

The Great Seneca Plan

CONNECTING LIFE AND SCIENCE

Existing Conditions Report



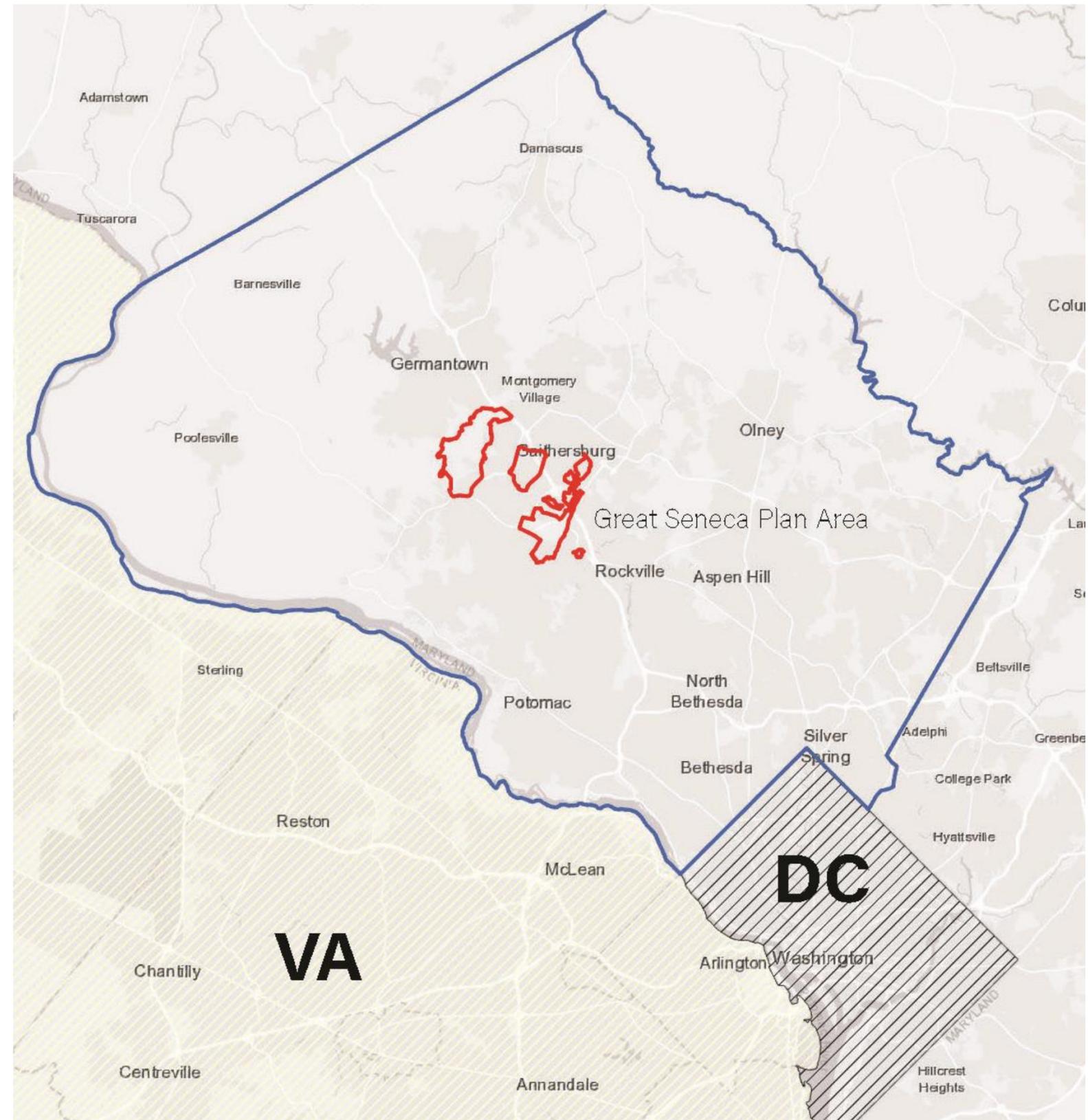
SHADY GROVE
LIFE SCIENCES CENTER

Introduction



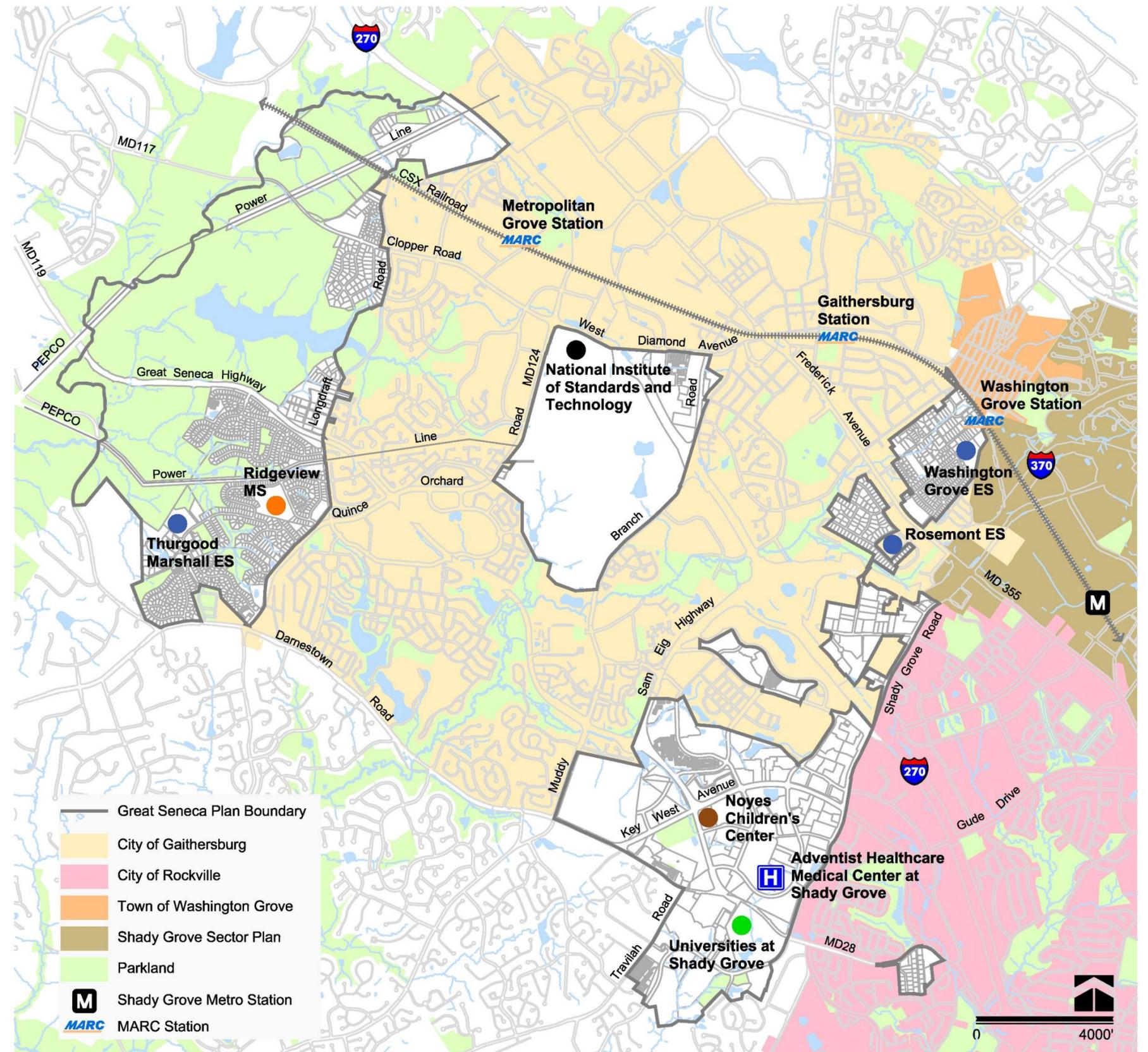
Where exactly is the Great Seneca Plan?

- In the heart of the I-270 Corridor
- Borders the Intercounty Connector (ICC) and MD 355
- Adjacent to the MARC Brunswick Line, including Metropolitan Grove, Gaithersburg, and Washington Grove Stations



What are the Plan Boundaries?

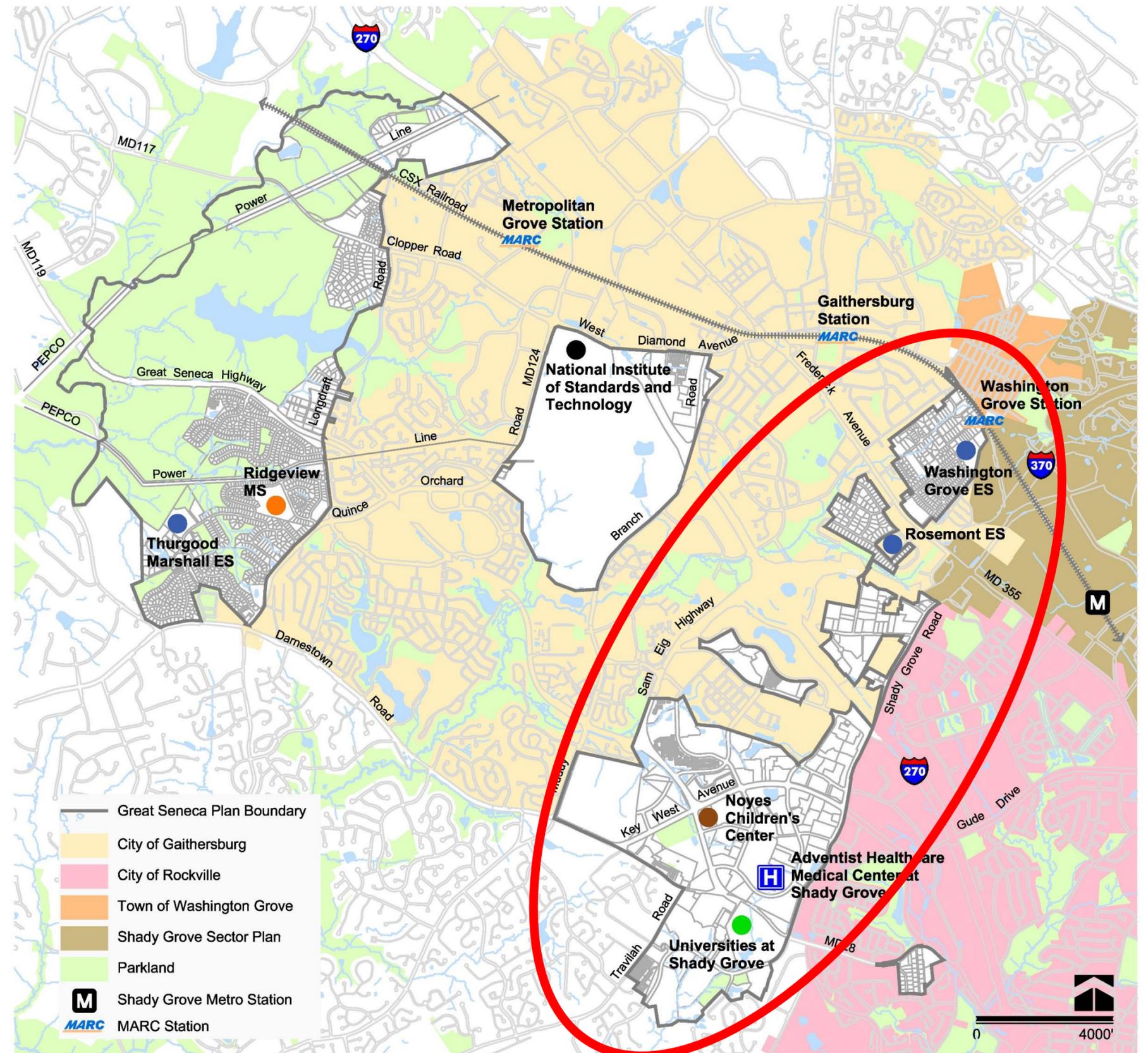
- Maintain 2010 Plan boundaries:
 - Life Sciences Center
 - Western Quince Orchard
 - National Institute of Standards and Technology
 - Rosemont and Walnut Hill
- Bordered by:
 - City of Gaithersburg
 - City of Rockville
 - Washington Grove



Plan Area – Focus Area

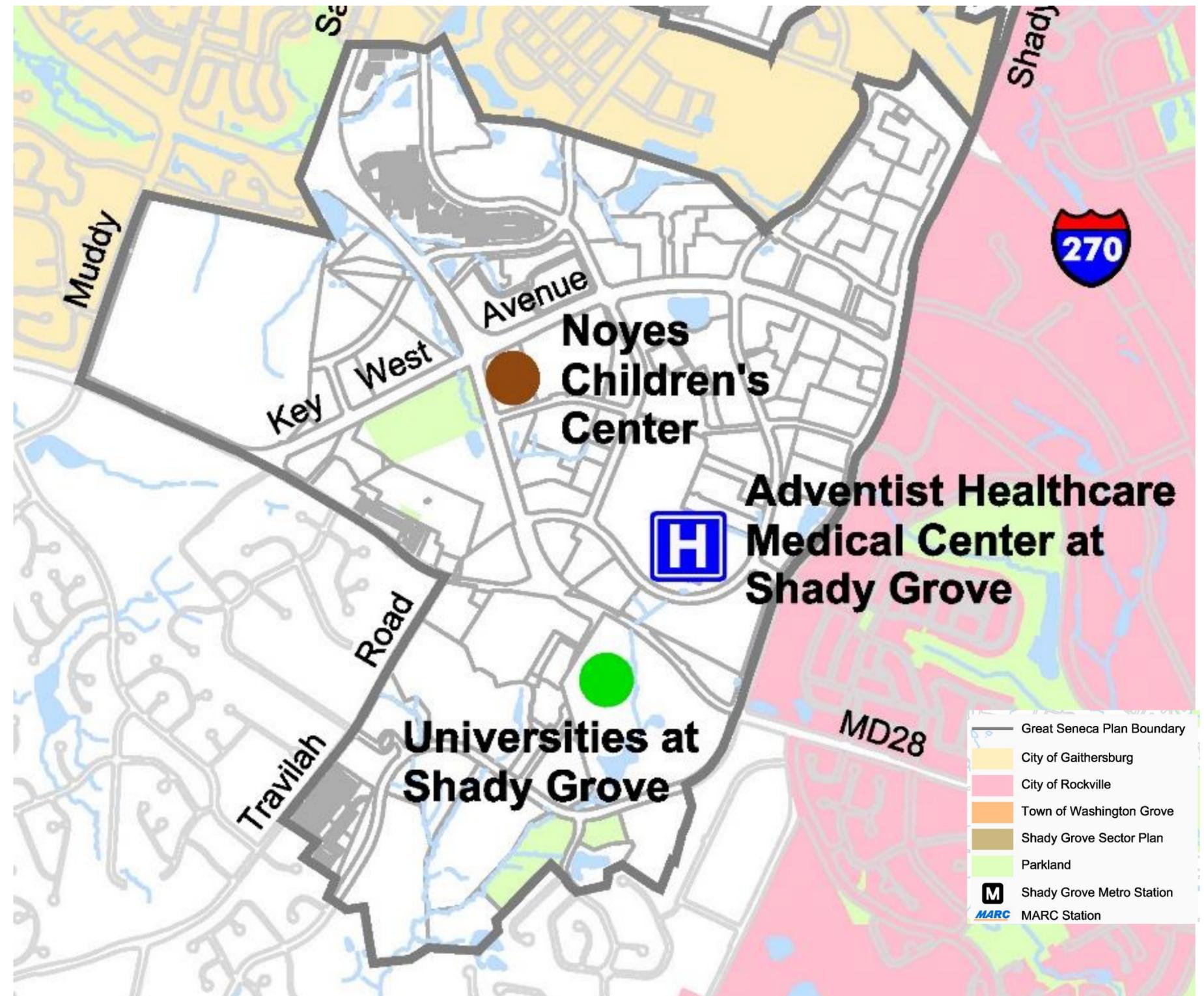
Focus area is where we've experienced the most change:

- Most new approved or built development
- Adjacent to important commercial centers (RIO Lakefront and Downtown Crown)
- Contains roadways with planned major infrastructure
- Neighborhoods potentially affected by municipal plans



Life Sciences Center – focus within the focus area

- Focus of 2010 Plan and only area subject to staging
- Life sciences and medical employment and research hub
- Site of most new housing construction
- Departs the most from the 2010 Plan Vision



Area Identity

- The area, containing so many important institutions, employers, and homes, does not have its own identity
- Long time workers, residents and property owners struggle to describe what this area is (Shady Grove? Rockville? Gaithersburg? Life Sciences Center?)
- The lack of place creates barriers to supporting a cohesive identity and marketing the area to businesses and residents alike

Area Identity

What do you call this area?

Great
Seneca
Science
Corridor

Life
Sciences
Center

Belward
Farm

Gaithersburg
West

ROCKVILLE

Shady
Grove

Shady
Grove Life
Sciences
Center

Great
Seneca

Gaithersburg

Land Use and Zoning

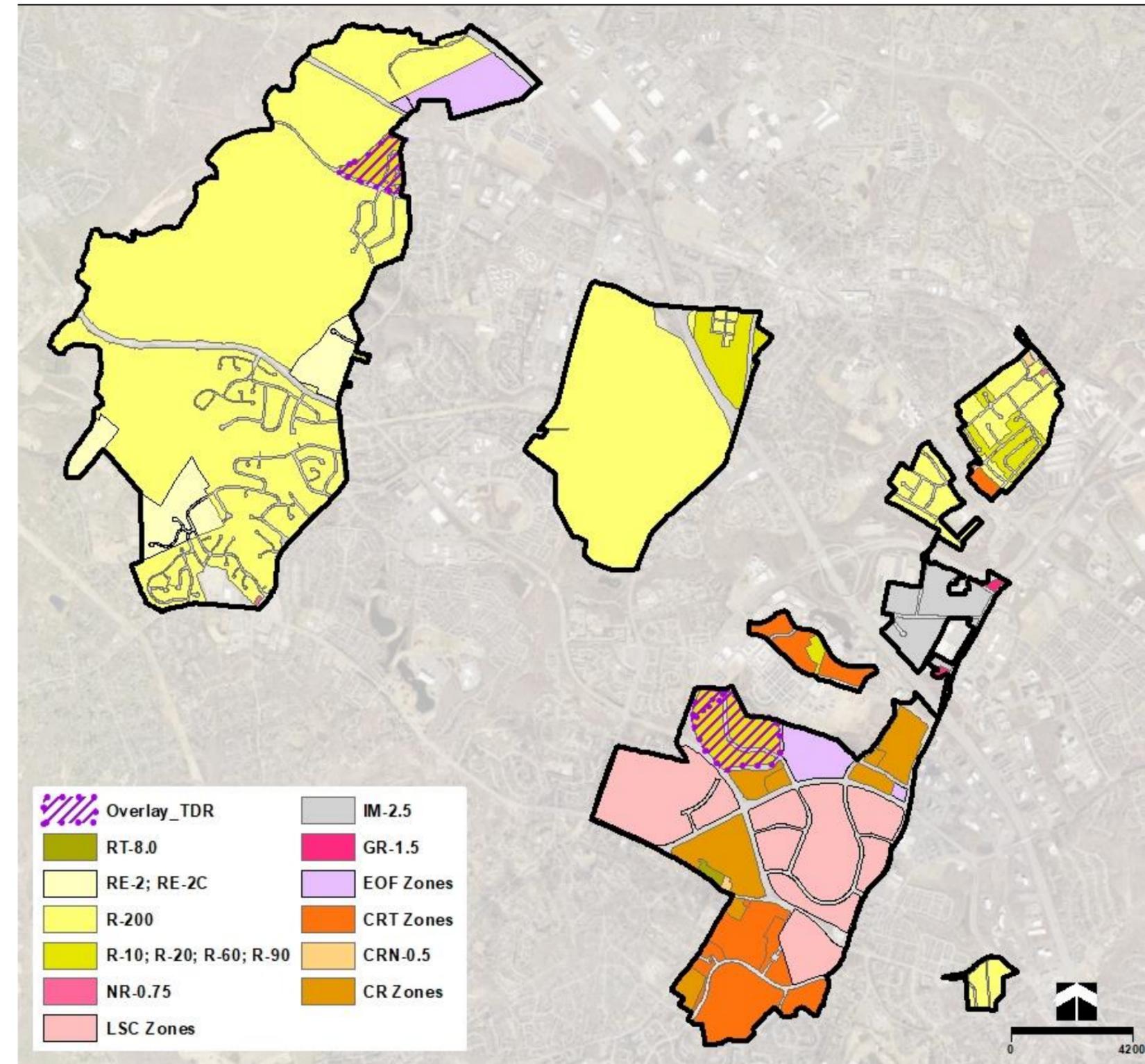


Zoning

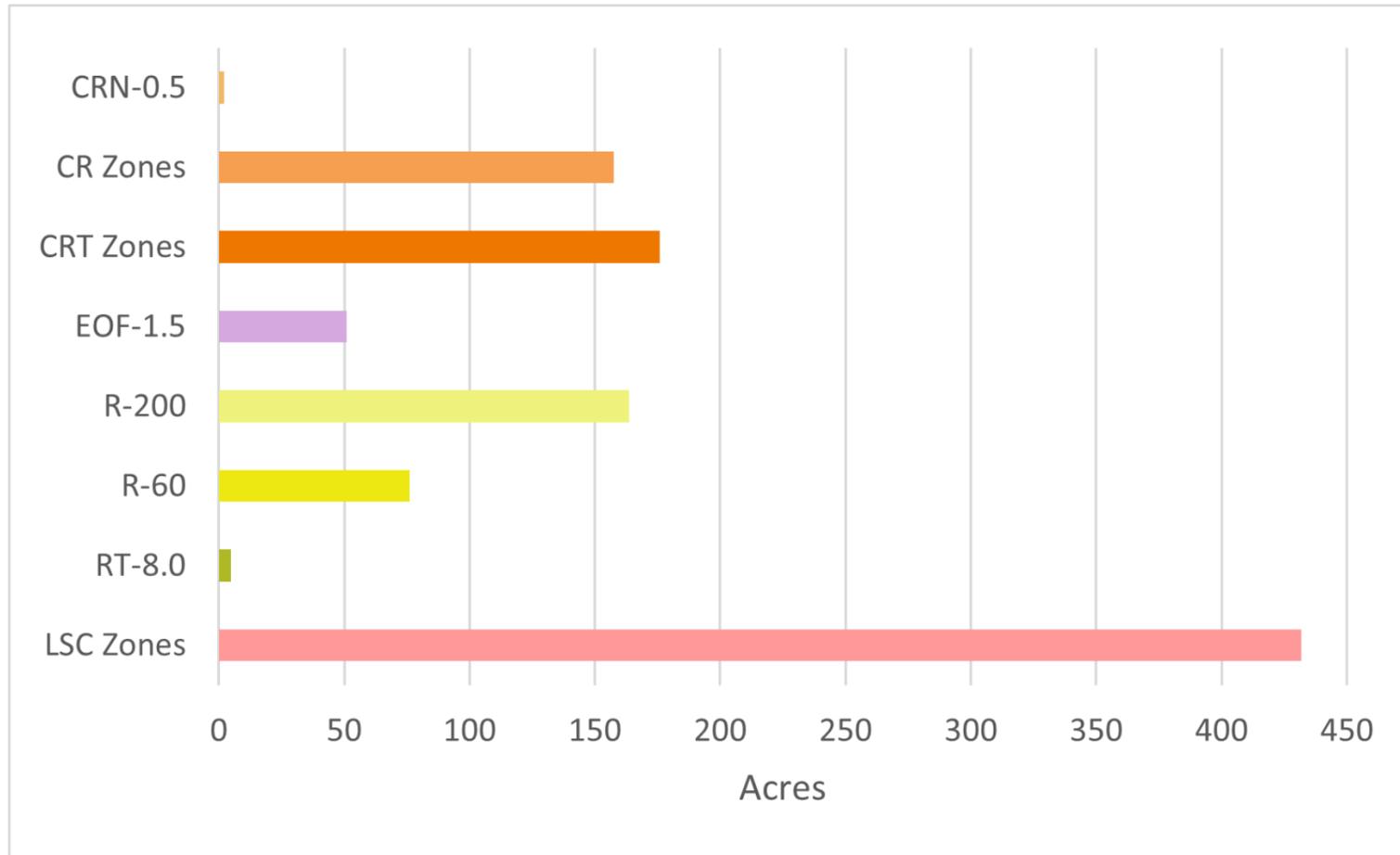
Zoning outside the Life Sciences Center is largely residential.

Exceptions:

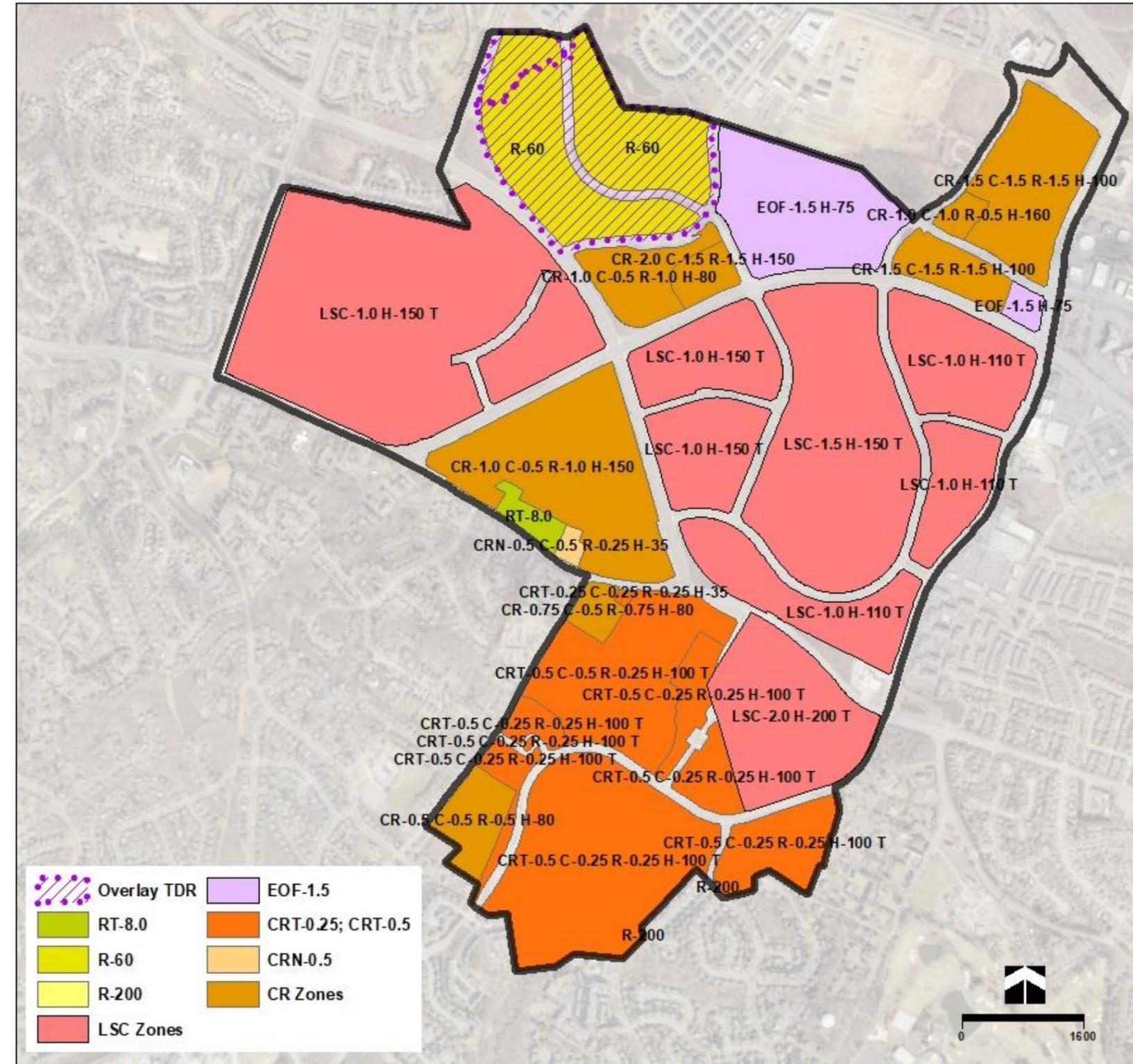
- Executive office zoning in the Northeast along Watkins Mill Road and Washington National Pike (I-270).
- Industrial Manufacturing in the Northwest at the Washingtonian Industrial Park along Shady Grove Road.
- Commercial Residential zoning at the Washingtonian Residential that lies between Downtown Crown and the RIO Lakefront.



Zoning: Life Sciences Center



The primary purpose of the Life Sciences Center (LSC) Zone is to promote research, academic, and clinical facilities that advance the life sciences, health care services, and applied technologies. Residential uses are limited uses in these zones.



Staging

- Staging requirements for the Life Sciences Center were established by the 2010 Master Plan.
- Staging
 - Address timing of development and provision of key public facilities and amenities.
 - Seek to ensure delivery of infrastructure and services to support development and minimize negative impacts.
 - If staging requirements do not match up with the reality of an area, staging can have unintended consequences.

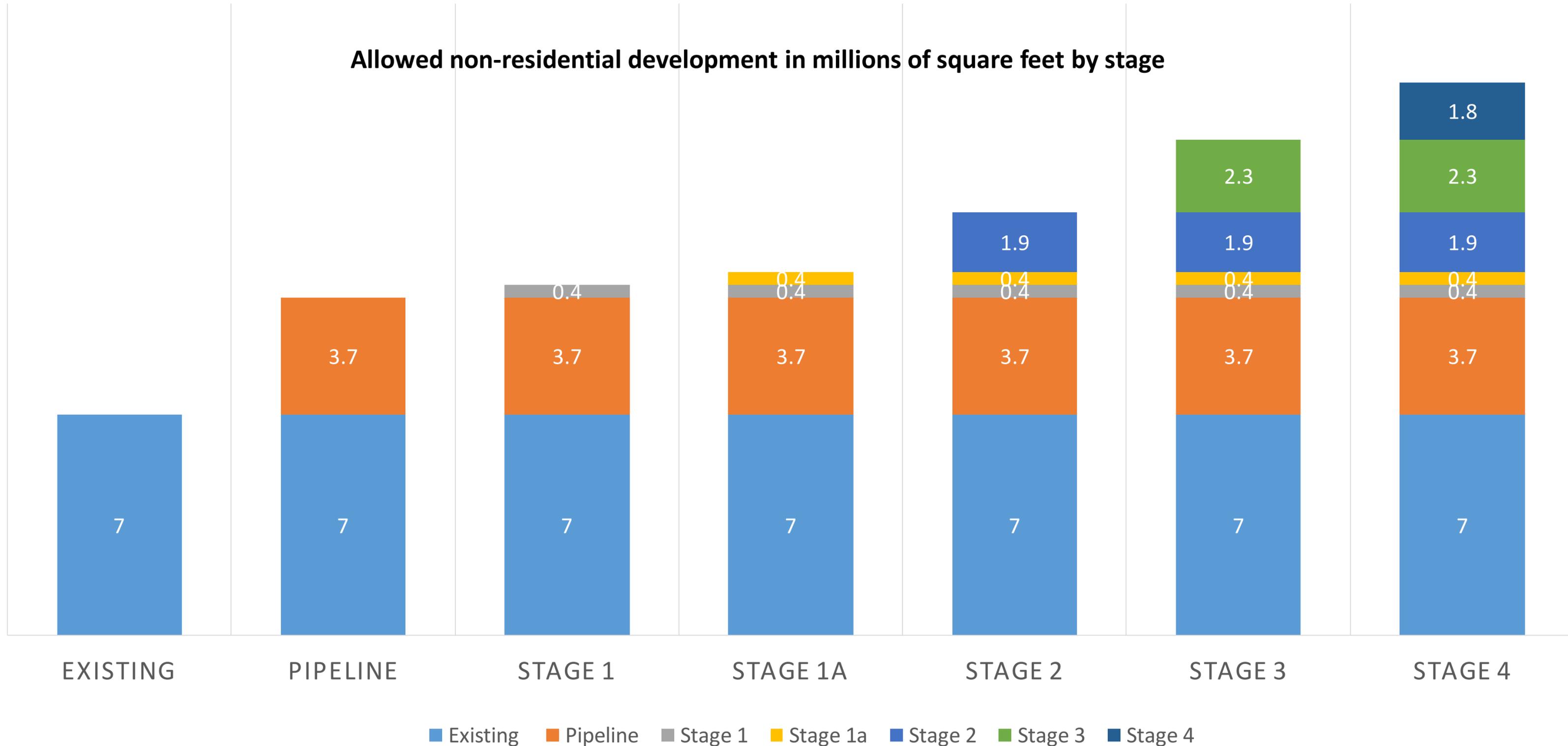


Existing Staging Requirements

<p>Stage 1</p> <p>400,000 Square Feet Commercial Development</p>	<ul style="list-style-type: none"> • Approve and adopt the Sectional Map Amendment. • Fund and begin operating the Greater Shady Grove Transportation Management District (TMD). • Designate the LSC Central, West, Belward, and North Districts as a Road Code Urban Area. • Include the entirety of the Rickman property on Travilah Road in the R&D Policy Area. • Document the baseline of non-driver mode share through monitoring and traffic counts. • Develop a monitoring program for the Master Plan within 12 months of adopting the Sectional Map Amendment.
<p>Stage 1 a</p> <p>400,000 Square Feet Commercial Development</p>	<ul style="list-style-type: none"> • Current Stage • Established by the 2021 Amendment • No requirements
<p>Stage 2</p> <p>1,900,000 Square Feet Commercial Development</p>	<ul style="list-style-type: none"> • Fully fund construction of the CCT from the Shady Grove Metro Station to Metropolitan Grove within the first six years of the County’s CIP or the State’s CTP. • Fully fund relocation of the Public Safety Training Academy from LSC West to a new site. • Fund the LSC Loop trail in the County’s six-year CIP and/or through developer contributions as part of plan approvals. • Attain an 18 percent non-auto driver mode share (NADMS).
<p>Stage 3</p> <p>2,300,000 Square Feet Commercial Development</p>	<ul style="list-style-type: none"> • CCT is under construction from Shady Grove Metro Station to Metropolitan Grove and at least 50 percent of the construction funds have been spent. • Program for completion within six years any needed master-planned transportation improvement identified by the most recent biennial monitoring review to be needed at this time. • Construct and open at least one public street (such as Medical Center Drive extended) across LSC West and Belward to provide a direct connection across major highways and between the districts, contributing to place-making and connectivity. • Attain a 23 percent NADMS.
<p>Stage 4</p> <p>1,800,000 Square Feet Commercial Development</p>	<ul style="list-style-type: none"> • Begin operating the CCT from the Shady Grove Metro Station to Clarksburg. • Program for completion within six years any needed master-planned transportation improvement identified by the most recent biennial monitoring review to be needed at this time. • Attain a 28 percent NADMS.

Staging of Non-Residential Development

Allowed non-residential development in millions of square feet by stage



Current Development

Existing Development (as of December 2022) is development on the ground and built. There are approximately 8.3 million square feet of existing development. Since the adoption of the 2010 Plan, approximately 1.3 million square feet of additional development has been built, including projects in the 2010 pipeline as well as new projects.

Pipeline Development (as of December 2022) is development that has been approved by the Planning Board but has not yet been built. This includes unbuilt projects that were approved before the 2010 Plan as well as new pipeline approved after 2010. In the Life Sciences Center, approximately 2.5 million square feet of development remain in the pipeline.

Zoning Development Capacity is the maximum potential development, according to zoning, that can be approved and built on a site. Applications for development propose a certain amount of square feet of development—up to the maximum zoning capacity for the site through the development review process. However, due to other market factors, many projects do not propose to construct the maximum allowable square feet of development, including projects in the development pipeline. Some projects that do propose the maximum still never reach their full buildout potential. The maximum non-residential zoning development capacity for the Life Sciences Center is 17.5 million square feet. Of the total zoning development capacity, 6.3 million square feet of capacity has not yet been allocated but will be available through subsequent stages.

Land Use, Zoning and Staging

Non-Residential Development in the Life Sciences Center - December 2022	
Existing Development	8,266,850 Square Feet
Pipeline - Approved and Unbuilt	2,474,084 Square Feet
Commercial to Residential Development	387,751 Square Feet
Development Available for New Projects Under Current Stage	400,000 Square Feet
Unallocated Development Capacity (subject to staging)	6,371,315 Square Feet
Zoning Development Capacity	17,500,000 Square Feet

***Commercial to Residential Conversion:** The 2010 Plan permitted pipeline projects to convert approved non-residential development to residential development. As long as the conversion did not add any vehicle trips, it would not be counted against staging.

Housing in the Life Sciences Center

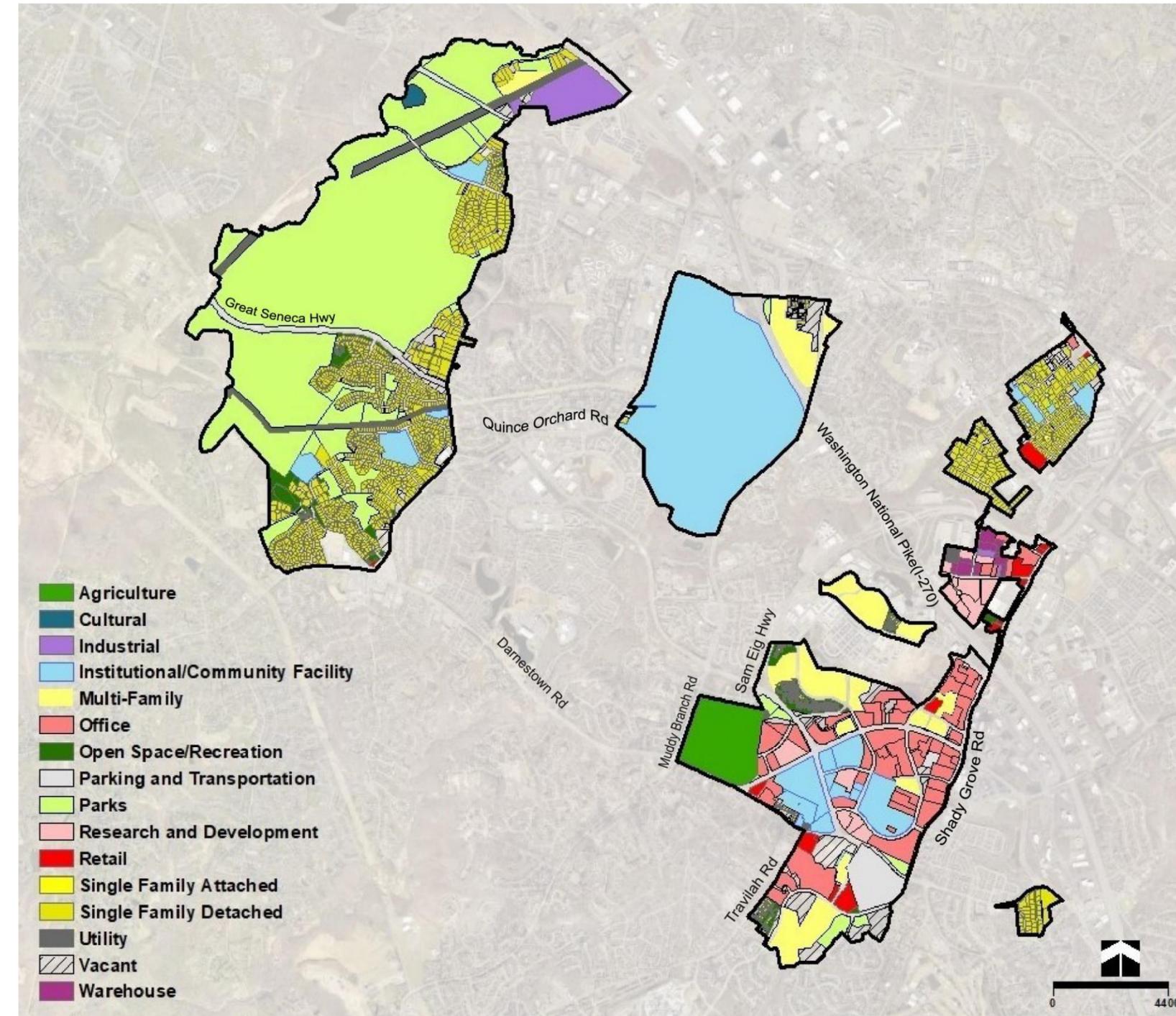
Housing Development in the Life Sciences Center	
Existing housing	3,573 dwelling units
Allocated but unbuilt capacity (pipeline)	880 dwelling units
Unallocated Residential Capacity	4,547 dwelling units
Total Residential Zoning Capacity	9,000 dwelling units

Land Use

The western portion of the plan area includes Seneca Creek State Park (approximately 1,842 acres), as well as single family detached homes in the Quince Orchard neighborhood.

The center area includes the National Institute of Standards and Technology and, across I-270, multi-family homes.

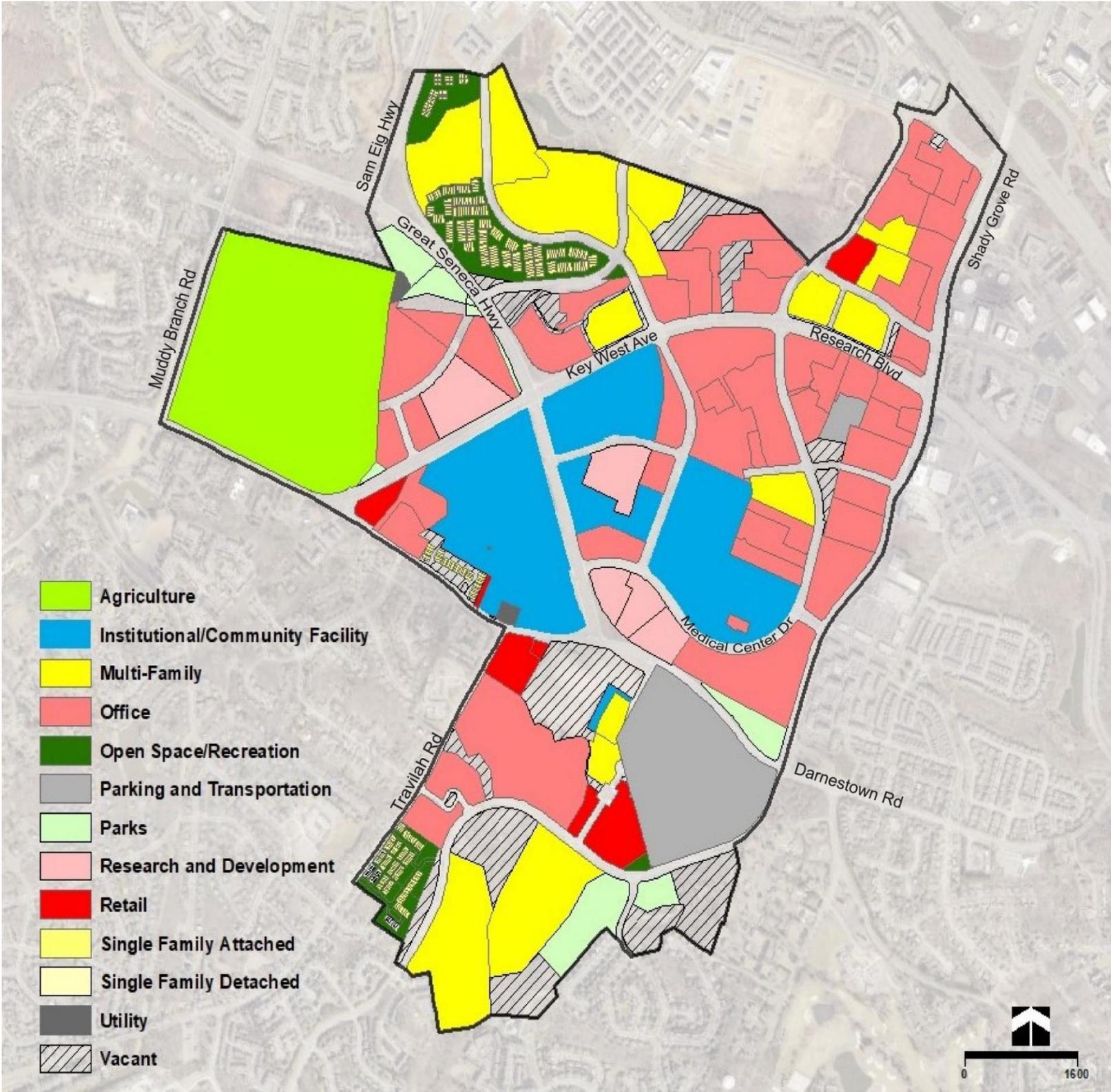
The focus area includes a mix of single family detached homes in the Walnut Hill, Oakmont and Rosemont neighborhoods.



Land Use: Life Sciences Center

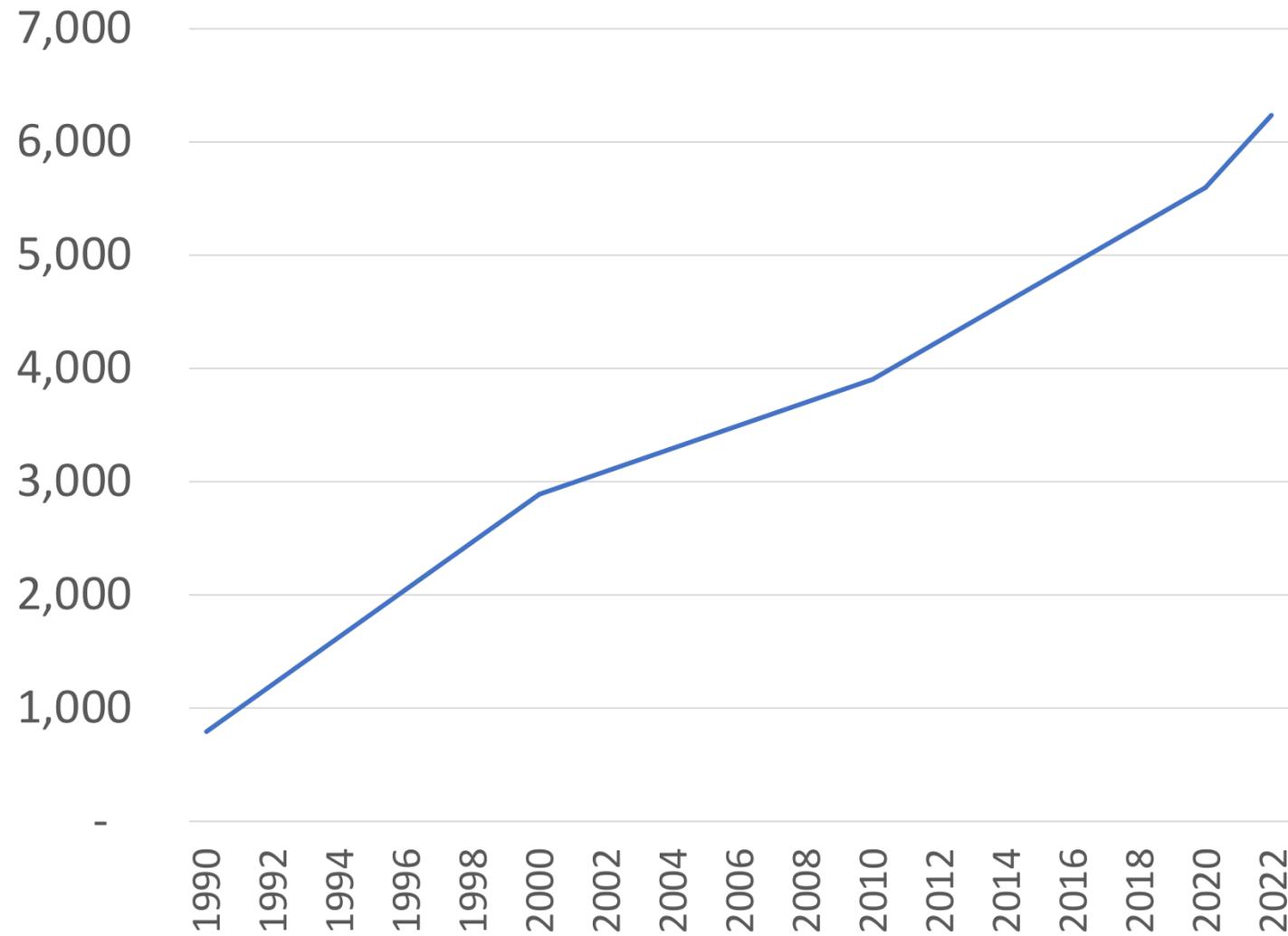
The Life Sciences Center is dominated by institutional, and research and development uses, including the Universities at Shady Grove and the Adventist Healthcare Shady Grove Medical Center.

However, it includes over 3,500 dwelling units as well as nearly 215,000 square feet of retail.

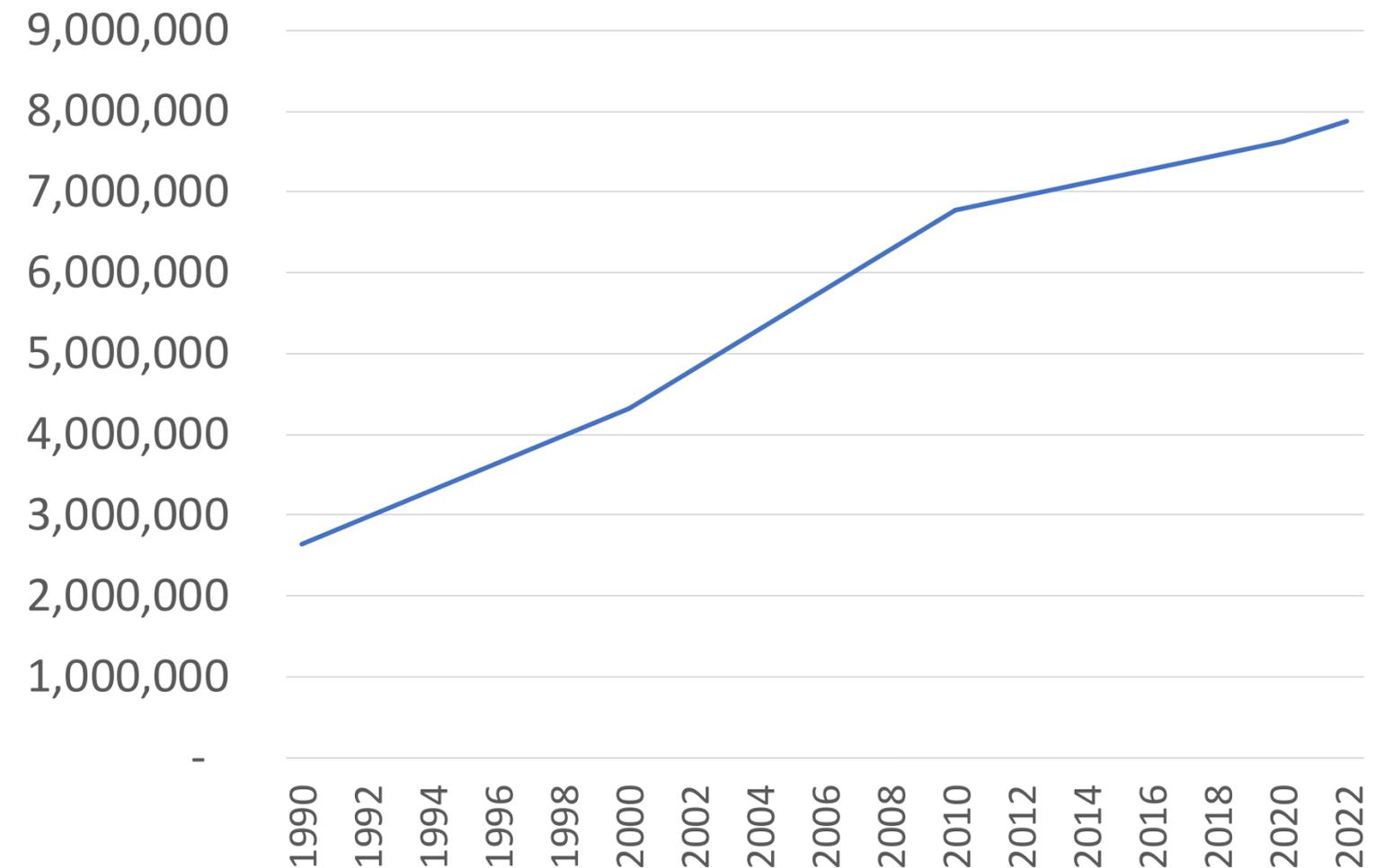


Development Approvals Over Time

Dwelling Units Approved over Time



Non-Residential Square Footage over Time



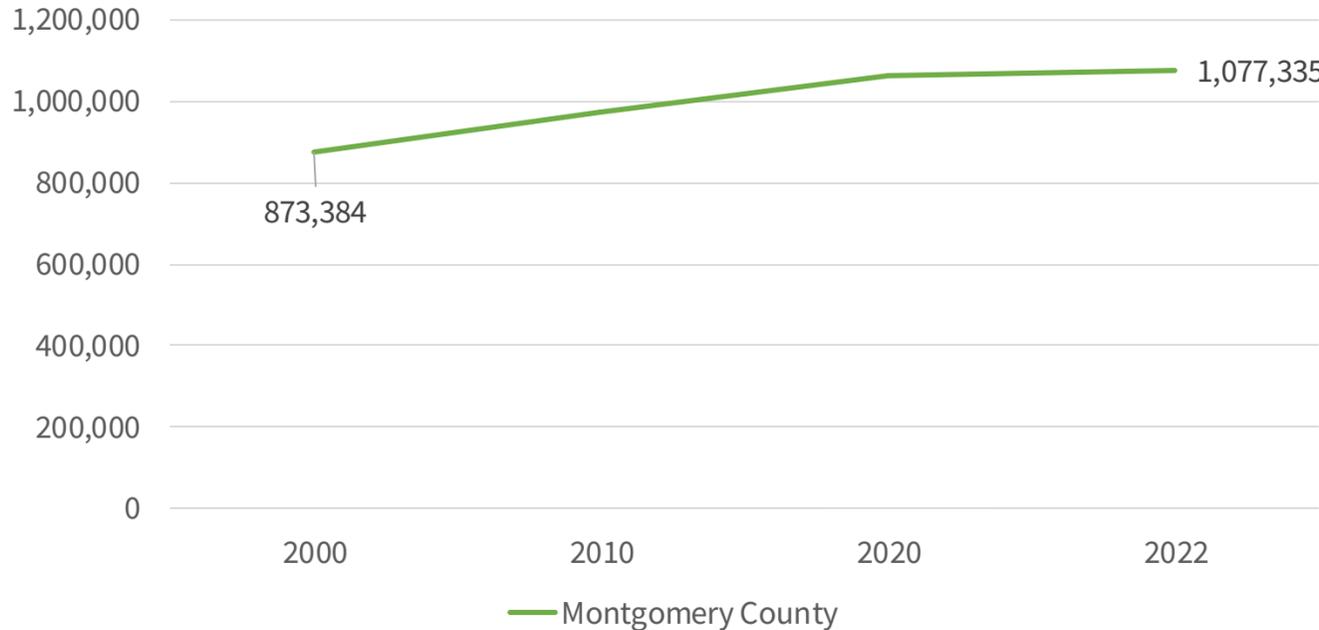
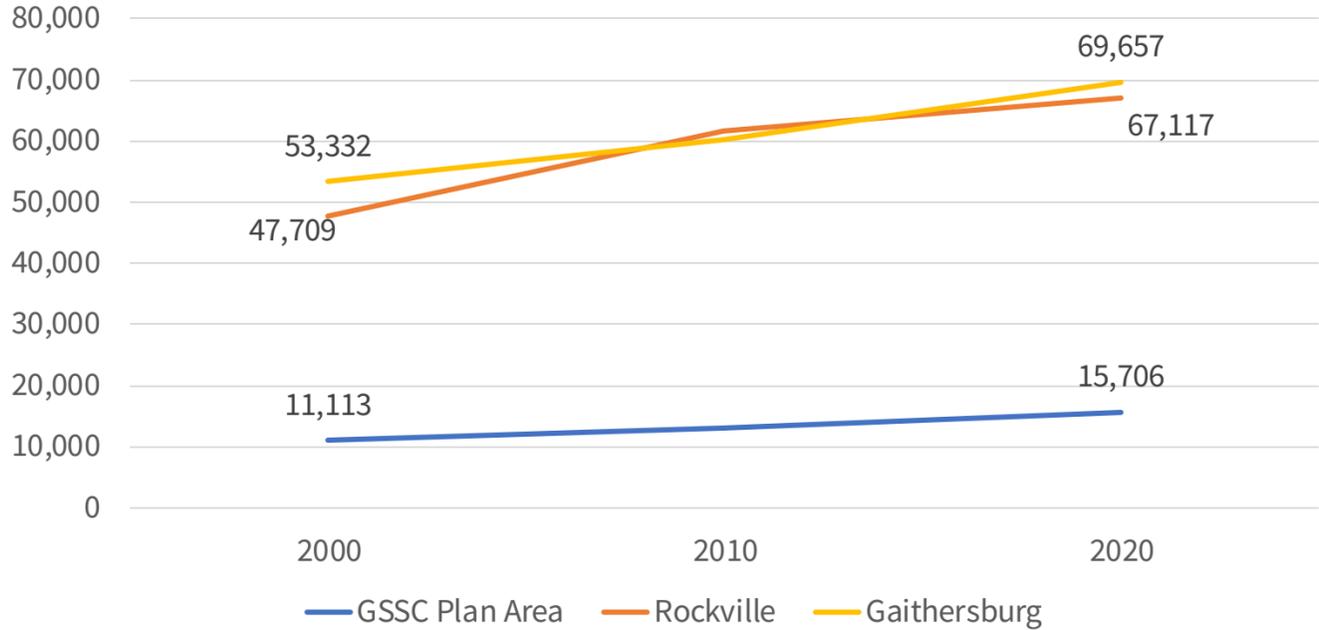
Not all approvals have been built, some projects remain in the pipeline.

Demographics



Plan Area Population

- Home to nearly 16,000 people and 6,900 households
- The Plan Area population has grown by 20% since 2010, and over 40% since 2000
 - The Plan Area outpaced population growth in Montgomery County since 2000 (23%)

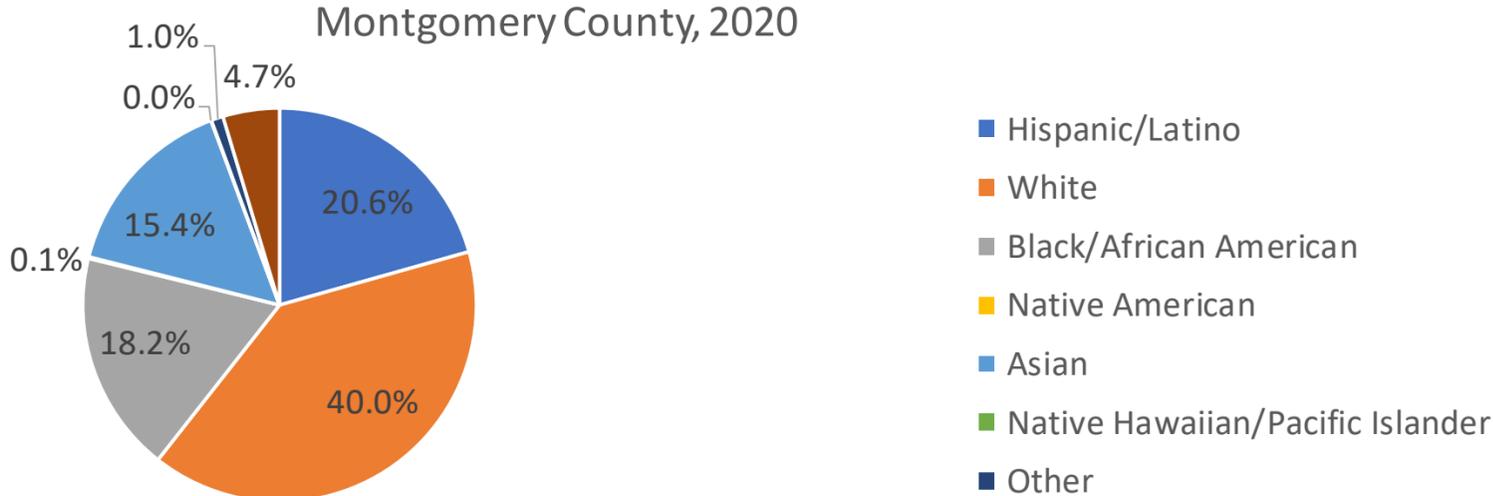
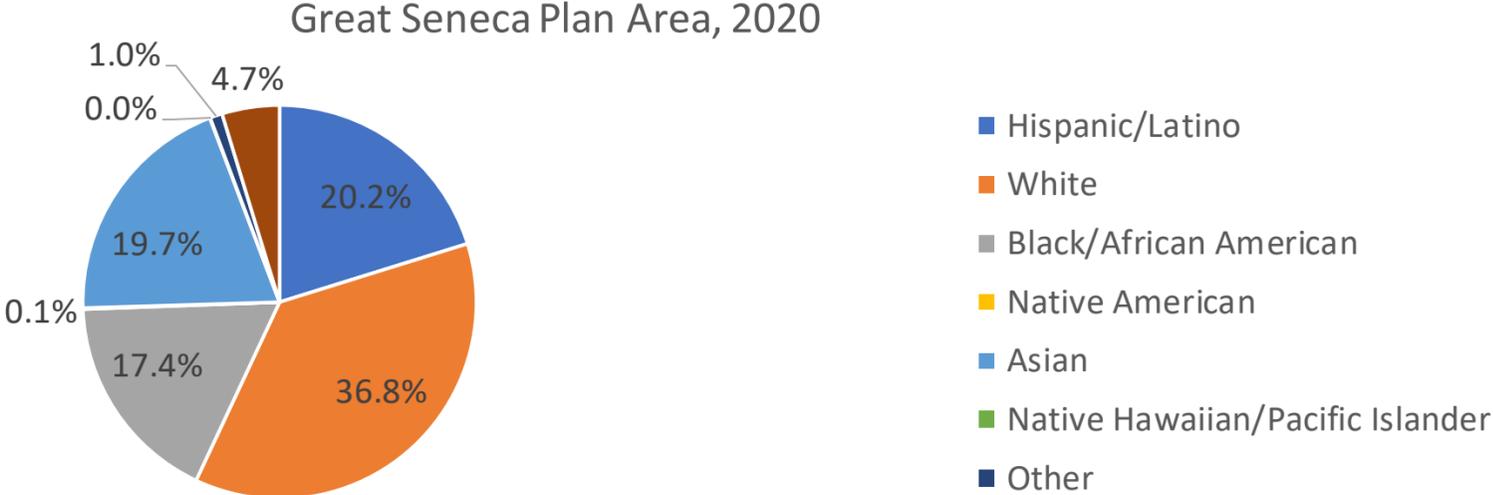


Plan Area Demographic Data

	Great Seneca Science Corridor	City of Rockville	City of Gaithersburg	Montgomery County
Household Profile, 2020				
Average Household Size	2.29	2.50	2.66	2.72
% Renter Households	61%	45%	49%	34%
Median Household Income	\$88,938	\$111,797	\$91,845	\$111,812
Population Profile				
Median Age	37	41	37	40
% 20-34 Year Olds	26%	19%	21%	18%
% Change 20-34 Year Olds, 2010-2020	5%	-12%	-15%	-18%
% Graduate/Professional Degree	29%	36%	26%	32%

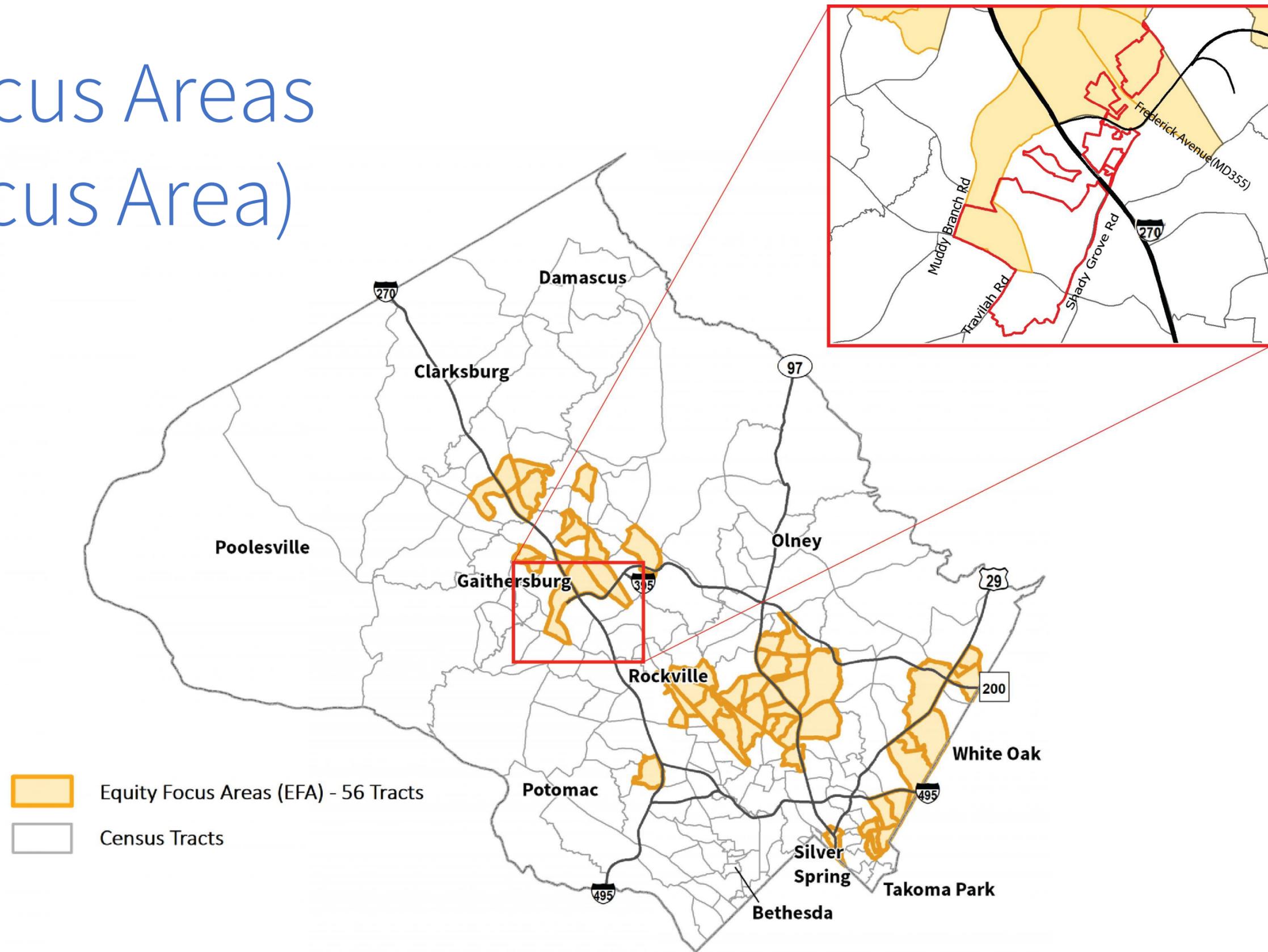
- Households in the Great Seneca Plan Area are notably **smaller, more renter-oriented, and have a lower median income** than Rockville, Gaithersburg or Montgomery County.
 - Nearly two-thirds of Plan Area households are renters!
- The Plan Area has a slightly younger but similar age profile to Montgomery County, with a larger share of 20- to 34-year-olds.
 - While the net growth in this age group in the Plan Area between 2010 and 2020 was limited, there was a *net loss* in this age group in Rockville, Gaithersburg, and Montgomery County.
 - **The Plan Area is unique for drawing in younger residents between 2010 and 2020.**
- Despite the large number of life sciences jobs, **there is no evidence that graduate/professional degree holders in life sciences jobs in the Life Sciences Center are choosing to live the Plan Area specifically.**

Plan Area Population by Race



- Racial and Ethnic diversity in the Plan Area is consistent with the county, with no notable differences.
- By comparison, there are key differences between the Plan Area and the surrounding cities:
 - Rockville has a slightly higher share of White residents, and a smaller share of Black/African American residents
 - Gaithersburg has a notably larger share of Hispanic/Latino residents, and a smaller share of White residents

Equity Focus Areas (GSSC Focus Area)



Top Four Languages

A higher percentage of residents (50%, compared to 40% countywide) speak a language other than English at home)**

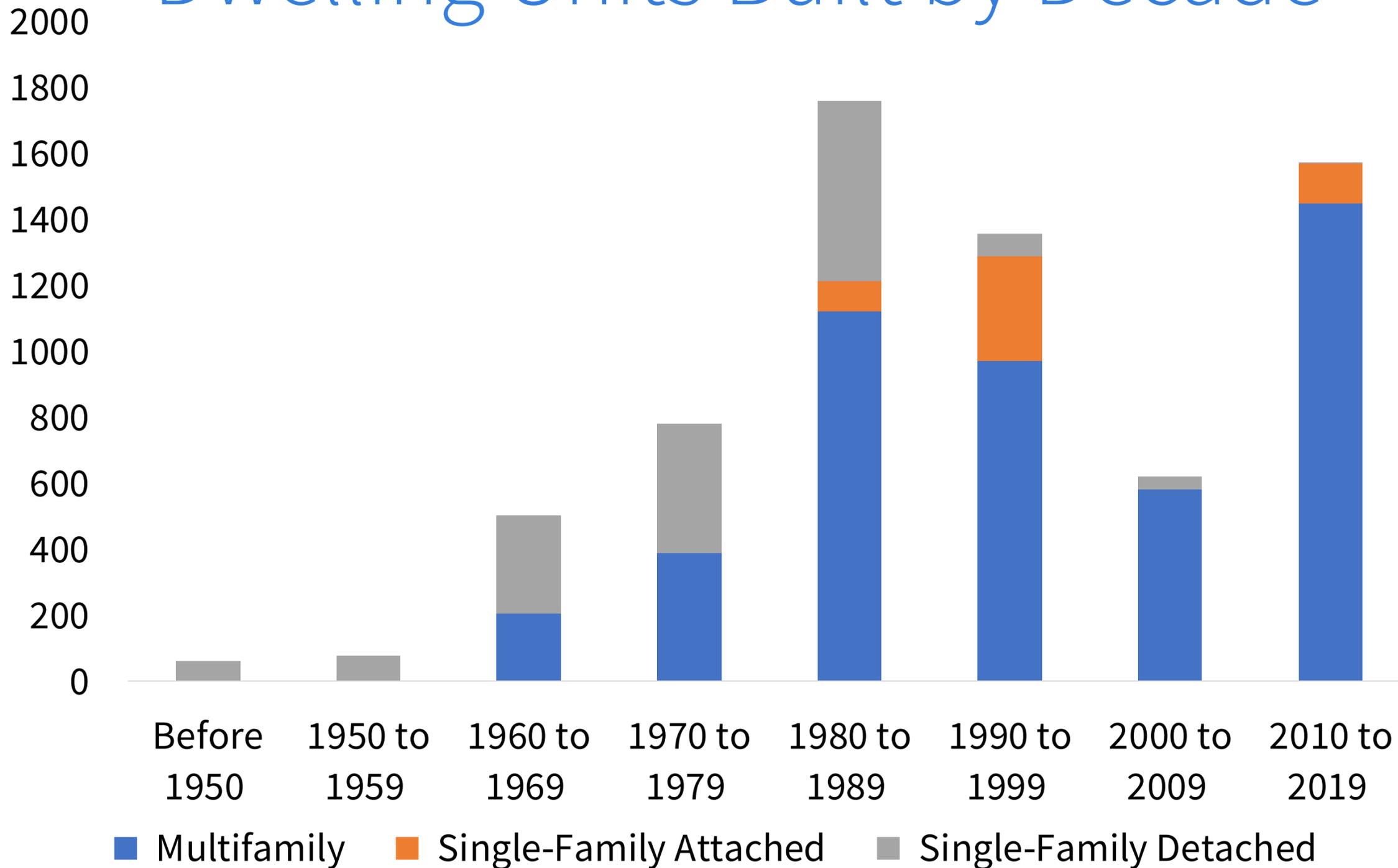
- Spanish (17.6%)
- Chinese (6.6% - Including Mandarin and Cantonese)
- Korean (3.2%)
- French (2.8%)

**This data is not available for the GSSC Plan Area. The data in this slide reflects the top four languages in the following Block Groups that encompass the Plan Area: 7006044, 7006101, 7007042, 7007061, 7007062, 7007174, 7007181, 7007182, 7007241, 7008163, 7008171, 7008172, 7008173, 7008291, 7010061, 7012211, 7012212 (estimated total population: 36,000)

Housing



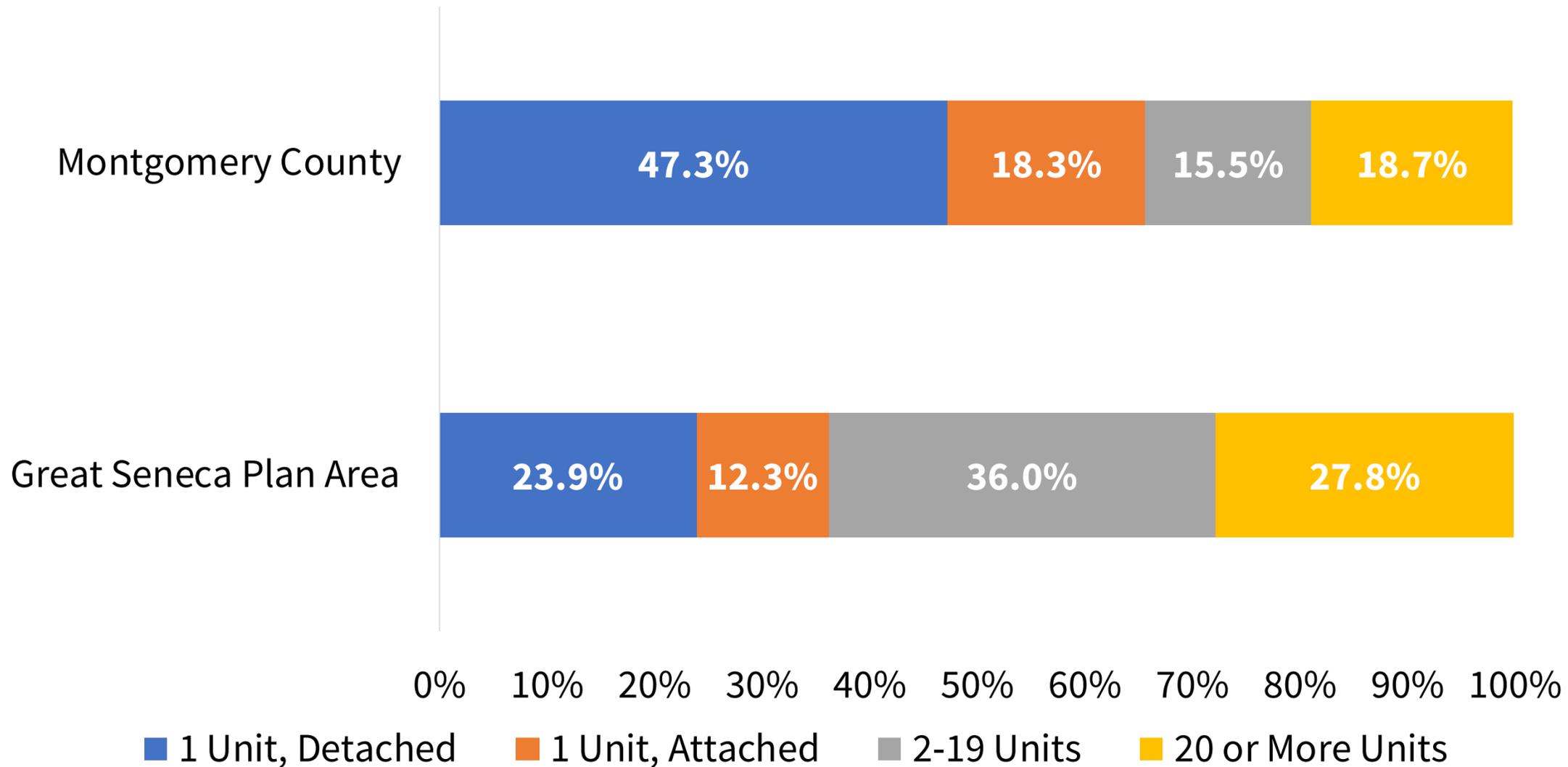
Dwelling Units Built by Decade



While the 1980s had the greatest number of units built, since the adoption of the Great Seneca Science Corridor Master Plan in 2010 over 1,500 units have been added to the Master Plan area.

Source: SDAT

Units in Structure

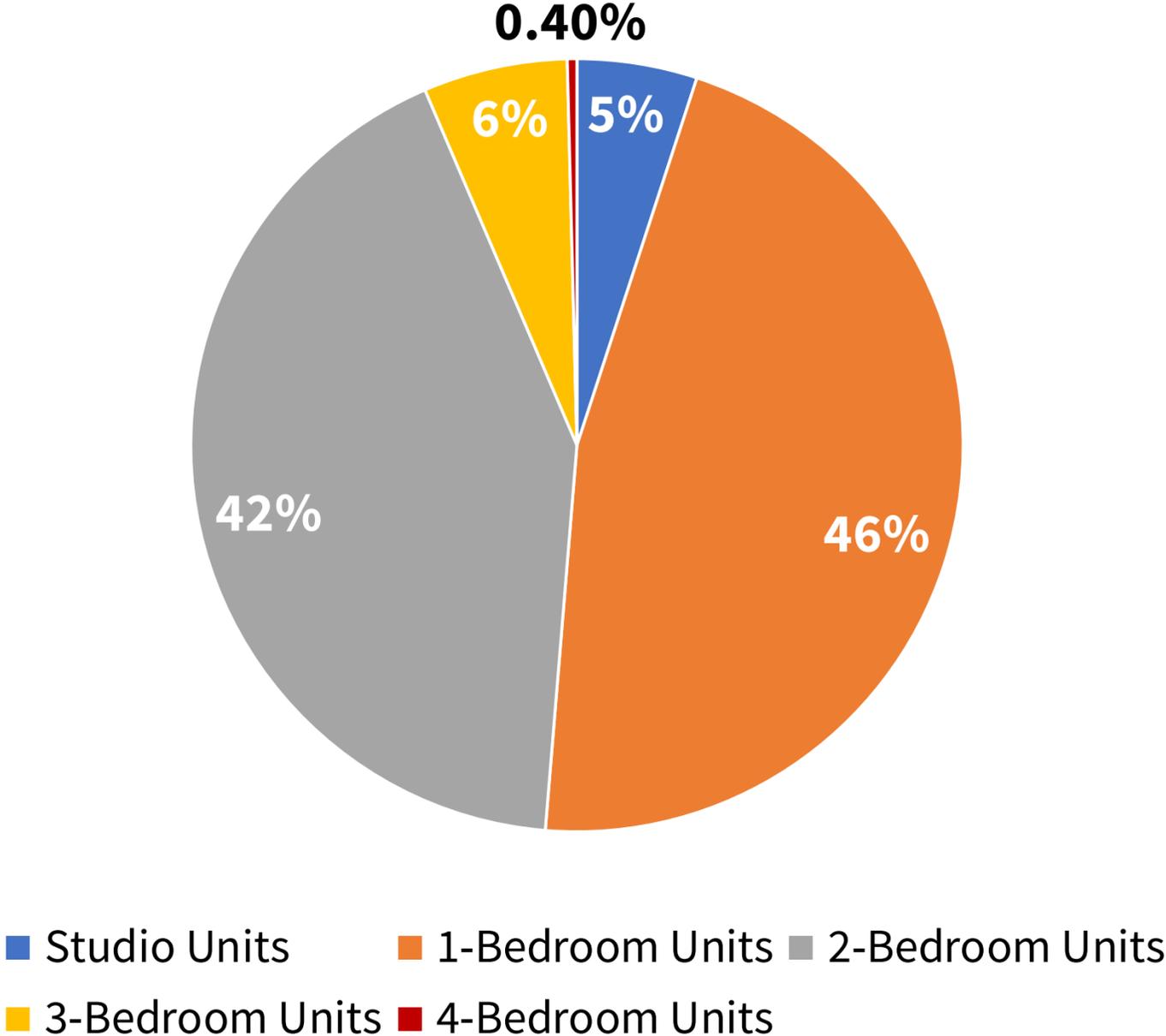


- The Great Seneca Plan area has a **greater mix of housing types** compared to the county as of 2020.
- **There are slightly fewer cost-burdened renter households** in the Great Seneca Plan area as compared to the county (43% in the Plan Area compared to 48% in the county).

Source: Esri Business Analyst, 2022; U.S. Census Bureau, 2022.

Rental Housing

Great Seneca Master Plan Area Bedroom Mix

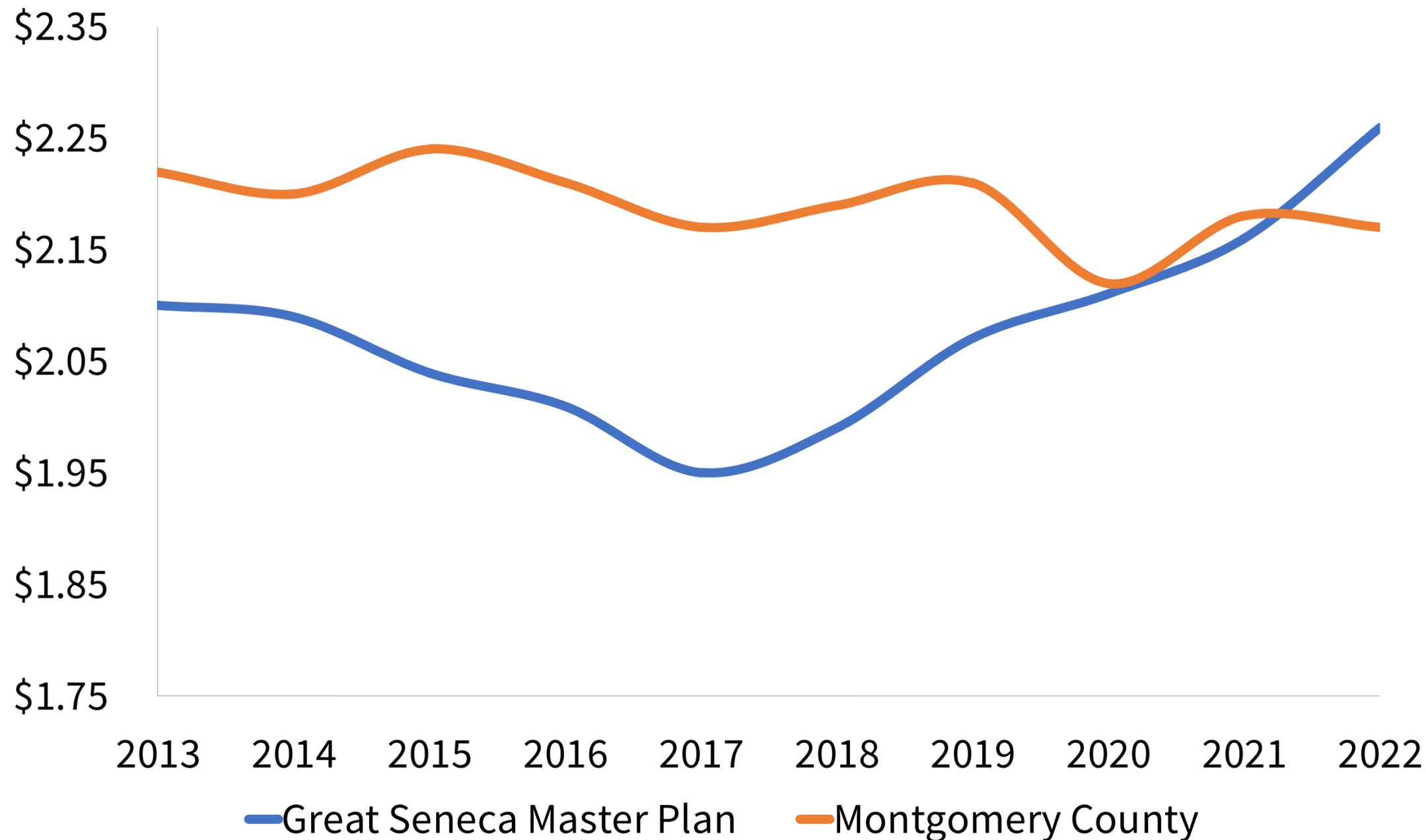


- The Great Seneca Plan Area has **over 5,000 multifamily rental units**.
- **48% of all multifamily rental units are family-sized** – having two or more bedrooms.

Source: CoStar

Rental Housing: Rents

Average Effective Rent/SF (Inflation Adjusted)

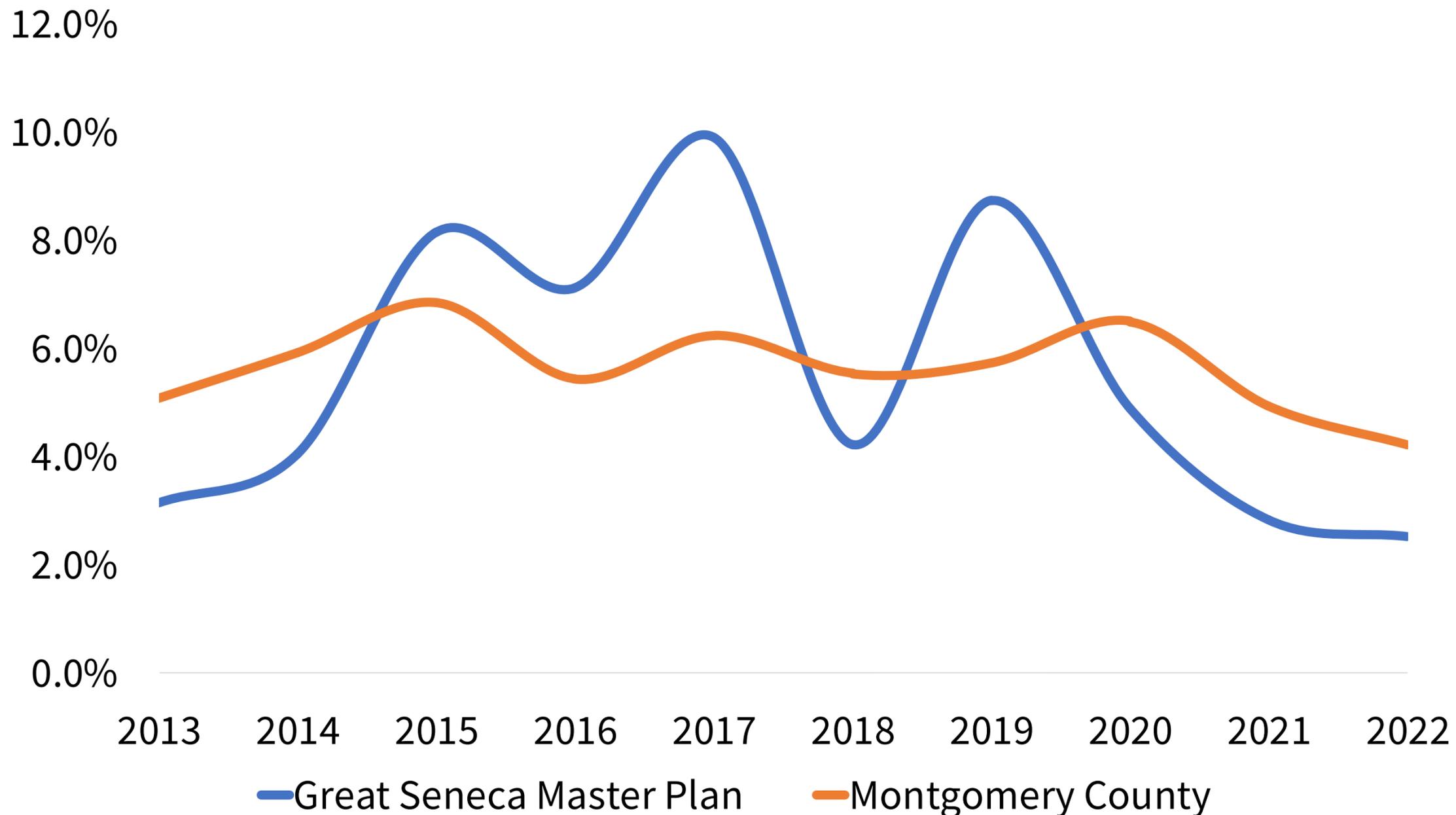


- In 2022, rents in the Great Seneca Plan Area surpassed the county's (\$2,140 vs. \$1,997).
- **Year over Year – rents have increased 10%** (5% in inflation adjusted dollars).

Source: CoStar

Rental Housing: Vacancy Rates

Vacancy Rate

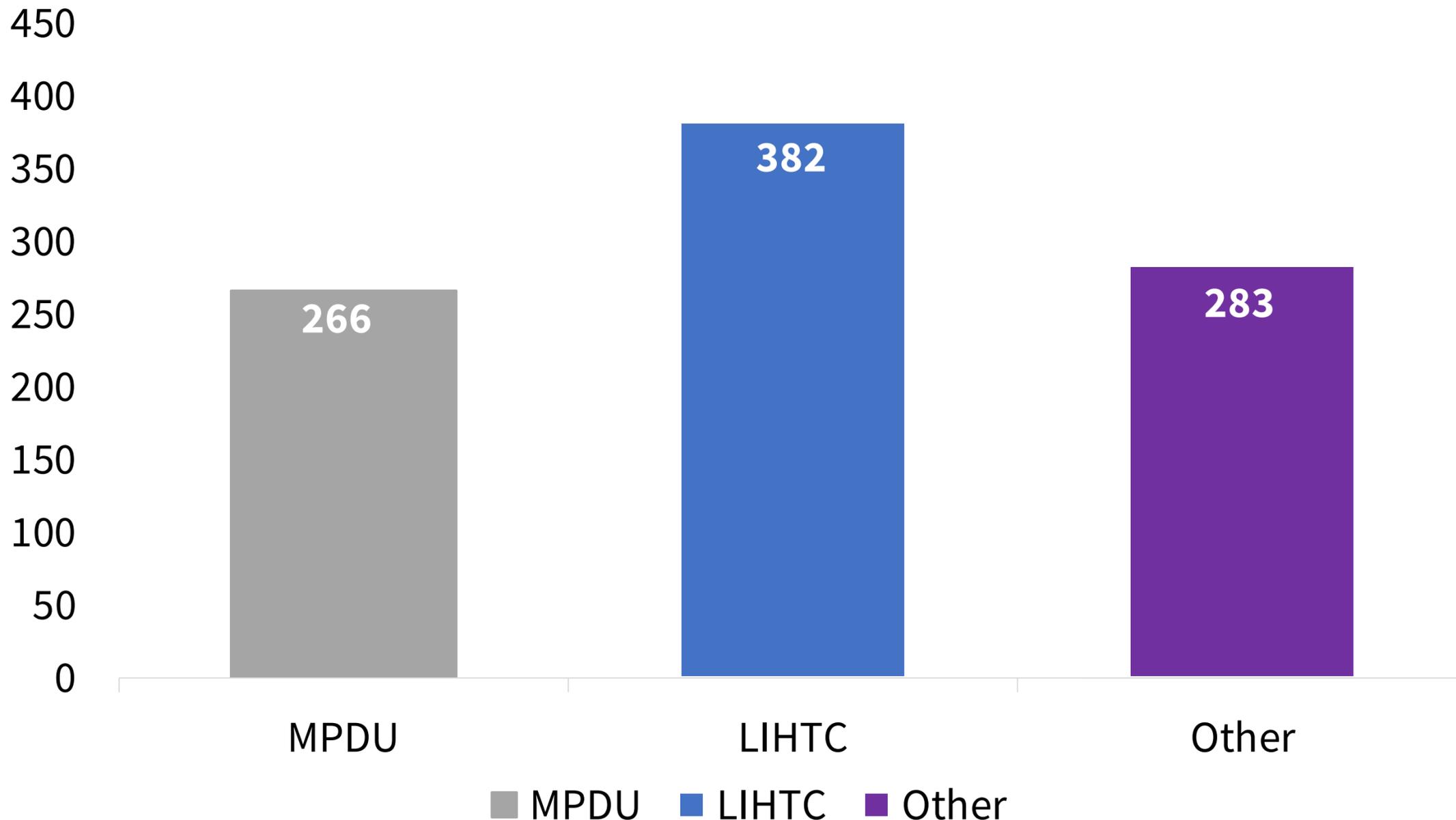


- **The multifamily rental vacancy rate YTD in the Plan area is at historic low at 2.5%** - declining from 2.8% in 2021.
- While the county has a higher vacancy rate than the Plan Area at 4.2% - this is still a very low vacancy rate.

Source: CoStar

Affordable Housing

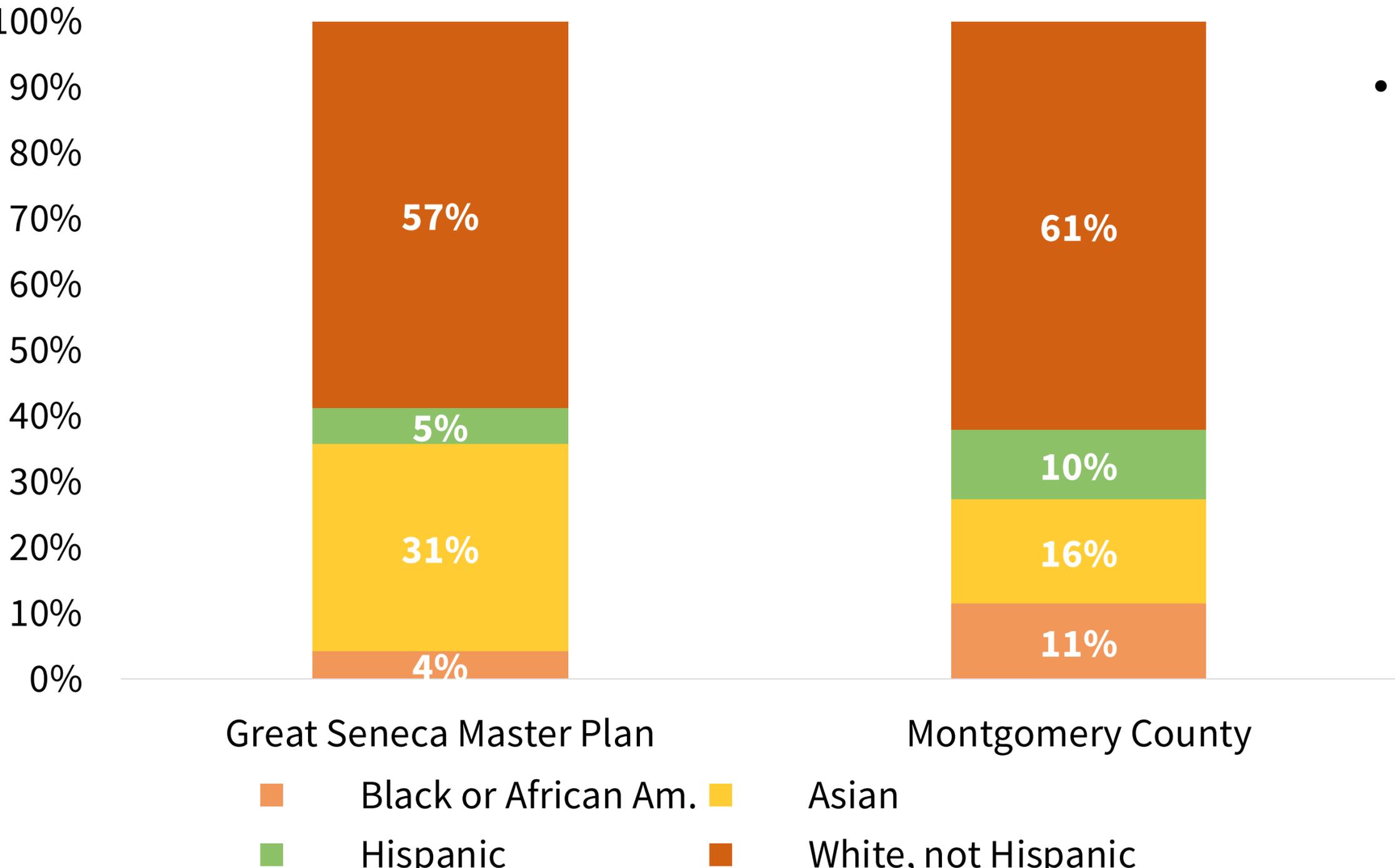
Affordable Housing By Program



- 19% of units in Great Seneca Plan Area are income-restricted affordable housing.
- **Most affordable housing units are through Low-Income Housing Tax Credit program (LIHTC)**, but there are sizeable amounts of Moderately Priced Dwelling Units (MPDU) in new developments, and a mix of other affordable programs like project-based Section 8.

Source: DHCA

For-Sale Housing: Tenure by Race and Hispanic Origin



- **The county has higher rates of homeownership for African Americans and Hispanic households as compared to the Plan Area.**

Source: 2014-2018 American Community Survey, 5-year estimate, U.S. Census Bureau.

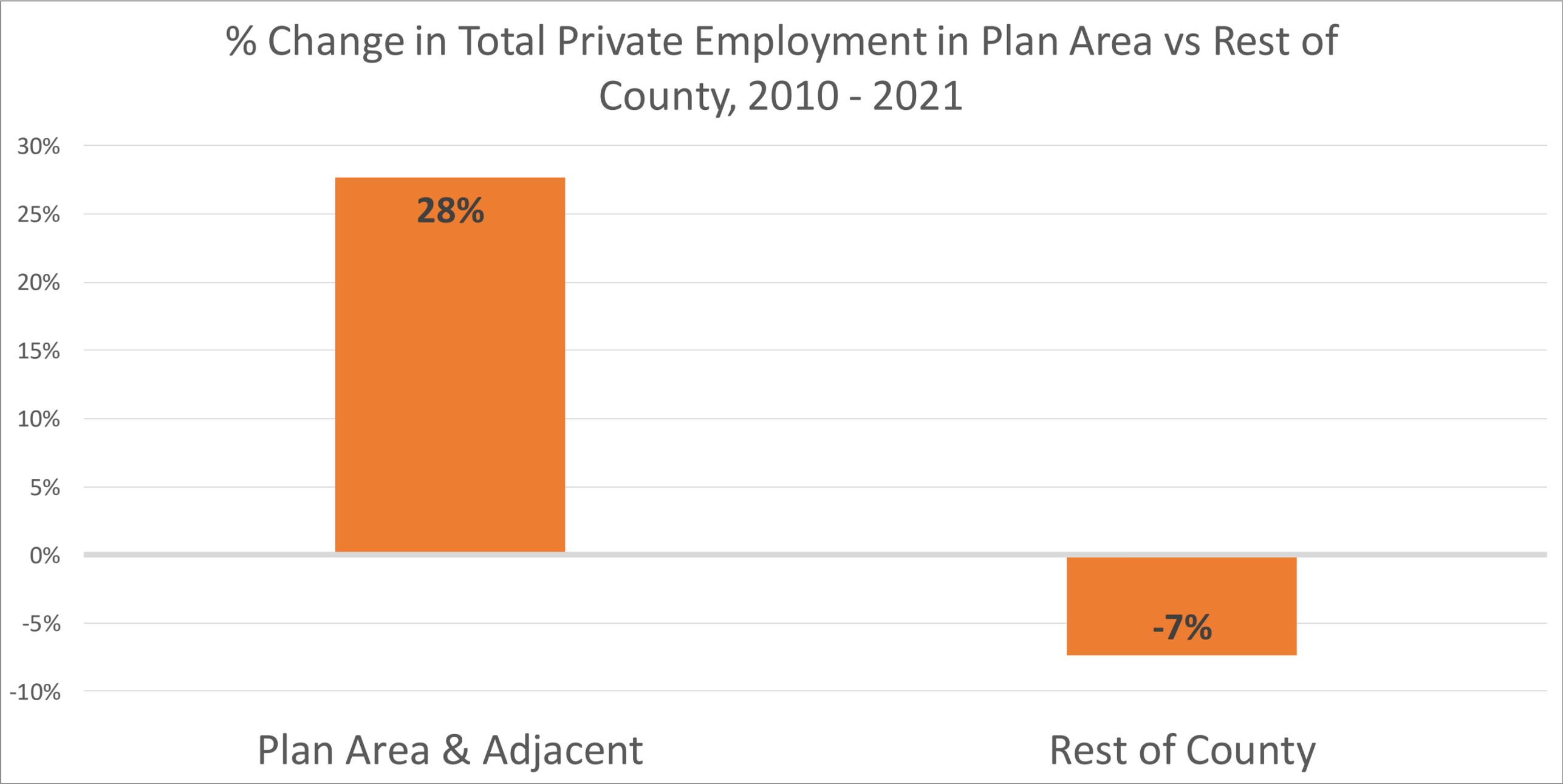
Economy and Employment



Life Sciences Industry Snapshot

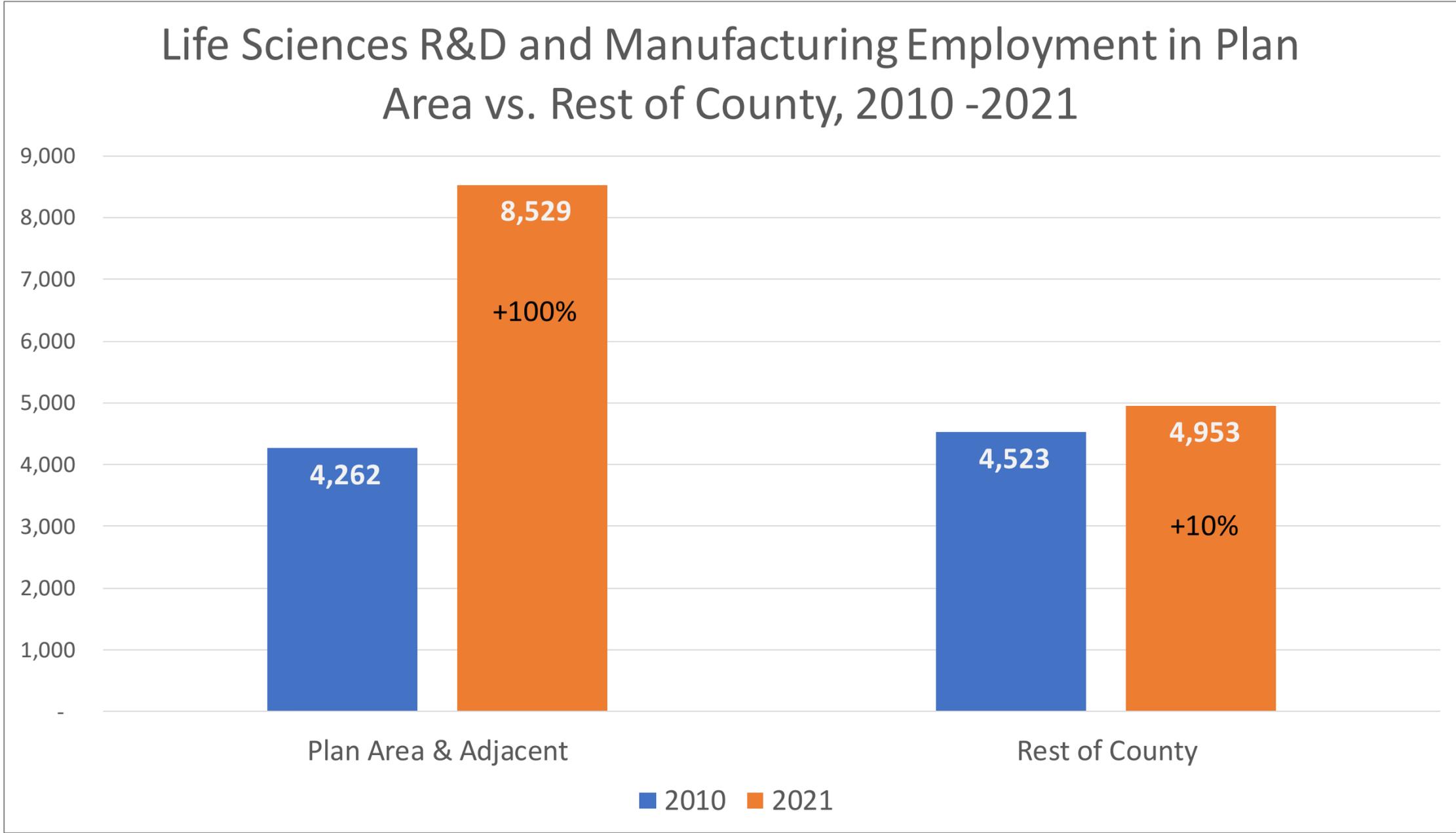
- Suburban Maryland ranks among top in the nation for life sciences industry.
- Life sciences industry accounts for annual gross regional product (GRP) of \$6.2 billion, or 6.5 percent of the county's total GRP.
- The county has approximately 11 million sq ft of life sciences development. There is 2 million sq ft of construction slated (1.2 million sq ft of new construction and 800,000 sq ft of conversion).

Employment in Plan Area vs. Rest of County



Data source: MD Dept of Labor QCEW microdata; private employment only

Life Sciences Subsectors



Life Sciences Manufacturing and Research and Development (R&D) are the largest, most competitive, and most important life sciences subsectors to the county's economic base

Data source: MD Dept of Labor QCEW microdata; private employment only.
Life Sciences R&D and Mfg includes 2018 NAICS codes 3254, 54174, and parts of 541713 and 541715

Life Sciences Center Jobs - Education Level Attained

Education	Percent of Jobs
Some high school or less	9%
High School	15%
Some college or associate's degree	21%
Bachelor's degree or higher	54%

Data Source: US Census Bureau Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES), All private jobs, 2019

Life Sciences Center Jobs - Experience Required

Experience Required	Percent of Jobs
0-1 years	19%
2-3 years	24%
4-6 years	19%
7-9 years	5%
10+ years	3%
Not specified	29%

Data Source: Percentages based on analysis by Montgomery County Economic Development Corporation

Largest Employers in Plan Area

Company	Jobs
Adventist Healthcare Shady Grove Medical Center	2,400-2,500
Financial Industry Regulatory Authority	800-900
National Institute of Standards and Technology	4,000

The life sciences industry is the major private employment sector in the Plan area, however, the largest single employers are federal, higher education and healthcare institutions.

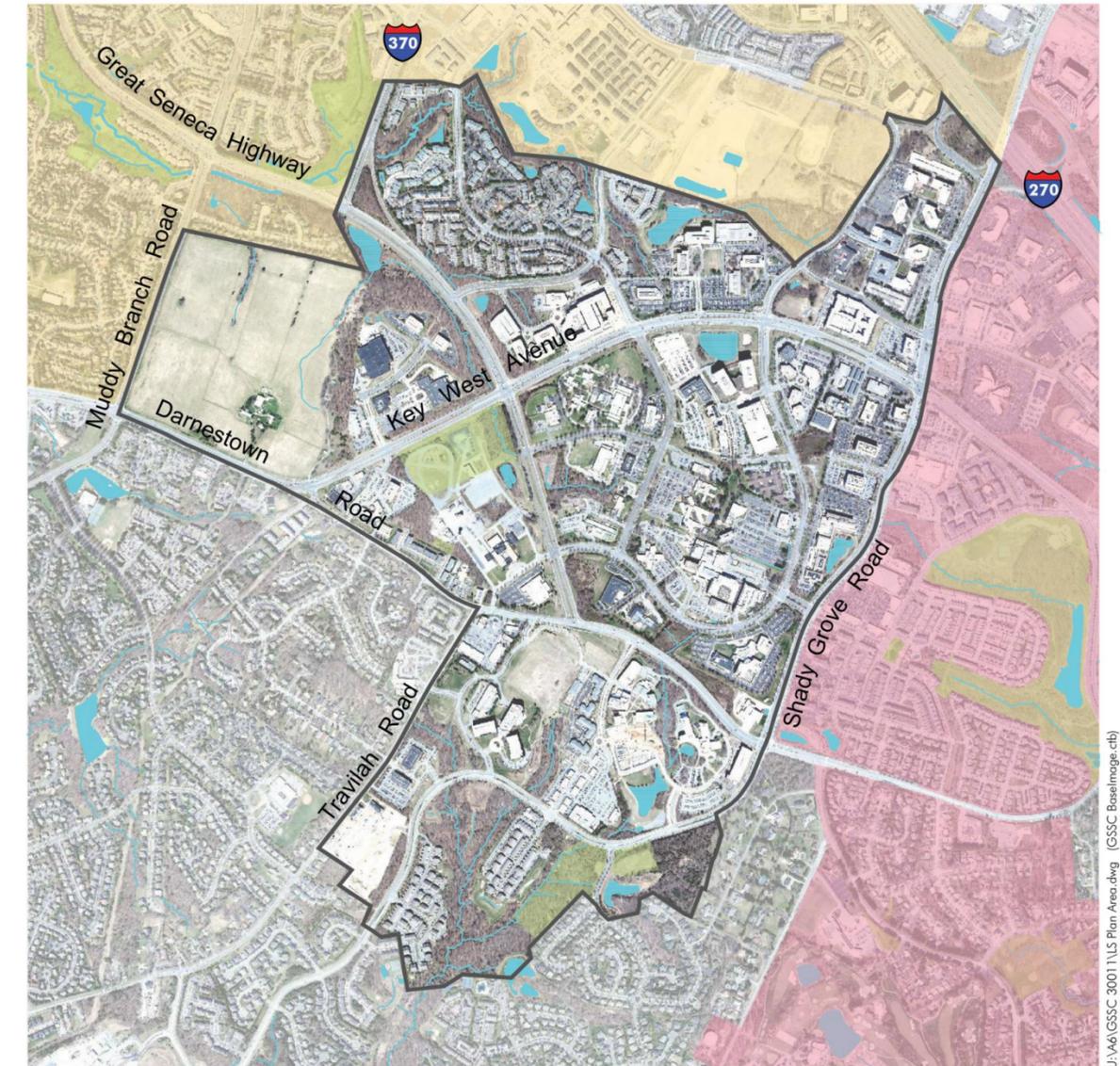
Real Estate



Understanding Life Sciences Development Market Conditions

- The Life Sciences Center within the Plan area has a **concentration of life sciences businesses.**
- By analyzing data on office space in the Life Sciences Center, we can **isolate market conditions for Life Sciences space.**

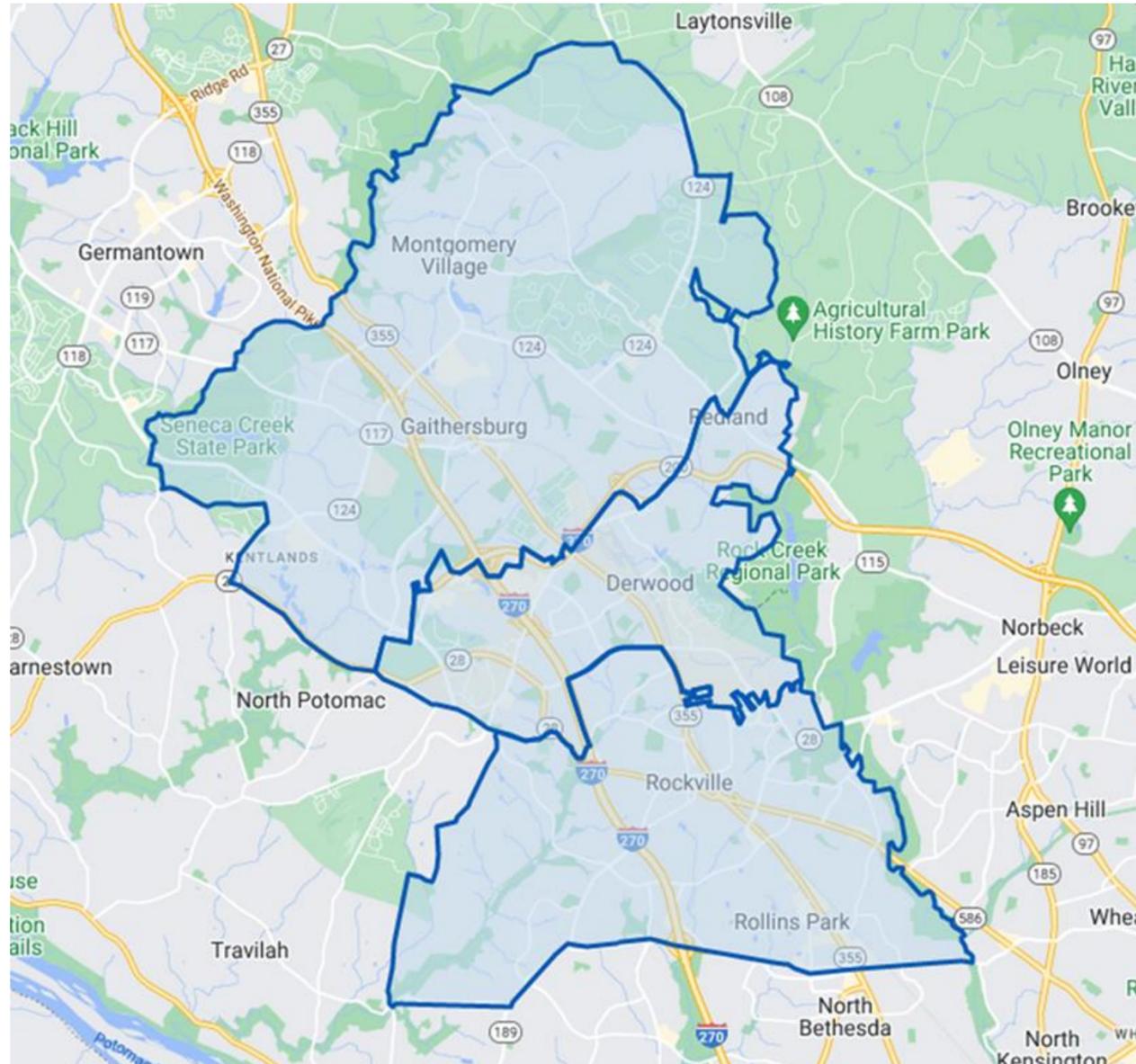
Life Science Center



- Life Science Center
- City of Gaithersburg
- City of Rockville
- Parkland



“the Submarket”

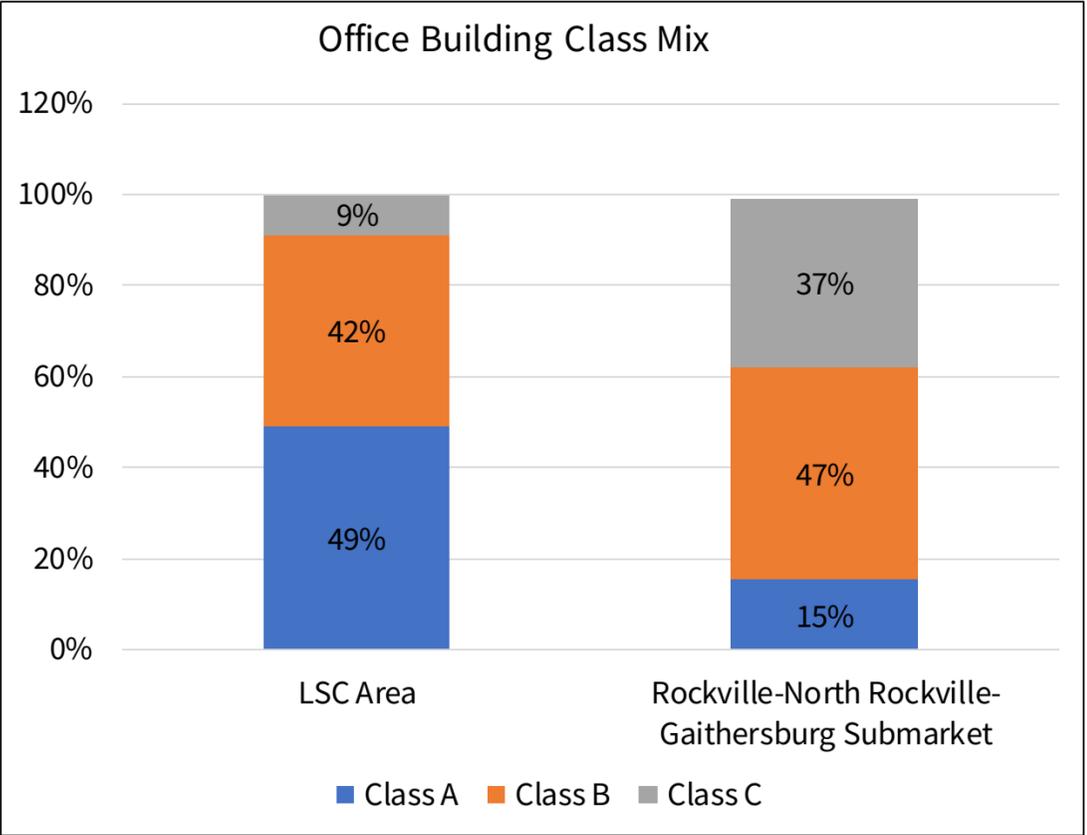
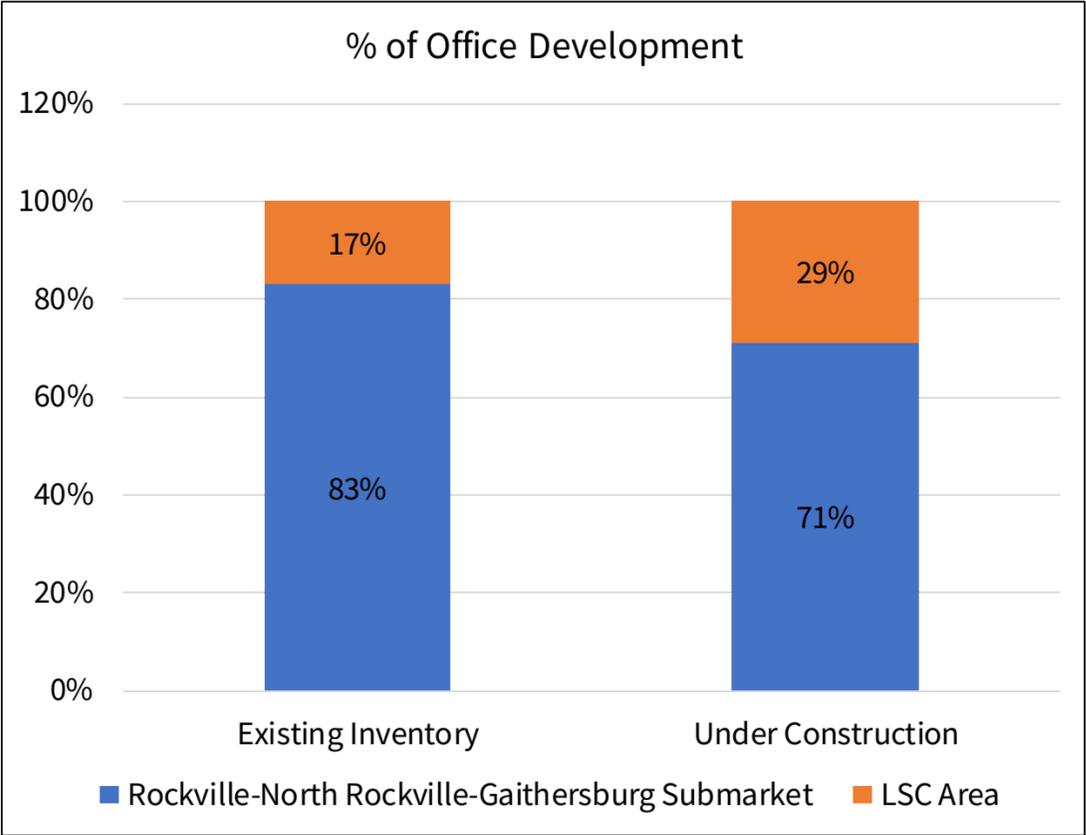


- The Great Seneca Plan Area is contained within three submarkets: Rockville, North Rockville, and Gaithersburg.
- The Submarket is the **comparison geography for office market conditions**, highlighting the difference between life sciences and traditional office.
- This Submarket is the **primary geography for retail market conditions** in the Plan Area.

Source: CoStar

Office Building Profile

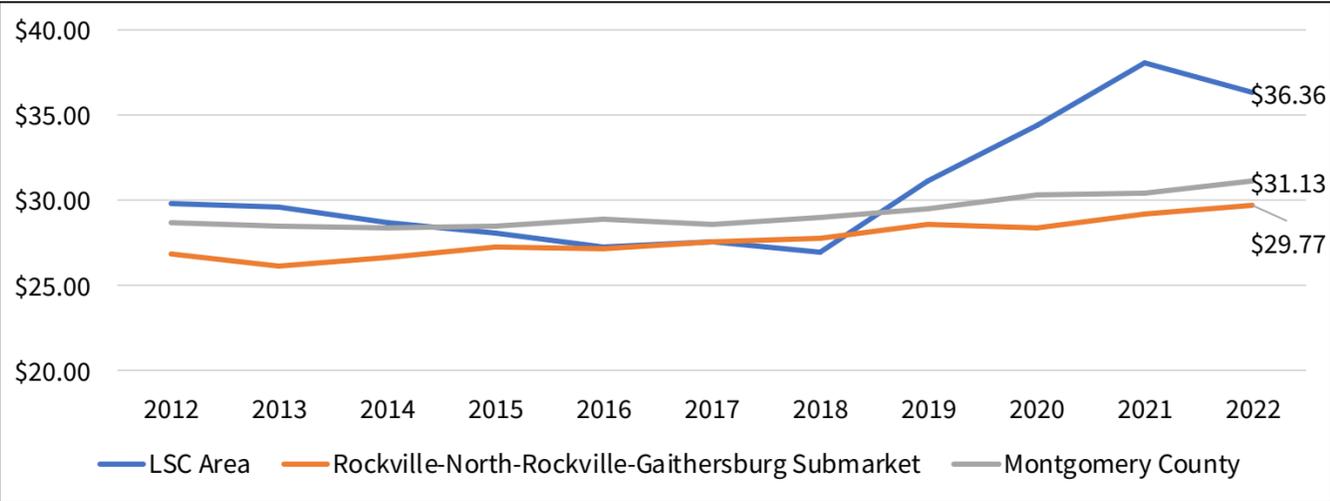
- LSC Area Office Inventory: 5.3 million sf
 - 97,196 sf under construction
- Submarket Inventory: 31.3 million sf
 - 337,196 sf under construction
- LSC Area with significantly greater share of Class A and B buildings



Source: CoStar

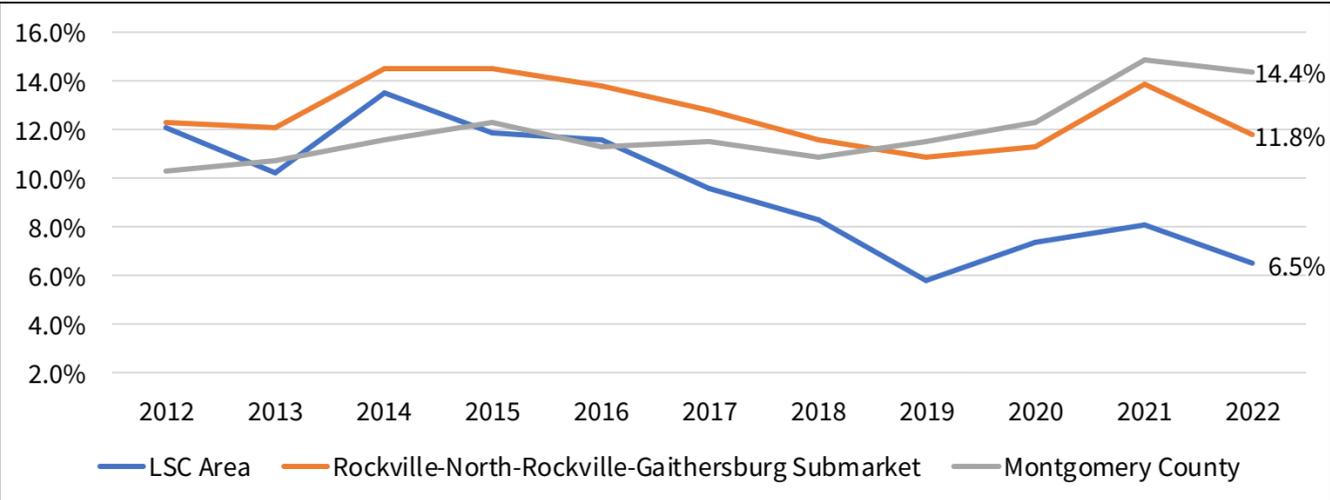
Office Rents & Vacancy Trends

Gross Rent:



- While not all office buildings in the LSC Area are life sciences uses, **it is life sciences development that is driving divergent trends in rents and vacancy** between the LSC Area and the Submarket and County.
- Other estimates of life sciences rents in ‘Suburban Maryland’ range from \$35-\$45.

Vacancy Rate:

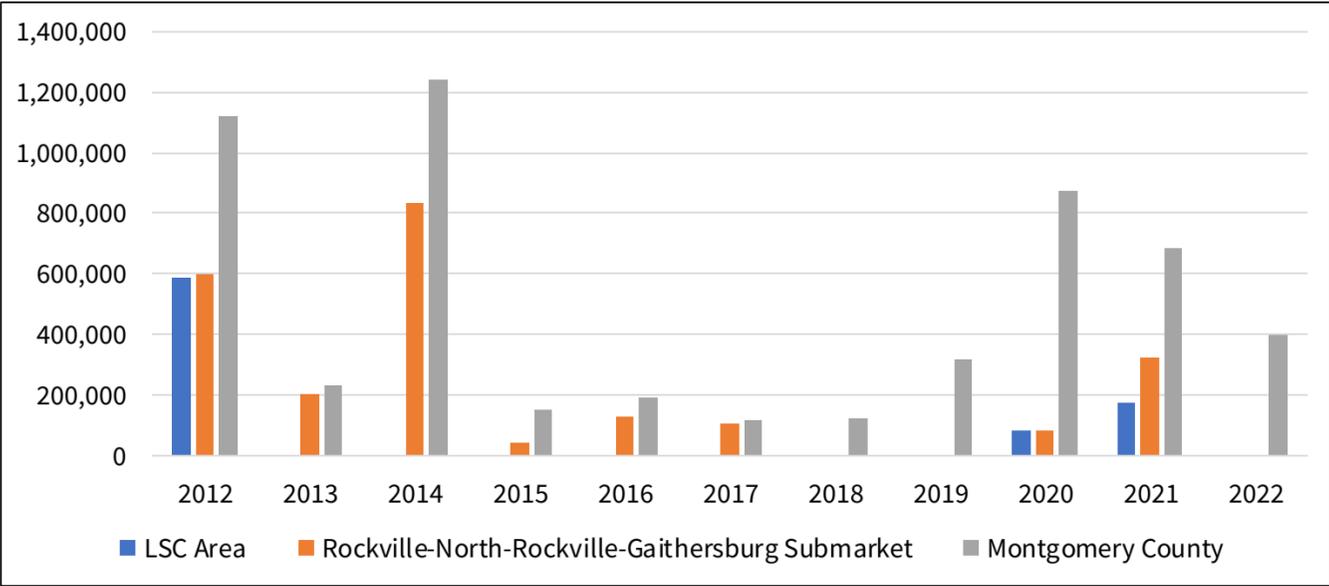


Source: CoStar

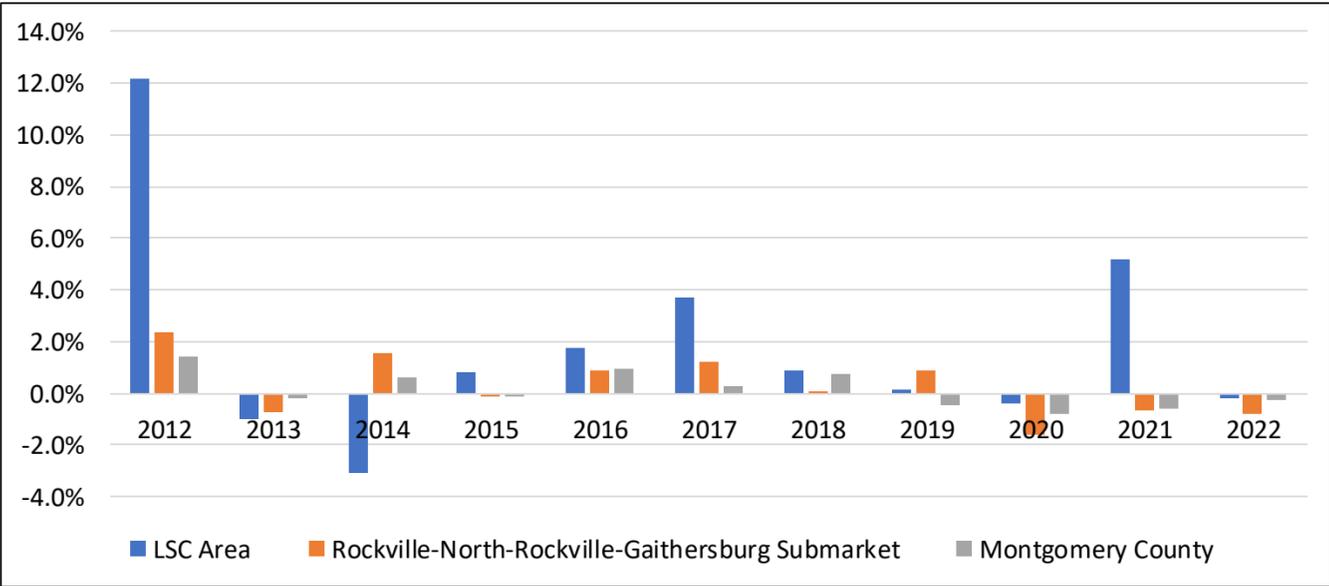
Office Delivery & Absorption Trends

- No new deliveries in the LSC Area from 2013-2019, but net positive absorption, explaining the fall in vacancy rate
- Since 2020, absorption has exceeded new deliveries
 - **Even as new office space has delivered, the vacancy rate continues to fall in the LSC Area**

Deliveries:

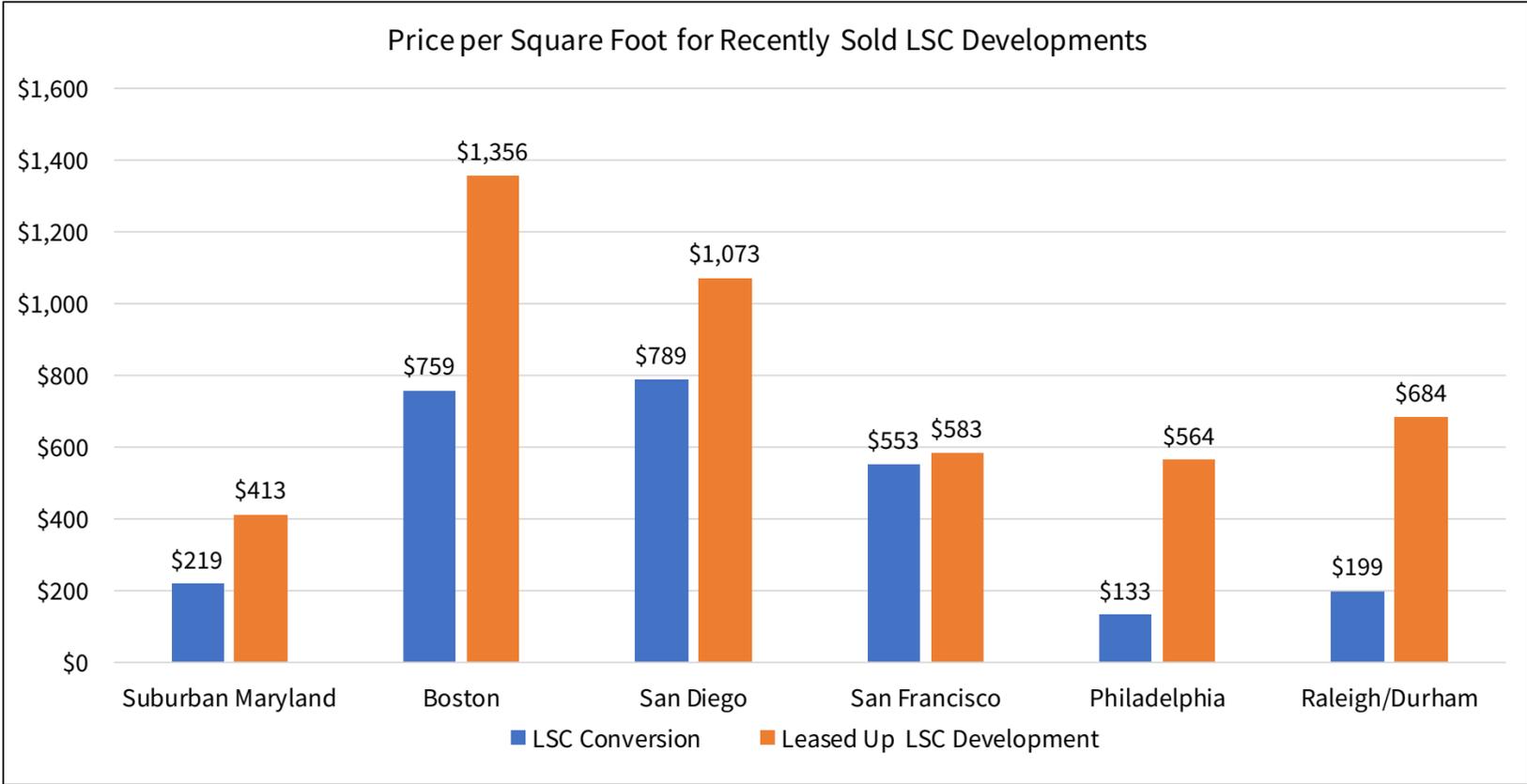


Absorption:



Source: CoStar

Life Sciences Property Sales and Development Activity



- Office-to-lab conversions have been occurring in Montgomery County
- Third-party analysis suggests DC region receives less venture capital funding than other top-tier markets
 - This may explain why fully leased properties in the LSC Area have sold for less than properties in other markets that need to be converted to lab space

Source: CoStar; Cushman & Wakefield

Life Sciences Development Activity Case Study

LSC Area Life Science Property Transactions

<u>Lab Conversion</u>	<u>Price per sf</u>
The District at King Farm	\$142
West Gude Labs	\$194
Discoverly Office Park	\$249
Twelve Oaks Office Park	\$99
The Shady Grove Innovation District	\$264
Research Square	\$300
Precision Labs™ Rockville	\$186
Key West Life Science Center	\$316
Average	\$219
<u>Existing LSC Use/Leased up</u>	
9605 Medical Center Drive - Building III	\$252
9900/9901 Belward Campus Drive	\$468
Key West Life Science Center	\$520
Average	\$413
<u>Other (a)</u>	
The Grove 270	n.a.
Shady Grove Life Science Portfolio	n.a.

- **Key West Life Sciences Case Center Study:**
 - Traditional Office Sale Price: \$316 per sf (August 2020)
 - Lab Conversion costs: \$127 per sf
 - Leased-up Lab Sale Price: \$520 per sf (July 2022)
 - **Developer yields 40.2% return**

Source: CoStar.

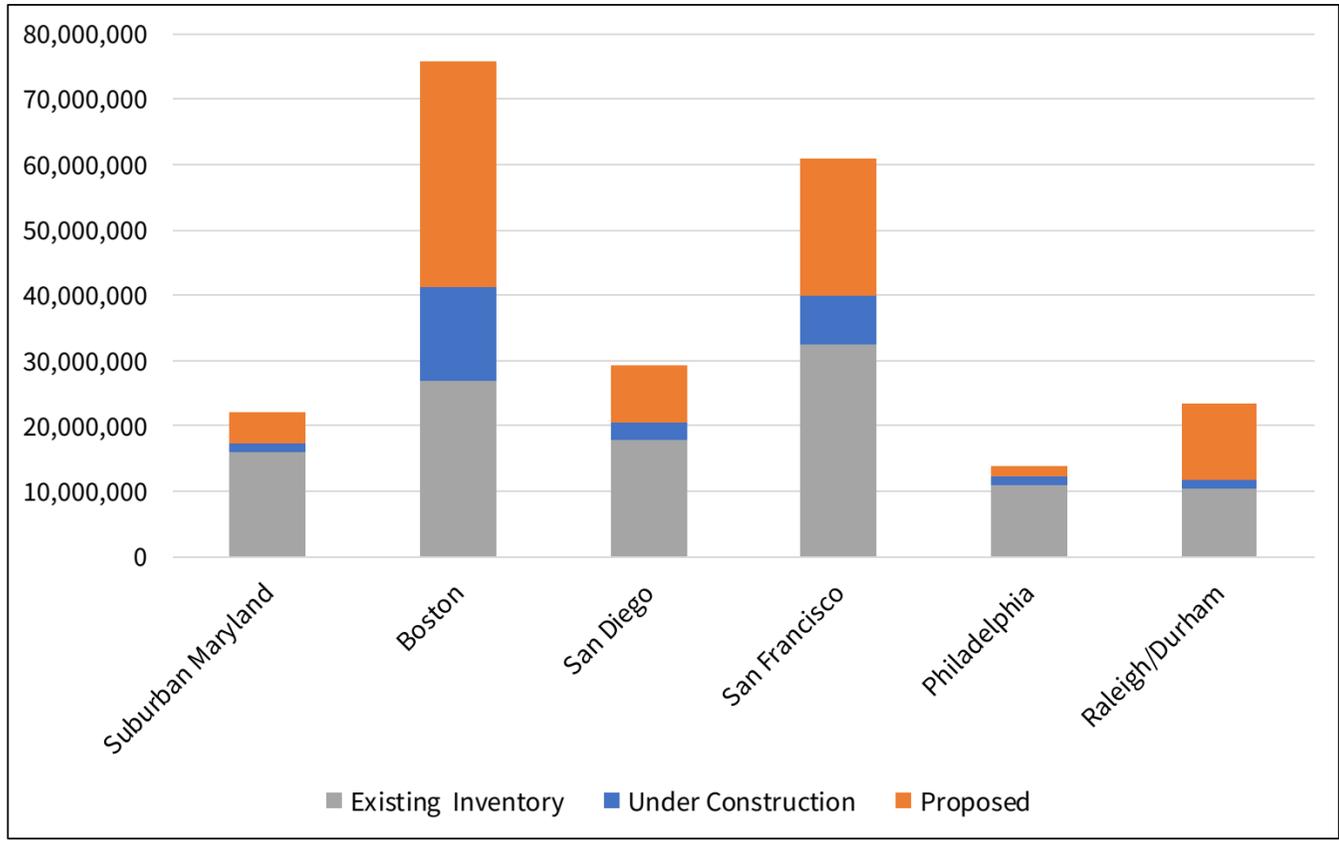
What We Heard in Focus Groups with Life Sciences Businesses and Real Estate Experts

- There is a less VC funding in this area compared to other top-tier hubs
 - For businesses, this makes it tougher to attract talent from elsewhere, and why businesses will have corporate headquarters in other locations
 - For the real estate industry, this increase the risk profile of leasing to life sciences businesses
- There is a cap on the viability of office-to-lab conversions
 - For real estate industry, demand exists but is limited. Conversions were also a speculative investment play during the pandemic when the value of traditional office investments plummeted
- Developers and businesses recognize the value of more urbanized lab space in terms of drawing workers, but not all developers will take the risk and not all businesses can afford premium lab space, particularly start-ups
- There is a lack of smaller lab space (500 - 2,000 square feet)

Life Sciences Development Pipeline

- Inventory comparable to San Diego, and larger than Research Triangle and Philadelphia.
- Pipeline development lagging most top-tier life sciences hubs.

Life Sciences Development Pipeline:

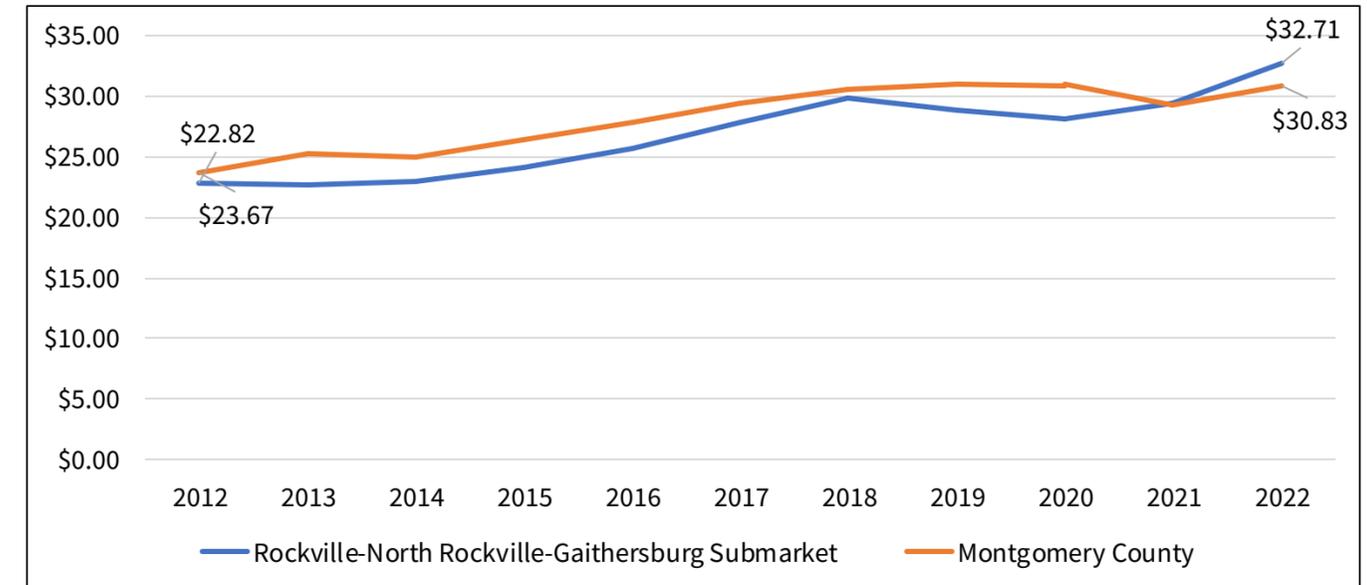


Source: Newmark

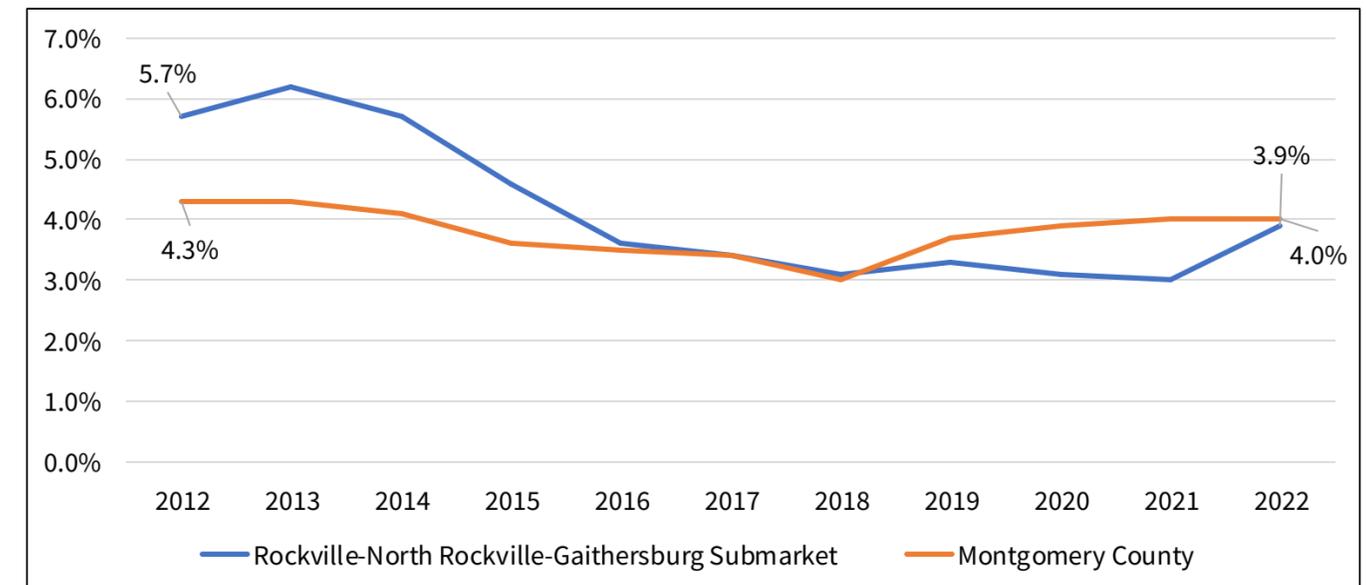
Retail Market Conditions

- 13.5 million square feet of retail in the Submarket
 - 36.5% of county inventory
- Until 2021, Submarket rents lagged the county
- Despite slightly differing trends, vacancy rate is the same
- While demand for brick-and-mortar retail is declining, **strong household and employment growth will continue to generate additional retail demand**

Rent:



Vacancy Rate:



Source: CoStar

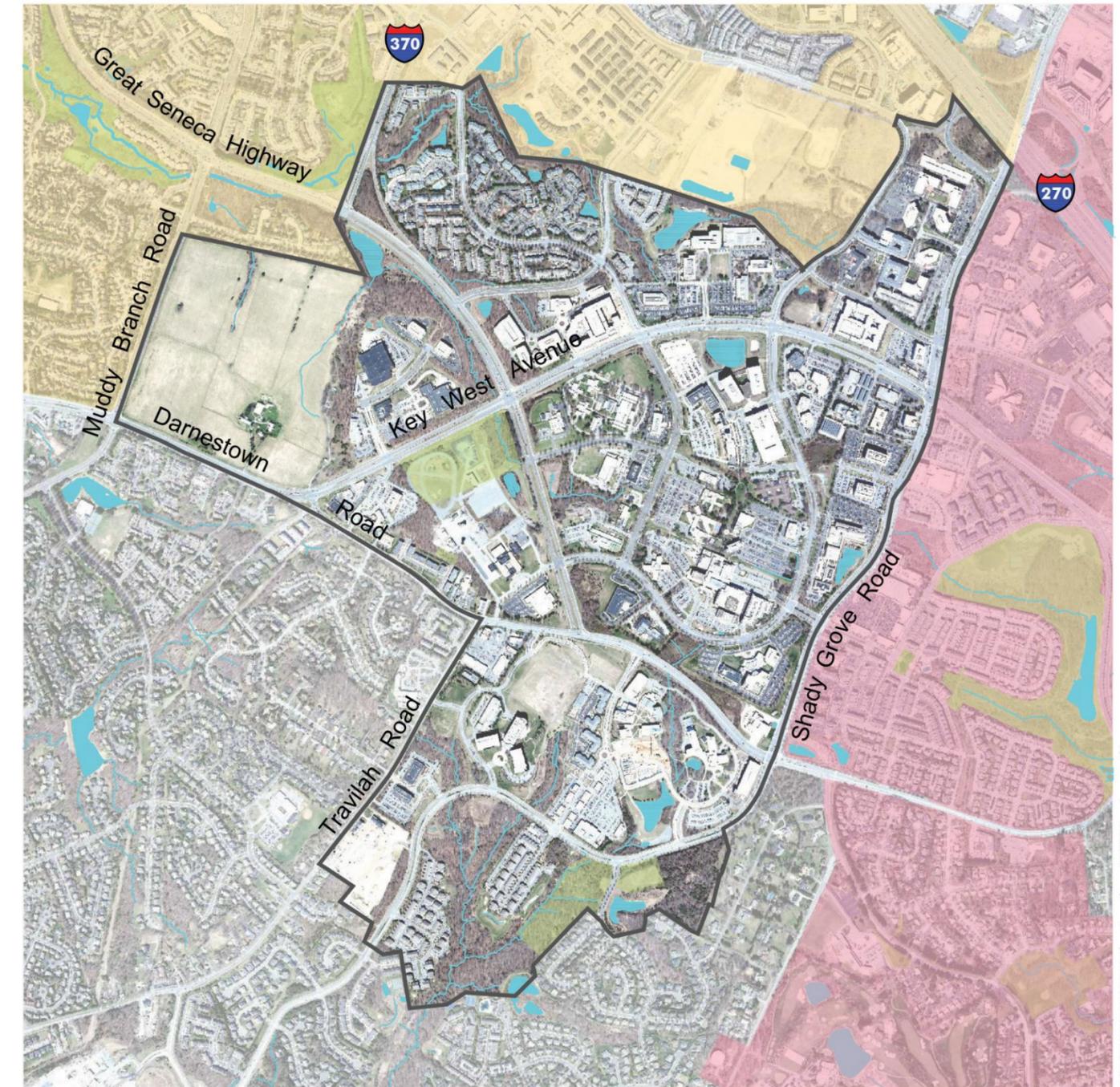
Urban Design



Life Sciences Center Districts

- The block sizes within the Life Sciences Center are large, auto oriented with little connectivity or through block connections
- Most of the lots were platted in the 1980s-1990s

Life Science Center



- Life Science Center
- City of Gaithersburg
- City of Rockville
- Parkland

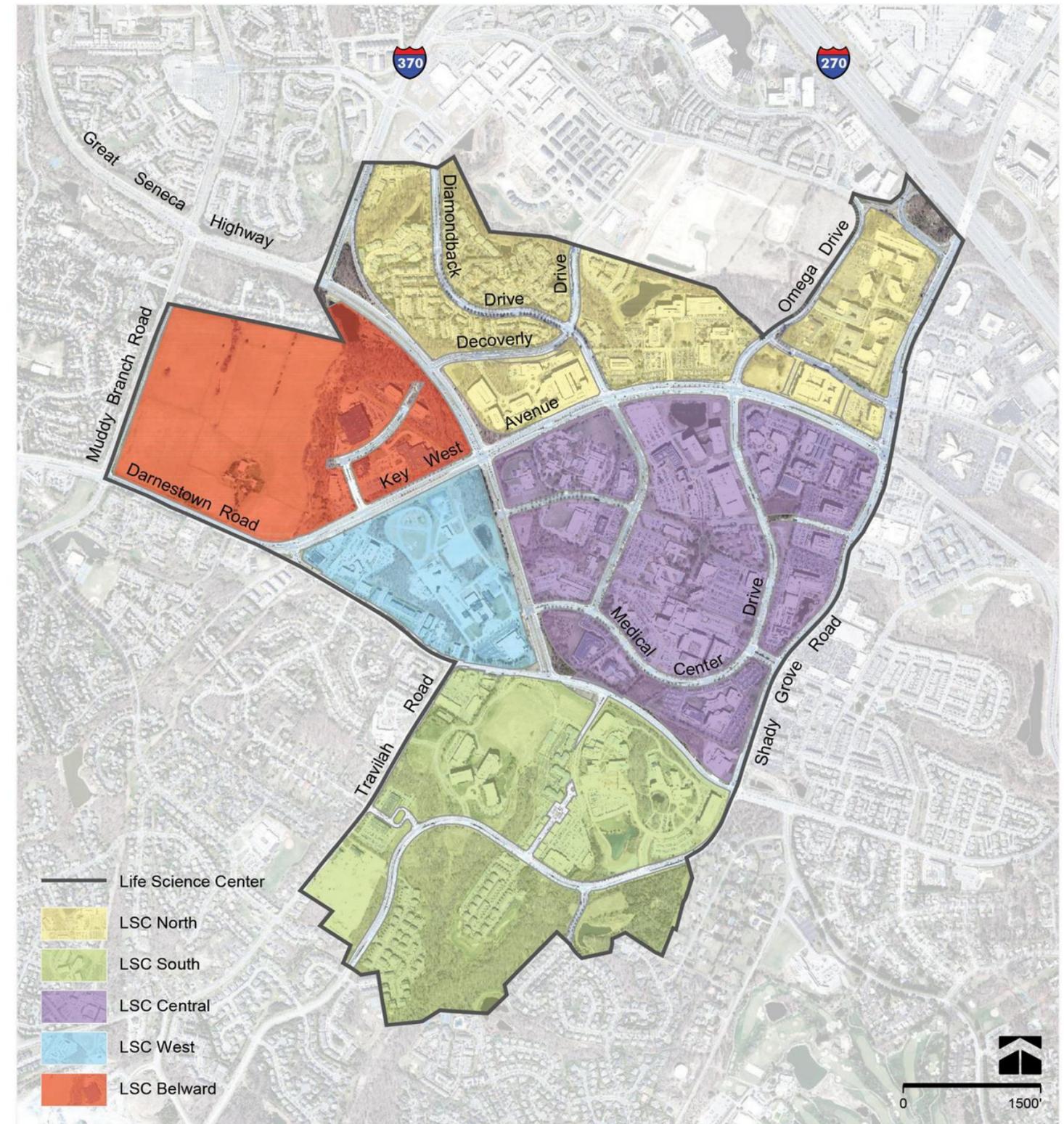


U:\48\GSSC 3001\LS Plan Area.dwg (GSSC BaseImage.ctb)

Life Sciences Center Districts

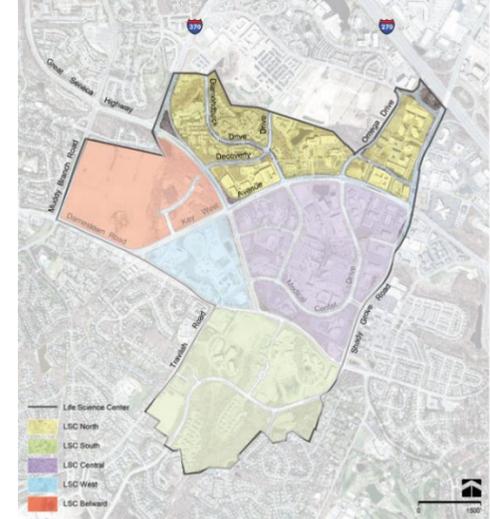
- The 2010 Plan separates the Life Sciences Center into five districts:
 - LSC North
 - LSC South
 - LSC Central
 - LSC West
 - LSC Belward

Life Science Center Districts



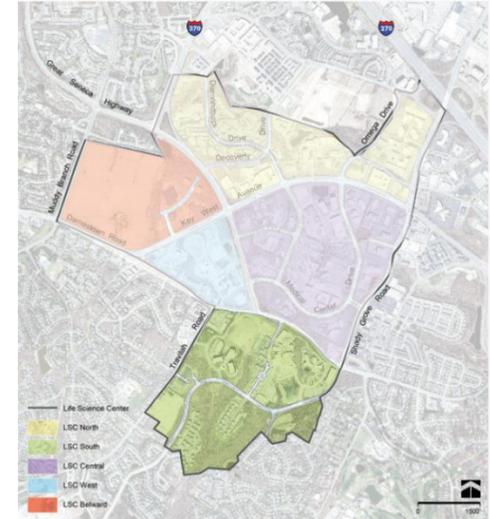
Districts – LSC North

- Mixed-use developments constructed in the last 5 years with apartments and retail on the ground floor level
- Additional older life sciences, office buildings and a hotel
- Townhomes and apartments located towards the northwest side



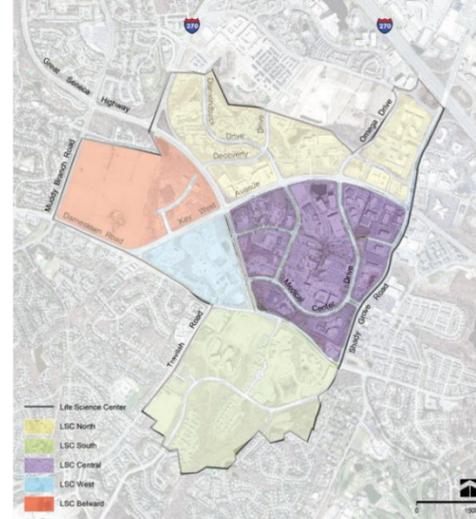
Districts – LSC South

- Home to the Universities at Shady Grove Campus and Trville Village Shopping Center
- New developments include Trville life sciences office buildings with a large public park and energized public space
- Undeveloped park's owned property towards the southeast



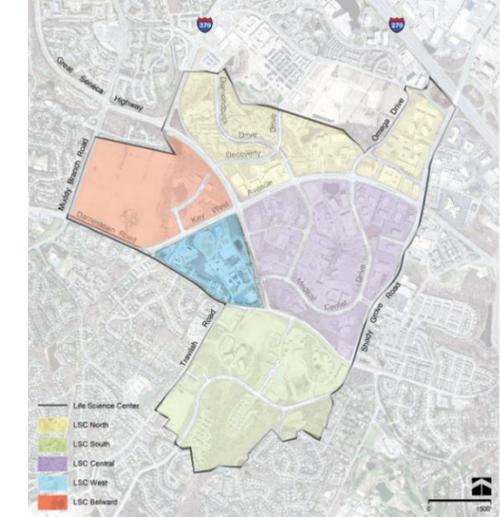
Districts – LSC Central

- Life sciences, hospital, offices and some retail serving the office workers
- Most built from the 1990s-Present
- Majority of the businesses have large surface parking lots
- Home to large life sciences/health related companies such as Adventist Hospital, National Cancer Institute, and Johns Hopkins



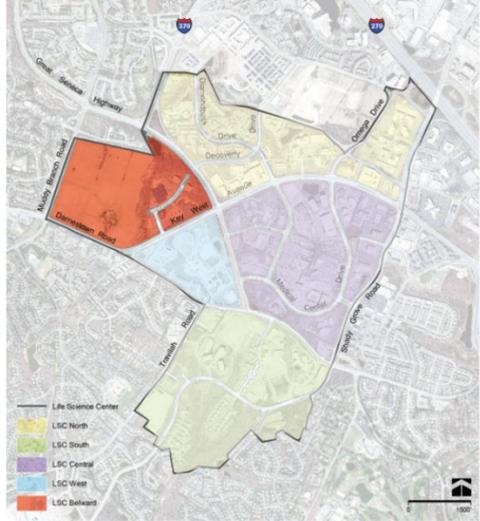
Districts – LSC West

- Home to a small retail shopping center, townhomes and the former PSTA site
- New development slated for multifamily rental units and townhomes
- Development includes activated public space and a small retail store



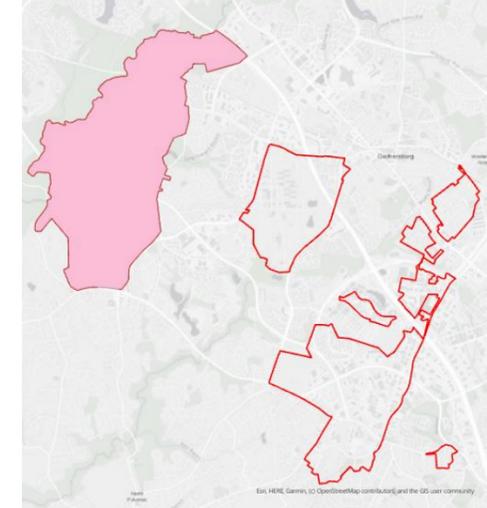
Districts - Belward

- Currently home to a historic farmhouse and undeveloped farmland
- John's Hopkins owned property slated for life sciences and office development
- Development includes a large public park and recreation space along Muddy Branch Road towards the west



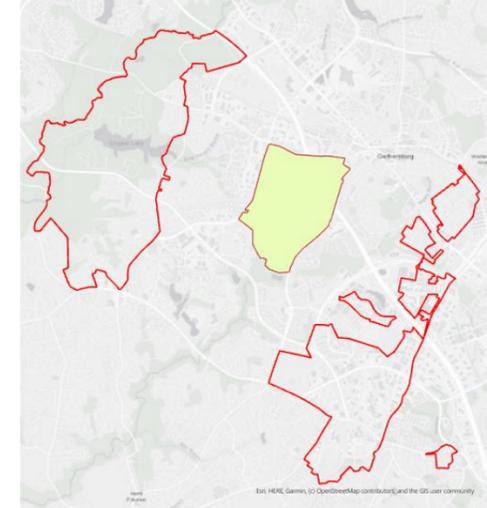
Adjacent Communities – Quince Orchard

- Most of the area is comprised of Seneca Creek State Park
- Large single-family homes located around the edges of the park
- Streets have trees with sidewalks and landscape buffer for a comfortable walking experience



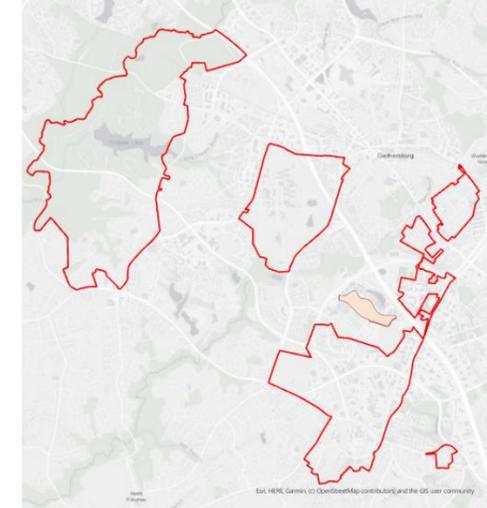
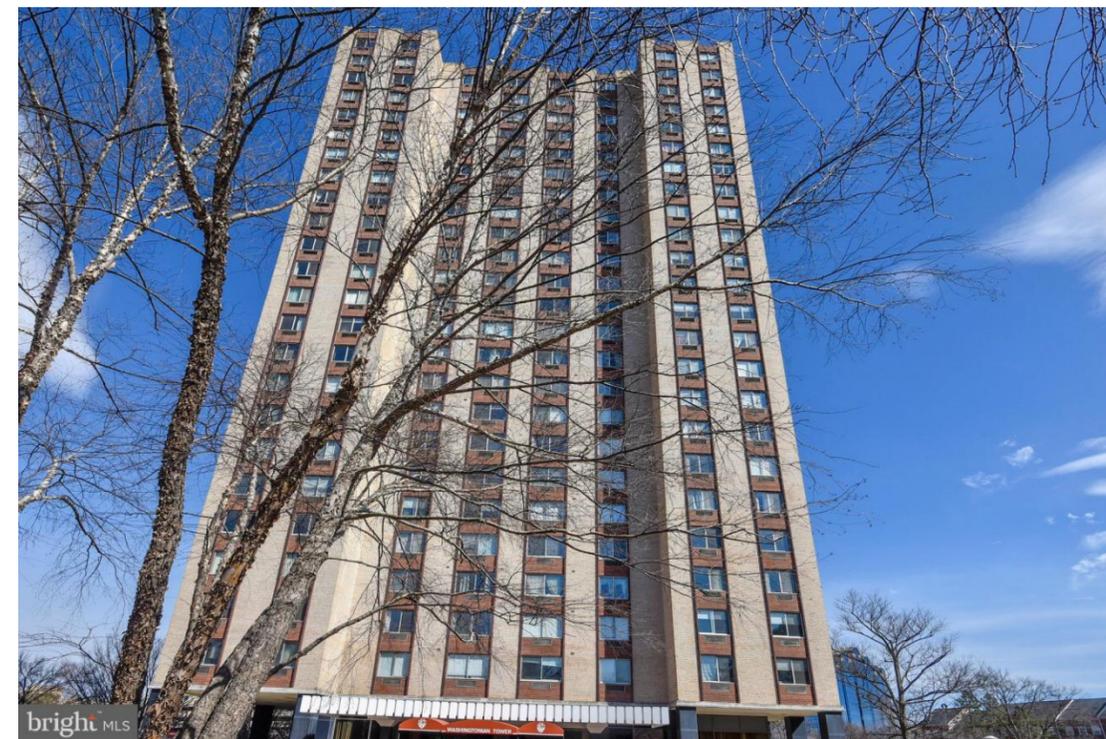
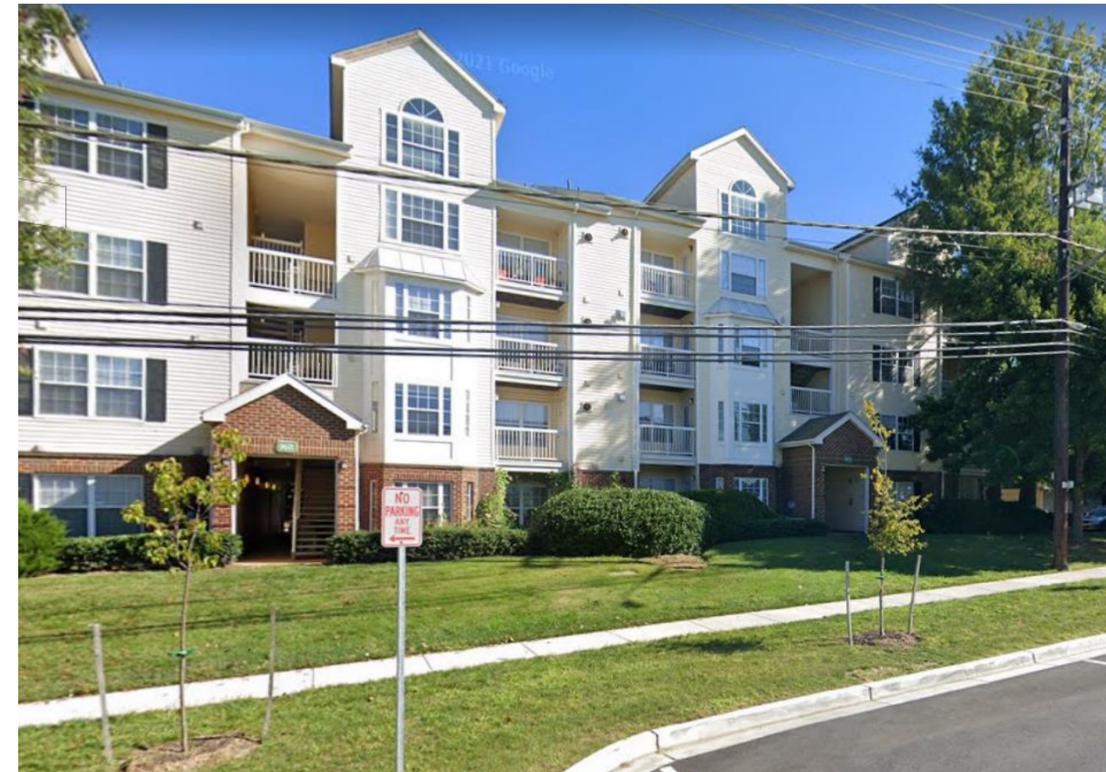
Adjacent Communities – NIST

- Home to the National Institute of Standards and Technology
- Garden style Londonderry Apartments towards the northeast side, built in the 1960s



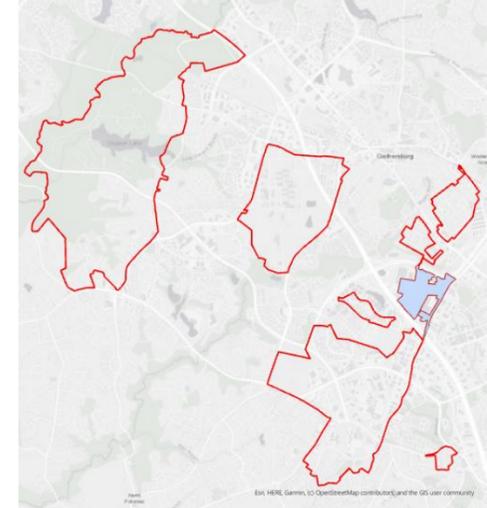
Adjacent Communities – Washingtonian

- Home to apartment buildings and the Washingtonian Tower Condominiums built in the 1960s
- Located in-between Downtown Crown and RIO
- Streets are mostly tree lined with landscape buffers and narrow sidewalks



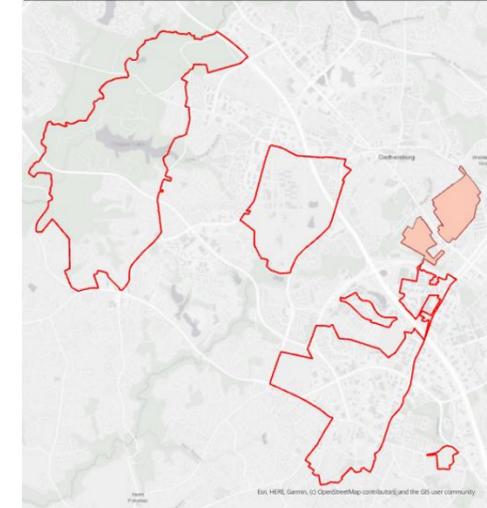
Adjacent Communities – Washingtonian Light Industrial Park

- Zoned for and contains industrial uses.
- Also contains specialty private recreation sites like Sky Zone Trampoline Park, Monster Mini Golf, and the Baseball Zone.
- Home to non-profit distribution and warehouse centers that serve the surrounding communities like Manna Food Distribution Center and the Red Cross.



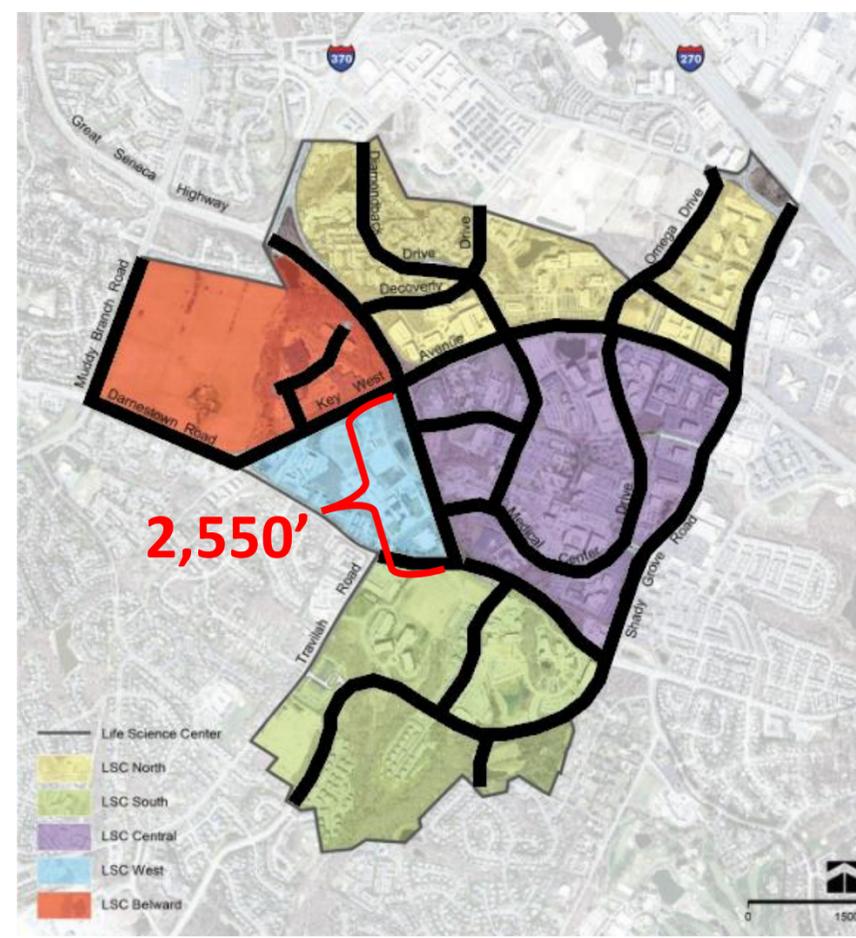
Adjacent Communities – Rosemont, Oakmont and Walnut Hill

- Home to large single-family homes on large lots
- Streets have narrow sidewalks with no landscape buffer and some trees



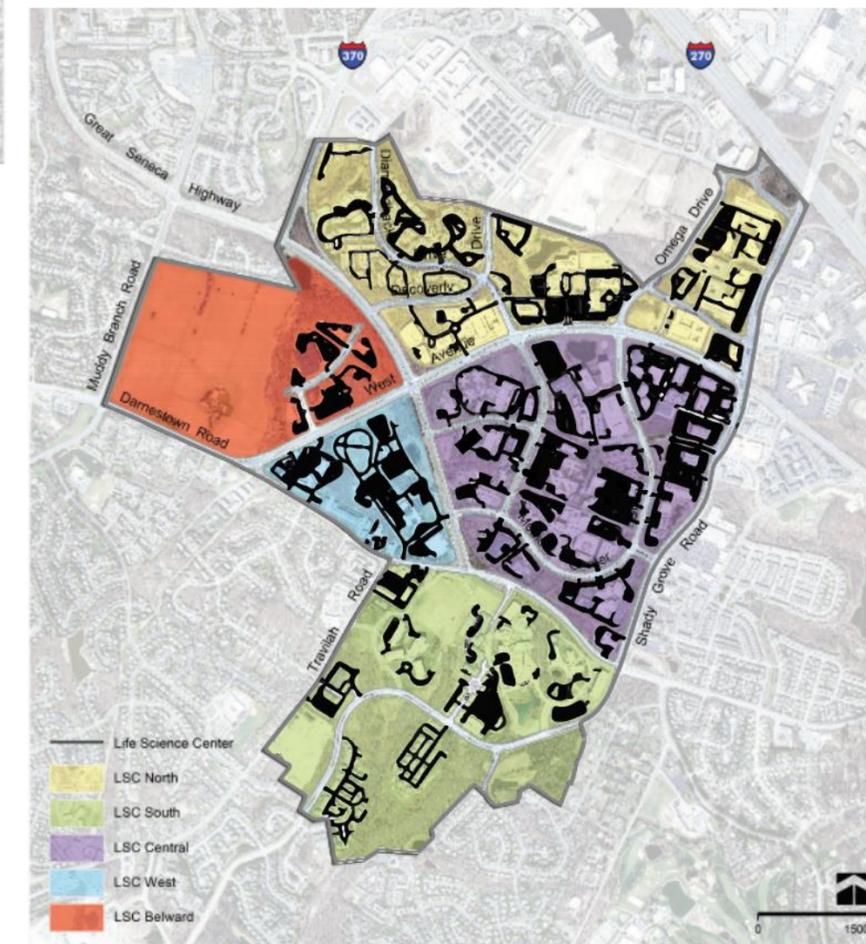
Urban Form – Life Sciences Center

- Large blocks in LSC Central inhibit walkability and the possibility for active street frontages for buildings
 - One of the longest street blocks is about 2,550 feet long
- Large surface parking lots limit possibility for active green space and contribute to the heat island effect
 - 26% or 164 Acres of the total LSC Area is covered by surface parking
 - 5% of all urban areas in the United States are covered in surface parking lots



Block Size

Impervious Surface – Parking Lots



Scale Comparison – Cambridge, MA

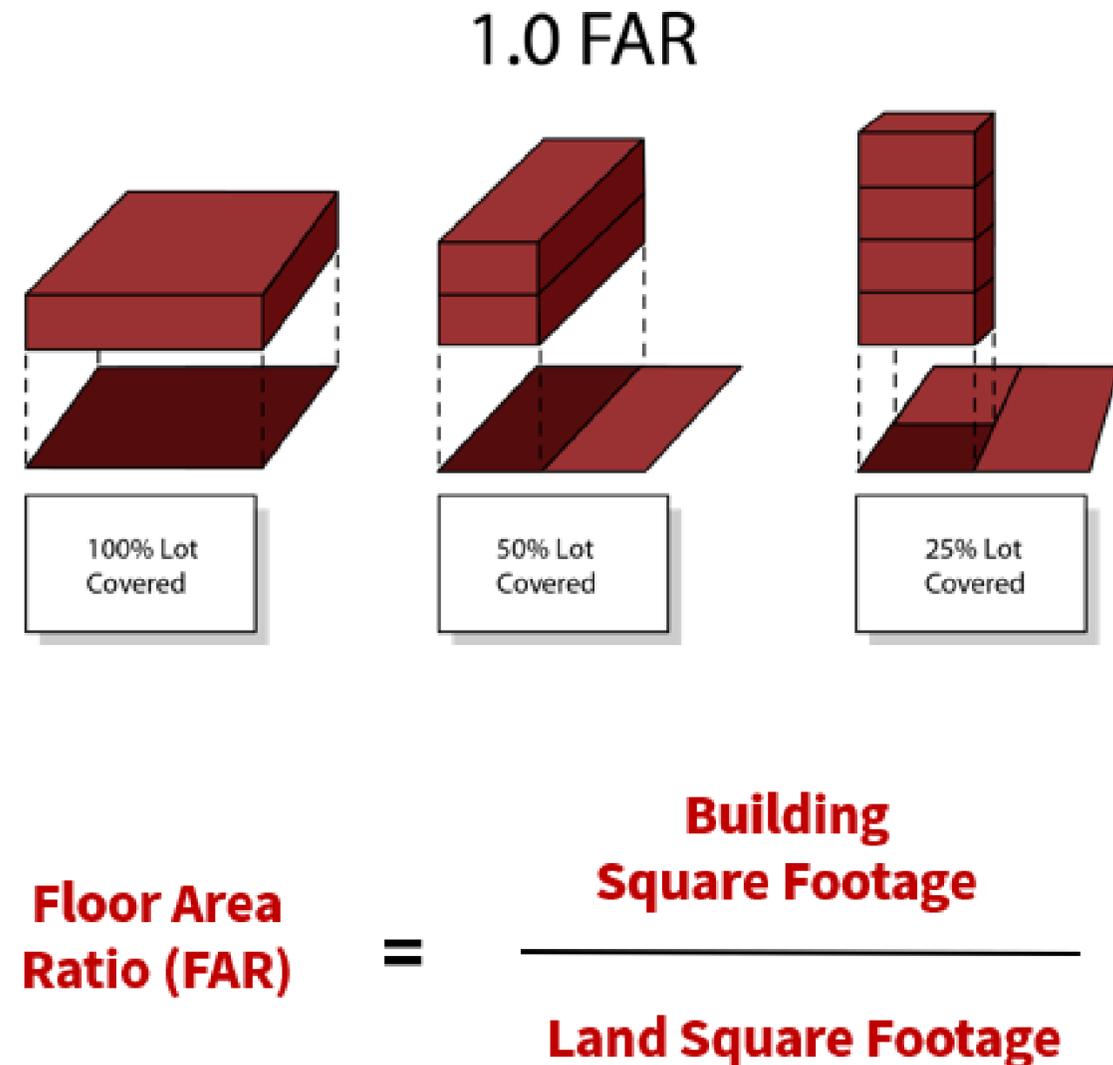
- Cambridge, MA – one of the largest life sciences clusters in the United States comparably has much smaller block lengths, which facilitate a more pedestrian oriented environment.
- The average block length in Cambridge is around 500 feet long (compared to 2,550 feet in the LSC Area).



Floor Area Ratio

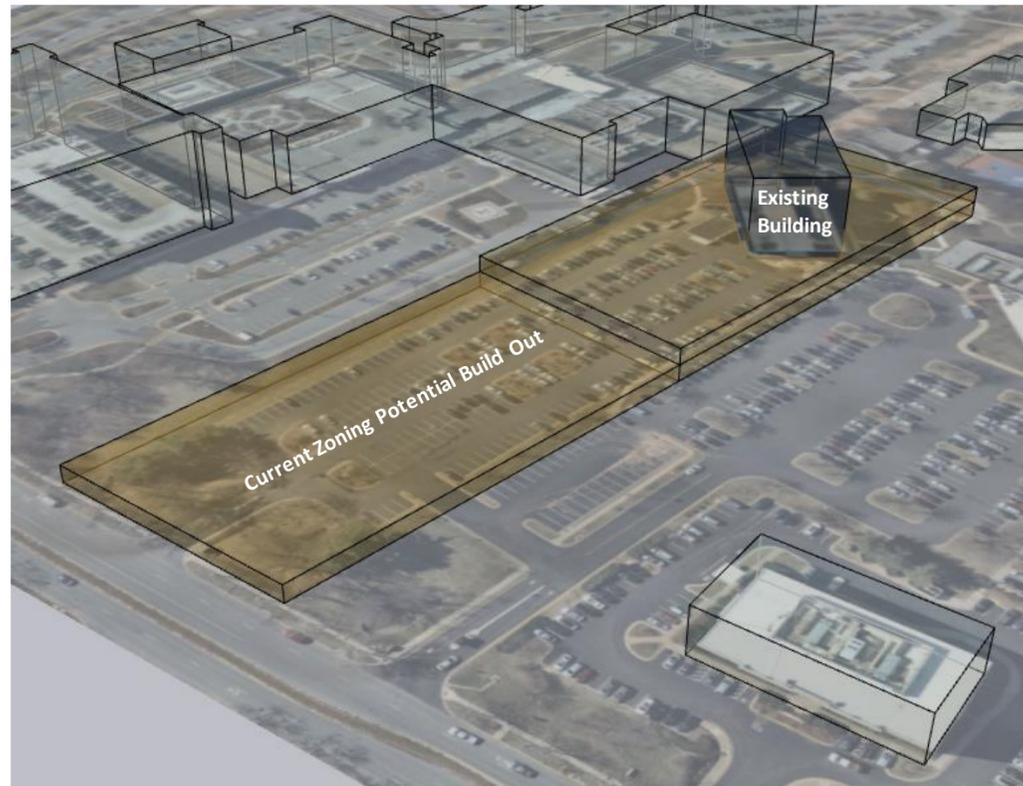
What is Floor Area Ratio (FAR)?

- Floor Area Ratio is a measure of development density. Higher FARs mean more dense development is allowed on a property. FAR is the ratio of the gross floor area of a building to the area of the property on which it is located.
- For example, on a property (land) that an area of 50,000 square feet and an FAR of 1.0, someone could construct a building with a maximum of 50,000 square feet. As shown on the right, this amount of buildable area could fit into a one-story building that covers the entire property, or a taller building that covers less of the property.
- The current Floor to Area Ratio (FAR) is **1.5** within the **LSC Zone**.

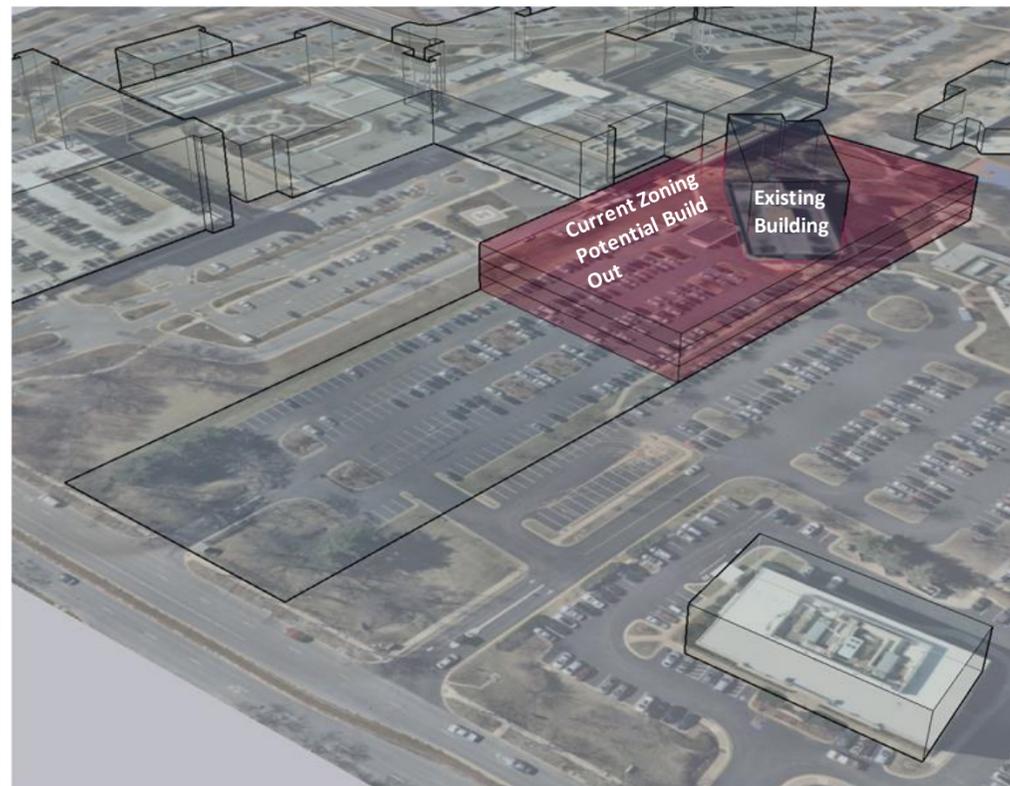


Floor to Area Ratio Build Out – Life Sciences Center Property Example

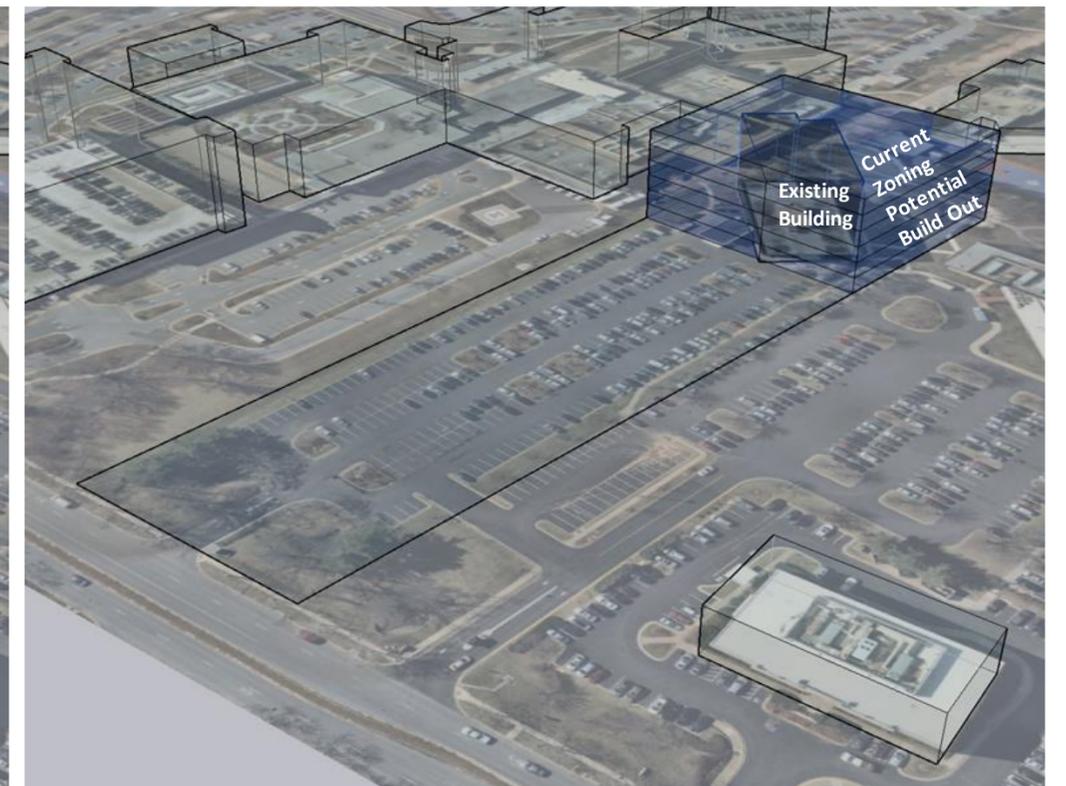
9715 Medical Center Drive, LSC Zone - 1.5 FAR



100% Lot Coverage



50% Lot Coverage

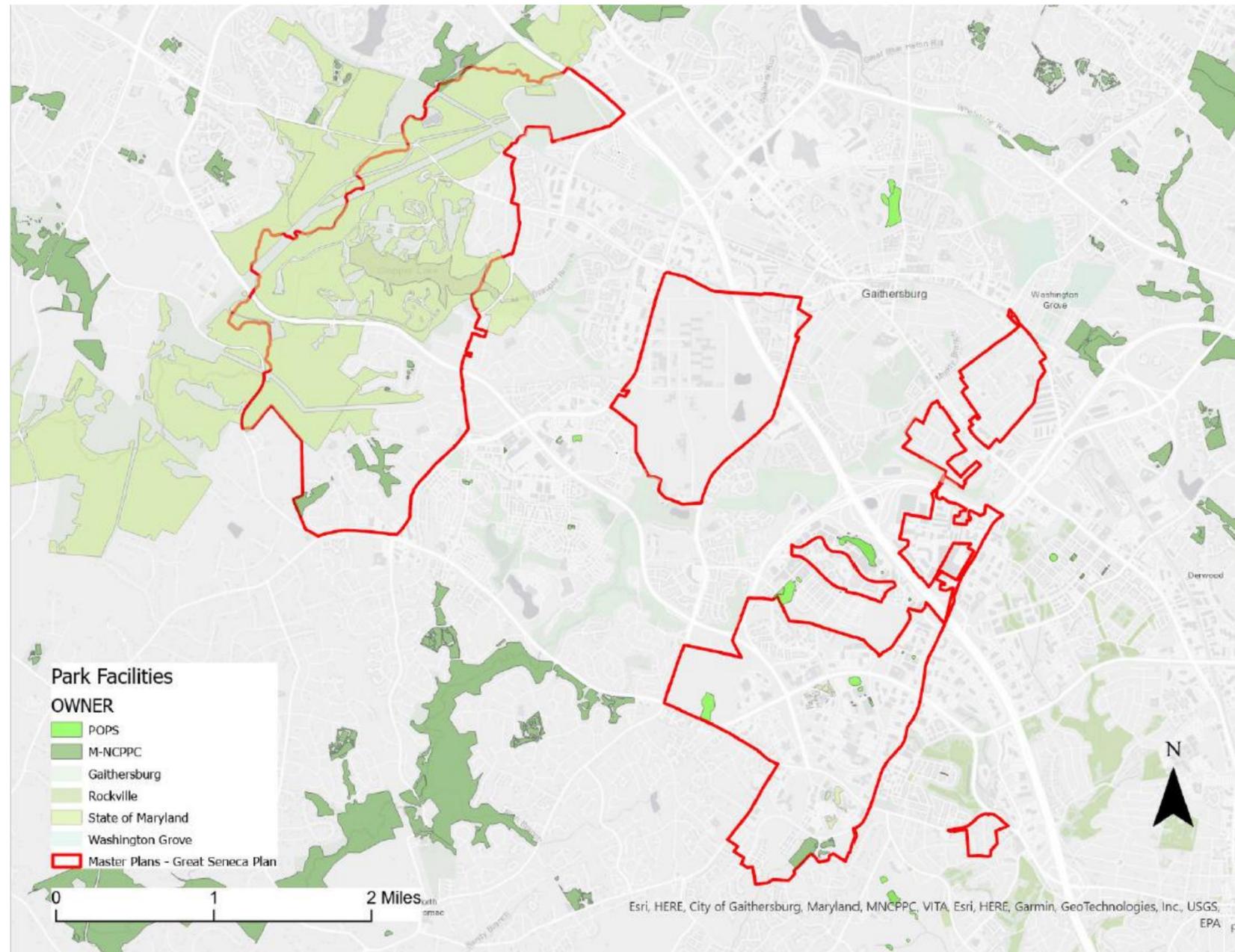


25% Lot Coverage

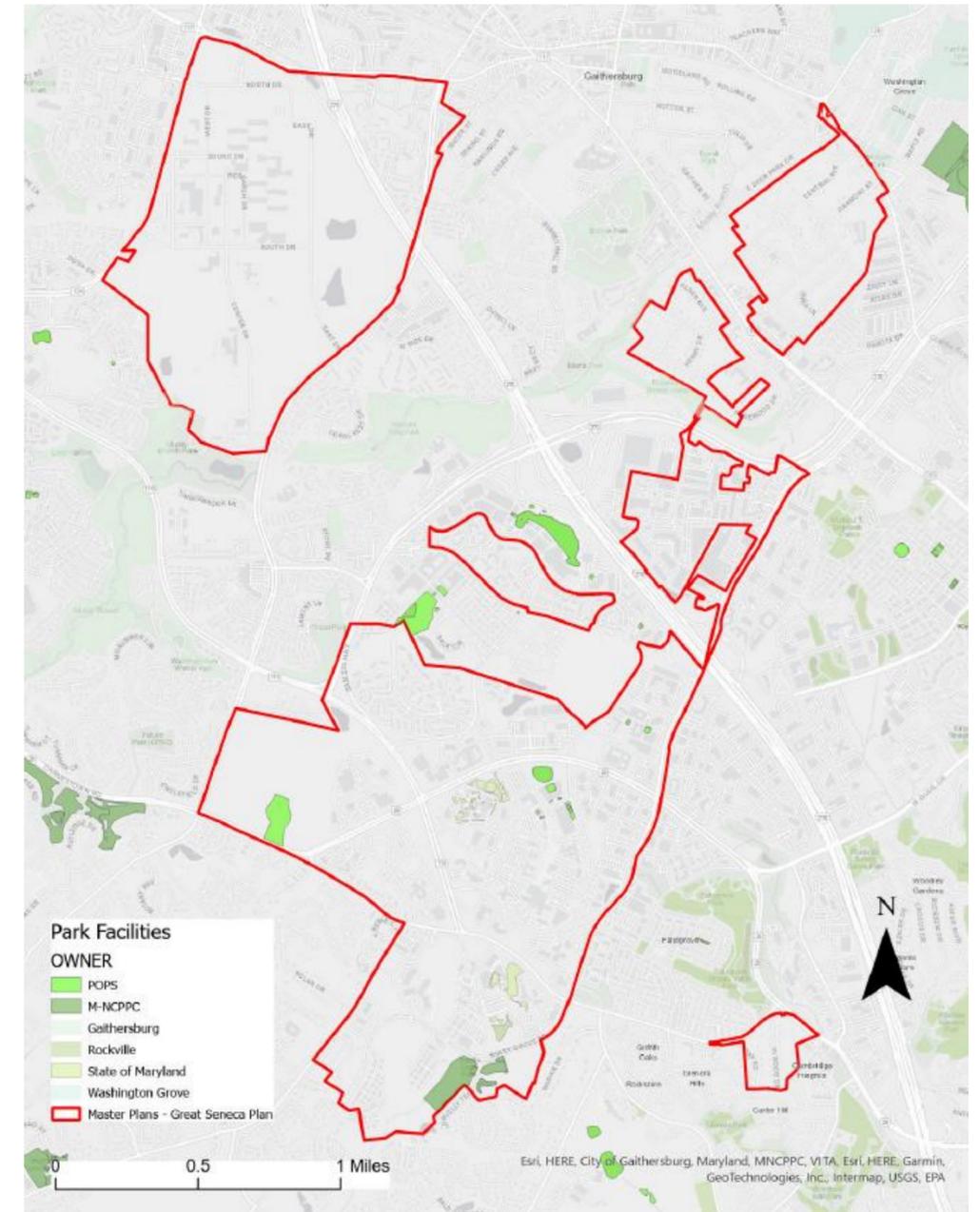
Parks



Great Seneca Plan Area - Parks by Owner



Great Seneca Plan Area



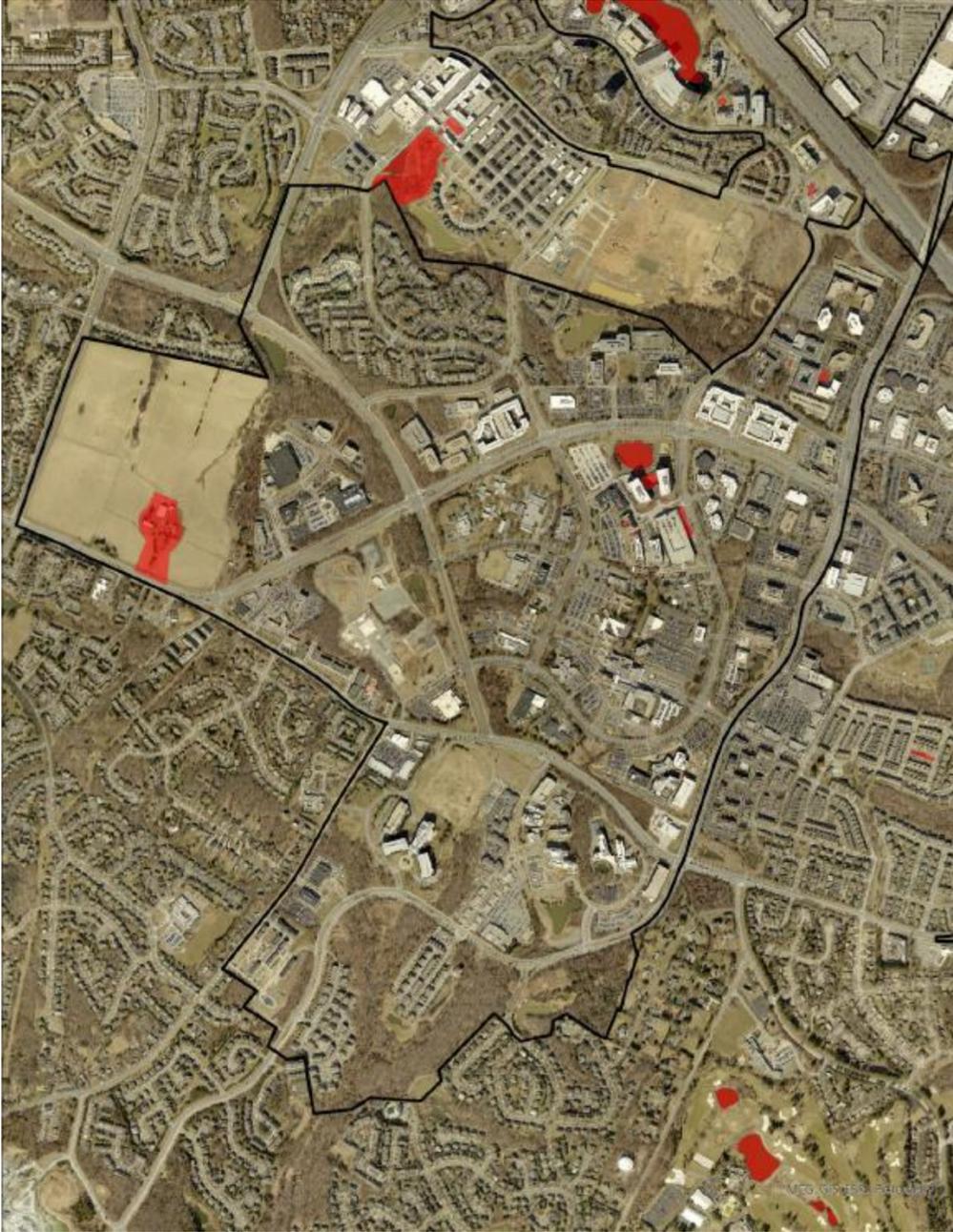
Life Sciences Center and Enclaves

Privately Owned Public Spaces (POPS)

 Privately Owned Public Spaces

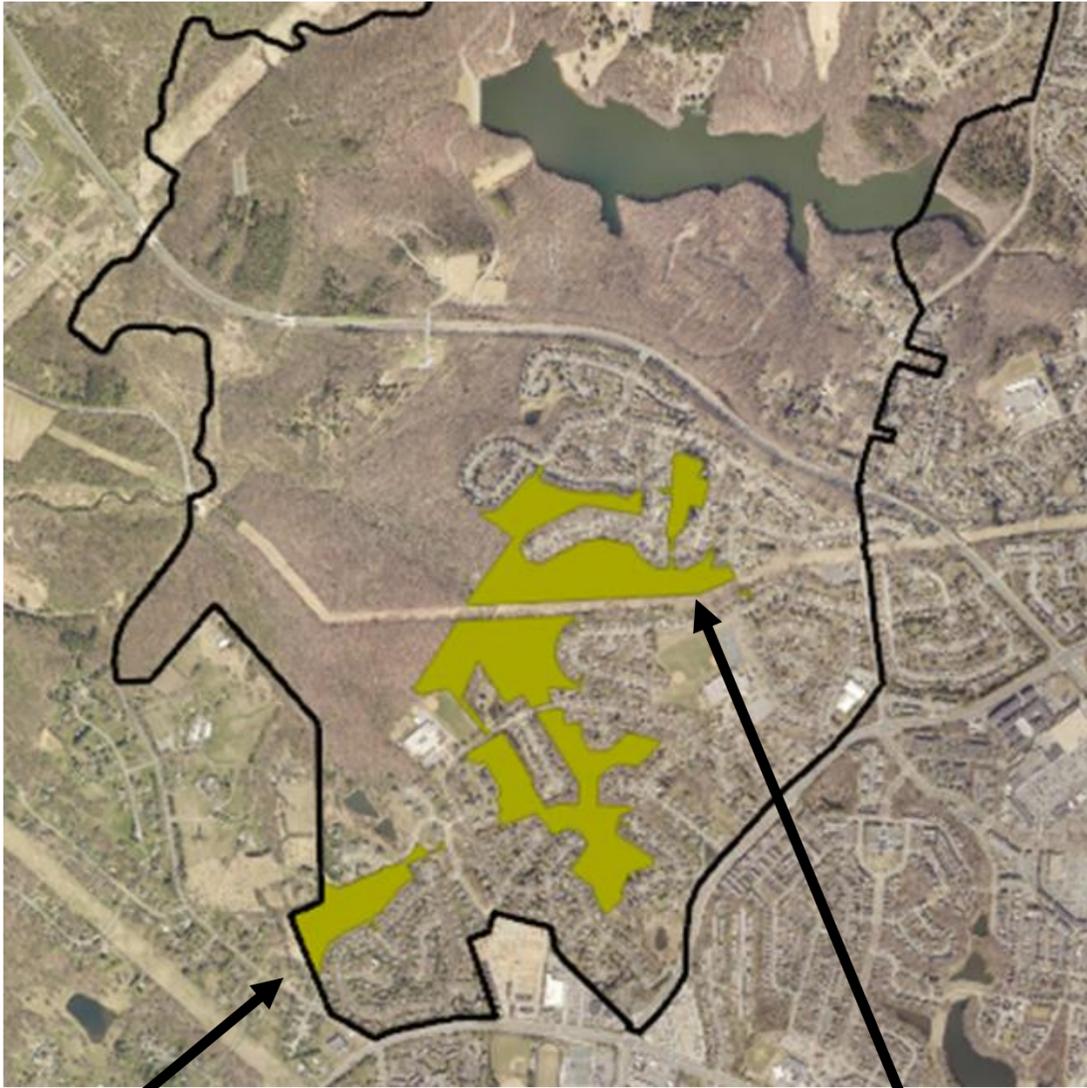


Great Seneca Plan Area



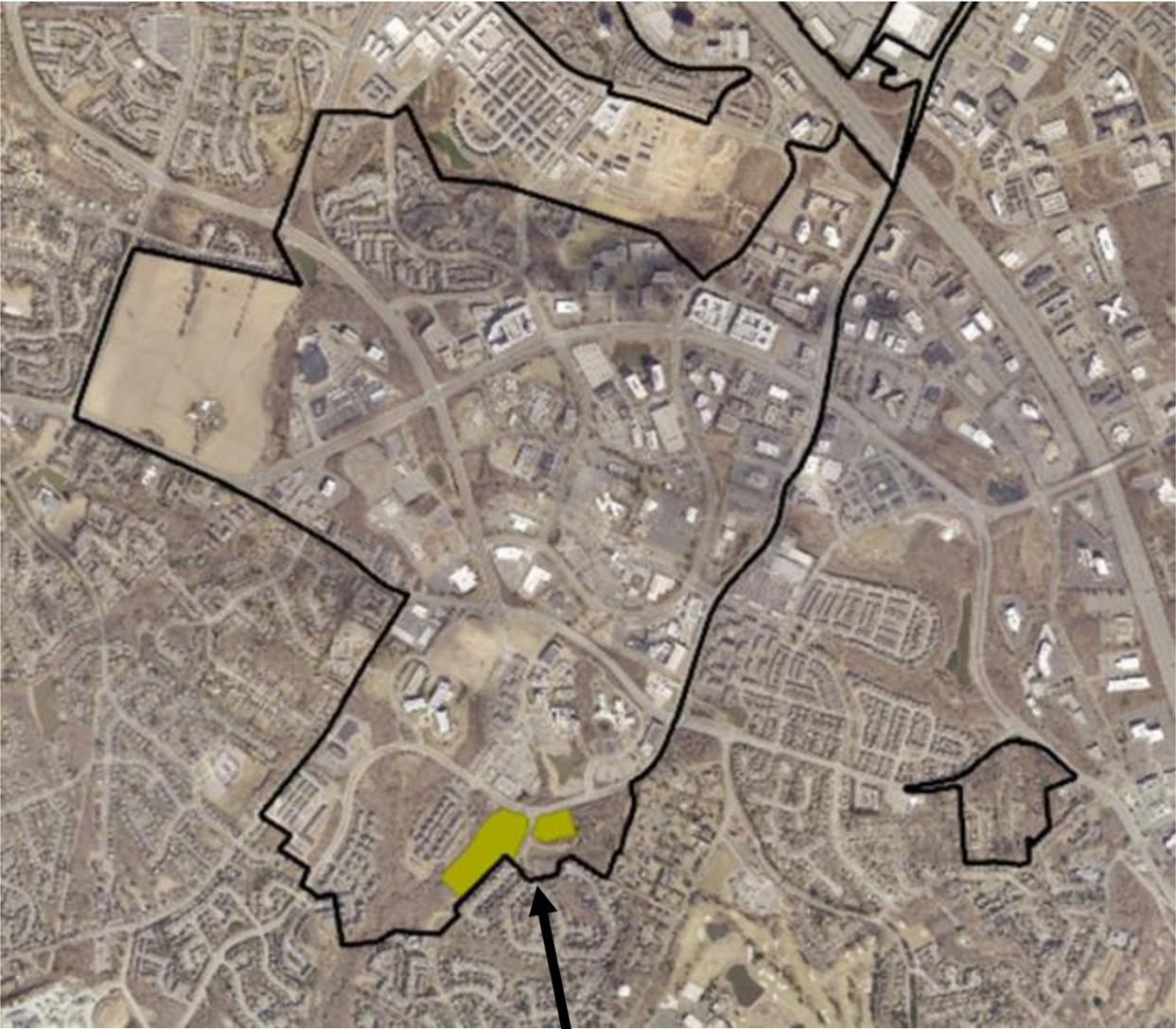
Life Sciences Center

M-NCPPC Parks



Orchard Neighborhood Park

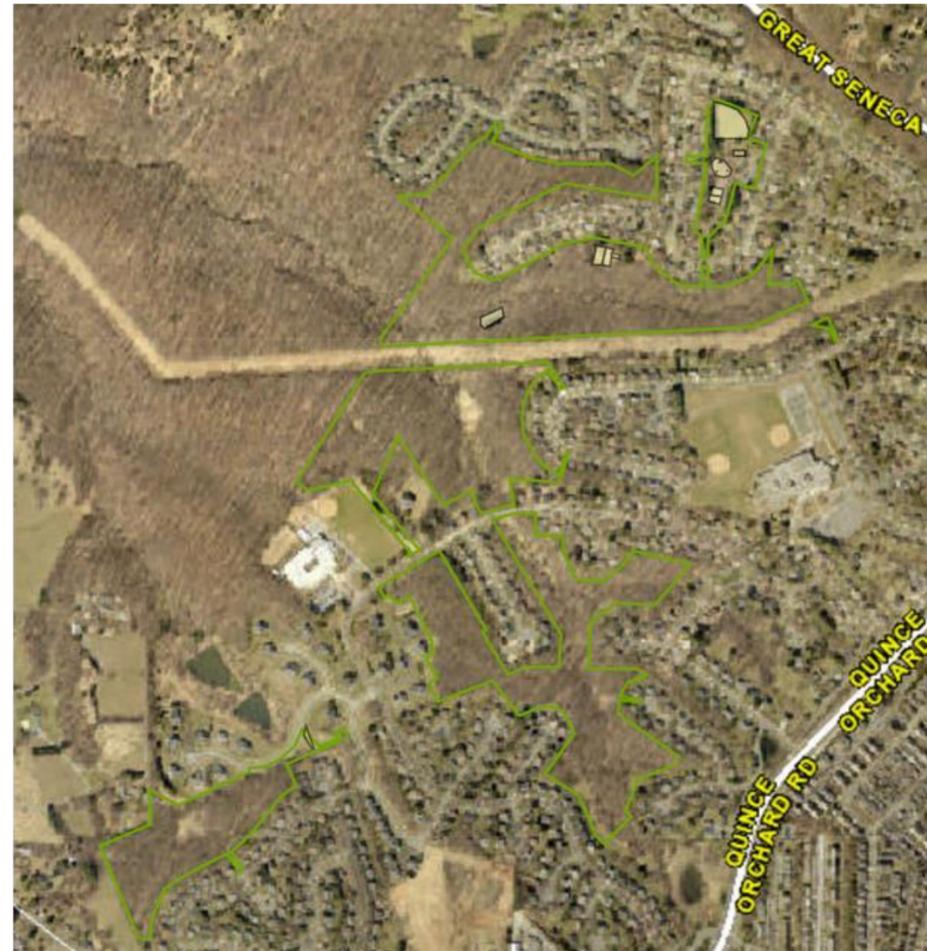
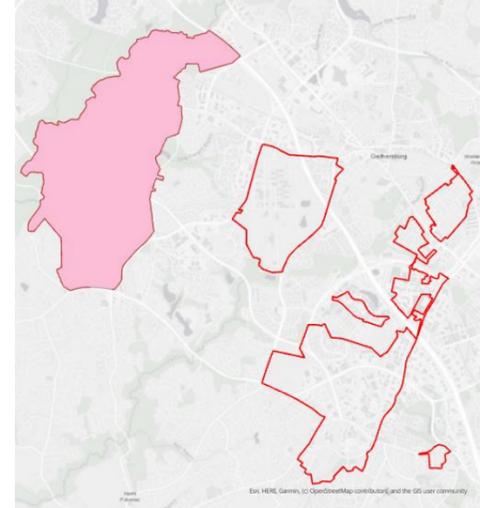
Quince Orchard Valley Neighborhood Park



Traville Local Park (Undeveloped)

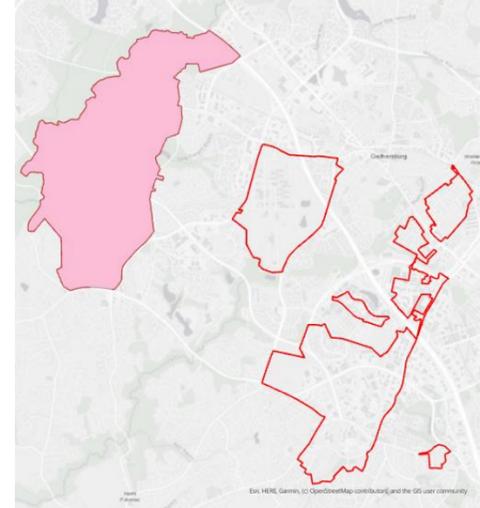
Quince Orchard Valley Neighborhood Park

- 76 Acres



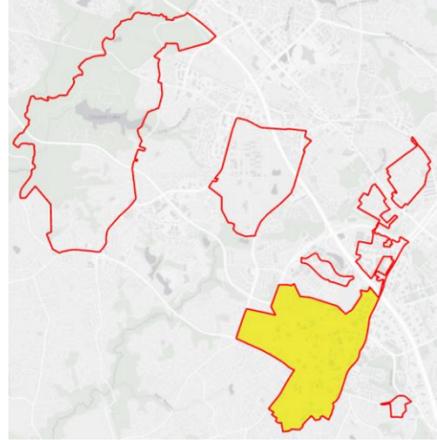
Orchard Neighborhood Park

- 10.2 Acres



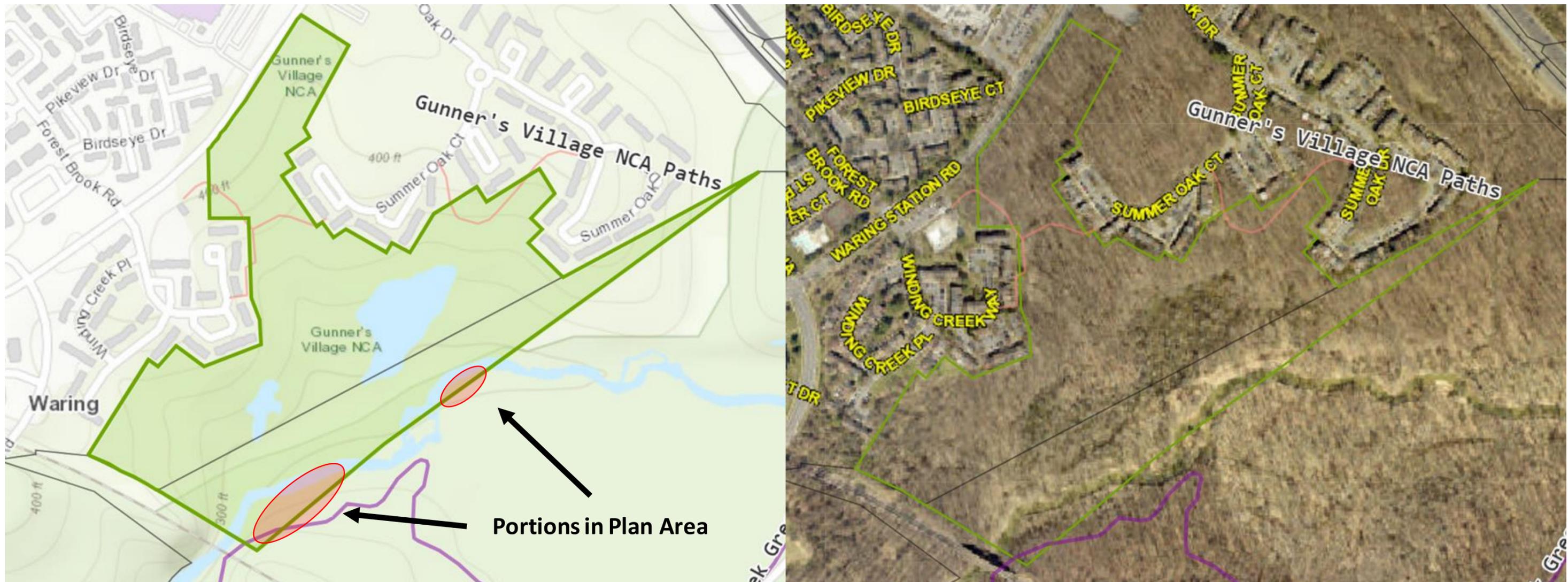
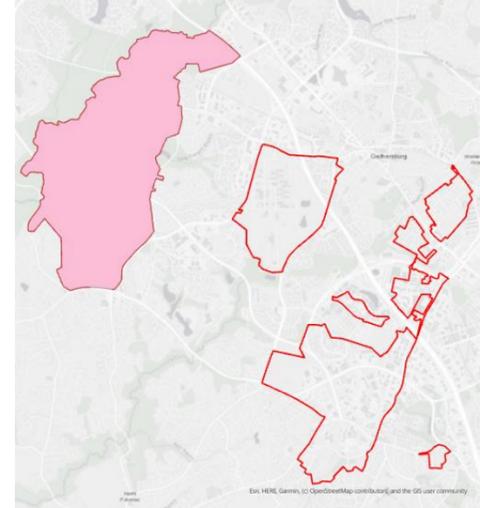
Traville Local Park

- 11.37 Acres



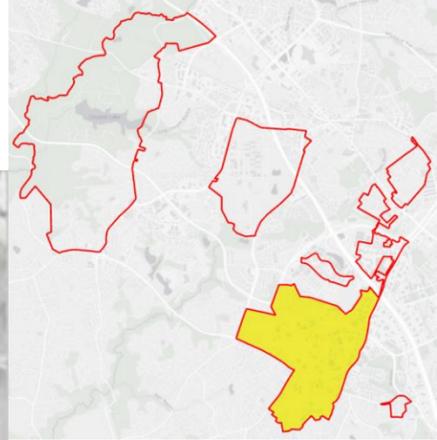
Gunner's Village Neighborhood Conservation Area

- 46.8 Acres



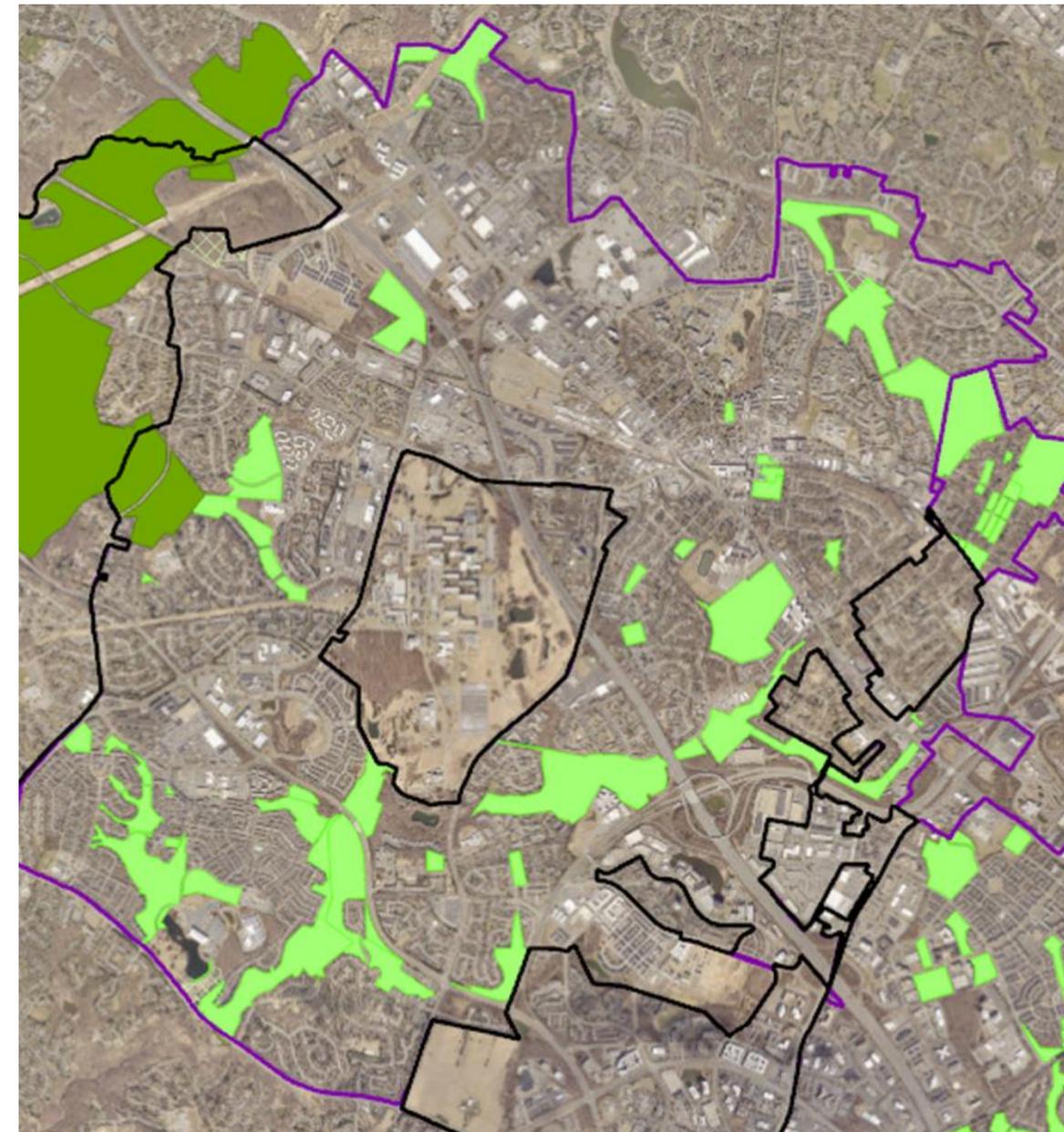
The Elms at PSTA (Pipeline Development)

- Site of formerly proposed LSC West Local Park and LSC West Urban Park
- Privately Owned Public Open Space (POPS)



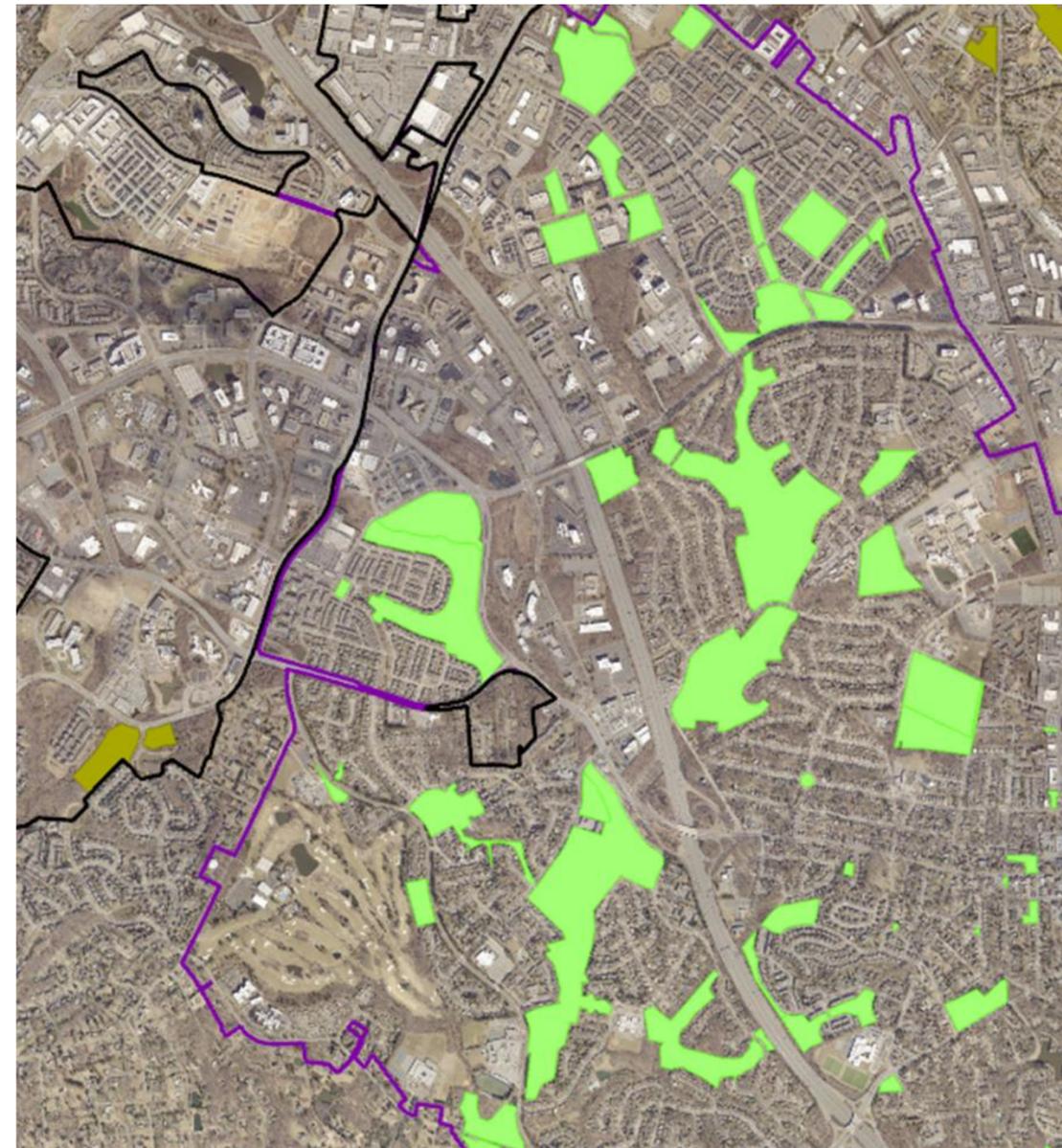
Municipal Parks – City of Gaithersburg

- Kentland Lakes Park (57 ac.)
- Muddy Branch Park (62 ac.)
- Malcolm King Park (78 ac.)
- Bohrer Park (56 ac.)
- Civic Center Park (5 ac.)
- Kelly Park (28 ac.)
- Victory Farms Park (58 ac.)
- Blohm Park (30 ac.)
- Brown Station Park (27 ac.)
- Diamond Farms Park (24 ac.)

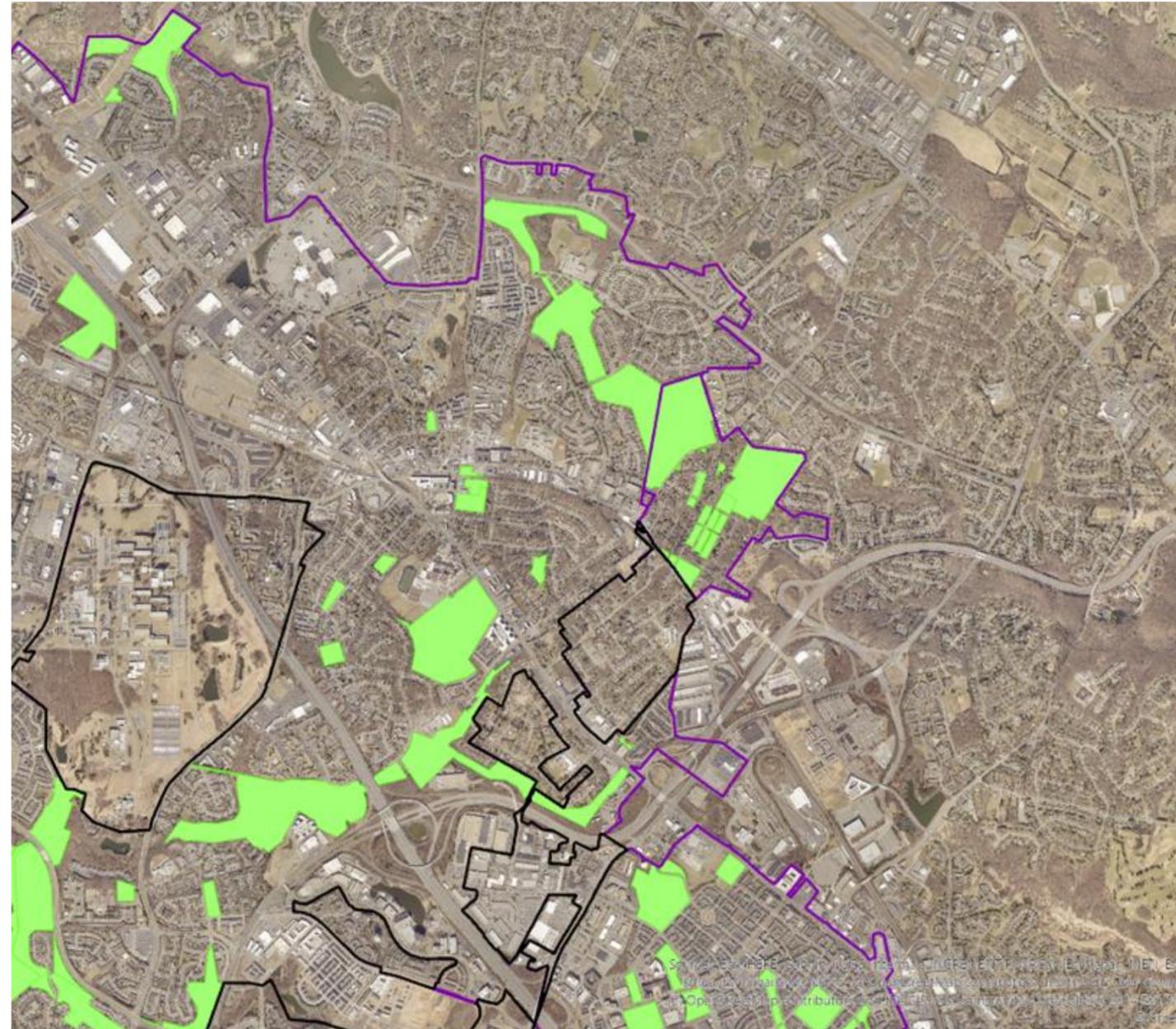


Municipal Parks – City of Rockville

- Falls Grove Stream Valley Park (39 ac.)
- Woottons Mill Park (75 ac.)
- Welsh Park and Swim Center (33 ac.)
- Woodley Gardens Park (40 ac.)
- Upper Watts Branch Forest Preserve (69 ac.)
- King Farm Stream Valley Park (52 ac.)
- King Farm Park (12 ac.)
- Mattie J.T. Stepanek Park (24 ac.)

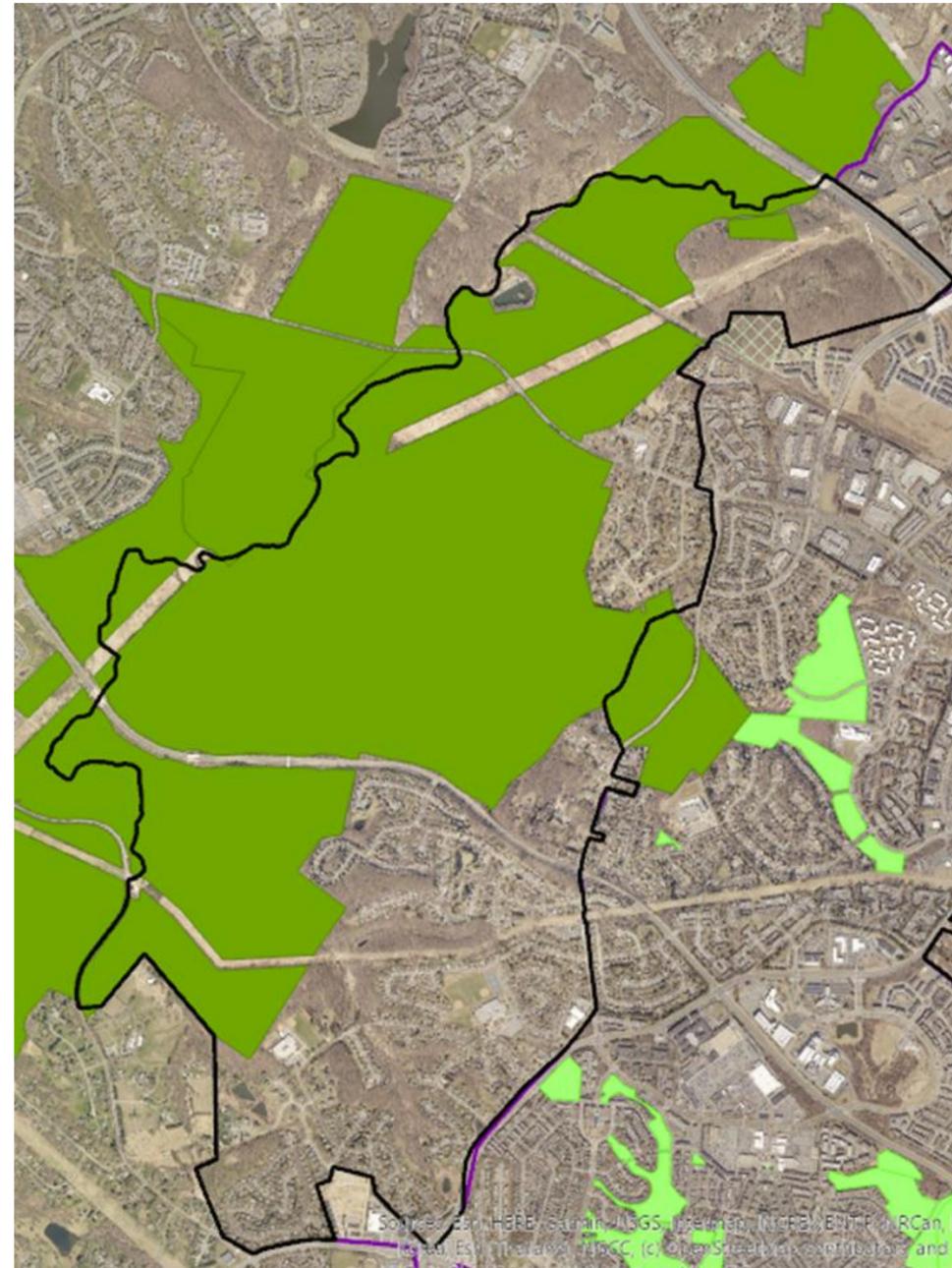


Municipal Parks – Town of Washington Grove



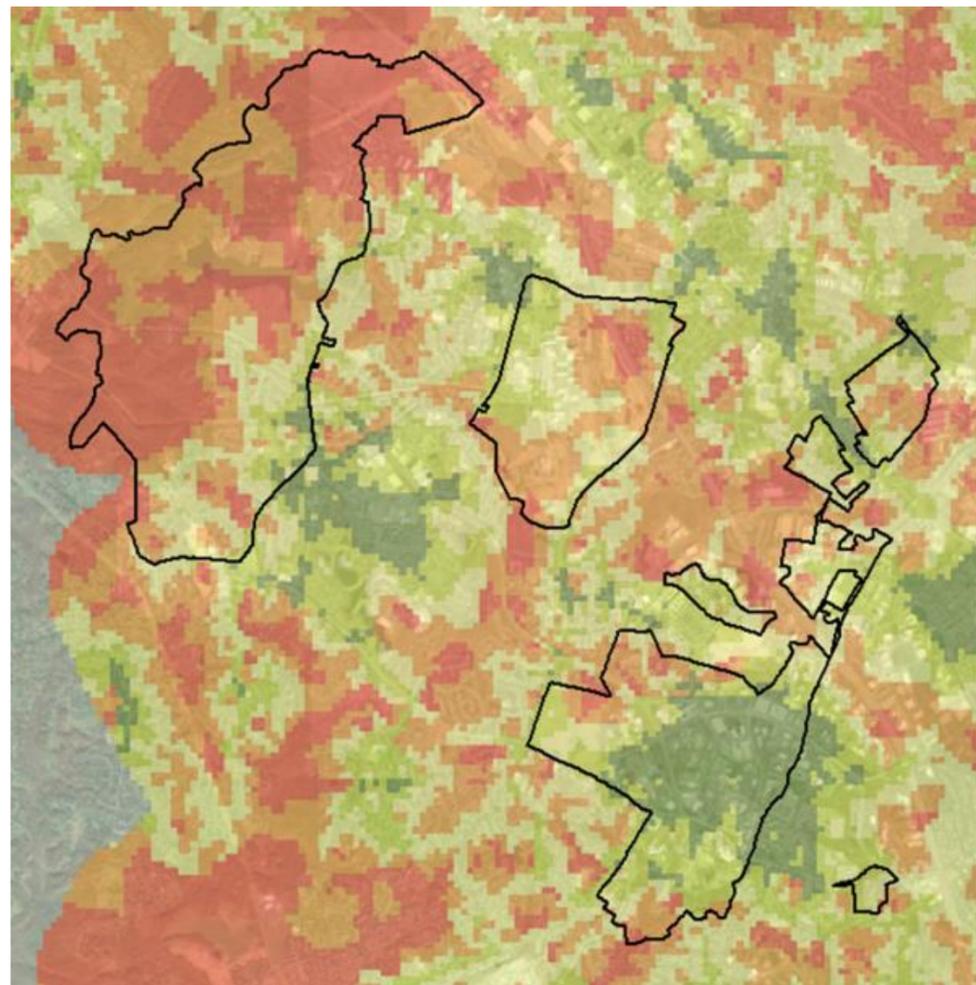
State Park - Seneca Creek State Park

- 6,300 Acres
- State owned park



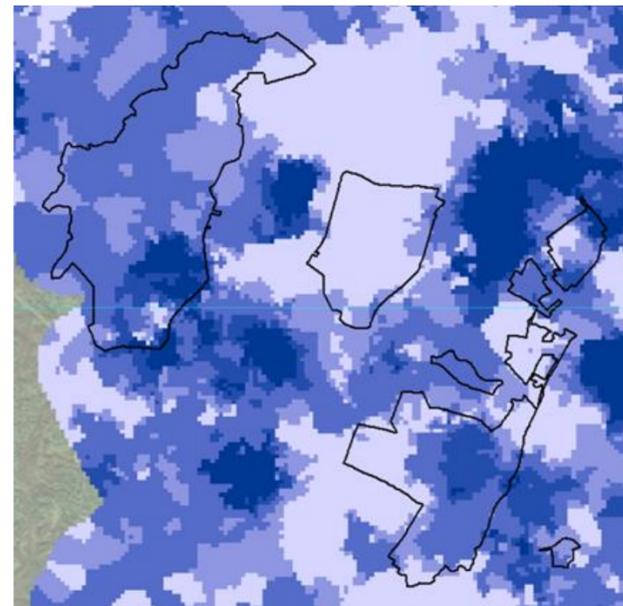
Energized Public Spaces Analysis

Supply, Demand and Experience Improvement Areas



Walkability 10-Min Shed

■ < walkable
■ \updownarrow
■
■
■ > walkable



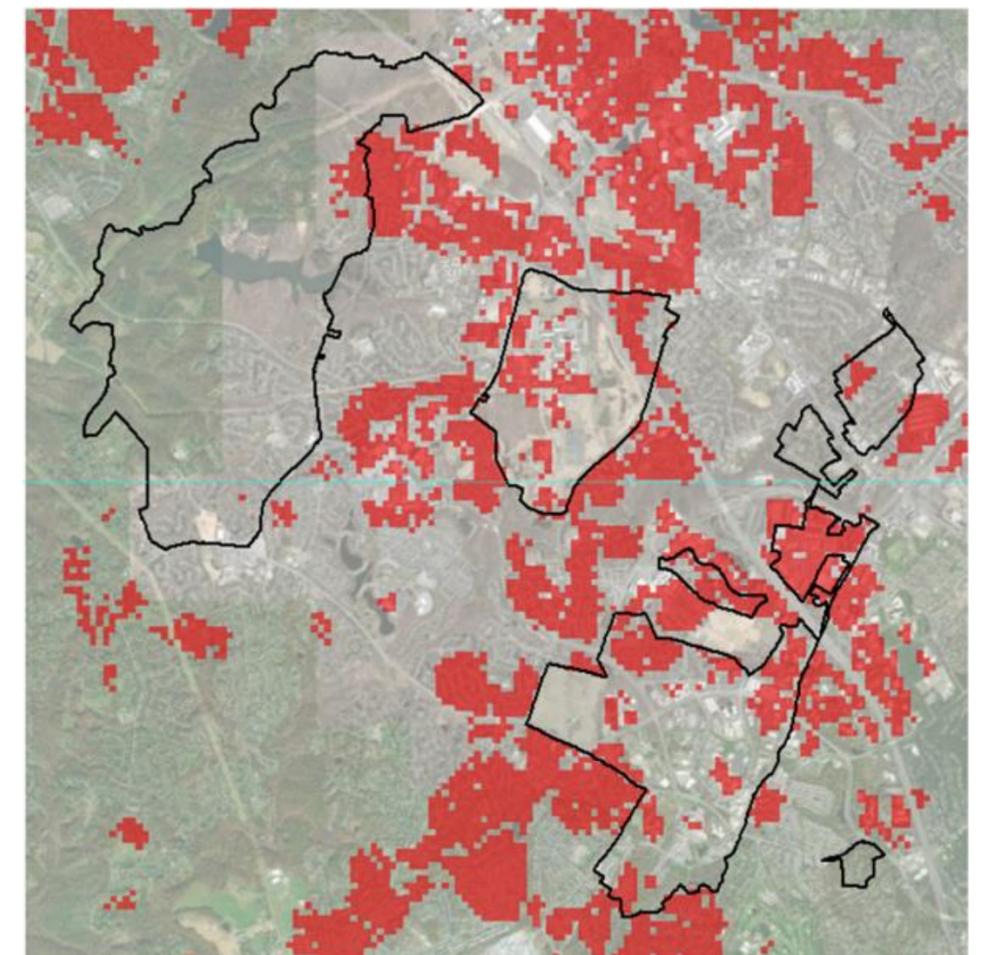
Supply

■ < amenities
■ \updownarrow
■ > amenities



Demand

■ < people
■ \updownarrow
■ > people



Experience Improvement Areas

Transportation



Existing Roadways

- Close proximity to I-270 with ramps at Sam Eig Highway, Omega Drive, Shady Grove Road, and Montgomery Avenue
- 6-lane roadways, including Darnestown Road, Key West Avenue, and Shady Grove Road
- Limited local street grid connectivity



Existing Roadways



Medical Center Drive



Key West Avenue



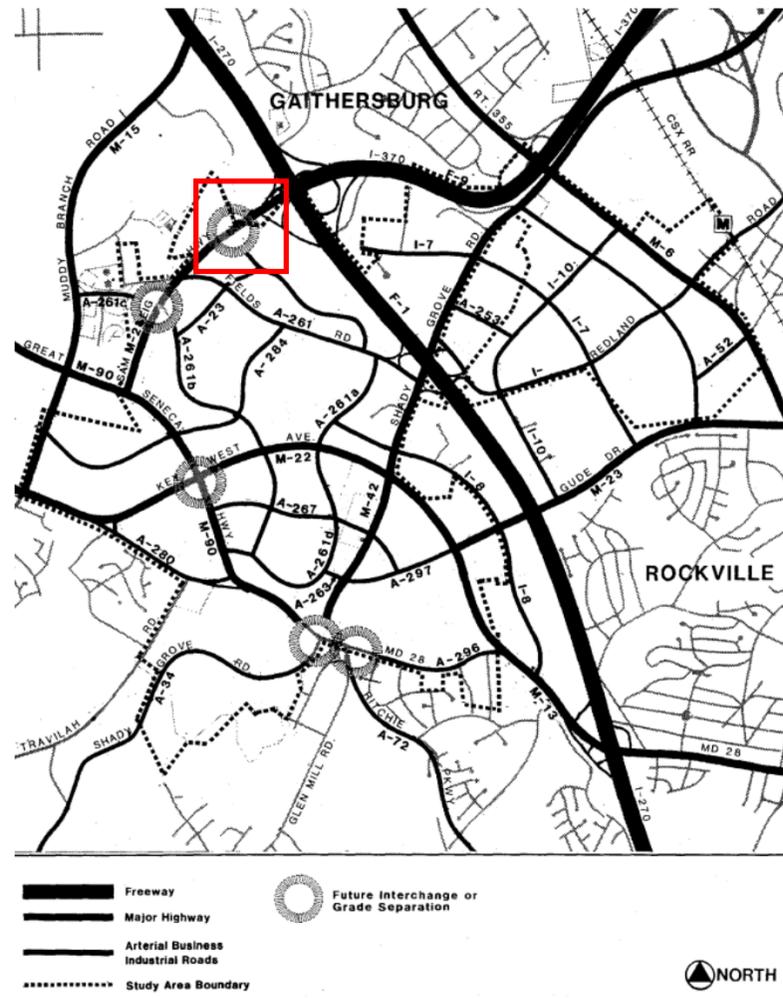
Traville Gateway Drive



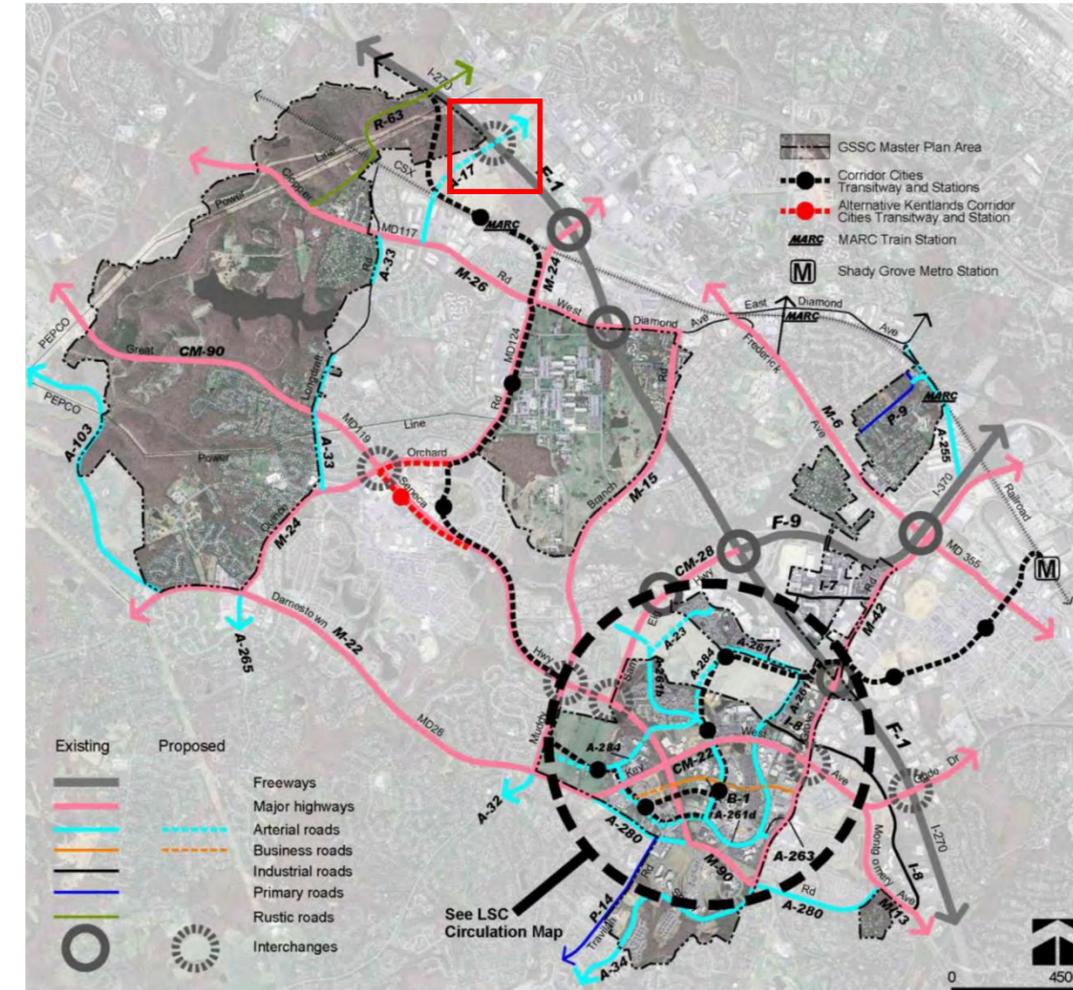
Broschart Road

Previously Proposed Interchanges

1990 Shady Grove Study Area Master Plan proposed 5 interchanges; 1 was built



2010 Great Seneca Science Corridor Plan proposed 6 interchanges; 1 was built



Undesirable / Uncomfortable Sidewalks

- Little to no sidewalk
- If sidewalk exists, it is narrow and/or in not good condition
- Little to no landscape or tree buffer
- Usually on streets with higher speed limit
- Non-urban or activated area



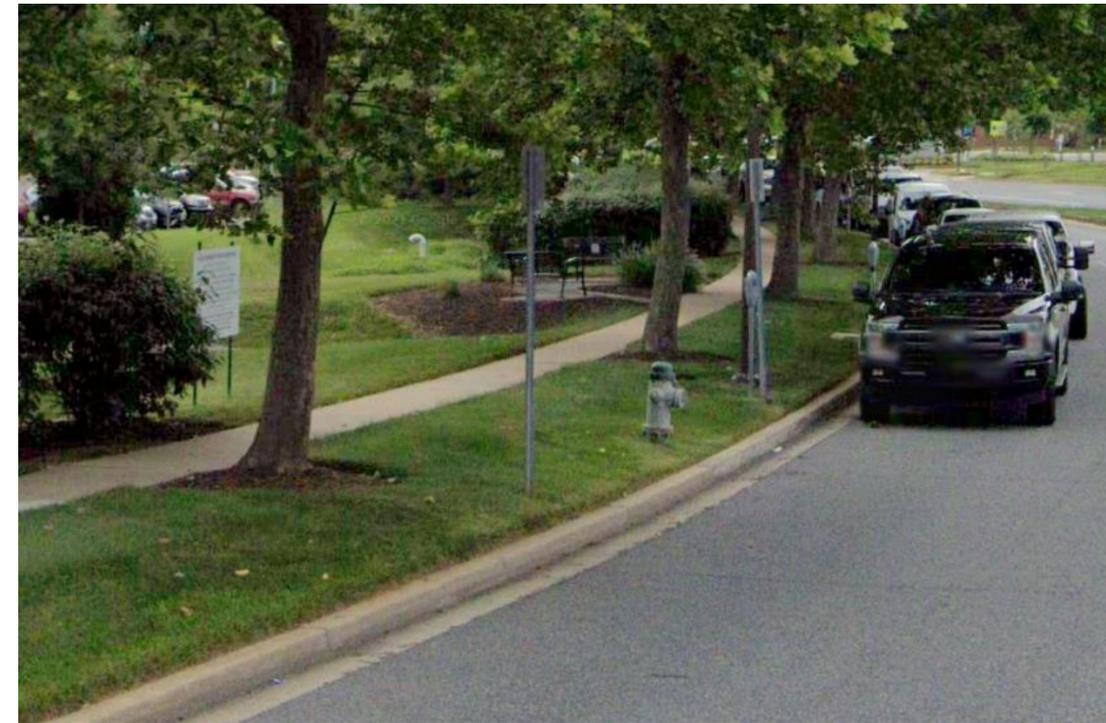
Great Seneca Highway



Darnestown Road – MD 28

Somewhat Comfortable Sidewalks

- Sidewalks exist but are often narrow
- Pedestrians are protected by narrow landscape buffer, trees and/or parked cars
- Usually on streets with lower speed limit
- In a somewhat urban or activated area



Medical Center Drive



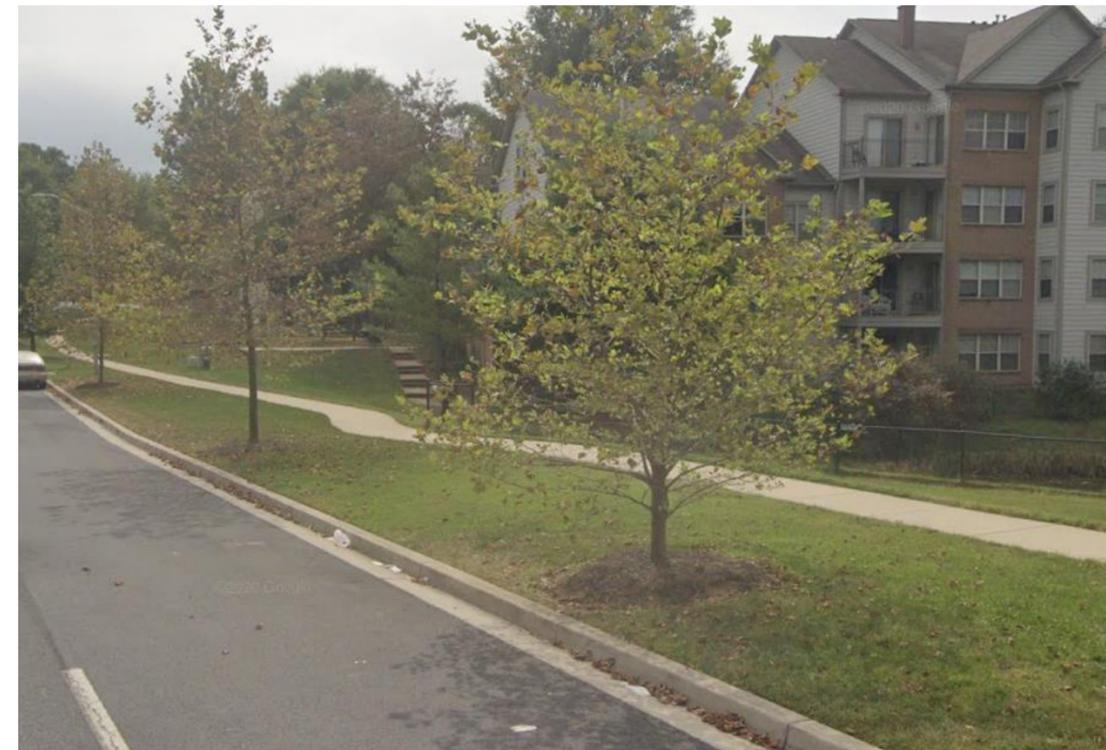
Shady Grove Road

Very Comfortable Generous Sidewalks

- Wide sidewalks
- Pedestrians are protected by large landscape buffer, trees and/or parked cars
- Usually on streets with lower speed limit
- In an urban or activated area



Key West Avenue



Discoverly Road

Uncomfortable / Undesirable Crossings

- Long crossing distances / more lanes
- High speeds
- Unmarked crossing or marked without high-visibility treatment
- No median refuge island



Great Seneca Highway at Medical Center Drive



Key West Avenue at Diamondback Drive

Somewhat Comfortable / Very Comfortable Crossings

- Fewer lanes to cross
- Lower speeds on crossed roadway
- High visibility crossing marking
- Raised refuge island



Research Boulevard at Siesta Key Way (Somewhat Comfortable)



Traville Gateway Drive at Gudelsky Drive (Very Comfortable)

Pedestrian Level of Comfort

- Undesirable sidewalk/path
- • • Undesirable (no sidewalk)
- Uncomfortable sidewalk/path
- • • Uncomfortable (no sidewalk)
- Somewhat comfortable sidewalk/path
- • • Somewhat comfortable (no sidewalk)
- Very comfortable sidewalk/path
- • • Very comfortable (no sidewalk)

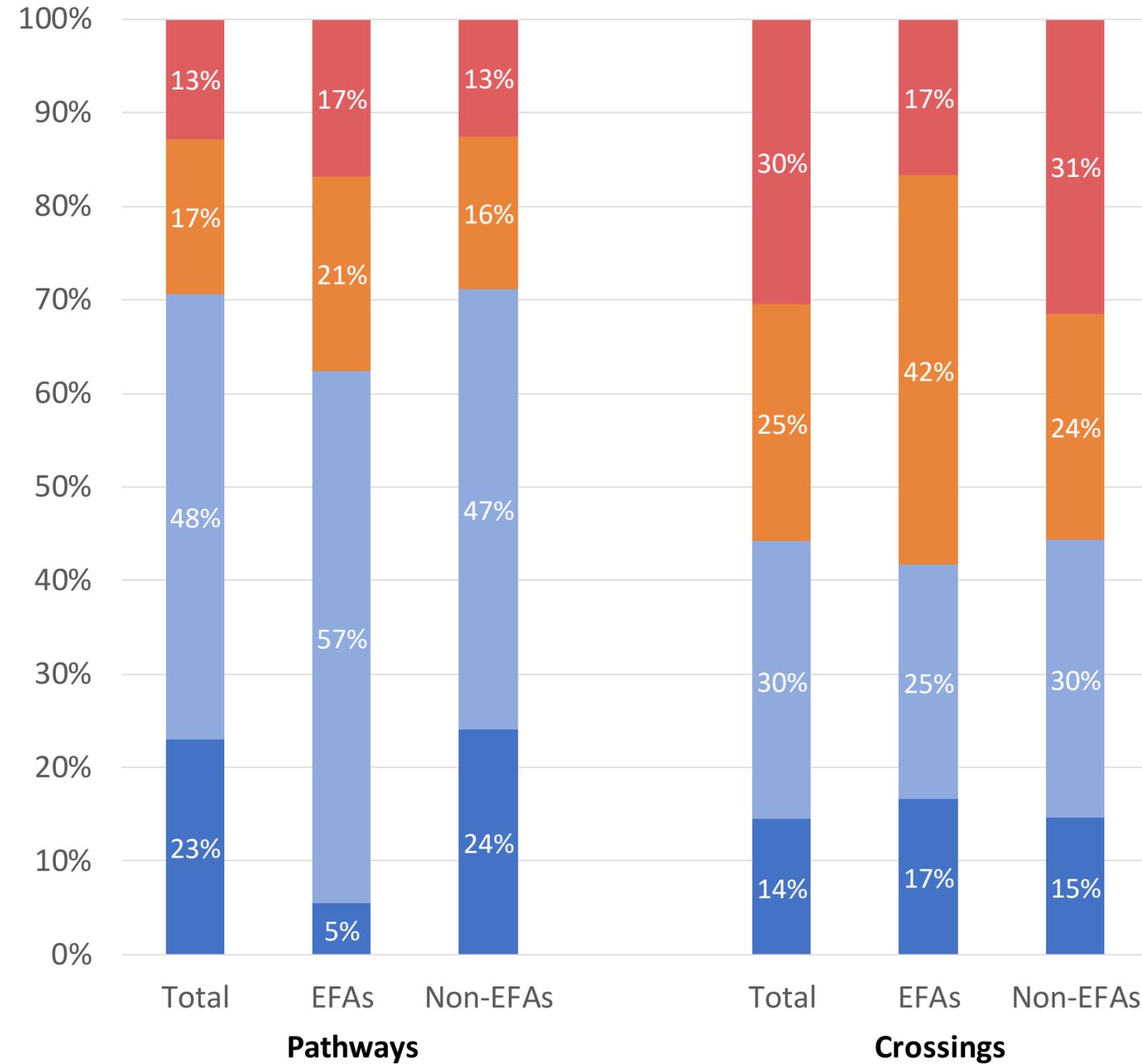


Pedestrian Comfort

In the Plan Focus Area

Equity Focus Areas (EFAs)	Non-EFAs
Uncomfortable or Undesirable Pedestrian Pathways	
38%	29%
Uncomfortable or Undesirable Pedestrian Crossings	
58%	56%

- 54% of crossings are unmarked
- 75% of crossings in EFAs are unmarked



Very Comfortable Somewhat Comfortable Uncomfortable Undesirable

Protected Crossings

- Signalized
- All-Way Stop Controlled (AWSC)
- Pedestrian Hybrid Beacon (PHB) (aka HAWK)



AWSC - Shady Grove Rd at Piney Meetinghouse Rd

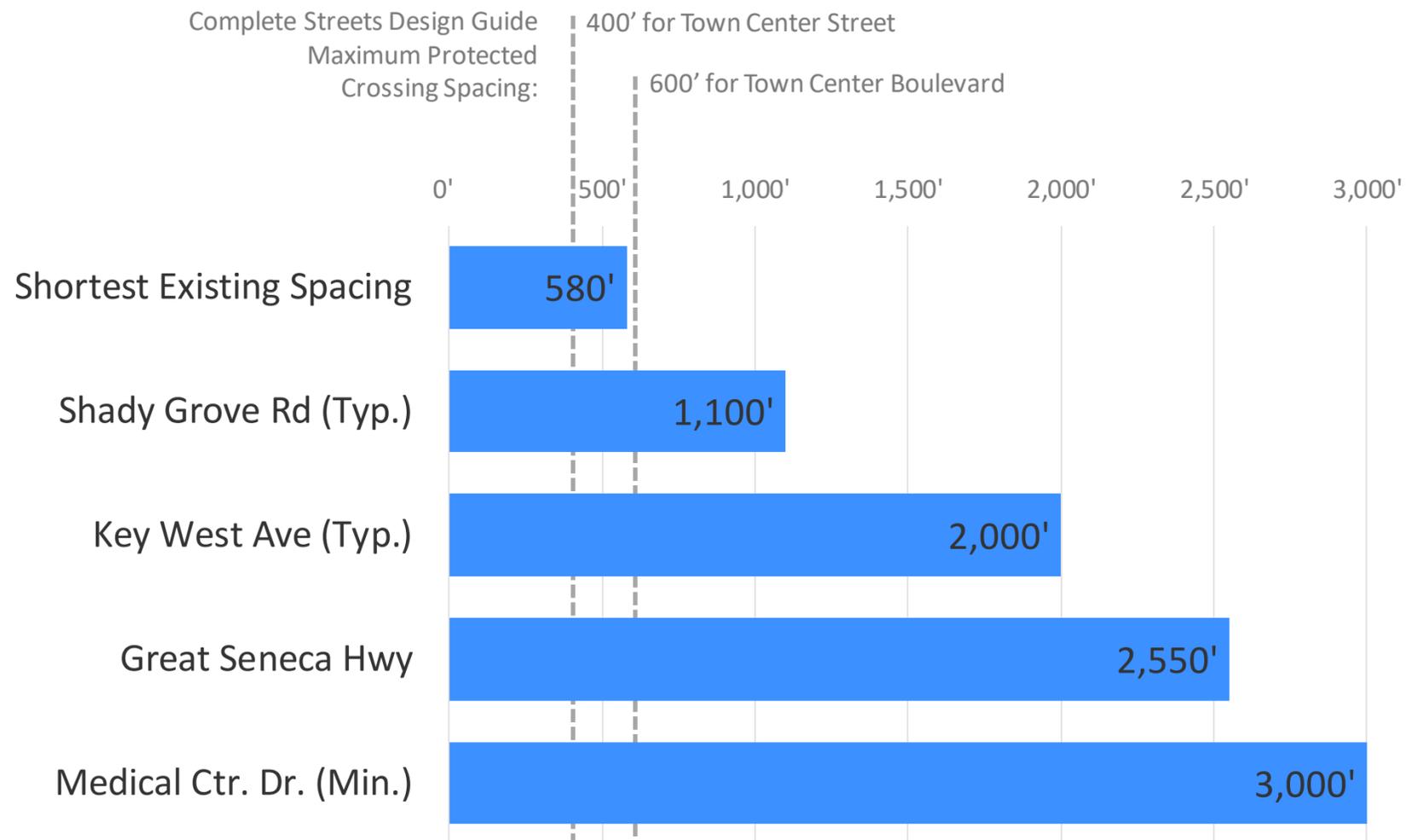


Signalized - Key West Avenue at Diamondback Drive

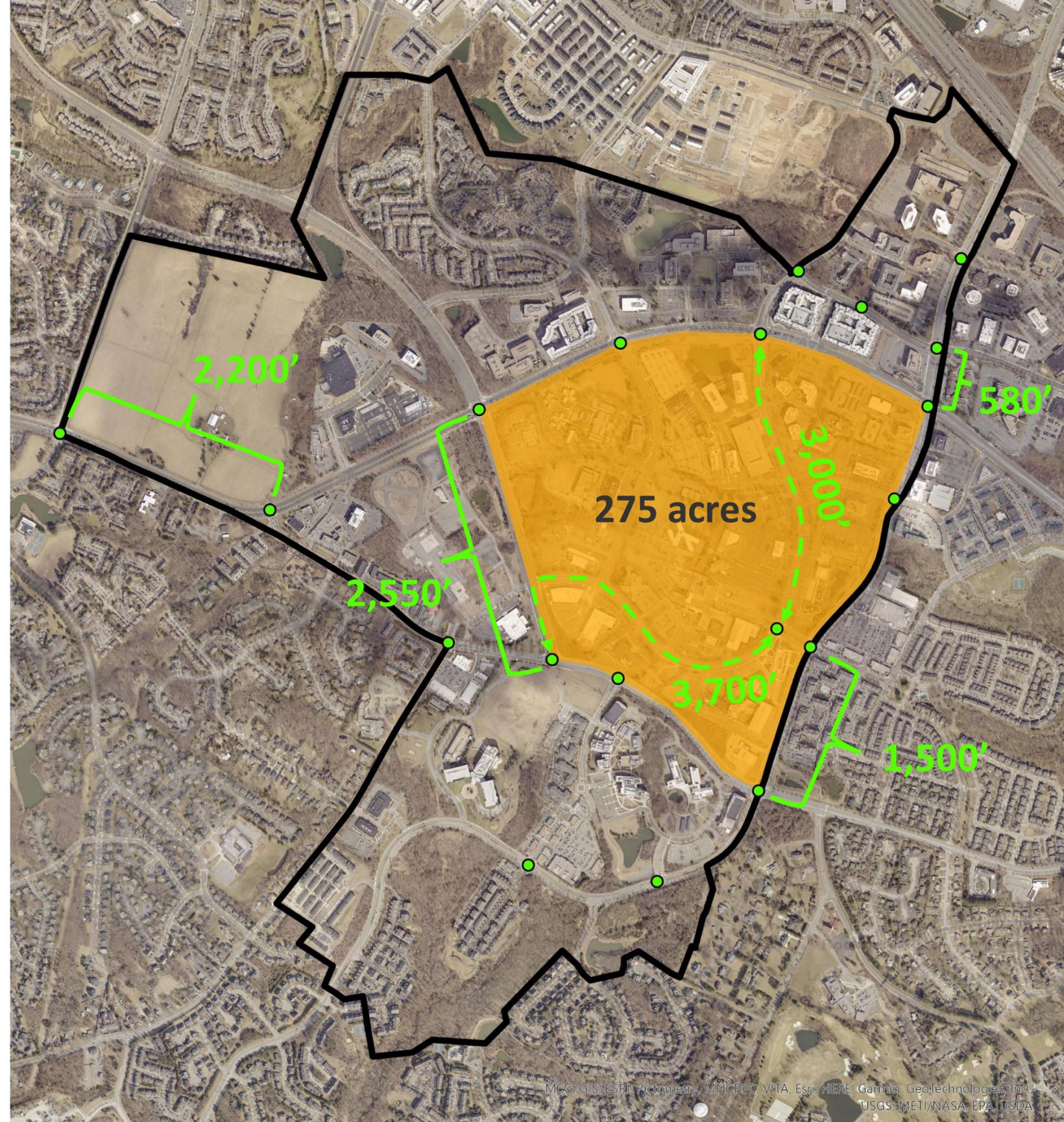


PHB - Muddy Branch Rd near Suffield Dr

Pedestrian Protected Crossing Spacing (in feet)

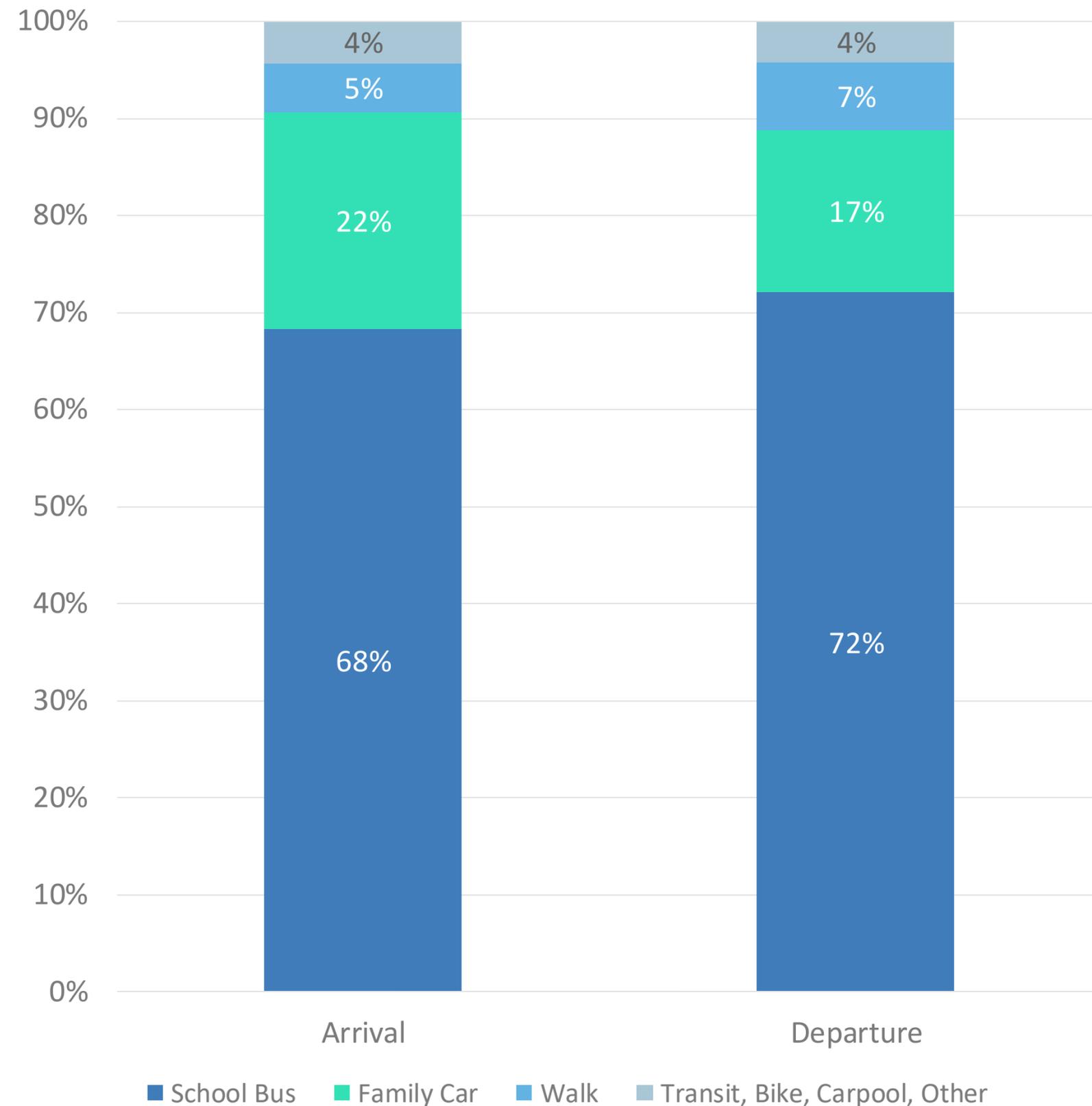


- One protected crossing within 275-acre area



Pedestrian Access to Schools

- Focus Area students are about 30% more likely than county average to take school bus and 60% less likely to walk.
- Students are more likely to take the family car to school than home from school.

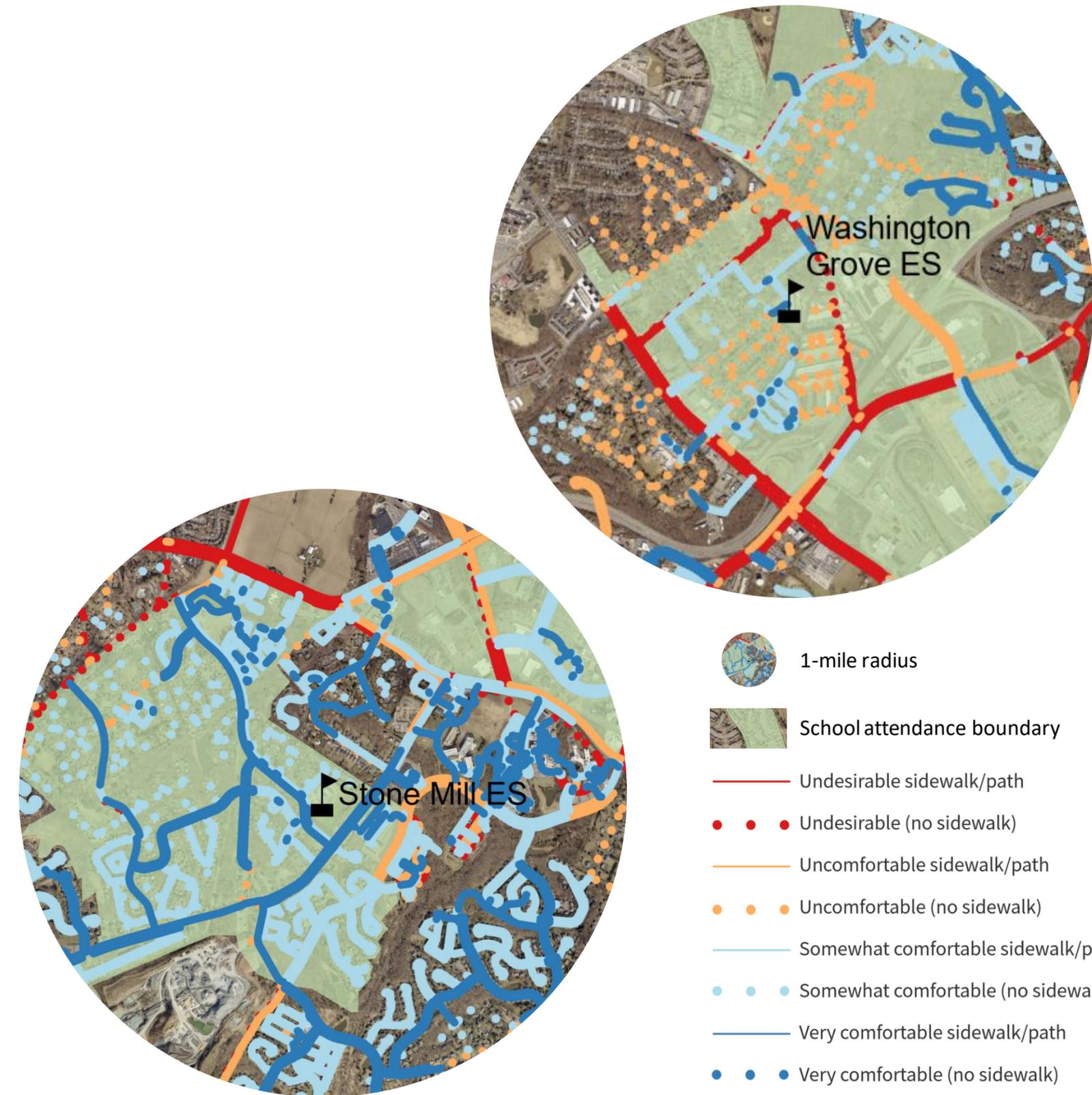


Pedestrian Access to Schools

$$\text{Comfortable School Access} = \frac{\text{Total Comfortable Distance of All Residential Trips (without travel along undesirable segments)}}{\text{Total Distance of All Residential Trips (including those traveling along undesirable segments)}}$$

Pedestrian Access to Schools

Pathway Comfort Access Score	Crossing Comfort Access Score
Washington Grove Elementary (Title I)	
20%	21%
Stone Mill Elementary (Non-Title I)	
74%	58%



Access to Destinations

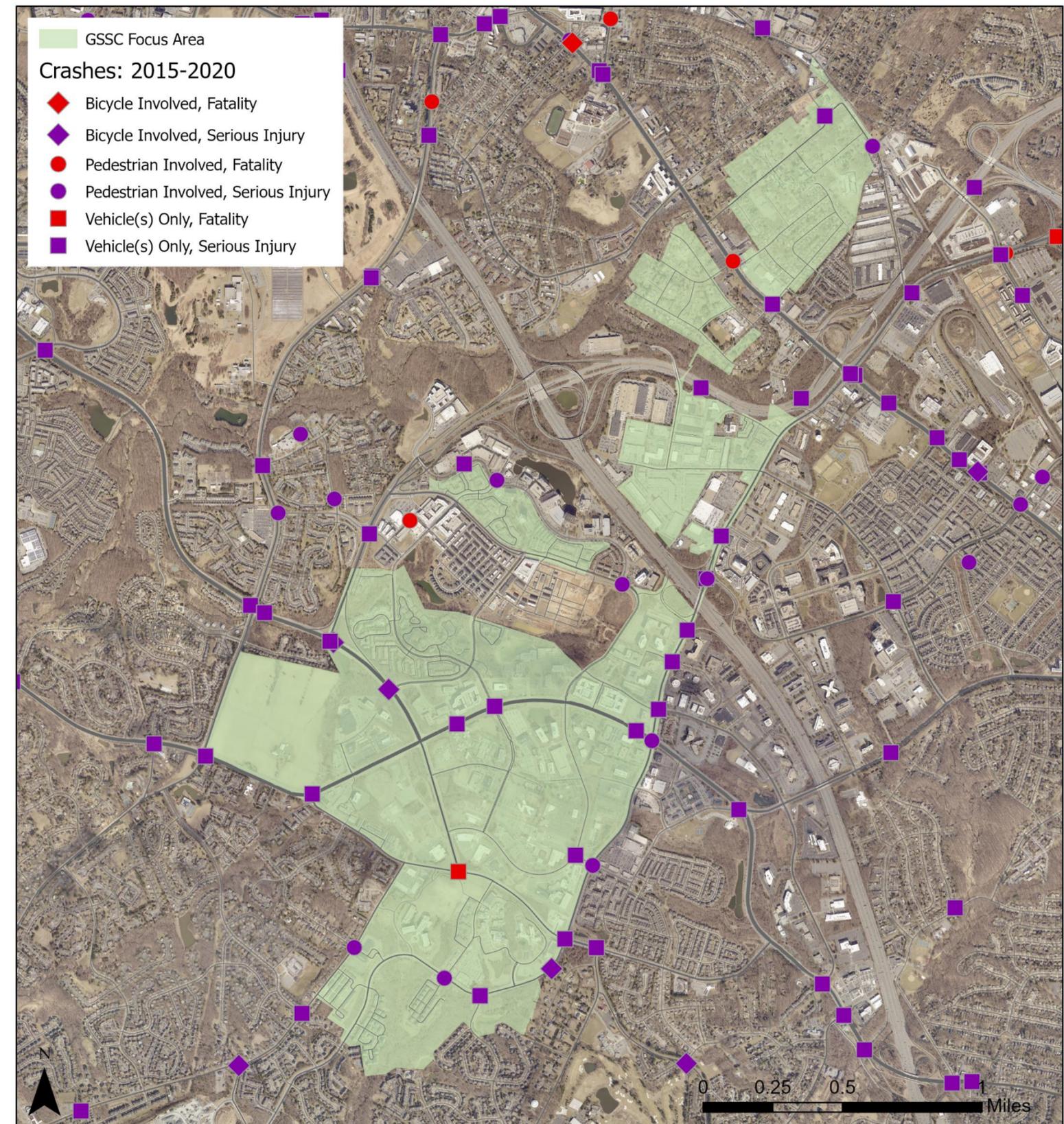
Destination	Pathway Comfort Access Score	Crossing Comfort Access Score
Adventist HealthCare Shady Grove Medical Center	92%	19%
Fallsgrove Village Center	86%	34%
Travilah Square	72%	52%
Traville Gateway	84%	50%
UMD – Shady Grove	84%	52%
Johns Hopkins University	99%	47%
Rio Lakefront	99%	49%
Downtown Crown	98%	50%



-  1-mile radius
-  Undesirable sidewalk/path
-  Undesirable (no sidewalk)
-  Uncomfortable sidewalk/path
-  Uncomfortable (no sidewalk)
-  Somewhat comfortable sidewalk/path
-  Somewhat comfortable (no sidewalk)
-  Very comfortable sidewalk/path
-  Very comfortable (no sidewalk)

Crashes

From 2015 to 2020, motor vehicle crashes resulted in **23 severe injuries** and **one fatality** within the Focus Area



Predictive Safety Assessment

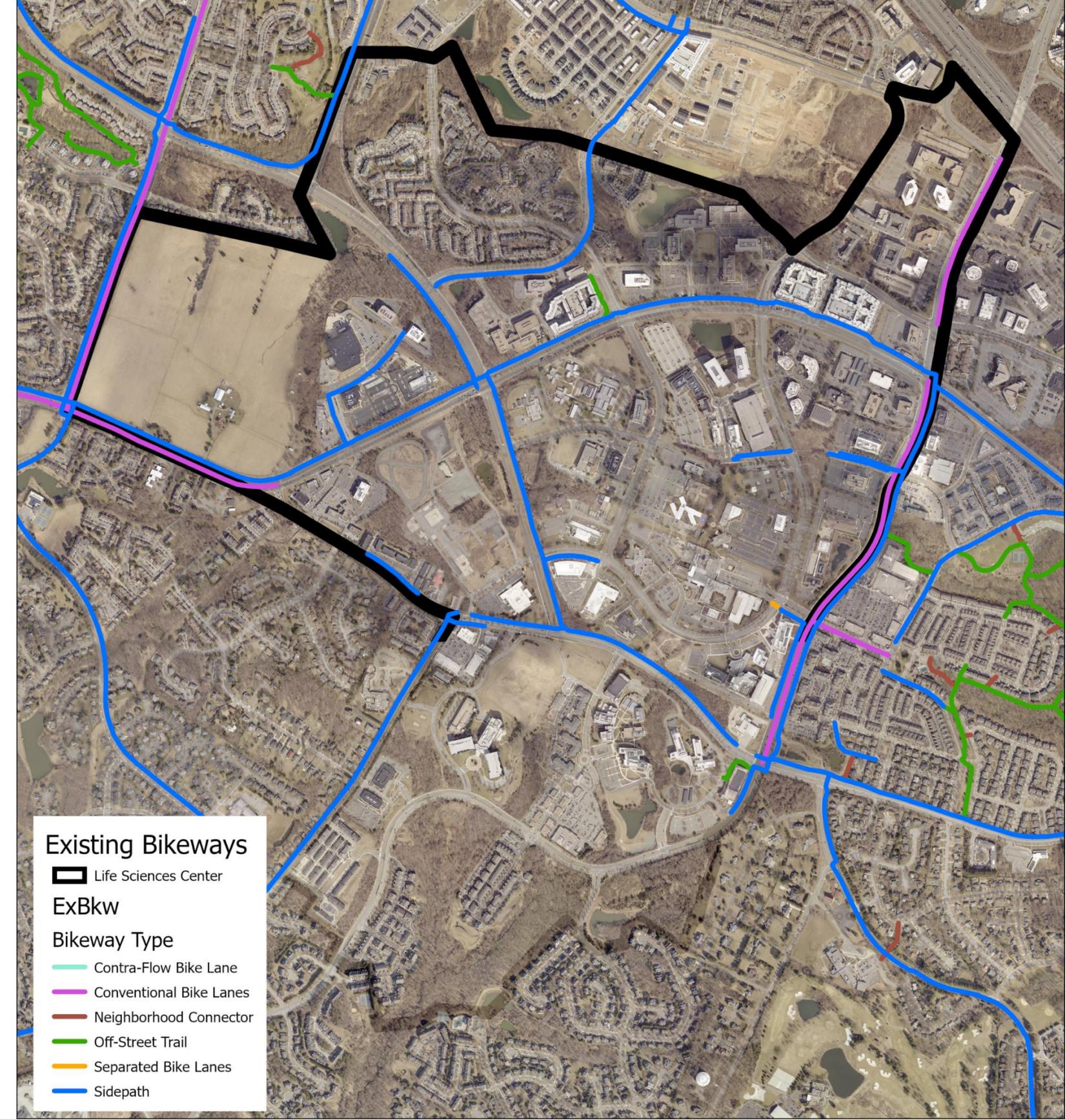
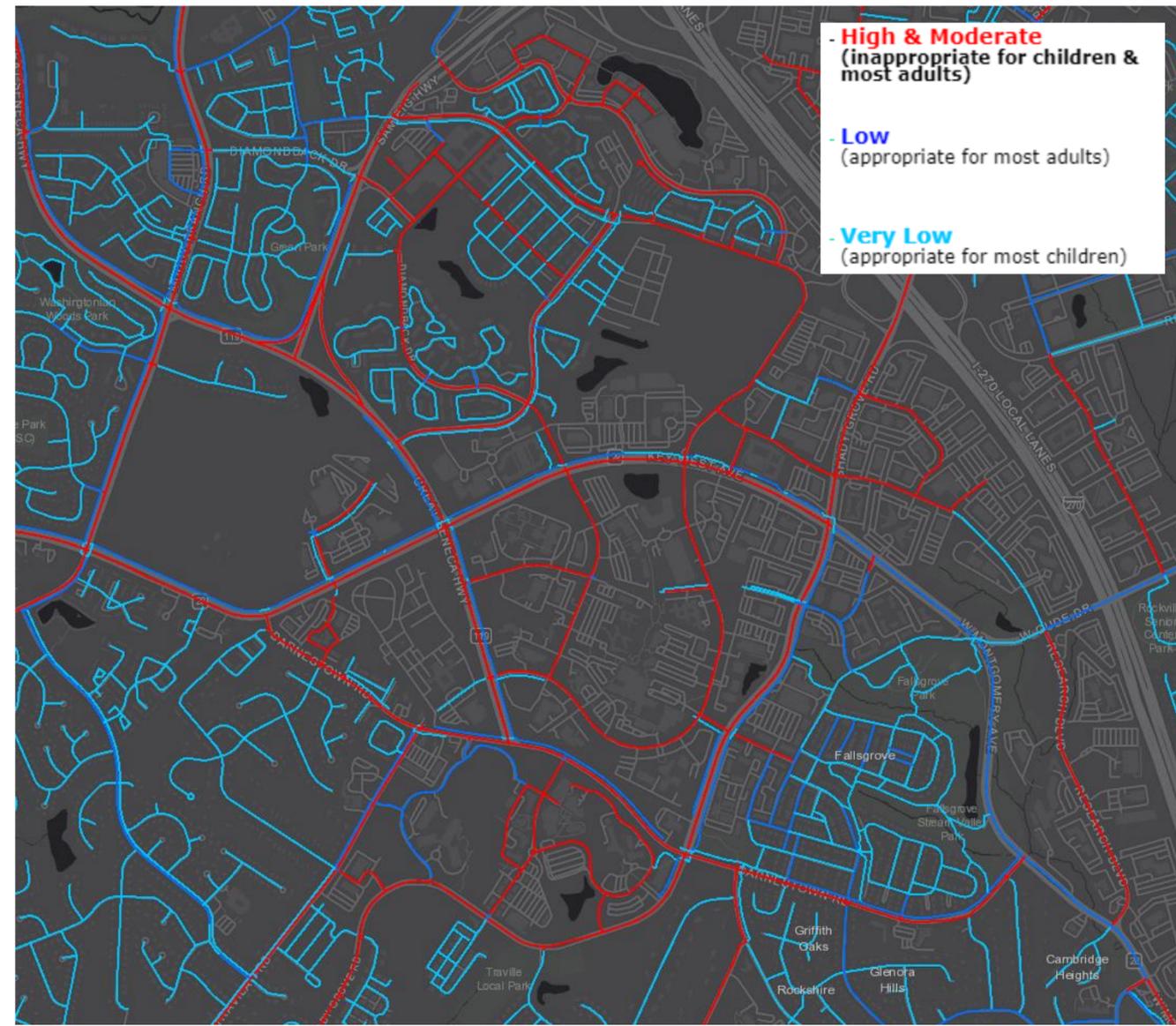
For certain crash types...

Variable	Effect
↑ Activity	↑ Crashes
↑ 2 Lanes to 4 Lanes	40% ↑ Crashes
↑ 4 Lanes to 6 Lanes	40% ↑ Crashes
↑ Speed Limit 5 mph	15% ↑ Crashes
↑ Speed Limit 10 mph	32% ↑ Crashes



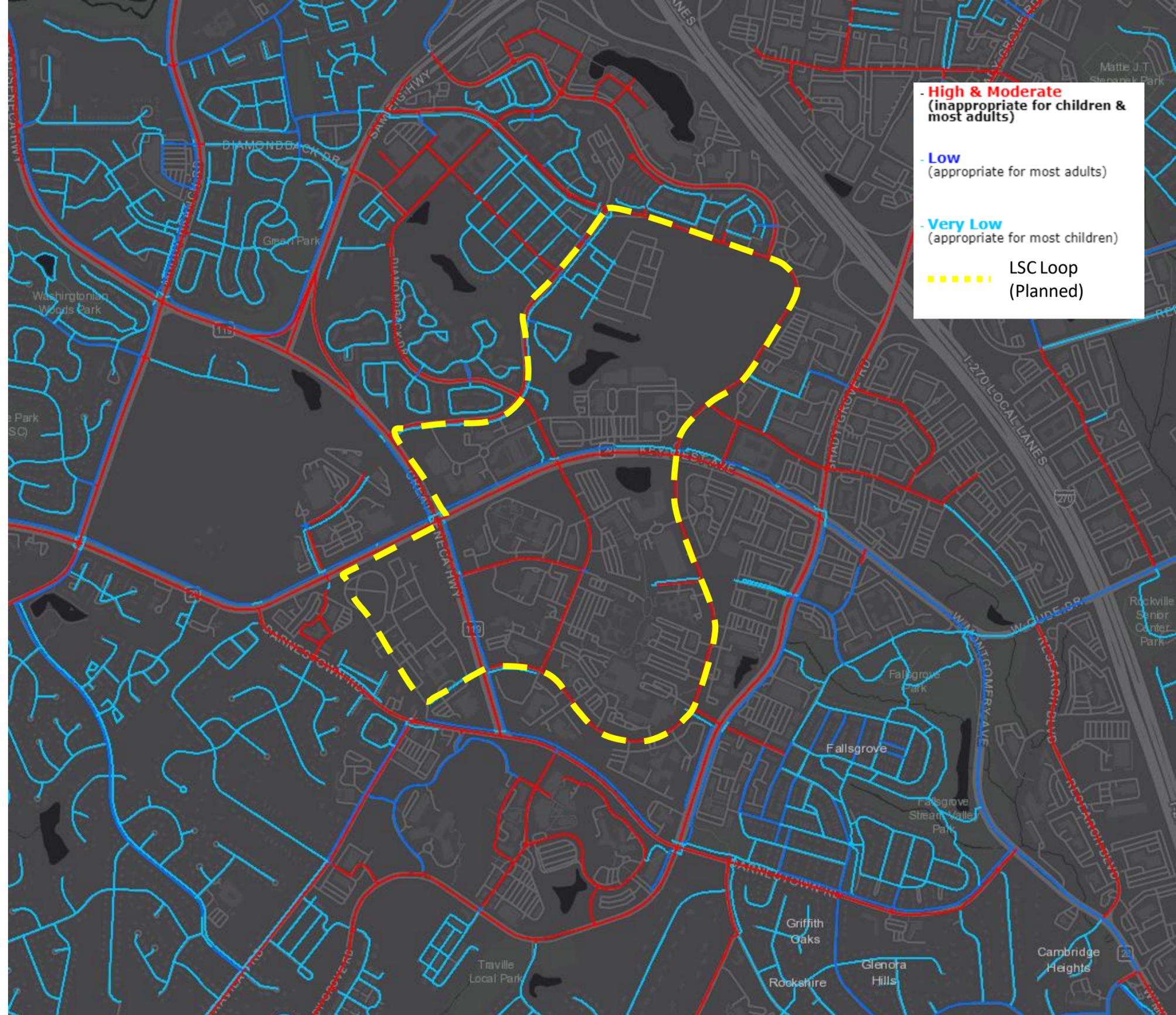
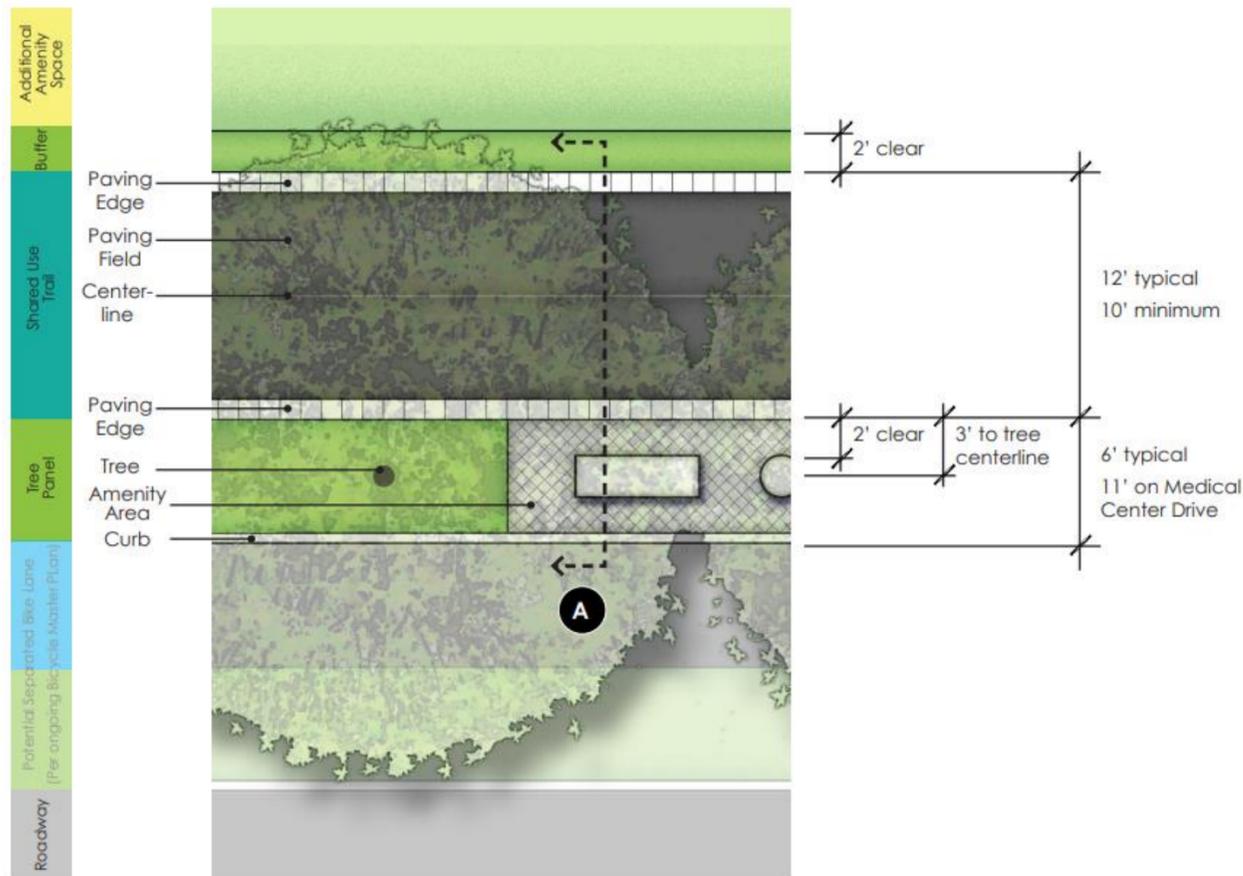
Existing Bikeways

Level of Traffic Stress



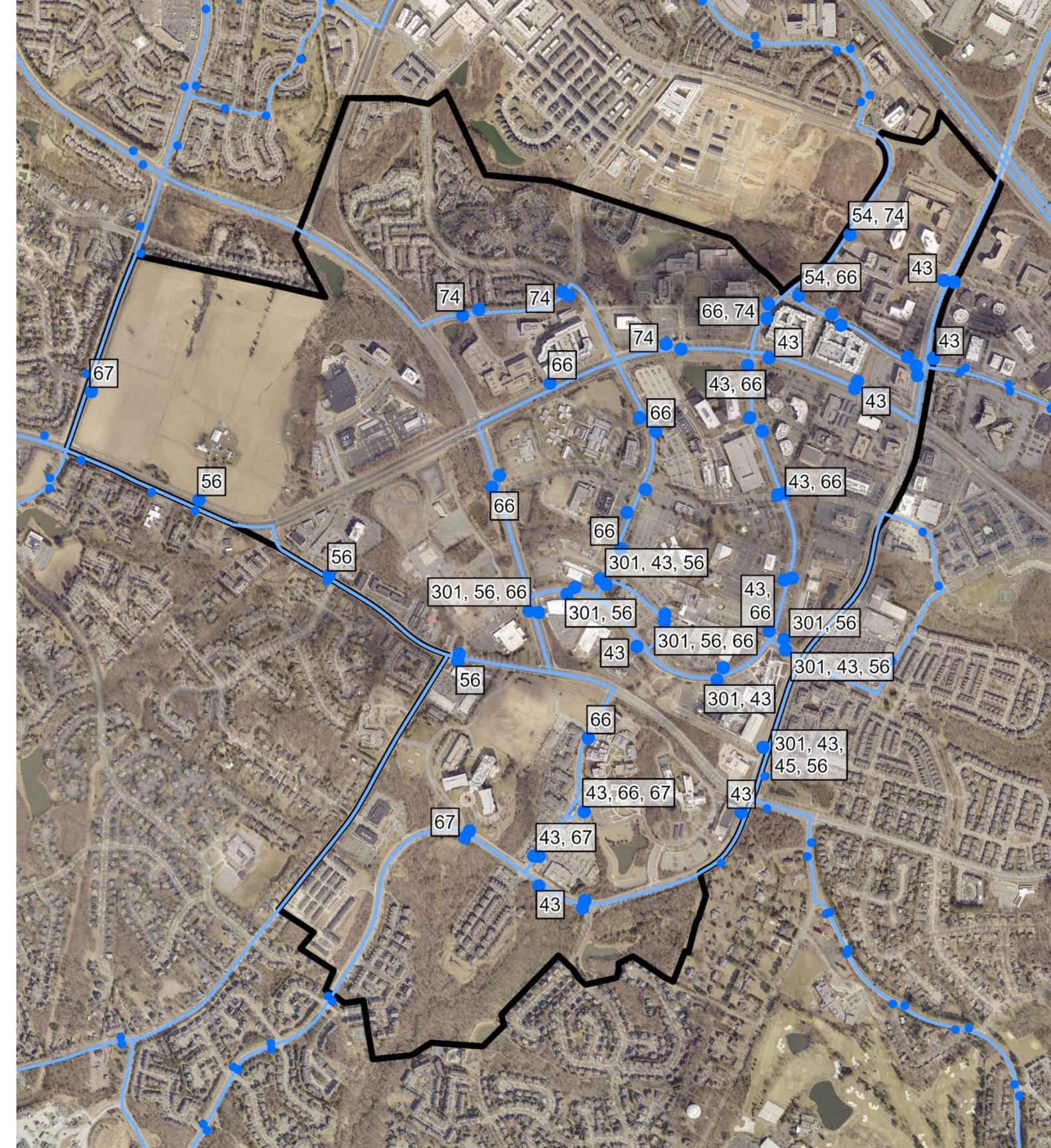
Life Sciences Center Loop Trail (Planned)

Would provide additional low-stress bike connectivity



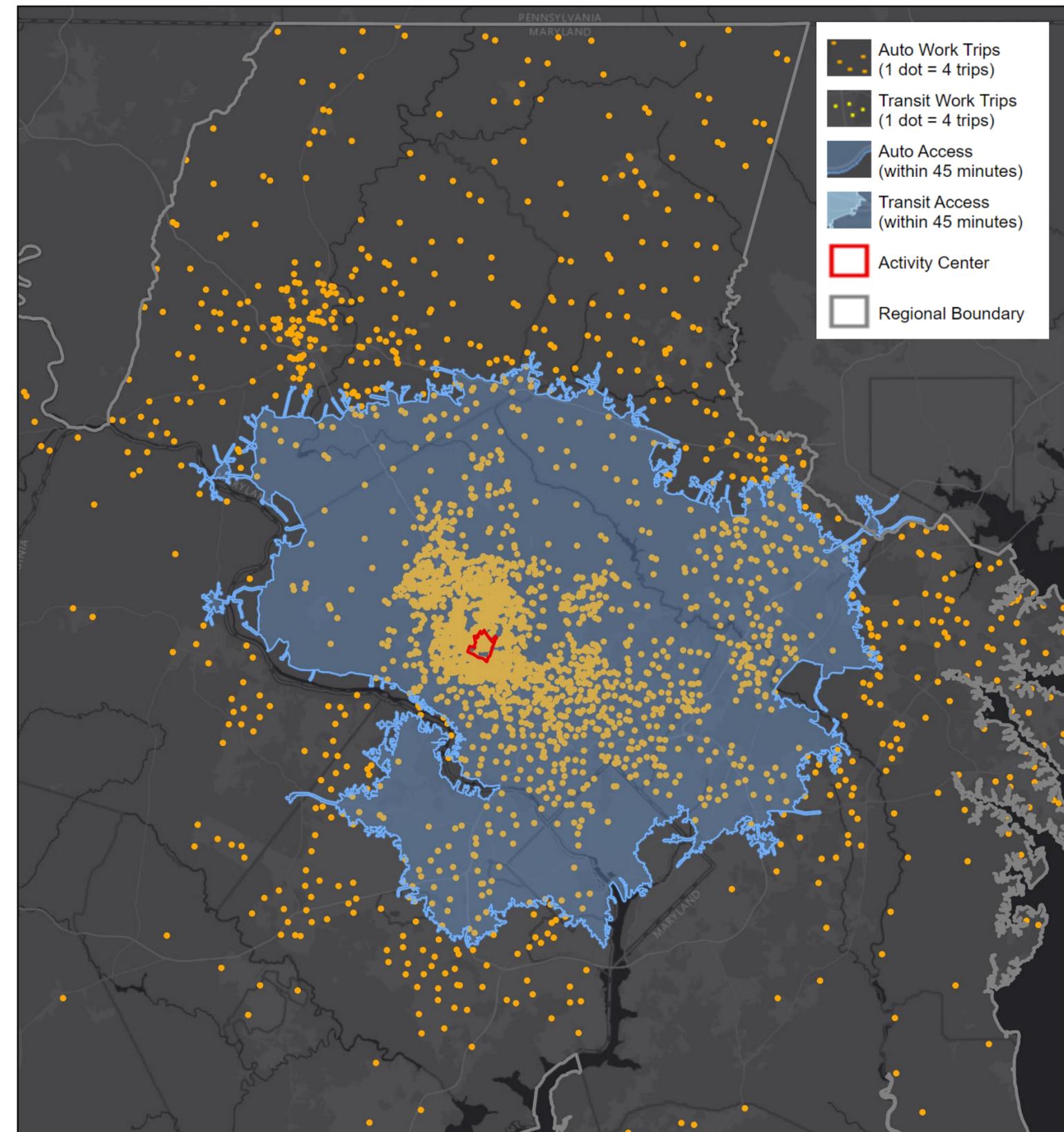
Existing Transit Service

- Montgomery County Ride On (8 routes)
- Metro Rail
 - Shady Grove (3.5 miles away)
 - Rockville (3.5 miles away)
- MARC
 - Gaithersburg (4.5 miles away)
 - Washington Grove (3.5 miles away)
 - Rockville (3.5 miles away)
- Private Shuttles
 - National Cancer Institute to NIH & Shady Grove Metro



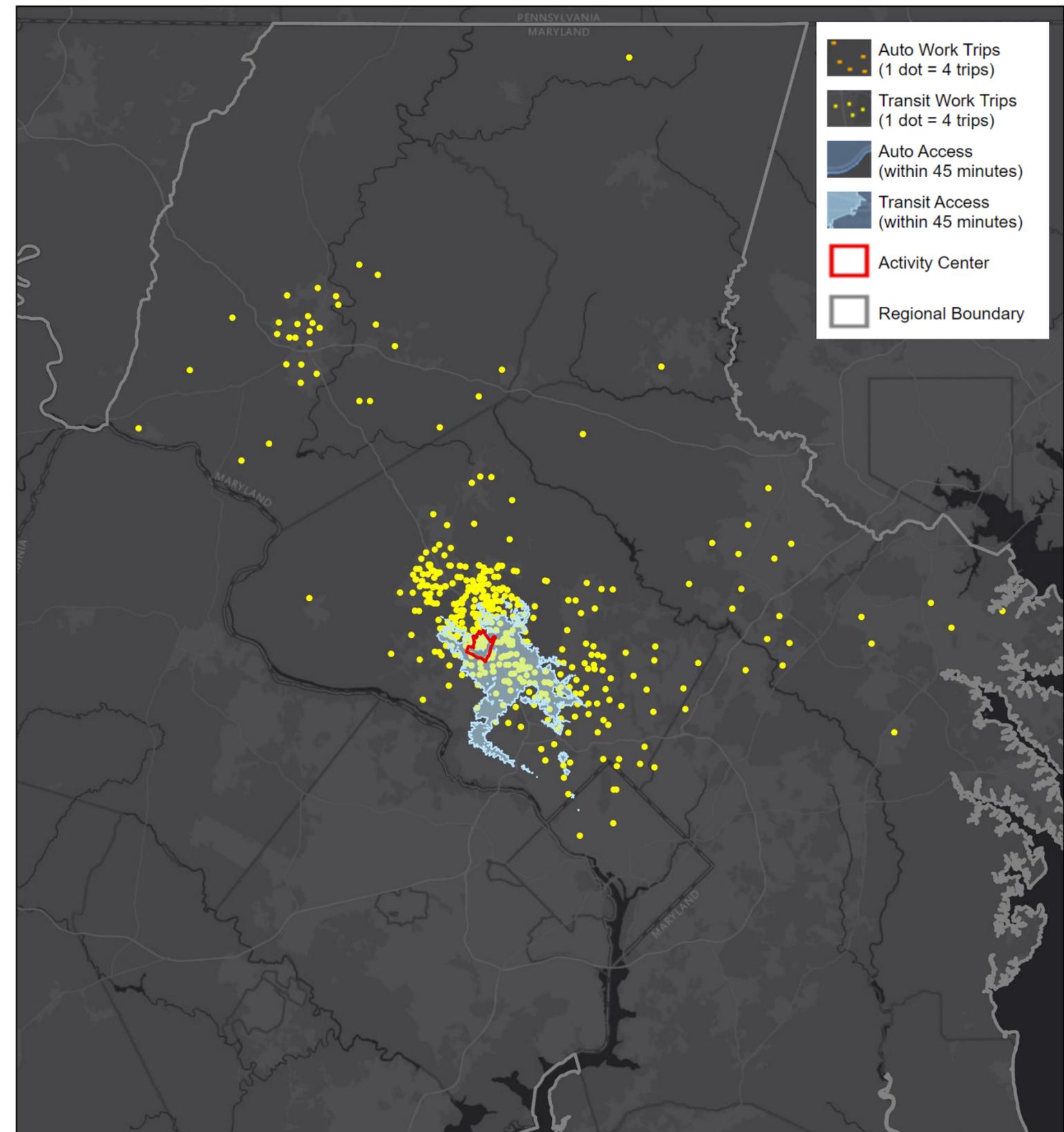
Auto Work Trips

- More than 20,000 people commute daily to the Life Sciences Center (LSC)
- 16% of commute trips to LSC by transit
- Average auto commute: 44 mins



Transit Work Trips

- More than 20,000 people commute daily to the Life Sciences Center (LSC)
- 16% of commute trips to LSC by transit
- Average transit commute: 1 hour 3 mins



Great Seneca Transit Network (GSTN)

- MCDOT targeting Summer 2024 opening for Lime & Pink Lines
- Battery electric bus charging at Trville Transit Center

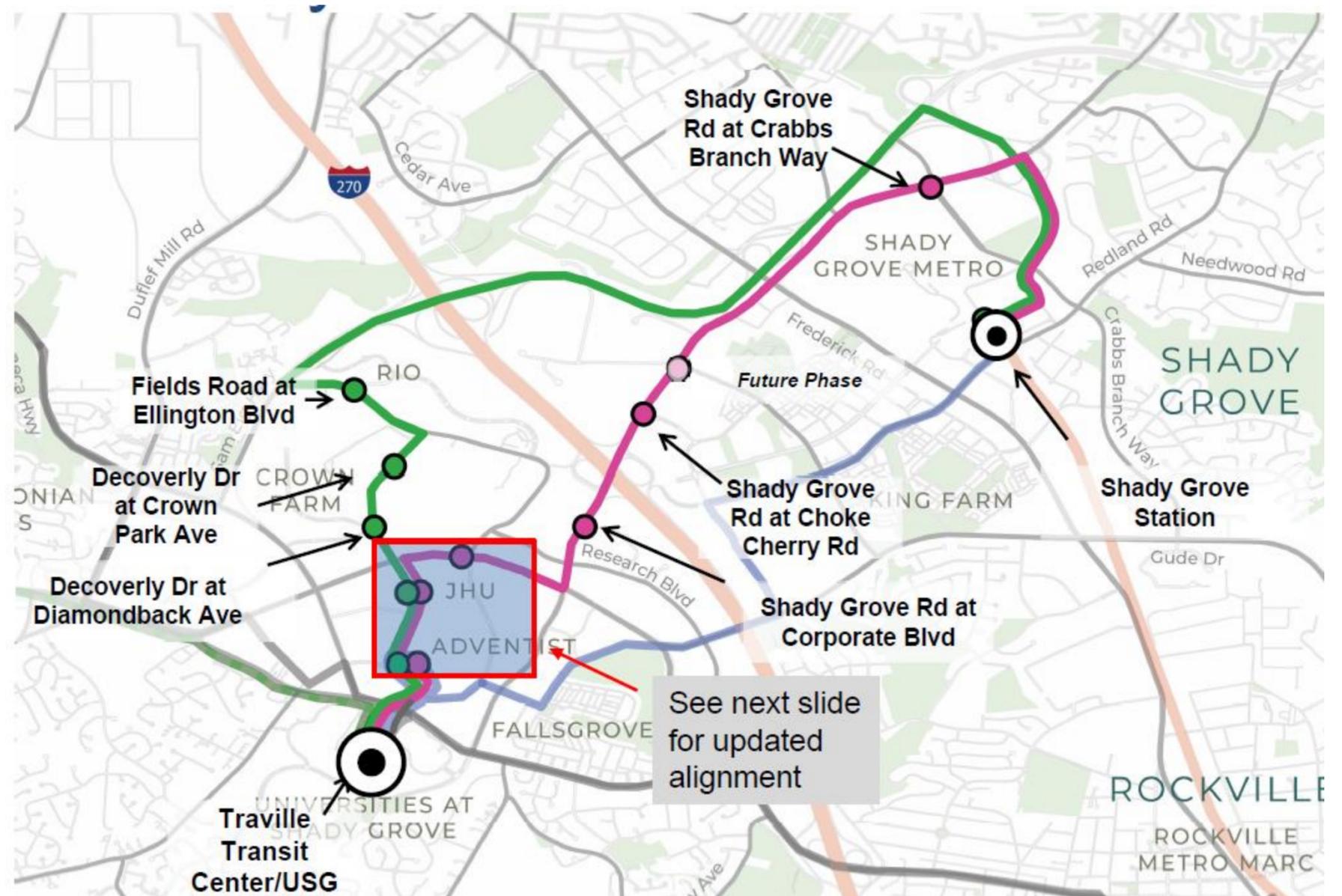
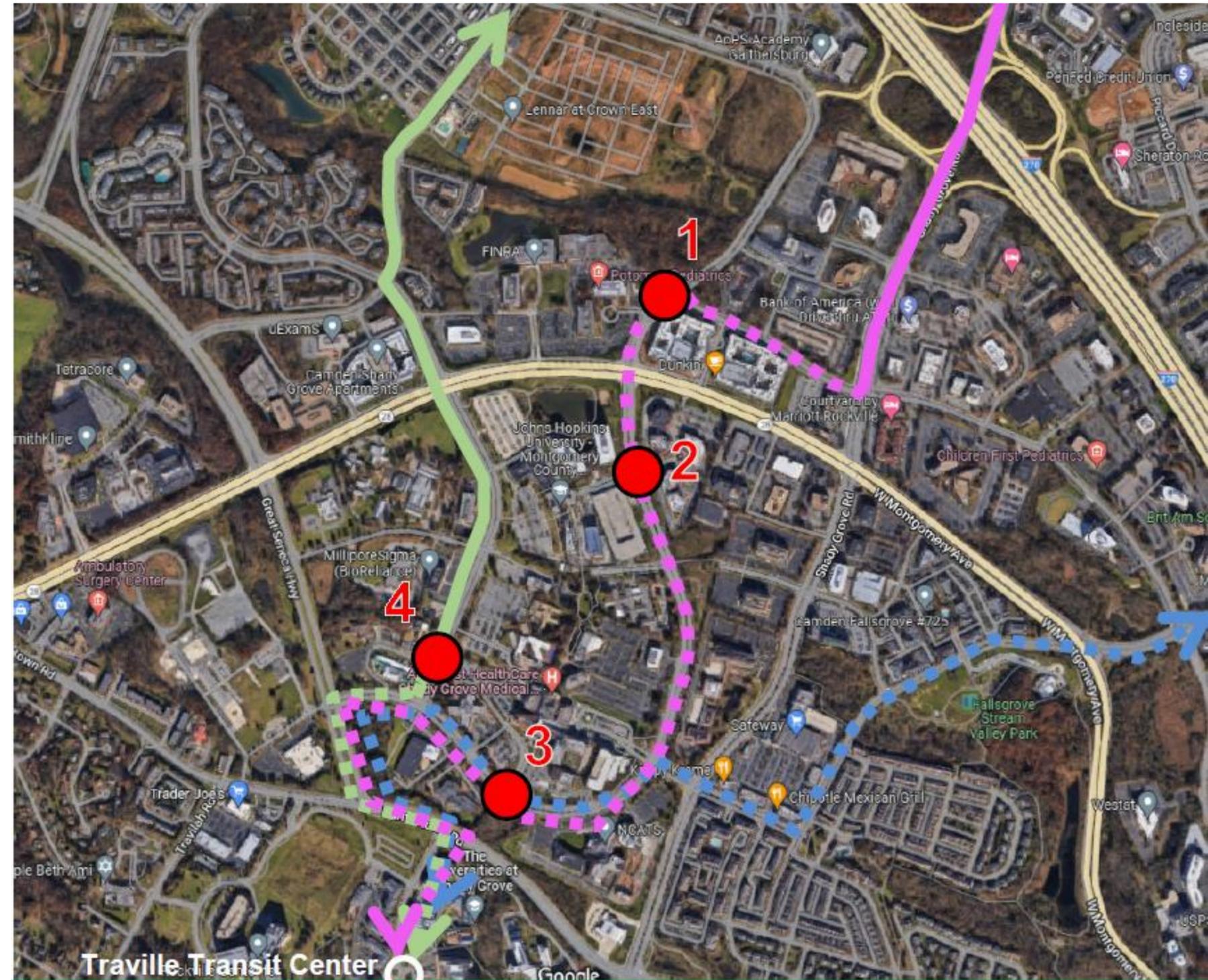
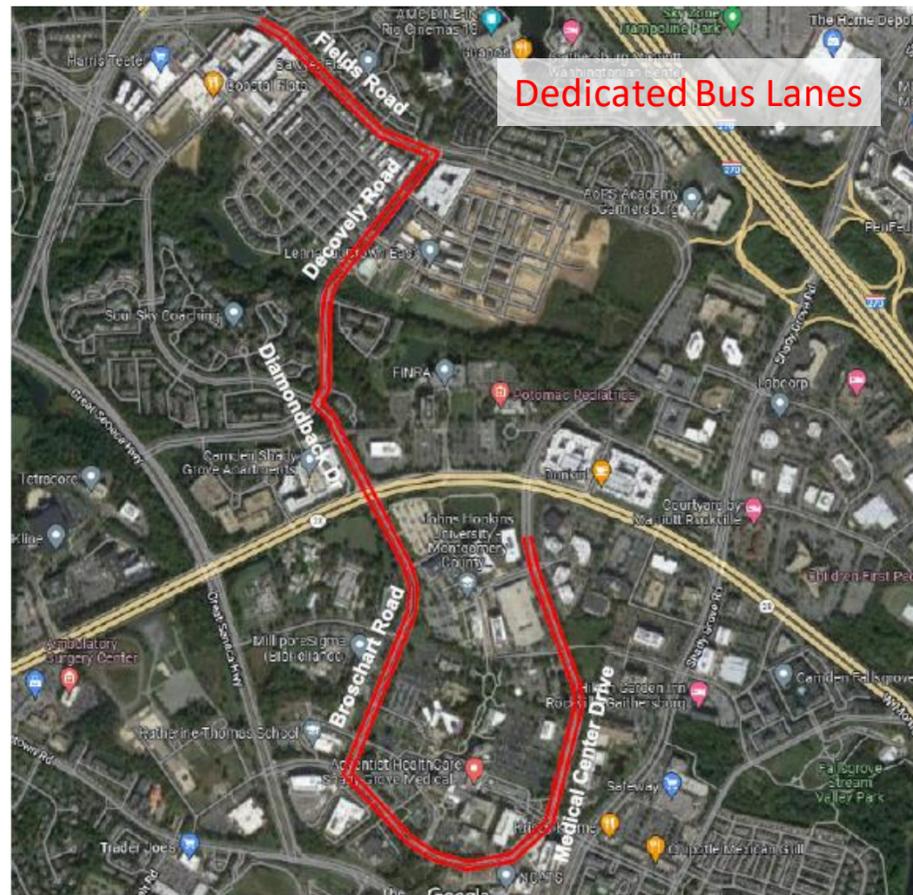


Image Source: MCDOT

Great Seneca Transit Network (GSTN)

Image Source: MCDOT

Dedicated bus lanes within existing curb limits from Downtown Crown to National Cancer Institute



Environment



Environmental Justice

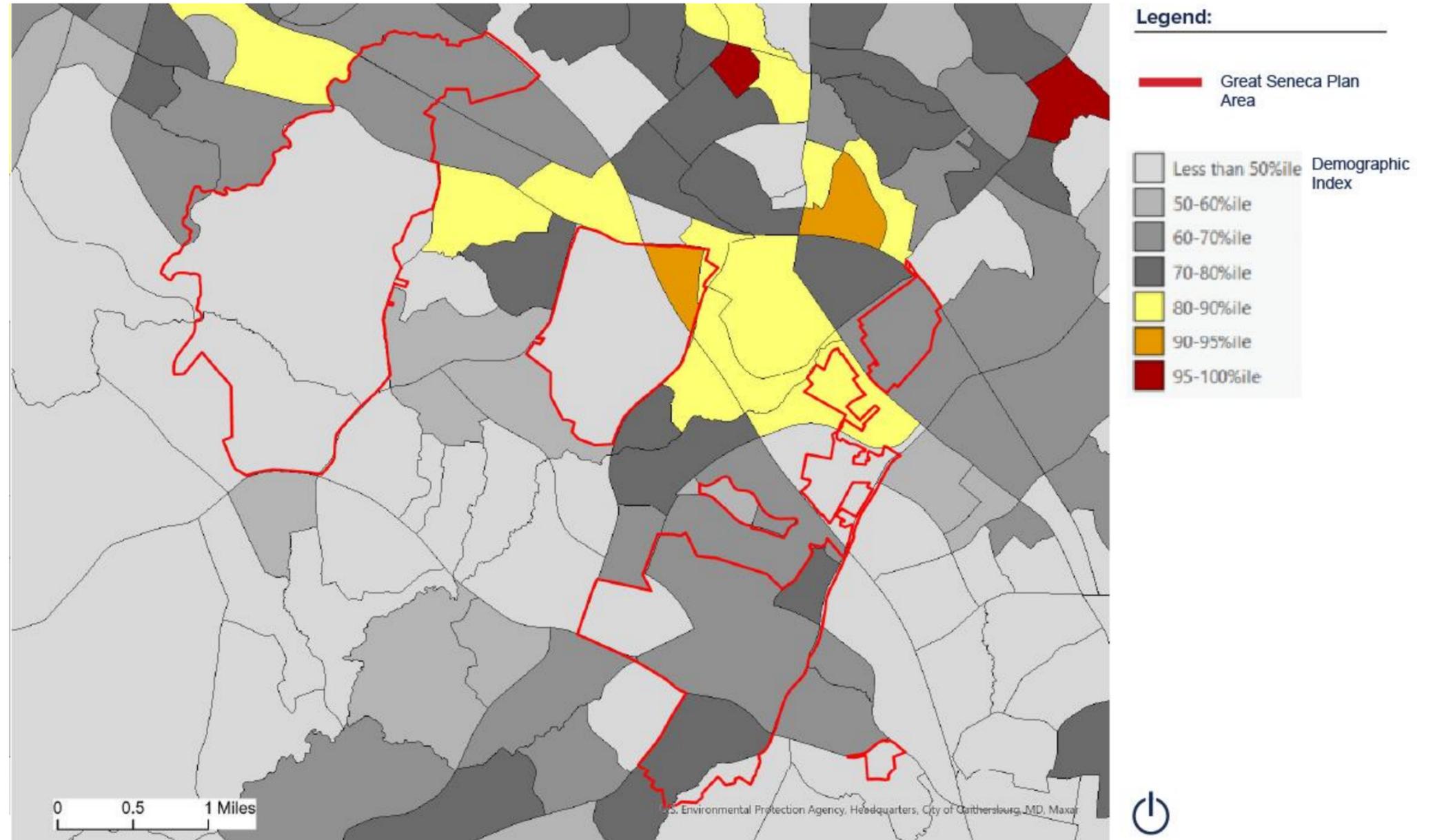
- Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.
- Environmental Justice indicators are provided through the EPA's EJScreen tool. Learn more: <https://www.epa.gov/ejscreen>



[Resources for Creating Healthy, Sustainable, and Equitable Communities | US EPA](#)

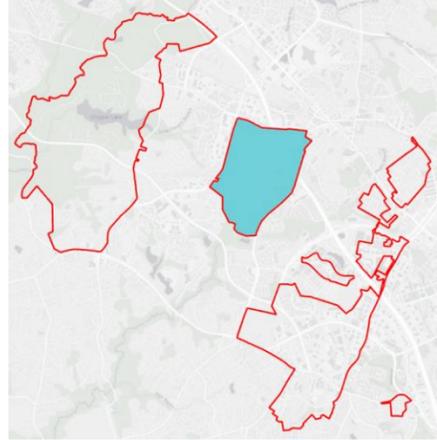
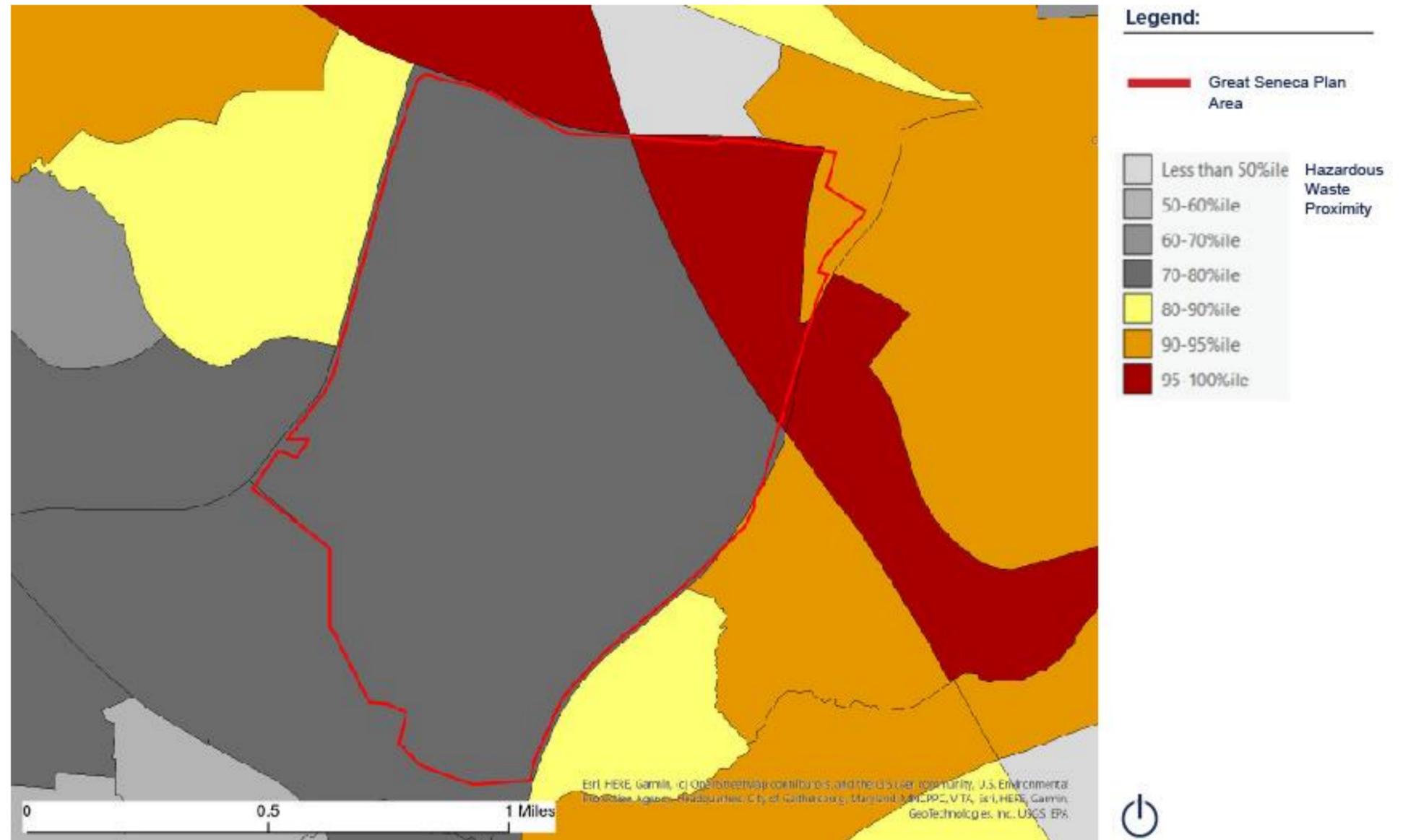
Great Seneca Plan Area – Demographic Index

- The demographic index is a combination of percent low-income and percent minority, the two socioeconomic factors that were explicitly named in Federal law.
- The Londonderry and Montgomery Club Apartments neighborhood has the highest demographic index within the Plan area.



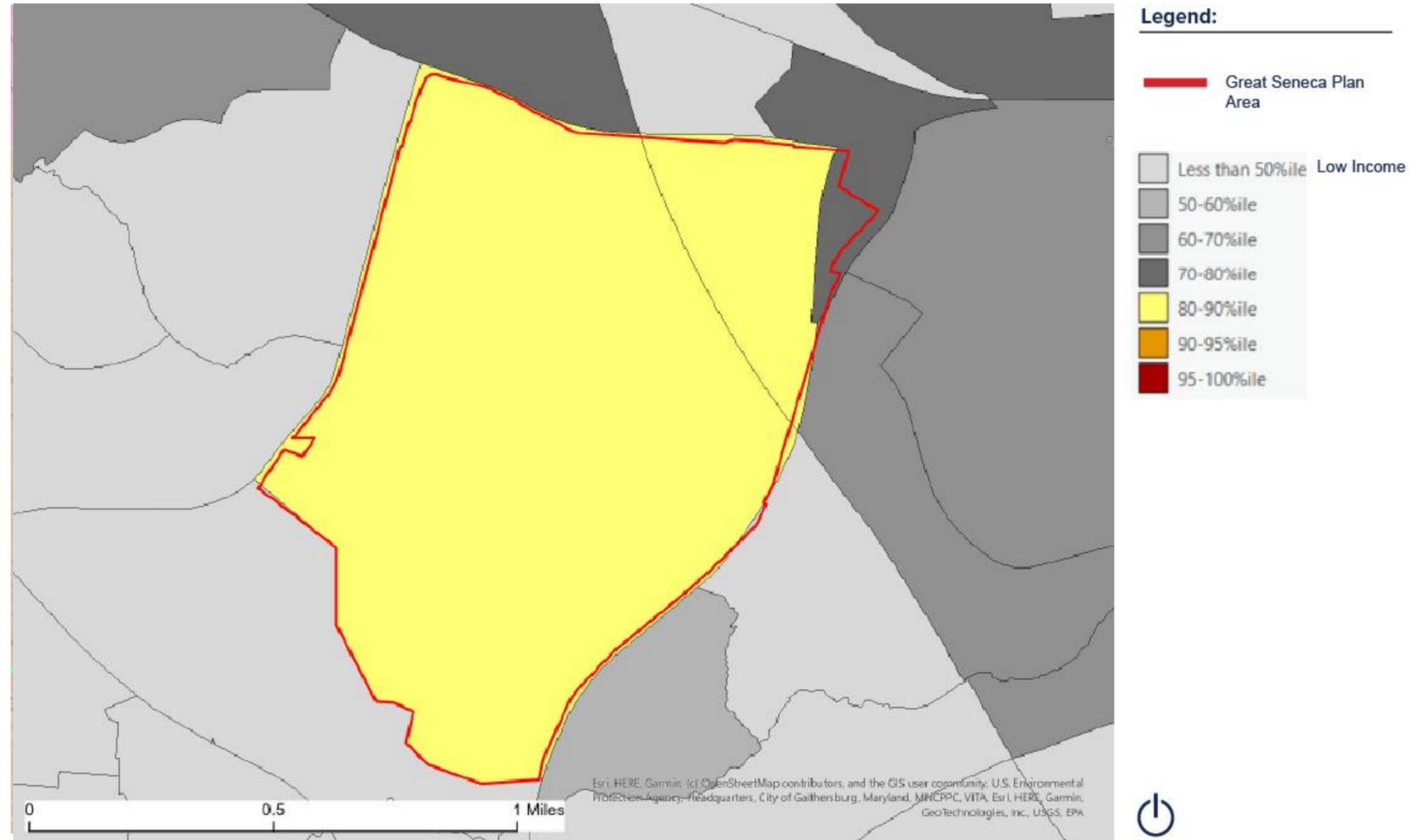
NIST – Hazardous Waste Proximity

- Count of hazardous waste management facilities (TSDFs and LQGs) within 5 km (or nearest one beyond 5 km), each divided by distance in km. Calculated from EPA RCRAInfo database.



NIST – Low Income

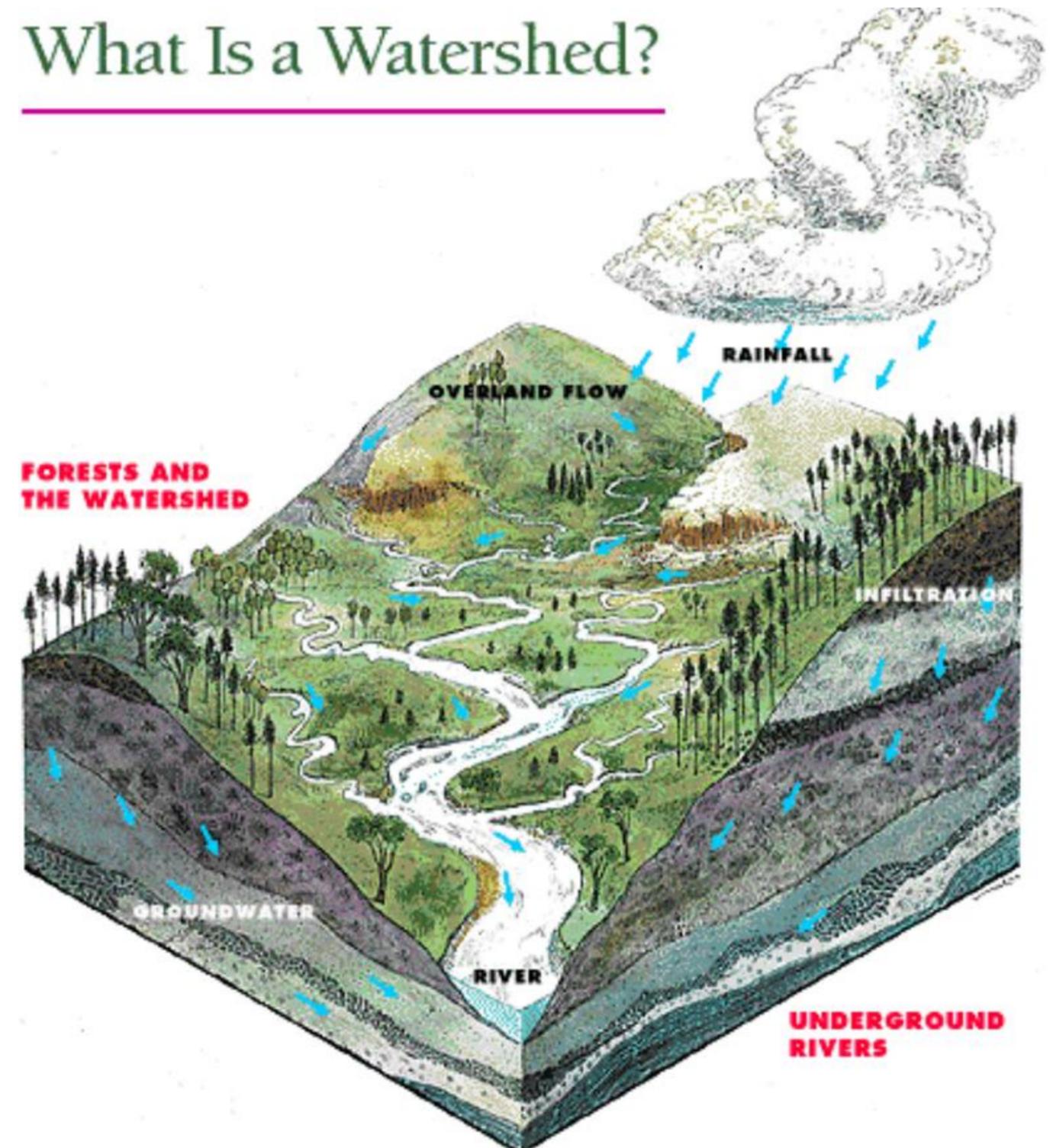
- Percent of individuals whose ratio of household income to poverty level in the past 12 months was less than 2 (as a fraction of individuals for whom ratio was determined).



Healthy Watershed Benefits

- Recreational opportunities.
- Habitats for wildlife and fish.
- Lower costs for drinking water.
- Aesthetically pleasing surroundings.
- Homes, businesses, and roads protected from flooding and other natural disasters.
- Less polluted waters creating better public health and safety.
- Reduced tax burdens to clean up and protect the environment.

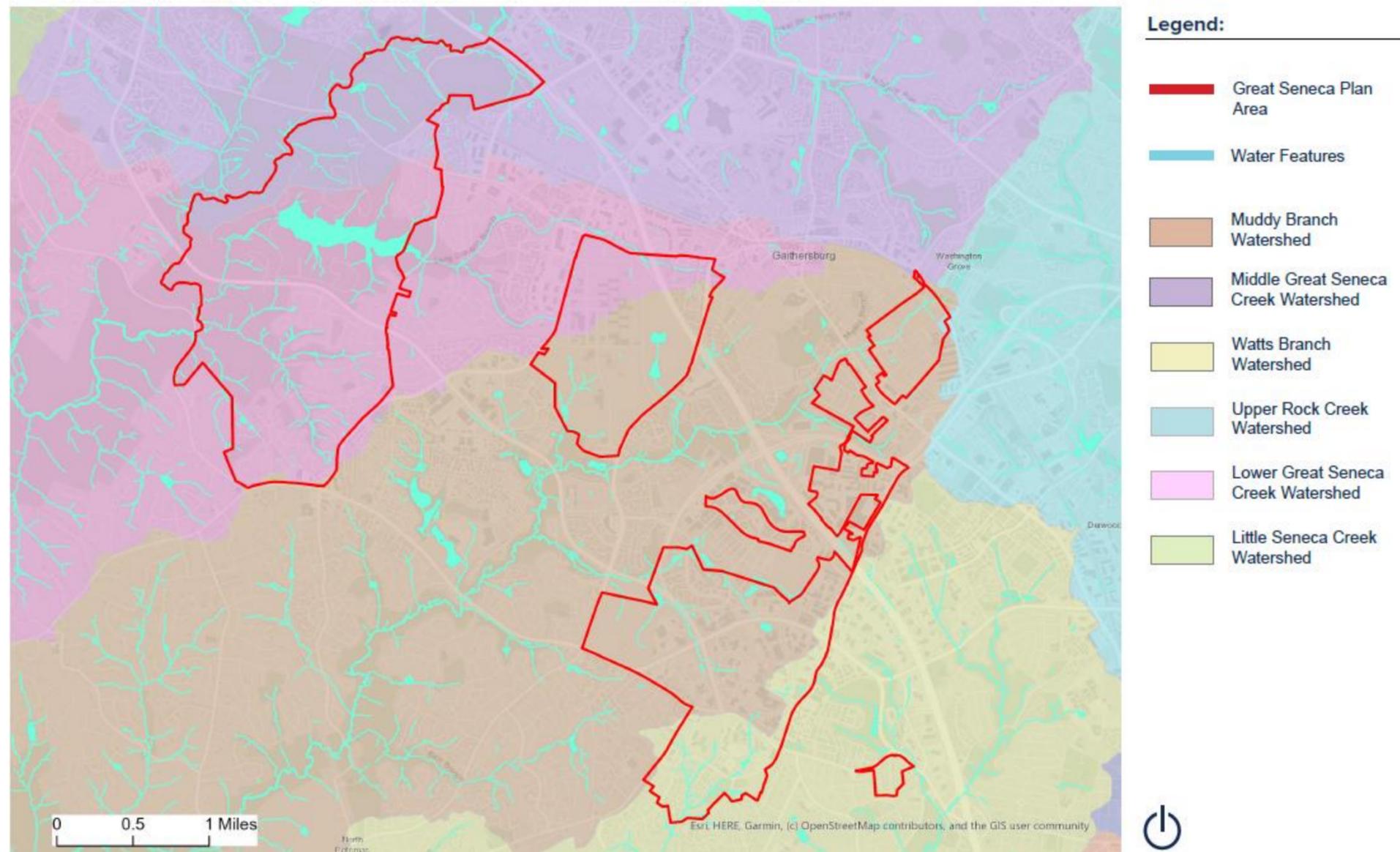
What Is a Watershed?



[Watersheds | Department of Environmental Protection, Montgomery County, MD](https://montgomerycountymd.gov/DEP/Watersheds)
(montgomerycountymd.gov)

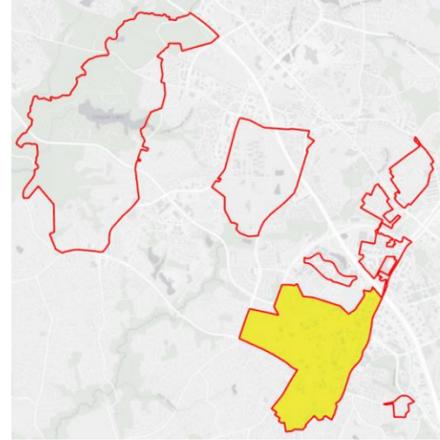
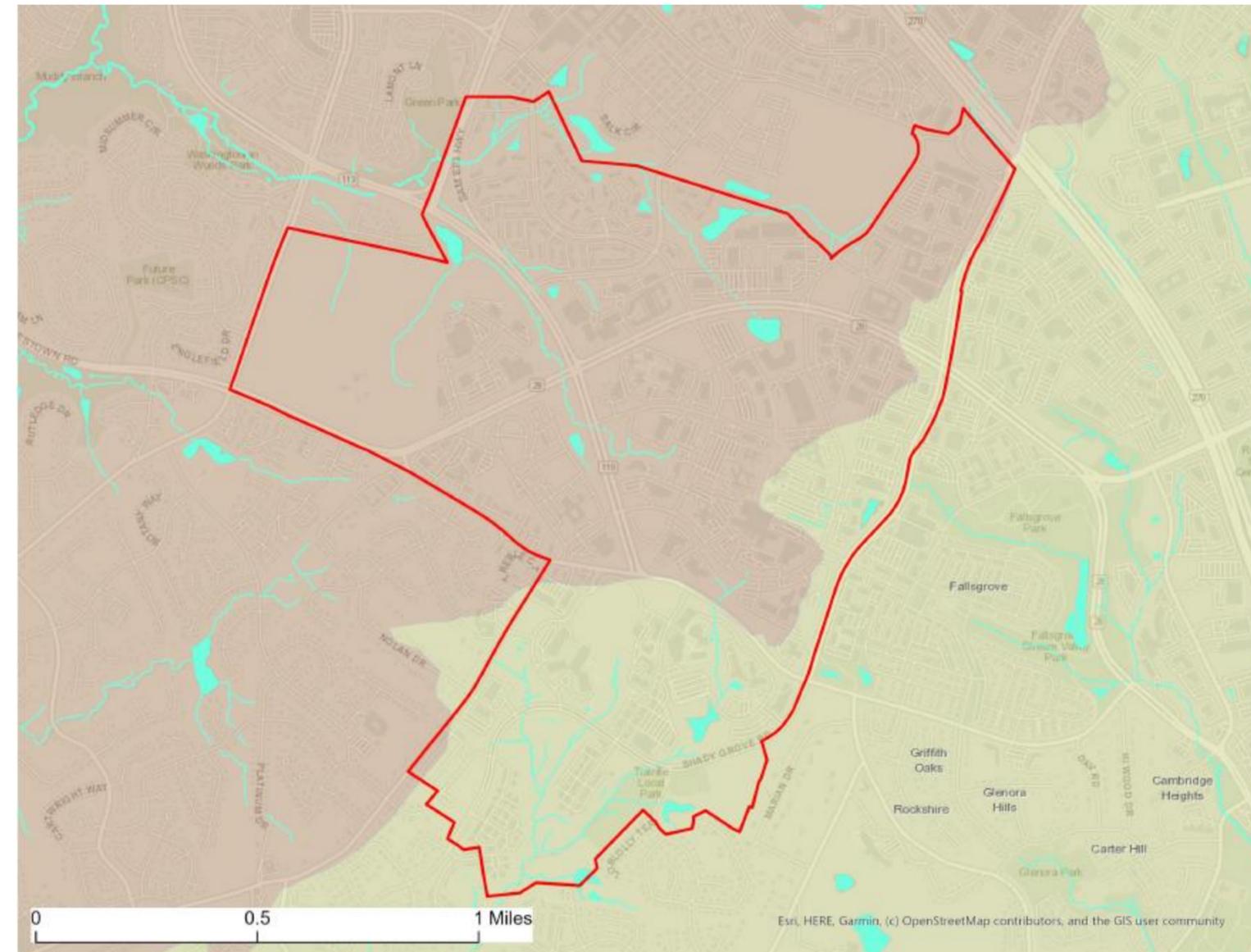
Great Seneca Plan Area - Watershed

- Muddy Branch and Watts Branch Watersheds flow into the Potomac River directly upstream of WSSC's Potomac Water Filtration Plant, which provides most of the potable water for Montgomery County.
- Biological indicators show fair to poor water quality in the upper reaches of Great Seneca Creek and Muddy Branch, with slightly improving conditions farther downstream.



Life Sciences Center – Watershed

- The LSC South and portions of the LSC Central districts drain south to the Watts Branch watershed.
- The Piney Branch has its headwaters in the Life Sciences Center and was declared a Special Protection Area in 1995.
- The LSC North, LSC West, and the remainder of the LSC Central drain north and west into the Muddy Branch watershed into the Potomac.



Tree Canopy Benefits

The canopy of a tree or group of trees is the area of leaves and branches that create shade under the tree(s). Like umbrellas, trees reduce the amount of sunlight and rain reaching the ground.

URBAN FORESTRY



COOLS THE AIR



REGULATES WATER FLOW AND IMPROVES WATER QUALITY



FILTERS FOR URBAN POLLUTANTS



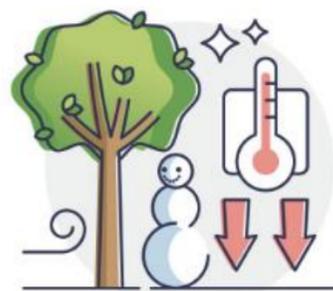
MITIGATE CLIMATE CHANGE



IMPROVES PHYSICAL AND MENTAL HEALTH



REDUCES AIR CONDITIONING NEEDS



SAVES ENERGY USED FOR HEATING



INCREASES URBAN BIODIVERSITY



INCREASES PROPERTY VALUE

https://cbtrust.org/wp-content/uploads/Fact-Sheet-and-Guidelines_Urban-Tree-Canopy_042120.pdf

[The Benefits of Trees | City of Takoma Park \(takomaparkmd.gov\)](https://www.takomaparkmd.gov)

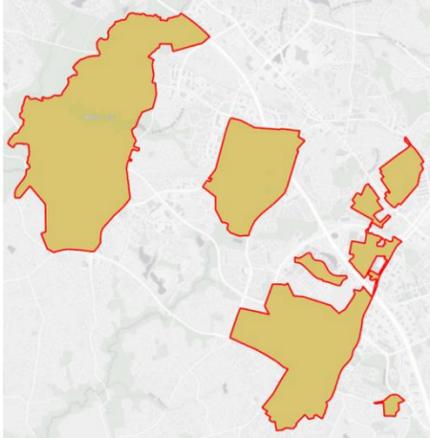
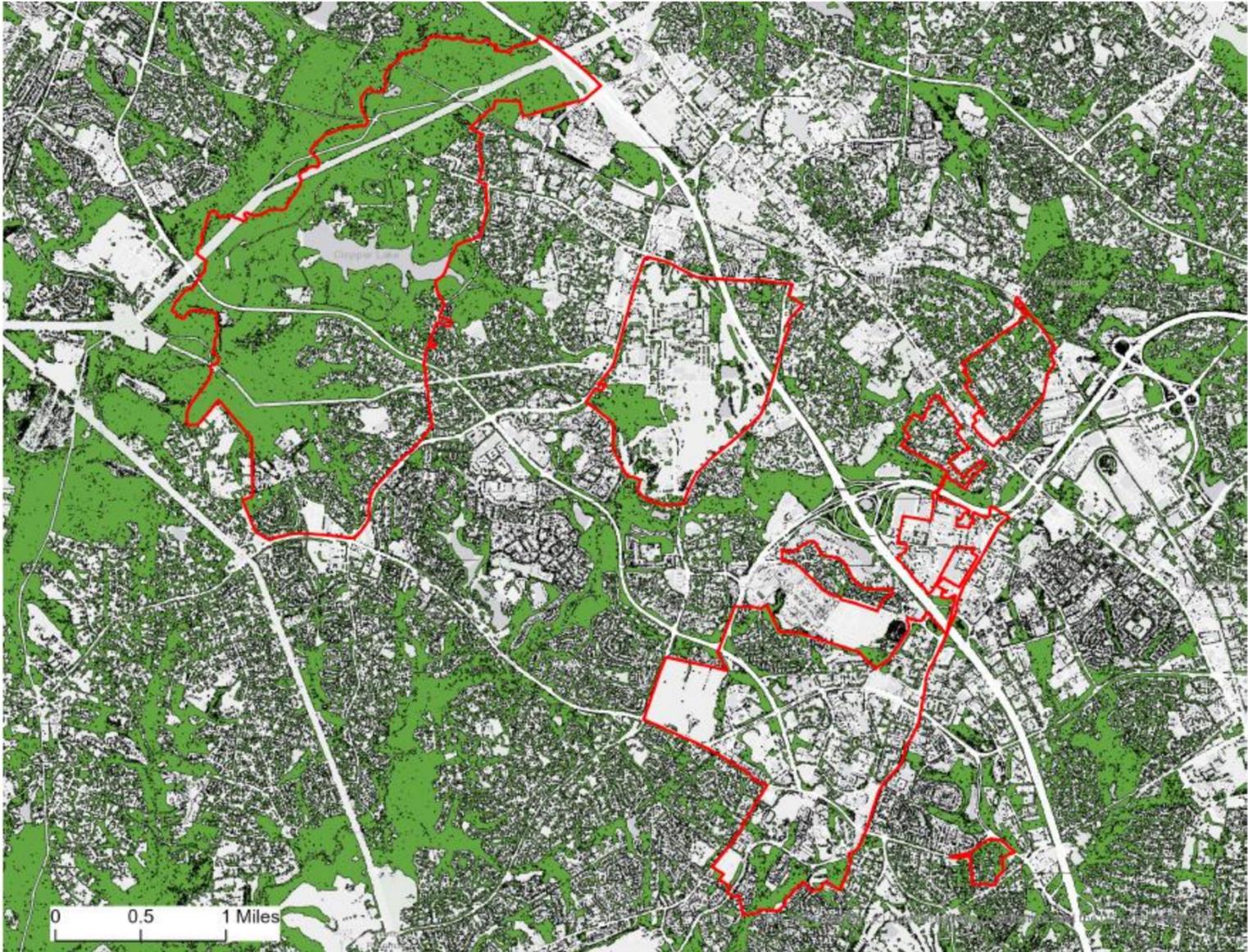
Forest Conservation Law

- [Montgomery County's Forest Conservation Law](#) aims to protect, plant, and maintain trees and forests for the [many benefits](#) they provide to county residents.
- The Forest Conservation Law applies to some property owners, government entities, and developers.
- Anyone subject to the Forest Conservation Law must meet a calculated forest retention or forest planting requirement.

[Montgomery-County-Forest-Conservation-Law-2-22-21.pdf \(montgomeryplanning.org\)](#)

Great Seneca Plan Area – Tree Canopy

47.49 % Total



Legend:

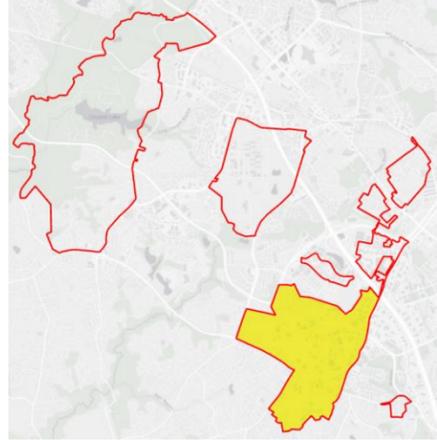
- Great Seneca Plan Area
- Tree Canopy

Tree Canopy
Total in Study Area: 2038.95 Acres
Percentage in Study Area: 47.49%



Life Sciences Center – Tree Canopy

27.89% Total



Legend:

-  Great Seneca Plan Area
-  Tree Canopy

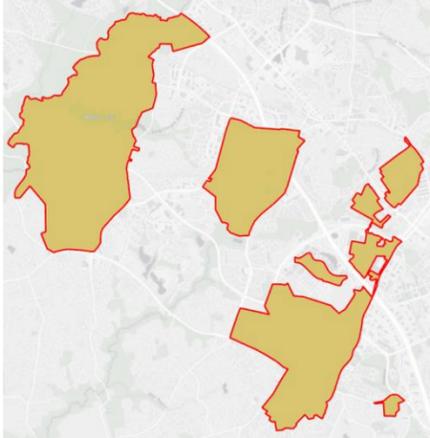
Tree Canopy

Total in Study Area: 299.38 Acres
Percentage in Study Area: 27.89%

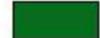


Great Seneca Plan Area - Forest

32.41 % Total



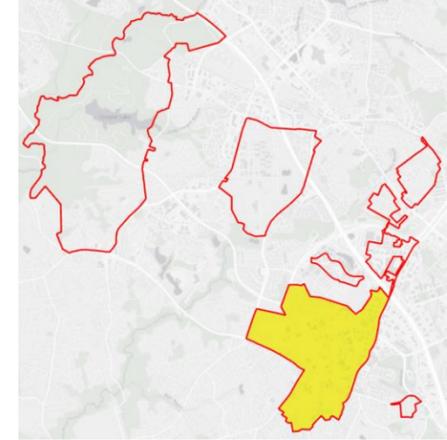
Legend:

-  Great Seneca Plan Area
-  Forest

Forest
Total in Study Area: 1,391.56 Acres
Percentage in Study Area: 32.41%

Life Sciences Center – Forest

12.42% Total



Legend:

- Great Seneca Plan Area
- Forest

Forest
Total in Study Area: 133.32 Acres
Percentage in Study Area: 12.42%



Impervious Surface and Impacts

- **Water Quantity:** storm drains deliver large volumes of water to streams much faster than would occur naturally, resulting in flooding and bank erosion. Stream inhabitants are stressed, displaced, or killed by the fast-moving water and the debris and sediment it brings with it.
- **Water Quality:** pollutants (gasoline, oil, fertilizers, etc) accumulate on impervious surfaces and are washed into the streams.
- **Water Temperature:** during warm weather, rain that falls on impervious surfaces becomes superheated and can stress or kill stream inhabitants.



Impervious 'hard' surfaces (roofs, roads, large areas of pavement, and asphalt parking lots) increase the volume and speed of stormwater runoff. This swift surge of water erodes streambeds, reduces groundwater infiltration, and delivers many pollutants and sediment to downstream waters.

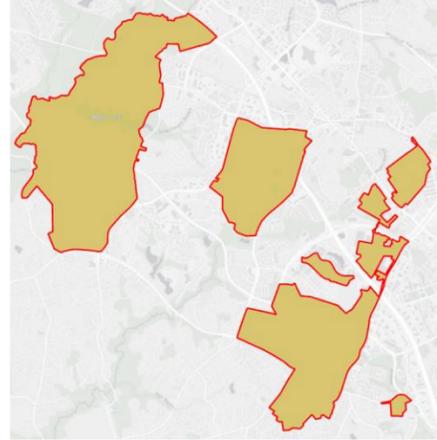
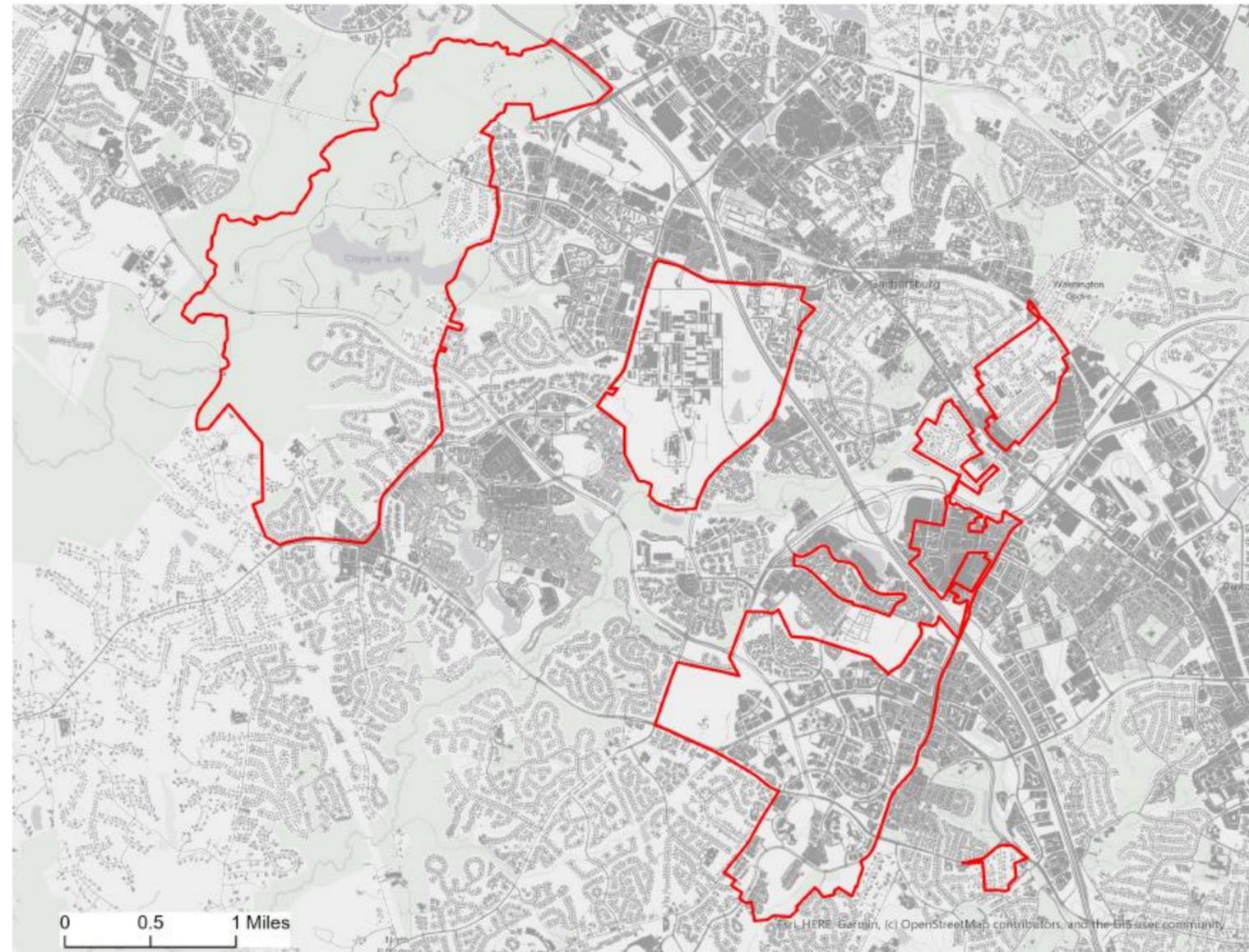


Pervious 'soft' surfaces (green roofs, rain gardens, grass paver parking lots, and infiltration trenches) decrease volume and speed of stormwater runoff. The slowed water seeps into the ground, recharges the water table, and filters out many pollutants and sediment before they arrive in downstream waters.

[Impervious versus pervious surfaces | Media Library | Integration and Application Network \(umces.edu\)](#)

Great Seneca Plan Area – Impervious Surface

Plan Area: 24.33 %



Legend:

-  Great Seneca Plan Area
-  Impervious Area

Impervious Area

Impervious

Total in Plan Area: 1,044.58 Acres

Percentage in Plan Area: 24.33%

Non-Impervious

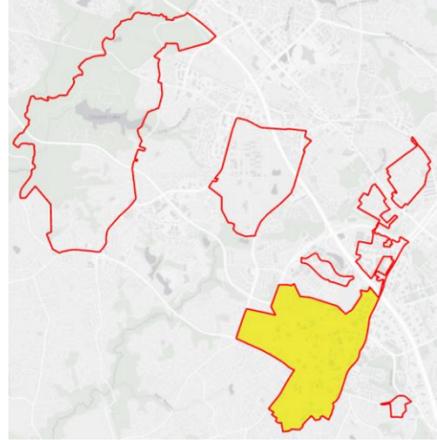
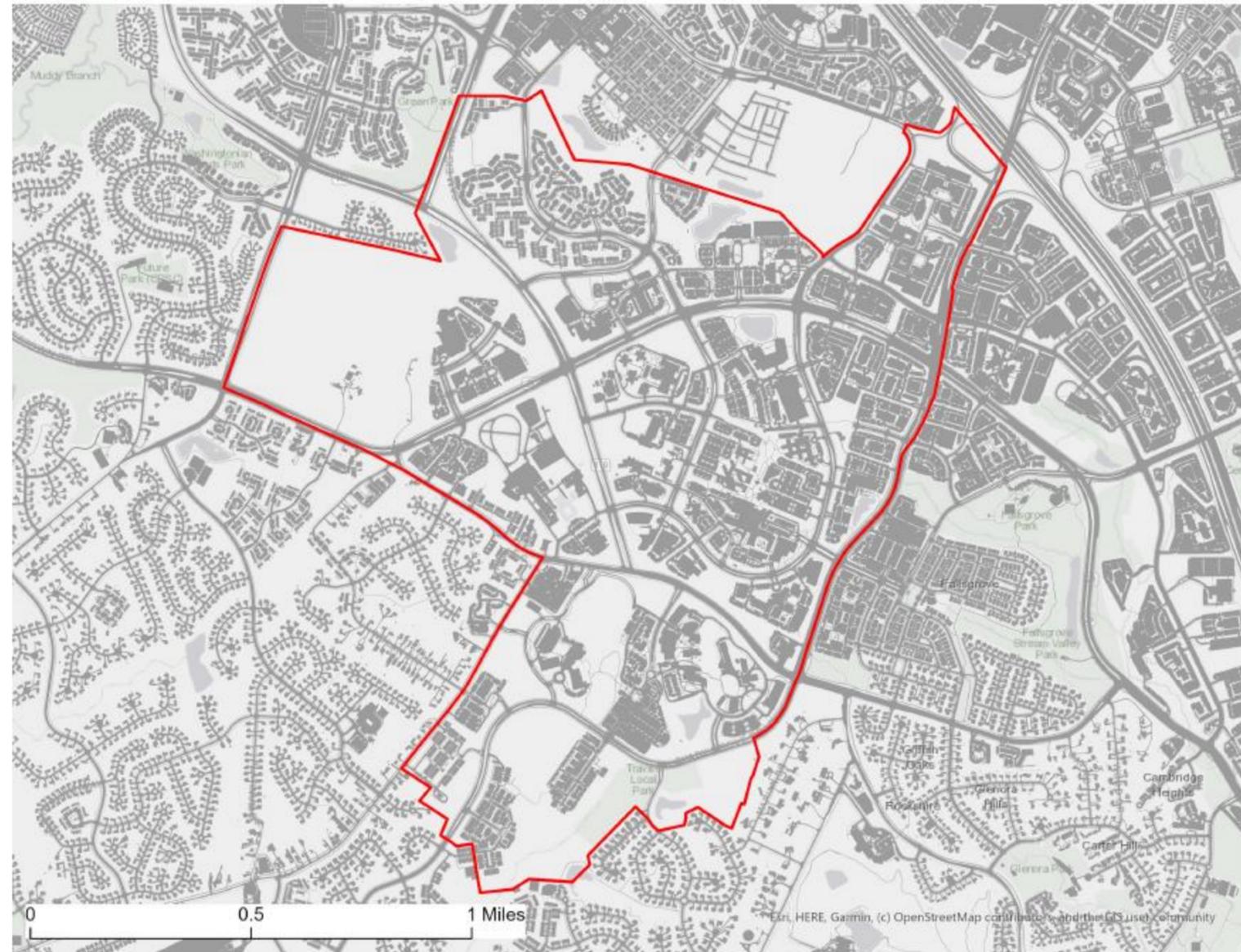
Total in Plan Area: 3,248.19 Acres

Percentage in Plan Area: 75.67%



Life Sciences Center – Impervious Surface

42.05% Total



Legend:

-  Great Seneca Plan Area
-  Impervious Area

Impervious Area

Impervious

Total in Study Area: 451.38 Acres
Percentage in Study Area: 42.05%

Non-Impervious

Total in Study Area: 621.90 Acres
Percentage in Study Area: 57.95%



Environmental Considerations for Human Health

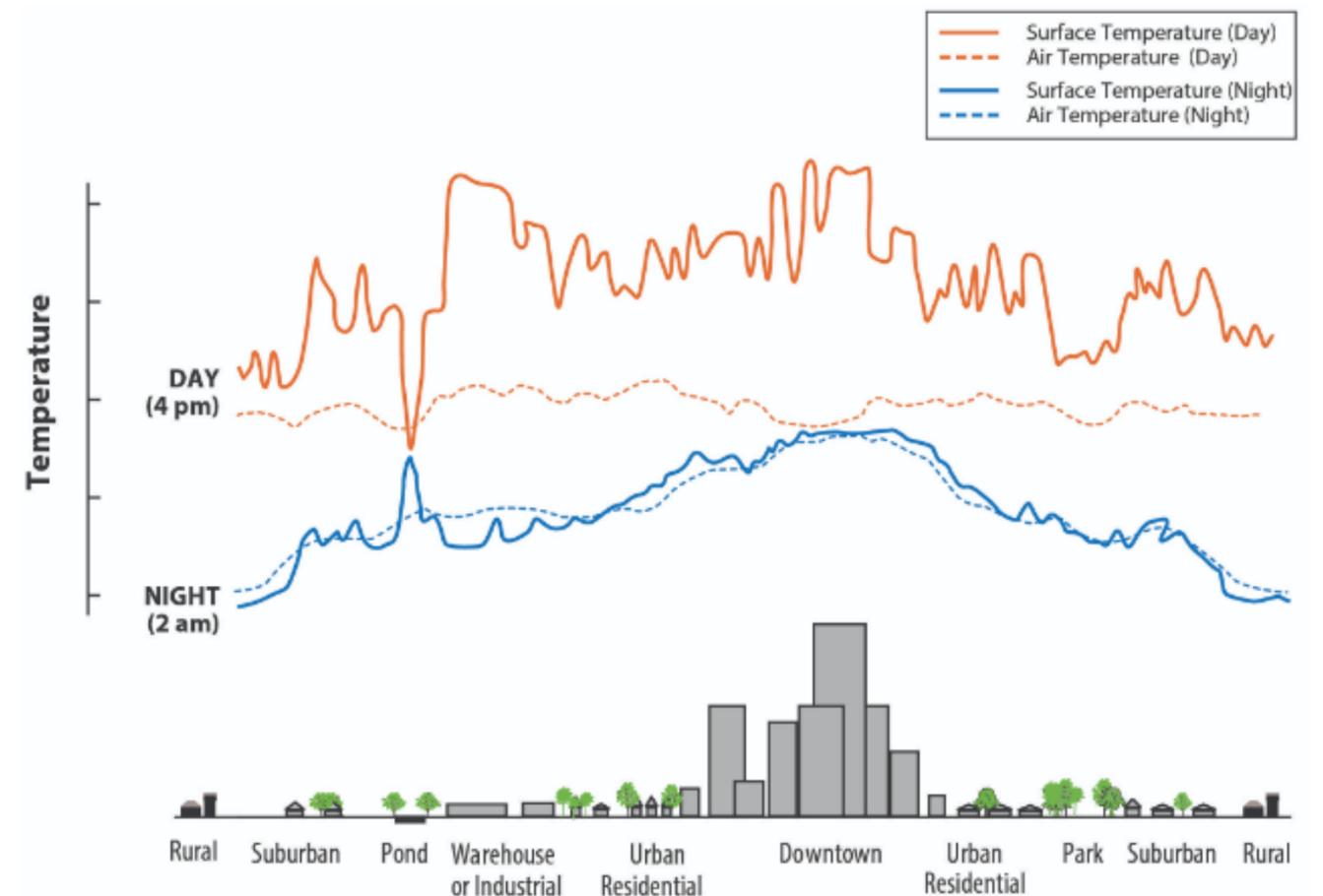
- Access to nutritious food.
- Air quality relates to increased incidences of pulmonary diseases and metabolic diseases.
- Access to places and facilities to get beneficial physical exercise.
- Extreme heat events kill more people every year than any other weather-related phenomenon, and heat-related deaths and illnesses are expected to increase as the climate heats up.

Heat and Heat Island Effect

Extreme heat impacts:

- Human health
- Infrastructure
- Energy demands
- Stress and mortality on crops, vegetation and wildlife
- Water temperature and aquatic life mortality
- Increases in pestilence and insects

Heat Island Effect Diagram

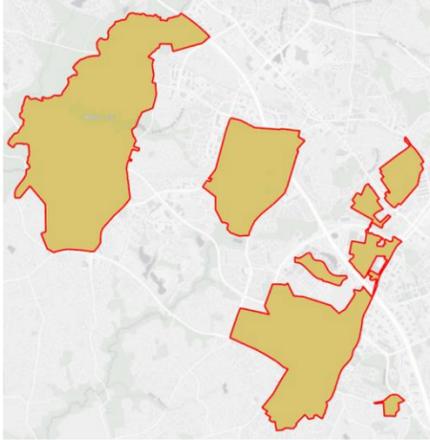
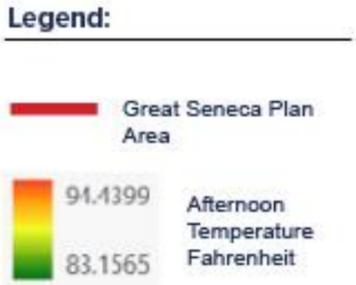
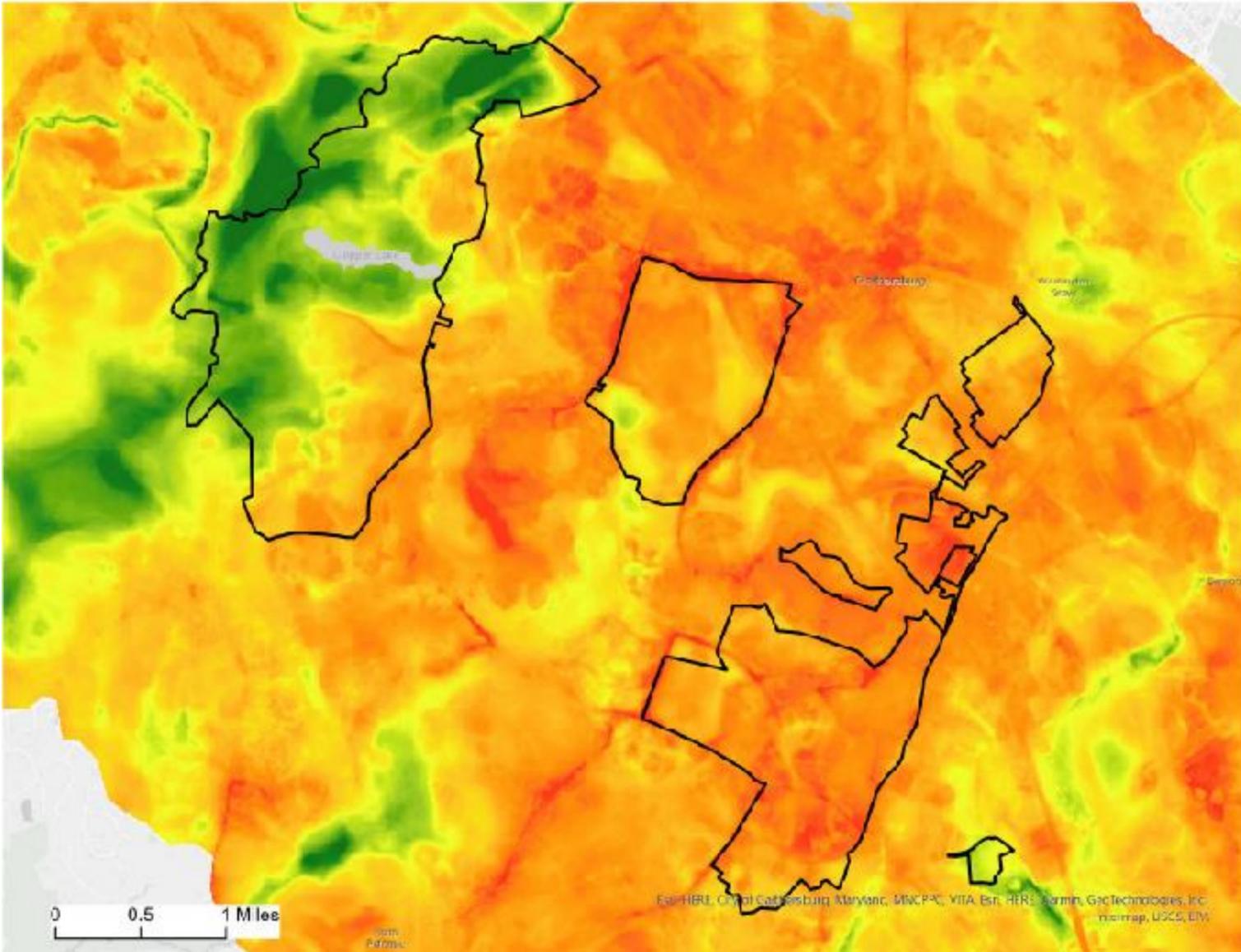


[Learn About Heat Islands | US EPA](#)

Great Seneca Plan Area – Heat Map

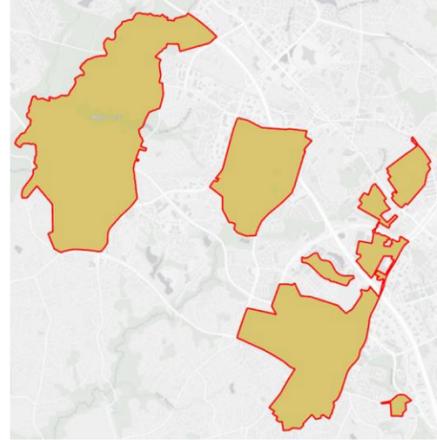
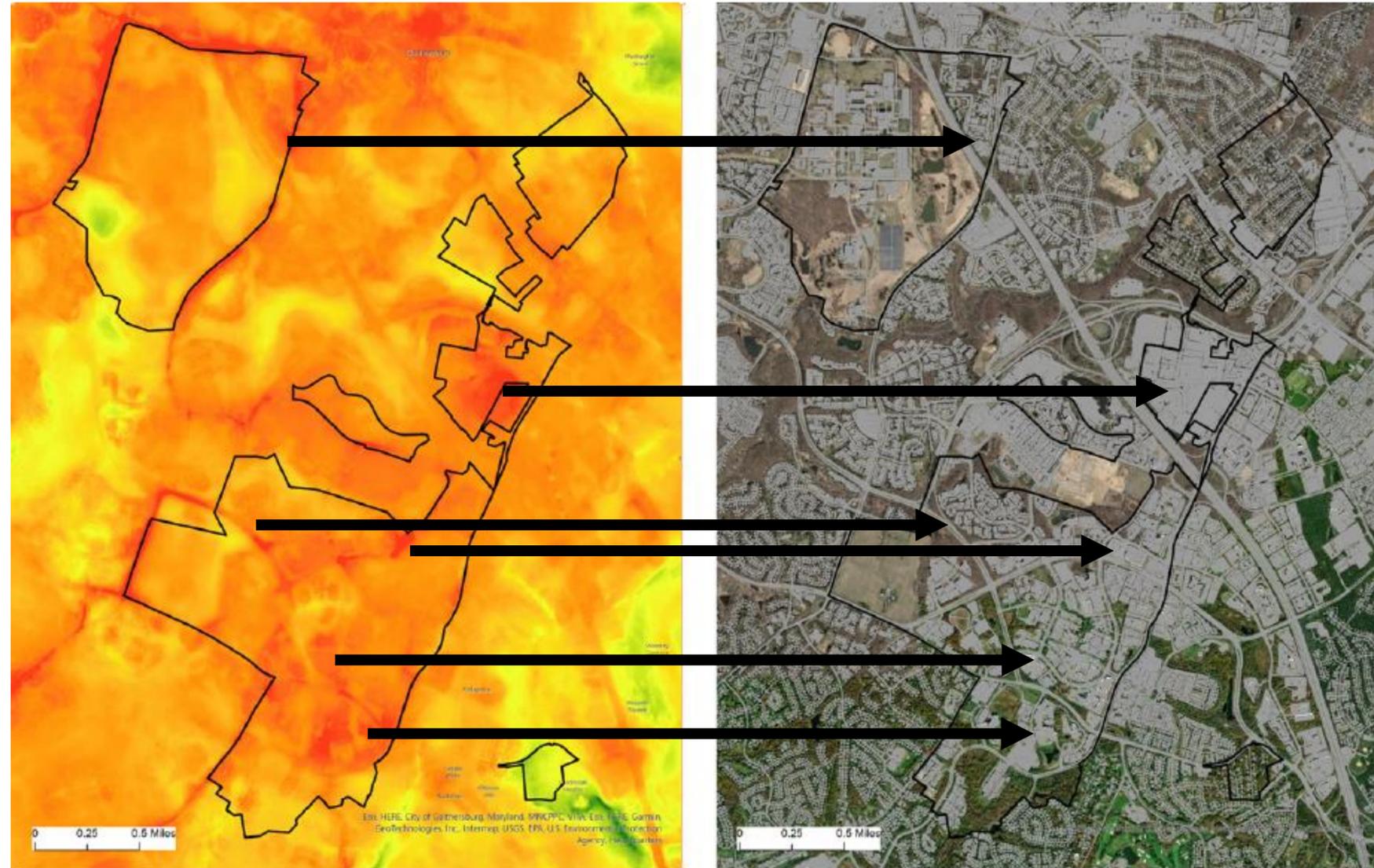
Factors include:

- Temperature
- Tree Cover
- Surface Color
- Surface Type
- Surface Material
- Wind
- Buildings/Shading



Life Sciences Center and Enclaves– Heat Map

- The Life Sciences Center Area and Washingtonian Light Industrial Park show the hottest afternoon temperatures in the Plan Area.
- The impervious surfaces from surface parking lots and large roads directly correlate with the higher temperatures.



Biological Diversity

- The Plan area has a rare habitat where an outcrop of serpentinite bedrock creates conditions that are hostile to many plant species typical of the region.
- Plants better adapted to the chemical makeup of the soil that occurs on the serpentinite become predominant, resulting in the occurrence of some rare plants.
- The serpentine barrens are considered a globally rare biological community. Rare plants occurring within the LSC are protected in conservation easements.



Education



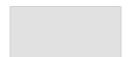
Public Schools

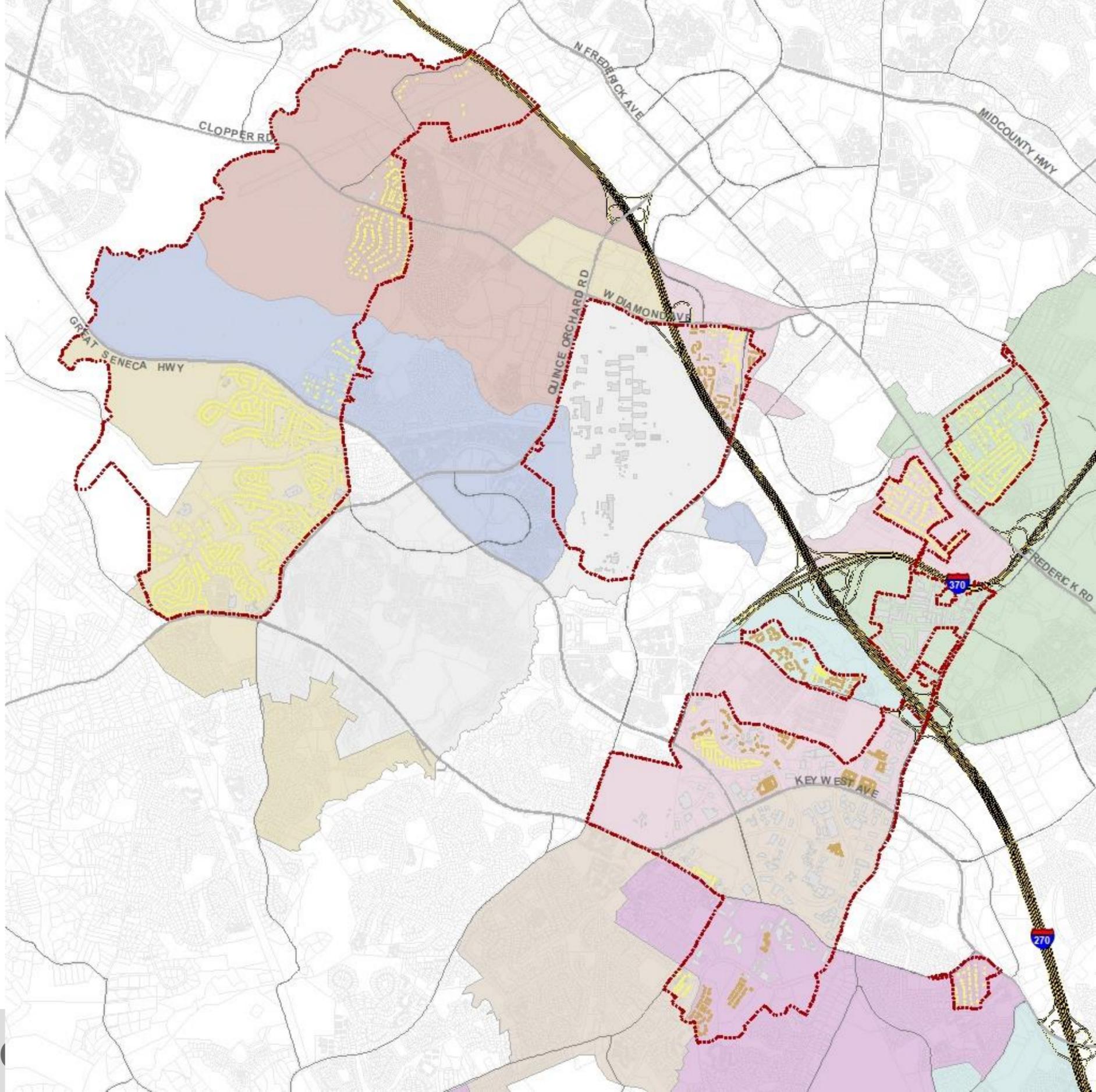
 Plan Boundary

School Service Area by Articulation Pattern

-  Rosemont ES – Forest Oak MS – Gaithersburg HS
-  Washington Grove ES – Gaithersburg MS – Gaithersburg HS
-  Diamond ES – Lakelands Park MS – Northwest HS
-  Brown Station ES – Lakelands Park MS – Quince Orchard HS
-  Marshall ES – Ridgeview MS – Quince Orchard HS
-  Fallsmead ES – Robert Frost MS – Wootton HS
-  Lakewood ES – Robert Frost MS – Wootton HS
-  Stone Mill ES – Cabin John MS – Wootton HS

Land Use Type

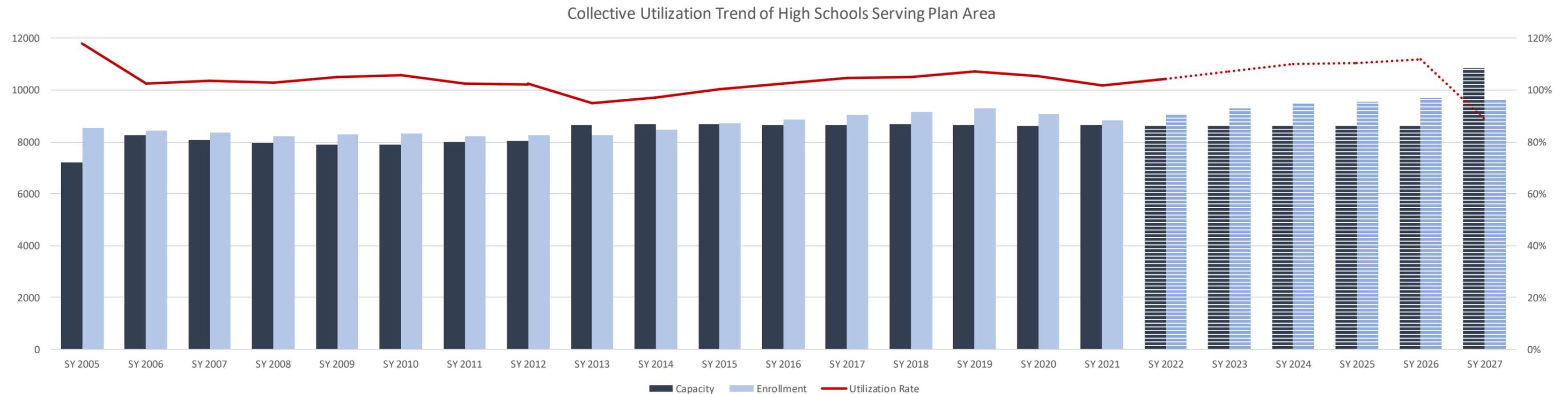
-  Single Family Residential
-  Multi-Family Residential
-  Non-Residential



High Schools

More than 1,100 surplus seats are projected collectively across all HS's serving the Plan area (+ the new school) by the end of current CIP cycle (2027 school year).

- The Plan area is currently served by:
 - **Gaithersburg HS** (>200 seat *deficit* projected, last renovated in 2013)
 - **Northwest HS** (>200 seat *deficit* projected, last renovated in 2006)
 - **Quince Orchard HS** (>200 seat *deficit* projected, built in 1988)
 - **Wootton HS** (surplus seats projected, built in 1970, Major Capital Project scheduled for completion by 2029 school year)
- Crown HS, scheduled to open in the 2027 school year with a 2021 seat capacity, will relieve overutilization in the area by reassigning students between multiple high schools.



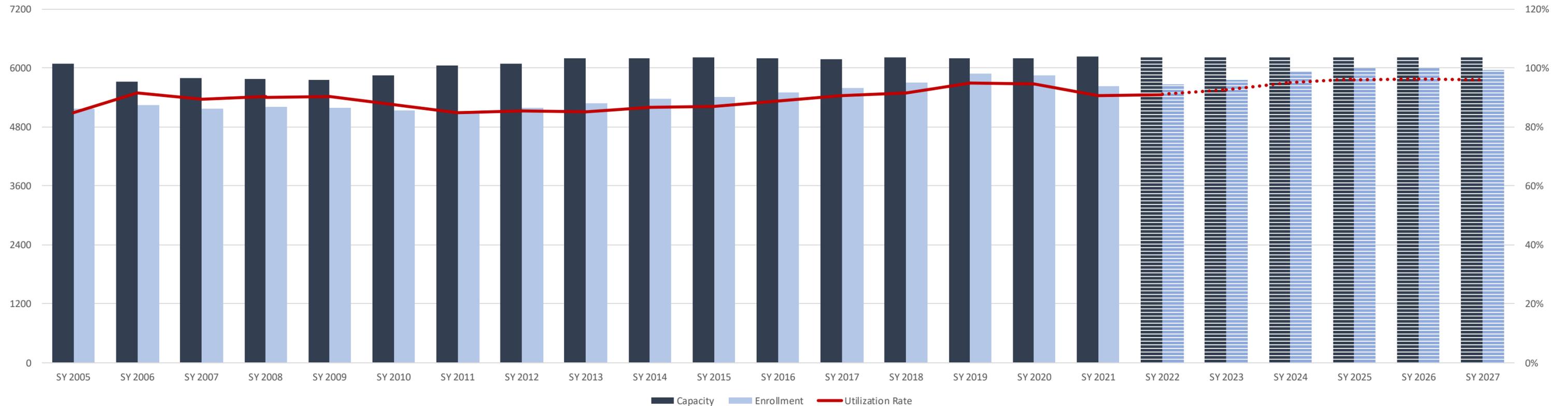
Middle Schools:

More than 250 surplus seats are projected collectively across all MS's serving the Plan area by the end of current CIP cycle (2027 school year).

○ The Plan area is currently served by:

- **Cabin John MS** (minor seat *deficit* projected, last renovated in 2011)
- **Forest Oak MS** (over 150 seat surplus projected, built in 1999)
- **Robert Frost MS** (minor seat *deficit* projected, built in 1971)
- **Gaithersburg MS** (minor seat *deficit* projected, last renovated in 1988)
- **Lakelands Park MS** (seat surplus projected, built in 2005)
- **Ridgeview MS** (over 150 seat surplus projected, built in 1975)

Collective Utilization Trend of Middle Schools Serving Plan Area

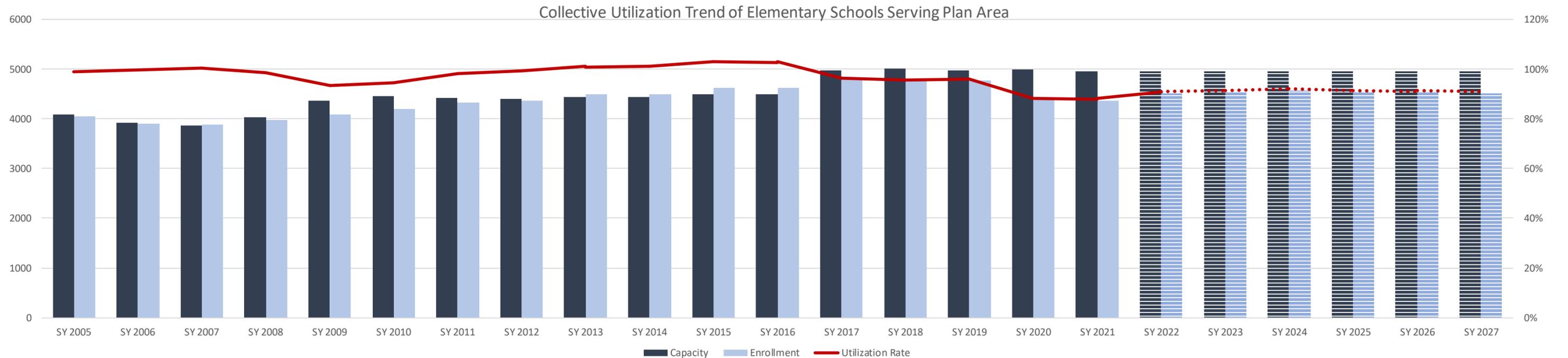


Elementary Schools:

More than 430 surplus seats projected collectively across ES's serving Plan area by end of current CIP cycle (2027 school year).

○ The Plan area is currently served by:

- **Brown Station ES** (seat surplus projected, last renovated in 2017)
- **Diamond ES** (less than 75 seat *deficit* projected, capacity expanded in 2017)
- **Fallsmead ES** (minor seat *deficit* projected, capacity expanded in 2008)
- **Lakewood ES** (over 150 seat surplus projected, last renovated in 2003)
- **Thurgood Marshall ES** (seat surplus projected, built in 1993)
- **Rosemont ES** (seat surplus projected, last renovated in 1995)
- **Stone Mill ES** (over 150 seat surplus projected, built in 1988)
- **Washington Grove ES** (seat surplus projected, capacity expanded in 2010)



Private and Specialty Schools

- **Alfred D Noyes Children's Center** - female detention center run by the Maryland Department of Juvenile Services that holds youth while they await their court date or placement. Noyes can serve up to 29 youth and is the Statewide Detention Center for female youth from Maryland.
- **Regional Institute for Children and Adolescents** - an MCPS special education school for students with emotional disabilities, autism, specific learning disabilities, and other health impairments, serving Montgomery County and several counties in the state of Maryland. Clinical treatment services are provided by the Maryland Department of Health.
- **Academy At Academy Hills** – Daycare and early childhood development
- **Katherine Thomas School** – school for children with language and learning disabilities, Autism, intellectual disabilities, and/or other health impairments in preschool through 12th grade.
- **Ridge School** - special education day school for students in grades 6 through 12 with emotional disabilities, learning disabilities, and other behavioral health impairments. Run by Adventist Healthcare.

Higher Education

- **Universities at Shady Grove (USG):**
 - Offers nearly 80 undergraduate and graduate degree programs from nine Maryland public universities. USG currently serves 3500 students.
- **Montgomery County Community College – Germantown (not in Plan area)**

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