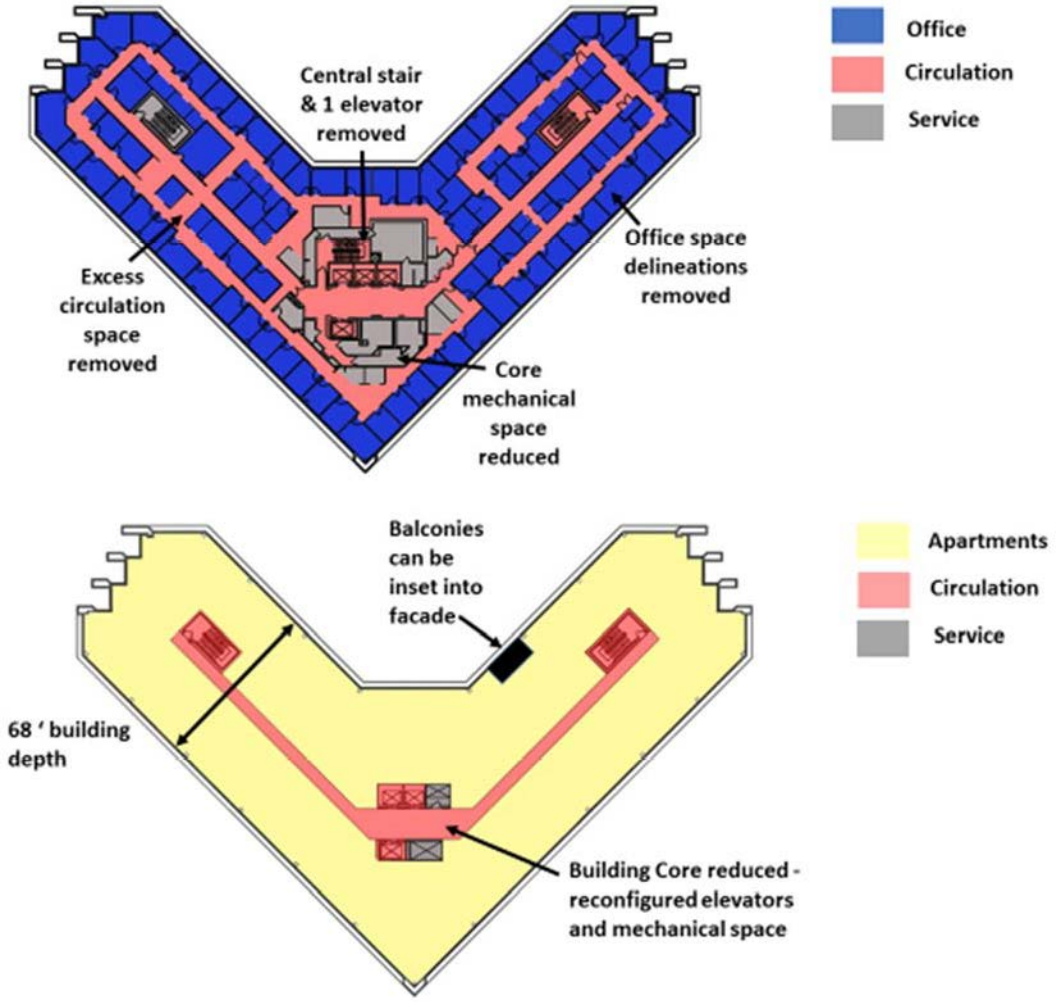
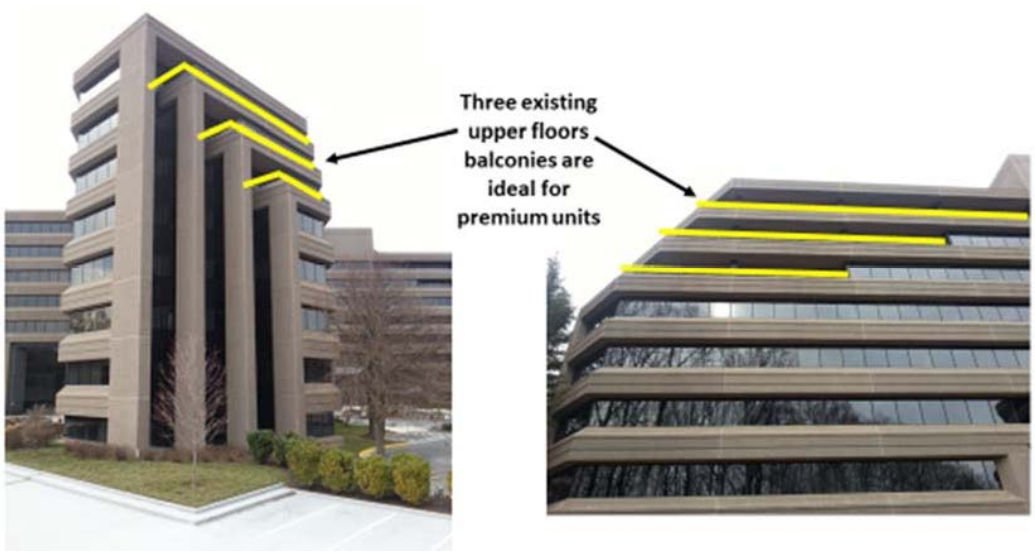


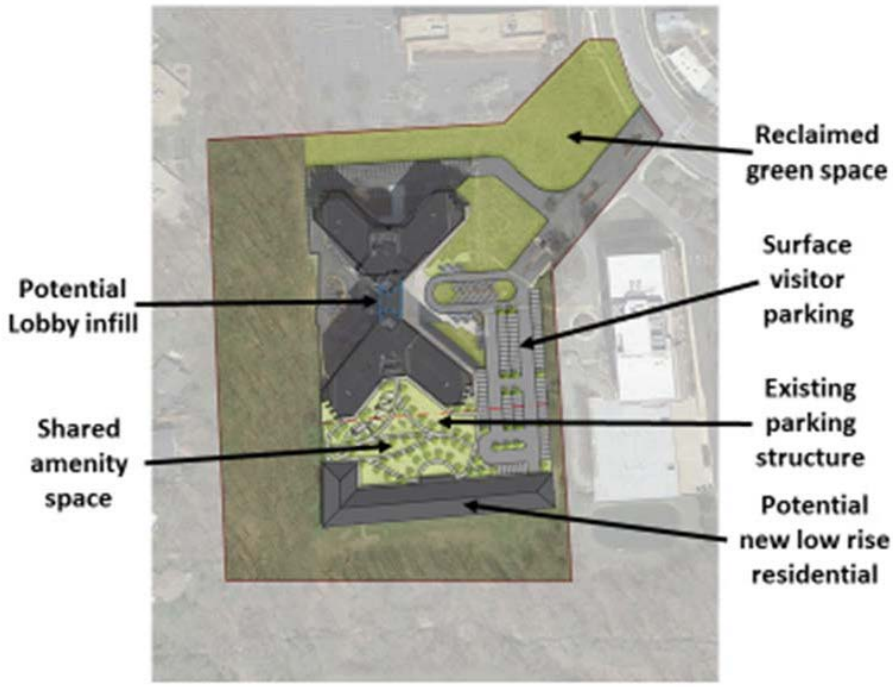
Exhibit 4 – Utilization of Existing Balconies



Additional Site Development Opportunities

The existing site accommodates more than 1,000 parking spaces, 625 of which are housed in a four-level parking structure. Demolition of a portion of the three-aisle parking structure appears feasible, providing what could be an ideal location to capture additional residential units (low-rise multifamily or townhomes). Although a variety of site plan configurations is possible, the illustrative site plan depicts a scenario of creating a shared open/amenity space located between possible new perimeter residential use and the existing office towers (on top of retained parking structure – see Exhibit 5).

Exhibit 5 – Illustrative Site Plan Configuration



Overall Conversion Dynamics

From a purely physical standpoint, Executive Plaza presents an excellent opportunity to consider an office-to-residential conversion. Apart from fundamental economic issues still favoring office use, there are few apparent drawbacks to achieving an efficient residential reuse. Reworking the existing parking (structure and surface) provides a lot of opportunities for adding additional new residential space as well as preserving existing value. While the final parking treatment may not be perfect for marketing purposes, compared with ground-up new construction, the scale and type of existing parking provides competitive and cost-effective parking options. With the majority of the office towers existing lower levels are below grade, conversion to living units in this area is limited. While there are alternate uses for this lower level space that support the residences, it is unlikely that, short of repurposing the basement of the north tower for parking, all of the fully effective use of lower level space would be achievable.

BUILDING CONVERSION CHECKLIST

Executive Plaza Office-to-Residential

Yellow = some importance *Green = important* *Red = critically important*

Criteria	Near Term	Future	Potential for Policy Impact
1. Location			
a) mixed-use proximate	*yes*		*possible*
b) office growth	*possible*		*limited*
2. Market for alternate uses	*yes*		*limited*
3. Property / Buildings			
a) age / when reinvested > 25 years	*no*		*no*
b) < 85 feet wide bldg depth	*yes*		*no*
c) bldg frame (> 30 foot column spacing)	*yes*		*no*
d) window line open space views	*yes*		*limited*
e) mostly bldg code compliant	*yes*		*limited*
d) some conversion value	*yes*		*no*
4. Underused FAR	*yes*		*possible*
5. Occupancy			
a) vacant	*yes*		*no*
b) single-user	*yes*		*no*
c) multi-tenant (possible complicated)	*n/a*		*no*
6. Financial			
a) land to building value ratio > 1.0	*no*	*possible*	*no*
b) non-office rents > office rents	*no*	*possible*	*no*
c) value recovery > repositioning costs	*no*	*possible*	*no*
7. Regulatory			
a) policy supported	*no*	*possible*	*possible*
b) zoning compatible	*no*	*possible*	*possible*
c) requirement factors (i.e. MPDUs)	*yes*		*possible*
d) incentives (reg. relief, financial)	*no*		*possible*
8. Future infrastructure / other change	*Maybe*	*possible*	*possible*

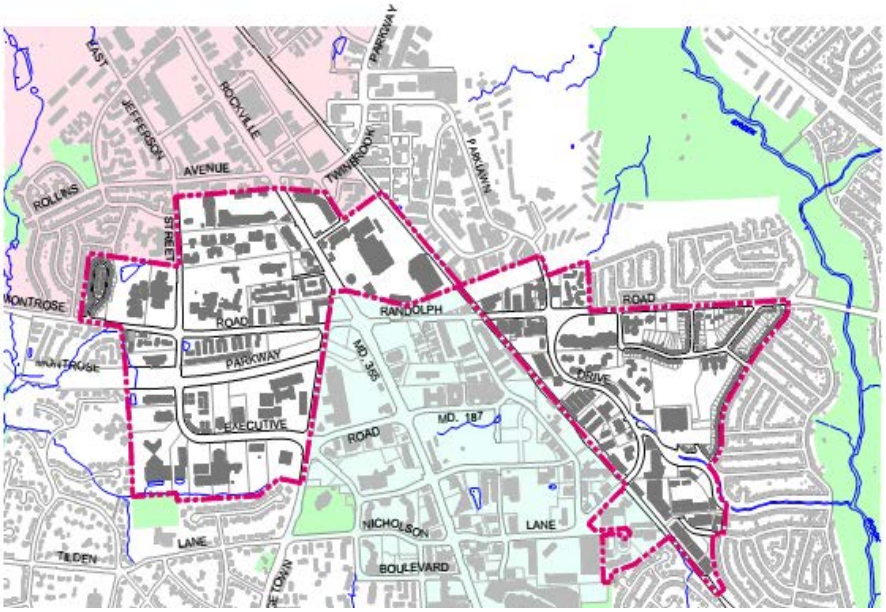
Conversion Prospect	*no*	*possible*	*maybe*

ULI TECHNICAL ASSISTANCE PANEL: EXECUTIVE BOULEVARD SECTION

The Executive Boulevard area of White Flint is located in the western portion of the 455-acre White Flint 2 Sector Plan, and is bounded by Old Georgetown Road to the east and Montrose Road to the north. Overall, the greater area is transitioning from an auto-oriented, suburban development pattern into a more urban area where people walk and bike to work, to shops, to services, and to transit. The Executive Boulevard area is served by the White Flint Metrorail station.

EXECUTIVE BOULEVARD STUDY AREA

The Executive Boulevard study area is located in the western-most portion of the White Flint 2 Sector Plan. *Map Source: Montgomery County Planning Department*



CHALLENGES FOR BOTH STUDY AREAS

Though they are geographically separated, the study areas possess many parallel challenges. The Panel grouped these challenges into four categories: connectivity, identity, amenities, and land use.

Connectivity

Both study areas are characterized by a conventional—and increasingly outdated—suburban development pattern: they are almost exclusively auto-oriented office parks with significant pedestrian challenges. In both cases, accessing the site for a pedestrian or cyclist is either uninviting, unsafe, or

both. Both sites are surrounded by and accessed through multi-lane roads that invite high traffic speeds. The blocks in both study areas are large “superblocks” that are scaled towards automobile traffic. Furthermore, traversing to spots within each study area is fraught with pedestrian challenges; in both cases, internal connectivity is neither intuitive nor inviting.

Identity

Both study areas suffer from identity challenges. The Panel continuously cited that the study areas lack a sense of place; that "there is no THERE there." In essence, the study areas lack distinguishing characteristics that might differentiate them from other office parks in the County or the region. Further, these "placeless places" are disconnected from any amenities, especially for pedestrians.

Amenities

The dearth of amenities in both study areas contributes to the sense of placelessness. Executive Boulevard and Rock Spring are both non-amenitized office parks; destinations that harken back to development patterns of the mid-20th century. In effect, office tenants in these study areas have access to very little other than their offices. Absent from these study areas are restaurants, coffee shops, gyms, drug stores, and other neighborhood-serving retail, although in some buildings, interior amenities for employees are available.

Land Use

Offices dominate the existing land uses in both study areas. The lack of diversity contributes to the identity challenge faced by both study areas. In their current state, the Executive Boulevard and Rock Spring study areas are office only destinations that largely see workers arrive by car in the morning, and depart by car in the evening, with very little other activity in between.

CHANGING TRENDS IN OFFICE SPACE

To set the stage for a conversation about the two study areas, the Panel discussed the context of the shifting nature of office space at the macro level. By and large, people are changing where their office space is located. The Panel analyzed existing industry research on office uses. Based on this analysis from 2000–2008, the rate of tenant relocation at the expiration of a lease was 40%. By contrast, between 2009 and 2014, the rate of tenant relocation at the expiration of a lease jumped to 60%. These trends show that, over the last five years, tenants are largely choosing to relocate to new office space, rather than remain in place.[19]These moves are often driven by the changing way office space is used, including prioritization of amenity-rich and transportation-accessible locations.

Often, this relocation is rooted in the "flight to quality" away from Class B or C office product and towards Class A office product. The substantial shift in absorption rates between 2008 and 2014 prove this overall preference for higher quality space: data shows that absorption for Class A product was 18.6 million square feet, whereas absorption for Class B and C product was –13.6

[19] Newmark Grubb Knight Frank (NGFK) is a commercial real estate advisory firm that put forth a study in September 2015 titled "Suburban Office Obsolescence." This study, including its data and overall relevance to the TAP, served as a foundational element in the Panel's formation of its recommendations. To view the study, visit: http://www.ngkf.com/Uploads/FileManager/NGKF-White-Paper-Suburban-Office-Obsolescence.pdf. To learn more about NGFK, visit: http://www.ngkf.com/home/research/thought-leadership.

million square feet.[20]The Panel suggested that preferences towards higher quality space are due, in part, to office clients placing a greater emphasis on their corporate identities as well as locating in areas where there is a high amenity base. The move to new space is viewed as essential in attracting the new generation of workers. The Panel's research further indicates that 86% of lease activity occurs within a ½ mile of a metro station, which represents a big shift from previous trends, where lease activity was less reliant on proximity to public transportation.

Office vacancy rates in the remainder of Montgomery County tell a similar story. According to the Panel's research, Montgomery County in 2015 had nearly 11 million square feet of vacant office space. Office vacancies in submarkets of Montgomery County are listed below.

OFFICE SPACE VACANCY IN MONTGOMERY COUNTY

NEIGHBORHOOD	PERCENTAGE VACANCY
Rock Spring	21.2%
Executive Boulevard Area	29.2%
Montgomery County	14.8%
Bethesda/Chevy Chase	9.4%

Relative to other comparably sized jurisdictions in the region, Montgomery County has been less successful in retaining corporate headquarter offices. Based on the Panel's research, over the past six years, eight Fortune 500 companies located their headquarters in Fairfax County, and only one such company left Fairfax County to locate elsewhere. In Montgomery County over the last six years, by contrast, zero Fortune 500 companies have located in the County, and zero have left to go elsewhere. A critical element of economic development for both study areas will be attracting new tenants while also maintaining existing tenants. According to the Panel, the County must be aggressive in catalyzing economic development in these study areas. Waiting for the market to naturally absorb itself will not yield productive growth. According to the Panel's research, approximately 16% of suburban office space in the Metropolitan Washington Region is determined to be obsolete.[21]

Office space obsolescence is a layered challenge, however. Some issues related to office space obsolescence—such as proximity to amenities—are curable; other challenges are not. While the phenomenon of challenged suburban office product is not unique to Montgomery County, a specific challenge for these study areas is that demand for their office product is severely constrained. The market perception of the study area locations, combined with the age of their

[20] http://www.ngkf.com/Uploads/FileManager/NGKF-White-Paper-Suburban-Office-Obsolescence.pdf.

[21] http://www.ngkf.com/Uploads/FileManager/NGKF-White-Paper-Suburban-Office-Obsolescence.pdf.

products, and the nearby amenity base characterize the products in both study areas as Class B and C space. According to the Panel, this product type does not possess the features sought by prospective office tenants.

Nevertheless—and importantly—the office product in both study areas is locationally viable, and in some cases, locationally vital. For instance, both Executive Boulevard and Rock Spring are located in areas with access to highly rated schools and other desirable demographics, according to the Panel. Similarly, both areas are easily accessible by major roads and arterials, and are centrally located in Montgomery County. Therefore, the focus of the Panel's recommendations consider these office products within their larger contexts—including the nearby amenity bases—in order to develop ways to improve conditions and make them attractive to potential tenants.

RECOMMENDATIONS: EXECUTIVE BOULEVARD

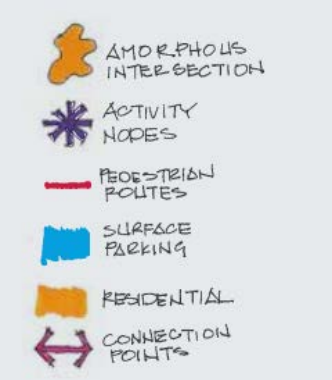
Existing Conditions

In order to develop recommendations to improve the Executive Boulevard portion of the study area, the Panel first analyzed the area's existing conditions. The area enjoys and is surrounded by tremendous assets, including the Pike & Rose mixed-use development, a major convention center and hotel complex, and proximity to the White Flint Metrorail station. The area's connections to these assets, however, need to be improved. For instance, the Panel expressed concerns that the multi-lane intersection of Executive Boulevard and Old Georgetown Road creates an uninviting and unsafe pedestrian experience to access the study area. Furthermore, while the handsome streetscape environment along Executive Boulevard is well maintained, it is oriented towards automobiles, not pedestrians.

EXECUTIVE BOULEVARD TAP STUDY AREA

The area outlined in red illustrates the boundaries of the Executive Boulevard Study Area

Map Source: ULI Washington



CONNECTIVITY

Connectivity to offsite amenities from the Executive Boulevard study area is largely automobile oriented and pedestrian challenged. Though the White Flint Metro station is only ¾ mile away—about a 15-minute walk—the routes to and from the site are circuitous and confusing. The lack of obvious connection has caused pedestrians to create an informal "goat trail" through parking lots, and there is evidence of people walking through landscaping to shorten the formal connection between the Metro and the study area. Auto-oriented crossings—particularly at Old Georgetown Road and Executive Boulevard—add to the connectivity challenge and create uninviting pedestrian experiences to access the site.

EXISTING CONDITIONS ALONG EXECUTIVE BOULEVARD
In this rendering, the blue shading indicates auto-dominant areas that largely monopolize the study area. The Panel advocated for making improvements that better connect the area to surrounding amenities, particularly for pedestrians. *Photo credit: ULI Washington*

Additionally, the way the buildings address Executive Boulevard renders the site nearly inaccessible to pedestrians. Because pedestrian access was not designed into the site, pedestrians are forced to access the front door of most buildings through driveways and parking lots, rather than on sidewalks and designated footpaths. Finally, although walking to Pike & Rose from the study area only takes six minutes, the experience is perceived to be much longer due to the site's unfriendly pedestrian conditions. As a result, the site is experiencing a diminished opportunity to take advantage of this nearby amenity.

PERCEPTION VS. REALITY

While walking to Pike & Rose from the study area only takes six minutes, the experience is perceived to be much longer due to the conditions within the site itself. *Map source: ULI Washington*

TOP

PEDESTRIAN EXPERIENCE FROM METRO

The solid red line shows a confusing and circuitous formal pedestrian path from Metro to the office destinations along Executive Boulevard. The dotted line indicates an informal "goat trail" that has formed through a parking lot to shorten the walking experience *Map Source: ULI Washington*

BOTTOM

AERIAL VIEW OF OLD GEORGETOWN ROAD AND EXECUTIVE BOULEVARD

This auto-oriented intersection, with its channelized right-turn lanes, and high car speeds, creates an intimidating and uninviting pedestrian experience to access the study area. *Image Source: Google Maps*

Enhancing connectivity to area amenities will require prioritizing infrastructure improvements. The Panel recommended accelerating the implementation of new White Flint Metro Station entrance and implementing the planned Old Georgetown Road and Executive Boulevard realignment. This street realignment, also known as the Western Workaround, in concert with plans for a new White Flint Metrorail station entrance, which will be one block north of the existing station entrance, will vastly improve pedestrian access to the area. In addition to creating a more obvious street grid, the realignment will tighten up the intersection of Old Georgetown Road and Executive Boulevard by ridding it of the channelized turn lanes. The realignment will also create a continuous corridor that decreases the distance and time it will take to walk

from the new White Flint Metrorail station entrance to the study area. Rather than a 15-minute, ¾ mile walk between the Metrorail station and the study area, pedestrians will instead experience a 10-minute, ½ mile walk between the Metrorail station and Executive Boulevard. Pike & Rose will serve as an intermediate landmark along the way, making the perception of the pedestrian experience more tenable.

Panelists also recommended leveraging and linking to the existing White Flint recreational loop, as well as extending the pedestrian amenities—such as shared use trails—that already exist in neighboring White

Flint. Finally, Panelists recommended introducing Capital Bikeshare to the study area, which can serve as a multimodal connector.

NEW WHITE FLINT METRORAIL STATION ENTRANCE

Plans for the new entrance to the White Flint Metrorail station will be one block north of the existing metro station, and will make access to the site from metro (shown in green) more direct than what exists today (shown in red).
Map source: ULI Washington

IDENTITY

The feeling of a “placeless place” pervades the study area. There is not a lot to attract people to the site other than the single office uses. However, Pike & Rose is a major nearby asset. The Panel recommended leveraging this asset as much as possible by linking the study area’s identity to it. One way to accomplish this is by creating consistent wayfinding and an overall streetscape package, which would contribute to a more uniform identity for the larger area. This streetscape

package would contribute to creating a corridor of activity that naturally connects Executive Boulevard to Pike & Rose.

AMENITIES

The local experience in the study area is generally unpleasant due to the lack of amenities.[22] Furthermore, the ability to walk to the nearby amenities—like the restaurants at Pike & Rose—feels prohibitive due to unpleasant pedestrian connections, like limited access from the street. This amenity desert creates a great opportunity: anything that diversifies the area's uses will benefit the area. The Panel recommended that the local experience would be improved by introducing neighborhood-serving retail that caters to the area's office workers—such as coffee shops, cafes, drug stores, and dry cleaning services. Panelists also recommended taking action to decrease the perceived distance between building entrances and street. One way to accomplish this, over the long term, is to encourage small floor plate retail in street-facing surface parking lots. In the shorter-term, the surface parking areas could be used as places to implement pop-up amenities, such as food trucks, coffee shops, or parklets. Either approach would create a street wall of retail, which would activate the area. Adding outdoor movable seating can further activate the space, and create gathering spots for office workers, thereby encouraging people to go outside and interact with each other, rather than return to their desks for lunch.

The Panel also recommended embracing and enhancing the ample existing green spaces within the study area. The mature trees and existing landscaping are major assets, but are uninviting to pedestrians in their current state. Adding picnic style seating amidst the trees is one way to make this asset more inviting. Another suggestion—activating a trail system amidst the green space—can also add a wellness benefit to the area as well as provide connections to neighboring residential areas to the south.

EXISTING GREEN SPACE IN STUDY AREA

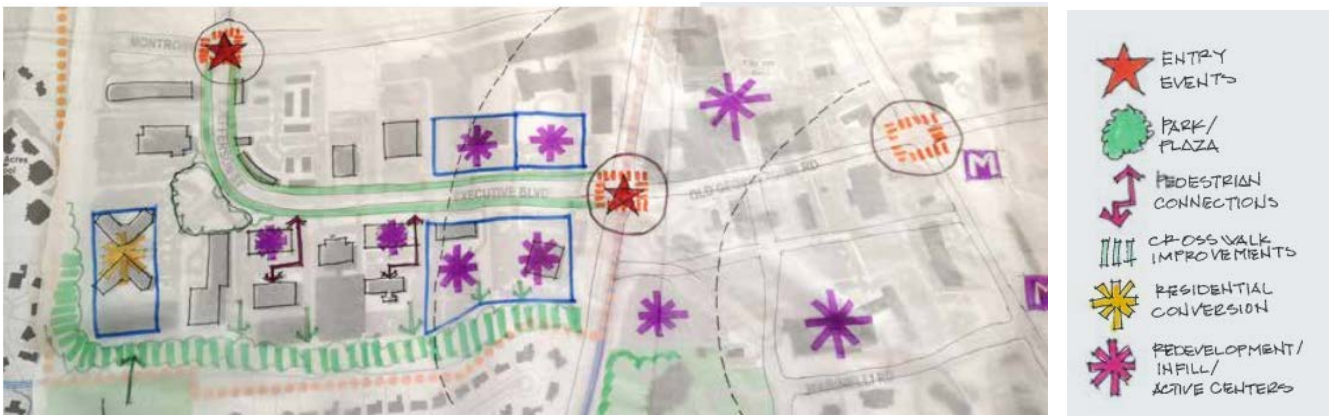
There is ample existing greenspace in the study area, which the Panel recommended could be used to create a trail system. *Image Source: ULI Washington*

[22] Panelists acknowledged that some of the office buildings may contain small retail shops, but contended that because these uses are not obvious from the street, the perception of the overall dearth in amenities persists.

LAND USE

According to the Panel, the only way to enhance the existing land use in the area is to add diversity. In addition to providing neighborhood-serving retail, the Panel also recommended considering converting some of the existing properties. Two narrow buildings in the southwest portion of the study area, in particular, are favorably oriented towards each other. Consequently, these buildings might present possibilities for a conversion to a residential use.

Should this conversion occur, the remaining parking designated for the area would be at a surplus, and could therefore provide an opportunity for additional stick-built residential construction. The Panel emphasized that anything Montgomery County can do to encourage and facilitate an added mix of uses—including repurposing existing buildings—would significantly enhance the character and viability of the study area.



EXECUTIVE BLVD FRAMEWORK PLAN

This rendering shows the areas of opportunity for Executive Boulevard. Introducing more urban street intersections, shown with red stars, will create inviting and safer pedestrian options. Building out the intersection of Old Georgetown Road and Executive Boulevard ca also enhance the area's identity by better linking it to Pike & Rose and to other amenities that are close to the Metrorail station. Additionally, the pleasant configuration of the south-western most buildings, indicated in orange, presents an opportunity to convert office uses into residential, thereby diversifying the area's land uses. Turning the existing green space into parks and trails can add enhancements and connections to nearby residential areas. Finally, activating the parking lots between the buildings and the Executive Boulevard can create a retail wall, which will enhance the amenity base for the area. *Image source: ULI Washington*

APPENDIX 5: SPECIAL TAXING DISTRICT FINANCING

Prepared by: Rick Liu, Rick.Liu@montgomeryplanning.org, Montgomery County Planning Department, Research and Special Projects Division.

TAX DISTRICT FRAMEWORK

The *2010 White Flint Sector Plan*'s proposed transportation improvements will substantially benefit properties in the 2010 Plan area, and the Special Taxing District it created borders the Plan boundary. Naturally, the Planning staff considered extending the Special Taxing District into the White Flint 2 Sector Plan area as the preferred method to fund its infrastructure recommendations. The Research and Special Projects (R&SP) Division performed an initial analysis of the potential tax revenues that could be generated by extending the existing White Flint Tax District into all or part of the White Flint 2 Plan area. The objective was to determine how much tax revenue could be raised to assist major infrastructure projects in both White Flint Plan areas, as well as compare its impact to transportation impact taxes generated from new construction.

In performing this analysis, R&SP looked at three different alternatives in extending the Special Taxing District into the *White Flint 2 Sector Plan*. Alternative 1 incorporates only properties north and west of the rail tracks bisecting the White Flint 2 Plan area. Alternative 2 incorporates all the properties in the Plan area, including properties east of the tracks. Alternative 3 incorporates only those properties along Executive Boulevard, south of Montrose Parkway. Planning staff's preferred alternative is Alternative 1, as its properties are deemed to have a strong nexus to infrastructure proposed in the 2010 plan, notably the Western Workaround and second Metro station entrance.

Using information from the Maryland Department of Assessments and Taxation (SDAT), the analysis aggregated tax assessments for properties in each of the three alternative scenarios to estimate new revenue that could be currently generated by extending the Taxing District. It subsequently factored in additional revenue projections from new development – using total zoning capacity of the properties for assumptions of build-out density – across a 30-year period. Estimates were expressed both annually and cumulatively. As most Sector Plans do not realize 100 percent build-out during its lifespan, the analysis also included more conservative revenue estimates assuming 70 percent, 50 percent, and 30 percent build-out. The analysis then calculated and compared revenue generated by impact taxes under each alternative, using the same buildout assumptions.

Other key assumptions in the Special Taxing District analysis are as follows:

- Market values for new development in the White Flint 2 Sector Plan per square foot (identical to those used in *2010 White Flint Sector Plan*).
- No inflation factor (represents today's numbers).
- Build-out schedule evenly distributed across 30 years.
- Existing residential excluded from assessments (consistent with current Special Taxing District).

- Special Taxing District tax rate = $0.115 per $100 of assessed value (represents 10 percent of total District taxes as calculated in FY 2017).

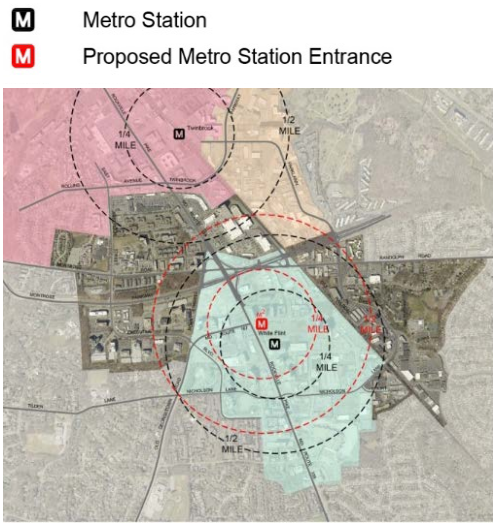
Detailed factors for assumptions, as well as detailed tax revenue estimates for each alternative, can be found in in the following presentation.

The findings reveal that the Special Tax District would be financially superior to transportation impact taxes because it raises more revenue, under each of the alternatives under every level of buildout; offers a more immediate and reliable stream of income, given that impact taxes are contingent on new construction; and can be dedicated towards infrastructure in the District, as opposed to Countywide.

The analysis also found that the Special Tax District, particularly Alternatives 1 and 2, could greatly aid in public infrastructure costs, although comparatively greater impact will be felt in the later years as new development gradually increases the District's taxable value. Based on the projections, the preferred alternative (Alternative 1) would generate between 70- 90 percent of the tax revenue in Alternative 2 (depending on level of buildout). Over the course of 30 years, Alternative 1's tax revenue at its most conservative (no new development) would be $26 million, and at its greatest (100 percent build-out) would be $111 million, which of itself could cover most of the Western Workaround's cost. Given Alternative 1's nexus to infrastructure proposed in the 2010 Plan, and its potentially strong financial impact, it is considered the most favorable method in the White Flint 2 Sector Plan for funding public infrastructure.

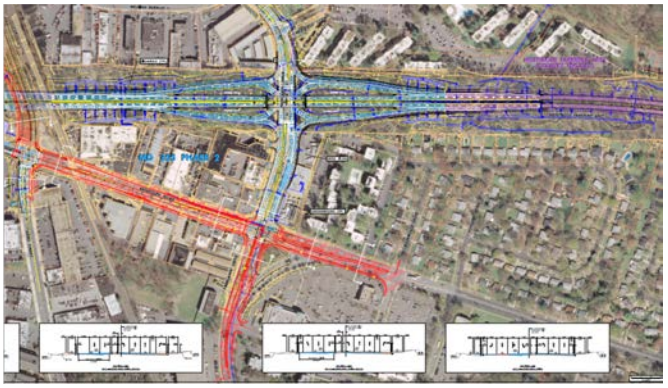
It should be noted that assumptions and values may continue to be modified before final approval of the plan, which would affect projections and possibly conclusions. It should also be noted that the tax revenue projections would be contingent on the milestones in the staging plan being met, as required by new development.

Capital Project Costs (White Flint 2)	
Second Metro Station Entrance (White Flint)	$13.5M - $35M (2008 estimate)
MARC Station (near White Flint)	$20M (2008 estimate)
Shuttle/Circulator	$1.25M - $5M
Bikeways	$2-3M+
Pedestrian Bridge over CSX	5M+
Roadway Realignment of Parklawn Drive and Randolph Road	$10M
Estimated Total (WF2)	$45-78M+
Western Workaround Total	$80M



Existing and Second Metro Station

MARC Station



Realignment of Parklawn Drive and Randolph Road

White Flint 2: Potential Tax District Alternatives

- Alternative 1: Properties north/west of CSX rail tracks (Planning Board preferred).
- Alternative 2: All properties within the White Flint 2 boundaries.
- Alternative 3: Executive Boulevard properties.

Assumptions

Special Tax District

New Construction Market Values		
Building Type	**Market Value per SF (from White Flint I)**	**Assessment Values per SF (as reference)**
Industrial	*$ 100.00*	
Institutional/ Community Facility	*$ 300.00*	
Office	*$ 425.00*	*$214 - $318*
Retail	*$ 400.00*	*$428*
Warehouse	*$ 100.00*	
Multifamily Residential	*$ 500.00*	*$155 - $289*
Townhouse Residential	*$ 500.00*	

Special Taxing District Tax Rate *(Per $100 Assessed Value)*	0.115

Inflation Factor	0%

Buildout Schedule	Evenly distributed across 30 years

Impact Tax Rates	
Residential Development	
Multifamily (DU)	$ 7,934
Townhouses (DU)	$ 14,284
Non-Residential Development	
Office (SF)	$ 15.95
Retail (SF)	$ 14.25
Industrial (SF)	$ 7.95
Other (SF)	$ 7.95

Inflation Factor	0%

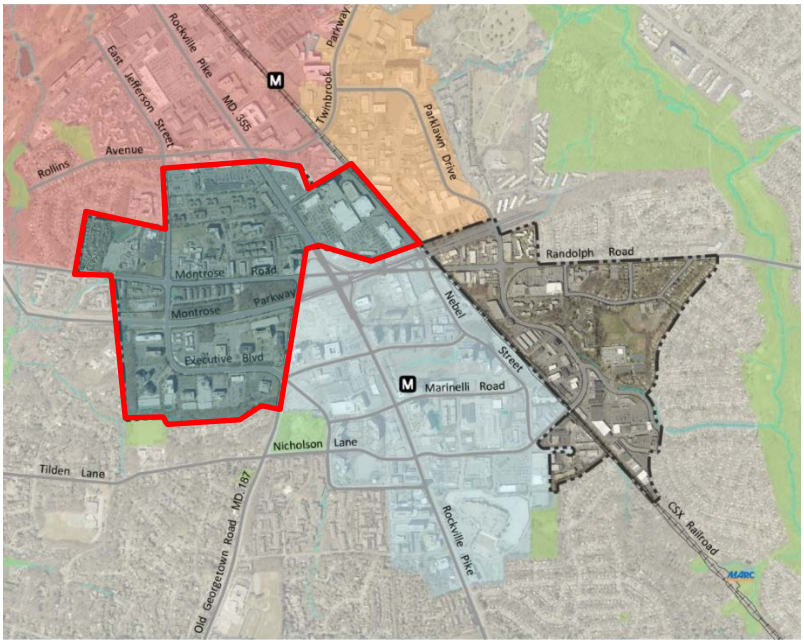
Buildout Schedule	Evenly distributed across 30 years

Buildout Assumptions

Assumed Buildout Per Zoning (@ 100% Buildout)			
	Alternative 1 - North/West Tracks	**Alternative 1 - All White Flint II Properties**	**Alternative 1 - Executive Boulevard**
	Dwelling unit or Sq.ft	**Dwelling unit or Sq.ft**	**Dwelling unit or Sq.ft**
Residential Development			
Multifamily (DU)	5,124	5,830	1,822
Townhouses (DU)	-	109	-
Residential SF	6,148,800	7,268,500	2,186,400
Non-Residential Development			
Office (SF)	1,113,410	1,153,329	617,585
Retail (SF)	1,088,188	1,169,409	342,667
Industrial (SF)	-	4,149	-
Other (SF)	645,975	662,969	181,971
Total Non-Residential SF	2,847,573	2,989,856	1,142,223
Gross SF	**8,996,373**	**10,258,356**	**3,328,623**

Special Tax District: Alternative 1

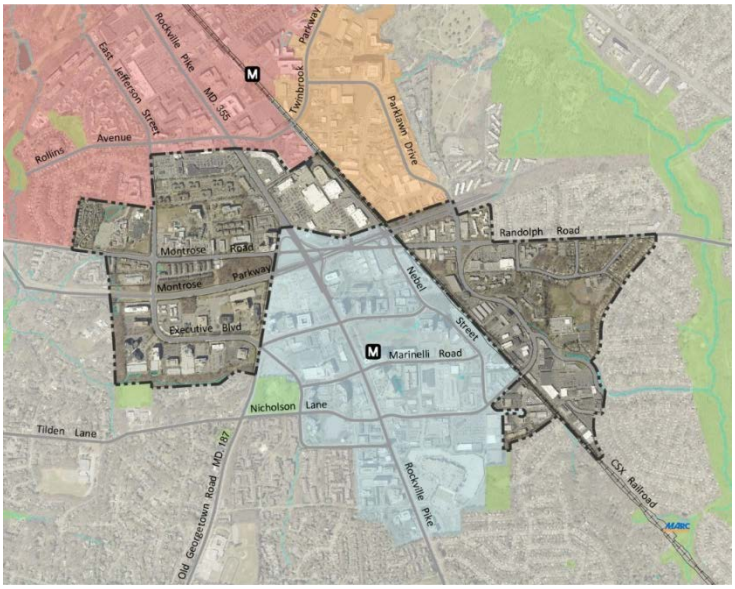
- Properties North and West



White Flint II - North/West of Rail Tracks			
Current Tax Assessment	$		744,537,600
New Development	**Special Tax District**		**30-Year Impact Taxes**
	Annual	*30-Year*	
0% Buildout (Existing Properties)	$ 856,218	$ 25,686,547	$ -
30% Buildout	$ 1,592,979	$ 54,086,577	$ 23,716,466
50% Buildout	$ 2,366,228	$ 67,731,274	$ 39,527,443
70% Buildout	$ 3,362,217	$ 85,455,792	$ 55,338,420
100% Buildout	$ 4,803,167	$ 111,071,182	$ 79,054,886

Special Tax District: Alternative 2

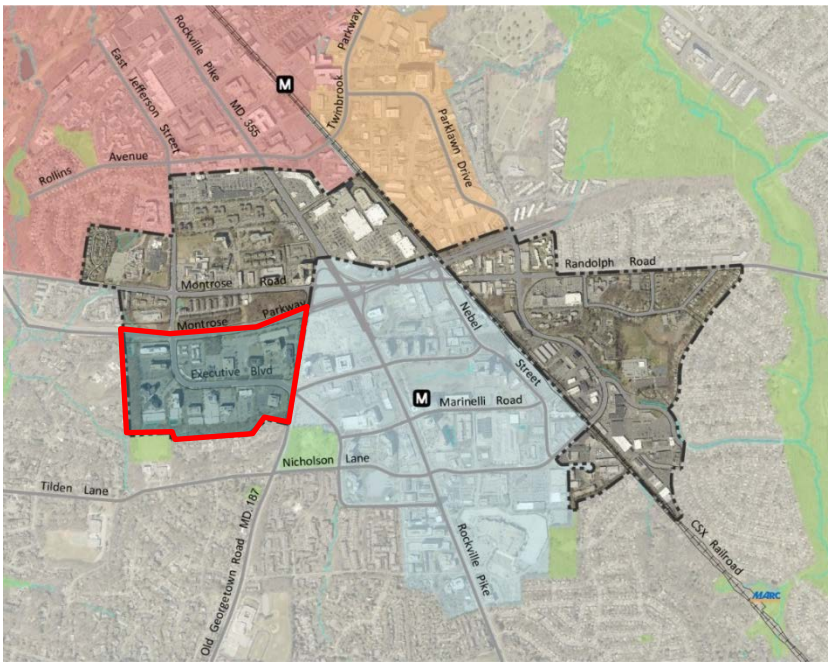
- All White Flint 2 properties



White Flint II - All Properties			
Current Tax Assessment	$		1,017,475,600
New Development	**Special Tax District**		**30-Year Impact Taxes**
	Annual	*30-Year*	
0% Buildout (Existing Properties)	$ 1,170,097	$ 35,102,908	$ -
30% Buildout	$ 1,832,776	$ 63,510,931	$ 26,452,632
50% Buildout	$ 2,713,309	$ 77,159,205	$ 44,087,720
70% Buildout	$ 3,857,145	$ 94,888,650	$ 61,722,808
100% Buildout	$ 5,510,207	$ 120,511,111	$ 88,175,440

Special Tax District: Alternative 3

- Executive Boulevard Properties



White Flint II - Executive Boulevard			
Current Tax Assessment	$		344,596,700
New Development	**Special Tax District**		**Impact Taxes**
	Annual	*30-Year*	
0% Buildout (Existing Properties)	$ 396,286	$ 11,888,586	$ -
30% Buildout	$ 587,888	$ 21,042,349	$ 9,190,771
50% Buildout	$ 877,144	$ 25,545,523	$ 15,317,952
70% Buildout	$ 1,245,602	$ 31,282,470	$ 21,445,133
100% Buildout	$ 1,779,432	$ 39,594,134	$ 30,635,905

Key Observations

- White Flint 2 taxing district can greatly aid in District infrastructure costs.
- A special taxing district offers more reliable income stream than impact taxes
  - Difference in 30 percent to 100 percent buildout in tax district: ~2X
  - Difference in 30 percent to 100 percent buildout with impact tax: ~3X
  - Funding immediately available for bonding
- Majority of tax revenue is in properties north/west
  - North/west properties = 70 percent – 90 percent taxes in White Flint 2
  - Executive Blvd. properties = 30 percent taxes in White Flint 2
- Assessment values can significantly affect projections for tax district.

APPENDIX 6: TRANSPORTATION AND MOBILITY

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INTRODUCTION

The transportation analysis performed in support of the Planning Board's Draft *White Flint 2 Sector Plan* focused on intersection system performance for the Plan's year 2040 master plan vision using the following tools:

- The Planning Department's regional travel demand model referred to as Travel/4. Travel/4 is a Montgomery County-focused adaptation of the Metropolitan Washington Council of Government's (MWCOG) regional travel demand modeling tool.
- National Cooperative Highway Research Program (NCHRP) 765 and 255 post-processing techniques.
- Highway Capacity Manual (HCM) methodologies as generally used to implement the county's Subdivision Staging Policy (SSP) as described in the Planning Board's *2017 Local Area Transportation Review Guidelines*.

Most of the White Flint 2 Plan area is located within the North Bethesda policy area and a smaller portion, Nicholson Court, is located within the White Flint Metro Station Policy Area (MSPA). The larger Plan study area includes a small portion of the Rockville City Policy Area and the Twinbrook MSPA, as well as a significant portion of the White Flint MSPA located immediately south of the Plan area. The methodology used to evaluate transportation system network performance is established by the county's Subdivision Staging Policy (SSP). Based on the recently adopted 2016-2020 SSP, the congestion standards for signalized intersections in the Plan study area are based on the policy area HCM average intersection delay-based level of service standards described in Table 1 below.

Table 1: 2016-2020 Subdivision Staging Policy Intersection Congestion Standards

HCM Volume-to-Capacity Equivalent	Policy Area	HCM Average Vehicle Delay Standard (seconds/vehicle)	Critical Lane Volume Congestion Standard
0.97	North Bethesda	71	N/A
1.13	White Flint	120	N/A
1.13	Twinbrook	120	N/A

The 2016-2020 SSP changed the LATR test of new subdivisions and created a multi-modal transportation adequacy test. The new process expands the application of delay-based Highway Capacity Manual (HCM) methodology to evaluate the performance of local intersections. In addition, new procedures that evaluate the adequacy of transit, pedestrian and bike facilities for new development have been introduced.

Sector Plan and Study Area Boundaries

As noted above, the boundary of the White Flint 2 Plan area is located within the North Bethesda policy area and a smaller portion within the White Flint MSPA. However, the transportation analysis Plan study area also considers portions of two neighboring policy areas: White Flint and Twinbrook. The northwestern portion of the Plan area is adjacent to the Rockville City policy area. Figure 1 depicts the relationship of the Sector Plan area to the four policy areas.

Two major arterials, Rockville Pike (MD 355) and Montrose Parkway, traverse the middle of study area in the north-south and east-west directions, respectively. The study area comprises the traffic analysis zones (TAZs), within and contiguous to the Plan boundary. The geographical definition of the Plan area is important in that it is the first step in establishing the interface between the regional transportation model (Travel/4) and the subarea Sector Plan-specific local area model (referred to as Travel/4MP[23]).

[23] Travel/4MP reflects a more detailed traffic analysis zone and transportation network structure relative to Travel/4.

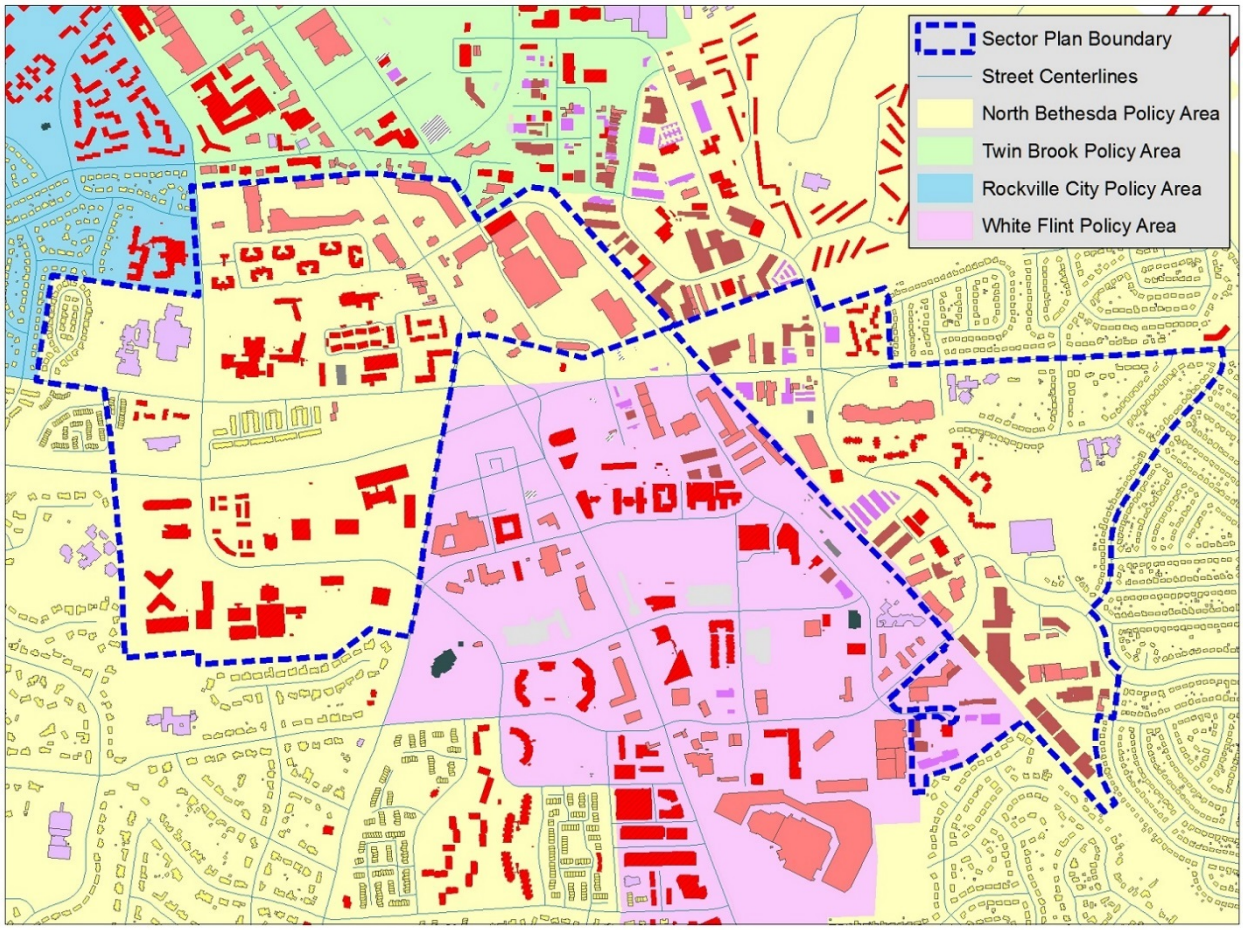

Figure 1. Relationship of Sector Plan Boundaries to Policy Areas

Traffic Count Collection and Evaluation

Using information derived from the Planning Department's intersection traffic count database (http://www.mcatlas.org/Intersections/), observed intersection turning movements at selected locations within the study area were gathered and observed (generally reflecting existing conditions) and the level of service at these locations was evaluated. Observed counts of vehicles, pedestrians, bicycles per 15-minute intervals (the minimum time interval unit used in traffic engineering analysis) were assembled. Figure 2 depicts the location of intersections identified for intersection performance evaluation. Ten intersections are within the 2010 White Flint Sector Plan area, including four intersections bordering the White Flint 2 Plan area.

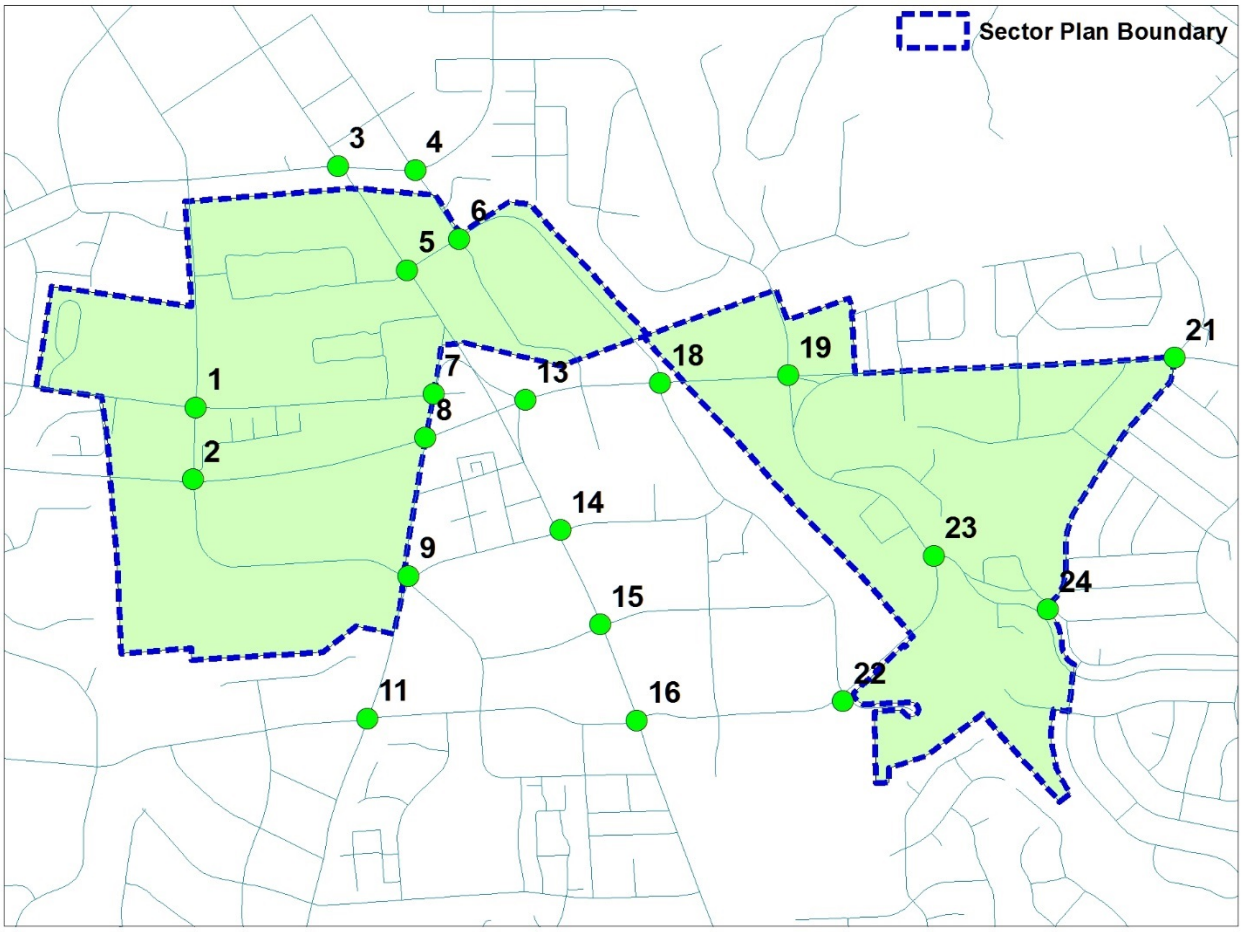

Figure 2. Study Area Intersection Locations

Plan study area intersections included in this analysis reflect three (3) policy area congestion standards. Table 2 summarizes the existing conditions (year 2015) HCM average intersection delay analysis results for 20 selected signalized intersections located within the Plan study area. As noted above, Plan study area intersections within the North Bethesda Policy Area reflect an average intersection delay standard of 71 seconds per vehicle. Plan study area intersections within the Twinbrook and White Flint MSPAs have an average intersection delay standard of 120 seconds per vehicle.

Six intersections depicted in Figure 2 are located along the boundary of two policy areas that have different congestion standards and where the higher congestion standard applies. Consequently, thirteen (13) Plan study area intersections which are located within the Twinbrook and White Flint MSPAs, reflect an average intersection delay standard of 120 seconds per vehicle. Seven (7) intersections located within the North Bethesda Policy Area have an average intersection delay standard of 71 seconds per vehicle. Intersections estimated to operate at or above these two congestion standards are considered "failing" or not within the acceptable standard for the relevant policy area. As can be observed, with the notable exception of Randolph Road at Parklawn Drive

(which operates above the applicable standard for this intersection during both the AM and PM peak), all of the study area intersections selected for evaluation operate well below the applicable congestion standards.

Table 2. Existing Conditions Scenario – Intersection Delay Analysis

ID	Delay Standard (seconds)	E-W Road	N-S Road	2015 Existing Delay (seconds)	
				AM	PM
1	71	Montrose Road	East Jefferson Street	41.1	50.6
2	71	Montrose Parkway	East Jefferson Street	41.1	48.4
3	120	Rollins Avenue	MD 355	23.4	32.4
4	120	Twinbrook Parkway	Chapman Avenue	49.0	47.0
5	120	Bou Avenue	MD 355	22.7	30.8
6	120	Bou Avenue	Chapman Avenue	26.0	23.1
7	120	Montrose Road	Hoya Street	27.7	24.0
8	120	Montrose Parkway	Hoya Street	28.4	40.5
9	120	Executive Boulevard	Old Georgetown Road	51.6	31.5
11	120	Nicholson Lane	Old Georgetown Road	33.2	38.2
13	120	Montrose Parkway	MD 355	19.8	19.0
14	120	Old Georgetown Road	MD 355	92.4	44.6
15	120	Marinelli Road	MD 355	25.3	28.0
16	120	Nicholson Lane	MD 355	38.4	61.5
18	120	Randolph Road	Nebel Street	22.0	35.3
19	71	Randolph Road	Parklawn Drive	126.6	202.2
21	71	Randolph Road	Gaynor Road	8.3	46.6
22	120	Nicholson Lane	Nebel Street	20.1	16.6
23	71	Boiling Brook Parkway	Parklawn Drive	32.9	27.6
24	71	Boiling Brook Parkway	Rocking Horse Road	21.2	23.7

Note: Intersections within the study area that exceed the applicable policy area congestion standard are highlighted in red.

Figure 3 depicts the information reported in Table 2 in a color-coded intersection level of service (LOS) "dot" map. The left-hand side of the dot shows LOS during the AM peak period and the right-hand side of the dot shows LOS during the PM peak period. The colors depicted on the dot map are determined by the range of delay values described below.

- Green: less than 30 seconds.
- Yellow: between 30 and 82.5 seconds.
- Orange: between 82.6 and 120 seconds.
- Red: greater than 120 seconds.

The dot map indicates that the following intersections within the study area approach or exceed HCM capacity, as reflected by the orange and red colors during the AM and/or PM peak periods:

- Randolph Road at Parklawn Drive – exceeds capacity during both the AM and PM peak periods.
- Old Georgetown Road (MD 187) at Rockville Pike (MD 355) – approaches capacity during the AM peak period.
- Montrose Road at East Jefferson Street – approaches capacity during the evening peak period.

HCM Analysis: 2015 Existing Conditions Traffic

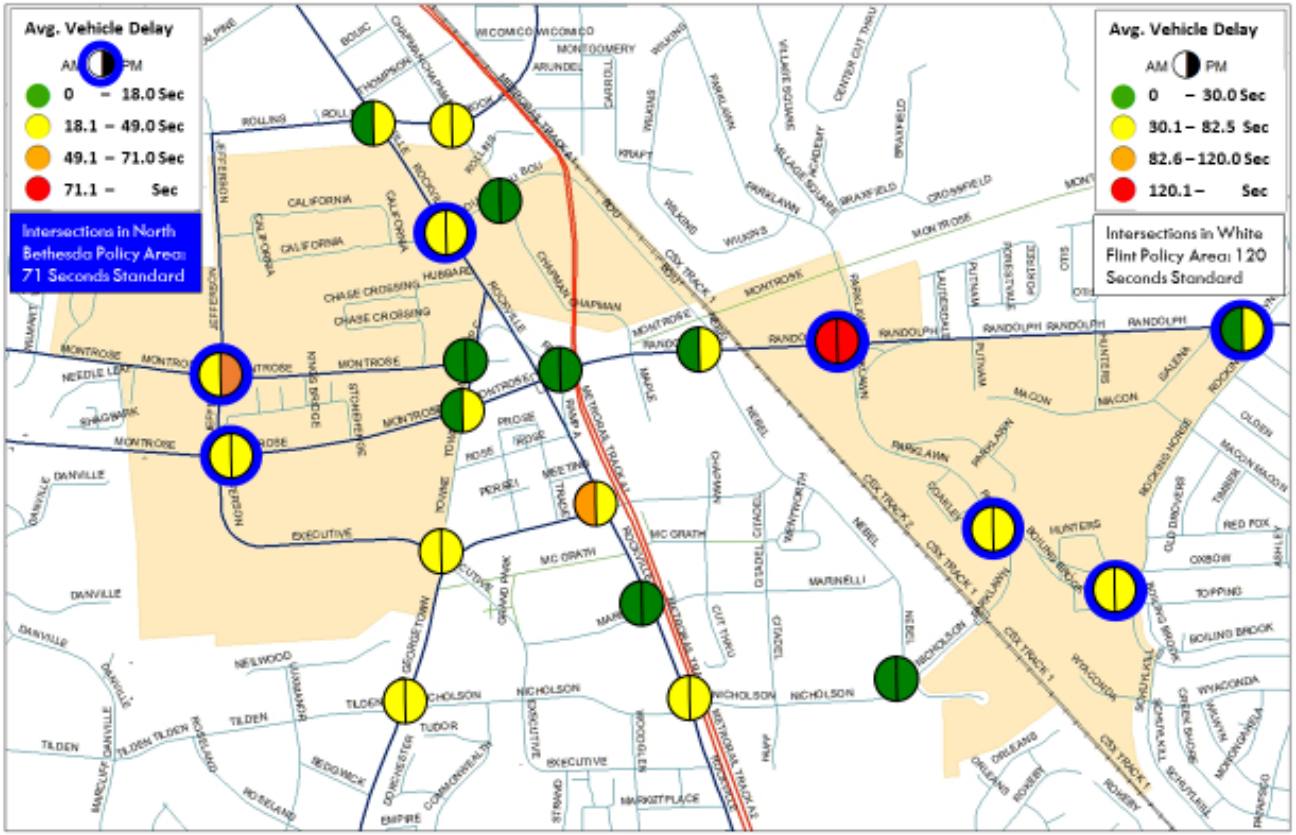

Figure 3. 2015 Existing Conditions HCM Analysis

Travel Demand Forecasting Process and Assumptions

An enhanced version of the Planning Department's regional travel demand forecasting model, TRAVEL/4, was used to develop traffic forecast results for weekday travel and AM/PM peak periods. Travel/4 is a Montgomery County-focused adaptation of the regional travel demand model developed by the Metropolitan Washington Council of Governments (MWCOG). The application of Travel/4 included the validation of the tool to reflect 2010 base year traffic conditions and the utilization of this tool to forecast of future 2040 traffic conditions in the study area. Travel/4 is a traditional four-step regional travel demand model, consisting of:

- **Trip generation:** the number of person trips that are generated by given types and densities of land uses within each traffic analysis zone (TAZ).
- **Trip distribution:** the number of person trips generated by each TAZ will travel to each of the other TAZs within the metropolitan area.
- **Mode split:** the mode of travel the person trips will use, including single-occupant auto, multiple-occupant auto, transit, or a non-motorized mode, such as walking or bicycling.
- **Traffic assignment:** the roadways that will be used for vehicular travel between TAZs.

The TRAVEL/4 model incorporates land use and transportation assumptions for the metropolitan Washington region, reflecting the same algorithms used in support of the application of the Metropolitan Washington Council of Governments' (MWCOG) regional travel demand modeling tool, Version 2.3.52.

Figure 4 shows the relationship of Montgomery County to the regional travel demand network, featuring the coding of street network characteristics to reflect the general level of adjacent development density.

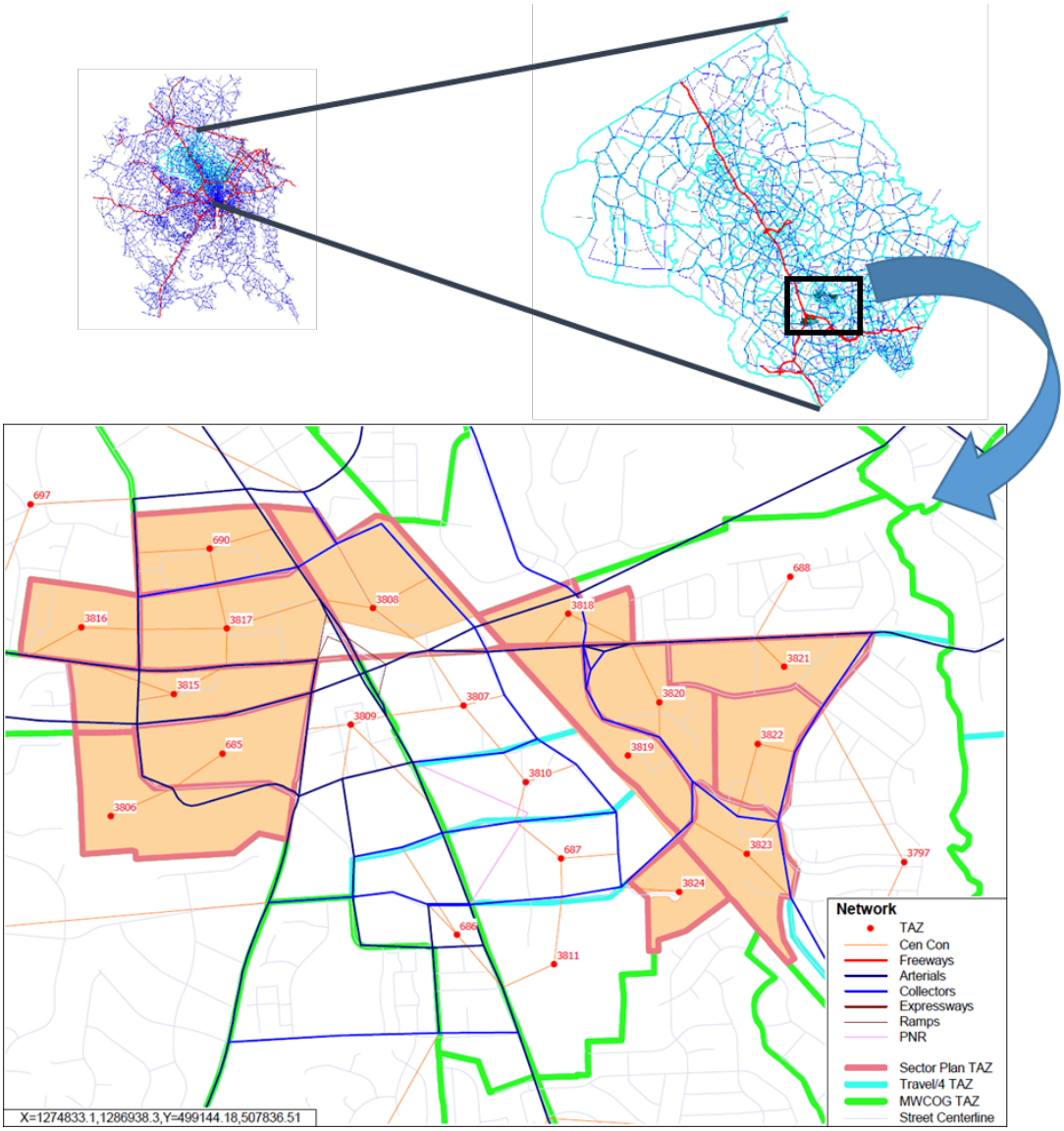

Figure 4. Study Area Network Reflected in the Travel Demand Model, Travel/4MP

Travel/4 for Countywide Traffic Analysis

Travel/4 is the Department's regional travel demand model, which is used to reflect county-wide and regional traffic effects. This tool is a revised version of MWCOG's Version 2.3.52 regional travel demand forecasting model, reflecting a more detailed transportation system network structure relative to the standard MWCOG model. In addition, relative to the standard MWCOG regional modeling tool, a more detailed transportation analysis zone (TAZ) structure is incorporated into Travel/4, reflecting the expansion from 376 to 466 TAZs in Montgomery County (an increase of 90 TAZs). Consequently, this change resulted in an expansion from 3709 TAZs reflected in the MWCOG regional travel demand model to 3799 TAZs in Travel/4.

Additional model run scripting enhancements were made to the model code. In response to adjustments to the regional model transportation network and zone structure, other inputs, such as aggregate socio-

demographic data, lookup tables and model parameters, were revised accordingly for incorporation into Travel/4. When transportation network and TAZ structures in Montgomery County area were expanded, the regional total of socio-demographic data, such as population, households and employment in the Travel/4 model remain are consistent with MWCOG's Round 8.3 Cooperative Forecast land use data.

The MWCOG regional travel demand model algorithm structure was retained in Travel/4, including the year 2020 transit constraint and two-step assignment for HOT lanes. Intra-step distributed processing was used to execute model runs with four sub-nodes.

Travel/4MP for Local Area Traffic Analysis

As a first step in support of the traffic analysis, a more detailed roadway network and finer grained traffic analysis zone system was incorporated into Travel/4 in both the Rock Spring and White Flint 2 Master Plan areas. This effort reflected a subarea modeling approach designed to analyze these two areas concurrently. This enhanced tool, called Travel/4MP (i.e., Travel/4 for master plan analysis), provides system-level traffic volume forecast results that were used as inputs to support the analytic tools described below.

The second step of the traffic analysis consisted of using post-processing techniques applied to the traffic volume forecasts. These techniques were derived from the application of the TRAVEL/4MP model, as described in National Cooperative Highway Research Program (NCHRP) Report 255. These techniques included refining the morning and evening peak hour forecasts to reflect the finer grained land use and roadway network assumptions described above.

Utilizing the information derived from the two steps described above, the third step of the traffic analysis was an evaluation of local intersection congestion, using the Highway Capacity Manual (HCM) methodologies described in the Planning Department's 2017 *Local Area Transportation Review Guidelines*.

Travel/4MP Model Updates Relative to Travel/4

The TAZ structure in the Rock Spring Master Plan and White Flint 2 Sector Plan areas was expanded utilizing block level land use data. Accordingly, the local roadway network and centroid connectors were revised based on the expanded TAZ structure. The Travel/4MP model represents the Rock Spring Master Plan study area as nine (9) transportation analysis zones (TAZs) based on block groupings spatially defined by major roads within the Plan area boundary (See Figure 5). Similarly, the Travel/4MP model represents the White Flint 2 Sector Plan area as fourteen (14) TAZs. The TAZ revisions for the two Master Plan areas are briefly described below.

- Eight TAZs in Travel/4MP were expanded into 14 TAZs based on 14 blocks in the White Flint 2 Sector Plan.

- Six TAZs in Travel/4MP were expanded into 9 TAZs based on 9 blocks in the Rock Spring Master Plan. Figure 4 shows the revised TAZ structure of the Rock Spring study area as reflected in Travel/4MP.

- Land use data for the new 23 TAZs were prepared for development scenarios and the original land use data from Travel/4MP were replaced by the new land use data for both Plans.

As appropriate, the TAZ level land use data of areas adjacent to the two Plan areas was also revised accordingly.

- Land use data of three TAZs where split by boundary of the White Flint 2 Sector Plan area were adjusted accordingly.
- Land use data of two TAZs where split by boundary of the Rock Spring Master Plan area were adjusted accordingly.

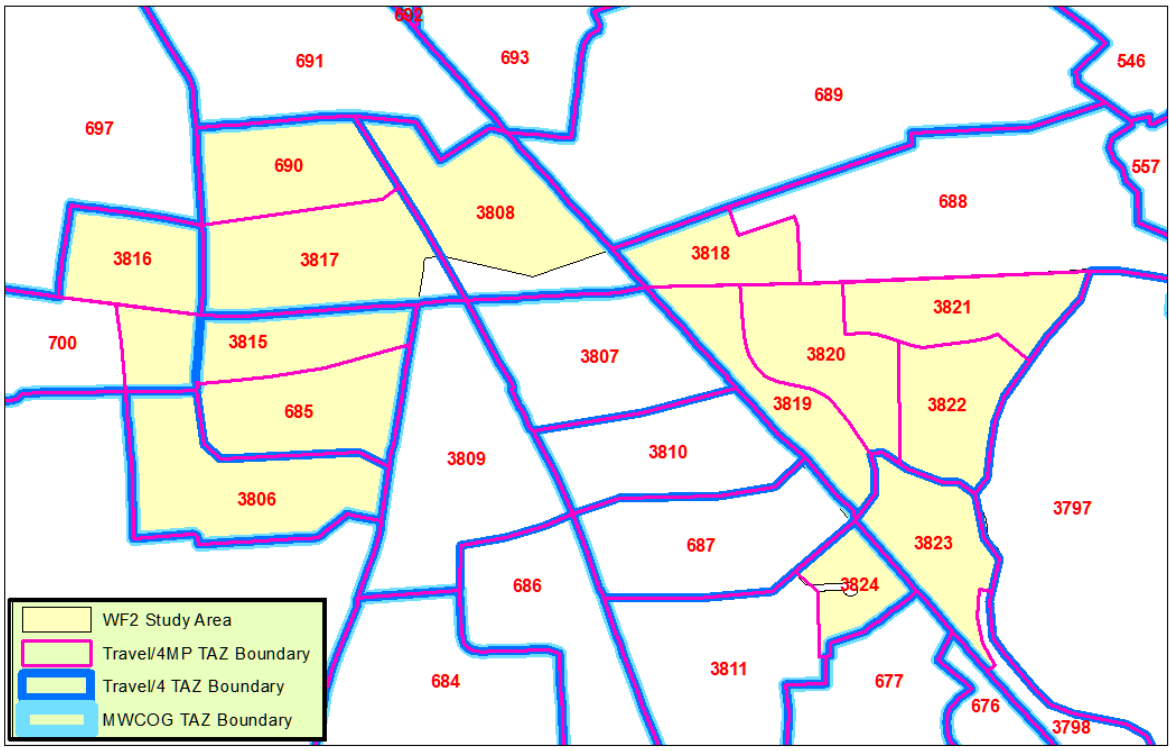

Figure 5. TAZ Structure of Study Area

The standard Travel/4 model network does not reflect minor classification local streets and/or lacks the sufficient level detailed network coding necessary to adequately represent traffic movements within the Rock Spring Master Plan and White Flint 2 Sector Plan areas. The networks of the Rock Spring Master Plan study area and nearby White Flint 2 Plan area were also revised to better represent traffic circulation in these areas.

- Network revisions for the White Flint 2 Sector Plan area:
  - Added new local road between Rockville Pike and East Jefferson Street.
  - Revised simplified intersection coding between Randolph Road at Parklawn Drive to represent all directional movements at this location.
- Network revisions for the Rock Spring Master Plan area:

- Revised simplified network coding between Rockledge Drive and I-270 to represent all movements at this location. (There are no frontage roads along I-270 on both directions in Travel/4.)
- Added new 2-lane north-south public street between Democracy Boulevard and Rock Spring Drive, along the western edge of Georgetown Square and eastern edge of Walter Johnson High School.

Land Use Scenarios for White Flint 2 Sector Plan

Local intersection performance was evaluated within the White Flint 2 Plan study area in the context of four (4) land use/transportation network scenarios. Each of these scenarios is briefly described below. The traffic analysis was based on development recommended in the public hearing and assumptions about which properties would develop.

Scenario 1: 2015 Existing Conditions Land Use

Scenario 2: 2040 Adopted Master Plan and Approved Land Use (see Table 3)

- Includes existing development and pipeline development in the White Flint area and some additional development based on existing zoning. This scenario is sometimes called the likely build-out scenario.

Scenario 3: 2040 Proposed Land Use, low level development (see Table 4)

- Includes existing development and pipeline development in the White Flint 2 area and a **lower**-level increment of additional development based on the land use associated with the Plan vision.

Scenario 4: 2040 Proposed Land Use, high level development (see Table 5)

- Includes existing development, pipeline including the White Flint 2 area and a **higher**-level increment of additional development based on the land use associated with the Plan vision.

The Planning Board's Draft Plan recommendations are linked to the limits in the staging plan, rather than the zoning envelope potential in the Draft Plan.

Table 3. Land Use Inputs for 2040 Adopted Sector Plan (Scenario 2)

TAZ	Population				Employment				
	Household	Household Population	Group Quarters	Total	Industrial	Retail	Office	Other	Total
685	211	356	0	356	0	60	3,224	32	3,316
690	921	2,167	412	2,579	0	1,776	1,042	521	3,339
3806	141	346	0	346	0	80	6,634	42	6,756
3808	1,969	4,044	0	4,044	0	2,231	404	296	2,931
3815	270	456	0	456	49	323	1,021	168	1,561
3816	40	153	0	153	0	0	0	366	366
3817	564	1,327	592	1,919	0	256	1,069	1,075	2,400
3818	120	273	0	273	479	30	50	0	560
3819	0	0	0	0	880	430	590	0	1,901
3820	717	1,632	0	1,632	0	464	213	37	714
3821	174	396	0	396	0	0	0	128	128
3822	29	66	0	66	0	0	0	360	360
3823	0	0	0	0	1,125	677	0	33	1,834
3824	0	0	0	0	732	305	0	0	1,038

Table 4. Land Use Inputs for 2040 Low Level Development (Scenario 3)

TAZ	Population				Employment				
	Household	Household Population	Group Quarters	Total	Industrial	Retail	Office	Other	Total
685	423	714	0	714	0	456	4,278	243	4,977
690	1,069	2,515	412	2,927	0	1,640	468	351	2,459
3806	283	695	0	695	0	292	7,356	78	7,726
3808	2,160	4,437	0	4,437	0	2,339	1,499	331	4,169
3815	459	775	0	775	49	186	654	95	983
3816	40	153	0	153	0	0	0	366	366
3817	1,069	2,515	592	3,107	0	670	1,564	1,089	3,324
3818	120	273	0	273	431	8	50	0	489
3819	0	0	0	0	848	394	590	0	1,832
3820	717	1,632	0	1,632	0	441	288	19	747
3821	192	437	0	437	0	0	0	128	128
3822	29	66	0	66	0	0	0	360	360
3823	0	0	0	0	960	524	0	6	1,490
3824	0	0	0	0	539	212	0	0	751

Table 5. Land Use Inputs for 2040 High Level Development (Scenario 4)

TAZ	Population				Employment				
	Household	Household Population	Group Quarters	Total	Industrial	Retail	Office	Other	Total
685	703	1,187	0	1,187	0	497	4,389	265	5,152
690	1,182	2,781	412	3,193	0	1,374	447	149	1,969
3806	377	926	0	926	0	232	7,537	186	7,956
3808	2,034	4,178	0	4,178	0	2,838	1,183	391	4,412
3815	532	898	0	898	49	216	734	166	1,164
3816	40	153	0	153	0	0	0	366	366
3817	1,111	2,614	592	3,205	0	431	1,558	1,739	3,728
3818	120	273	0	273	474	56	50	0	580
3819	173	394	0	394	876	418	628	0	1,921
3820	855	1,946	0	1,946	0	547	373	33	953
3821	200	455	0	455	0	0	0	128	128
3822	29	66	0	66	0	0	0	360	360
3823	265	674	0	674	1,002	680	53	53	1,789
3824	106	295	0	295	593	313	32	16	955

Local Area Transportation Review (LATR) Analysis Modeling Assumptions

Daily traffic forecasts were estimated utilizing procedures from the National Cooperative Highway Research Program (NCHRP) *765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design.* NCHRP Report 255 techniques were used to convert the Travel/4MP system level forecasts to intersection-level forecasts. In the context of the regional travel demand modeling analysis using Travel/4MP, the following key assumptions were reflected in the 2040 traffic evaluation:

- No Bus Rapid Transit (BRT) network was explicitly modeled.
- A 42 percent Non-Auto Driver Mode Share (NADMS) goal/target was applied (for employees in the White Flint 2 Plan area); Similarly, a 50 percent NADMS goal was applied for employees in the 2010 *White Flint Sector Plan* area.
- Rock Spring and White Flint 2 land use/transportation network scenarios were evaluated concurrently.

In support of traffic analysis for the Rock Spring Master Plan, the following background parameters were assumed beyond the Plan area:

- **White Flint 1 area**
    - Year 2030 land use forecast, developed by the White Flint Partnership, was used in support of the *White Flint Sector Plan* traffic impact studies performed by MCDOT and the White Flint Partnership after the adoption of the Sector Plan in 2010.

- White Flint 1 Transportation CIP Projects:
  - White Flint District West Workaround (No.501506)
  - White Flint West: Transportation (No.501116)
  - White Flint District East: Transportation (No.501204)
  - White Flint Traffic Analysis and Mitigation (No.501202)
- Montrose Parkway East

- **Rock Spring area**
  - Planning Board Draft Plan recommended land uses for the area.
  - 320 residential units are proposed at the WMAL site located south of the Rock Spring Plan area. (Added in TAZ 3748.)
  - New I-270 Spur HOV ramps are proposed for the south side of the Westlake Terrace Bridge.

- **Remainder of the Metropolitan Washington Region** - Year 2040 MWCOG Round 8.3 Cooperative land use Forecast for the areas beyond those referenced above.
  - For the Washington DC region, the Round 8.3 forecast assumes an increase from 3.9 million employees and 2.5 million households in 2010 to 5.6 million employees and 3.4 million households in 2040.
  - For Montgomery County (including the cities of Rockville and Gaithersburg), the Round 8.3 forecast assumes and increase from 666,100 employees and 408,200 households in 2010 to 895,300 employees and 527,900 households in 2040.
  - Transportation improvements in the Metropolitan Washington region's *Constrained Long Range Plan* (CLRP), a fiscally constrained transportation network, are recommended for both highway and transit.

HCM Intersection Delay Analysis

Table 6 summarizes the Highway Capacity Manual (HCM) analysis results for the key land use/transportation scenarios evaluated in support of this Plan. The results for three scenarios are reported:

- **Scenario 1:** 2015 existing conditions land use and transportation network.
- **Scenario 2:** 2040 Plan Vision scenario reflecting Plan-recommended land use (Scenario 3 described above) in combination with the 2040 transportation network and a local "road diet," reflecting the reduction of the number of lanes along East Jefferson Street between Executive Boulevard and City of Rockville from four (4) to two (2) lanes.
- **Scenario 3:** Scenario 2 described above in combination with a 42 percent non-auto driver mode share (NADMS) goal for employees in the Plan area.

Relative to the existing conditions scenario, the projected average intersection delay results for the Plan Vision scenario (both with and without the application of the NADMS goal) generally shows a very similar pattern of traffic congestion throughout the Plan study area.

Table 6. Summary of HCM Intersection Delay Analysis Results[24] [25]

White Flint 2 Sector Plan

ID	Policy Area	Average vehicle delay equivalent (seconds/vehicle)	Scenario		AM HCM Delay	AM HCM LOS	PM HCM Delay	PM HCM LOS	Mitigation
1	North Bethesda	71	Existing	2015	41.1	D	50.6	D	
			Plan Vision	2040	41.6	D	54.7	D	
			Plan with NADMS Goal	2040	41.4	D	54.4	D	
2	North Bethesda	71	Existing	2015	41.1	D	48.4	D	
			Plan Vision	2040	44.3	D	43.6	D	
			Plan with NADMS Goal	2040	44.3	D	43.6	D	
3	Twinbrook	120	Existing	2015	23.4	C	32.4	C	
			Plan Vision	2040	25.9	C	38.8	D	
			Plan with NADMS Goal	2040	26.8	C	38.9	D	
4	Twinbrook	120	Existing	2015	49.0	D	47.0	D	
			Plan Vision	2040	93.4	F	65.2	E	
			Plan with NADMS Goal	2040	93.4	F	65.2	E	
5	North Bethesda	71	Existing	2015	22.7	C	30.8	C	
			Plan Vision	2040	36.3	D	60.2	E	
			Plan with NADMS Goal	2040	37.2	D	48.8	D	
6	North Bethesda	71	Existing	2015	26.0	C	23.1	C	
			Plan Vision	2040	26.1	C	23.4	C	
			Plan with NADMS Goal	2040	26.1	C	23.4	C	
7	White Flint	120	Existing	2015	27.7	C	24.0	C	Affected by Redistribution
			Plan Vision	2040	174.2	F	53.0	D	
			Plan with NADMS Goal	2040	162.2	F	50.5	D	
			Plan with NADMS Goal plus Mitigation	2040	25.4	C	25.4	C	
8	White Flint	120	Existing	2015	28.4	C	40.5	D	
			Plan Vision	2040	55.2	E	82.4	F	
			Plan with NADMS Goal	2040	48.4	D	81.3	F	
9	White Flint	120	Existing	2015	51.6	D	31.5	C	
			Plan Vision	2040	82.0	F	54.0	D	
			Plan with NADMS Goal	2040	82.2	F	53.1	D	
11	White Flint	120	Existing	2015	33.2	C	38.2	D	
			Plan Vision	2040	116.8	F	113.5	F	
			Plan with NADMS Goal	2040	117.9	F	114.1	F	

[24] Note: Level of service reported reflects HCM transportation industry standards.

[25] Four intersection IDs (#10, 12, 17, and 20) at on-off ramps and minor intersections have been excluded in the analysis as the Cube Travel Demand model does not generate outputs to calculate future turning counts on those intersections.

Table 6 Continued. Summary of HCM Intersection Delay Analysis Results[3]

13	White Flint	120	Existing	2015	19.8	B	19.0	B	
			Plan Vision	2040	43.4	D	33.8	C	
			Plan with NADMS Goal	2040	42.9	D	33.9	C	
14	White Flint	120	Existing	2015	92.4	F	44.6	D	
			Plan Vision	2040	80.9	F	106.9	F	
			Plan with NADMS Goal	2040	76.9	E	107.8	F	
15	White Flint	120	Existing	2015	25.3	C	28.0	C	
			Plan Vision	2040	97.3	F	91.4	F	
			Plan with NADMS Goal	2040	87.5	F	89.0	F	
16	White Flint	120	Existing	2015	38.4	D	61.5	E	
			Plan Vision	2040	39.1	D	89.6	F	
			Plan with NADMS Goal	2040	39.3	D	89.7	F	
18	White Flint	120	Existing	2015	22.0	C	35.3	D	
			Plan Vision	2040	22.8	C	48.7	D	
			Plan with NADMS Goal	2040	23.4	C	47.9	D	
19	North Bethesda	71	Existing	2015	126.6	F	202.2	F	2nd SB left turn lane & remove split phasing
			Plan Vision	2040	113.6	F	93.9	F	
			Plan with NADMS Goal	2040	106.2	F	90.5	F	
			Plan with NADMS Goal Plus Mitigation	2040	43.7	D	57.8	E	
21	North Bethesda	71	Existing	2015	8.3	A	46.6	D	
			Plan Vision	2040	8.9	A	46.7	D	
			Plan with NADMS Goal	2040	9.0	A	53.5	D	
22	White Flint	120	Existing	2015	20.1	C	16.6	B	
			Plan Vision	2040	32.6	C	50.3	D	
			Plan with NADMS Goal	2040	29.3	C	47.5	D	
23	North Bethesda	71	Existing	2015	32.9	C	27.6	C	Add NB right turn lane
			Plan Vision	2040	43.2	D	97.0	F	
			Plan with NADMS Goal	2040	42.2	D	91.0	F	
			Plan with NADMS Goal plus Mitigation	2040	36.5	D	22.5	C	
24	North Bethesda	71	Existing	2015	21.2	C	23.7	C	
			Plan Vision	2040	37.3	D	46.1	D	
			Plan with NADMS Goal	2040	35.5	D	38.7	D	

Note: Intersection #12 was not analyzed.

HCM LOS (Average Vehicle Delay)

LOS	LOS Range	
A	0	10
B	10.1	20
C	20.1	35
D	35.1	55
E	55.1	80
F	80.1	

Figure 7 depicts projected AM and PM peak period traffic *congestion* conditions for the Plan Vision scenario for the 20 selected intersections in the Plan study area using a color-coded "dot" map reflecting policy area level of service (LOS). The North Bethesda policy area average intersection delay congestion

standard of 71 seconds per vehicle applies to the intersections highlighted with a blue circle. The left and right sides of the dots show AM and PM LOS, respectively.

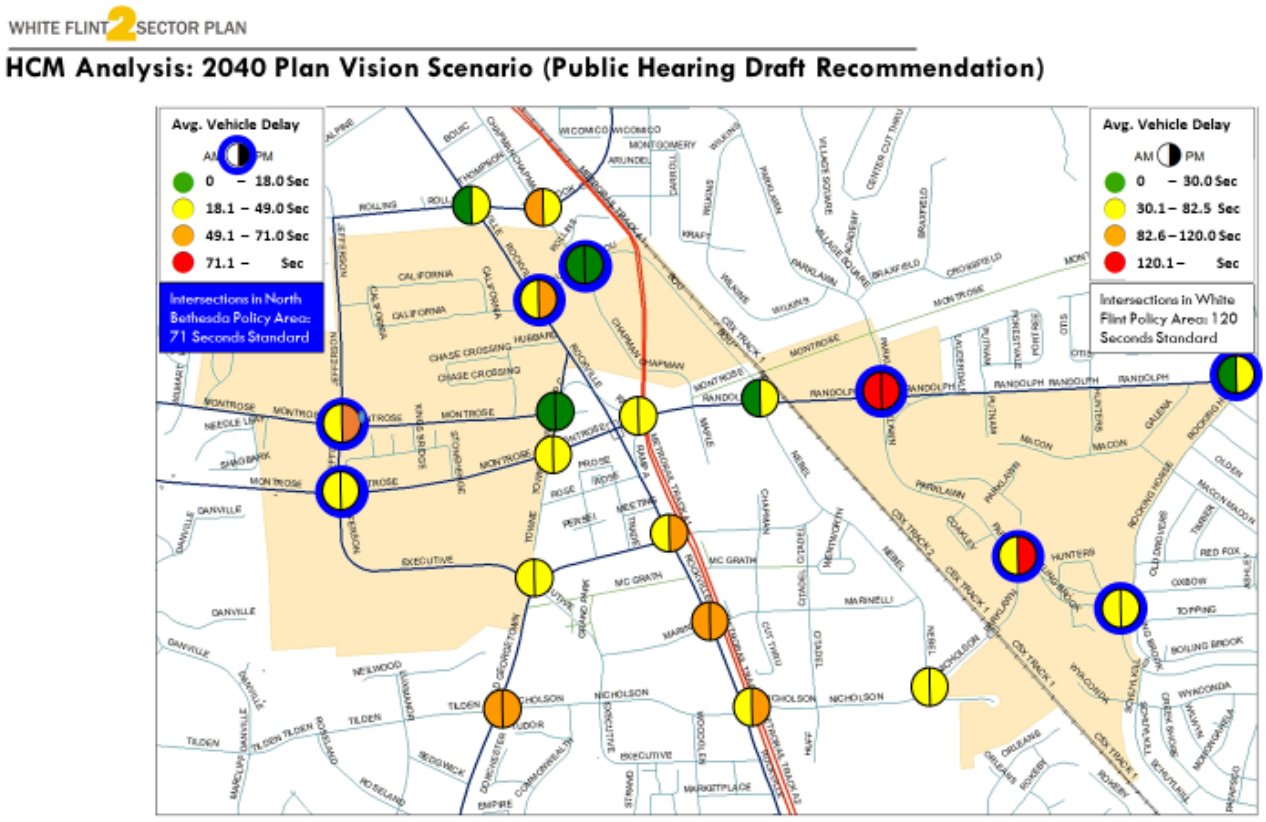

Figure 7. 2040 Plan Vision Scenario

As a sensitivity test, Figure 8 depicts the traffic implications of the Plan Vision scenario in combination with the application of a 42 percent NADMS goal for employees in the Plan area. Given the 50 percent NADMS goal for journey-to-work trips recommended to support stage 3 development in the adopted *2010 White Flint Sector Plan*, this goal seems reasonable for the White Flint 2 area. The results of this analysis are generally comparable to the information depicted in the graphic shown as Figure 7, reflecting a marginal improvement to local intersection delay, but no discernable change in LOS between the two scenarios.

HCM Analysis: 2040 Plan Vision Scenario with NADMS Improvement

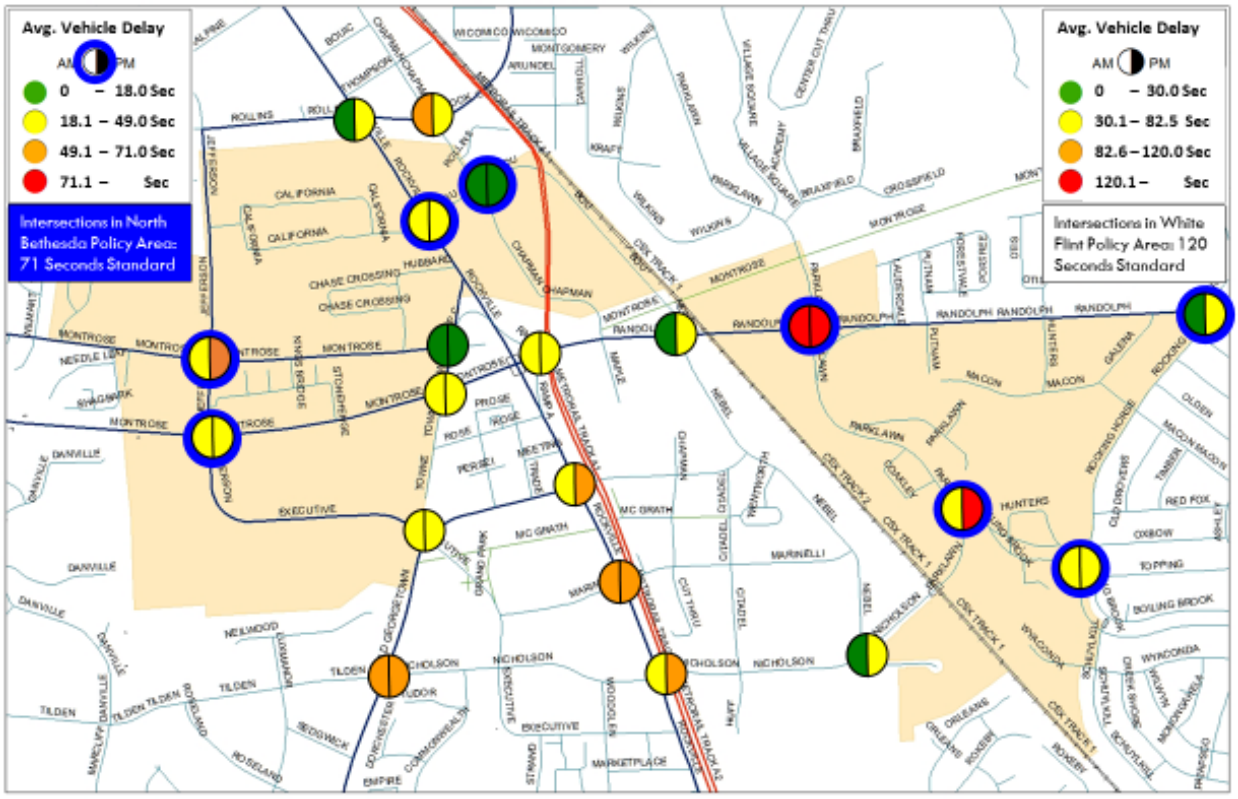

Figure 8. 2040 Plan Vision Scenario with NADMS Goal

The results of the information conveyed in Figures 7 and 8 shows that mitigation would be required at two intersections located in the eastern portion of the Plan area:

- Randolph Road at Parklawn Drive.
- Boiling Brook Parkway at Parklawn Drive.

To address failing conditions at these intersections, **potential** mitigation options which could be **considered** include:

- Randolph Road at Parklawn Drive - Add a second left turn lane at the southbound approach of Parklawn Drive in combination with the removal of the split phase at this location (See Figure 9).
- Boiling Brook Parkway at Parklawn Drive - Add a right turn pocket at the northbound approach of Parklawn Drive.

The LOS results of these improvements are depicted in Figure 10.

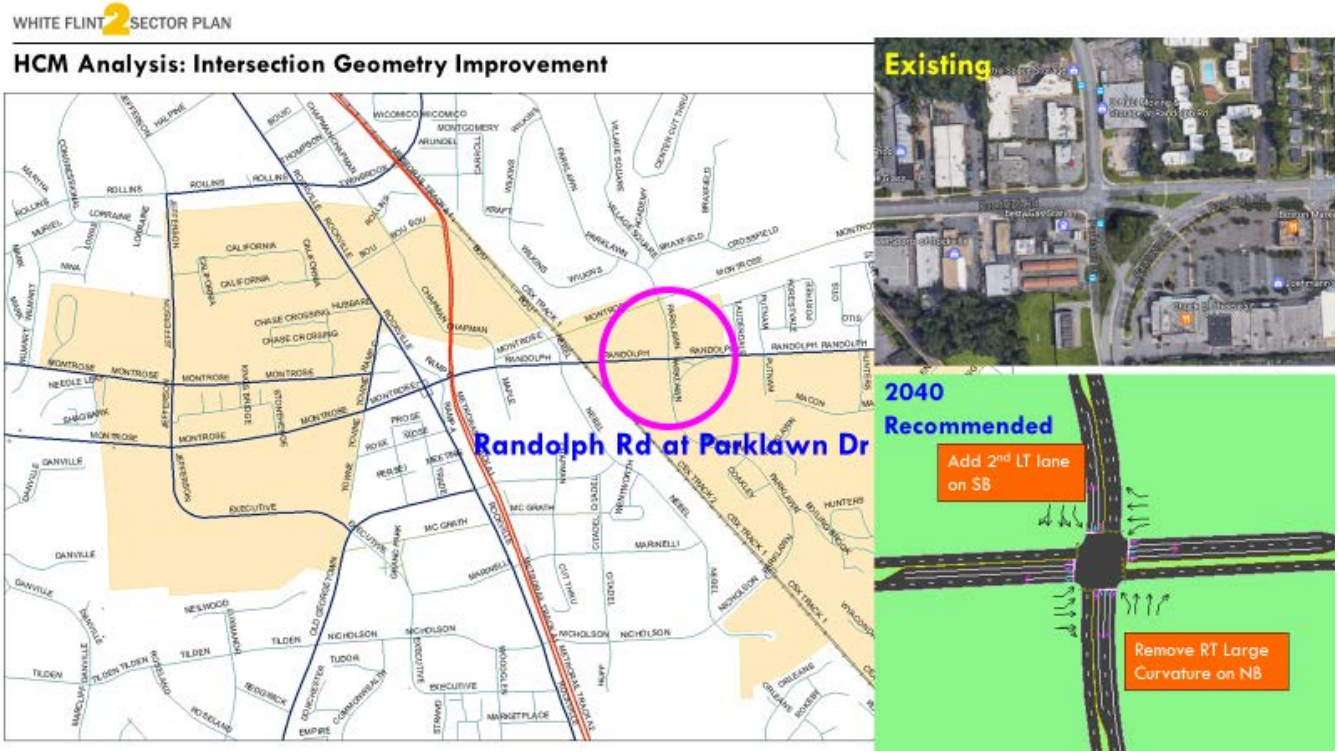

Figure 9: Potential Mitigation Concept – Randolph Road and Parklawn Drive

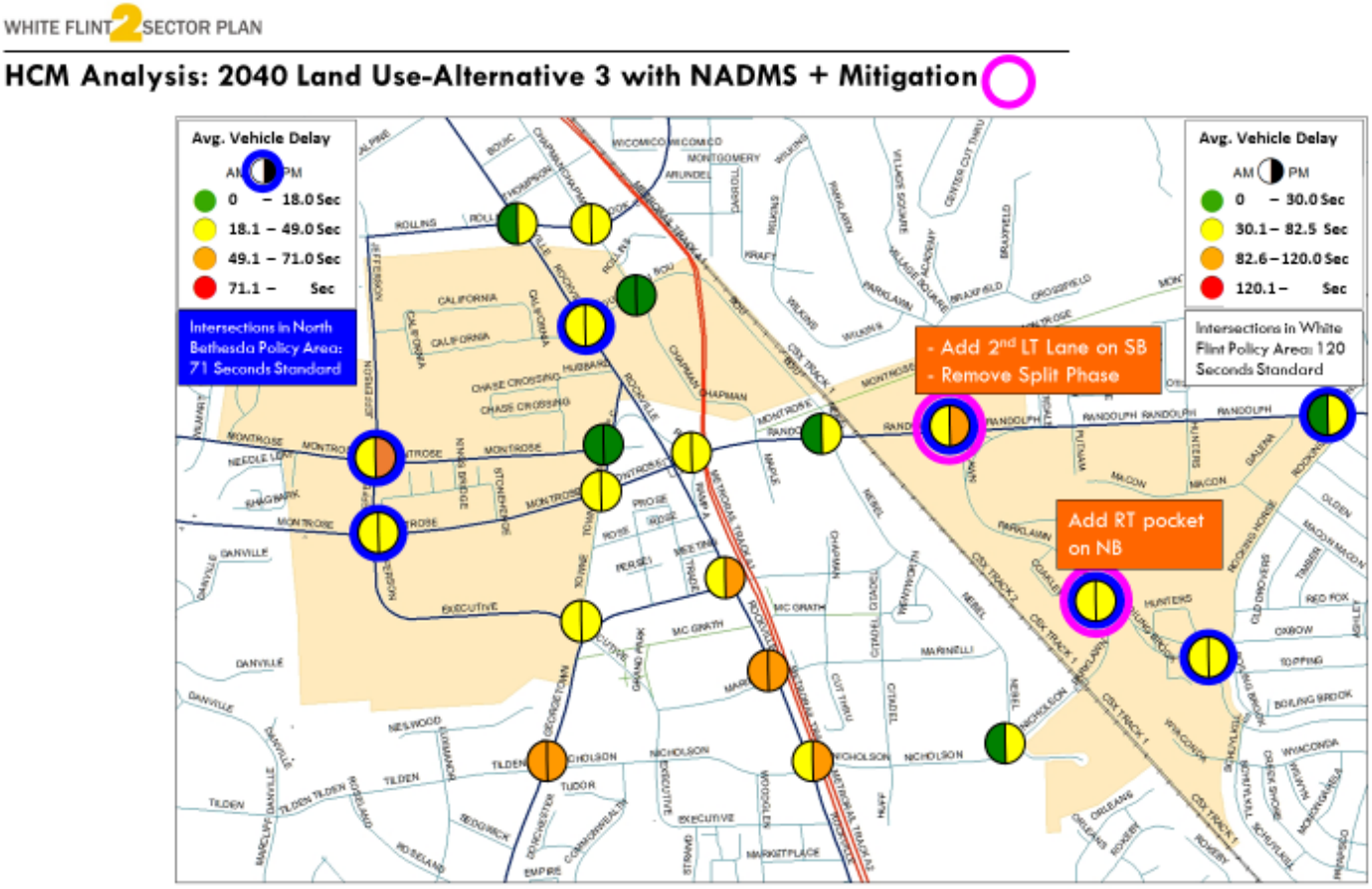

Figure 10. 2040 Plan Vision Scenario with NADMS Goal and Mitigation

Transportation Policy Recommendation

The Planning Board Draft of the White Flint 2 Sector Plan recommends the extension of the policy area boundary of the White Flint Sector Plan area to include the portion of the White Flint 2 Sector Plan Area that lies west of Old Georgetown Road and north of Montrose Parkway. (See Figure 11.)

In concert with this change, this Plan recommends raising the congestion standard in this portion of the White Flint 2 Sector Plan area from 71 seconds per vehicle (applicable to the remainder of the North Bethesda policy area) to 120 seconds per vehicle (applicable to the White Flint and Twinbrook MSPAs). These changes would require a Subdivision Staging Policy amendment. The rationale for these changes recognizes key distinctions between this portion of the Plan area relative to the remaining eastern portion of the Plan area, specifically:

- Proximity to the White Flint and Twinbrook Metro stations.
- Character of existing and planned development is similar to that of the White Flint Sector Plan area.

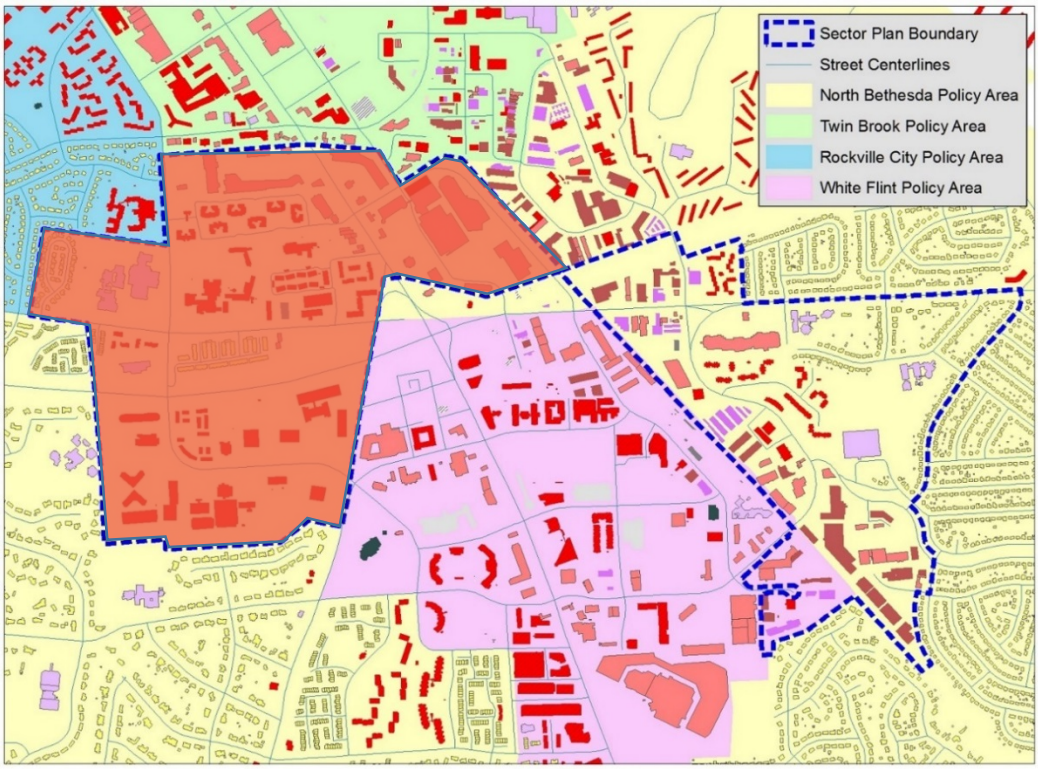

Figure 11. Proposed Extension of White Flint Sector Plan Boundary

Street Network

The travel demand forecasting was informed by the Draft Plan's recommended street network. White Flint 2's street network, along with the 2010 *White Flint Sector Plan's* street network, will enhance the overall network of streets in the White Flint area. Unlike the 2010 Sector Plan that anticipates complete redevelopment of commercial shopping centers, segments of this Plan area, such as offices on Executive

Boulevard are likely to remain in place with new development. Further, existing residential communities and the CSX tracks limit the extension of new streets.

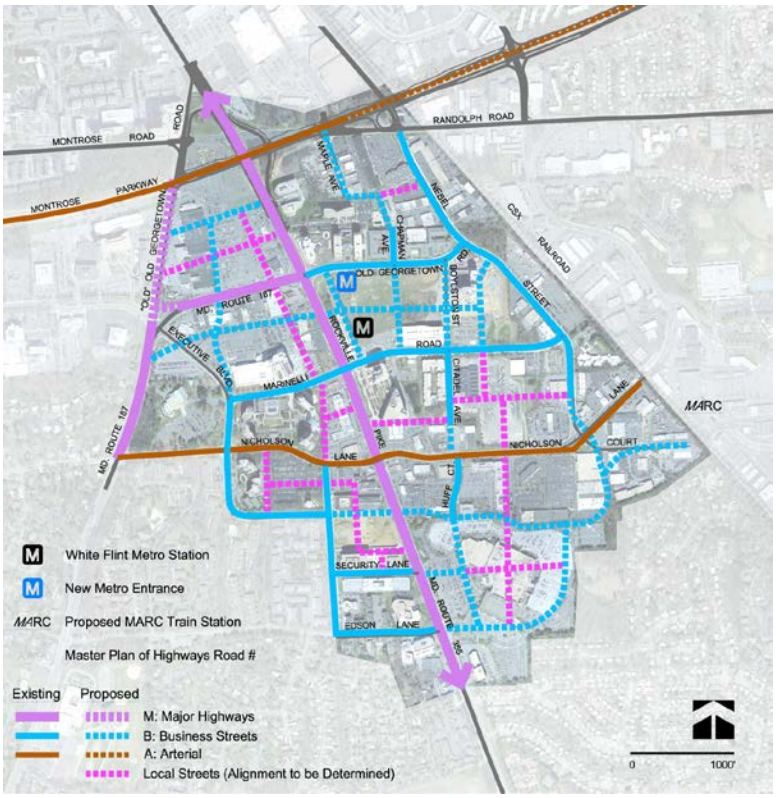

Figure 12: 2010 White Flint Sector Plan Street Network

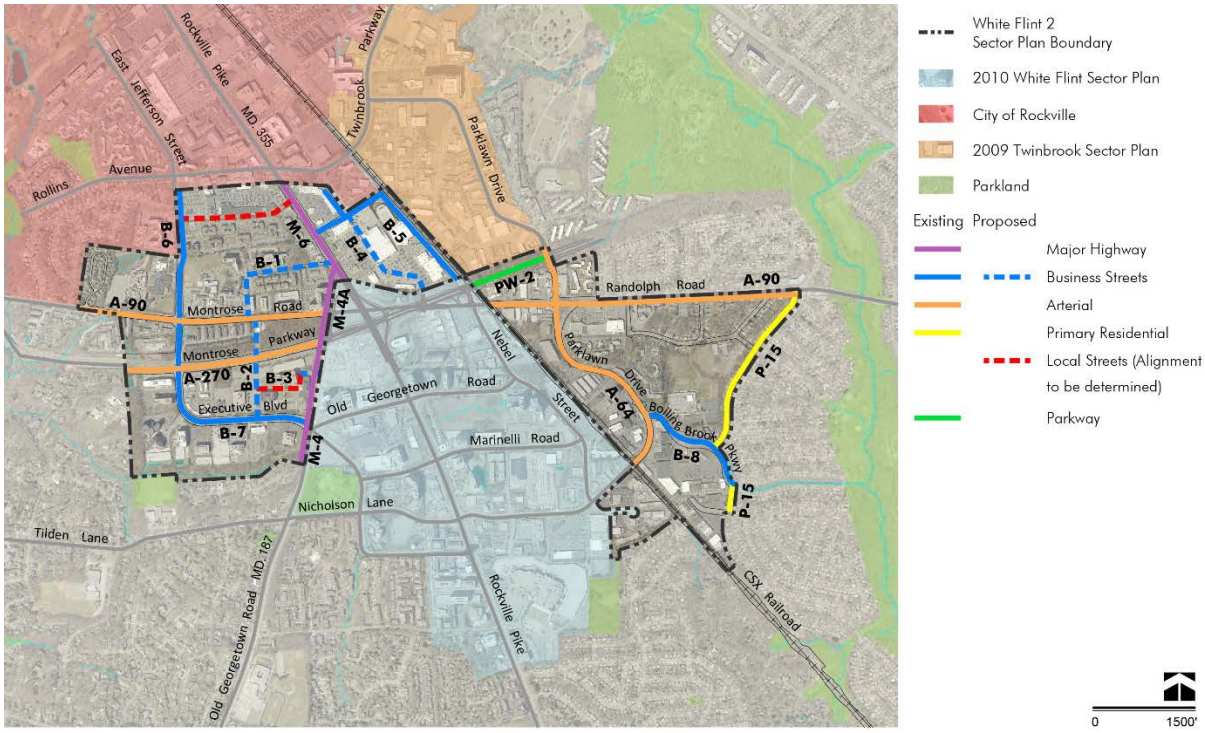

Figure 13: Draft White Flint 2 Sector Plan Street Network

MARC

The 2010 White Flint Sector Plan recommends a new MARC station at Nicholson Court. The Planning Board's White Flint 2 Draft Plan confirms the 2010 Sector Plan recommendation and linked increased development potential to the provision of a MARC Station at Nicholson Court and Randolph Hills areas.

MARC's *Growth and Investment Plan* (2013), 2013 to 2050, indicated near-term improvements for the Brunswick Line, including lengthening existing trains by 2019. In the long-term, MARC anticipates three main tracks and the addition of a new station in Montgomery County or expansion to an existing station.

Figure 14: MARC Service Lines

In 2008, Maryland Transit Administration (MTA) estimated that a new station would cost at least $19 million, excluding property acquisition. The spacing of stations between the White Flint area and Garrett Park has been identified as a significant issue for a new station along the Brunswick Line.

Additional features identified from the 2008 technical review are the following:

Proposed Platform

The proposed platforms are to be High Level Retractable Side Platforms that are 600 feet in length and 16 feet in width, and have the capabilities of extending to 900 feet in length in the future.

Bus Loop

Bus transfers to the MARC Station will occur within the bus loop. A total of three bus sawtooth bays have been estimated based upon standard MTA practices. Based upon projected ridership, the number of bus sawtooth bays will need to be confirmed.

Kiss-N-Ride

The Kiss-N-Ride facility will be located within the inner radii of the bus loop. This facility will accommodate approximately 25 parking spaces for rider drop-off. The total number of Kiss-N-Ride spaces will need to be confirmed based upon ridership projections.

Pedestrian Overpass

CSX has a policy to eliminate all at-grade crossings throughout their rail lines. This is being implemented based upon safety and in conjunction with other improvements. Based upon this policy, a pedestrian

overpass will be required to gain connectivity between the two platforms. The pedestrian overpass could be located at the north end of the proposed platform. This will be accessible by elevators and/or escalators, providing access to north and southbound platforms.

MTA is updating its 2013 Growth and Investment Plan. Discussions with MTA staff has indicated that CSX would require that MARC close an existing station, if a new station is added to the Brunswick line. Garrett Park is the closest station to the White Flint area.

TRANSPORTATION DEMAND MANAGEMENT

The White Flint 2 Sector Plan recommends Transportation Demand Management (TDM) strategies, including aggressive Non-Automotive Driver Mode Share (NADMS) goals to augment new infrastructure recommendations, such as new streets and bikeways. This approach extends the 2010 *White Flint Sector Plan* multimodal approach and prior planning efforts. The overall Non-Automotive Driver Mode Share (NADMS) goal for the 1992 *North Bethesda/Garrett Park Master Plan* area is 39 percent for employees. In 2015, the estimated NADMS for the overall Master Plan area was 28 percent. Recent surveys indicated that within the 2010 *White Flint Sector Plan* area the weighted average NADMS was 34 percent.

The Planning Board's Draft Plan recommends new NADMS goals in each phase to reduce reliance on single occupancy vehicles, which will be implemented by Montgomery County Department of Transportation (MCDOT) during the approval of new development. Most of the White Flint 2 Plan area is within the North Bethesda Transportation Management District. Known as the North Bethesda Transportation Center (NBTC), the NBTC provides services to employers and employees in North Bethesda's commercial areas to promote employers' commuter benefits programs and to inform employees of alternative commuting options.

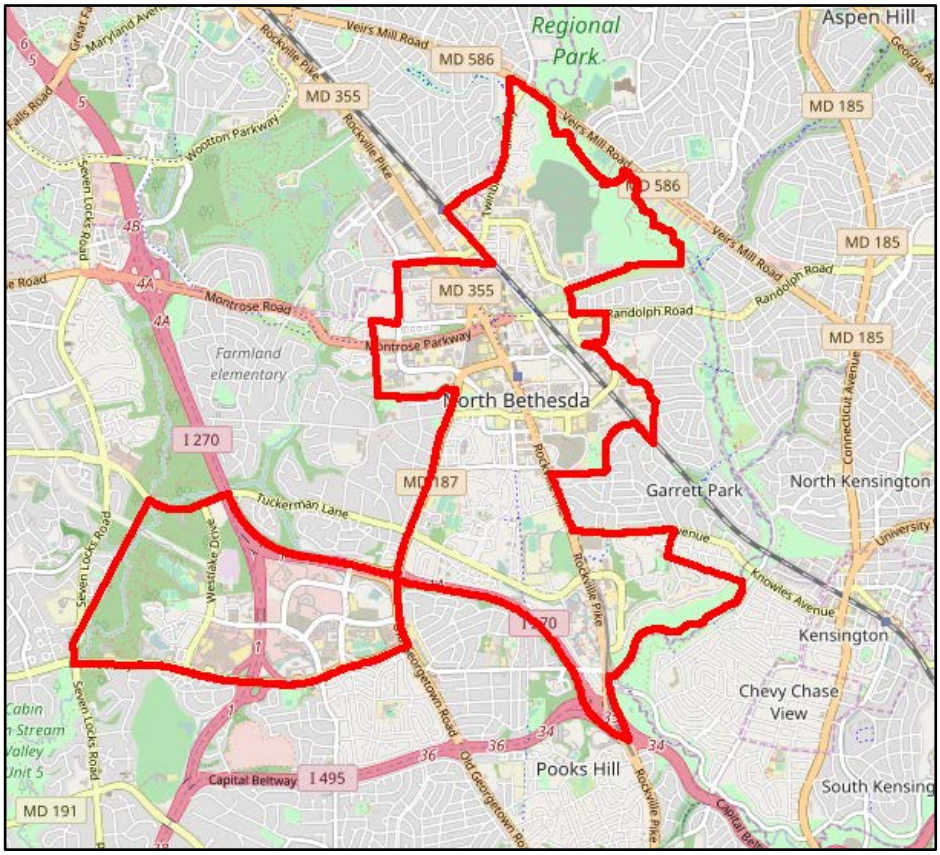

Figure 15: North Bethesda TMD area

The range of TDM strategies includes programs, services, activities and infrastructure improvements. TDM strategies may include:

- Improved pedestrian and transit facilities with high-quality transit stops and stations.
- Enhanced access and circulation opportunities for bicyclists and pedestrians.
- Telework options for employees.
- Employer subsidies for transit.
- High-quality digital, written, and signage information about travel options.
- Car sharing, van pools, ride-matching, and guaranteed ride home services.

The staging plan recommends higher Non-Auto-Driver Mode Share (NADMS) goals for areas that are in proximity to existing and future transit, such as the recommended second Metrorail entrance and BRT along Rockville Pike. Like the 2010 White Flint Sector Plan, monitoring is proposed in the Sector Plan to ensure that the mode split goals are being met.

White Flint 2 Sector Plan NADMS Goals:

Phase 1: Executive Boulevard and Rockville Pike-Montrose North Districts:	34% non-automotive trip goal for employees and 34% for residents
Phase 1: East of the CSX Railroad tracks	27% non-automotive trip goals for employees and 27% for residents
Phase 2: Executive Boulevard and Rockville Pike-Montrose North Districts	42% non-automotive trip goal for employees and 42% for residents
Phase 2: East of the CSX Railroad tracks	35% non-automotive trip goals for employees and 35% for residents
Phase 3: Executive Boulevard and Rockville Pike-Montrose North Districts	50% non-automotive trip goal for employees and 51% for residents
Phase 3: East of the CSX Railroad tracks	42% non-automotive trip goals for employees and 42% for residents

Bus and Circulator Services

Ride On and Metro bus provide bus services to the White Flint 2 Plan area, including Ride On Routes 5, 10, 26, 42, 46 and 81. Metro Service is limited to the C-4 and C-8 that provides service to the White Flint Metro Station.

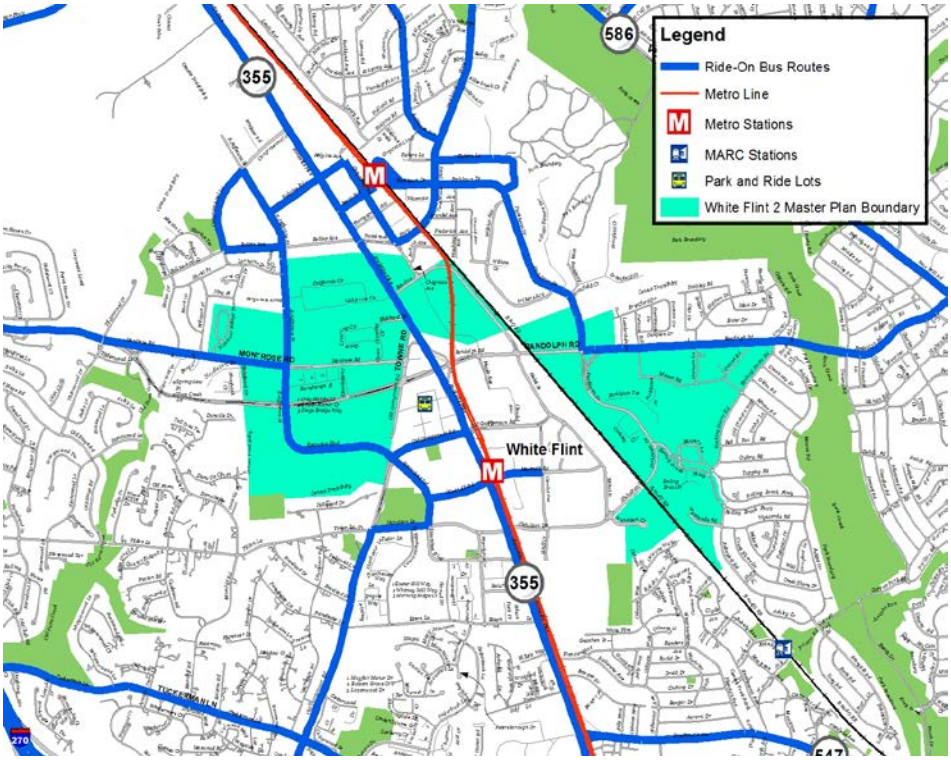

Figure 16: Existing Ride On Routes

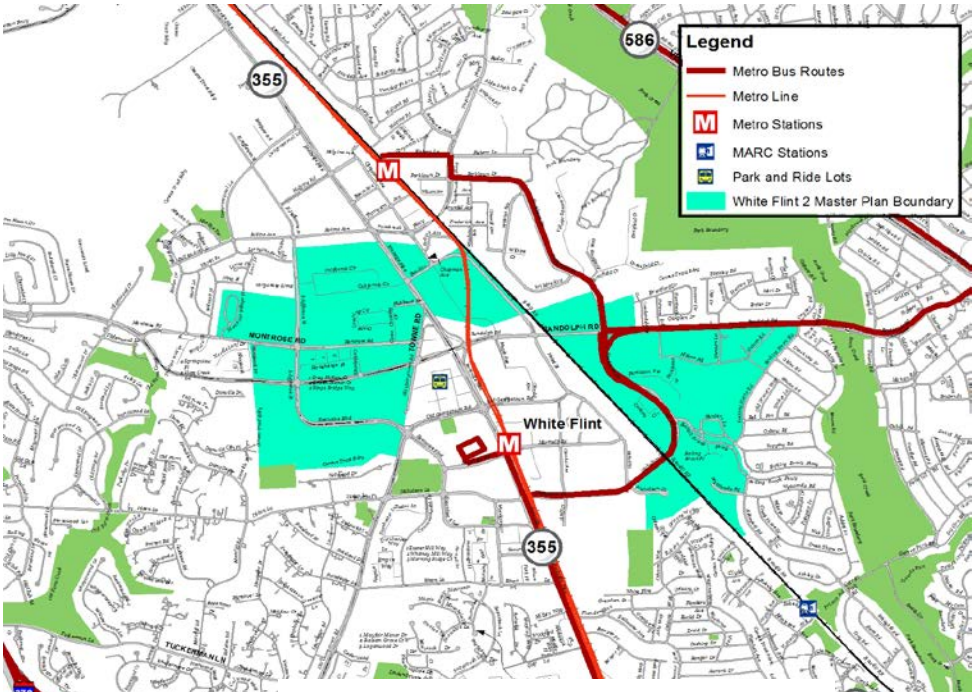

Figure 17: Existing Metro Bus Routes

Beginning in September 2017, Montgomery County Department of Transportation (MCDOT) will provide additional bus service along Executive Boulevard in the White Flint 2 Plan area. Local bus services, and the recommended circulator, will be essential to achieving the recommended NADMS goals for the Plan area. The expanded Ride On routes are shown below:

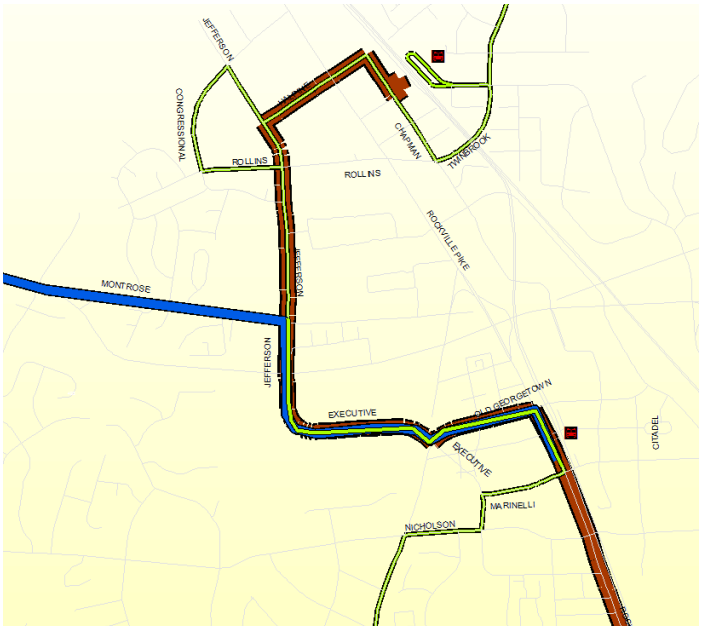

Figure 18: Expanded Ride On Services

The funding of a dedicated circulator or shuttle is recommended in the first phase of the staging plan. This service would benefit both White Flint Plan areas, as each area continues to urbanize with more residents, businesses and visitors. Additional benefits for a dedicated circular are marketing and branding opportunities for this portion of North Bethesda and providing opportunities to traverse the area without an automobile. The conceptual framework of a circulator or shuttle route is shown in Figure 19.

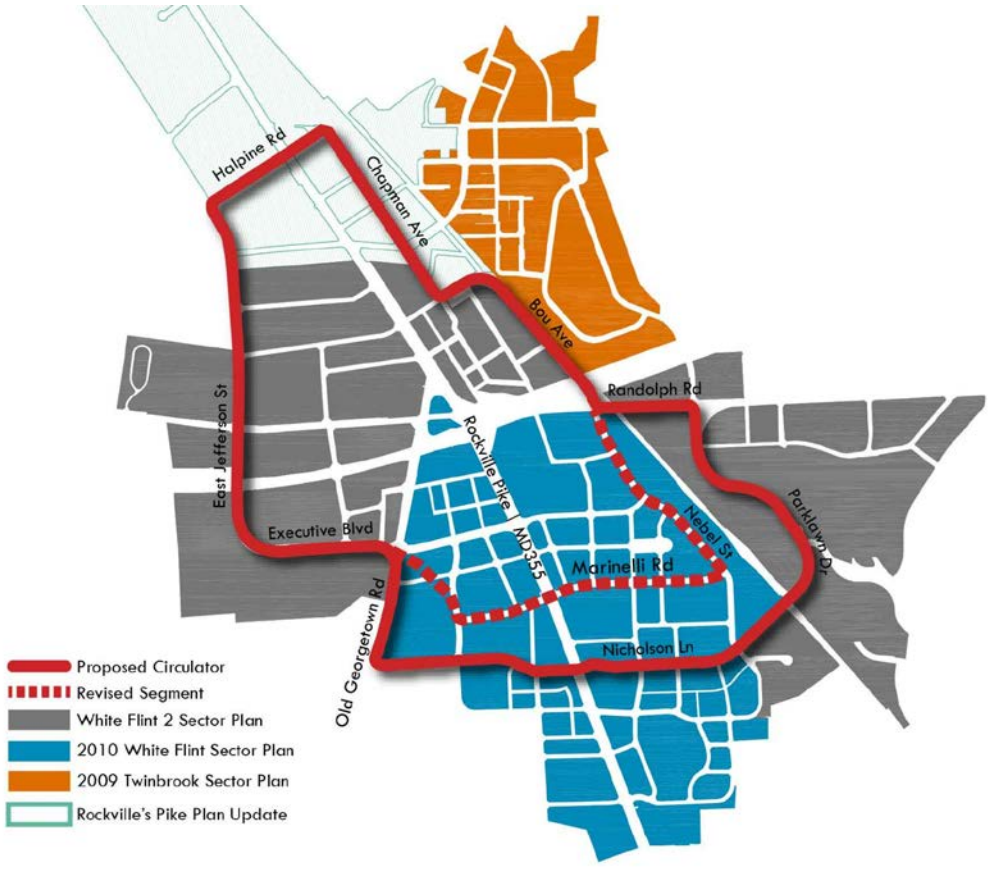

Figure 19: Shuttle or circulator framework route

PEDESTRIAN-BIKE CSX CROSSING

The Draft Plan recommends a pedestrian-bike a pedestrian-bike crossing of the CSX tracks between the Nicholson Court and Randolph Hills Shopping Center areas that would provide improved access to the White Flint Metro Station and new development along Rockville Pike. CSX has numerous rules and procedures regarding a pedestrian and bike crossing of any CSX right-of-way. Grade separated crossings are preferred in most cases, and crossings under existing railroad structures are discouraged and only permitted under special considerations (*CSX Public Projects Manual*, p. 24). Existing bike-pedestrian crossings of CSX tracks at Jessup Blair Park/Montgomery College in Takoma Park/Silver Spring, and the Rhode Island Avenue/Brentwood Metro Station in Washington, D.C. are representative of the type of pedestrian and bike crossings, which are permitted by CSX. The Rhode Island-Brentwood crossing was approximately $4 million

Figure 20: Rhode Island Avenue-Brentwood CSX Crossing

Figure 21: Jessup Blair Park-Montgomery College (Takoma Park) Crossing

APPENDIX 7: INDUSTRIAL DISTRICT ANALYSIS

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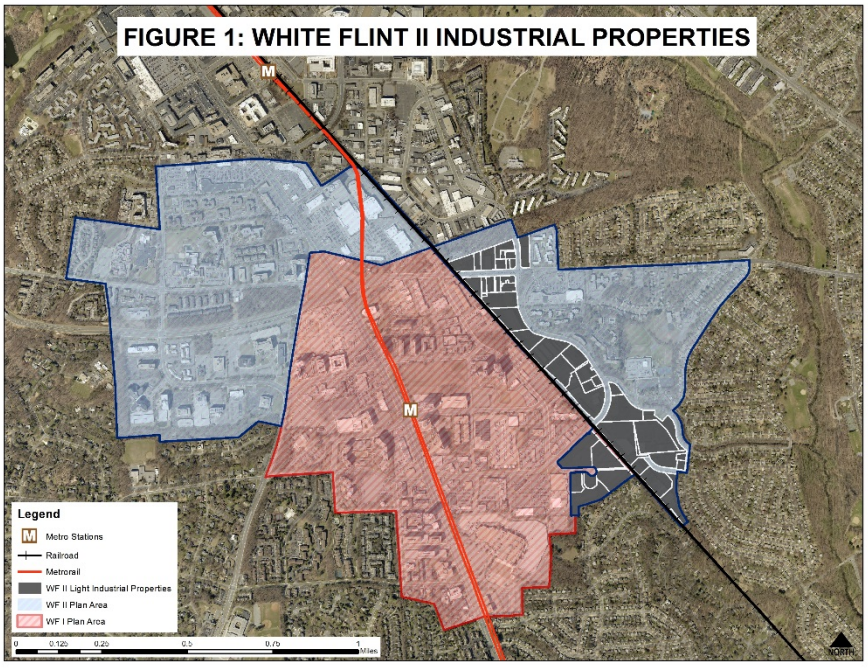
INTRODUCTION AND CONTEXT

The White Flint 2 Sector Plan area consists of approximately 455 acres, of which 82 acres are zoned Light Industrial (IL), comprising 18 percent of the total planning area. A majority of these industrially zoned properties are located along the eastern portion of the Plan area, adjacent to the MARC/freight rail line that bisects it (see Figure 1 for mapped properties). The Plan area is generally bordered by a shopping center to the north, the rail line to the west, multifamily and commercial uses to the east, and single-family residences to the south.

All these properties zoned Light Industrial have a maximum allowable density of 1.0 Floor Area Ratio (FAR) and a maximum building height of 50 feet. These industrial properties are currently home to a variety of businesses and uses, ranging from residential/commercial contractors to ethnic grocery stores. The properties belong to the Twinbrook/Parklawn industrial cluster – one of the few remaining down-county industrial areas identified in the 2013 *Industrial Land Use* Study[26] – that is understood to be a vital resource providing industrial services to down-county residents and businesses.



The industrial district is adjacent to the 2010 White Flint Sector Plan, which is expecting a significant amount of commercial and residential development over the next 10 to 20 years. Furthermore, an additional MARC station was proposed in the White Flint 1Sector Plan just south of Parklawn Drive, falling squarely inside the industrial district. Both could potentially increase market pressures to encourage conversion of industrially zoned land, which raises the question to what degree of preservation or change would best serve the County's interest.

To comprehensively analyze this issue, Planning staff reviewed the key findings from the 2013 *Industrial Land Use* Study. Staff then examined the industrial district's business and industry composition, market conditions, and property and building inventory to determine whether the district was adequately fulfilling the needs and interests of County residents, businesses and economic development objectives.

[26] Industrial Land Use: Montgomery County, Maryland. Partners for Economic Solutions. October 18, 2013

INDUSTRIAL LAND USE TRENDS: MONTGOMERY COUNTY

In 2013, a comprehensive study of industrial land use in Montgomery County was undertaken. Key findings related to its light industrially zoned land are outlined below.

- The county's light industrial districts provide valuable services for residents and businesses. Such uses locate outside of typical retail or office districts due to their cost-sensitivity and physical incompatibility (e.g. odors, appearance, loading and truck traffic), but still need to be in close proximity to their customer base.
  - Valuable services for residents include uses such as auto repair, home remodeling, landscape maintenance, sign fabrication, upholstery, self-storage and miscellaneous retail.
  - Valuable services for businesses include many of the same for residents, as well as specialized parts suppliers, specialized repair persons, and storage for landscapers and construction contractors.
- While losses of industrial land in Montgomery County are relatively modest (only about 0.9 percent between 2009 – 2012), losses are greatest in the county's urban areas.
  - 53 percent of converted properties were located within one mile of a Metro station, with another 27 percent situated between one and five miles of Metro.
  - The most sensitive industrial districts – due to their proximity to densely populated areas where market pressures are greatest – are the Brookville Road area in Silver Spring, Howard Avenue in Kensington and Parklawn/Twinbrook. Losing these industrial lands would compromise the service industry's ability to serve down-county residents.
  - In contrast to light industrial zoned land, the County generally has sufficient land zoned for heavy industry in up-county locations.[27]
- Industrially zoned land often provides opportunities for entry-level and vocational jobs that represent a large cross-section of the County's population. Qualifications for jobs in these industries – such as production, distribution and repair – depend less on education and more on on-the-job training and work experience.
- Industrial land serves the County's basic needs for facilities and sites for municipal functions, such as equipment maintenance and repair, warehousing and parking of its vehicle fleet.
- Industrial buildings typically offer lower rents than most office or retail buildings, and often light industrial properties are better suited to the needs of non-industrial small businesses, entrepreneurs and even artisans needing to minimize occupancy costs.
  - Almost three-quarters of business in these districts have 10 or fewer employees, and can contribute to the economy by growing faster than large businesses.

[27] This relates to the Heavy Industrial (IH) zone, which is for industrial activities usually incompatible with residential, commercial, and other land uses due to adverse environmental impacts.

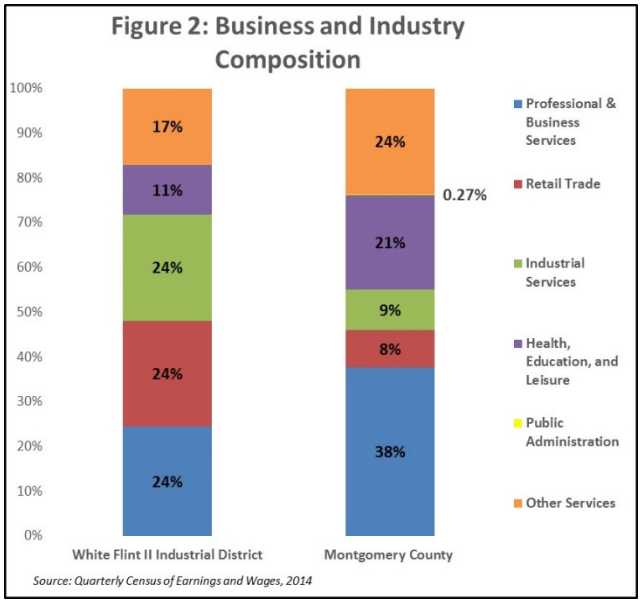
- Very few are chain operations; most are local businesses.

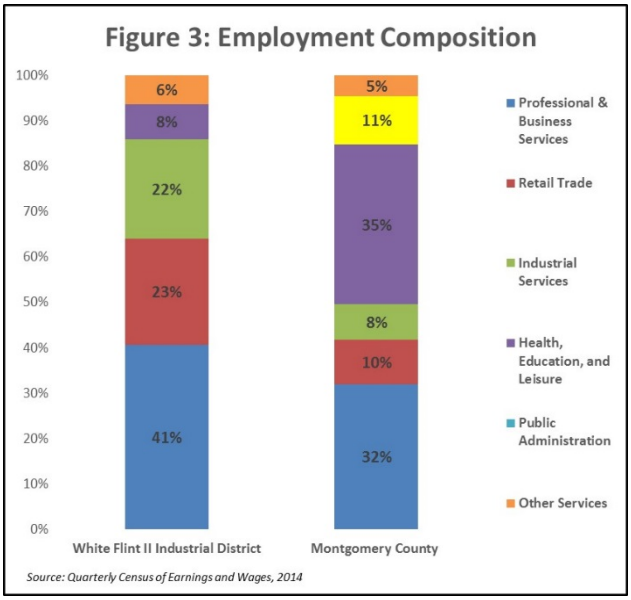
- Public commitment to retaining industrial districts can reassure businesses as to their long-term stability. Before reinvesting in facilities, businesses want reassurance that they won't be forced to move due to conversion of their properties to other uses or rapidly escalating rents.

In summary, the 2013 *Industrial Land Use* Study made a strong case for preserving light industrial districts in Montgomery County because of their role in providing vital services to residents and businesses, vocational and entry-level employment and because they are largely composed of small, local businesses that are crucial to driving growth. The study recommended preserving light industrial land whenever possible, as the County already has sufficient land zoned for heavy industry. Additional density in light industrial districts could be a tool for owners to enhance their properties over the long term, in the event that they wish to expand by adopting structured parking. Lastly, the study highlighted the value of promoting stability in industrial districts, as uncertainty about a district's future often leads to land speculation and disinvestment.

WHITE FLINT 2 INDUSTRIAL DISTRICT: INDUSTRY COMPOSITION ANALYSIS

The business and employment composition was examined in the White Flint 2 industrial district, to determine whether it was representative of the industrial districts characterized in the study.
First, consistent with the study, businesses in the industrial district were indeed found to be mostly small and local, as 86 of the 181 businesses (nearly 50 percent) employ 5 people or less. Second, the composition of businesses in White Flint 2 industrial district is extremely diverse, benefiting from its proximity to the commercial centers along Rockville Pike and White Flint, as well as residential neighborhoods, such as Rockville, Bethesda and Kensington.





According to the North American Industry Classification System (NAICS), nearly half of the businesses in the industrial district fall under "professional/business services" and "retail trade" (see Figure 2), typically non-industrial sectors. These sectors also produce a large proportion of jobs in the White Flint 2

district (see Figure 3); although they comprise half of the businesses, they account for nearly 65 percent of the employment. "Industrial services" on the other hand account for only a quarter of the businesses – which is still 13 percent higher than the County – and 22 percent of the jobs.

However, a closer look reveals the presence of an even stronger industrial character in the White Flint 2 district. Our analysis studied and reclassified each of the 181 listed businesses in the district under three categories: *Conventional Light Industrial Uses, Consumer Goods and Services, and Office and Professional Organizations* (see Figure 4 for examples of these uses)[28][29]. What was discovered was that nearly half of the businesses are those typically found in Conventional Light Industrial Uses, such as auto repair, storage facilities, contractors and building supply (see Figure 4). All are leased to private businesses or nonprofits, except one, which is leased by Montgomery County Department of Transportation to serve as a staging area for Ride-On buses. Due to the environmental impacts of their operations, such uses are often physically incompatible with commercial retail and office centers, but provide critical services for local businesses and residents.

Figure 4: Businesses in the White Flint II Industrial District

Category	Business Type	Number	Description
Conventional Light Industrial Uses (~44%)	Auto Repair	13	Auto and motorcycle repair shops, dealerships
	Dry Cleaners	5	Dry cleaners and laundromats
	General contracting or construction services (including design)	30	Contractors for home building, flooring, tile, electrical, plumbing, kitchen and bath
	Commercial Supply and Wholesale	16	Supply stores for lighting, plumbing, countertops, woodworking, Clean Rooms
	Storage Facility, Rental Car Companies, Moving Companies	7	U-Haul, self storage, moving companies, taxicab fleet
Consumer Goods and Services (~32%)	Furniture Store	8	Furniture and sofa stores
	Apparel, Home Goods Supply and Wholesale	22	sign fabrication and printing shops, antique and thrift shops, men's apparel, housewares, electronic service centers
	Restaurants and Grocery Stores	16	Restaurants, take-out, ethnic grocery stores, caterers
	Convenience Retail Services	9	Salons, Tailors, upholstery, daycare, gas stations
	Fitness Centers	3	Fitness Centers
Offices and Professional Organizations (~24%)	Professional associations and advocacy organiations	6	Professional associations, nonprofit advocacy organizations
	Medical Offices and Education	5	Chiropracters, physical therapy, speech pathology
	Finance, Insurance, and Real Estate	11	Accountants, real estate, insurance agents
	Consulting Firms	20	Consulting for IT, software, environmental remediation, event planning, facility planning
	Administrative Office for Retail Businesses	3	Administrative offices for grocery stores, jewelry stores, etc.
	Unknown	7	
	Total	**181**	

Source: Quarterly Census of Earnings and Wages, 2014

Still, in this reclassification, more than half of the businesses in the district operate in the categories of consumer retail and services (where a large proportion of sales are to everyday individuals, rather than businesses), as well as offices and professional organizations. Retail includes convenience retail as well as limited service restaurants, but also a wide array of thrift and antique stores, clothing distributors and service centers to repair electronics or other items. Many of these are niche businesses that do not require a storefront with a lot of auto or foot traffic, but represent destinations for customers seeking a specific

[28] Many uses typically representative of industrial areas – such as auto repair garages or dry cleaners – are not generally classified as an industrial service in NAICS, which thus portrays a smaller industrial presence than what exists. Such businesses were reclassified to *Conventional Light Industrial Uses* in the analysis.

[29] Out of the 181 businesses where more information was sought, 7 were unable to be identified.

product or service. Office use includes various sole proprietorships, such as doctors' offices, real estate and insurance agents, but also a relatively large number of consulting firms. Most of these consulting firms are located in the dedicated office buildings of 11820 and 11900 Parklawn Drive.

These retail and office uses typically locate in the industrial district because they share some synergy with industrial uses, such as facility management and inventory consulting, and/or they are cost-sensitive. Retail rents here are $15 per square foot (PSF), which is 56 percent lower than rents on Rockville Pike, while office rents ($21/PSF) are about 26 percent lower than rents on Rockville Pike. These affordable rents are especially attractive to small businesses that are cost-sensitive, who might not otherwise exist outside of industrial districts.

In summary, the White Flint 2 industrial district is characterized by a local service-industry, small, independent businesses, a municipal presence and appeal to cost-sensitive businesses. Given that these findings are consistent with the 2013 *Industrial Land Use* Study, they lend value to the idea of preserving the area as light industrial.

WHITE FLINT 2 INDUSTRIAL DISTRICT: MARKET ANALYSIS

An analysis of the industrial market in the White Flint 2 Industrial District were conducted, to examine whether demand for industrial use is strong in this area and its ability to be supported in the future.

The market indicators for the White Flint 2 industrial district suggest that it is performing well relative to industrial properties in the County and the Washington Metropolitan Region (see Figure 5). Notably, its rental rates (per square foot) are about six percent higher than the County average, and over 40 percent higher than the region[30]. Despite this elevated cost, tenant occupancy in this district has increased considerably over the past 5 years – nearly five percentage points – which is two to three times more than its counterparts on the county and regional level. Its overall occupancy rate and net absorption[31] are similar, if not slightly better, than the county and region. It also has a much lower proportion of underutilized land (7 percent) than the County (34 percent), as estimated using a ratio between the value of a building to the value of its underlying land. Perhaps most importantly, most of the property owners in this area have industrial tenants under long term leases (10-15 years) and few have formally requested zoning conversions to commercial, residential, or other. The relatively healthy market supports the notion that industrial land uses can, and will, continue to thrive in this area with the existing zoning and land uses.

Figure 5: White Flint II Industrial District: Market Performance Indicators[1]

	WFII Industrial District	County (Industrial)	Region (Industrial)[2]
Occupancy			
Occupancy Rate	90.5%	89.5%	90.8%
5-Year Occupancy Rate Change	+4.7%	+1.5%	+1.9%
Rent			
Rent per SF	$13.12	$12.34	$9.27
5-Year Rent PSF Change	2.0%	2.1%	2.7%
Absorption			
Annual Net Absorption Rate	2.2%	1.0%	2.1%
Utilization			
Proportion of Underutilized Land[3]	7.2%	33.7	Not Available

Source: CoStar Group, Inc.

[1] Industrial space measured on the County and Region level include only buildings classified as industrial and flex space.

[2] Defined to include DC, Arlington, Berkeley, Calvert, Charles, Fairfax, Fauquier, Frederick, Jefferson, King George, Loudoun, Montgomery, Prince George's, Stafford, and Prince Williams Counties and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park.

[30] Given higher land values as a result of its knowledge-based economy and proximity to D.C., industrial rents have historically been higher in Montgomery County than the region, especially in the second or third ring suburbs such Frederick, Loudoun, and Fauquier counties.

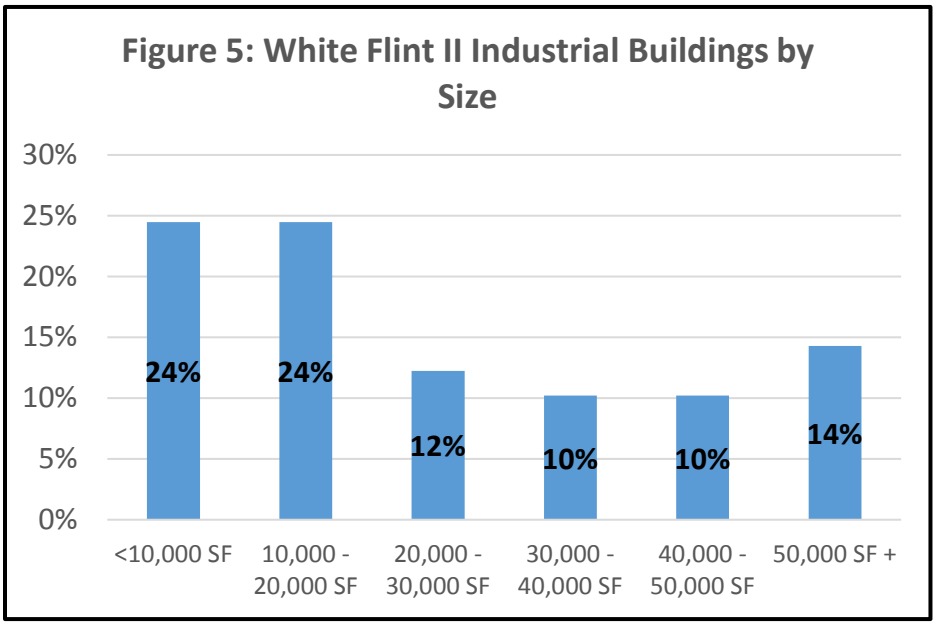
[31] Net absorption is measured as the change in the number of occupied square feet from one year to the next.

[3]*Planning professionals often consider properties with an improvement-to-land ratio below one to be underutilized and more likely to redeveloped or improved over time*

WHITE FLINT 2 INDUSTRIAL DISTRICT: PROPERTY ANALYSIS

An analysis of the buildings and properties in the White Flint 2 Industrial District was conducted to determine how well they are responding to the needs of their tenants as well as their potential for growth.

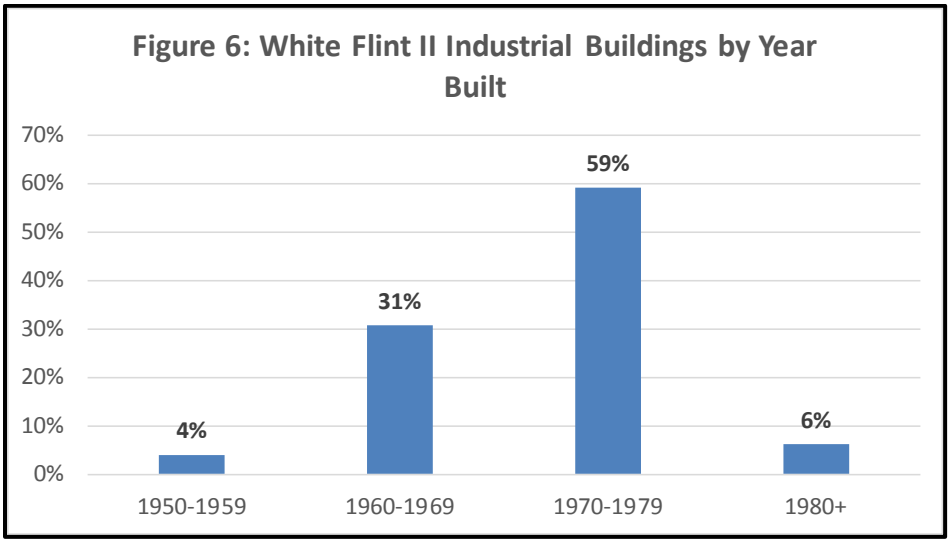
There are 49 buildings within the White Flint 2 Industrial Area as tracked by CoStar, a proprietary provider of commercial real estate statistics. Of these, the proportion of industrial (44 percent), office (31 percent), and retail (25 percent) buildings is almost identical to the distribution as found in Figure 4 for "conventional light industrial uses," "consumer goods and services," and "office and professional organizations," which suggests that its buildings are well-aligned with the area's industry composition. There is also a wide range in the size of the buildings, with approximately half of the buildings under 20,000 square feet and 15 percent more than 50,000 square feet (see Figure 5). This range is important to supporting the diverse mix of uses that characterize this area. The Rockville Economic Development Inc. notes that businesses seeking non-traditional industrial space value *"diversity in space configurations…. [where] open floor plans, high ceilings and loading docks, combined with relatively low rents, meet their needs better than office or retail space."*[32]



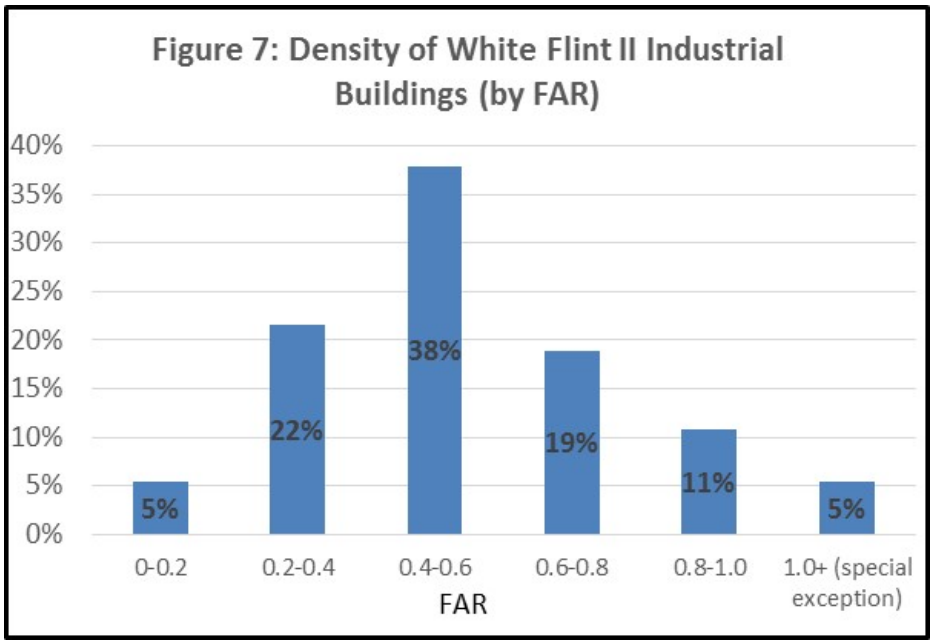
Virtually all of the industrial buildings were constructed over 25 years ago, with roughly 90 percent built between 1960-1979 (see Figure 6). While some buildings have experienced reinvestment in the intervening years, a windshield tour indicates most have remained in their original condition with only minor upgrades and regular maintenance, due to a number of reasons. Property owners here may anticipate an alternative, non-industrial type of redevelopment in the near future, which deters long term reinvestment. Secondly, expansion or reinvestment to industrial space often results only in a modest rent increase, such that the cost is not justified. Regardless, aging buildings over time may need more

[32] Southlawn Industrial Area Feasibility Study, City of Rockville. VHB. February 18, 2016.

significant investments to stay competitive, such as adapting to changes in building standards, tenant needs and market expectations, in order to prevent deterioration of the market.



To encourage future reinvestment, researchers studied whether there was sufficient, unused density that provided flexibility for properties here to redevelop or expand if they wished[33]. The analysis revealed that most of the properties were not built out to their maximum allowed density (see Figure 7). Roughly 65 percent of the properties had an FAR less than 0.6, compared to a maximum of 1.0 FAR. Therefore, most property owners will be able to intensify their development should it become economically feasible (usually taking the form of vertical building expansion and structured parking). However, a number of properties where buildings already represent high densities – especially those 0.8 and greater – may require additional incentives to encourage building improvement or redevelopment.



[33] While redevelopment and expansion are not the only methods of reinvestment, they typically generate the larger payback and are thus most frequently considered by industrial property owners.

SUMMARY AND RECOMMENDATIONS

The findings in this industrial district are mostly consistent with those from the Countywide *Industrial Land Use* Study, and point to a continuation of the current land use orientation. The key reasons are summarized as follows:

- The industrial market in this area is healthy and expected to remain so into the foreseeable future. The modest but not negligible amount of vacancy helps accommodate future demand.
- The area hosts a diverse mix of small businesses, many of which provide valuable down-county industrial services, and others that depend on affordable rents for their office and retail spaces.
- Facilities represent a good mix of size, format and configuration to serve the real estate needs of a wide range of businesses, to whom many prefer over traditional retail and office space.
- The older buildings remain adequate for businesses and they help keep rents low, which is an asset given the area's prime down-county location. Some incentives and provisions should be made for property reinvestment, as needed.

While there is likely a greater market here for non-industrial uses – as evidenced by its growing office and retail uses – the County should not actively target this area for zoning conversions. As noted in the 2013 *Industrial Land Use* Study as well as the 2015 *Brookville Road Market Analysis*[34], property owners and businesses want to see a clear public policy commitment to preserving the viability of an industrial area before they feel confident in reinvestment. Maintaining the light industrial zoning for most, if not all, of this area would be a strong signal of this commitment.

Furthermore, the area's location relative to transit infrastructure does not provide a compelling argument for a change in use. First, the prospect of a White Flint MARC station is increasingly understood to be very long term and perhaps even questionable, and thus, preemptive rezoning could lead to speculation and disinvestment. Second, one of the recommendations in the 2013 *Industrial Land Use* Study is "industrially-zoned land more than one-half mile away from a Metro station should be preserved in the urbanized parts of the county." The White Flint 2 Industrial District is still just beyond the half-mile walkshed to the White Flint Metro Station. This distance is felt to be even greater given the railroad separation, lack of at-grade crossings and poor pedestrian environment limiting opportunities to truly capitalize on the mixed-use, pedestrian-oriented development concepts planned closer to Rockville Pike (MD 355).

Should Planning staff consider any property rezonings, it is recommended that they be minor and on the periphery of the industrial district, so as not to change the market dynamic of the area. Rezoning could be considered on properties that have a firmly established retail presence, such as the Randolph Hills Shopping Center (which is well patronized by the surrounding neighborhood) and Nicholson Plaza (which is west of the rail tracks and has frontage along a busy Nicholson Lane). The objective would be to allow additional density to encourage reinvestment if required,[35] while limiting additional encroachment onto traditional industrial uses. Tools could include overlay zones or site-specific language, which calls for increasing density, but prohibits new uses. Finally, this analysis does not recommend introducing residential uses or the Commercial Residential (CR) zoning into this area. As stated in the *Industrial Land*

[34] Brookville Road Market Analysis, Montgomery County Planning Department. Bolan Smart Associates. March 2015.
[35] Randolph Hills has about 70,000 square feet of retail, and Nicholson Plaza has about 100,000 square feet, both of which may be too near the 120,000 square feet of retail maximum permitted in the IL zoning to motivate property owners to redevelop.

Use Study, residential encroachment is “one of the most serious threats to an active industrial district”, and industrial tenants try to avoid locations with adjoining residential development for fear of constraints that would limit their efficiency and ability to carry out their core business.

APPENDIX NO. 8: ENVIRONMENT

Prepared by Steve Findley, steve.findley@montgomeryplanning.org, Montgomery County Planning, Area 2 Environmental Planner

White Flint 2 Existing Conditions

The White Flint 2 Sector Plan area typifies an older model of dense suburban development characterized by low buildings set back from the street and large expanses of asphalt parking lots. This model of development leaves little room for significant tree cover and was often implemented with little or no stormwater management. The result is that local receiving streams have impaired water quality and degraded aquatic habitats, and urban heat island effect is pronounced in the summer months. Such forested areas as remain in the area are likewise degraded, with significant invasive species incursions and low biological diversity leading to reduced delivery of environmental services, such as filtering of water and air, provision of plant and animal habitats, and groundwater recharge.

There are two significant natural resource areas remaining in the White Flint 2 planning area. The Old Farm tributary of Cabin John Creek and its associated stream valley are partially protected by a forested stream buffer just south of Executive Boulevard and west of Old Georgetown Road. The stream forms the boundary between the White Flint 2 planning area and the North Bethesda/Garrett Park planning area to the south.

There is also a prominent forest stand between Montrose Parkway and old Montrose Road in the center of the planning area, but much of this forest stand is likely to be removed for completion of the Montrose Parkway construction in the eastern half of the planning area and development in the western half. There is the potential to retain some portion of this forest as the western half develops.

Most of the eastern districts in the White Flint 2 Sector Plan area drain to Rock Creek, which is a State Use Class I-P watershed. The western districts drain to Cabin John Creek, which is also a State Use Class I-P watershed. The "P" designation in these categories denotes that they are a source of potable (drinking) water, as they drain to the Potomac River, which provides most of the drinking water to lower Montgomery County; therefore, it is important to protect and enhance the water quality of these streams.

The mainstems of both Rock Creek and Cabin John Creek are protected by Stream Valley Parks that are part of the Montgomery County Park system. These parks offer not only water quality protection and floodflow attenuation, but also significant wildlife habitat, active and passive recreational opportunities, and a green respite from the built environment. Getting people in White Flint 2 safely from their homes and offices to these parks should be a priority in the White Flint 2 Sector Plan.

Forest and Tree Cover, and Impervious Surfaces

Water quality is especially correlated with the amount of forest cover and the percentage of the watershed that is impervious. In the White Flint 2, 57 percent of the planning area is covered with impervious surfaces, while only 8 percent of the area is covered in forest. The already-programmed Montrose Parkway extension and likely development of the Willco property north of Montrose Parkway west of Hoya Street will likely result in the loss of some existing forest, bringing the areal coverage of forest to around 5 percent.

Tree canopy coverage does not match forest cover in terms of environmental benefits, but there are still significant water quality, air quality, carbon storage and health benefits that accrue from a healthy tree

canopy. The overall tree canopy coverage in White Flint 2 is 33 percent, but the proposed development is likely to reduce current tree cover to about 30 percent.

The respected non-profit conservation group *American Forests* recommends a goal of 40 percent tree cover for developed and developing communities to promote sustainability and a healthy human environment. By taking advantage of opportunities to preserve existing forest and to increase tree canopy through new and re-development, including planting trees in public and private open space areas and as a part of streetscaping, White Flint 2 should be able to advance toward the 40 percent tree canopy goal.

Environmental Goal

The overall goal for environmental planning stated in the 1993 *General Plan Refinement* is to "Conserve and protect natural resources to provide a healthy and beautiful environment for present and future generations. Manage the impacts of human activity on our natural resources in a balanced manner to sustain human, plant, and animal life." Implementation of this goal guides the environmental recommendations in Montgomery County's Master and Sector Plans.

Provision of Environmental Services

Undeveloped land provides most of the services necessary to sustain life. Through a combination of biological communities and biochemical processes, an undeveloped landscape produces clean air, filters water, provides shelter, produces food, moderates temperature extremes (heat island effect), attenuates flood flows and moderates the climate through the storage of carbon.

Modern buildings provide a more comfortable environment for human life and transportation systems facilitate people's movements between residences, employment centers, shopping areas, etc. As areas develop, the biological communities are removed, along with the associated environmental services they provide. These environmental services must be replaced if life is to be sustained. We pay to create water filtration and delivery systems, and to build stormwater management facilities to protect water quality, reduce flooding, protect infrastructure and maintain aquatic life. We build HVAC systems to heat, cool and filter air, and pay for the energy needed to run them. We plant trees and create landscaped areas to provide shade, generate oxygen, filter air and water, and provide the green environment that has demonstrated benefits for physical and mental health. But artificial systems cannot fully replace the environmental functions lost when development occurs. Ultimately, a balance must be achieved between development and the preservation of natural resources if we are to create sustainable communities.

In White Flint 2, this balance is achieved both locally and regionally. Locally, the plan identifies existing natural resource areas that can be preserved, and makes recommendations to replace lost environmental services. But equally important is the planning principle of concentrating development in areas where infrastructure already exists rather than creating sprawl developments that eliminate additional natural resources farther from urban centers. By redeveloping underutilized land in White Flint 2, forested watersheds in the Agricultural and Open Space ring in the northern and western portions of Montgomery County are preserved as fully functioning ecosystems that provide environmental services to the entire area. These services include clean water for the Potomac River, large-scale provision of clean air, carbon sequestration, flood attenuation, and high-quality aquatic and terrestrial habitat for animals and plant communities.

Recommendations for Forest Preservation

Two significant forest areas have been identified for preservation in White Flint 2. The first is the forested stream buffer along the Old Farm Branch of Cabin John Creek, adjacent to the Luxmanor neighborhood to the south of White Flint 2. This forest would be classified as a high priority for preservation by Montgomery County's Forest Conservation Law. The forest protects the water quality and habitat of this tributary of Cabin John Creek. The stream buffer is treated as a regulated area under the County's development review process.

The second forested area lies to the north of Montrose Parkway, west of Rockville Pike. The plan recognizes that a portion of this forest occupies a high value area for development adjacent to the intersection of Montrose Parkway and the planned extension of Old Georgetown Road. But a portion of this forest can be preserved adjacent to the shared-use path north of Montrose Parkway. In addition to the environmental services it provides, this strip of forest extends a green connection between Rock Creek Stream Valley Park to the east and Cabin John Stream Valley Park to the west, creating a more inviting experience for people using the shared-use path. It also provides a visual buffer between the Cherington condominium community and Montrose Parkway. The Montgomery County Department of Parks also recommends creating a linear park in this portion of the forest, which is compatible with the recommendation to preserve the forest.

Focus on Energy Conservation

Montgomery County has made great strides in developing policies that help balance development and environmental protection, including requirements for detaining and treating stormwater runoff to protect aquatic habitats and water quality, and forest conservation regulations that are designed to preserve forests where possible and replant forests to mitigate forest lost to development. Areas where significant opportunities for improvement remain are in energy conservation and clean energy generation. Conserving energy reduces air pollution and atmospheric carbon emissions. It reduces the demand on an aging electric delivery infrastructure and reduces operating costs. Effective energy conservation is both economical and beneficial to human health.

There are two areas of focus for energy conservation: building energy and transportation energy. Conservation of energy and clean energy generation in buildings depends on site design, building design, building construction, including materials and systems, and building operation. While building construction is primarily the purview of the Montgomery County Department of Permitting Services, site design and building design are both planning concerns.

Site designs that permit building orientation to maximize opportunities for passive solar lighting and heating set up the optimal situation for energy conservation. In addition, building orientations that are optimal for passive solar energy use frequently are optimal for orientation of solar energy panels for clean energy generation. Building design features should include properly designed shading features to reduce solar heating in the summertime.

Transportation energy use can be reduced by providing non-auto alternatives that allow people to get to their significant destinations on foot, by bicycle or by transit. Safe and attractive pedestrian paths and bikeways need to be integrated into all Master Plans, Sector Plans and Site Plans. Transportation energy use can also be reduced by mixed-use communities that allow people to meet their basic needs without having to travel long distances by car.
Some areas with concentrations of uses that have a high energy demand, such as research centers that use

a lot of computing power and hospitals/health care centers, might consider planning distributed energy or district energy systems. These small-scale energy generation and distribution facilities are located close to the sources of demand, and can increase efficiency and reliability of energy delivery while reducing pollution and carbon emissions. Other related approaches include combined heat and power systems that allow multiple buildings to share heat and energy, and harvesting urban heat sources such as computer servers. This plan recommends that planners and developers monitor the rapid advances in energy conservation and clean energy generation, and incorporate improvements in these areas whenever possible.

Greenhouse Gas Modeling

Montgomery County Code Chapter 18A-15 requires the Planning Board to model the carbon footprint of planning areas as part of a Sector Plan. Another law (Montgomery County Code Chapter 33A-14) requires the Planning Board to estimate the carbon footprint of areas being master planned, and to make recommendations for carbon emissions reductions. Carbon footprint is calculated by estimating the greenhouse gas (ghg) emissions from construction and operation of the projected development.

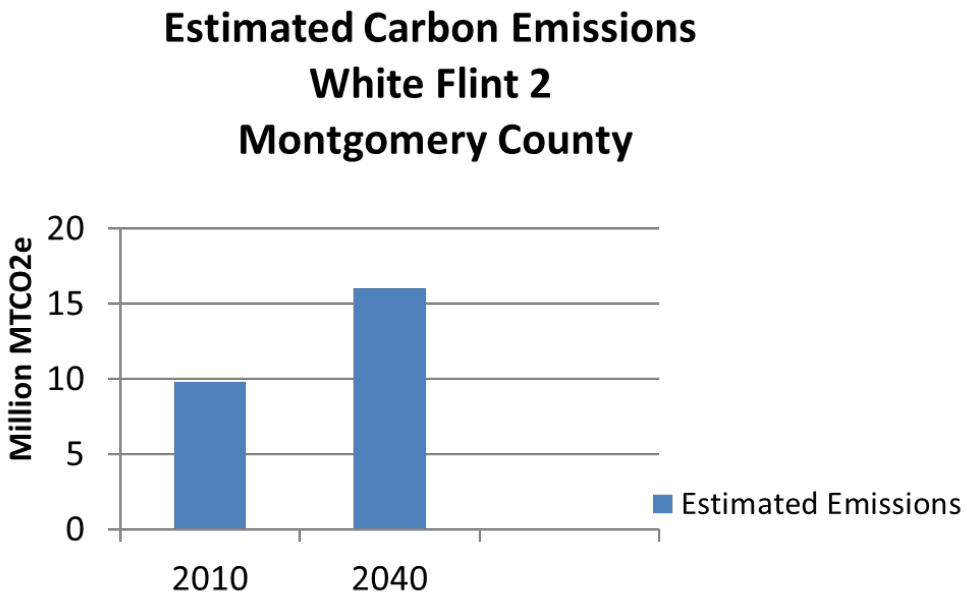
There are three main components to greenhouse gas emissions: embodied energy emissions, building energy emissions and transportation emissions in projecting total emissions for an area. Embodied emissions are emissions that are created through the extraction, processing, transportation, construction and disposal of building materials, as well as emissions created through landscape disturbance (by both soil disturbance and changes in above ground biomass). Building energy emissions are created in the normal operation of a building, including lighting, heating cooling and ventilation, operation of computers and appliances, etc. Transportation emissions are released by the operation of cars, trucks, buses, motorcycles, etc. Results are given for the total life of the development from construction to demolition, and are given in metric tons of carbon dioxide equivalents (MTCO2e).

White Flint 2 Sector Plan GHG Emissions Analysis

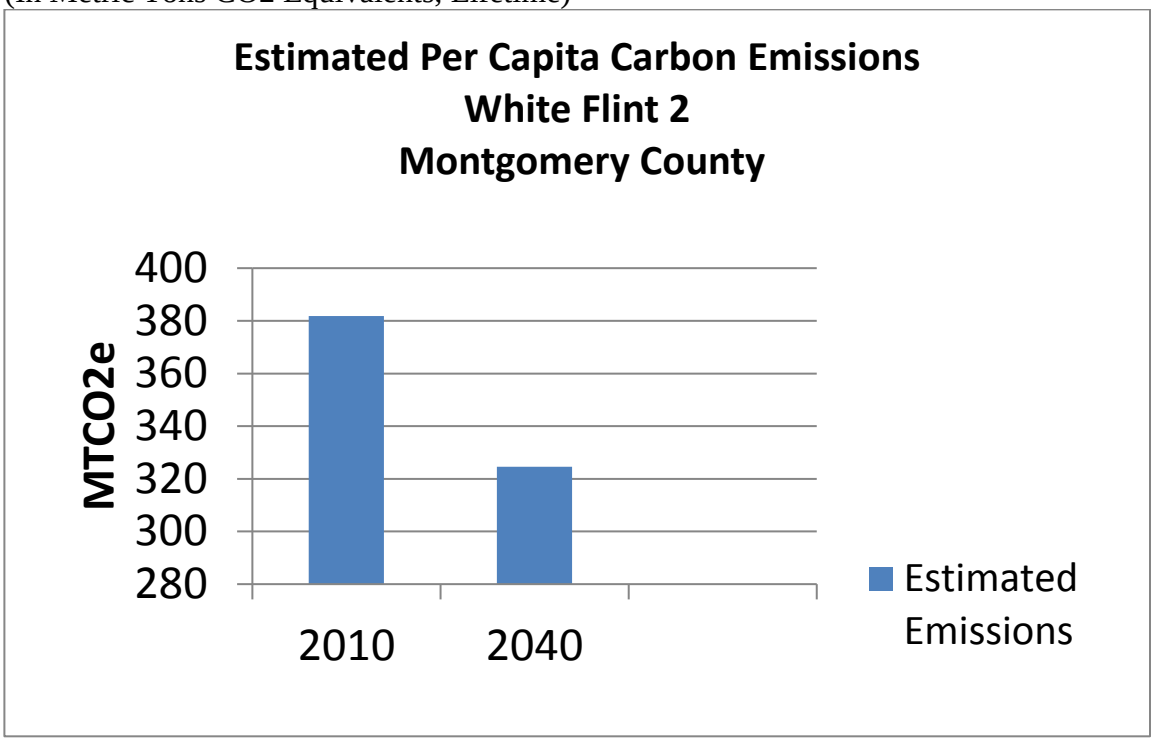
Because master and sector plans focus on areas that are most appropriate for new or re-development, the increased numbers of housing units and non-residential spaces naturally result in an overall increase in greenhouse gas emissions, and White Flint 2 is no exception. The carbon footprint estimation shows an increase in total greenhouse gas emissions of about 39 percent above the existing condition. When considered on a per capita basis, however, the carbon footprint estimation shows a decline in per capita greenhouse gas emissions of about 15 percent less than existing. Recommendations for reducing ghg emissions are included in the Plan's section on Energy and Carbon Emissions.

Figure 1: White Flint 2 Sector Plan Carbon Footprint Estimation

(In Millions of Metric Tons CO2 Equivalents, for the lifetime of the plan)



White Flint 2 Estimate Per Capita Carbon Footprint
(In Metric Tons CO2 Equivalents, Lifetime)



APPENDIX 9: PARKS, TRAILS AND OPEN SPACE

For more information: Contact Rachel Newhouse, Montgomery County Parks Department, at Rachel.Newhouse@montgomeryparks.org

Public parkland, open spaces and trail connections contribute towards the well-being of a community. Parks have a positive impact on people, particularly in urban areas where residents can become disengaged from the from natural environment, which could be detrimental to health and well-being. Parks also provide a vital link to nature, space for leisure and sport, and their natural green settings contribute to stress reduction. Parks can lead to building community cohesion and identity; spaces for gatherings and events; opportunities for people to meet each other and socialize and bond with neighbors. In addition, open spaces contribute to the natural environment by providing wildlife habitat, improving air quality and preserving water quality.

Park Planning Context

The existing pattern of parks in White Flint 2, along with the recommended new parks in the 2010 White Flint Sector Plan area, reflect the urban park classifications from the 2012 *Park, Recreation and Open Space Plan* (PROS). PROS recommended how parks and the recreation system can meet the needs of a growing population and continues to play a significant role in shaping Montgomery County's high quality of life. A central component of PROS is its "Service Delivery Strategies" to ensure that the "right parks" are put in the "right places." The strategies recommend the type, number and general location of lands and facilities needed to the year 2022. Current and future plans for urban parks, trails, dog parks, community gardens and other needed facilities are guided by PROS.

Park and Open Space Needs

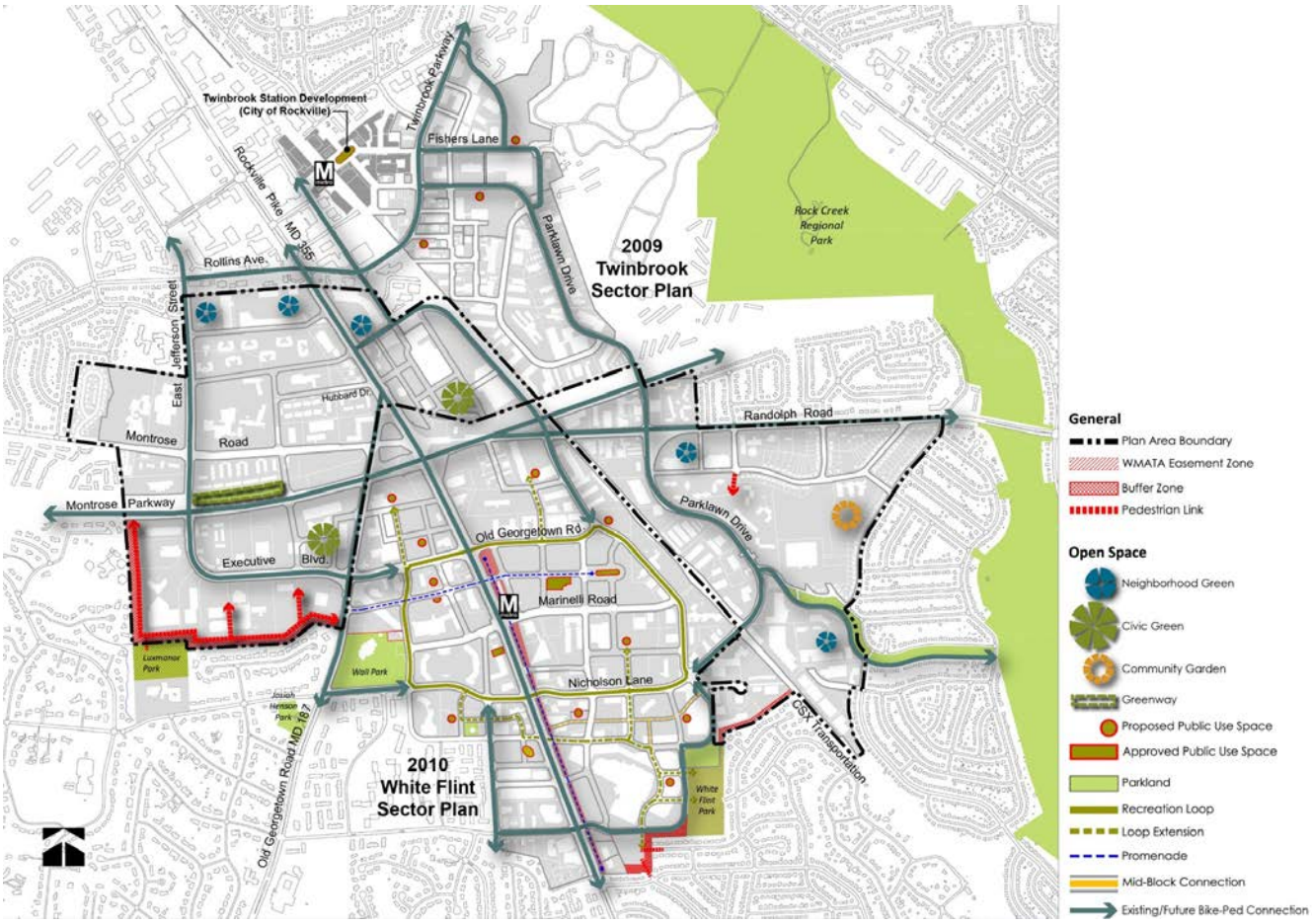
Policy Background

In analyzing the park needs for the Plan area, existing plan policies were reviewed, including the 2010 *White Flint Sector Plan* and the 2012 *Park, Recreation and Open Space Plan*. The PROS Plan guides the County-wide pattern of parkland and recreation needs, including small areas like the 2010 White Flint and White Flint 2 plan areas. This Plan's recommendations recognize that urban areas present distinct challenges and opportunities to provide park and recreation resources, and strive to incorporate and create those resources through redevelopment of commercial properties. PROS recommended six new categories of urban parks as shown in the tables below:

PARK TYPE	PARK TYPE DESCRIPTION	TYPICAL FACILITIES*
COUNTYWIDE PARKS - Parks in this category serve all residents of Montgomery County		
- Recreational Oriented Parks		
Regional Parks	Large parks that provide a wide range of recreational opportunities but retain 2/3 of the acreage as conservation areas.	Picnic / playground areas, tennis courts, athletic fields, golf course, campgrounds, and water-oriented recreation areas.
Recreational Parks	Parks larger than 50 acres in size that are more intensively developed than Regional Parks, but may also contain natural areas.	Athletic fields, tennis courts, multi-use courts, picnic/playground areas, golf course, trails, and natural areas.
Special Parks	These parks include areas that contain features of historic and cultural significance.	Vary, but may include agricultural centers, garden, small conference centers, and historic structures, etc.
Countywide Urban Parks	Serve residents, visitors, and workers of an entire urban high-density transit-oriented development area, and may be programmed with that attract residents from other parts of the County. Parking is located in structures underground or in nearby public parking lots, garag adjoining streets, rather than on-site. Parks may be lighted at night along major walkways and for certain activities such as events, or cou Subcategories include Civic Greens, Countywide Urban Recreational Parks, and Urban Greenways.	
	CIVIC GREENS	
	Formally planned, flexible, programmable open spaces that serve as places for informal gathering, quiet contemplation, or large special event gatherings. Depending on size, they may support activities including open air markets, concerts, festivals, and special events but are not often used for programmed recreational purposes.	A central lawn is often the main focus with adjacent spaces providing complementary uses. May include gardens, water features and shade structures.
	COUNTYWIDE URBAN RECREATIONAL PARKS	
	Oriented to the recreational needs of a densely populated neighborhood and business district. They provide space for many activities.	May include athletic fields, playing courts, picnicking, dog parks, sitting areas and flexible grassy open space. Programming can include farmer's markets, outdoor exercise classes, and community yard sales. There is space for a safe drop-off area and nearby accessible parking for those who cannot walk to the park.
	URBAN GREENWAYS	
	Linear parks that provide trails or wide landscaped walkways and bikeways and may include other recreational and natural amenities. May occur along road rights of way or "paper" streets.	Trails, walkways and bikeways, with extra space for vegetative ground cover and trees. Should link other green spaces, trails and natural systems.
- Conservation Oriented Parks		
Stream Valley Parks	Interconnected linear parks along major stream valleys providing conservation and recreation areas.	Hiker-biker trails, fishing, picnicking, playground areas.
Conservation Area Parks	Large natural areas acquired to preserve specific natural archaeological or historic features. They also provide opportunities of compatible recreation activities.	Trails, fishing areas, nature study areas, and informal picnic areas.
COMMUNITY USE PARKS - Parks in this category serve residents of surrounding communities		
Community Use Urban Parks	Serve residents and workers in urban neighborhoods and districts. These parks may be programmed for more localized events, but not c No parking is available on the park property. Subcategories include Urban Buffer Parks, Neighborhood Greens, and Community Use Urba Parks.	
	URBAN BUFFER PARKS	
	Serve as green buffers at the edges of urban, high density development adjacent to lower density residential areas. They provide a green space within which residents and workers of an urban area may relax and recreate.	Landscaping, sitting/picnic areas, play equipment, courts, and shelters.
	NEIGHBORHOOD GREENS	
	Serve the residents and workers from the surrounding neighborhood or district, but may be designed for more activity than an urban buffer park. These formally planned, flexible open spaces serve as places for informal gathering, lunchtime relaxation, or small special event gatherings.	Lawn area, shaded seating and pathways. May include a play area, a skate spot, a community garden, or similar neighborhood facilities.

	COMMUNITY USE URBAN RECREATIONAL PARK	
	These parks serve the residents and workers from the surrounding neighborhood or district, and are designed for more active recreation than an urban buffer park or a neighborhood green.	Sport courts, skate spots, and may include lawn areas, playgrounds or similar neighborhood recreation facilities.
Neighborhood Parks	Small parks providing informal recreation in residential areas.	Play equipment, play field, sitting area, shelter, tennis and Multi-use courts. (Do not include regulation size ballfields).
Local Parks	Larger parks that provide ballfields and both programmed and un-programmed recreation facilities.	Ballfields, play equipment, tennis and multi-use courts, sitting/picnic area, shelters, buildings and other facilities.
Neighborhood Conservation Areas	Small parcels of conservation oriented parkland in residential areas, generally dedicated at the time of subdivision.	Generally undeveloped, may include a stormwater management pond and related facilities.

As shown on the Park, Trail and Open Space Concept below, proposed facilities are provided through a combination of public and private efforts. Those open spaces that rise to the level of serving as a focal point of community life for the planning area are recommended to be public parks.



A System

The 2012 *PROS Plan* recommends that for each urban area, a unique open space system should be planned to serve the projected demographics of residents, workers and visitors. The urban design vision developed during the master plan or sector plan process for the area will help guide the amount, pattern, location, siting and design of open spaces. The type and pattern of parks and open spaces best suited to urban populations is different from the suburban model of large tracts of land filled with fixed, single-use facilities. *PROS Plans* in the past projected recreational needs by broad planning areas, rather than by small sub-areas, such as the new transit-oriented neighborhoods in both White Flint Plan areas.

The 2012 *PROS Plan* recognizes that urban areas change the way in which we provide, build and manage park and recreation resources in those areas. There are distinct challenges, the potential to provide park and recreation resources in different ways and different opportunities to incorporate and create those resources as urbanizing areas redevelop. The 2012 *PROS Plan* recommends a system of parks and open spaces at the core of every urban area, provided through a combination of public and private efforts. The new open space system should support a vibrant and sustainable urban center by including open spaces that will be comfortable, attractive, easily accessible, safe and provide a range of experiences, up to and including festival and outdoor event spaces. Open spaces that rise to the level of serving as a focal point of community life for the planning area are typically recommended to be owned and managed by the public. Those open spaces that serve a smaller district, neighborhood, or block are often recommended as public use spaces owned or managed by the private sector.

Every urban area should have a system of parks and open spaces that include the following attributes:

Active recreation - places to exercise outdoors, alone or in groups.

Social interaction - comfortable seating areas, large public spaces for formal or informal gathering, community gardens.

Access to green space - ample areas of grass, trees, and other landscaping.

Relaxation and stress relief - areas away from traffic and urban noise.

Public accessibility - where anyone can gather or sit or talk.

Educational experiences - programs to learn from nature or cultural/historic resources.

Walkability - every residence should have a park or open space within 1/8 mile. Major roads can be barriers that add to the walking time and must be calculated into the minimum distance formula.

Connectivity - walking and biking systems to link all proposed urban open spaces, and provide pleasant walking routes from residences and businesses to open space destinations throughout the planning area, and to connect to regional trail and bikeway systems.

Flexibility- space that can be used for a variety of spontaneous activities and gatherings, and respond to the changing needs of urban populations.

Activating Uses –nearby shops, restaurants, and residences, attractions, entertainment, as well as places within the park for relaxation, getting work done (Wi-Fi), spontaneous play, education, recreation, etc.

This Plan recommends a variety of new parks and open spaces to meet the existing and new needs of existing and future residents, visitors and employees in White Flint 2.

Local and neighborhood recreation facility needs are projected by the *PROS Plan* based on residential population. While locating new parkland for rectangular fields is desirable in the Plan area, it is difficult to find available land. The 2005 *PROS Plan* indicated that the Bethesda/North Bethesda planning area, which includes White Flint 2, needs additional baseball fields, rectangular (soccer fields) and playgrounds. Ballfields are estimated for the entire Bethesda/North Bethesda area, which is estimated to need approximately 25 additional fields by 2020, the majority of which are large, multi-purpose, rectangular fields:

Inventory of all Facilities & Parkland Owned, Leased and/or Maintained by M-NCPPC

Park Status	Park Name	Acreage	Park School	Play-ground	Soft Ball Field	Baseball Field	Basketball/ Multi-Use	Lighted Basketball Ct	Tennis Court	Lighted Tennis Courts	F_S_ OVERLAY	F_S FIELD	Play Field	Picnic Shelters	Open Shelter	Rec Building
PARKS IN WHITE FLINT SECTOR PLAN																
D	WALL LOCAL PARK	12.1405	0	1			1	1								
D	WHITE FLINT NEIGHBORHOOD PARK	8.7194	0	1			2		2							
Subtotal		20.8599														
PARKS IN NORTH BETHESDA PLANNING AREA SERVING WHITE FLINT RESIDENTS																
NEIGHBORHOOD PARKS																
D	DRUID DRIVE NEIGHBORHOOD PARK	0.4105	0	1												
D	GARRETT PARK-WAVERLY NEIGHBORHOOD PARK	1.221	0				1		2						1	
D	WAVERLY-SCHUYLKILL NEIGHBORHOOD PARK	5.7756	0													
D	WELLS NEIGHBORHOOD PARK	1.34	0	1											1	
Subtotal		8.7471														
LOCAL PARKS																
D	FARMLAND DRIVE LOCAL PARK	6.6799	1		2						1					
D	FLEMING LOCAL PARK	12.8	0	1	2			2		2					1	
D	GARRETT PARK ESTATES LOCAL PARK	3.6187	1	1	1						1				1	
D	LUXMANOR LOCAL PARK	6.4932	1		2						1				1	
D	RANDOLPH HILLS LOCAL PARK	18	0	1	2			2	2			1			1	
D	STRATTON LOCAL PARK	11	0	1	1		1		2		1	1			1	
D	TILDEN WOODS LOCAL PARK	7	0	1	1		1			2	1				1	1
D	TIMBERLAWN LOCAL PARK	12.3501	0	1			1					2			1	
Subtotal		77.9419														
NEIGHBORHOOD CONSERVATION AREA																
U	OLD FARM NEIGHBORHOOD CONSERVATION AREA	0.7756	0													
Subtotal		0.7756														
STREAM VALLEY PARKS																
U	CABIN JOHN STREAM VALLEY UNIT #6	21.2062	0													
U	ROCK CREEK STREAM VALLEY UNIT #3	312.5319	0	3			0.5									
U	ROCK CREEK STREAM VALLEY UNIT #5	30.5611	0													
U	ROCK CREEK STREAM VALLEY UNIT #6	193.2718	0													
U	TILDEN WOODS STREAM VALLEY PARK	65.4976	0													
Subtotal		623.0686														
TOTAL		731.3931	3	13	11		7.5	5	8	4	5	4			7	1

Key:
Park Status D - Developed
Park Status U - undeveloped
Park School 1 - Park School
Park School 0 - Not park school

In down-County areas, such as both White Flint plan areas, there is insufficient land to locate fields. Playing field users, who normally drive to fields, will have to use fields in other areas and make more efficient use of existing fields through artificial turf, innovative scheduling and lighting to increase hours of use. This plan is using an innovative approach to meet field needs by recommending that a full-sized adult rectangular field be built on top of an existing or proposed parking structure. The implementation of this recommendation in envisioned to be a joint public-private partnership with all the new developments occurring within the White Flint 2 Sector Plan.

Implementation

Below is a table indicating possible implementation strategies for the recommended parks and open spaces:

Table 1 - White Flint 2 Sector Plan - Park, Trail and Open Space Recommendations

Park, Trail or Open Space	Recommendation	Implementation Strategy
Willco Civic Green Urban Park	1+ acre park to serve the new development at Willco property and the entire sector plan area.	Implemented by developer during the re-development process.
Montrose Crossing Civic Green Urban Park	1-2-acre park for events and community gatherings. Would serve the entire sector plan area.	Implemented by developer during the re-development process.
Federal Plaza #1 Neighborhood Green Urban Park	Create a ½ - ¾ acre park.	Implemented by developer during the re-development process.
Federal Plaza #2 Neighborhood Green Urban Park	Create a ½ - ¾ acre park.	Implemented by developer during the re-development process.
Pike Center Neighborhood Green Urban Park	Create a ½ - ¾ acre park.	Implemented by developer during the re-development process.
Loehmann's Plaza Neighborhood Green Urban Park	Create a ½ - ¾ acre park to meet the neighborhood needs of the community.	Implemented by developer during the re-development process.
Randolph Hills Neighborhood Green Urban Park	Create a ¾ acre park to serve the recreational needs of the eastern sector plan neighborhoods.	Implemented by developer during the re-development process.
Urban Plazas and Open Spaces along Executive Blvd.	Create a series of publicly inviting open spaces to encourage people to walk along the street.	Implemented by making this a privately-owned public open space streetscape requirement during the re-development of the sites along Executive Blvd.
A full sized adult rectangular athletic field to serve the public in the larger planning area	Locate a rectangular field on top of one of the existing or proposed parking garages on properties in the Executive Boulevard District or properties in the Rockville Pike-Montrose North District.	Would require the developer of the large parcels in both districts to accommodate a full-sized adult rectangular athletic field on top of a parking garage. The field would be open to the public and be paid for by new development within a specific district or the plan area.
Rocking Horse Center athletic field	Add a small practice field on the Rocking Horse Center property.	Would be implemented with agreement from schools.
Macon Road Park and Trail	Small pocket park in the right-of-way for trail crossing.	Would be implemented as public benefit by adjacent properties, including redevelopment of the Oxford Square Apartments or Walnut Grove Condominium. This Montgomery County Department of Transportation (MCDOT) parcel could also be implemented as CIP project. MCDOT will provide the developer with standards for trail development through the property.
Trails adjacent to Luxmanor Elementary School	Trails through the private properties that connect the residents from Luxmanor into the heart of White Flint and to Montrose bikeway north.	This publicly accessible trail linkage will be established when the properties redevelop.

APPENDIX 10: PUBLIC SCHOOLS

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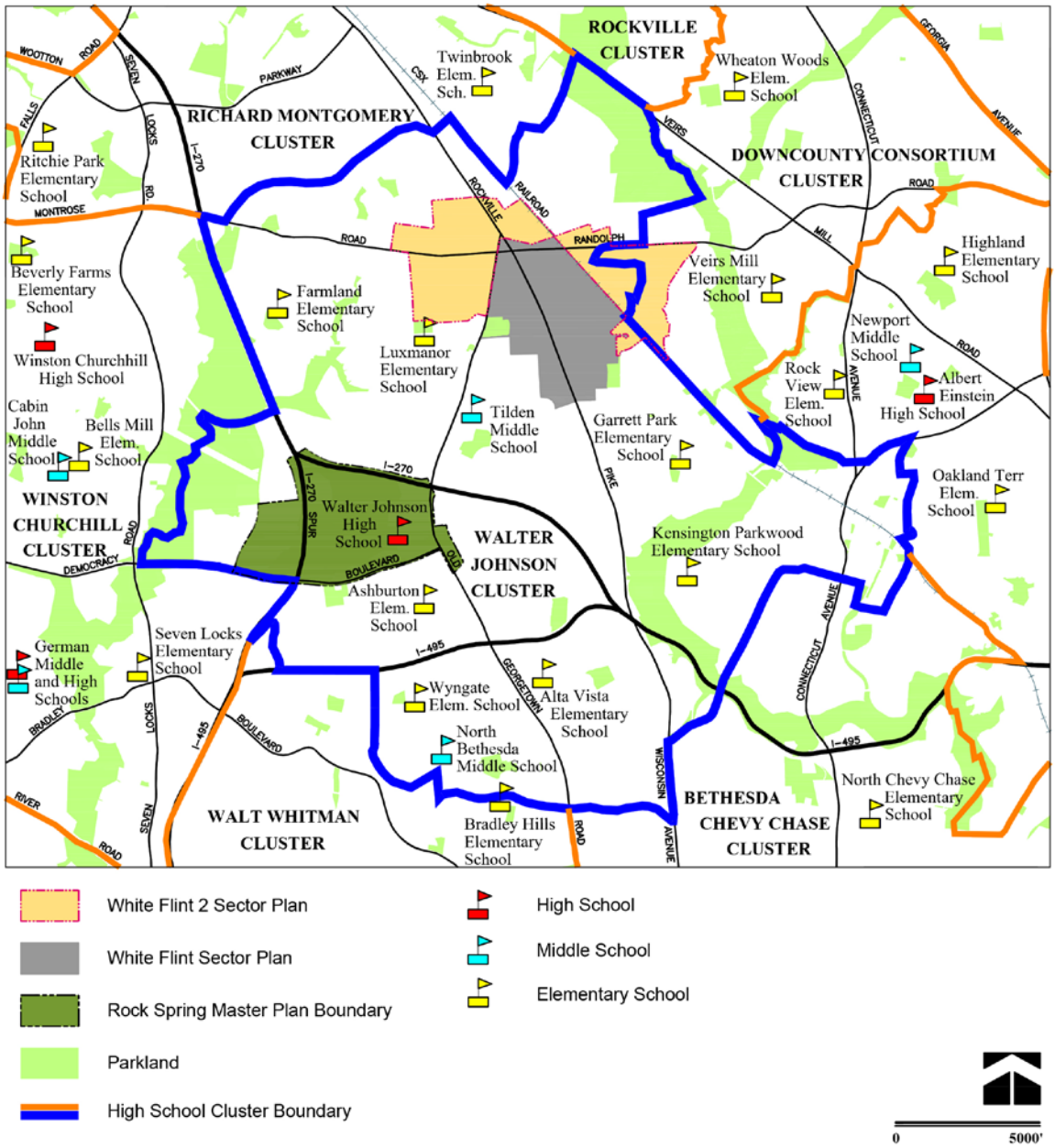
The White Flint 2 Sector Plan area is located primarily within the Montgomery County Public Schools (MCPS) Walter Johnson High School Cluster and a smaller portion is in the Downcounty Consortium Secondary Schools. Most of this appendix focuses on the Walter Johnson Cluster since most of the future White Flint 2 residential development will be in this cluster. Both school clusters areas and the White Flint Plan areas are illustrated in Figure 1, below.

Figure 1: Montgomery County Public Schools Clusters



Background

Enrollment growth and consequential space deficits in the Walter Johnson Cluster have resulted from a combination of existing residential turnover and new development. At the high school level, Walter Johnson High School is forecast to have a deficit of nearly 700 seats by the 2022–2023 school year, and long-term projections indicate that high school enrollment could reach 3,600 students by 2046. At the middle school level, North Bethesda Middle school exceeds its current program capacity and Tilden Middle is within its capacity.

Currently, most of the six elementary schools in the Walter Johnson Cluster, including Ashburton, Luxmanor, Farmland, Garrett Park and Kensington-Parkwood exceed their enrollment capacities. Only Wyngate is within its program capacity. Garrett Park Elementary School and Luxmanor Elementary School are the elementary school service areas for the White Flint 2 Sector Plan area.

In 2015, the Board of Education approved the Walter Johnson Roundtable Discussion Group to explore short and long-term approaches to address the current space deficits in the Cluster. The roundtable developed 18 (10 secondary and eight elementary) approaches to address capacity issues, including school additions and alternative school day schedules. The approaches include the following:

- One approach focused on a high school addition project.
- Three approaches focused on reopening the former Woodward High School.
- Two approaches utilized irregular grade configurations (Grades 8–9 school or Grades 6–9 school).
- One approach relied on commercial office space for school use; one approach utilized alternative school day scheduling.
- One approach utilized online education.
- One approach focused on constructing new secondary schools.

After the roundtable issued its approaches, the Montgomery County Public Schools (MCPS) Superintendent issued an amendment to the FY-17 Capital Improvements Program that recommended the following action for the Walter Johnson Cluster:

- For Ashburton Elementary School, reduce the approved addition project scheduled for completion in August 2019 from 881 seats to 770 seats, relocate the four-special education Preschool Education Program (PEP) classes to Bradley Hills and Luxmanor elementary schools beginning in the 2017–2018 school year, and construct a modular classroom addition to open in August 2019 that can be relocated in the future after a new school opens.

- Monitor the enrollment at Farmland Elementary School and consider the reassignment of students to Luxmanor Elementary School beginning in the 2020–2021 school year after completion of the revitalization/expansion project.

- Utilize space in the annex facility adjacent to Garrett Park Elementary School to address the capacity deficit at the school.

- Monitor enrollment in the cluster elementary schools and open a new school in the long-term when the capacity deficit may support the need for the new school.

- Continue with the plans for the addition at North Bethesda Middle School scheduled to open in August 2018 with a capacity for 1,229 students and a master-planned addition for up to 1,500 students.

- Continue with the plans to revitalize/expand Tilden Middle School (and colocation with Rock Terrace School) with a capacity for 1,200 students and a master-planned addition for up to 1,500 students.

- Convene a roundtable discussion group to include representatives from the Downcounty Consortium high schools and Walter Johnson High School to study the following:
    - Reopen the former Woodward High School to address the space deficits at Montgomery Blair, Albert Einstein, Walter Johnson, John F. Kennedy, and Northwood High Schools.
    - Explore potential approaches to address space deficits at these high schools as well as others countywide, by offering alternative programmatic, career technology education, or other voluntary educational options for high school students through use of non-traditional facilities, including commercial space.

The reopening of Woodward High School was considered during the Walter Johnson Roundtable process and it could provide relief to the enrollment issues at Walter Johnson High School. In 2016, MCPS established the Woodward High School Reopening and Nontraditional Facilities Study Work Group. This study is currently underway.

Capital Improvements Program

The MCPS Amended FY 2017–2022 Capital Improvements Program (CIP) and the Superintendent's Recommended FY 2018-2022 Capital Improvements Program (CIP) recommended the following action for the Walter Johnson Cluster:

Walter Johnson High School

Projections indicate that enrollment at Walter Johnson High School will exceed enrollment capacity by 200 seats or more by 2020. Additional student enrollment growth is also forecasted beyond the six year CIP. An FY 2015 appropriation is approved for facility planning to determine the feasibility, scope, and cost for a classroom addition. It is anticipated that by FY-19, MCPS will have a full recommendation to address space deficits at the high school level.

The Superintendent's Amended FY 2017-2022 CIP notes that "there is a strong desire to reopen the former Woodward High School to address the urgent high school space needs in this cluster. However, the reopening of Woodward High School solely for Walter Johnson High School would leave a significant amount of space available in the cluster which cannot be justified when there are limited capital funds and urgent space needs throughout this county. Therefore, I expanded my review of space needs beyond the Walter Johnson Cluster to determine if the reopening of Woodward High School could be justified for additional schools" (p.12).

The table below displays both the short-term and long-term enrollment projections for Walter Johnson High School.

Walter Johnson High School Projections, 2016–2046

	Off. Enr.	Projected Enrollment										
	2016 – 2017	**2017 – 2018**	**2018 – 2019**	**2019 – 2020**	**2020 – 2021**	**2021 – 2022**	**2022 – 2023**	**2026**	**2031**	**2036 ***	**2041**	**2046 ****
Walter Johnson High School												
Program Capacity	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335
Enrollment	**2,350**	**2,466**	**2,615**	**2,774**	**2,857**	**2,943**	**3,024**	**3,200**	**3,300**	**3,400**	**3,500**	**3,600**
Space availablee	*-15*	*-131*	*-280*	*-439*	*-522*	*-608*	*-689*	*-865*	*-965*	*-1,065*	*-1,165*	*-1,265*

***** Projections from 2036 to 2046 assume complete build-out of Kensington and White Flint Sector Plans (2010) and proposed housing not associated with these sector plans. Market conditions and the pace of redevelopment of existing properties could change the number of units built and the timing of full build-out. Most master plans never reach full build-out.

****** The projection for 2046 is considered peak enrollment. However, the projection for 2046 does not include the Rock Spring Master Plan and White Flint 2 Sector Plan as housing unit counts are not finalized at this time. The longer the forecast period, the more error is possible. It is considered equally likely for enrollment to come in below the numbers as it is for enrollment to exceed them. The Grosvenor Strathmore Amendment also is not added to the long-range forecast.

The table below shows the space needs for Walter Johnson High School and adjacent high schools in the Downcounty Consortium.

Downcounty Consortium and Walter Johnson High Schools Projections, 2016–2031

	Off. Enr.	Projected Enrollment							
	16–17	**17–18**	**18–19**	**19–20**	**20–21**	**21–22**	**22–23**	**2026**	**2031**
Montgomery Blair High School									
Program Capacity	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920
Enrollment	**2,982**	**3,093**	**3,175**	**3,258**	**3,398**	**3,479**	**3,606**	**3,700**	**3,700**
Space available	*-62*	*-172*	*-254*	*-338*	*-478*	*-558*	*-686*	*-780*	*-780*
Albert Einstein High School									
Program Capacity	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604
Enrollment	**1,752**	**1,873**	**1,925**	**2,021**	**2,111**	**2,168**	**2,244**	**2,300**	**2,300**
Space available	*-148*	*-269*	*-321*	*-417*	*-507*	*-564*	*-640*	*-696*	*-696*
Walter Johnson High School									
Program Capacity	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335	2,335
Enrollment	**2,350**	**2,466**	**2,615**	**2,774**	**2,857**	**2,943**	**3,024**	**3,200**	**3,300**
Space available	*-15*	*-131*	*-280*	*-439*	*-522*	*-608*	*-689*	*-865*	*-965*
John F. Kennedy High School									
Program Capacity	1,833	1,833	1,833	1,833	1,833	1,833	1,833	1,833	1,833
Enrollment	**1,604**	**1,746**	**1,803**	**1,875**	**1,979**	**2,058**	**2,142**	**2,200**	**2,200**
Space available	*229*	*87*	*30*	*-42*	*-146*	*-225*	*-309*	*-367*	*-367*
Northwood High School									
Program Capacity	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508
Enrollment	**1,658**	**1,740**	**1,837**	**1,878**	**1,998**	**2,035**	**2,152**	**2,200**	**2,200**
Space available	*-150*	*-232*	*-329*	*-370*	*-490*	*-527*	*-644*	*-692*	*-692*
Wheaton High School									
Program Capacity	1,722	1,722	2,239	2,239	2,239	2,239	2,239	2,239	2,239
Enrollment	**1,767**	**1,908**	**1,974**	**1,987**	**1,968**	**1,991**	**2,011**	**2,100**	**2,100**
Space available	*-45*	*-186*	*265*	*252*	*271*	*248*	*228*	*139*	*139*
Total Enrollment									
Program Capacity	11,922	11,922	12,439	12,439	12,439	12,439	12,439	12,439	12,439
Enrollment	**12,113**	**12,826**	**13,329**	**12,793**	**14,311**	**14,674**	**15,179**	**15,600**	**15,700**
Space available	*-191*	*-904*	*-890*	*-1354*	*-1872*	*-2,235*	*-2,740*	*-3,261*	*-3,361*

Middle Schools

North Bethesda Middle School and Tilden Middle School are the two middle schools in the Walter Johnson Cluster. An addition project is approved at North Bethesda Middle School in the FY2017 CIP that will increase the capacity to 1,229 students with a master-planned addition for up to 1,500 students. An expansion and colocation with Rock Terrace School is proposed for Tilden Middle School by August 2020, which will relocate to Tilden Lane from its current location on Old Georgetown Road. This project will expand Tilden Middle capacity to 1,200 students with a master-planned addition for up to 1,500 students. Below are short-term and long-term middle school projections:

Walter Johnson Cluster Middle School Projections, 2016–2046

	Off. Enr.	Projected Enrollment										
	2016 – 2017	**2017 – 2018**	**2018 – 2019**	**2019 – 2020**	**2020– 2021**	**2021 – 2022**	**2022 – 2023**	**2026**	**2031**	**2036***	**2041**	**2046 ****
North Bethesda Middle School												
Program Capacity	864	864	1,229	1,229	1,229	1,229	1,229	1,229	1,229	1,229	1,229	1,229
Enrollment	**1,102**	**1,154**	**1,171**	**1,185**	**1,194**	**1,171**	**1,162**	**1,300**	**1,300**	**1,300**	**1,400**	**1,400**
Space available	*-238*	*-290*	*58*	*44*	*35*	*58*	*67*	*-71*	*-71*	*-71*	*-171*	*-171*
Tilden Middle School												
Program Capacity	927	927	927	927	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
	911	**943**	**953**	**964**	**1,021**	**1,090**	**1,164**	**1,300**	**1,300**	**1,300**	**1,400**	**1,400**
Space available	*16*	*-16*	*-26*	*-37*	*179*	*110*	*36*	*-100*	*-100*	*-100*	*-200*	*-200*

***** Projections from 2036 to 2046 assume complete build-out of Kensington and White Flint Sector Plans (2010) and proposed housing not associated with these sector plans. Market conditions and the pace of redevelopment of existing properties could change the number of units built and the timing of full build-out. Most master plans never reach full build-out.

****** The projection for 2046 is considered peak enrollment. However, the projection for 2046 does not include the Rock Spring Master Plan and White Flint 2 Sector Plan as housing unit counts are not finalized at this time. The longer the forecast period, the more error is possible. It is considered equally likely for enrollment to come in below the numbers as it is for enrollment to exceed them.

Elementary Schools

Six elementary schools are in the Walter Johnson Cluster: Ashburton Elementary, Farmland Elementary, Garrett Park Elementary, Kensington-Parkwood Elementary, Luxmanor Elementary and Wyngate Elementary. Ashburton, Farmland, and Garrett Park Elementary Schools will have space deficits within the next six years. Kensington-Parkwood, Luxmanor, and Wyngate Elementary Schools will have space available within the same time period. The projected enrollment within the six-year CIP is indicated below:

Walter Johnson Cluster Elementary School Projections, 2016–2022

	Off. Enr.	Projected Enrollment					
	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023
Ashburton Elementary School							
Program Capacity	651	651	651	881	881	881	881
Enrollment	**905**	**955**	**969**	**965**	**978**	**998**	**979**
Space available	*-254*	*-304*	*-318*	*-84*	*-97*	*-117*	*-98*
Farmland Elementary School							
Program Capacity	714	714	714	714	714	714	714
Enrollment	**755**	**808**	**834**	**854**	**868**	**865**	**835**
Space available	*-41*	*-94*	*-120*	*-140*	*-154*	*-151*	*-121*
Garrett Park Elementary School							
Program Capacity	776	776	776	776	776	776	776
Enrollment	**829**	**855**	**882**	**888**	**894**	**882**	**894**
Space available	*-53*	*-79*	*-106*	*-112*	*-118*	*-106*	*-118*
Kensington-Parkwood Elementary School							
Program Capacity	472	472	746	746	746	746	746
Enrollment	**656**	**653**	**664**	**667**	**674**	**676**	**676**
Space available	*-184*	*-181*	*82*	*79*	*72*	*70*	*70*
Luxmanor Elementary School							
Program Capacity	411	411	411	429	745	745	745
Enrollment	**467**	**466**	**496**	**531**	**555**	**588**	**596**
Space available	*-56*	*-55*	*-85*	*-102*	*190*	*157*	*149*
Wyngate Elementary School							
Program Capacity	*777*	*777*	*777*	*777*	*777*	*777*	*777*
Enrollment	**739**	**719**	**727**	**708**	**696**	**715**	**716**
Space available	*38*	*58*	*50*	*69*	*81*	*62*	*61*
Total Elementary School							
Program Capacity	*3,801*	3,801	*4,075*	*4,323*	*4,639*	*4,639*	*4,639*
Enrollment	**4,351**	**4,456**	**4,572**	**4,613**	**4,665**	**4,724**	**4,696**
Space available	*-550*	*-655*	*-497*	*-290*	*-26*	*-85*	*-57*

The Superintendent's Amended CIP notes that enrollment projections indicate that the total cluster elementary school space deficit will be 57 seats within six years. To support a new school, the total elementary school cluster space deficit should be 450 seats or higher before MCPS can justify a new school. It is anticipated that in the long-term, at least one new elementary will be required in the cluster.

The 2010 White Flint Sector Plan recommends an elementary school at the southern portion of White Flint Mall as the preferred site. In 2012, the White Flint Mall received a Sketch Plan approval that illustrated the option for an elementary school, but litigation has delayed the submission of a Preliminary Plan to determine how the site will be acquired. The alternative site recommended in the 2010 White Flint Sector Plan is the Lutrell property, which is located at the southwestern intersection of Nicholson Lane and Woodglen Drive. No development proposals have been made with this property. The approved Preliminary Plan for the WMAL property, which is in the Cluster, will provide an elementary school site.

To address elementary school needs the near-term, MCPS will implement the following steps:

- Monitor the enrollment at the Farmland Elementary school, and if the space deficit continues to remain high, reassignments could be considered to Luxmanor Elementary School one year prior to the completion of the Luxmanor Elementary School revitalization/expansion project.
- For Ashburton Elementary School, reduce the approved addition project scheduled for completion in August 2019 from 881 seats to 770 seats, relocate the four special education Preschool Education Program (PEP) classes to Bradley Hills and Luxmanor elementary schools beginning in the 2017–2018 school year, and construct a modular classroom addition to open in August 2019 that can be relocated in the future after a new school opens.
- Utilize the Garrett Park annex located at the Garrett Park Elementary School to address space deficits.

PLANNING BOARD DRAFT

The White Flint 2 Sector Plan Planning Board Draft recommends up to 5,832 new residential dwelling units, including 106 approved units. Most of the new residential development, approximately 5,017 dwelling units, will be in the Walter Johnson Cluster and the remaining residential development, approximately 815 dwelling units will be in the Downcounty Consortium. It is assumed that 90 percent of the residential development will be multifamily mid-rise or high-rise in the Plan area, and townhouses will represent 10 percent of the residential development.

The generation rates for the Walter Johnson Cluster and the Downcounty Consortium (East) are indicated below:

Southwest Generation Rates: Walter Johnson Cluster			
Housing Type	*Elementary*	*Middle*	*High*
Townhouse	0.191	0.094	0.124
Multifamily High-rise	0.055	0.022	0.031

Downcounty Consortium Student Generation Rates: East			
Housing Type	*Elementary*	*Middle*	*High*
Townhouse	0.217	0.108	0.149
Multifamily High-rise	0.099	0.039	0.051

New students will be primarily generated at the elementary school level with additional students at the middle and high school levels. The projected student impact on the Walter Johnson Cluster and the Downcounty Consortium are indicated below and are based on the recommended staging numbers.

Walter Johnson Cluster				
Residential Type	Residential Dwelling Units	Elementary	Middle	High
Townhouses	501	95.69	47.09	62.12
Multifamily	4516	248.38	99.35	140.00
	5017	**344.07**	**146.45**	**202.12**

Downcounty Consortium Schools				
Residential Type	Residential Dwelling Units	Elementary	Middle	High
Approved Development	106	23.00	11.45	15.79
Townhouses	71	15.41	7.67	10.58
Multifamily	638	63.16	24.88	32.54
	815	**101.57**	**44.00**	**58.91**

School Sites

A traditional elementary school site is 10-12 acres in size, but that amount of land is difficult to achieve in urbanizing areas, such as the White Flint 2 Sector Plan area. Subsequently, a smaller property, at least 4 to 5 acres in size, could accommodate a future multi-level elementary school. The Planning Board Draft plan does not specify a specific privately-owned property as suitable for an elementary school. Several private properties in the Plan area, via redevelopment, could provide a public school through the incentive provisions in the Commercial Residential (CR) and Commercial Residential Town (CRT) zones.

The Board's recommendations will permit optional method projects to be evaluated as potential sites for an elementary school. The CR and CRT zones require the provision of public benefit to achieve the minimum benefit points in both zones. The conveyance of a site or floor area of a public facility, including a school, could achieve up to 70 points in the CR zone and up to 40 points in the CRT zone. Most of the large properties in the Plan area are recommended for the CR zone.

Rocking Horse Road Center

The Rocking Horse Road Center is in the Randolph Hills residential neighborhood. Owned by the Montgomery County Board of Education, this property is approximately 18.7 acres in size. This property was utilized as an elementary school until the early 1980s when it was closed, and it is now utilized as an administrative office for Montgomery County Public Schools (MCPS).

MCPS staff has indicated that this property could be utilized as a future middle or secondary school in the future. This site is not located in the Walter Johnson Cluster, but in the Downcounty Consortium. To serve the Walter Johnson Cluster, this property would require a school cluster boundary adjustment by the Board of Education.

Rocking Horse Road is recommended for a middle or high school since it has the size of a middle school. The existing MCPS administrative offices could relocate to a traditional office location to reduce the public expenditure to acquire land for a public school. Given the near-term and long-term need to acquire new school sites for the Walter Johnson Cluster, Rocking Horse Road Center should be included as a future school site. Further, a new school would return a neighborhood school to the Randolph Hills neighborhood.

Closed schools in the Walter Johnson Cluster

There are several former school sites that are in the Walter Johnson Cluster. These sites are either owned by Montgomery County or the Board of Education. In some instances, these properties are leased to private schools or host other public agencies. Publicly owned school sites in the Walter Johnson Cluster are listed below:

School Name	Current Owner/Tenant	Acres	Square feet	Built Year	Closed Year
Alta Vista Elementary School-5615 Beech Avenue	Montgomery County/Bethesda Country Day School	3.53	26, 369	1935	1976
Ayrlawn Elementary School-5650 Oakmont Avenue	Montgomery County/Bethesda YMCA	3.08	27,735	1961	1982
Grosvenor Center-5701 Grosvenor Lane	Board of Education/Holding School	10.21	36,770	1955	1980
Kensington Elementary School-10400 Detrick Avenue	Montgomery County/Housing Opportunities Office	4.54	45,206	1946	1982
Montrose Elementary School-12301 Academy Way	Board of Education/ Reginald S. Lourie Center-Kennedy Krieger Institute	7.50	38,310	1967	1982

Charles E. Jewish Day School (Upper School)

The Charles E. Jewish Day School (Upper School), which is located at 11710 Hunters Lane in the Randolph Hills neighborhood, is a former middle school that is owned by Montgomery County. This property is 8.07 acre in size and the existing building comprises approximately 110,000 square feet.

The property is leased from the County by the Jewish Day School (JDS). The current lease runs through June 30, 2025 with three, five-year renewal options and an option to purchase. Like Rocking Horse Road Center, this property is located adjacent to the existing Walter Johnson Cluster and is in the Downcounty Consortium.

APPENDIX 11: PLANNING HISTORY

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The 1964 GENERAL PLAN

The 1964 *General Plan On Wedges and Corridors* provides the foundation and overall framework for all prior master and functional plans. It was amended in 1993, via the General Plan Refinement. The *General Plan* envisions the District of Columbia as the core of a radial pattern of regional urban development. Four radial corridors of dense development, each served by a rapid transit line, are to stretch outward from the District of Columbia into Montgomery County and Prince George's County. The mainline of the corridor is Interstate 270/MD 355 and the western leg of Metrorail's Red Line.

The White Flint 2 Sector Plan area is within Planning Area 30, North Bethesda Garrett Park. This Appendix provides summaries from prior comprehensive plans, including the 1992 *North Bethesda/Garrett Park Master Plan* and the 2009 *Twinbrook Sector Plan.* Highlights from older plans from the 1970s are also addressed to provide additional historical context to the White Flint 2 Sector Plan area. The recently approved City of Rockville's *Rockville's Pike Plan* (2016) is also included in this appendix since it is adjacent to this Plan area.

1970 NORTH BETHESDA GARRETT PARK MASTER PLAN

The 1970 *North Bethesda Garrett Park Master Plan* examined areas in the North Bethesda Planning Area. The Plan identified nine important areas or districts in the Plan area, including two areas that are within White Flint 2. Future three mass transit stations, Twinbrook, White Flint (then Nicholson Lane), and Grosvenor are also identified in the 1970 Plan.

Some of the specific recommendations in the 1970 Plan are the following:

- The area fronting on Montrose Road, from Jefferson Avenue to I-70s, south of the city limits of Rockville, is recommended for "single-family development at a density of 3 dwellings per acre. Churches and other institutional uses also are proposed for this area. Churches and other institutional uses also are proposed for this area. A school site is shown on realigned Montrose Road, just east of I-70S interchange" (p.10).

- The area "north of Montrose Road is recommended for low-density, multi-family development with town houses recommended for the area adjacent to the Jewish Community Center. The area south of Montrose Road and bordering the alignment of the Rockville Freeway is proposed for commercial-office-type uses" (p.8).

- Industrial uses are identified as the dominant uses for properties west of Parklawn Drive and east of the CSX tracks. This area was in the Light Industrial (I-1) zone. Along Rockville Pike and Executive Boulevard, commercial properties were in the General Commercial (C-2) and Industrial Park (I-3) zones, respectively. Institutional properties along East Jefferson were in the Rural Residential (R-R) zone.

Other highlights from the 1970 Master Plan are the following:
Rockville Pike

- The Plan recommended widening Rockville Pike to a six-lane highway with a 120 feet right-of-way. Service lanes were recommended where intensive "commercial, residential, or industrial development fronts on the roadway. This will require an additional with restricted access requiring an addition 30 feet of right-of-way" (p.13).

Street Network

- Several new streets were recommended in the Master Plan. Within White Flint 2, the Plan recommended the extension of "Jefferson Street from Montrose Road to Executive Boulevard" (p.14).

Public Facilities

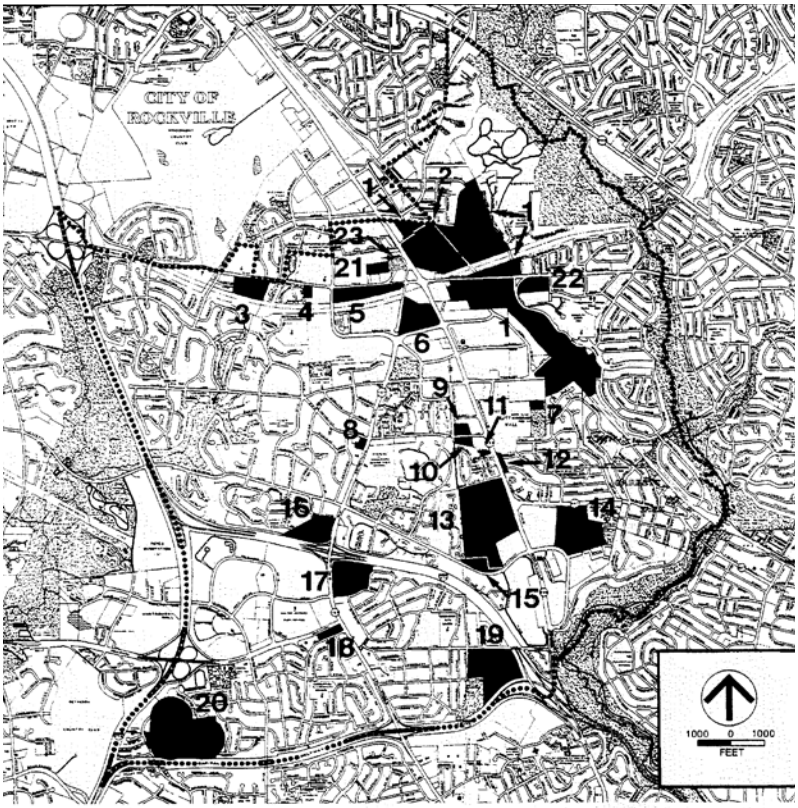
- Several public facilities were recommended in the Plan, including two elementary schools and new parks, a library in the vicinity of Twinbrook Parkway, and a new fire station near Old Georgetown Road, Democracy Boulevard and I-270.

1978 North Bethesda Sector Plan

The 1978 *North Bethesda Sector Plan* updated the 1970 *North Bethesda Master Plan*. It identified the three proposed transit stations for the Metrorail Red Line in North Bethesda as Twinbrook, Nicholson Lane, and Grosvenor, and proposed land use and zoning for the impact areas associated with these locations. In the case of White Flint, the transit station impact area was identified as Nicholson Lane Station and encompassed about 200 acres, of which 63 percent were vacant. The Nicholson Lane Station was later renamed White Flint. The Plan promoted new mixed uses, including office, retail, and residential development within a 10-year horizon.

1992 NORTH BETHESDA/GARRETT PARK MASTER PLAN

The Approved and Adopted 1992 *North Bethesda Garrett Park Master Plan* made specific recommendations for several properties within White Flint 2. The Wilgus; Montrose Crossing; Tri-Rock; Chang and light industrial properties east of CSX tracks were addressed in the 1992 Plan. The Plan either retained the prior zone or recommended a less intensive zone for these and other properties outside of transit station areas.



(Outside Sector Plan Areas and Rock Spring Park)

1.	I-1 Zone Outside Sector Plans	12.	WMATA
2.	Montrose Crossing	13.	Georgetown Preparatory School
3.	Armstrong and Mervis	14.	Holy Cross
4.	Maryland National Bank	15.	Corby
5.	Wilgus	16.	Davis-Lux Lane
6.	Mid Pike Plaza	17.	Aubinoe
7.	White Flint Parking Lot	18.	Davis-Democracy
8.	Poindexter	19.	American Foresters/NRF
9.	Edson Lane North	20.	WMAL, Inc.
10.	Edson Lane South	21.	Tri-Rock
11.	Hillery Way	22.	Loehmann's Plaza
		23.	Chang

Key or redevelopable parcels in the 1992 Master Plan

Property Recommendations

Wilgus Property

The Wilgus property is located south of Montrose Road, north of the Montrose Parkway and east of East Jefferson Street. Residential townhouses, a gas station, and undeveloped parcels are on this property. The Plan envisioned a mixture of residential, convenience commercial and office uses for this property. It recommended a base zone of R-20 (multi-family residential medium density) on eight acres and Limited Commercial (C-4) on two acres that includes the gas station and the Planned Development (PD-44) zone for 10 acres. The Plan also recommended an alternative zoning approach-Low-Density Office (C-5) zone with an optional Office Building, moderate intensity (OM) zone at 1 FAR for 3.5 acres of this property.

Montrose Crossing Shopping Center

Montrose Crossing, approximately 40 acres, is located at the northeast intersection of Rockville Pike (MD 355) and Randolph Road. The Plan recommended the use of the Residential Mixed Use, Regional Center-Commercial Base (RMX-3C) to encourage mixed-use development at a maximum commercial at 0.5 FAR with 25 percent limited for office development and residential development at a maximum of 40 units per acre. A new MARC station along with the extensions of Nebel Street and Chapman Avenue were also recommended for this property. The Mid-Town North Bethesda multi-family residential development and a two-level Target store reflect new development since the 1992 Master Plan adoption.

Light Industrial

East of the CSX tracks and west of Parklawn Drive are several industrial zoned properties, including small businesses, such as automotive repair and warehouses. The 1992 Plan recommended the use of the Low Intensity, Light Industrial (I-4) zone instead of the prior Light Industrial (I-1) zone to limit the amount of office development in the Plan area. The Master Plan notes that the "gradual intrusion of general office development and traditional retail uses now provides the area with an eclectic mix of uses, but is steadily diminishing the amount of

industrial space. This Plan recognizes the light industrial areas vital for maintaining high tech incubator firms and general business services for the down-County population" (p.72).

Tri-Rock

The Tri-Rock, identified as a key or redevelopable property (No.21) in the 1992 Plan, is located north of Montrose Road and west of Rockville Pike (MD 355). Georgetown Park Office Condominiums is to the east and the Jewish Community Center (JCC) is to the immediate west. Now known as the Morgan Apartments, access to this 5-acre property is from either Rockville Pike or Montrose Road. The Plan recommended the R-20 (multi-family, medium density) zone as the base zone with PD-35 as an optional floating zone. The Morgan Apartments has been developed with 132 multi-family residential units.

Chang Property

The Chang property, identified as a key vacant or redevelopable property (No.23), comprises two vacant properties that are north of Hubbard Drive. The Plan recommended the C-1 zone to promote coherent development and 30-foot setback from residentially zoned property to the immediate east. These properties remain vacant.

Loehmann's Plaza

Loehmann's Plaza is a traditional strip commercial shopping center that is located at the southeastern intersection of Parklawn Drive and Randolph Road. This property is a key or redevelopable property (No. 22) and the Plan recommended the rezoning of the property to the C-4 (Limited Commercial) zone. The Master Plan also recommended that "any future development on this site be subject to rigorous landscaping and screen conditions during the site plan approval process, particularly along Putnam Road. The existing planted buffer strip on the parcel should be retained along the west side of Putnam Road, and supplemented with additional screening, particularly at the west end of Macon Road" (p.86).

Community Facilities

The 1992 Master Plan made no specific recommendations for community facilities within the White Flint 2 Plan area. However, the Plan does note that the "former Rocking Horse Road School has been retained by the Board of Education and is now used by the Board of Education's staff for administrative offices and for alternative education use. The former Randolph Junior High School is leased to the Greater Washington Jewish Foundation and operated as a community center and a private school" (p.239).

Parks and Open Spaces

The 1992 Master Plan recommended an urban amenity open space at Montrose Crossing. No other property within the White Flint 2 Sector Plan area was recommended for a public park or an urban amenity space.

Transportation

A key objective of the 1992 Master Plan transportation recommendations is to "provide a balance transportation system for the recommended land use plan. This plan defines balance between transportation and land use as a system where no roads or intersections are beyond their total capacity and the average area-wide level of service is within the bounds for the recommended transportation category" (p.149).

Transportation System

Key transportation system recommendations including the following:

- Major expansion to the public transportation system in North Bethesda is needed to provide alternative to driving and encourage transit use. Additional service will be needed to meet expected demand on some sections of the Metrorail system because of already high peak-hour ridership levels.
- Future plans should include running every northbound train on the Red Line all the way to Shady Grove. Since approximately every other train now turns back at Grosvenor, this longer route would have the effect of increasing the frequency of transit service and providing many more seats for North Bethesda passengers.
- Provide increased local bus services both as feeders to the Metrorail stations and to connect the stations with employment locations. Many routes in North Bethesda now operate at 30 minutes headways, which are not frequent enough to attract ridership. This recommendation includes expansion and enhancement to the current bus services operating as shuttles from the White Flint station. The additional services can be successful, if supported by Transportation Demand Management.

Roadway Network

Specific to the White Flint 2 Sector Plan area, the 1992 Plan recommended that "Chapman Avenue Extended would be a non-divided Business Street District Street, with two travel lanes and two parking lanes. Nebel Street Extended would require four travel lanes at all times because of its higher emphasis on longer trips (p.156). Major Roadway Classifications are:

- Rockville Pike is classified as a major highway (M-4) as a 6-lane divided with a minimum right-of-way of 134 feet.
- Randolph Road, between Parklawn Drive to Rock Creek, is classified as an arterial (A-69) with a minimum right-of-way of 100 feet and four travel lanes.
- Parklawn Drive, between Nebel Street to Randolph Road, is classified as an arterial (A-69) with a minimum right-of-way of 80 feet and four travel lanes.

Montrose Parkway

Construct the Montrose Parkway from Montrose Road to Veirs Mill Road and maintain the remainder of the right-of-way to the west side of the connection to Montrose Road for a possible future transitway. This Master Plan envisions a divided four-lane parkway with a wide landscaped median in a portion of the former Rockville Facility right-of-way, from east of Tildenwood Lane to Veirs Mill Road (p.154).

The Master Plan also states that "this road is essential to future capacity for east and west vehicular movement across the planning area. The two existing roads, Montrose/Randolph Roads and Twinbrook Parkway, are currently congested and have high accident rates. Future growth in the region, even with little growth in North Bethesda, makes the provision of additional capacity essential. The parkway would add capacity, replacing capacity removed by the deletion of the Aspen Hill Road Extension (p.155).

Transportation Demand Management

Create one or more Transportation System Management Districts around, at the least, the Metrorail station and Rock Spring Park. These TMDs would have mandatory participation by all existing and future employers, similar to the current Silver Spring TMD. The TMDs should build on, and not supplant, existing traffic mitigation programs in the area (p.153).

2009 TWINBROOK SECTOR PLAN

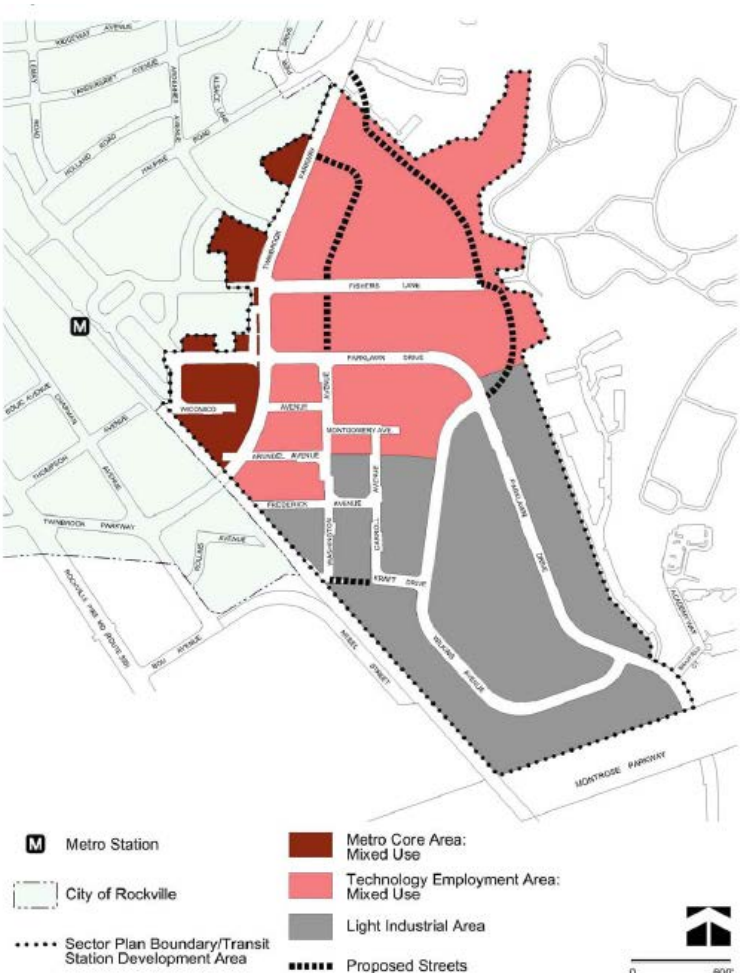
Background

The Approved and Adopted 2009 *Twinbrook Sector Plan* envisions an area surrounding the Twinbrook Metro Station area that supports employment, residential, retail and technology uses in an urban environment. The Sector Plan notes that the "Plan's recommendations seek to create Twinbrook as a distinct and varied community. Redevelopment in Twinbrook has the opportunity to create a technology node that builds on existing government agencies and private businesses, make use of adjacent light industrial sites for incubator activities, develop a community profile with housing and retail near the Metro station, and establish park connections" (p.1).

The key Twinbrook Sector Plan recommendations are:

Land Use and Zoning

- Establish and apply the Transit Mixed Use (TMX-2) zone to facilitate mixed-use development in the Metro Core Area and the Technology Employment Area.
- Amend the I-4 Zone in Transit Station Development Areas to facilitate an urban environment, with standards appropriate to a transit-accessible area of light industrial uses.



Proposed Twinbrook Land Use Plan

Urban Design

- Establish design standards for Fishers Lane and Parklawn Drive to redevelop them as active streets, connected to Metro, linked by streetscaped pedestrian/vehicle connections, and lined with commercial, retail and some residential uses.
- Create public open spaces at the eastern end of Fishers Lane and along Parklawn Drive that contribute to a network of green spaces and pedestrian routes.

- Ensure that new development and redevelopment contribute to improving both the natural environment and community spaces.

Transportation

- Create a network of local streets that offers alternative vehicle routes.
- Create and enhance pedestrian and bike routes that connect to parks and the Metro station.

Park and Recreation Facilities

- Improve connections to public and private parks and open spaces.
- Secure new urban parks east of Twinbrook Parkway, along Parklawn Drive and at the eastern end of Fishers Lane.
- Establish pedestrian and bicycle routes through the Plan area's northeast corner connecting to the M-NCPPC park facilities, Rock Creek Park, and Veirs Mill Road, as well as a connection south to the planned Montrose Parkway shared-use path.

Environmental Resources

- Integrate urban design, parks, land use and transportation recommendations with environmental improvements to create an urban form that promotes the function of healthy natural processes.
- Encourage the highest feasible use of green building and site design.
- Reduce automobile dependence by encouraging increased pedestrian activity and transit accessibility.

Historic Resources

- Recommend the addition of the Higgins Cemetery to the *Master Plan for Historic Preservation* via a future amendment to the *Master Plan for Historic Preservation* and incorporate its open space with the area's system of open space and pedestrian routes (p.3)

THE CITY OF ROCKVILLE'S ROCKVILLE PIKE PLAN

Overview

The City of Rockville's 2016 *Rockville Pike Plan* establishes a new vision for how the City's portion of the Rockville Pike corridor and adjoining areas can be transformed from an architecturally non-distinctive suburban retail strip into an attractive and vibrant neighborhood for shopping, living, and working. It strives to conform to the principles of smart growth and makes the best use of decades of significant public investment in transportation infrastructure along the corridor. Regional projections indicate that there will be approximately 11,800 residents and 13,900 jobs in the Pan area by 2040,[36] compared with about 3,530 residents and 9,050 jobs in 2015. Project increases would account for about 40 percent of Rockville's population growth during that time frame, and approximately one-third of the employment growth. These projections signal the need for a vision and a comprehensive plan for the corridor (p.ES-1).

Key Land Use Policies

Rockville's Pike Plan recommends the following land use policies for the Plan area:

1. Seek to ensure a comfortable and functional relationship between public infrastructure and the private built environment. The plan, and the associated development regulations, addresses the relationship between building façades and public infrastructure, the form and mass of buildings in relation to one another, the public spaces formed by the disposition of buildings, and the scale and types of streets and blocks.

2. Require buildings to be adjacent to sidewalks. In most locations, buildings will be constructed adjacent to continuous sidewalks to frame the public realm, structure the environment for pedestrians, and position pedestrians where land uses are located. The distance between building faces across the Pike will be reduced from that which was endorsed in the 1989 Pike Plan.

3. Regulate building height by location. Maximum building heights serve walkability and economic development objectives by permitting sufficient mixed-use density to create vitality while maintaining a comfortable environment. Different height standards are appropriate for different parts of the Plan Area and depend on the specific characteristics of their locations.

4. Create smaller blocks. Reducing the size of existing blocks as part of the redevelopment process creates a more finely developed street network, increases connectivity and movement choices for all travel modes, and provides increased street frontage for land uses.

5. Provide wide and pleasant sidewalks. Sidewalks are located immediately next to land uses to encourage inter-site movement (except, perhaps, in the middle and northern parts of the east side of the Pike where sites are very narrow and the full boulevard concept will be difficult to achieve). Sidewalks are wide and continuous, and feature amenities, such as street trees, benches, bike racks, and places for outdoor restaurant seating.

6. Enhance the pedestrian and bicycle environment. This plan places emphasis on the treatment of building frontages at strategic intersections to create enlarged pedestrian environments with art, fountains and other place-making features. It encourages opportunities for safe pedestrian and bicycle crossings of the Pike and the CSX/Metro tracks.

7. Ensure a mix of uses to encourage activity in the daytime and evening, reduce dependency on automobiles, provide a balance of residences and employment opportunities, and create a full-service transit-oriented neighbor-

[36] *City of Rockville, Department of Community Planning and Development Services, as part of Metropolitan Washington Council of Governments Round 9.0 projections, 2015.*

hood around the Twinbrook Metro Station.

8. Ensure that new neighborhoods will accommodate residents of all incomes. Rockville's existing housing programs, while very beneficial, are insufficient to accommodate the full range of households that the Plan Area should include.

9. Ensure adequacy of public facilities, including transportation, school capacity, water infrastructure, sewer infrastructure, parks and access to police and fire protection, as critical to maintaining Rockville's excellent quality of life and a necessary foundation for achieving smart growth.

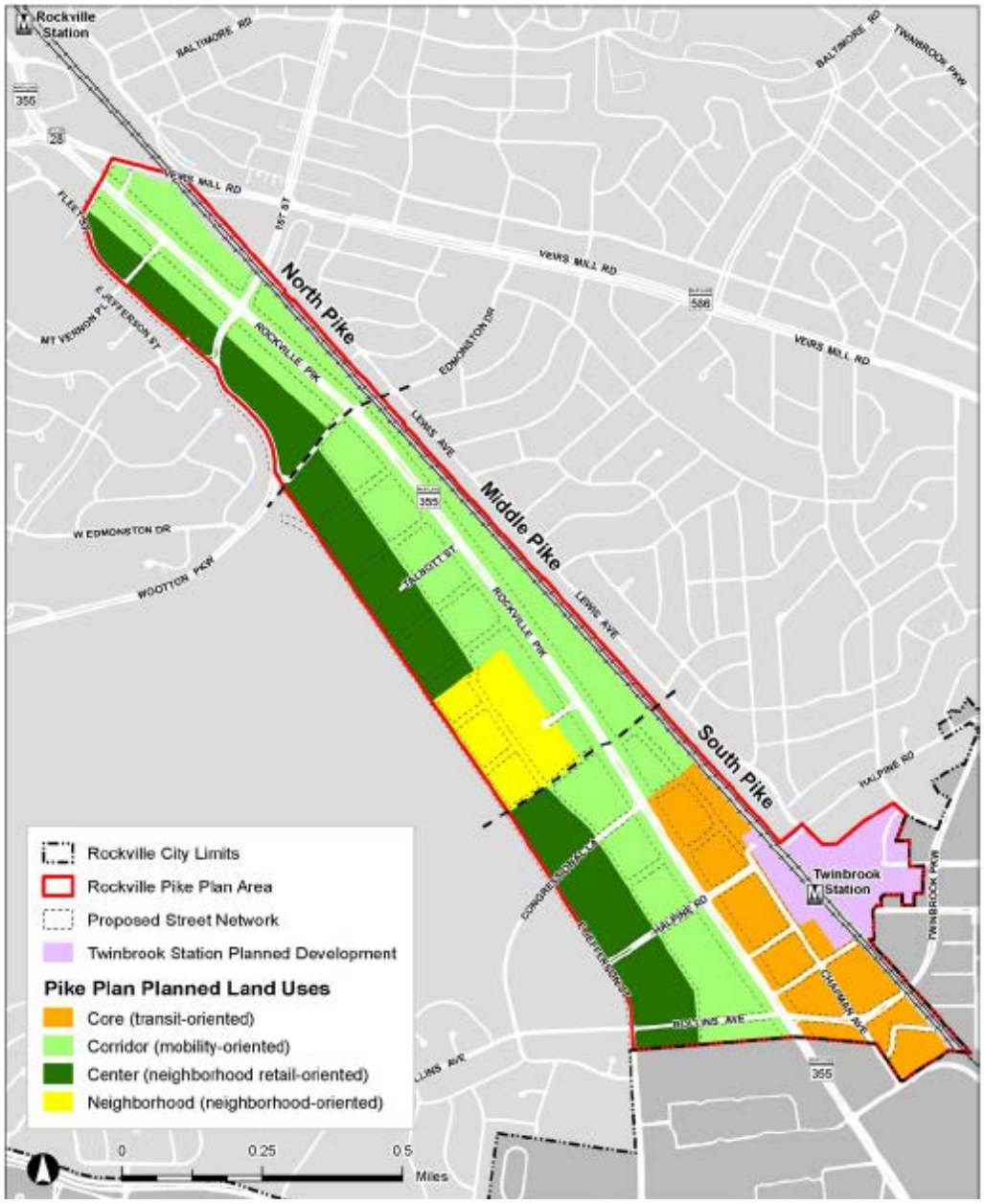
10. Encourage enduring architecture that has visual interest. The plan does not mandate particular architectural styles, but rather encourages massing and building forms that are visually interesting and contribute to energy on the street.

11. Provide parks. There are no parks in the Plan Area now. The need exists and this need will grow as the number of people living and working in the Plan Area increases.

12. Require the creation of public use space through redevelopment. Growth and redevelopment can and should result in better public spaces, including community centers and other indoor facilities, for existing and new residents.

13. Promote development that improves environmental conditions. Currently, there are very few mature trees, very little pervious surface area, inadequate on-site stormwater management, no parks and scarce open space. The redevelopment that this plan calls for is subject to more stringent afforestation, stormwater, open space and building code requirements than those in place decades ago when the Pike was developed. Redevelopment along the Pike, done well, can create a healthier and more environmentally robust community.

14. Strategically locate and right-size parking. This plan locates most parking in structures behind or under buildings, thereby minimizing inactive zones and reducing the visually unappealing effect of large surface lots in front of buildings. The plan also encourages less parking over time, as the area becomes more pedestrian-friendly (City of Rockville Plan, pages 6-7).



Recommended land uses

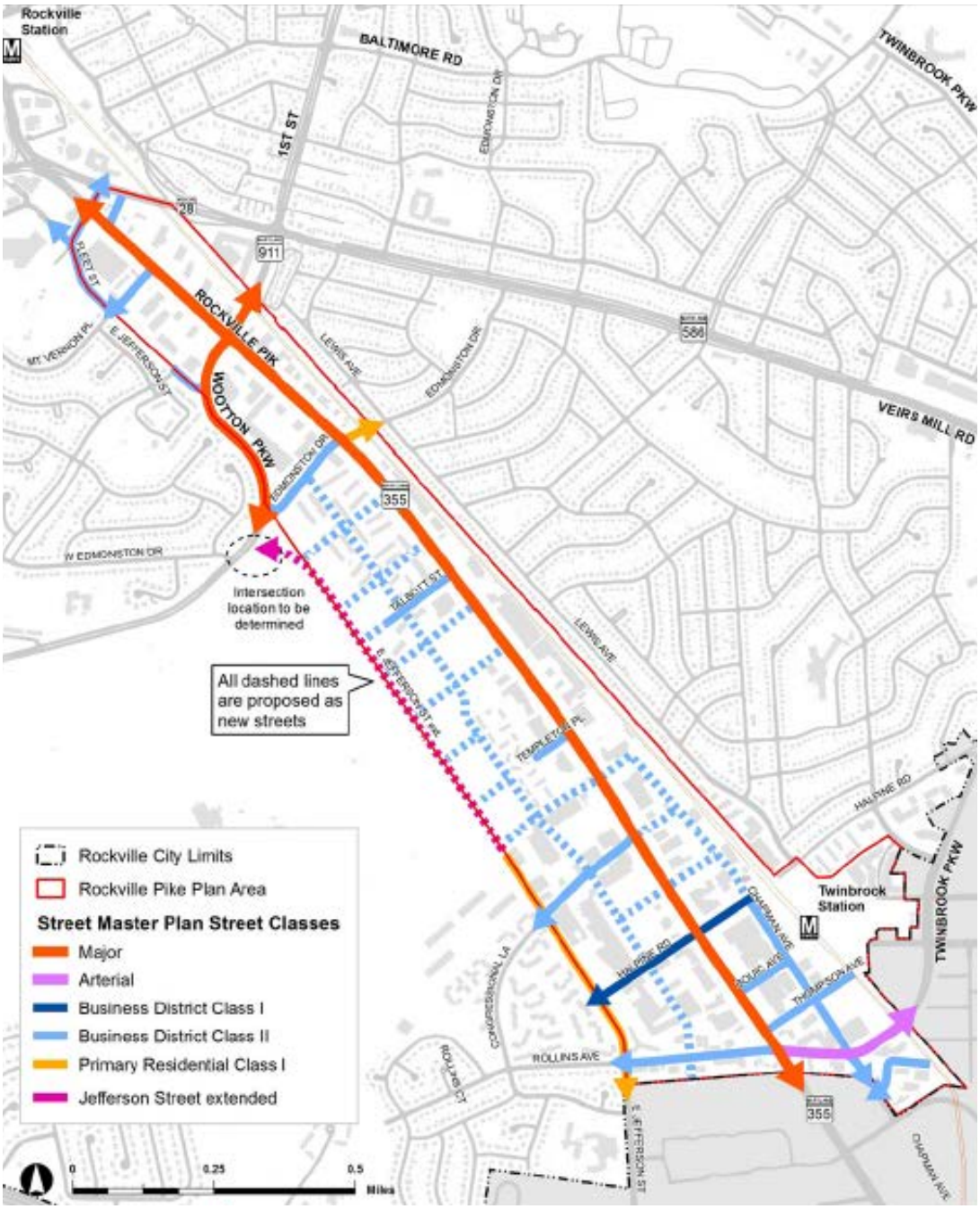
TRANSPORTATION POLICIES

The principal transportation policies of the *Rockville's Pike Plan* are to:

- Redesign and reconstruct Rockville Pike as a multi-way boulevard.
- Expand the street network.
- Adhere to the city's Complete Streets Policy.
- Adhere to the principles of Vision Zero.
- Optimize acccess to and use of public transit.

Street Network

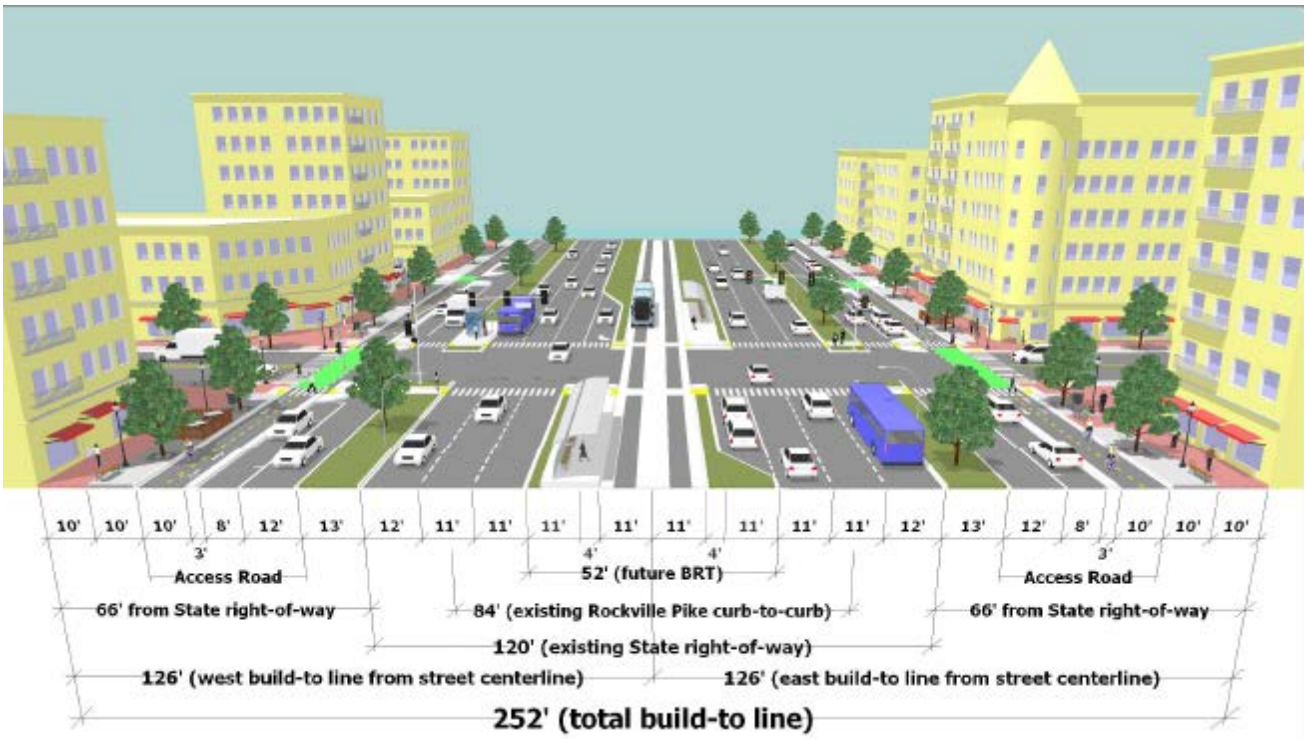
The proposed overall street network for the Rockville Pike Plan is illustrated below:



Recommended Street Network

Multi-Way Boulevard

A main feature of Rockville's Pike Plan is creating a multi-way boulevard for approximately 2 miles of Rockville Pike. As proposed, the central portion of the Boulevard will be dedicated for Bus Rapid Transit (BRT) and access roads, which are adjacent to the main travel lanes, will accommodate bikeways and parking. The central main lanes of Rockville Pike and parallel side access roads together form the envisioned multi-way boulevard with a distance between building faces of approximately 252 feet. Since the 1970s, the city has established building setbacks where the build-to-line was 135 feet from the center of Rockville Pike, for a total of 270 feet from building face to building face.[37]



Multi-Way Boulevard for Rockville Pike

[37] A build-to-line is a setback line that sets the location of building construction on the lot and is established to create a uniform building façade along the street.