

Appendix 9: Montgomery County Biotechnology Potentials

Montgomery County Biotechnology Potentials

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Executive Summary

The draft Master Plan for Gaithersburg West calls for a shift from a Life Sciences Center zoning focused on single uses – office, flex industrial, laboratory and educational uses – to a mixed-use concept that also allows significant retail and residential development. The goal is to achieve a better jobs/housing balance while creating attractive mixed-use environments that allow people to live, work, shop and recreate in a walkable community that reduces dependence on single-passenger automobile travel. As input to the plan, the Montgomery County Planning Department asked Partners for Economic Solutions (PES) to evaluate the potentials for additional biosciences development and to evaluate the county’s ability to compete for biotech companies.

Biotechnology Industry Clusters

As defined by the U.S. Department of Commerce and the Biotechnology Industry Association, biotechnology is the “application of molecular and cellular processes to solve problems, conduct research, and create goods and services.” It takes many forms, focusing alternatively on medical applications (“red”), agricultural applications (“green”) or industrial applications (“white”). Maryland and Montgomery County have excelled in the “red” segment of medically-related biotech, R&D, therapeutics, tools and diagnostics.

Though the biotechnology industry is expanding around the world, it has shown great propensity for clustering in a select set of geographic locations. This clustering is driven largely by the need for specialized labor pool, advanced science, industry experience and financing. Human capital is the most critical resource; it is important to be in a location that can attract the talent, offering a good quality of life, good employment opportunities among other similar firms, continuing education opportunities and other amenities.

A Brookings Institution study in 2002 identified nine key clusters of biotech activity in the United States that represent three-quarters of both large and new biotech companies:

- Boston
- San Francisco
- New York
- Philadelphia
- San Diego
- Seattle
- Raleigh/Durham
- Washington/Baltimore
- Los Angeles

Financing patterns reinforce the competitive strength of existing biotech clusters. Biotech investors, who are largely focused in Boston, New York and San Francisco, favor investing in companies within a reasonable drive time so that they can stay actively involved in managing and guiding the companies.

Though the industry is dominated by U.S. companies with 77 percent of industry revenues in 2007, biotechnology is continually globalizing as other countries capitalize on their

science, industry and investments. Europe represented 15 percent of global industry revenues in 2007; Asia-Pacific generated 5 percent; and Canada provided 3 percent of industry revenues. The largest European clusters are currently focused in Cambridge, the Medicon Valley at the border between Sweden and Denmark, Switzerland and Paris. Other emerging clusters exist in Sydney, Melbourne, Tokyo, Hong Kong, Singapore, Shanghai, Beijing, Brazil, and India's "Genome Valley." The developing nations tend to focus on manufacturing operations but are seeking to expand into R&D as well.

Montgomery County's Competitive Advantages and Disadvantages

Montgomery County has a total of 223 bioscience companies located across the county, but concentrated in the I-270 Corridor. The county's biotech industry stands out in R&D and biotech therapeutics with a particular niche of in vitro diagnostics.

Montgomery County competes with several other regional locations, most significantly, Frederick County and Baltimore. Frederick County benefits from its I-270 Corridor location and expansion from Montgomery County. Its greater availability of land at lower prices has attracted MedImmune and others to establish production facilities there. Baltimore is now home to two new university-affiliated bioscience research parks. The University of Maryland BioPark is a highly urban development park on 10 acres adjacent to downtown Baltimore. In East Baltimore, Forest City Corporation is developing a 31-acre Science + Technology Park at Johns Hopkins in cooperation with the State, the City of Baltimore and Johns Hopkins University. Its initial development has accommodated major Johns Hopkins centers and private biotech companies.

Montgomery County and Gaithersburg West, in particular, excel in many of the key locational criteria for early-stage, second-stage and mature companies other than production facilities, again largely focused on "red" biotech of human medicine.

- Research universities and institutes – 50 Federal life science research-intensive institutions, Johns Hopkins University, and the National Institute of Standards and Technology (NIST).
- Regulatory agencies – Access to the FDA.
- Educated and experienced workforce.
- Experienced entrepreneurs – A slowly developing cadre of experienced biotechnology entrepreneurs; however, the county still lags in comparison to other regions with a longer history of life science companies and an entrepreneurial environment.
- Specialized business support – Specialized services to biotech companies.
- Access to capital – Washington/Baltimore has a growing venture capital community capable of supporting some of Montgomery County's biotech companies. However, these firms have invested less locally than have those in comparable regions, possibly due to the county's limited supply of experienced entrepreneurs with industry expertise.
- Specialized facilities – Laboratory and incubator space available for lease.

Some of the factors that may be inhibiting the industry's growth in Gaithersburg West include:

- Limited transit service –Most workers must drive to work, drive to eat out and drive to meet with other companies.
- Traffic congestion and internal circulation.
- Limited retail opportunities – Limited choice of nearby restaurants, though the selection has improved in the last few years.
- Sterility of the office park environment – Some companies, such as United Therapeutics in Silver Spring, choose to locate in more urban environments with greater levels of diverse activity and the opportunity to walk to restaurants, retail, entertainment, Metro and nearby housing.

Future Demand and Opportunities

Growth projections are fraught with difficulty in a young industry with such diversity of company types and maturity levels. Based on industry growth trends in Maryland, PES projects that the industry could grow from the 2007 level of 12,000 private industry employees in Montgomery County to 16,200 employees by 2025. Within Gaithersburg West, the employee base is projected to shift from 33 percent of the county total (4,000 employees) in 2007 to 29 to 47 percent of the county total depending on the introduction of transit and mixed-use development as well as competitive development elsewhere in the county (Bethesda, Rockville, Germantown, Silver Spring and White Oak). That share would translate into 4,700 to 7,600 bioscience employees in Gaithersburg West by 2025.

Gaithersburg West will continue to compete well in the bioscience field, but each year the competition will increase from regional, other domestic and international clusters. Gaithersburg West's greatest strength will be internally generated growth from its existing base of companies. The ability to capitalize on that potential requires access to financial capital, appropriate facilities, mentoring, technical support, a favorable regulatory environment and incentives to help developing companies.

Critical to the competition for biotech growth is the ability to attract talent – both scientific and entrepreneurial. The county's high quality of life is important in attracting new workers and in retaining existing researchers and scientists when they decide to start a company. Also important is a supportive and appealing work environment. The pattern of single-use development works against 1) walkable environments where retail and other support uses are close enough to access on foot or on bicycle rather than being forced to drive and 2) the density of employees and residents needed to support a vibrant business base.

The vision for Gaithersburg West as a higher density village could be quite effective in helping the county attract and retain knowledge workers – the key to long-term prosperity in the evolving knowledge economy.

The transition to the new paradigm of mixed-use, walkable development will take time, however. The sector is relatively built out in that most of the available land parcels have been developed. However, the scale and density of that development leave open the opportunity for selective infill to replace parking lots with parking garages and new multi-story buildings. Some redevelopment will be possible, though laboratory improvements are too expensive to demolish in great numbers. More likely will be new development in

environments in which density and transit are designed from the beginning – the Belward campus and the redevelopment of the Public Safety Training Academy.

As biotech evolves to include a higher percentage of office space, it will be easier to accommodate in higher-density developments. Laboratory space can be effectively accommodated in multi-story buildings designed for that use; however, such buildings come with a higher price tag and are more complex to adapt. Most tenants and developers have favored one- and two-story buildings due to their cost and flexibility for reconfiguration. In the near- and mid-term, bioscience lab buildings are likely to remain at primarily two stories. Going forward, the demand is likely to break down 40 to 45 percent in flex space and 55 to 60 percent in office space.

It will also take time to change due to the relatively slow pace of development for the biotech industry. Employment projections presented above suggest an average annual increase in demand of 70,000 to 105,000 square feet. In the first few years, that will be absorbed largely by the existing vacant space in the market. Also, land economics require a high land value in order to justify construction of structured parking rather than less expensive surface parking lots. That value calculation may postpone intensive infill for some years. Introduction of the Corridor Cities Transitway will help to ease that transition by increasing demand and allowing a reduction in the number of parking spaces required.

The long-term future of Gaithersburg West will be best served by concentrating a mix of land uses at the new transit stations so as to create a knowledge community with places to live, work, eat and interact, while facilitating pedestrian and bicycle movements and reducing dependence on the private automobile.

I. Introduction

The Montgomery County Planning Department has prepared a draft Master Plan for Gaithersburg West – the core of the I-270 Corridor. The plan calls for a shift from a Life Sciences Center zoning focused on single uses – office, flex industrial, laboratory and educational uses – to a mixed-use concept that also allows significant retail and residential development. The goal is to achieve a better jobs/housing balance while creating attractive mixed-use environments that allow people to live, work, shop and recreate in a walkable community that reduces dependence on single-passenger automobile travel. The new proposed zoning would allow an increase in maximum density from the current 12.9 million square feet to 20 million square feet.

In considering this major shift in land use policy, the Planning Board has asked what are the potentials for additional biosciences development and what portion of the new development is likely to be used for bioscience operations. This resulting report is organized as follows:

- Section II profiles the biotechnology industry, the life cycles of typical biotech companies and their locational patterns, and key biotech clusters around the world.
- Section III focuses on Montgomery County, its base of biotech companies, related real estate trends and its competitive advantages and disadvantages.
- Section IV evaluates the regional competition.
- Section V projects future demand for biotech-related development.
- Section VI evaluates the five Gaithersburg West subareas and their potentials for future biotech development.

This analysis relies largely on secondary data with selected interviews with individuals and organizations involved in the local and regional life sciences industry.

II. Biotechnology Industry

Biotechnology Industry

As defined by the U.S. Department of Commerce and the Biotechnology Industry Association, biotechnology is the “application of molecular and cellular processes to solve problems, conduct research, and create goods and services.”¹ Experts often talk about biotechnology sectors as “red”, “green” and “white” where “red” refers to medically-related biotechnology focused on understanding and treating diseases. “Green” includes agricultural biotechnology oriented to plants and animals. “White” refers to applications for industrial purposes, including creating and modifying enzymes for bioremediation and the efficient production of biofuels. Historically, Montgomery County’s activity has focused on the “red” segment of medically-related biotech, R&D, therapeutics, tools and diagnostics.

Globally, the industry now includes an estimated 4,414 companies. Of that total, 798 are publicly held companies with total revenues of \$84.8 billion in 2007, \$31.8 billion in research & development expenditures and a net loss of \$2.7 billion.² Still in its early stages, the industry has failed to generate consistent profits due largely to the high costs and long lead time required to bring products to market. The United States dominates the market with 77 percent of the total revenues, 81 percent of the global R&D expenditures and 10 percent of the net losses. Though large, the industry is dwarfed by size of pharmaceutical industry.

Business Life Cycle

Biotechnology companies focused on therapeutics and human medical applications typically progress through several life cycle stages:

- Research
- Discovery of a promising gene or technology
- Proof of concept
- Scale-up manufacturing
- Clinical trials
- Approval by the U.S. Food & Drug Administration
- Production

¹ Biotechnology Industry Organization, “*Guide to Biotechnology, 2008.*”

www.bio.org/speeches/pubs/er/

² Ernst & Young, *Beyond Borders: Global Biotechnology Report 2008*,

[www.ey.com/Publication/vwLUAssets/Industry_Biotechnology_Beyond_Borders_2008/\\$FILE/Biotechnology_Beyond_Borders_2008.pdf](http://www.ey.com/Publication/vwLUAssets/Industry_Biotechnology_Beyond_Borders_2008/$FILE/Biotechnology_Beyond_Borders_2008.pdf)

That progression typically requires 10 years or more from the initial discovery given the lengthy testing and review process required before a drug can be brought to market. Only one in thousands of discoveries ever reach production.

The scale of money is astounding, involving \$100 million or more to bring a drug to market. So the availability of financing for high-risk ventures is critical to company success. Currently, the national and international financing crisis is impacting biotech companies, many of which are finding it much more difficult to secure financing to expand their R&D and product development. The failure of the industry to live up to the lofty expectations of high profits in a short timeframe also has restricted the flow of necessary funds. In the first quarter of 2009, venture capital investment in the life sciences sector (biotech and medical devices) dropped 40 percent in amount from the fourth quarter of 2008.³

Funding options for early-stage companies during the research stage are relatively limited – typically involving federal Small Business Innovation Research (SBIR) grants, personal savings, and investment by family and friends. Once a discovery is made, it is subjected to a proof of concept study to demonstrate clinical efficacy with a small number of patients. This study seeks to test quickly for clinical efficacy and toxicity and provide information for a potential go/no go decision. Proof of concept funding is often the most difficult funding to attract at this very early stage of product development.

Once a promising innovation or discovery is achieved and the concept proven, the company is better able to compete for investment, reaching out to “angel” investors, that is, individual high-wealth investors who often have personal knowledge of the industry and an ability to assess the potential value of the innovation. Major pharmaceutical companies are increasingly entering into strategic alliances with smaller biotechnology firms to take advantage of their innovation and research skills. They may fund the firms’ research and clinical trials. These trials subject the new compound to rigorous analysis on a much larger scale to determine efficacy, appropriate dosage and treatment protocols, toxicity and specific populations that will benefit. These trials and the review process by the U.S. Food and Drug Administration (FDA) take several years to complete with no assurance of a positive outcome. Recently, the Merck, Eli Lilly, Pfizer, and Johnson & Johnson pharmaceutical firms created a new venture fund to search for innovative ways to test drugs without human trials so as to reduce the huge cost of bringing a drug to market.

Venture capital firms have been major sources of capital funding for the industry, but they are most interested in companies likely to attract major investors within five years – i.e., companies that are likely to be ready for acquisition by a major pharmaceutical firm or for going public through an Initial Public Offering. More often, companies are acquired by

³ PricewaterhouseCoopers and the National Venture Capital Association, *MoneyTree Report*, <https://www.pwcmoneytree.com/MTPublic/ns/moneytree/filesource/exhibits/Moneytree%20Report%20Q1%202009.pdf>

major pharmaceutical firms that need the research capabilities, innovation and discoveries of small biotech companies to fill their pipeline of new drugs.

Upon completion of clinical trials and receipt of FDA approval, biotech companies that are still independent are most likely to license their innovation to a major pharmaceutical firm. Some pursue an Initial Public Offering (IPO) and go public to raise capital, but few biotech companies have the financial strength, manufacturing expertise and distribution network that will allow them to be fully integrated vertically. Most prefer to focus on their particular strengths of research and development, leaving production, marketing and distribution to other entities.

These life cycles apply most directly to health-related biotech companies. Companies focused on industrial applications of biotechnology are less constrained by the FDA approval process and follow somewhat different paths. To date, very few Maryland biotech firms have focused on this segment of the industry; however, the State has targeted bioagriculture, biofuels and nanotechnology for future growth.

Locational Patterns

The industry's locational patterns often reflect these life cycle stages. In the initial stages of development, the company's efforts typically focus on research. Their staffing is relatively small and heavily oriented to research scientists. At this stage, proximity to universities, institutes, major governmental entities (e.g., National Institutes of Health) and major research hospitals is highly valued. Many of the company founders come from major research institutions or universities and maintain their ties while developing new innovations with potential commercial value. For them, proximity to their institutional laboratory provides major time savings while also providing access to a valuable workforce of highly trained graduate students. Access to expensive equipment is also important to start-ups that cannot afford to buy their own. Facilities are smaller and company requirements change quickly. Incubator facilities which offer inexpensive, flexible space and business support services can be very important to companies at this stage.

Cambridge has developed an impressive concentration of biotech companies on the strength of access to Massachusetts Institute of Technology (MIT), Harvard and other scientists and graduate student workers. While Amgen and some other companies have retained their Cambridge location as they matured into major international corporations, second-stage companies involved in the clinical trials stage often elect to move to suburban locations along Route 128 with lower-cost and larger facilities, room for growth and easier commutes for the companies' managers and the full range of employees (not just the graduate students).

At maturity, most are acquired by large pharmaceutical companies. Acquisition by a major pharmaceutical company does not necessarily mean that the biotech company leaves its original location. The importance of retaining the scientific talent in an environment that encourages further innovation leads many companies to remain in place after acquisition

rather than being absorbed into the major corporation and a corporate environment that may stultify innovation and entrepreneurial thinking.

However, the pattern of company acquisition or licensing of proven drugs to major pharmaceutical companies does mean that production operations are often separated physically from the biotech company's headquarters and R&D facilities. Pharmaceutical manufacturing has shifted through the recent decades to favor lower-cost areas such as the Research Triangle or international sites. Some Maryland firms have retained production facilities in the state, particularly pilot-scale production.

Site selection for a biotechnology company mirrors that of any industry because it is based on the comparative advantages of one location over another. While most biotechnology companies seek close proximity to world-class research institutions, a pool of skilled workers, and access to local capital, offering incentives can promote one location over another.

Incentives

Incentives offered to biotechnology companies typically feature several components of economic development programs created by most state and local governments in the past decade. Throughout this region many jurisdictions offer a mix of tax incentives, low-cost financing and creative financing. The tax incentives focus on research and development, job training, capital purchases (equipment, machines, etc.) and property or sales tax exemptions. The low-cost and creative financing mechanisms are more directed toward product development and construction financing. While each incentive package reflects the needs of a specific company and its location, most packages include some form of tax credits.

Many of the early stage companies need cash in hand more than a promise of tax credits. These types of biotech companies do not have high tax burdens and need incentives that more effectively meet their needs. A few jurisdictions – including New Jersey and Pennsylvania but not Maryland – allow such companies to cash in tax credits or trade the credits to other companies for cash. In all instances, these companies receive less than the full value, typically 65 percent of the credit value as cash in hand. These incentives make a difference in the survival of new biotechnology firms. While Maryland does not allow jurisdictions to cash in tax credits, both the Challenge Investment and Enterprise Investment programs help establish emerging biotechnology companies and those established businesses ready for the next stage of development.

In Maryland, the state's Biotechnology Investment Tax Credit, launched in 2006 provides small Maryland-headquartered biotechnology companies a 50-percent credit against State income taxes. The credit targets younger biotechnology companies in business for less than 12 years. The challenges in the venture capital market means that many biotech companies rely on this type of investment incentive to keep their operation running. On average each year the State receives 200 applications for the Biotechnology Investment

Incentive Tax Credit. The program has attracted \$36 million in total capital investment for the first three years.

Recently increasing incentives for biotechnology companies reflect the promise of the industry and the belief of local governments that such jobs will create a spin-off impact on local and state economies. Several states now provide more flexible low-cost financing options with performance-based incentives. Such incentives may be used as a source of liquidity when companies operate at a loss in their first three to five years of operations. These incentives provide firms some of the flexibility and patience often needed to achieve ultimate success in a new venture.

Industry Clusters

Though the biotechnology industry is expanding around the world, it has shown great propensity for clustering in a select set of geographic locations. This clustering is driven largely by the need for specialized labor pool, advanced science, industry experience and financing. Human capital is the most critical resource; companies want to be able to reach out to a local market of skilled and experienced workers without having to recruit nationally and pay for relocation. Where recruitment is likely, it is important to be in a location that can attract the talent – regions with a good quality of life, good employment opportunities among other similar firms, continuing education opportunities and other amenities.

An in-depth analysis by the Brookings Institution⁴ in 2002 identified nine key clusters of biotech activity in the United States that represent three-quarters of both large and new biotech companies. The majority of the industry's activity is focused in four metropolitan areas:

- Boston
- San Francisco
- New York
- Philadelphia

Building on the strength of MIT, Harvard, University of California-San Francisco and other major research institutions, Boston and San Francisco were early leaders in the development of the biotech industry. The New York and Philadelphia areas excel due to their long history of major pharmaceutical company headquarters and the availability of financial capital.

Emerging clusters of growing importance include:

- San Diego

⁴ The Brookings Institution Center on Urban & Metropolitan Policy, *Signs of Life: The Growth of Biotechnology Centers in the U.S.*, 2002, www.brookings.edu/ES/urban/publications/biotech.pdf

- Seattle
- Raleigh/Durham

These areas also have benefited from major research institutions, good quality of life and a strong technical workforce.

Rounding out the list are:

- Washington/Baltimore
- Los Angeles

The Washington/Baltimore area ranked eighth in 2002 by virtue of the mass of biotech companies that have spun out of and/or seek proximity to the National Institutes of Health (NIH), the FDA and other governmental institutions, including the Walter Reed Army Institute of Research, the United States Army Medical Research and Materiel Command and the National Cancer Institute at Fort Detrick, and the Uniformed University of Health Sciences. Also important are the research capabilities of Johns Hopkins University as well as several other well-respected medical and graduate science universities. Los Angeles' ranking is due primarily to the presence of Amgen, the world's largest biotech company.

Financing patterns further reinforce the competitive strength of existing biotech clusters. Biotech investors, who are largely focused in Boston, New York and San Francisco, favor investing in companies within a reasonable drive time so that they can stay actively involved in managing and guiding the companies.

Brookings reported that the growth of the late 1990s was most significant in the Boston, San Francisco, San Diego, Seattle and Raleigh/Durham metropolitan areas. These five areas accounted for 56 percent of new biotech companies and 75 percent of new venture capital invested in biopharmaceuticals from 1996 to 2001. That trend also is reflected in more recent data from Ernst & Young. In 2007, the San Francisco Bay Area had 77 public biotech companies – 20 percent of the nation's total. Another 16 percent were concentrated in New England with 11 percent in San Diego, 8 percent in New Jersey, 7 percent in New York state and 6 percent in the Mid-Atlantic (Maryland, DC and Virginia).

Internationally, biotechnology is continually globalizing as other countries capitalize on their science, industry and investments. Europe represented 15 percent of global industry revenues in 2007 with 40 percent of the publicly traded companies. Asia-Pacific generated 5 percent with 17 percent of public companies, and Canada provided 3 percent of industry revenues with 9 percent of public companies. The largest European clusters are currently focused in Cambridge, the Medicon Valley at the border between Sweden and Denmark, Switzerland and Paris. In Canada, the three finance centers – Montreal, Toronto and Vancouver – dominate the industry. Singapore has been very aggressive in pursuing and funding international experts to open regional facilities in its Biopolis development. Other emerging clusters exist in Sydney, Melbourne, Tokyo, Hong Kong, Shanghai, Beijing,

Brazil, and India's "Genome Valley." The developing nations tend to focus on manufacturing operations but are seeking to expand into R&D as well. Most focus on "red" biotechnology. However, Finland, Denmark and Japan stand out in "white" applications of biotechnology to industrial uses. "Green" biotechnology has largely focused around major companies, such as Monsanto and DuPont. India and China are also involved in agribio applications, which are largely banned in Europe.

III. Montgomery County Conditions

Montgomery County has a total of 223 bioscience companies located across the county, but concentrated in the I-270 Corridor. Table 1 on the following page shows the number of companies by type and location. The county's biotech industry stands out in R&D and biotech therapeutics with a particular niche of in vitro diagnostics. Local businesses and institutions led the mapping of the human genome, providing a surge of activity in the early part of the decade and an invaluable research resource. That resource base positions Montgomery County to benefit from the evolution toward personalized medicine, where treatments are tailored based on the patient's individual genetic makeup.

The county has an estimated inventory of 6.65 million square feet of space for biotech companies with the following approximate breakdown of space by building type:

Flex	49%
Office	45%
Industrial	6%

With the growing field of bioinformatics, more of the biotech activity is shifting from the laboratory to computers, allowing for a greater utilization of office space rather than flex buildings outfitted for laboratories.

Table 1. Maryland Biotechnology Companies

Location	Biotech/ R&D Services		Biotech Therapeutics		Medical Technology		Professional Service/ Consulting		Supplier & Engineering		Other Biotech		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Baltimore	18	11.6%	14	15.2%	5	13.2%	6	12.8%	6	11.1%	4	18.2%	53
Bethesda	1	0.6%	3	3.3%	2	5.3%	10	21.3%	3	5.6%	-	0.0%	19
College Park	0	0.0%	1	1.1%	0	0.0%	0	0.0%	1	1.9%	1	4.5%	3
Columbia	14	9.0%	2	2.2%	3	7.9%	1	2.1%	7	13.0%	5	22.7%	32
Frederick	17	11.0%	4	4.3%	1	2.6%	2	4.3%	6	11.1%	2	9.1%	32
Gaithersburg	21	13.5%	22	23.9%	2	5.3%	1	2.1%	8	14.8%	2	9.1%	56
Germentown	8	5.2%	4	4.3%	1	2.6%	2	4.3%	0	0.0%	1	4.5%	16
Rockville	53	34.2%	31	33.7%	8	21.1%	14	29.8%	7	13.0%	1	4.5%	114
Silver Spring	0	0.0%	1	1.1%	1	2.6%	2	4.3%	1	1.9%	1	4.5%	6
Other Maryland Locations	23	14.8%	10	10.9%	15	39.5%	9	19.1%	15	27.8%	5	22.7%	77
	155		92		38		47		54		22		408
County													
Baltimore City	18	11.6%	14	15.2%	5	13.2%	6	15.8%	6	11.1%	4	18.2%	53
Baltimore	2	1.3%	2	2.2%	2	5.3%	2	5.3%	2	3.7%	2	9.1%	12
Frederick	17	11.0%	4	4.3%	1	2.6%	2	5.3%	6	11.1%	2	9.1%	32
Howard	14	9.0%	2	2.2%	3	7.9%	1	2.6%	7	13.0%	5	22.7%	32
Montgomery	85	53.5%	63	66.3%	16	36.8%	31	81.6%	21	35.2%	7	31.8%	223
Prince George's	0	0.0%	1	1.1%	0	0.0%	0	0.0%	1	1.9%	1	4.5%	3
Other Maryland Counties	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	-
	155		92		38		47		54		22		408

Note: Locations coded based on mailing address.

Source: USA Life Science Database: Partners for Economic Solutions, 2009.

Office and R&D Development Trends

CoStar tracks the inventory and performance of office and industrial buildings in the region, the county and key subareas. It characterizes lab buildings within its category of R&D/flex space.

Montgomery County

The history of office development and absorption trends since 2000 show a significant slowing in new development since 2004 and in absorption over the last two years. Table 2 shows both R&D/lab space in flex industrial buildings and total office space for the county and the metropolitan area as a whole. Since 2000, Montgomery County's total office space inventory has grown by 9.9 million square feet or 17.9 percent to a 2008 total of 65.3 million square feet. The county's office development lagged the metropolitan area, which grew by 21.8 percent from 2000 through 2008. New construction averaged 1,255,000 square feet annually – ranging from 3.3 to 30.4 percent of the region's annual office construction. During this decade, the county's share of the region's office inventory has declined from 15.8 to 15.2 percent with the expansion of markets in Northern Virginia and other jurisdictions.

In terms of demand, absorption⁵ of Montgomery County office space totaled 7.1 million square feet from 2000 through 2008, an average of 786,000 square feet annually. With absorption running slower than new construction, occupancy rates in the county's office space fell from 94.4 percent in 2000 to 89.0 percent in 2008 and continued to fall to 88.5 percent in the first quarter of 2009 with an additional 325,000 of occupied space vacated.⁶ The metropolitan area suffered a similar fate as new construction outran demand. The County now has 7.5 million square feet of vacant office space. That vacant space has the following breakdown by class of space:

Class of Space	Square Feet Vacant	Percent Vacant	Percent of Vacant Space
A	4,000,214	12.7%	53.3%
B	2,904,381	10.7%	38.7%
C	594,619	8.6%	7.9%

For R&D/lab space in flex industrial buildings, county development trends have been constrained by a lack of available sites and competition from other land uses that return a higher value to the property owner. The county's inventory of 2.79 million square feet of space has grown by 11.1 percent or 310,000 square feet since 2000. Somewhat under one-half (44.5 percent) of the region's total supply of R&D/lab space is located in Montgomery County. Over the same period, occupied space grew by only 6.1 percent. From 2000

⁵ Increase in occupied space.

⁶ Typically, a healthy office market will have occupancies close to 95 percent.

through the first quarter of 2009, the county captured only one-quarter of the total regional net absorption.

The county's market absorbed 208,000 square feet of R&D/lab space while developers built an additional 605,000 square feet of lab space in flex buildings. R&D/lab space occupancy fell from 85.5 percent in 2000 to 80.5 percent in the first quarter of 2009.

Table 2: Office and R&D/Flex Space Trends, Montgomery County and the Washington Metropolitan Area, 2000-1st Quarter, 2009

	2000-2008 Change											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	1 Qtr, 2009	Amount	Percent
Montgomery County R&D Lab/Flex Space												
Total Square Feet (4th Quarter)	2,477,476	2,497,676	2,497,676	2,497,676	2,497,676	2,787,588	2,787,588	2,787,588	2,787,588	2,787,588	310,112	12.5%
New Construction	294,397	20,200	0	0	0	289,912	0	0	0	0	NA	NA
Total Occupied Square Feet	2,118,569	2,019,569	2,195,873	2,010,800	2,137,965	2,468,762	2,399,535	2,302,224	2,256,517	2,243,269	137,948	6.5%
Occupancy Rate	85.5%	80.9%	87.9%	80.5%	85.6%	88.6%	88.6%	82.6%	80.9%	80.5%	-4.6%	-5.3%
Net Absorption	83,420	(99,000)	176,304	(185,073)	127,165	330,797	(69,227)	(97,311)	(45,707)	(13,248)	NA	NA
Average Rate (triple net)	\$15.64	\$26.42	\$19.43	\$18.62	\$18.65	\$24.97	\$24.81	\$24.61	\$24.04	\$24.03	\$8.40	53.7%
Share of Total Office Inventory	4.3%	4.2%	4.0%	4.3%	3.9%	4.2%	4.2%	4.1%	4.1%	4.1%	0	-4.4%
Share of Occupied Office Space	3.9%	3.7%	4.0%	3.6%	3.7%	4.1%	4.0%	4.2%	3.7%	3.7%	-0.2%	-4.1%
Share of Total New Office Space	17.8%	0.9%	0.0%	0.0%	0.0%	49.5%	0.0%	0.0%	0.0%	#DIV/0!	NA	NA
Share of Metro R&D Space	47.8%	47.0%	47.0%	46.8%	46.3%	48.6%	47.9%	47.5%	44.7%	44.5%	-3.1%	-6.4%
Share of Metro Occupied R&D	47.7%	48.2%	49.3%	47.2%	45.7%	49.8%	45.7%	46.4%	43.4%	43.5%	-4.3%	-9.1%
Washington Metro Area R&D Lab/Flex Space												
Total Square Feet (4th Quarter)	5,184,987	5,308,953	5,308,953	5,334,352	5,393,295	5,737,105	5,820,329	5,871,448	6,234,620	6,258,870	1,049,633	20.2%
New Construction	362,095	123,966	0	77,057	58,943	343,810	83,224	51,119	363,172	24,250	NA	NA
Total Occupied Square Feet	4,439,548	4,192,034	4,456,688	4,257,009	4,679,997	4,960,775	5,235,932	4,956,647	5,199,229	5,154,248	759,681	17.1%
Occupancy Rate	85.6%	79.0%	83.9%	79.8%	86.8%	86.5%	90.0%	84.4%	83.4%	82.4%	-2.2%	-2.6%
Net Absorption	109,367	(247,514)	264,654	(199,679)	422,988	280,778	275,157	(279,285)	242,582	(44,981)	NA	NA
Average Rate (triple net)	\$12.03	\$19.91	\$14.44	\$13.90	\$16.05	\$20.25	\$20.56	\$19.79	\$19.57	\$19.09	\$7.54	62.7%
Share of Total Office Inventory	1.5%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	0.0%	-1.2%
Share of Occupied Office Space	1.3%	1.3%	1.3%	1.2%	1.3%	1.4%	1.4%	1.3%	1.4%	1.3%	0.0%	2.3%
Share of Total New Office Space	4.6%	0.9%	0.0%	1.3%	0.8%	4.7%	0.7%	0.6%	3.7%	3.0%	NA	NA
Total Montgomery County Office Space												
Total Square Feet	55,351,536	57,647,409	59,412,188	61,202,932	62,702,320	62,998,558	63,409,557	64,401,375	65,285,880	65,285,880	9,934,344	17.9%
New Construction	1,359,868	2,295,873	1,764,779	1,790,744	1,499,388	296,238	410,999	991,818	884,505	0	NA	NA
Total Occupied Square Feet	52,255,050	51,918,533	52,423,356	54,069,957	56,028,549	57,308,076	58,252,465	52,359,369	58,107,562	57,782,714	5,852,512	11.2%
Occupancy Rate	94.4%	90.1%	88.2%	88.3%	89.4%	91.0%	91.9%	81.3%	89.0%	88.5%	-5.4%	-5.7%
Net Absorption	1,404,917	(336,517)	499,544	1,474,060	1,952,592	1,279,527	944,389	106,904	(251,807)	(324,848)	NA	NA
Average Rate (full service)	\$28.35	\$28.13	\$27.42	\$26.28	\$25.62	\$25.70	\$27.32	\$28.97	\$29.16	\$28.89	\$0.81	2.9%
Share of Metro Space	15.8%	15.8%	15.8%	16.0%	16.1%	15.9%	15.5%	15.4%	15.3%	15.2%	-0.5%	-3.1%
Share of Metro Occupied Space	15.8%	15.8%	15.9%	16.0%	16.1%	15.8%	15.7%	13.9%	15.4%	15.3%	-0.5%	-2.9%
Share of Metro New Space	18.2%	16.3%	15.1%	30.4%	21.5%	4.2%	3.3%	11.1%	9.5%	0.0%	NA	NA
Total Washington Metro Area Office Space												
Total Square Feet	351,189,580	365,286,140	377,002,656	382,889,104	389,853,314	396,847,400	409,298,610	418,236,694	427,579,866	428,365,996	76,390,286	21.8%
New Construction	7,452,421	14,096,560	11,716,516	5,886,448	6,967,710	6,990,586	12,451,210	8,932,874	9,333,172	786,130	1,880,751	25.2%
Total Occupied Square Feet	330,361,469	328,004,694	330,096,366	338,162,265	348,862,865	362,292,778	371,413,529	377,073,656	378,222,264	377,601,679	47,860,795	14.5%
Occupancy Rate	94.1%	89.8%	87.6%	88.3%	89.5%	91.3%	90.7%	90.2%	88.5%	88.1%	-5.6%	-6.0%
Net Absorption	10,147,104	(2,360,445)	2,086,393	7,913,062	10,700,600	13,429,159	9,124,257	5,660,127	1,148,608	(620,585)	NA	NA
Average Rate (full service)	\$30.59	\$29.78	\$28.69	\$28.31	\$29.56	\$30.46	\$32.08	\$33.34	\$33.25	\$32.86	\$2.66	8.7%

Sources: CoStar; Partners for Economic Solutions, 2009.

Shady Grove Life Sciences Center, Gaithersburg and Rockville Submarkets

The Shady Grove Life Sciences Center, which dominates the Gaithersburg West business district, has a total of 3.9 million square feet in office buildings – a growth of 3.9 million square feet of 1.6 million square feet or 69 percent since 2000. Tenants occupy 3.3 million or 86.2 percent of that space. The occupancy rate has fallen from 92.9 percent in the fourth quarter of 2000 due to the extensive construction from 2002 to 2004. Also relevant to the analysis are trends in Gaithersburg and Rockville which border the Life Sciences Center.

The Gaithersburg and Rockville submarkets' office inventories have grown significantly since 2000 while their R&D/lab space inventory has remained static. Gaithersburg and Rockville have 6.0 million and 8.9 million square feet of office space, respectively. (See Table 3.) That represents 23 percent of the county's total office supply. New construction added 2.85 million square feet of office space from 2000 through 2008. Over the same time period, the market absorbed only 1.1 million square feet. Occupancy rates dropped almost 10 percentage points to 83.1 percent in Gaithersburg in 2009 and 7 percentage points to 87.3 percent in Rockville. Since the end of 2006, net absorption has been negative with Gaithersburg losing 306,000 square feet of occupied space and Rockville losing 184,000 square feet.

The Shady Grove Life Sciences Center also has an inventory of 746,000 square feet of R&D/lab space in flex buildings – 26.8 percent of the county's total. Occupancy increased from 453,000 square feet in 2000 to 700,000 square feet in 2005 before declining to 580,000 square feet in the first quarter of 2009. Because almost 290,000 square feet of space was added to the inventory in 2005, the occupancy rate fell from 99.4 percent in 2000 to 77.8 percent in 2009. Gaithersburg has a total inventory of 1.18 million square feet of R&D/lab space in flex industrial buildings as compared with Rockville's inventory of 258,000 square feet. Occupancy of Gaithersburg space increased significantly in the face of no increase in supply, growing from 71.6 percent in 2000 to 86.7 percent in the first quarter of 2009. Rockville's occupancy fell from 98.3 percent to 67.1 percent over the same time period with the movement of several FDA operations to White Oak. Together, these three subareas represent more than three-quarters of the county's total inventory of R&D/lab space in flex buildings.

Table 3: Office and R&D/Flex Space Trends, Gaithersburg and Rockville, 2000-1st Quarter, 2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	1 Qtr. 2009	2000-2008 Amount	2000-2008 Change Percent
Shady Grove Life Sciences Center R&D Lab/FlexSpace												
Total Square Feet (4th Quarter)	455,929	455,929	455,929	455,929	455,929	455,929	455,929	455,929	455,929	455,929	289,912	63.6%
New Construction	0	0	0	0	0	0	0	0	0	0	0	NA
Total Occupied Square Feet	453,329	449,929	443,929	411,916	411,916	700,257	610,712	584,556	580,073	580,073	126,744	28.0%
Occupancy Rate	99.4%	98.7%	97.2%	90.3%	90.3%	93.9%	81.9%	78.4%	77.8%	77.8%	-21.7%	-21.8%
Net Absorption	100	(3,500)	(6,500)	(31,463)	0	288,341	(89,543)	(26,156)	(4,483)	0	0	NA
Average Rate (triple net)	NA	NA	NA	NA	\$29.48	\$30.58	\$29.93	\$29.11	\$29.50	\$29.50	NA	NA
Share of County R&D Space	18.4%	18.3%	18.3%	18.3%	19.3%	18.3%	18.3%	18.3%	18.3%	18.3%	8.4%	45.4%
Share of County Occupied R&D	21.4%	22.3%	20.2%	20.5%	19.3%	28.4%	25.5%	25.4%	25.7%	25.9%	4.3%	20.1%
Gaithersburg R&D Lab/FlexSpace												
Total Square Feet (4th Quarter)	1,184,086	1,184,086	1,184,086	1,184,086	1,184,086	1,184,086	1,184,086	1,184,086	1,184,086	1,184,086	0	0.0%
New Construction	0	0	0	0	0	0	0	0	0	0	0	NA
Total Occupied Square Feet	847,556	1,012,025	1,077,083	884,409	988,563	990,063	978,345	973,615	1,036,690	1,026,435	189,134	22.3%
Occupancy Rate	71.6%	85.5%	91.0%	74.7%	83.5%	83.6%	82.6%	82.6%	87.6%	87.6%	16.0%	22.3%
Net Absorption	(33,806)	164,469	65,058	(192,674)	104,154	1,500	(11,718)	(4,700)	63,075	(10,255)	NA	NA
Average Rate (triple net)	\$16.29	\$16.25	\$16.23	\$17.20	\$19.43	\$20.49	\$19.83	\$19.29	\$21.62	\$21.49	\$5.33	32.7%
Share of County R&D Space	47.8%	47.4%	47.4%	47.4%	47.4%	42.5%	42.5%	42.5%	42.5%	42.5%	-5.5%	-11.1%
Share of County Occupied R&D	40.0%	50.1%	49.1%	44.0%	46.2%	40.1%	40.5%	40.3%	45.9%	45.8%	5.9%	14.8%
Rockville R&D Lab/FlexSpace												
Total Square Feet (4th Quarter)	258,122	258,122	258,122	258,122	258,122	258,122	258,122	258,122	258,122	258,122	0	0.0%
New Construction	0	0	0	0	0	0	0	0	0	0	0	NA
Total Occupied Square Feet	253,775	252,102	252,102	252,102	258,122	258,122	258,122	194,108	171,101	173,108	-82,674	-32.6%
Occupancy Rate	98.3%	97.7%	98.5%	97.7%	100.0%	100.0%	100.0%	75.2%	66.3%	67.1%	-32.0%	-32.6%
Net Absorption	(4,347)	(1,673)	2,020	(2,020)	6,020	0	0	(64,014)	(23,007)	2,007	NA	NA
Average Rate (triple net)	\$14.50	\$10.50	\$16.75	\$11.00	-	\$12.00	\$25.41	\$25.41	\$25.41	\$25.41	\$10.91	75.2%
Share of County R&D Space	10.4%	10.3%	10.3%	10.3%	10.3%	9.3%	9.3%	9.3%	9.3%	9.3%	-1.2%	-11.1%
Share of County Occupied R&D	12.0%	12.5%	11.6%	12.5%	10.5%	10.8%	10.8%	8.4%	7.6%	7.7%	-4.4%	-36.7%
Total Shady Grove Life Sciences Center Office Space												
Total Square Feet	2,280,866	2,431,513	2,766,104	3,401,162	3,639,453	3,693,453	3,723,689	3,783,357	3,857,357	3,857,357	1,576,491	69.1%
New Construction	435,190	150,647	334,591	635,058	238,291	54,000	30,236	61,668	72,000	0	NA	NA
Total Occupied Square Feet	2,190,342	2,271,903	2,560,994	3,111,606	3,378,239	3,326,013	3,156,206	3,361,653	3,281,601	3,326,095	1,091,259	49.8%
Occupancy Rate	96.0%	93.8%	92.6%	91.5%	92.8%	90.1%	84.8%	88.8%	85.1%	86.2%	-11.0%	-11.4%
Net Absorption	460,129	84,561	285,089	379,071	266,633	(52,293)	(169,807)	205,447	(80,032)	44,494	NA	NA
Average Rate (full service)	\$27.22	\$27.90	\$28.35	\$26.28	\$26.68	\$25.97	\$27.74	\$26.99	\$26.63	\$27.01	-\$0.59	-2.2%
Share of County Office Space	4.1%	4.2%	4.7%	5.6%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	1.8%	43.4%
Share of County Occupied Space	4.2%	4.4%	4.9%	5.8%	6.0%	5.8%	5.4%	6.4%	5.6%	5.8%	1.5%	34.7%
Total Gaithersburg Office Space												
Total Square Feet	5,253,899	5,365,734	5,527,071	5,766,003	5,791,439	5,791,439	5,834,379	6,034,379	6,040,379	6,040,379	786,480	15.0%
New Construction	234,311	111,835	161,337	238,932	25,436	0	42,940	200,000	6,000	0	NA	NA
Total Occupied Square Feet	4,880,171	5,044,565	5,081,882	5,296,249	5,198,154	5,321,795	5,323,181	5,151,554	5,023,007	5,017,031	142,836	2.9%
Occupancy Rate	92.9%	94.0%	91.9%	91.9%	89.8%	91.9%	91.2%	85.4%	83.2%	83.1%	-9.7%	-10.5%
Net Absorption	85,474	164,394	32,038	214,367	(68,095)	123,641	1,386	(171,627)	(128,547)	(5,976)	NA	NA
Average Rate (full service)	\$24.74	\$23.29	\$23.64	\$22.39	\$22.60	\$21.26	\$23.61	\$23.61	\$23.42	\$23.20	-\$1.32	-5.3%
Share of County Office Space	9.5%	9.3%	9.3%	9.4%	9.2%	9.2%	9.2%	9.2%	9.3%	9.3%	-0.2%	-2.5%
Share of County Occupied Space	9.3%	9.7%	9.7%	9.8%	9.3%	9.3%	9.1%	9.8%	8.6%	8.7%	-0.7%	-7.4%
Total Rockville Office Space												
Total Square Feet	7,156,101	7,697,158	7,952,187	7,952,187	8,393,023	8,429,023	8,429,023	8,518,241	8,901,122	8,901,122	1,745,021	24.4%
New Construction	86,484	541,057	255,029	0	440,836	36,000	0	89,218	382,881	0	NA	NA
Total Occupied Square Feet	6,728,038	6,842,412	7,096,271	7,114,792	7,566,733	7,719,279	7,950,055	7,706,176	7,774,556	7,766,353	1,046,518	15.6%
Occupancy Rate	94.0%	88.9%	89.2%	89.5%	90.2%	91.6%	94.3%	90.5%	87.3%	87.3%	-6.7%	-7.1%
Net Absorption	105,606	114,374	253,859	18,321	207,009	152,543	230,779	(243,879)	68,380	(8,203)	NA	NA
Average Rate (full service)	\$29.76	\$28.31	\$28.69	\$26.99	\$26.39	\$26.19	\$28.85	\$28.14	\$31.59	\$31.09	\$1.83	6.1%
Share of County Office Space	12.9%	13.4%	13.4%	13.0%	13.4%	13.4%	13.4%	13.2%	13.6%	13.6%	0.7%	5.5%
Share of County Occupied Space	12.9%	13.2%	13.5%	13.2%	13.5%	13.5%	13.6%	14.7%	13.4%	13.4%	0.5%	3.9%

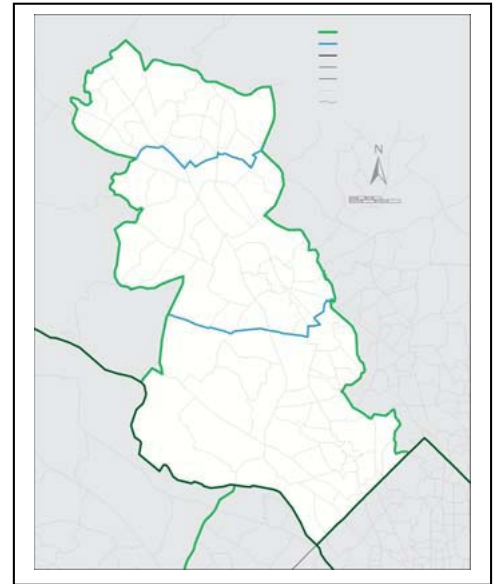
Note: Gaithersburg and Rockville subarea boundaries conform roughly to the city limits.
Sources: CoStar; Partners for Economic Solutions, 2009.

Table 4 summarizes and compares current conditions across the Gaithersburg, Rockville, Montgomery County and metropolitan area markets.

Table 4: Office and R&D/Flex Space Conditions, Shady Grove Life Sciences Center, Gaithersburg, Rockville, Montgomery County and the Washington Metropolitan Area, March 2009				
	Number of Buildings	Total Space	Vacant Space	Percent Vacant
Shady Grove Life Sciences Center				
Total Office Space	47	3,857,357	526,757	13.7%
R&D Lab/Flex Space	8	745,841	164,042	22.0%
R&D as Share of Total Space	14.5%	16.2%	23.7%	NA
Share of Total County Office Space	3.5%	5.9%	7.0%	NA
Share of Total County R&D Space	19.5%	26.8%	29.6%	NA
Gaithersburg				
Total Office Space	200	6,040,379	953,180	15.8%
R&D Lab/Flex Space	19	1,184,086	149,644	12.6%
R&D as Share of Total Space	8.7%	16.4%	13.6%	NA
Share of Total County Office Space	14.7%	9.2%	12.7%	NA
Share of Total County R&D Space	46.3%	42.5%	27.0%	NA
Rockville				
Total Office Space	186	8,901,122	1,186,189	13.3%
R&D Lab/Flex Space	5	258,122	85,014	32.9%
R&D as Share of Total Space	2.6%	2.8%	6.7%	NA
Share of Total County Office Space	13.7%	13.6%	15.8%	NA
Share of Total County R&D Space	12.2%	9.3%	15.3%	NA
Montgomery County				
Total Office Space	1,359	65,451,647	7,499,214	11.5%
R&D Lab/Flex Space	41	2,787,588	554,986	19.9%
R&D as Share of Total Space	2.9%	4.1%	6.9%	NA
Share of Total Metro Area Office Space	15.8%	15.2%	14.6%	NA
Share of Total Metro Area R&D Space	46.6%	44.5%	49.8%	NA
Washington Metro Area				
Total Office Space	8,580	430,120,773	51,425,872	12.0%
R&D Lab/Flex Space	88	6,258,870	1,115,124	17.8%
R&D as Share of Total Space	1.0%	1.4%	2.1%	NA
Note: Gaithersburg and Rockville subarea boundaries conform roughly to the city limits.				
Sources: CoStar; Partners for Economic Solutions, 2009.				

Biotech Jobs

One of the reasons that Montgomery County is so competitive for biotech companies is its outstanding labor force of highly trained scientists and technicians. Obviously, the concentration of biotech workers also reflects the concentration of biotech companies in the county. The U.S. Census provides detailed information about the characteristics of individuals or units (households) with sample data from specific geographies. Unlike standard census tracts, these areas must contain a large enough sample size of persons to keep information confidential and reduce the margin of error when extrapolating trends. The I-270 corridor consists of three Public Use Microdata Areas (PUMAs) contained within the Super-PUMA 24102.⁷ The map shows the boundaries for this area.



Montgomery County had 9,800 persons in traditional biotechnology occupations in 2000. Of that total, 65 percent live within the I-270 Corridor.

The biotechnology industry creates new jobs with the creation of a new company. The creation of new companies correlates closely with the availability of capturing venture capital dollars and the existing knowledge based infrastructure or spinoff from world-class research institutions. In 2005, authors Junfu Zhang and Nikesh Patel found that “more than half of the employment growth in biotech is attributable to new firms”. In the State of Maryland, we’ve seen a small but steady amount of growth in the number of biotechnology firms from 360 in 2002 to 370, as reported in June of 2008.

⁷ U.S. Census Bureau, Census 2000 Public Use Microdata Sample files: 01002, 01003 and 01004.

Table 5. Biotechnology and Related Occupations by Jurisdiction

Biotechnology and Related Occupations	I-270 Corridor		Montgomery County		Maryland Percent	U.S. Percent
	Number	Percent	Number	Percent		
Biotechnology and Related Occupations						
Medical and Health Services Managers	1,841	0.61%	2,935	0.49%	0.39%	0.12%
Natural Sciences Managers	254	0.08%	254	0.04%	0.03%	0.00%
Biomedical and Agricultural Engineers	-	0.00%	-	0.00%	0.01%	0.00%
Chemical Engineers	108	0.04%	108	0.02%	0.02%	0.01%
Biological Engineers	1,275	0.42%	2,099	0.35%	0.10%	0.03%
Medical Scientists	2,404	0.80%	3,499	0.58%	0.20%	0.02%
Chemist and Materials Scientists	477	0.16%	791	0.13%	0.09%	0.02%
Biological Technicians	-	0.00%	73	0.01%	0.01%	0.01%
Chemical Technicians	-	0.00%	-	0.00%	0.03%	0.03%
Total Biotechnology & Related Employees	6,359	2.11%	9,759	1.62%	0.88%	0.25%
Computer and Related Occupations						
Computer Scientists and Systems Analysts	4,295	1.42%	7,353	1.22%	0.95%	0.19%
Computer Programmers	3,918	1.30%	5,065	0.84%	0.42%	0.13%
Computer Software Engineers	6,207	2.06%	9,721	1.61%	0.92%	0.15%
Computer Support Specialists	875	0.29%	2,360	0.39%	0.40%	0.16%
Database Administrators	804	0.27%	1,595	0.26%	0.13%	0.02%
Network and Computer Systems Administrators	1,855	0.61%	2,612	0.43%	0.40%	0.06%
Network Systems and Data Communications	1,856	0.61%	3,782	0.63%	0.41%	0.10%
Operations Research Analysts	1,154	0.38%	2,071	0.34%	0.27%	0.19%
Miscellaneous Mathematical Science Occupations	737	0.24%	1,397	0.23%	0.10%	0.00%
Total Computer & Related Employees	21,701	7.19%	35,956	6.0%	4.0%	1.0%

Source: Public Use Microdata Sample; Partners for Economic Solutions, 2009.

Biotechnology and related fields provide much higher wages than other occupations in the US and locally. This higher wage reflects the highly educated workers required by the industry. Within the US personal incomes average \$27,050 as compared to the I-270 corridor in Montgomery County in which the average income for all occupations averages \$32,467. As can be seen in the following table, biotech occupations pay significantly higher wages.

Table 6. Occupation by Income for I-270 Corridor		
Biotechnology and Related Occupations	I-270 Corridor	U.S.
Medical and Health Services Managers	\$124,144	\$71,173
Natural Sciences Managers	\$345,996	\$100,049
Biomedical and Agricultural Engineers	n/a	\$85,731
Chemical Engineers	\$80,000	\$77,360
Biological Engineers	\$71,534	\$52,694
Medical Scientists	\$98,610	\$76,720
Chemist and Materials Scientists	\$122,468	\$66,653
Biological Technicians	n/a	\$39,202
Chemical Technicians	n/a	\$44,814
Computer Scientists and Systems Analysts	\$78,923	\$66,784
Computer Programmers	\$56,974	\$83,345
Computer Software Engineers	\$79,527	\$47,605
Computer Support Specialists	\$44,560	\$70,499
Database Administrators	\$83,621	\$62,940
Network and Computer Systems Administrators	\$76,064	\$56,294
Network Systems and Data Communications	\$74,291	\$67,551
Operations Research Analysts	\$74,164	\$72,120
Miscellaneous Mathematical Science Occupations	\$140,224	\$74,486
Income for All Occupations	\$32,467	\$27,050

Source: Public Use Microdata Sample; Partners for Economic Solutions, 2009.

Montgomery County's Competitive Position

Montgomery County and Gaithersburg West, in particular, excel in many of the key locational criteria for early-stage, second-stage and mature companies other than production facilities, again largely focused on “red” biotech of human medicine.

- Research universities and institutes – The presence of 50 Federal life science research-intensive institutions, Johns Hopkins University and the University of Maryland provide an important base of cutting-edge science and world-class researchers. The Center for Advanced Research in Biotechnology (CARB) located in Gaithersburg West is a joint effort of the University of Maryland and the National Institute of Standards and Technology (NIST).

- Regulatory agencies – Access to the FDA is an important factor for many companies.
- Educated and experienced workforce – Montgomery County’s highly educated workforce is quite attractive, particularly its concentration of life scientists and others with specialized skills and experience in the biotechnology industry. The concentration of private and public employment opportunities and the national reputation of local schools and other quality of life factors make it easy to attract and retain key workers.
- Experienced entrepreneurs – The county is slowly developing a cadre of experienced biotechnology entrepreneurs; however, it still lags in comparison to other regions with a longer history of life science companies and an entrepreneurial environment. The biggest deficiency identified by the County’s Biosciences Task Force is the limited number of experienced entrepreneurs and managers that can lead a firm to profitable operations. The extensive base of private companies helps to train executives and scientists, who then seek to start their own companies. Researchers from the Johns Hopkins Institute for Policy Studies tracked the history of founders of Maryland bioscience and medical instrument companies and found that fewer than half “launched their start-ups after leaving a position in another company. Overwhelmingly, bio company founders came from federal laboratories and universities, primarily NIH.”⁸
- Specialized business support – The cluster of life science firms has helped to generate a corps of specialists that provide support services particular to the biotech industry, e.g., Intellectual Property attorneys.
- Access to capital – While the venture capital industry is most heavily concentrated in New York, San Francisco and Boston, Washington/Baltimore has a growing venture capital community capable of supporting some of Montgomery County’s biotech companies. However, these firms have invested less locally than have those in comparable regions. This record may relate to the county’s limited supply of experienced entrepreneurs with industry expertise.
- Specialized facilities – Most biotech companies choose to focus their resources and energies on the science and business rather than on real estate, so most seek to rent space, particularly in the early stages. Few developers build the types of laboratory space needed by biotech companies on a speculative basis due to the high cost. In recent years, the development industry has come to realize that the investment in lab space is not as risky as it was once thought and has begun building speculative

⁸ Marsha R.B. Schachtel and Scott R. Heacock, Johns Hopkins Institute for Policy Studies, “Founders of Maryland Bioscience and Medical Instrument Companies,” 2002, www.marylandtedco.org/media/pdf/publications/BioGenealogyStudy.pdf

lab space in certain limited locations that have a critical mass of life sciences companies. Montgomery County is well equipped with a large inventory of lab-served buildings. Also important is lower-cost incubator space with flexible leases and supportive services. The Shady Grove Innovation Center offers 60,000 square feet of space for early-stage companies. Other incubators elsewhere in Maryland often generate companies that move to Montgomery County once they leave the incubator.

Some of the factors that may be inhibiting the industry's growth in Gaithersburg West include:

- Limited transit service – The Shady Grove Metro station provides good regional transit access for Gaithersburg West, but it must be accessed by feeder bus. Not all segments of the area are well served with frequent and convenient bus service. Most workers must drive to work, drive to eat out and drive to meet with other companies.
- Traffic congestion and internal circulation – The I-270 Corridor is impacted by traffic congestion on its major arteries. Within Shady Grove Life Sciences Center, area workers report frustration with traffic congestion at lunch time that prevents them from being able to go out to eat.
- Limited retail opportunities – The limited choice of nearby restaurants has been a long standing complaint in the Life Sciences Center, though the selection has improved in the last few years. Again, the requirement that almost everyone must drive to lunch constrains employees' ability to take advantage of some of the offerings.
- Sterility of the office park environment – The single-use development pattern of isolated office and lab buildings surrounded by parking and open land is appealing to many companies and workers, but not to all. Some companies, such as United Therapeutics in Silver Spring, choose to locate in more urban environments with greater levels of diverse activity and the opportunity to walk to restaurants, retail, entertainment, Metro and nearby housing.

IV. Regional Competition

The regional competition for biotechnology and related industries includes a growing number of viable locations. Beyond Montgomery County's life science clusters there are several other prominent research institutions attempting to capture their in-house scientific knowledge base and grow new biotech firms.

Competitive Environment

Within the State of Maryland, Montgomery County is the predominant location for biotechnology companies. Approximately 60 percent of the state's biotechnology firms are located in Montgomery County. The other competitive locations for biotechnology firms in the region include: Baltimore, Beltsville, Columbia, College Park, Germantown, Frederick, and Northern Virginia.

Those smaller submarkets close-in to the existing I-270 cluster, such as Germantown, will likely gather some of the biotechnology activity with the creation of desirable incubator space. The Germantown Innovation Center, on the upper county campus of Montgomery College, plans to attract an estimated 10 to 15 new biotechnology start-ups.

The nature of biotechnology development in Beltsville, Columbia and other smaller submarkets represents only a fraction of the actual biotechnology activity in the State of Maryland. These areas do not have a strong world-class research institution and typify site selection likely unrelated to standard factors but rather an executive preference for a specific location. While these areas may continue to house the same biotechnology firms located there today, their ability to compete is limited.

For this reason, this analysis focused on four primary regionally competitive locations for biotechnology and related companies. These included Frederick, Baltimore, College Park, and Northern Virginia in order of potential to attract biotechnology. As previously mentioned, these areas may be competing for the same biotechnology firms or for the creation of an independent cluster based on existing local resources.

Frederick County benefits from its location in the I-270 Corridor and expansion from Montgomery County. Its greater availability of land at lower prices has attracted MedImmune and others to establish production facilities in the county. Fort Detrick, the largest employer in Frederick County, is home to the United States Army Medical Research and Material Command with the National Cancer Institute (NCI- Frederick), National Interagency Confederation for Biological Research and National Interagency Biodefense Campus. This military command's mission envelopes biomedical research and development, attracting many private biotechnology firms to nearby locations.

Baltimore's biotechnology industry consists of two biotechnology parks centered on its major research universities. In 2007, UM Biotech Park received acknowledgement from the biotech community as the "Emerging University Research Park of the Year according to the Association for University Research Parks (AURP). The BioPark includes a 10-acre campus planned for more than 1.8 million square feet of lab and office space in 12 buildings with structured parking. Currently the BioPark has more than 12 tenants including high profile biotechnology firms like Gliknik Inc, and Alba Therapeutics Corporation.

Johns Hopkins University is the nation's leading recipient of NIH funding with world-renowned researchers and facilities. The University has entered into a partnership with the City of Baltimore, the State of Maryland and Forest City Corporation to develop the 31-acre Science + Technology Park at Johns Hopkins in East Baltimore adjacent to its Medical Campus. The bioscience-focused research park will provide facilities for the University, private bioscience businesses and nonprofit research institutions. The first 278,000 square-foot building, opened in 2008, houses the Johns Hopkins Institute for Basic Biomedical Sciences, the Johns Hopkins Brain Sciences Institute, the Howard Hughes Medical Institute, Cangen Biotechnologies, BioMarker Strategies, IATRICA and Champions Biotechnology.

The University of Maryland's M Square Research Park is attracting companies working with the University and Federal government agencies. It has the advantage of access to the College Park Metro and MARC stations. When fully built out, the 130-acre park will host 2 million square feet of space for research and technology companies. It is anchored by the National Oceanic and Atmospheric Administration as well as the American Center for Physics and the Center for Advanced Study of Language. To date, the park has focused on homeland and national security, environmental and earth sciences, weather prediction and global climate change; and food safety and security rather than biotechnology. However, the University's Technology Advancement Program incubator system has supported the start-up of several biotechnology firms.

The Northern Virginia biotechnology market is dispersed among several locations, primarily in the Dulles Toll Road corridor. A new research park is being developed in Manassas with George Mason University. The Howard Hughes Medical Institute moved its headquarters from Bethesda to Loudoun County. However, Northern Virginia has nothing approaching the concentration of biotech firms found in Montgomery County.

The following matrix provides basic features and elements within each of the competitive regional life science clusters.

Table 7. Competitive Biotechnology Clusters, 2009

Name/Location	Existing Companies	Related Federal Agencies	Research Institutions	Major Medical Center	Density	Highway Access	Transit Access	Available Laboratory Space	Presence of Incubator	Distance (miles) to	
										Residential	Retail
Shady Grove Life Sciences Center, Gaithersburg		NIH	Johns Hopkins Univ. of MD	Shady Grove Adventist	<0.5 FAR	Excellent	Good	Yes	Yes	<1 mile	<1 mile
Rockville/Twinbrook		FDA, NIH			0.5-1.5 FAR	Good	Excellent	Yes	Yes	<1 mile	<1 mile
White Oak		FDA			<0.5 FAR	Excellent	Fair	No	No	<1 mile	<1 mile
Science + Technology Park at Johns Hopkins, E. Balto.		NIH	Johns Hopkins Kennedy Krieger Howard Hughes	Johns Hopkins Hospital	0.5-1.5 FAR	Fair	Excellent	Yes	Yes	Included	Included
University of Maryland BioPark, Baltimore	10 to 15		Univ. of MD Medicine MD Biotech Institute	Univ. of MD Medical Center VA Hospital	>1.5 FAR	Good	Excellent	Yes	No	<1 mile	<1 mile
M Square, University of Maryland Research Park, College Park	less than 5		Univ. of MD		<0.5 FAR	Good	Good	No	Yes	1-5 miles	1-5 miles
Frederick County	30 to 40	Fort Detrick			<0.5 FAR	Excellent	Fair	Yes	No	1-5 miles	1-5 miles
Columbia / Howard County	30 to 40		Johns Hopkins Applied Physics Lab	Howard County General Hospital	<0.5 FAR	Excellent	Fair	Little	No	<1 mile	1-5 miles
hwtech@UMBC, University of Maryland-Balto. Co., Catonsville	10 to 20		Univ. of MD Balto. Co.		<0.5 FAR	Excellent	Good	No	Yes	<1 mile	>5 miles
George Mason Research Park, Manassas, VA	Less than 10		George Mason Univ.	Prince William Hospital	<0.5 FAR	Good	Fair	No	No	1-5 miles	1-5 miles
Dulles Toll Road Area, Fairfax County, VA	Less than 10			Reston Hospital Center	<0.5 FAR	Excellent	Good	Yes	No	1-5 miles	1-5 miles

Source: Partners for Economic Solutions, 2009.

V. Demand Projections

Growth projections are fraught with difficulty in a young industry with such diversity of company types and maturity levels. A single successful company can lead to demand for 600,000 square feet or more in a relatively short time. Or a promising molecular compound may fail to prove its clinical efficacy or it may demonstrate toxic side effects that stop or significantly delay its development. Other unknown factors could impact development, such as the long-term potential for a new NIH campus.

Many factors impact the industry's health and growth – most notably the availability of financial support. The current credit crunch is impacting biotech severely, potentially inhibiting a generation of start-up companies that may not survive due to lack of funding when needed. Maryland's new bioscience initiative includes several steps to accelerate business development, actions that may accelerate the industry's growth.

The Battelle Technology Partnership Practice studies prepared for the Maryland Life Sciences Board highlights the state's strengths as “one of the world's leading bioscience research environments and one of the largest and fastest-growing bioscience clusters in the country.” They further observe that “what remains striking about Maryland is its still enormous untapped potential in the biosciences.”⁹ The extent of future growth in the biotechnology industry in Maryland and Montgomery County will depend on tapping that potential and attracting additional experienced entrepreneurs to develop successful companies to exploit that research.

Few definitive forecasts of future biotech industry growth exist for the U.S., and none are available for submarkets, such as Maryland and the I-270 Corridor. Recent history can provide some guidance, with the caveat that history is not always a good predictor of the future, particularly in a rapidly developing industry.

From 2001 to 2006, Battelle reports that Maryland employment in the industry grew 14.5 percent¹⁰, adding 3,200 jobs to reach more than 25,000 jobs. At the same time, U.S. industry grew 5.7 percent. Ernst & Young has tracked the biotech industry for more than

⁹ Battelle Technology Partnership Practice, *BioMaryland 2020: Strategic Framework and Proposed Policy Actions*, May 2009,

www.choosemaryland.org/businessinmd/biosciences/lisab/documentsandimages/BioMaryland%202020%20Strategic%20Framework%20and%20Proposed%20Policy%20Actions.pdf

¹⁰ Ibid, *Maryland Life Sciences Strategic Plan: the Current Competitive Position of Maryland*, May 2009,

[www.choosemaryland.org/businessinmd/biosciences/lisab/documentsandimages/Maryland%20Life%2020Sciences%20%20%20Current%20Competitive%20Position%20\(Battelle\).pdf](http://www.choosemaryland.org/businessinmd/biosciences/lisab/documentsandimages/Maryland%20Life%2020Sciences%20%20%20Current%20Competitive%20Position%20(Battelle).pdf)

20 years. They show that the number of companies (public and private) in the industry has increased 13.9 percent from 2000 to 2007 and 14.6 percent from 1994 to 2007.¹¹

The Maryland bioscience employment growth rate equates to 2.75 percent per year. An annual growth rate that high is hard to maintain over time as the base of companies grows. Montgomery County serves as the epicenter of the state’s biotech cluster and can be expected to develop at a pace commensurate with the state’s growth rate, though there is emerging competition from new locations in Baltimore, Frederick and other parts of the state. Given these factors, we estimate that the 12,000 life science private industry workers in Montgomery County in 2007¹² could grow 1.0 percent annually from 2008 to 2010 with the economic slow-down and financial crunch, 2.0 percent annually from 2011 to 2015, and 1.8 percent per year from 2016 to 2020 and 1.6 percent annually from 2021 to 2025. Shown in the following table, these growth rates suggest the county could add 4,200 new bioscience jobs by 2025, a growth of 35 percent from the 2007 level.

Table 8. Potential Growth in Bioscience Employment, Montgomery County and Gaithersburg West, 2007-2025

Year	Montgomery County		Share of County Total	Gaithersburg West	
	Employees	Annual Growth Rate		Employees	Annual Growth Rate
2007-2010		1.0%			0.6% - 2.3%
2011-2015		2.0%			1.7% - 3.4%
2016-2020		1.8%			1.3% - 3.4%
2021-2025		1.6%			1.2% - 2.9%
2007	12,000		33% - 33%	4,000 - 4,000	
2010	12,400		32% - 36%	4,000 - 4,500	
2015	13,700		31% - 39%	4,200 - 5,300	
2020	15,000		30% - 43%	4,500 - 6,500	
2025	16,200		29% - 47%	4,700 - 7,600	

Source: Montgomery County Department of Economic Development; Partners for Economic Solutions, 2009.

Gaithersburg West (the Shady Grove Life Sciences Center) has an estimated 4,000 bioscience jobs, based on its share of the county’s R&D/Lab space as well as major single-tenant buildings (e.g., Human Genome Sciences). The area’s future share of county bioscience jobs will depend, in part, on adoption of the proposed plan and the resulting change in environment and density increases. It will also be impacted by competitive

¹¹ Ernst & Young, *Beyond Borders: Global Biotechnology Report 2008*,” [www.ey.com/Publication/vwLUAssets/Industry_Biotechnology_Beyond_Borders_2008/\\$FILE/Biotechnology_Beyond_Borders_2008.pdf](http://www.ey.com/Publication/vwLUAssets/Industry_Biotechnology_Beyond_Borders_2008/$FILE/Biotechnology_Beyond_Borders_2008.pdf) and Biotechnology Industry Organization, “*Guide to Biotechnology, 2008*.” www.bio.org/speeches/pubs/er/

¹² Montgomery County Department of Economic Development, October 2008, www.montgomerycountymd.gov/apps/News/press/PR_details.asp?PrID=4931

developments elsewhere in the county, including Rockville, Bethesda, Germantown and Silver Spring. PES projects that the share of county bioscience jobs located in the Gaithersburg West sector will range between 29 and 47 percent by 2025. By 2025, Gaithersburg West could develop a base of 4,700 to 7,600 bioscience jobs.

Gaithersburg West will continue to compete well in the bioscience field, but each year the competition will increase from regional, other domestic and international clusters. Gaithersburg West will benefit from self-sustaining growth within its existing base of companies. This strength has already been proven through the spin-outs from NIH and from a few early industry leaders. The ability to capitalize on that potential requires access to financial capital, appropriate facilities, mentoring, technical support, a favorable regulatory environment and incentives to help companies offset some of the high costs of real estate during their early stages.

Critical to the competition for biotech growth is the ability to attract talent – both scientific and entrepreneurial. The county’s high quality of life is important in attracting new workers and in retaining existing researchers and scientists when they decide to start a company.

It is also important to provide a supportive and appealing work environment. While many people value and appreciate the business park model that has dominated the Shady Grove Life Sciences Center development historically, it has some fundamental weaknesses noted earlier. Chief among those is the isolation of uses and the need to drive to work, to lunch and to meetings. The low-density business park model inhibits the potential for effective transit connections. The pattern of single-use development works against walkable environments where retail and other support uses are close enough to access on foot or on bicycle rather than being forced to drive. The quality, quantity and success of the supporting retail depends on being able to draw a sufficient mass of customers, which typically requires both daytime and nighttime/weekend patronage. Therein lies some of the strength of mixed-use development – the aggregation of sufficient numbers of employees and residents to support a vibrant business base and a pedestrian environment that frees people from the constant need to depend on private automobiles.

The vision for Gaithersburg West as a higher density village could be quite effective in helping the county attract and retain knowledge workers – the key to long-term prosperity in the evolving knowledge economy.

The transition to the new paradigm of mixed-use, walkable development will take time. The sector is relatively built out in that most of the available land parcels have been developed. However, the scale and density of that development leave open the opportunity for selective infill to replace parking lots with parking garages and new multi-story buildings. Some redevelopment may be possible, though laboratory improvements are too expensive to demolish in great numbers. More likely will be new development in

environments in which density and transit are designed from the beginning – the Belward campus and the redevelopment of the Public Safety Training Academy.

As biotech evolves to include a higher percentage of office space, it will be easier to accommodate in higher-density developments. Laboratory space can be effectively accommodated in multi-story buildings designed for that use. Examples abound in Cambridge, San Francisco, New York City and at research university campus around the world. However, such buildings come with a higher price tag and are more complex to adapt. Given the tenant companies' desire to maintain their flexibility to reconfigure lab space and building uses over time as their businesses evolve and grow, most tenants and developers have favored one- and two-story buildings. Experienced brokers and developers report some market resistance to even three-story lab buildings in the I-270 Corridor's recent development. In the near- and mid-term, bioscience lab buildings are likely to remain at primarily two stories. Going forward, the demand is likely to break down 40 to 45 percent in flex space and 55 to 60 percent in office space.

It will also take time to change due to the relatively slow pace of development for the biotech industry. Employment projections presented above suggest an average annual increase in demand of 70,000 to 105,000 square feet. In the first few years, that will be absorbed largely by the existing vacant space in the market. Also, land economics require a high land value in order to justify construction of structured parking rather than less expensive surface parking lots. That value calculation may postpone intensive infill for some years. Introduction of the Corridor Cities Transitway will help to ease that transition by increasing demand and allowing a reduction in the number of parking spaces required.

VI. Subarea Evaluations

The Gaithersburg West Master Plan breaks the area into five key subareas:

- North – encompassing the north side of Key West Avenue from Shady Grove Road to Great Seneca Highway, which includes the Decoverly and DANAC developments and the Shady Grove Executive Center;
- Core – bounded by Key West Avenue, Shady Grove Road, Darnestown Road and Great Seneca Highway, which includes the Shady Grove Adventist Hospital, the Johns Hopkins Montgomery County Campus, the J. Craig Venter Institute, BioReliance and several social service providers;
- South – extending south from Darnestown Road between Travilah Road and Shady Grove Road, which is anchored on the east by the Universities at Shady Grove and on the west by the Human Genome Sciences headquarters;
- West – bounded by Key West Avenue, Great Seneca Highway and Darnestown Road, including Montgomery County’s Public Safety Training Academy (PSTA), which the Plan recommends be relocated; and
- Belward – bounded by Darnestown Road, Key West Avenue, Great Seneca Highway and Muddy Branch Road, a former farm owned by the Johns Hopkins University and proposed for mixed-use development dominated by research and development uses.

The evaluation of each of these areas for future development considers the

- concentration of biotech activity;
- availability of underutilized land;
- highway access;
- transit access;
- pedestrian amenities;
- quality of the environs; and
- proximity to
 - Johns Hopkins University Montgomery County Center
 - University of Maryland Shady Grove Campus
 - retail and restaurants
 - multi-family housing.

Subarea Evaluations

LSC North

The LSC North subarea has the advantages of I-270 access from both Shady Grove Road and Sam Eig Highway (I-370). The current and proposed Corridor Cities Transitway (CCT) alignments show a station to the north of this subarea but not providing immediate access. Recent development includes three- to five-story office buildings with structured parking –

a higher density than in most of the rest of the study area. Avalon Decoverly provides rental housing with easy access to office uses. This subarea lacks restaurants and retail space but benefits from the amenities of the Washingtonian Center, a mixed-use development to the north at the I-270/I-370 interchange separated by the Crown Farm to the north. The quality of the environment is high though the area is not well developed for pedestrians.

LSC Central

The LSC Central subarea is dominated by Shady Grove Adventist Hospital and other medical institutions with their major parking lots. Several major office buildings, including the J. Craig Venter Institute, line Shady Grove Road. The area benefits from proximity to Falls Grove Village – a major retail and office center east of Shady Grove Road in the City of Rockville as well as a new hotel. I-270 access is provided primarily by Shady Grove Road with additional access from the West Montgomery Avenue interchange. The proposed CCT alignment includes a stop near Shady Grove Adventist Hospital. Johns Hopkins Montgomery County Campus has three buildings in the Central subarea along with major parking lots. The environment is somewhat more dominated by parking and auto-oriented uses. The parking lots and aging buildings in some parts of the subarea may present redevelopment opportunities. The Central subarea has the highest employee density of the five subareas, providing better support for transit and mixed uses, particularly medically-related office space.

LSC South

The LSC South subarea extends south from Darnestown Road to residential developments and is anchored by the Universities at Shady Grove campus on the east and the substantial Human Genome Sciences (HGS) headquarters on the west. I-270 can be accessed from West Montgomery Avenue or Shady Grove Road. No CCT station is proposed. The Travilah Square Shopping Center provides retail and restaurant amenities in an auto-oriented environment. The Avalon at Traville development south on Shady Grove Road offers proximate rental housing. Major executive housing neighborhoods also line the subarea's edges. HGS sits on a major independent landscaped campus with a relatively low density. Some other land remains undeveloped.

LSC West (PSTA)

The West subarea is dominated by the County's PSTA, which is recommended for relocation to another part of the county. That relocation will make available a major land assemblage. Also within the subarea is the Shady Grove Medical Village with physicians' offices and extensive parking. The Shady Grove Innovation Center (formerly the Maryland Technology Development Center) occupies a 60,000 square-foot building with wet labs and office facilities for 40 to 50 companies. A CCT station is proposed for the center of the subarea, providing links to both the Core and Belward subareas. The West subarea sits somewhat further from I-270 but enjoys good regional accessibility. The Travilah Square Shopping Center is immediately south across Darnestown Road, providing nearby retail and restaurants, though lacking good pedestrian connections.

LSC Belward

The LSC Belward subarea is a partially developed former farm owned by Johns Hopkins University and proposed for development as a research campus. It enjoys good access via Great Seneca Highway and Key West Avenue to the Sam Eij Highway and Shady Grove Road interchanges on I-270. A CCT station is proposed central to the property. Residential development lines its northern edge and the west side of Muddy Branch Road. Currently, Belward is removed from most of the area's retail amenities, though clusters on Shady Grove Road and Darnestown Road can be accessed by car.

Implications for Future Development

The different natures of these subareas have implications for their ability to attract biotech and other tenants. Most of the near-term opportunities for new development in the Core are gone except for reuse of parking lots. The presence of nearby retail, restaurants and hotel make possible some synergies but require much better pedestrian and bicycle connections. Belward offers a largely blank slate for new development with the opportunity for true integration of mixed-use and transit-oriented development to create a sense of place. A similar opportunity is created by redevelopment of the PSTA site, which is unencumbered by multiple owners and existing buildings planned for retention.

The long-term future of the area will be best served by concentrating a mix of land uses at the new transit stations so as to create a knowledge community with places to live, work, eat and interact, while facilitating pedestrian and bicycle movements and reducing dependence on the private automobile.

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appendix

gaithersburg west master plan

The Life Sciences Center



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

MontgomeryPlanning.org



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