

# TARGETED INDUSTRY LAND NEED ANALYSIS

PRINCE WILLIAM COUNTY, VA

MAY 2022

## SUBMITTED TO:

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# Introduction

Prince William County engaged Camoin Associates to conduct an analysis that projects future land needs for the county's six targeted industry sectors. Per the 2018 Target Industry Analysis, those sectors include:

- Advanced Manufacturing,
- Federal Government Contracting,
- Healthcare,
- Information Communications Technology (ICT),
- Life Sciences, and
- Logistics.

The County's competitiveness for siting data centers, a key subsector with ICT, has brought about significant development of these facilities and has resulted in high consumption of industrial and commercial land. This has raised concerns about future available supply, as well as concerns that the high land demands of data centers may be limiting the growth potential of the county's other target industries. In order to assist in future buildout planning, this analysis projects the future land needs of the targeted industries and compares them to the supply of available land.

This analysis consists of the following parts:

1. Key Findings
2. Targeted Industry Trends
3. Real Estate Trends
4. Demand Modeling
5. Supply Modeling
6. Appendices



# Key Findings

The study examines the six targeted industries in terms of share of overall county economic output, past and projected employment and economic output trends, and facility type needs by sub-industry. It then delves into historic buildout trends in Prince William County for the targeted industry facility types, including recent economic development project wins. Facility buildout and real estate inventory data for the county and region are then used to project future space demand for six key facility types: office, medical office, distribution and logistics space, manufacturing space, **data centers**, and lab/R&D. These demand projections are compared to the county's buildout capacity (as determined in the 2020 Buildout Analysis) based on current zoning and future land use classifications to assess the availability of land to accommodate targeted industry facility types. Key findings from the study are presented here, with detailed data and methodology included in subsequent sections of the report.

- Overall new space demand for target industry facility types is projected to be between 13.6 million square feet (MSF) and 75.5MSF (occupying between 1,500 and 8,700 acres of land) in Prince William County over the next 20 years. Both data centers and distribution centers are large space users with strong market demand projected to far outpace space demand from other facility types. **Under the midrange scenario, data centers will account for 64% of new space demand over the next 20 years**, and distribution centers will account for 26% of new space demand. Excluding data centers, space demand is expected to be between 5.6MSF and 27.5MSF (occupying between 640 and 3,200 acres).
- This projected demand compares to new buildout capacity of 21.7MSF on land currently zoned to support targeted industries and an additional 24.6MSF under likely future zoning, based on the county's adopted Comprehensive Plan. This equates to total capacity (current and future) of 46.3MSF of buildout on about 5,300 acres. The degree to which this total

capacity can support the different facility types is shown in the following figures. Office is the least restricted facility type and can be developed on any portion of the approximately 5,300 acres of buildout capacity, while distribution/logistics is the most restricted and can be developed on only a fraction of this acreage. Buildout capacity is not mutually exclusive across facility types.

- Examined for all targeted industry facility types in aggregate, midrange projected demand (5,114 acres) will approximately equal total buildout capacity (5,316 acres) within 20 years. Note that this assumes a near-perfect match between available sites and industry needs, which is unlikely to be the reality. Under the high-demand scenario, projected demand of 8,666 acres will considerably exceed the county's 5,316 acres of buildout capacity.

## 20-Year Projected Demand vs. Buildout Capacity (Acres), by Facility Type

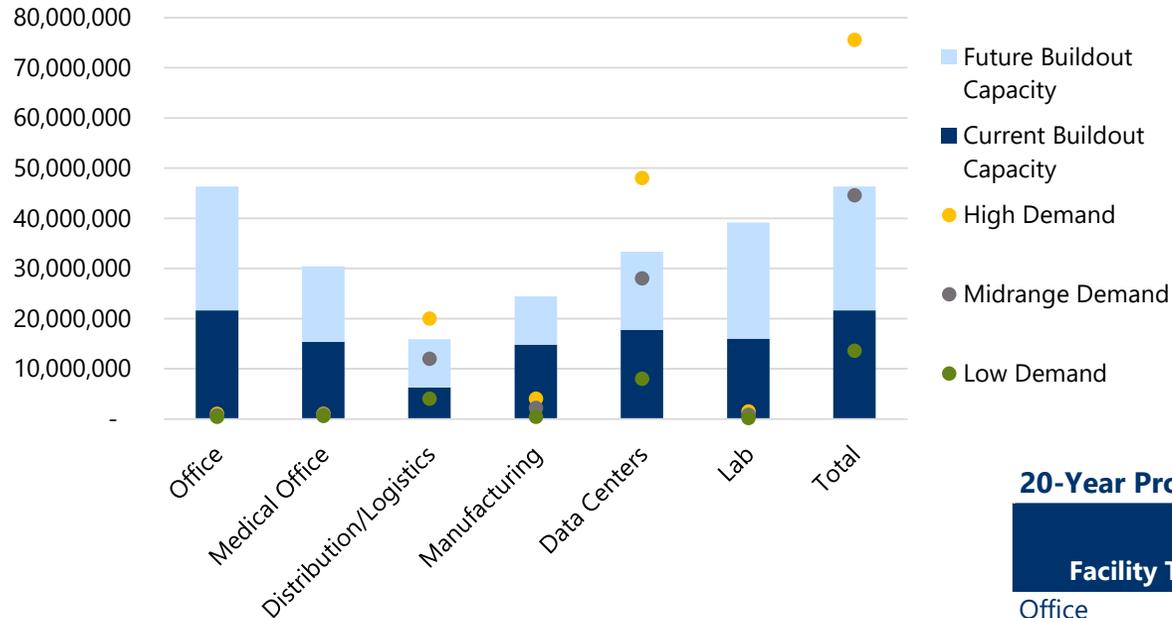
Facility Type	Buildout Capacity			Projected Demand		
	Current	Future	Total	Low	Midrange	High
Office	2,487	2,829	<b>5,316</b>	46	80	115
Medical Office	1,765	1,727	<b>3,493</b>	69	92	115
Distribution/Logistics	722	1,102	<b>1,823</b>	459	1,377	2,296
Manufacturing	1,703	1,102	<b>2,804</b>	46	253	459
<b>Data Centers</b>	<b>2,033</b>	<b>1,797</b>	<b>3,829</b>	<b>918</b>	<b>3,214</b>	<b>5,510</b>
Lab	1,841	2,655	<b>4,496</b>	23	98	172
<b>Total</b>	<b>2,487</b>	<b>2,829</b>	<b>5,316</b>	<b>1,561</b>	<b>5,114</b>	<b>8,666</b>
<b>Total, Excluding Data Centers</b>				<b>643</b>	<b>1,900</b>	<b>3,157</b>

**Note:** The buildout capacity for each facility type reflects a subset of total buildout capacity. The same parcel could have the capacity to support one or more different facility types based on zoning, and therefore, buildout capacity across facility types is not mutually exclusive.

**Source:** Camoin Associates



### 20-Year Projected Demand vs. Buildout Capacity (SF), by Facility Type



Source: Camoin Associates

### 20-Year Projected Demand vs. Buildout Capacity (SF), by Facility Type

Facility Type	Buildout Capacity			Projected Demand		
	Current	Future	Total	Low	Midrange	High
Office	21,664,367	24,647,976	<b>46,312,343</b>	400,000	700,000	1,000,000
Medical Office	15,377,752	15,049,347	<b>30,427,099</b>	600,000	800,000	1,000,000
Distribution/Logistics	6,286,615	9,598,629	<b>15,885,244</b>	4,000,000	12,000,000	20,000,000
Manufacturing	14,833,755	9,598,629	<b>24,432,384</b>	400,000	2,200,000	4,000,000
<b>Data Centers</b>	<b>17,707,757</b>	<b>15,652,889</b>	<b>33,360,646</b>	<b>8,000,000</b>	<b>28,000,000</b>	<b>48,000,000</b>
Lab	16,035,170	23,134,160	<b>39,169,330</b>	200,000	850,000	1,500,000
<b>Total</b>	<b>21,664,367</b>	<b>24,647,976</b>	<b>46,312,343</b>	<b>13,600,000</b>	<b>44,550,000</b>	<b>75,500,000</b>
<b>Total, Excluding Data Centers</b>				<b>5,600,000</b>	<b>16,550,000</b>	<b>27,500,000</b>

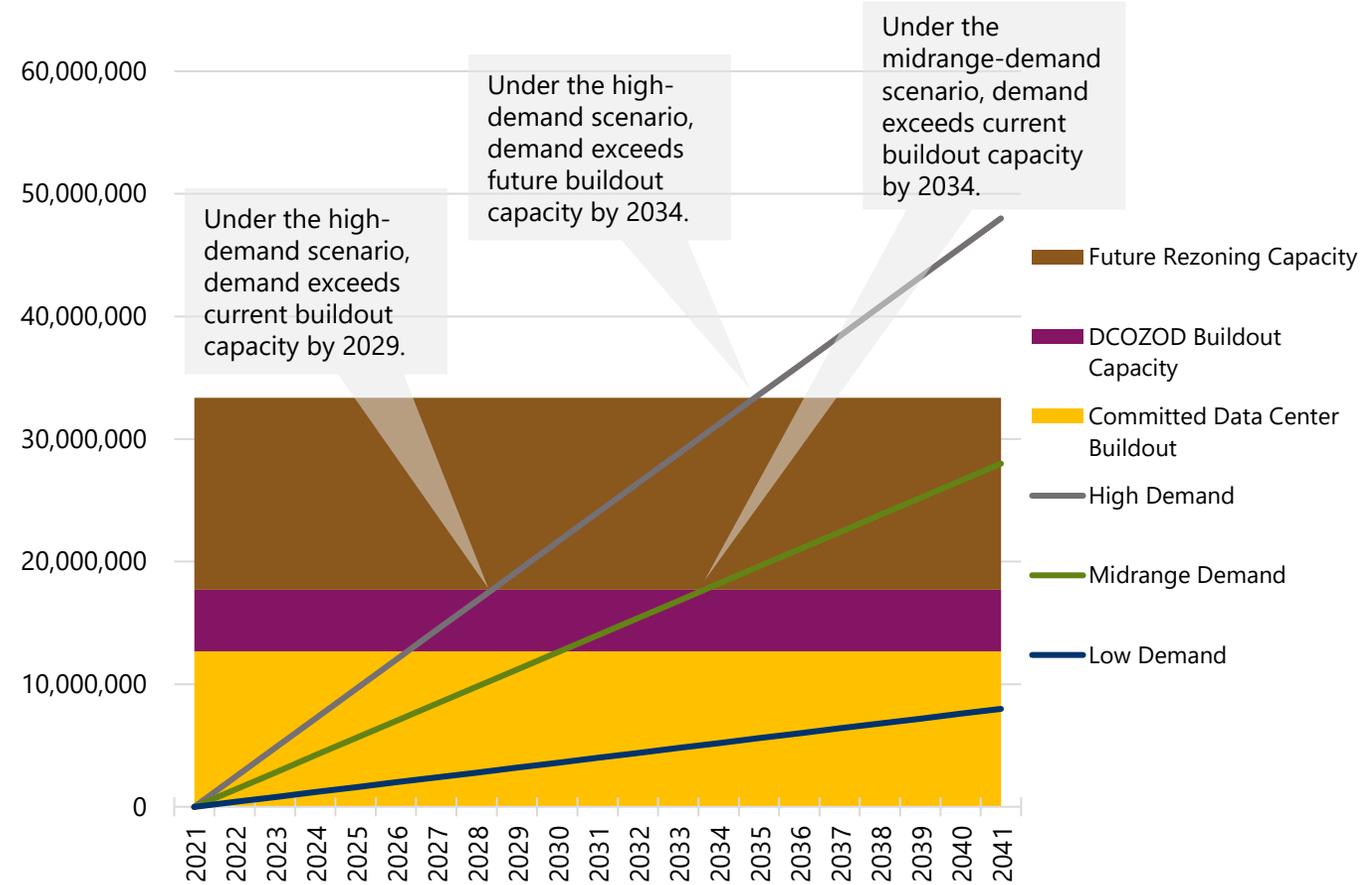
**Note:** The buildout capacity for each facility type reflects a subset of total buildout capacity. The same parcel could have the capacity to support one or more different facility types based on zoning, and therefore, buildout capacity across facility types is not mutually exclusive.

Source: Camoin Associates



- Beyond considering projected supply and demand in aggregate, it is important to examine buildout capacity specific to each targeted industry facility type. Projected data center demand is 1.4MSF per year under the midrange scenario to 2.4MSF under the high scenario (28-48MSF over 20 years).
- There is an estimated 12.7MSF of data center space that can be built out on parcels owned by data center developers (referred to in this analysis as "committed" parcels) totaling 823 acres. Beyond these committed parcels, there are 79 uncommitted parcels available for data center development that both fall within the Data Center Opportunity Zone Overlay District (DCOZOD) and have zoning that is compatible with data centers. These 79 parcels comprise a total of 684 acres; however, only 6 of these parcels are larger than 30 acres, which is generally the minimum acceptable size for data center development. These 6 parcels collectively comprise 330 acres and could support an estimated 5MSF of data center development.
- Under the high-demand scenario, data center demand would exceed buildout capacity under current zoning by 2029. If future rezoning buildout capacity is considered, demand exceeds total buildout capacity by 2035. Under the midrange-demand scenario, data center demand would exceed current buildout capacity by 2034.

### Data Center Buildout Capacity vs Demand (Building SF)



Source: Prince William County Planning Department; Camoin Associates Projections



- If successful, efforts in neighboring Loudoun County to designate large swaths of land for data center use (potentially supporting 56MSF) could draw developers of large data centers to those sites, absent an increase in the supply of large, appropriately zoned sites in Prince William County. This will, in turn, reduce the rate of data center buildout in PWC, with development limited to smaller data centers that can be accommodated on remaining parcels. The high growth potential and significant fiscal revenue associated with data center development should be weighed against high land consumption and low job generation per square foot.
- The high rate of data center development threatens to crowd out the development of other facility types that support the county's targeted industries. Distribution centers and manufacturing space are the uses most limited by the zoning districts they are allowed to occupy. There is essentially 100% overlap in the locations where these uses can be sited, which are the county's industrial zones. Data centers are also permitted in all industrial zones. Because of high space demand from data centers, prospective manufacturing and distribution space users are at risk of being out-bid for large sites. In cases where industrial zones fall within the E-Commerce Overlay, which allows for more intensive development and streamlined approvals, demand for distribution centers is likely to be strongest.
- The county created its Data Center Opportunity Zone Overlay District (DCOZOD) to focus data center development in specific, suitable areas and to mitigate impacts to other properties. However, the supply of sizable sites within the DCOZOD has dwindled and has forced data center developers to consider sites outside the overlay, potentially limiting the availability of land for other uses. Expanding the DCOZOD, and/or designating specific areas for non-data center industrial use could alleviate land supply constraints.
- Non-hazmat lab space is permitted in nearly all non-residential districts within the county. County buildout capacity points to a sufficient supply of land for lab users, especially those with small to moderate-sized space needs. Larger users may find themselves competing for land with data centers, as there is nearly full overlap between sites that allow R&D/lab and data centers. Restricting data center use in concentrated areas targeted for Life Sciences sector buildout could preserve sites for lab space. Expanding areas where hazmat lab space can be developed might also be considered.
- Future office space and medical office space development is projected to be modest (a combined 1.5MSF over 20 years under the midrange scenario) and is expected to be concentrated in mixed-use areas and planned districts alongside residential and retail space. Such areas are not typically zoned to allow for large data centers or distribution centers and have enough buildout potential to more than satisfy demand for office space.
- Planned district zones (i.e., Planned Business District (PBD) and Planned Mixed Use District (PMD)) account for a considerable share of potential buildout capacity in the county, estimated at about 8.5MSF, or 39% of total buildout capacity on land currently zoned for target industry development. Land bays in these zones will determine use potential and could potentially significantly constrain manufacturing and lab development if not designated to allow for such uses.



## 2. TARGET INDUSTRY TRENDS

# Targeted Industry Summary

- As of 2021, Prince William County's six targeted industry clusters account for about 21% of the county's 156,000+ jobs. Collectively, these clusters have grown as a share of the county's employment base, up from 18% in 2011.
- The clusters have grown as a share of the county's gross regional product (GRP), increasing from 22.3% in 2011 to 24.1% in 2020.
- Healthcare and Federal Government Contracting are the two largest clusters. These clusters have also experienced the largest gains in job growth, each increasing by about 50% over the last decade.
- ICT and Logistics are mid-sized clusters that have experienced strong job growth as well, growing by 29% and 25%, respectively.
- Advanced Manufacturing and Life Sciences remain relatively small. Both clusters have shrunk as a share of county-wide employment and GRP. The Life Sciences sector added fewer than 100 jobs, while Advanced Manufacturing was the only sector to lose jobs in absolute terms.
- Long-term projections point to strong but slowing job growth into the future for the target industry clusters as a whole and for the county's economy overall. This is consistent with national forecasts, reflecting slowing population and labor force growth, declining labor force participation rate as the population ages, increased labor productivity (i.e., fewer workers needed per unit of output), and other structural factors.

## Prince William County Economy by Targeted Industry Cluster

Targeted Industry Cluster	2011			2021			2031			2011	2020 GRP,	Average
	Jobs	Jobs	Jobs	Jobs, Pct.	Jobs, Pct.	Jobs, Pct.	GRP	GRP	GRP, Pct.	Pct. of Total	Earnings per Job, 2021	
Advanced Manufacturing	879	801	1,038	0.7%	0.5%	0.6%	\$161 MM	\$118 MM	1.5%	0.7%	\$ 91,179	
Federal Gov't Contracting	6,082	9,179	10,752	4.7%	5.9%	6.2%	\$726 MM	\$1,369 MM	6.9%	8.5%	\$ 112,581	
Healthcare	10,103	15,257	18,456	7.8%	9.8%	10.7%	\$591 MM	\$1,051 MM	5.6%	6.5%	\$ 59,619	
ICT	3,745	4,823	5,641	2.9%	3.1%	3.3%	\$626 MM	\$1,043 MM	5.9%	6.5%	\$ 132,318	
Life Sciences	1,310	1,382	1,223	1.0%	0.9%	0.7%	\$197 MM	\$180 MM	1.9%	1.1%	\$ 103,105	
Logistics	4,855	6,089	6,713	3.7%	3.9%	3.9%	\$569 MM	\$1,032 MM	5.4%	6.4%	\$ 74,066	
<b>Total, All Clusters*</b>	<b>22,931</b>	<b>32,059</b>	<b>37,617</b>	<b>17.7%</b>	<b>20.5%</b>	<b>21.8%</b>	<b>\$2,359 MM</b>	<b>\$3,870 MM</b>	<b>22.3%</b>	<b>24.1%</b>	<b>\$ 86,533</b>	
<b>Total, Full Economy</b>	<b>129,805</b>	<b>156,036</b>	<b>172,585</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>\$10,558 MM</b>	<b>\$16,040 MM</b>	<b>100.0%</b>	<b>100.0%</b>	<b>\$ 65,608</b>	

\*Total, All Clusters adjusted to exclude duplicate jobs classified in more than one targeted cluster

Source: EMSI



# Advanced Manufacturing

- The county's Advanced Manufacturing cluster is relatively small, making up about 801 jobs. It represents less than 1% of total county jobs and exhibits low levels of industry concentration (LQ of 0.14).
- The cluster lost jobs both in the county and in the DC MSA between 2011 and 2021, while it is projected to gain jobs in both geographies over the coming decade.
- Over the past decade, PWC and the DC MSA have been less competitive locations for the cluster compared to the nation overall. During this time, job declines in larger legacy industries masked gains in smaller industries. As employment in legacy industries levels out, the cluster will shift to posting gains.
- Industrial machinery manufacturing, computer manufacturing, and military vehicle manufacturing are examples of legacy industries with a diminished presence in the county.
- Most industries in the cluster fall within the "mature" industry life cycle phase, indicating modest growth potential into the future.
- Firms in this cluster typically require industrial facilities that allow for manufacturing, assembly, and warehousing, often coupled with office space.

Geography	Jobs 2011	Jobs 2021	Jobs 2031	Change in Jobs 2011-2021	Pct. Change in Jobs 2011-2021	Change in Jobs 2021-2031	Pct. Change in Jobs 2021-2031	2021 Jobs LQ	Competitive Effect 2011-2021	Competitive Effect 2021-2031
<b>PW Co.</b>	879	801	1,038	(78)	(9%)	236	30%	0.14	(119)	222
<b>DC MSA</b>	24,320	22,217	24,761	(2,103)	(9%)	2,544	11%	0.18	(3,246)	2,159
<b>US</b>	5,314,504	5,564,101	5,660,692	249,597	5%	96,591	2%	1.00	0	0



Sub-industries within the Advanced Manufacturing Cluster with at least 10 jobs in 2021 are shown in the following table:

### Advanced Manufacturing Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Business Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
332117	Powder Metallurgy Part Manufacturing	Manufacturing	3.27	1	26	0	0%	3	12%	Mature	Low	2.1%	1.0%
	Prefabricated Metal Building and												
332311	Component Manufacturing	Manufacturing	4.40	1	143	143	**	66	47%	Mature	Medium	1.6%	1.5%
332312	Fabricated Structural Metal Manufacturing	Manufacturing	0.58	3	52	(28)	(35%)	**	**	Mature	Medium	1.6%	1.5%
332321	Metal Window and Door Manufacturing	Manufacturing	0.39	1	25	25	**	16	65%	Mature	High	1.8%	0.1%
332710	Machine Shops	Manufacturing	0.04	3	11	**	**	6	60%	Mature	Medium - Low	1.1%	0.9%
	Small Arms, Ordnance, and Ordnance												
332994	Accessories Manufacturing	Manufacturing	0.63	1	14	14	**	**	**	Mature	Medium	5.7%	2.2%
	All Other Miscellaneous Fabricated Metal												
332999	Product Manufacturing	Manufacturing	0.14	2	11	**	**	2	21%	#N/A	#N/A	#N/A	#N/A
333314	Optical Instrument and Lens Manufacturing	Manufacturing	3.07	1	65	(28)	(30%)	24	37%	Mature	Medium - Low	-0.3%	2.5%
	Industrial and Commercial Fan and Blower and Air Purification Equipment												
333413	Manufacturing	Manufacturing	1.95	1	57	57	**	35	61%	Mature	Medium	2.2%	2.3%
	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial												
333415	Refrigeration Equipment Manufacturing	Manufacturing	0.15	1	13	(2)	(13%)	**	**	Mature	Medium	2.2%	2.3%
334111	Electronic Computer Manufacturing	Manufacturing	0.73	1	80	69	635%	25	31%	Mature	Medium - High	-0.8%	2.2%
	Radio and Television Broadcasting and Wireless Communications Equipment												
334220	Manufacturing	Manufacturing	0.70	3	35	12	53%	12	33%	Decline	Medium - High	-0.7%	-1.5%
	Other Measuring and Controlling Device												
334519	Manufacturing	Manufacturing	2.21	3	76	**	**	29	38%	Mature	Medium	2.7%	1.2%
	Software and Other Prerecorded Compact												
334614	Disc, Tape, and Record Reproducing	Manufacturing	3.53	3	29	29	**	17	59%	Decline	Medium	-11.0%	-5.2%
335129	Other Lighting Equipment Manufacturing	Manufacturing	7.06	1	52	52	**	29	55%	Mature	Medium - High	1.6%	1.0%
	All Other Transportation Equipment												
336999	Manufacturing	Manufacturing	1.81	1	32	**	**	13	42%	Mature	Medium	0.9%	0.7%

Source: EMSI, IBISWorld



# Federal Government Contracting

- Prince William County has about 9,200 jobs in the Federal Government Contracting cluster, as of 2021, representing nearly 6% of all jobs.
- The cluster grew by 51% over the last decade in the county, adding nearly 3,100 jobs and far outpacing the rate of growth both in the DC MSA (+16%) and the US (+38%).
- The rate of growth in the cluster within the county is expected to decelerate into the future but remain positive, in line with national projections.
- From 2011-2021, most sub-industries posted gains. The largest gainers included various consulting services and security services.
- Most sub-industries in this cluster require office space as their primary facility type. Security guards and patrol services firms often perform duties on-site at client locations and therefore do not require separate facilities.

Geography	Jobs 2011	Jobs 2021	Jobs 2031	Change in Jobs 2011-2021	Pct. Change in Jobs 2011-2021	Change in Jobs 2021-2031	Pct. Change in Jobs 2021-2031	2021 Jobs LQ	Competitive Effect 2011-2021	Competitive Effect 2021-2031
<b>PW Co.</b>	6,082	9,179	10,752	3,097	51%	1,573	17%	1.30	759	111
<b>DC MSA</b>	364,933	422,280	473,850	57,347	16%	51,571	12%	2.74	(82,926)	(15,670)
<b>US</b>	5,245,792	7,262,173	8,418,539	2,016,381	38%	1,156,367	16%	1.00	0	0



Sub-industries within the Federal Government Contracting Cluster with at least 10 jobs in 2021 are shown in the following table:

### Federal Government Contracting Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Business Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
541490	Other Specialized Design Services	Office	0.48	5	12 **	**		2	16%	Mature	Medium	0.9%	3.4%
	Administrative Management and General												
541611	Management Consulting Services	Office	1.82	177	1,516	783	107%	309	20%	Mature	Medium - Low	1.9%	1.8%
541612	Human Resources Consulting Services	Office	0.66	11	60	20	49%	(13)	(22%)	Mature	Medium - Low	1.9%	1.8%
541613	Marketing Consulting Services	Office	0.56	32	189	81	74%	52	27%	Mature	Medium - Low	1.9%	1.8%
541618	Other Management Consulting Services	Office	0.98	37	118	(3)	(2%)	15	13%	Mature	Medium - Low	1.9%	1.8%
541620	Environmental Consulting Services	Office	2.42	14	254	114	82%	51	20%	Mature	Medium	1.7%	1.5%
	Marketing Research and Public Opinion												
541910	Polling	Office	0.20	2	16 **	**		7	46%	Mature	Low	2.1%	2.6%
541930	Translation and Interpretation Services	Office	0.27	5	14	(1)	(4%)	(0)	(1%)	Growth	Medium - Low	4.9%	3.1%
	All Other Professional, Scientific, and												
541990	Technical Services	Office	1.82	86	506	177	54%	162	32%	Mature	Medium	4.7%	2.5%
561611	Investigation Services	Office	0.79	6	34	1	2%	(2)	(6%)	Mature	Medium - Low	3.8%	1.9%
	Security Systems Services (except												
561621	Locksmiths)	Office	2.49	10	347	188	119%	71	20%	Growth	Medium - High	4.1%	2.6%
561622	Locksmiths	Office	0.48	3	11	(7)	(39%) **	**		Growth	Medium - High	4.1%	2.6%
	Primarily off-												
561612	Security Guards and Patrol Services	site	1.10	31	781	255	48%	250	32%	Mature	Medium - Low	3.8%	1.9%

Source: EMSI, IBISWorld



# Healthcare

- Healthcare is a large and diverse industry cluster within the county. With over 15,200 jobs, it is the largest of the six clusters, accounting for 9.8% of county-wide employment.
- The cluster has expanded rapidly over the last decade, adding over 5,100 positions and growing by 51%, outpacing growth in the DC MSA (+16%) and the US (+20%).
- Growth in the cluster is projected to continue at a high, albeit slower, rate through 2031.
- The Healthcare cluster has a variety of space needs.
  - Ambulatory medical services (i.e., doctors' offices, outpatient centers, etc.) account for about 38% of the sector's jobs and typically require medical office space.
  - Social services make up 23% of employment and require office space or specialized facilities such as shelters or day care centers.
  - Residential healthcare makes up 15% of jobs and requires patient living facilities, such as nursing care or assisted living facilities.
  - Hospitals account for about 8% of jobs.
  - A small subset of the sector requires standalone laboratory space (<1%).
  - Finally, the large and growing Home Health Care Services sector (16% of jobs) typically performs duties in clients' homes. Most workers are not housed on-site but may require limited office space for management and administrative functions.

Geography	Jobs 2011	Jobs 2021	Jobs 2031	Change in Jobs 2011-2021	Pct. Change in Jobs 2011-2021	Change in Jobs 2021-2031	Pct. Change in Jobs 2021-2031	2021 Jobs LQ	Competitive Effect 2011-2021	Competitive Effect 2021-2031
<b>PW Co.</b>	10,103	15,257	18,456	5,154	51%	3,199	21%	0.73	3,122	1,083
<b>DC MSA</b>	291,822	339,541	383,927	47,719	16%	44,386	13%	0.75	(10,969)	(2,712)
<b>US</b>	17,618,404	21,161,654	24,097,026	3,543,250	20%	2,935,373	14%	1.00	0	0



Sub-industries within the Healthcare Cluster with at least 10 jobs in 2021 are shown in the following table:

### Healthcare Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
621111	Offices of Physicians (except Mental Health Specialists)	Medical Office	0.94	181	2,434	837	52%	609	25%	Mature	Medium	1.5%	2.2%
621112	Offices of Physicians, Mental Health Specialists	Medical Office	0.46	9	32	11	55%	(1)	(2%)	Mature	Medium - High	0.9%	2.3%
621210	Offices of Dentists	Medical Office	1.50	164	1,380	368	36%	306	22%	Mature	Medium	2.8%	3.5%
621310	Offices of Chiropractors	Medical Office	1.02	30	156	20	15%	0	0%	Decline	Medium	2.6%	2.1%
621320	Offices of Optometrists	Medical Office	1.85	28	262	114	77%	33	12%	Mature	Medium - Low	1.8%	2.8%
621330	Offices of Mental Health Practitioners (except Physicians)	Medical Office	1.01	23	167	121	263%	27	16%	Growth	Medium	5.6%	2.7%
621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	Medical Office	0.57	44	236	30	14%	(16)	(7%)	Growth	Medium	1.6%	2.2%
621391	Offices of Podiatrists	Medical Office	0.35	3	12	(9)	(45%)	**	**	Mature	Medium	2.1%	1.2%
621399	Offices of All Other Miscellaneous Health Practitioners	Medical Office	0.64	15	105	38	56%	13	12%	Growth	Medium - High	3.0%	2.2%
621420	Outpatient Mental Health and Substance Abuse Centers	Medical Office	0.28	11	76	57	300%	22	29%	Growth	Medium - Low	2.9%	3.5%
621491	HMO Medical Centers	Medical Office	1.39	1	296	91	44%	5	2%	Growth	Medium	2.8%	4.5%
621492	Kidney Dialysis Centers	Medical Office	0.35	10	49	(38)	(44%)	(28)	(56%)	Growth	Medium	2.8%	4.5%
621493	Freestanding Ambulatory Surgical and Emergency Centers	Medical Office	1.38	6	236	220	1440%	26	11%	Growth	Medium	2.8%	4.5%
621498	All Other Outpatient Care Centers	Medical Office	1.09	16	235	170	263%	71	30%	Growth	Medium	2.8%	4.5%
621910	Ambulance Services	Medical Office	0.47	2	83	51	160%	51	62%	Growth	Medium - Low	1.1%	2.1%
621999	All Other Miscellaneous Ambulatory Health Care Services	Medical Office	0.46	8	41	23	121%	13	32%	Growth	Medium - Low	4.2%	2.5%



The Healthcare Cluster sub-industries are continued below.

### Healthcare Cluster, Prince William County

6-digit NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Business Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
621511	Medical Laboratories	Lab	0.30	13	67	5	8%	31	46%	Growth	Medium - Low	3.1%	2.5%
621610	Home Health Care Services	Primarily off-site	1.49	89	2,365	1,812	328%	899	38%	Growth	Medium	3.4%	5.1%
622110	General Medical and Surgical Hospitals	Hospital	0.22	4	1,042	4	0%	(64)	(6%)	Mature	Medium - High	-1.2%	3.2%
622210	Psychiatric and Substance Abuse Hospitals	Hospital	0.83	1	104	104	**	83	79%	Mature	Medium	1.4%	2.4%
622310	Specialty (except Psychiatric and Substance Abuse) Hospitals	Hospital	0.08	1	19	19	**	18	93%	Growth	Medium - Low	1.9%	2.7%
623110	Nursing Care Facilities (Skilled Nursing Facilities)	Residential Healthcare	0.29	4	422	12	3%	49	12%	Mature	Medium	1.9%	4.5%
623210	Residential Intellectual and Developmental Disability Facilities	Residential Healthcare	0.97	28	388	118	44%	140	36%	Growth	Medium	1.9%	1.9%
623311	Continuing Care Retirement Communities	Residential Healthcare	1.35	7	664	222	50%	187	28%	Growth	Medium	0.9%	3.0%
623312	Assisted Living Facilities for the Elderly	Residential Healthcare	0.87	11	403	326	426%	169	42%	Growth	Medium	0.9%	3.0%
623990	Other Residential Care Facilities	Residential Healthcare	2.76	3	440	199	83%	2	0%	Decline	Low	1.0%	1.5%
624110	Child and Youth Services	Social Services	0.16	3	35	(26)	(43%)	(8)	(23%)	Mature	Medium - Low	0.6%	3.3%
624120	Services for the Elderly and Persons with Disabilities	Social Services	0.42	656	922	316	52%	269	29%	Growth	Medium	3.1%	2.5%
624190	Other Individual and Family Services	Social Services	0.40	24	200	47	31%	97	48%	Mature	Medium - Low	4.5%	1.7%
624221	Temporary Shelters	Social Services	0.24	3	19	(87)	(82%)	2	8%	Mature	Medium	3.2%	-2.0%
624229	Other Community Housing Services	Social Services	0.45	3	19	8	69%	(4)	(22%)	Mature	Medium	3.2%	-2.0%
624230	Emergency and Other Relief Services	Social Services	0.34	1	11	11	**	1	8%	Mature	Medium - Low	-2.4%	0.4%
624310	Vocational Rehabilitation Services	Social Services	1.38	12	387	200	107%	28	7%	Mature	Medium	1.7%	0.2%
624410	Child Day Care Services	Social Services	1.78	86	1,927	(219)	(10%)	169	9%	Mature	Medium - Low	0.5%	2.2%

Source: EMSI, IBISWorld



# Information & Communications Technology

- The Information and Communications Technology (ICT) cluster consists of 4,800 jobs, or 3.1% of the county-wide total.
- The ICT cluster has added over 1,000 jobs since 2011, growing by 29%. Prince William County has substantially outpaced the DC MSA, which grew by 10%, but slightly lagged the US, which grew by 36%. Robust gains in the high-growth Computer Systems Design Services, Computer Facilities Management Services, and Data Processing/Hosting industries were somewhat neutralized by losses in both Wired and Wireless Telecommunications Carriers.
- The cluster is projected to add over 800 jobs through 2031, driven by Computer Systems Design and Custom Computer Programming Services, among other growth industries.
- Space needs for this cluster include office facilities, which accommodate an estimated 85% of employment, and data centers, accounting for the remaining 15%.
- It is important to note that data centers have a very high ratio of facility square footage to employees. While data centers house only a small share of ICT workers, they account for a large share of building area. Employment growth and decline for sub-industries based in data centers is therefore not strongly correlated with future data center space demand.

Geography	Jobs 2011	Jobs 2021	Jobs 2031	Change in Jobs 2011-2021	Pct. Change in Jobs 2011-2021	Change in Jobs 2021-2031	Pct. Change in Jobs 2021-2031	2021 Jobs LQ	Competitive Effect 2011-2021	Competitive Effect 2021-2031
<b>PW Co.</b>	3,745	4,823	5,641	1,078	29%	819	17%	1.10	(268)	187
<b>DC MSA</b>	212,739	233,847	254,850	21,108	10%	21,003	9%	2.45	(55,358)	(9,637)
<b>US</b>	3,315,184	4,506,784	5,097,291	1,191,600	36%	590,507	13%	1.00	0	0



Sub-industries within the ICT Cluster with at least 10 jobs in 2021 are shown in the following table:

### ICT Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Business Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
517311	Wired Telecommunications Carriers	Data Center	0.76	10	367	(291)	(44%)	(177)	(48%)	Decline	Low	-3.3%	-0.3%
	Wireless Telecommunications Carriers (except Satellite)	Data Center	0.21	9	22	(58)	(73%)	3	12%	Mature	Medium - High	2.4%	2.6%
517919	All Other Telecommunications	Data Center	1.88	7	69	55	412%	18	26%	Growth	Medium - Low	7.8%	1.3%
	Data Processing, Hosting, and Related Services	Data Center	0.72	30	266	148	125%	30	10%	Growth	Medium - High	3.6%	3.3%
511210	Software Publishers	Office	0.12	19	62	49	404%	3	5%	Growth	Medium	7.6%	2.2%
517911	Telecommunications Resellers	Office	1.37	4	65	52	419%	39	60%	Mature	Medium - High	1.5%	1.1%
	Internet Publishing and Broadcasting and Web Search Portals	Office	0.11	7	35	(5)	(13%)	13	26%	Growth	Medium	11.8%	7.1%
541430	Graphic Design Services	Office	0.84	9	110	21	24%	9	8%	Mature	Medium - Low	1.2%	1.9%
541511	Custom Computer Programming Services	Office	0.59	121	622	78	14%	131	21%	Growth	Medium	2.2%	2.9%
541512	Computer Systems Design Services	Office	2.35	282	2,575	582	29%	643	25%	Growth	Medium	2.2%	2.9%
541513	Computer Facilities Management Services	Office	3.00	15	239	219	1094%	107	45%	Growth	Medium	2.2%	2.9%
541519	Other Computer Related Services	Office	1.85	58	244	91	59%	108	44%	Growth	Medium	2.2%	2.9%

Source: EMSI, IBISWorld



# Life Sciences

- The Life Sciences cluster makes up about 1% of jobs in the county, with about 1,400 positions.
- Gains over the last decade have been modest at about 5%, lagging the MSA (+16%) and the US (+19%). Growth is projected to accelerate to 9% over the next decade, on par with projections for the metro and nation.
- Scientific and Technical Consulting Services has been the growth driver of the cluster historically and is projected to continue to drive growth into the future.
- Space needs in this sector are a combination of lab (wet and dry) and office space.

Geography	Jobs 2011	Jobs 2021	Jobs 2031	Change in Jobs 2011-2021	Pct. Change in Jobs 2011-2021	Change in Jobs 2021-2031	Pct. Change in Jobs 2021-2031	2021 Jobs LQ	Competitive Effect 2011-2021	Competitive Effect 2021-2031
<b>PW Co.</b>	1,310	1,382	1,223	72	5%	128	9%	0.61	(183)	(10)
<b>DC MSA</b>	71,669	83,165	90,583	11,496	16%	7,419	9%	1.59	(2,457)	1,095
<b>US</b>	2,052,833	2,452,487	2,638,963	399,654	19%	186,476	8%	1.00	0	0



Sub-industries within the Life Sciences Cluster with at least 10 jobs in 2021 are shown in the following table:

### Life Sciences Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Business Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
339116	Dental Laboratories	Lab	2.16	9	92	60	186%	26	30%	#N/A	#N/A	#N/A	#N/A
541713	Research and Development in Nanotechnology	Lab	3.16	4	72	**	**	29	59%	Mature	Low	9.4%	4.2%
541714	Research and Development in Biotechnology (except Nanobiotechnology)	Lab	0.05	5	13	(6)	(30%)	4	27%	Mature	Low	9.4%	4.2%
541715	Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	Lab	0.92	7	424	(248)	(37%)	(243)	(56%)	Mature	Low	9.4%	4.2%
541690	Other Scientific and Technical Consulting Services	Office	2.52	60	596	327	121%	269	42%	Mature	Low	3.7%	1.8%

Source: EMSI, IBISWorld

Note: Industry Life Cycle is a determination made by IBISWorld, an industry research provider, based on the industry's growth rate compared to the economy overall. A mature life cycle stage indicates that the industry's growth in value-add nationally is expected to exceed overall GDP growth (i.e., comprise a growing share of the economy), while growth in number of establishments is expected to be relatively low or declining. While there is significant startup activity in the Life Sciences industry (both nationally and in Prince William County), the sector is largely characterized by mergers and acquisitions, as large established firms acquire early-stage firms, and therefore low growth overall in number of establishments. Therefore, this industry is classified as mature by IBISWorld.



# Logistics

- The Logistics cluster in Prince William County is comprised of about 6,000 jobs in sub-industries including wholesale, warehousing, distribution, and transportation.
- Growth in the cluster over the last decade has been substantial at over 25%, surpassing the DC MSA (+6%) and the US (+19%). The county is expected to see above-average growth through 2031.
- Industrial facilities in the form of warehouses and distribution centers are the primary space need of the cluster, often coupled with office/flex space. Small segments of the cluster require specialized transportation facilities, such as railyards, vehicle storage lots, or utility pipelines.

Geography	Jobs 2011	Jobs 2021	Jobs 2031	Change in Jobs 2011-2021	Pct. Change in Jobs 2011-2021	Change in Jobs 2021-2031	Pct. Change in Jobs 2021-2031	2021 Jobs LQ	Competitive Effect 2011-2021	Competitive Effect 2021-2031
<b>PW Co.</b>	4,855	6,089	6,713	1,234	25%	624	10%	0.56	327	407
<b>DC MSA</b>	108,245	114,699	122,498	6,454	6%	7,799	7%	0.48	(13,764)	3,711
<b>US</b>	9,358,212	11,106,154	11,501,995	1,747,943	19%	395,841	4%	1.00	0	0



Sub-industries within the Logistics Cluster with at least 10 jobs in 2021 are shown in the following table:

#### Logistics Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Business Locations 2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US	
											Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027	
423110	Automobile and Other Motor Vehicle Merchant Wholesalers	Warehouse	0.60	6	74	48	182%	19	26%	Mature	High	-2.2%	0.2%
423120	Motor Vehicle Supplies and New Parts Merchant Wholesalers	Warehouse	1.05	13	176	92	110%	35	20%	Mature	Medium	1.3%	1.7%
423130	Tire and Tube Merchant Wholesalers	Warehouse	1.26	4	40	28	242%	24	60%	Mature	Medium	2.9%	3.7%
423140	Motor Vehicle Parts (Used) Merchant Wholesalers	Warehouse	0.49	2	11	(16)	(60%)	**	**	Mature	Medium - Low	2.2%	0.4%
423220	Home Furnishing Merchant Wholesalers	Warehouse	0.46	2	28	**	**	17	60%	Mature	Medium - High	-2.6%	1.5%
423310	Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers	Warehouse	1.70	12	185	(0)	(0%)	(10)	(5%)	Mature	Medium - High	6.2%	-0.2%
423330	Roofing, Siding, and Insulation Material Merchant Wholesalers	Warehouse	3.38	6	137	114	499%	44	32%	Mature	Medium - High	2.1%	-0.7%
423430	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers	Warehouse	0.46	7	102	57	125%	(36)	(35%)	Decline	Medium - High	3.2%	2.0%
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	Warehouse	0.11	11	30	18	154%	(1)	(4%)	Growth	Medium - Low	2.5%	2.2%
423510	Metal Service Centers and Other Metal Merchant Wholesalers	Warehouse	0.11	2	14	(35)	(72%)	**	**	Mature	Medium	2.5%	0.0%
423610	Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers	Warehouse	0.20	8	34	8	32%	13	37%	Mature	Medium	1.3%	2.5%
423690	Other Electronic Parts and Equipment Merchant Wholesalers	Warehouse	0.17	6	23	(103)	(82%)	**	**	Mature	Medium - High	2.7%	1.3%
423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers	Warehouse	0.74	9	80	(28)	(26%)	(16)	(20%)	Mature	Medium	2.4%	1.8%
423730	Warm Air Heating and Air-Conditioning Equipment and Supplies Merchant Wholesalers	Warehouse	0.27	4	20	(14)	(41%)	(4)	(22%)	Mature	Medium - High	1.3%	1.3%
423810	Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	Warehouse	0.80	6	74	30	70%	20	27%	Mature	Medium - Low	1.1%	2.0%
423820	Farm and Garden Machinery and Equipment Merchant Wholesalers	Warehouse	0.27	3	28	**	**	2	9%	Mature	Medium - Low	0.7%	1.2%



# The Logistics Cluster sub-industries are continued below.

## Logistics Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Industry Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
	Industrial Machinery and Equipment												
423830	Merchant Wholesalers	Warehouse	0.23	9	71	8	14%	17	23%	Mature	Low	-0.3%	2.9%
423840	Industrial Supplies Merchant Wholesalers	Warehouse	0.15	3	15	**	**	3	21%	Growth	Low	0.5%	-5.6%
	Service Establishment Equipment and												
423850	Supplies Merchant Wholesalers	Warehouse	1.46	4	77	(9)	(11%)	(10)	(13%)	Mature	Medium - Low	1.4%	1.8%
	Transportation Equipment and Supplies (except Motor Vehicle) Merchant												
423860	Wholesalers	Warehouse	0.46	3	15	(28)	(65%)	**	**	Mature	Medium - Low	3.0%	1.2%
	Sporting and Recreational Goods and												
423910	Supplies Merchant Wholesalers	Warehouse	2.23	7	128	14	12%	(8)	(6%)	Mature	Medium - Low	1.4%	1.5%
423930	Recyclable Material Merchant Wholesalers	Warehouse	0.93	4	93	(5)	(5%)	13	14%	Mature	Medium - Low	-0.3%	1.6%
	Jewelry, Watch, Precious Stone, and												
423940	Precious Metal Merchant Wholesalers	Warehouse	0.97	2	29	16	128%	4	15%	Mature	Medium - High	2.2%	0.7%
	Other Miscellaneous Durable Goods												
423990	Merchant Wholesalers	Warehouse	0.20	8	17	(6)	(28%)	(5)	(29%)	#N/A	#N/A	#N/A	#N/A
	Printing and Writing Paper Merchant												
424110	Wholesalers	Warehouse	0.99	1	12	**	**	**	**	Decline	Medium	-5.3%	-5.2%
	Stationery and Office Supplies Merchant												
424120	Wholesalers	Warehouse	0.38	1	16	(5)	(23%)	6	38%	Decline	Medium - Low	-3.9%	0.0%
	Drugs and Druggists' Sundries Merchant												
424210	Wholesalers	Warehouse	0.09	5	22	(13)	(37%)	(2)	(8%)	Growth	Medium	3.4%	3.2%
	General Line Grocery Merchant Wholesalers												
424410	Other Grocery and Related Products	Warehouse	2.71	6	623	142	30%	(33)	(5%)	Mature	Low	0.9%	1.7%
	Other Grocery and Related Products												
424490	Merchant Wholesalers	Warehouse	0.47	8	106	(4)	(3%)	(8)	(8%)	Mature	Medium	1.3%	2.9%
	Other Chemical and Allied Products												
424690	Merchant Wholesalers	Warehouse	0.44	5	52	(7)	(11%)	4	8%	Mature	Medium	1.2%	1.7%
	Wine and Distilled Alcoholic Beverage												
424820	Merchant Wholesalers	Warehouse	0.36	3	32	**	**	11	34%	Mature	Medium - High	3.2%	2.6%
	Book, Periodical, and Newspaper Merchant												
424920	Wholesalers	Warehouse	1.46	3	45	(16)	(27%)	(9)	(21%)	Decline	Medium - High	-1.4%	-2.4%



The Logistics Cluster sub-industries are continued below.

### Logistics Cluster, Prince William County

6-dig NAICS	Description	Facility Type	2021 Location Quotient	2020 Payrolled Locations	2021 Jobs	Change in Jobs, 2011- 2021	Pct. Change Jobs, 2011- 2021	Change in Jobs, 2021- 2031	Pct. Change in Jobs, 2021- 2031	US Life Cycle Stage	US Industry Overall Risk Level	US	US
												Revenue Growth CAGR 2017- 2022	Revenue Growth CAGR 2022- 2027
	Other Miscellaneous Nondurable Goods												
424990	Merchant Wholesalers	Warehouse	0.15	1	12	(11)	(47%)	**	**	#N/A	#N/A	#N/A	#N/A
484110	General Freight Trucking, Local	Warehouse	1.38	50	466	172	59%	109	23%	Mature	Low	4.6%	1.5%
484121	General Freight Trucking, Long-Distance, Truckload	Warehouse	0.26	24	161	74	85%	47	29%	Mature	Medium - Low	3.2%	2.1%
484122	General Freight Trucking, Long-Distance, Less Than Truckload	Warehouse	1.36	11	365	7	2%	14	4%	Mature	Medium - Low	3.2%	2.1%
484210	Used Household and Office Goods Moving Specialized Freight (except Used Goods)	Warehouse	5.26	24	510	(22)	(4%)	(61)	(12%)	Mature	Medium	1.6%	0.4%
484220	Trucking, Local	Warehouse	1.32	25	305	93	44%	102	34%	Mature	Medium - Low	1.0%	1.9%
488510	Freight Transportation Arrangement	Warehouse	0.40	7	104	84	421%	30	29%	Mature	Medium - Low	3.7%	4.1%
488991	Packing and Crating	Warehouse	1.25	2	28	**	**	3	12%	Mature	Low	3.3%	2.5%
492110	Couriers and Express Delivery Services	Warehouse	0.65	10	572	529	1258%	247	43%	Growth	Medium - Low	5.5%	4.0%
493110	General Warehousing and Storage	Warehouse	0.06	6	80	27	50%	(14)	(17%)	Mature	Medium - Low	3.3%	3.2%
424710	Petroleum Bulk Stations and Terminals	Utilities	0.74	1	26	(5)	(15%)	(9)	(35%)	Mature	Medium - Low	0.9%	0.4%
	Petroleum and Petroleum Products												
424720	Merchant Wholesalers (except Bulk Stations and Terminals)	Utilities	1.77	3	116	**	**	38	33%	Mature	Medium - Low	3.0%	1.0%
425120	Wholesale Trade Agents and Brokers	Office	0.40	54	176	(331)	(65%)	31	18%	Decline	Medium	-2.9%	0.5%
	Process, Physical Distribution, and Logistics												
541614	Consulting Services	Office	1.51	22	226	155	216%	(13)	(6%)	Mature	Medium - Low	1.9%	1.8%
482110	Rail transportation	Transportation	0.51	0	103	(46)	(31%)	(15)	(14%)	Mature	Low	0.3%	2.5%
	Other Support Activities for Air												
488190	Transportation	Transportation	0.58	8	71	(38)	(35%)	16	23%	Mature	Medium - Low	-0.5%	1.5%
488410	Motor Vehicle Towing	Transportation	1.18	9	92	35	62%	9	10%	Mature	Medium - Low	5.5%	0.9%
	Other Support Activities for Road												
488490	Transportation	Transportation	3.21	2	137	114	496%	74	54%	Growth	Medium - Low	2.3%	2.1%

Source: EMSI, IBISWorld



### 3. REAL ESTATE TRENDS

# Prince William County Buildout Trends

Parcel data for Prince William County were examined to assess long-term buildout trends in the county for relevant use types since 2000. From 2002 to 2009, the county experienced a high rate of buildout, with warehouse, other industrial, and office space driving this growth. 2009-2012 was a slower period, coinciding with the Great Recession. Momentum resumed in 2013, ticking up substantially in 2016.

From 2017-2021, over 4.1M SF of data center space was added to the county inventory and represented the fastest-growing use type by far. Warehouses also saw substantial growth, adding over 2.5M SF of space.

Office space development plateaued with the onset of the Great Recession, expanding by less than 250,000 SF over the last decade, after adding nearly 2.5M SF in the first decade of the century.

Medical office development has also slowed over the last decade, representing a small portion of overall buildout since 2000 (4%). Similarly, manufacturing space represents a small share of buildout (3%). Lab space buildout has been relatively modest in the county, with about 200,000 SF having been added in 2009-2012 period.

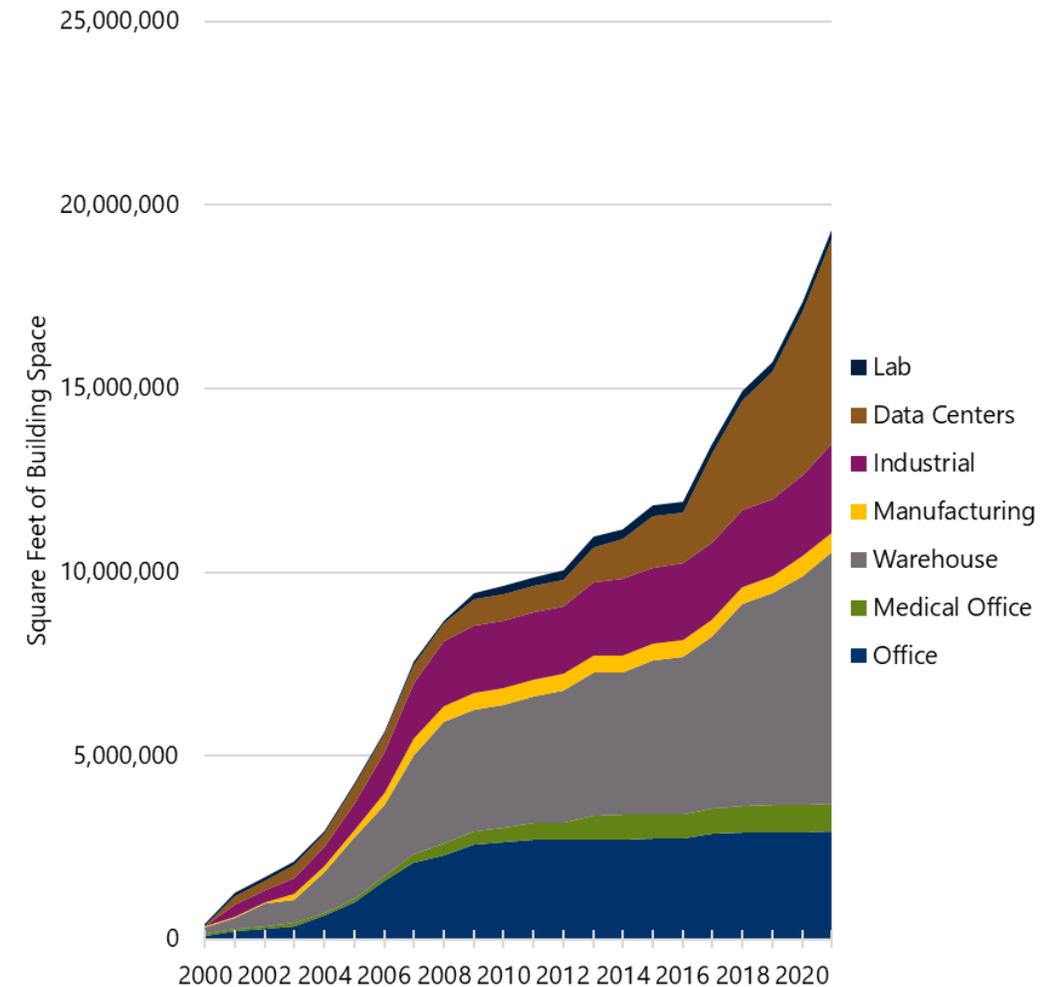
Note that this data reflects all buildout for each land use type, and not just buildout specific to the county's six targeted industry clusters.

**Buildout (Building SF) by 5-Year Period, 2002-2021**

Facility Type	2002-	2007-	2012-	2017-	Trend
Office	1,381,126	1,121,165	26,611	199,792	
Medical Office	68,087	308,570	223,643	81,053	
Warehouse	1,632,003	1,516,401	827,921	2,556,364	
Manufacturing	291,199	140,139	0	94,970	
Industrial	809,130	708,648	249,727	329,022	
Data Centers	219,343	247,608	678,032	4,151,624	
Lab	0	152,242	43,891	0	
<b>Total</b>	<b>4,400,888</b>	<b>4,194,773</b>	<b>2,049,825</b>	<b>7,412,825</b>	

Source: Prince William County Parcel Data

**Prince William County - Cumulative Buildout (Building SF) 2000-2021 by Facility Type**



Source: Prince William County Parcel Data



# Project Wins

Project wins data from the county's economic development database for projects over the last 10 years (2012-2021) were cleaned and cross-tabulated by targeted industry and facility type (see table at right). Over this period approximately, 10.5 million SF of space and 4,300 jobs were announced for Prince William County.

Using project-specific data on facility size and job counts, we developed average square foot per job ratios by targeted industry and facility type, as shown in the table below. These ratios show wide variation in average square feet per job, ranging from about 300 SF for an office job to nearly 6,000 SF for a data center job.

Refer to the appendix for a discussion of using these ratios for estimating buildout. Ultimately, the square-feet-per job methodology was not used to project future buildout in this analysis.

**Average Square Feet per Job by Targeted Industry and Space Type (Project Wins Database)**

	Advanced Manufacturing	Fed Gov't Contracting	Healthcare	ICT	Life Sciences	Logistics	All Targeted Clusters
Office	406	549	**	135	617	**	320
Corporate Headquarters	**	1,351	352	313	792	**	693
Data Center	**	**	**	5,958	**	**	5,958
Medical Office	**	**	**	**	1,416	**	1,416
Distribution	**	**	**	**	**	1,037	1,037
Flex	1,976	596	**	**	607	**	789
Industrial	2,528	3,500	**	2,310	3,605	1,964	2,483
Wet Lab	**	**	**	**	711	**	711
<b>All Facility Types</b>	<b>2,298</b>	<b>1,061</b>	<b>352</b>	<b>3,923</b>	<b>1,197</b>	<b>1,187</b>	<b>2,438</b>

Source: Prince William County Economic Development Project Wins Database

**Square Feet and Jobs by Facility Type by Targeted Industry**

Targeted Industry by Facility Type	Announced Square Footage (2012-2021)	Share of Targeted Industry Total	Total Projected New Jobs (2012-2021)	Share of Targeted Industry Total
<b>Advanced Manufacturing</b>				
Flex	41,491	6%	21	6%
Industrial	697,738	93%	276	84%
Office	12,183	2%	30	9%
<b>Subtotal</b>	<b>751,412</b>	<b>100%</b>	<b>327</b>	<b>100%</b>
<b>Federal Gov't Contracting</b>				
Corporate Headquarters	214,850	75%	159	59%
Flex	16,700	6%	28	10%
Industrial	10,500	4%	3	1%
Office	43,400	15%	79	29%
<b>Subtotal</b>	<b>285,450</b>	<b>100%</b>	<b>269</b>	<b>100%</b>
<b>Healthcare</b>				
Corporate Headquarters	8,800	100%	25	100%
<b>Subtotal</b>	<b>8,800</b>	<b>100%</b>	<b>25</b>	<b>100%</b>
<b>ICT</b>				
Corporate Headquarters	82,909	1%	265	14%
Data Center	7,012,579	96%	1,177	63%
Industrial	154,762	2%	67	4%
Office	47,392	1%	351	19%
<b>Subtotal</b>	<b>7,297,642</b>	<b>100%</b>	<b>1,860</b>	<b>100%</b>
<b>Life Sciences</b>				
Corporate Headquarters	36,433	4%	46	6%
Flex	64,900	7%	107	14%
Industrial	270,366	29%	75	10%
Medical Office	378,000	40%	267	34%
Office	92,000	10%	149	19%
Wet Lab	103,112	11%	145	18%
<b>Subtotal</b>	<b>944,811</b>	<b>100%</b>	<b>789</b>	<b>100%</b>
<b>Logistics</b>				
Distribution	916,000	73%	883	84%
Industrial	333,837	27%	170	16%
<b>Subtotal</b>	<b>1,249,837</b>	<b>100%</b>	<b>1,053</b>	<b>100%</b>
<b>Total</b>	<b>10,537,952</b>		<b>4,323</b>	

Source: Prince William County Economic Development Project Wins Database



# Historic Buildout Data

As a frame of reference for developing buildout projections, the table below summarizes buildout by facility type using both the county parcel data and the project wins data. Data shown are annual averages over the most recent 10-year, 5-year, and 3-year periods.

**Historic Buildout (SF) by Facility Type - Parcel Data vs Project Wins Data**

	Parcel Data - Actual Buildout (SF)			Project Wins (Announced SF)		
	10-Yr Avg (2012-2021)	5-Yr Avg (2017-2021)	3-Yr Avg (2019-2021)	10-Yr Avg (2012-2021)	5-Yr Avg (2017-2021)	3-Yr Avg (2019-2021)
Office	27,029	39,958	11,610	53,797	43,223	37,333
Medical Office	30,470	16,211	12,185	37,800	74,000	111,667
Warehouse	338,429	511,273	440,474	91,600	148,200	173,667
Industrial/Manufacturing	67,372	84,798	141,331	146,720	144,233	212,389
<b>Data Centers</b>	<b>482,966</b>	<b>830,325</b>	<b>858,570</b>	<b>701,258</b>	<b>927,780</b>	<b>1,332,489</b>
Lab	-	-	-	10,311	17,891	19,257

**Source:** Prince William County parcel data and project wins; Camoin Associates

The following pages examine local, regional, and national trends in buildout for the six facility types in greater detail and identify a range of projected space demand that can be expected in the county over the next 20 years, through 2041.



# Office

At the national, regional, and local levels, office construction has been considerably slower over the last decade (since the Great Recession) than it was over the prior 10 years. Greater workplace density has been the trend over the last 20 years: digitization reduced the space needed to store paper, the “open office” trend led to more employees being packed into tighter spaces, and remote work began to take hold.

The pandemic has been an inflection point, bringing about an unprecedented jump in rates of working from home, low office utilization, and an uptick in vacancies. The degree to which these changes “stick” remains to be seen. Office use will rebound to some degree but may never return to pre-pandemic levels.

In the meantime, office space development is expected to remain muted as organizations determine future space need strategies. Development that does occur will be concentrated in high-amenity, mixed-use locations that appeal to workers and compel them to come into the office.

Recent major project wins in PWC include:

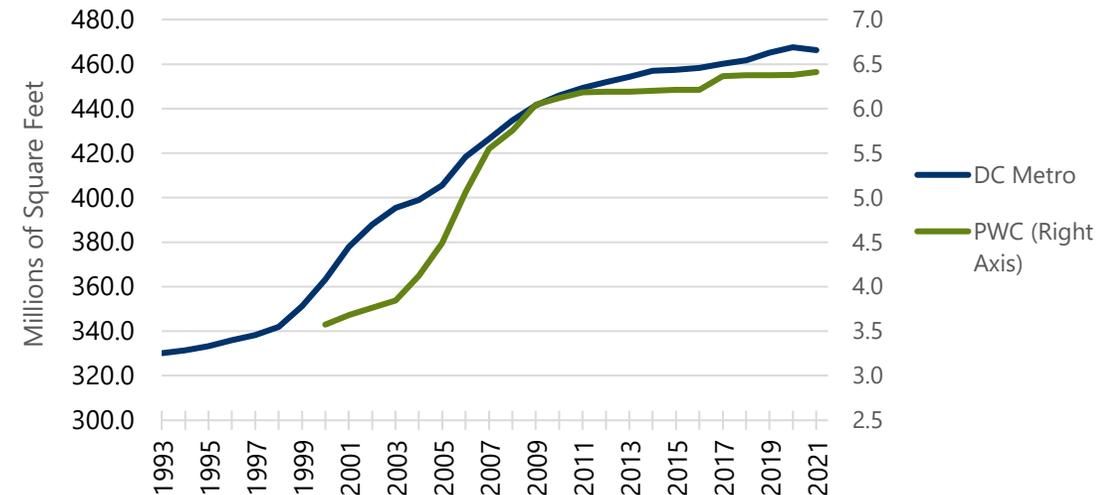
- BerkleyNet, 80,000 sq ft, 2015
- Lifetime Fitness: 125,000 sq ft, 2018
- Medliminal: 17,400 sq ft, 2018
- I66 Express Regional HQ, 17,000 sq ft, 2021

Prince William County represents 1.4% of DC MSA inventory, as tracked by CoStar, up from 1.0% in 2000. The county has captured 2.2% of new development between 2016 and 2021. (CoStar)

- Average Annual Growth Rates  
2003–2009: 7.9%, 366,612 sq ft  
2009–2021: 2.9%, 30,654 sq ft

Office development in the DC metro has been relatively steady, adding about 2 million SF per year over the last 10 years. Future office development in Prince William County is projected to fall between 20,000 SF and 50,000 SF per year, equivalent to the county capturing between 1% and 2.5% of metro-wide office development (if assumed to continue at a rate of 2MSF per year).

**Cumulative Office Inventory, 1993–2021**



Source: CoStar

**Washington DC MSA Average Annual Growth in Office Inventory**

Period	Rate	Square Feet
1998–2009	2.4%	9,038,309
2009–2021	0.5%	2,069,397
2000–2021	1.2%	4,910,612

Source: CoStar



# Medical Office

2009 was an inflection point for medical office space development in the DC metro, with the rate of development slowing at this point. From 2000-2009, the metro added an average of 900KSF of medical office each year, compared to only 200KSF per year from 2010-2021. This trend was mirrored at the county level. (CoStar)

Counterintuitively, the pandemic led to a decline in the use of medical facilities as nonurgent care and elective procedures were postponed or cancelled. The use of telemedicine spiked dramatically. However, "as with other pandemic-related property shifts, the pendulum will certainly swing back, as evidenced by the rapid increase in office consultations once patients felt safe to visit." This not likely to lead to a significant reduction in the need for medical space. It may reduce the number of in-person patient visits, but a similar amount of space will still be needed for medical staff to perform their jobs. (ULI)

Trends in the healthcare industry point to a rise in leasing of more localized alternatives to hospitals and large medical complexes, located closer to where people live. In addition, the aging of the population will contribute to an increasing need for healthcare facilities overall. (ULI)

Recent PWC major project wins include:

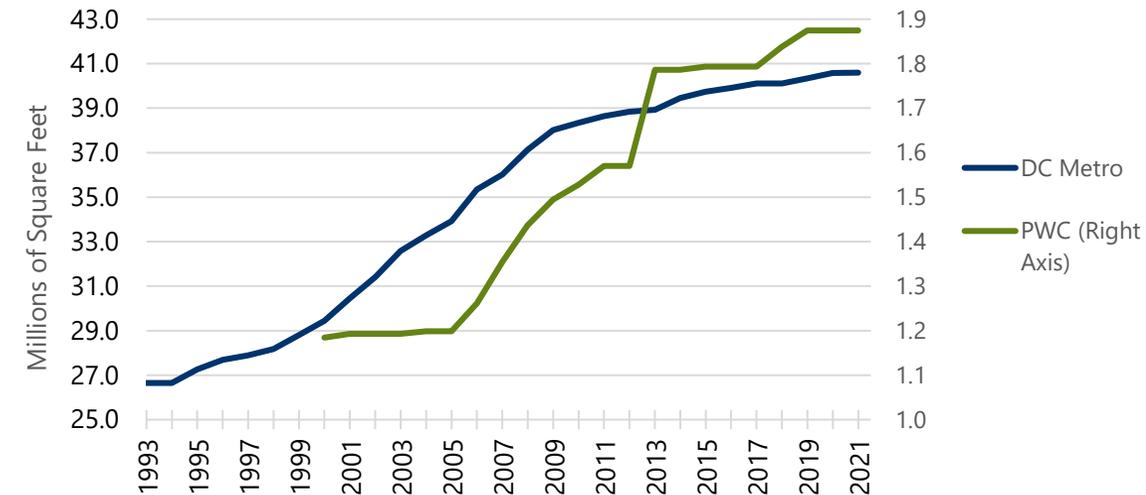
- Kaiser Permanente–Woodbridge: 335,000 sq ft, 2019
- Kaiser Permanente–Haymarket: 35,000 sq ft, 2017
- Light Wave Dental I: 8,800 sq ft, 2019

Prince William County represents 4.6% of DC MSA inventory, as tracked by CoStar, up from 4.0% in 2000. The county has captured 12% of new development between 2016 and 2021.

- Average Annual Growth Rates
  - 2005–2019: 3.3%, 48,280 sq ft
  - 2000–2021: 2.3%, 32,862 sq ft

At over 300KSF, Kaiser Permanente's state-of-the-art medical center in Woodbridge, slated to open in June 2022, is an unusually large addition to the region's medical office inventory. The addition of this facility single-handedly far exceeds the county's average annual buildout and even exceeds the metro-wide average. Over the long-term, medical office space buildout is projected at between 10,000 and 40,000 SF per year, equivalent to the county capturing between 5% and 20% of metro-wide medical office development (if assumed to continue at a rate of 200KSF per year).

**Cumulative Medical Office Inventory, 1993–2021**



Source: CoStar

**Washington DC MSA Average Annual Growth in Medical Office Inventory**

Period	Rate	Square Feet
1994–2000	1.7%	465,732
2000–2009	2.9%	952,966
2009–2021	0.5%	214,972
2000–2021	1.5%	531,255

Source: CoStar



# Distribution/Logistics

Extremely strong demand for distribution space nationally and a lack of suitable sites located in infill areas close to customers have contributed to soaring land costs and competition with other uses.

According to ULI, "In pulling e-commerce penetration forward, the...pandemic amplified the need for resilient supply chains and modern stock, which, in turn, has propelled demand for logistics real estate." "Given record competition in the market, developers are working quickly to monetize zoned and entitled land." Construction starts of logistics space has reached new quarterly peaks.

Recent major project wins in PWC include:

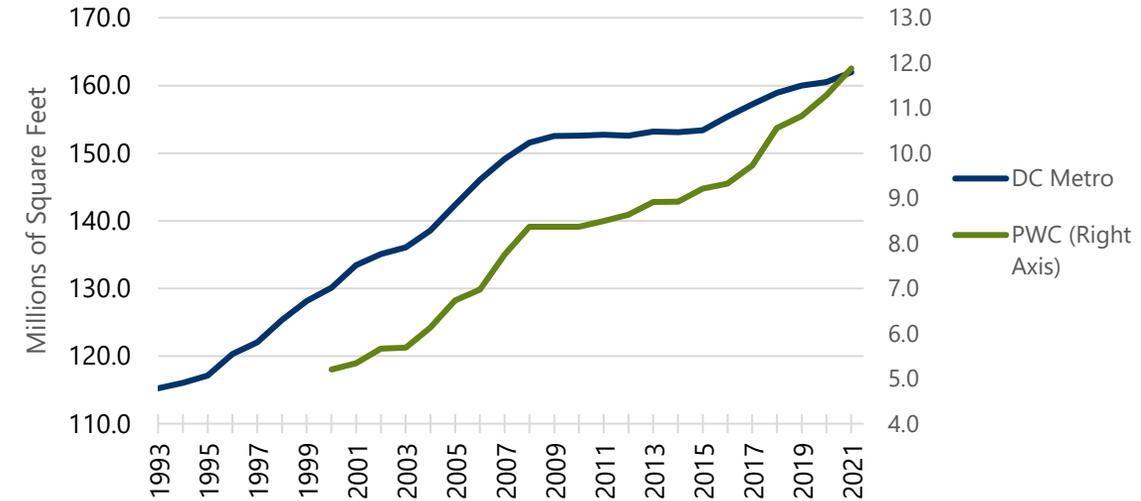
- Amazon: 250,000 sq ft, 2020
- US Foods: 220,000 sq ft, 2017
- International Gourmet Foods: 139,500 sq ft, 2020
- Becknell Industrial: 113,000 sq ft, 2020

Prince William County represents 7.3% of DC MSA inventory, up from 4.0% in 2000. Notably, from 2016–2021, PWC has accounted for nearly 39% of new inventory metro-wide. (CoStar)

- Average Annual Growth Rates
  - 2003–2008: 8.0%, 535,068 sq ft
  - 2008–2016: 1.4%, 119,620 sq ft
  - 2016–2021: 5.0%, 511,273 sq ft
  - 2000–2021: 4.1%, 318,077 sq ft

PWC's location along I-95 and I-66, proximity to the most densely populated portions of the DC metro area, and availability of land that could potentially be used for logistics development means such uses will continue to be in high demand for the foreseeable future. PWC is poised to capture a significant share of DC metro buildout. Projected buildout demand is estimated at between 200KSF and 1MSF annually, equivalent to the county capturing between 10% and 50% of metro-wide logistics development (if assumed to continue at a rate of 2MSF per year).

**Cumulative Logistics Inventory, 1993–2021**



Source: CoStar

**Washington DC MSA Average Annual Growth in Logistics Inventory**

Period	Rate	Square Feet
1995–2008	2.0%	2,647,929
2008–2021	0.5%	802,557
2000–2021	1.1%	1,517,622

Source: CoStar



# Manufacturing

Within the industrial real estate market, manufacturing has taken a backseat to distribution and logistics, with considerably less new space built over the last 10 years both regionally and in the county.

Recent major project wins in PWC include the following:

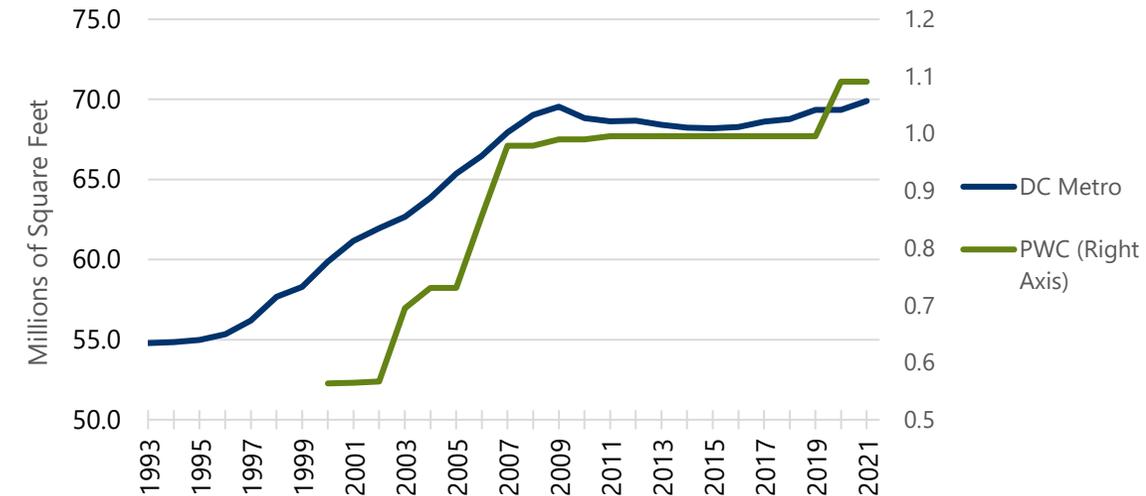
- NCS Technologies I: 108,000 sq ft, 2021
- Planet Direct: 110,000 sq ft, 2020
- Dulles Glass & Mirror: 84,000 sq ft, 2017

Prince William County represents 1.6% of DC MSA inventory, up from 0.9% in 2000. From 2016-2021, PWC has accounted for about 6% of new inventory metro-wide.

- Average Annual Growth Rates  
2002–2007: 11.9%, 82,450 sq ft  
2000–2021: 3.4%, 25,091 sq ft

Project wins in PWC since 2019 will collectively add 434KSF of manufacturing space in the county, considerably above recent average buildout levels. This could indicate a shift in the attractiveness of PWC for manufacturing space. For this reason, a fairly wide range for future annual buildout is provided, projected at between 20,000 SF and 200,000 SF, equivalent to the county capturing between 6% and 66% of metro-wide manufacturing/light industrial (if assumed to continue at a rate of 300KSF per year).

**Cumulative Manufacturing Inventory, 1993–2021**



Source: CoStar

**Washington DC MSA Average Annual Growth in Manufacturing Inventory**

Period	Rate	Square Feet
1996–2009	1.8%	1,091,013
2009–2015	-0.3%	-224,118
2015–2021	0.4%	286,204
2000–2021	0.7%	477,761

Source: CoStar



# Data Centers

Demand is high and expected to grow, fueling growth, but “space and power limitations could constrain new development, which may ... lead more developers to explore vertical construction of data centers.” (CBRE)

US Data Center industry forecast to increase in value by 8.6% annually from 2021 to 2026 (ResearchAndMarkets.com)

Global Data Center industry five- to ten-year forecasts range from 5.5% to 13.5% annual growth rates.

Recent major project wins in PWC include:

- Gainesville Crossing – Building 1: 500,000 sq ft, 2020
- Manassas Corporate Center – Building 1: 460,248 sq ft, 2016
- Manassas Corporate Center – Building 2: 392,565 sq ft, 2019
- DC-5 Building 1: 300,000 sq ft, 2021

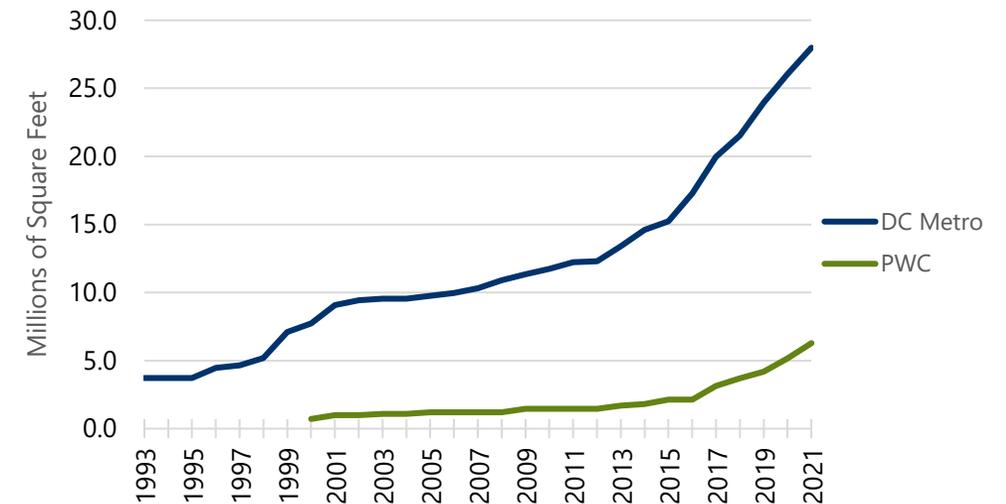
Prince William County represents 24% of DC MSA inventory. From 2016-2021, PWC has accounted for about 39% of new inventory metro-wide.

- Average Annual Growth Rates
  - Prince William, 2012–2021: 18.3%, 536,628 sq ft
  - Prince William, 2000–2021: 11.5%, 264,637 sq ft
  - Loudoun, 2012–2021: 20.1%, 2,100,000 sq ft

PWC’s current data center inventory is about 5MSF, with 2-3MSF currently under construction, and another 8-10MSF potentially in the development pipeline. Neighboring Loudoun County has an inventory of 26MSF, with 4MSF in development. Loudoun is currently studying the potential of enabling data center development in a portion of the county south of Dulles Airport (tentatively dubbed “Dulles Cloud South”) that could support upwards of 56MSF near the PWC border.

The bulk of data center development in the region has been quite recent, within the last several years. This makes projecting future buildout challenging, though all indications point to sustained high growth of the sector into the foreseeable future. Metro-wide, data center buildout is projected at 2-4MSF per year, based on the recent 5-year average of 2.1 MSF. Assuming a capture rate for PWC in the 20%-60% range, future annual data center buildout is projected at 400,000 to 2.4 million SF per year.

## Cumulative Data Hosting Inventory, 1993–2021



Source: CoStar and Prince William County

## Washington DC MSA Average Annual Growth in Data Hosting Inventory

Period	Rate	Square Feet
1995–2001	16.5%	892,477
2001–2012	2.8%	292,437
2012–2021	9.6%	1,741,522
2000–2021	6.4%	964,176

Source: CoStar



# Lab/R&D Space

Observers see strong demand and limited supply of lab/R&D space:

- Demand across all major US markets grew by 34% from mid-2020 to mid-2021. (CBRE)
- Greater DC Mid-Atlantic market is sixth largest.
- “Rents continue to grow quickly, particularly in ascendant markets like Philadelphia and Washington, D.C.-Baltimore.” (CBRE, mid-2021)

The global Clinical Laboratory Services industry is forecast to grow 5.5% annually from 2020 to 2026 (Mordor Intelligence)

Recent major project wins in PWC include:

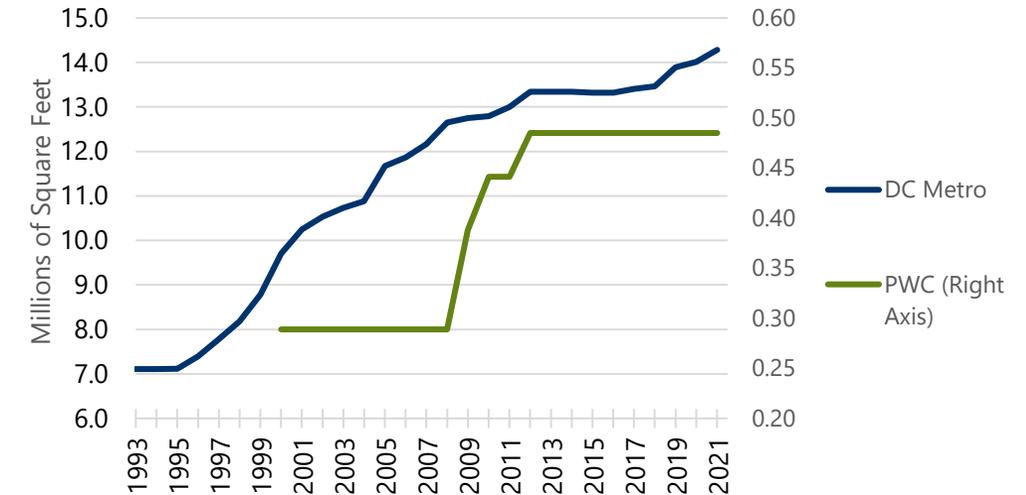
- NoVa BioScience Center, 30,000 sq ft, 2020
- Ceres Nano Expansion, 15,000 sq ft, 2020
- Caerus Discovery, 1,500 sq ft, 2022

Prince William County represents 3.6% of DC MSA inventory, up slightly from 3.0% in 2000. Recent PWC lab space wins totaling 54KSF represent about 5% of metro-wide lab development since 2016. (CoStar)

- Average Annual Growth Rates  
2000–2021: 2.8%, 9,340 sq ft

PWC has not been a major player in the DC lab space market, compared to more established locations like Montgomery County in Maryland, but may be well poised to capture a growing share of the pie. Lab space users tend to prefer to locate near each other to take advantage of a shared talent pool and other synergies. Once a lab space node is established, momentum builds and attracts further lab development interest. Metro-wide, lab/R&D space buildout is projected at 200-300KSF per year, based on the recent 5-year average of about 200KSF. Assuming a capture rate for PWC in the 5-25% range, future annual data center buildout is projected at 10-75KSF per year.

**Cumulative R&D/Lab Inventory, 1993–2021**



Source: CoStar

**Washington DC MSA Average Annual Growth in R&D Inventory**

Period	Rate	Square Feet
1995–2001	6.3%	521,640
2001–2012	2.4%	280,804
2018–2021	2.0%	273,574
2000–2021	1.9%	218,010

Source: CoStar



## 4. DEMAND ANALYSIS

# Projected Space Demand

To project space demand, a model was employed that extrapolates buildout by facility type using a combination of the county parcel data, project wins data, annual real estate inventory data for the DC Metro Area from CoStar. Projections were informed by national, regional, and local market trends for each facility type, as discussed in the Real Estate Trends section of this report.

The table at top right shows low, midrange, and high scenarios for project annual demand for space by facility type. Assumptions leading to these buildout projections are discussed on the following slides. These values are to be interpreted as the amount of new annual buildout (in square feet) that the Prince William County real estate market can be expected to support, absent any supply-side constraints.

The table at bottom right multiplies out low, midrange, and high values for the 20-year timeframe, through 2041. This represents total demand for space in SF through 2041.

## Projected Annual Space Demand (SF), Prince William County

	Low	Midrange	High
Office	20,000	35,000	50,000
Medical Office	30,000	40,000	50,000
Distribution/Logistics	200,000	600,000	1,000,000
Manufacturing	20,000	110,000	200,000
Data Centers	400,000	1,400,000	2,400,000
Lab	10,000	42,500	75,000
<b>Total</b>	<b>680,000</b>	<b>2,227,500</b>	<b>3,775,000</b>

Source: Camoin Associates

## 20-Year Projected Space Demand (SF), 2021-2041

	Low	Midrange	High
Office	400,000	700,000	1,000,000
Medical Office	600,000	800,000	1,000,000
Distribution/Logistics	4,000,000	12,000,000	20,000,000
Manufacturing	400,000	2,200,000	4,000,000
Data Centers	8,000,000	28,000,000	48,000,000
Lab	200,000	850,000	1,500,000
<b>Total</b>	<b>13,600,000</b>	<b>44,550,000</b>	<b>75,500,000</b>

Source: Camoin Associates



# Projected Space Demand (SF) – Low, Midrange, High Scenarios

These tables (low, midrange, and high projections) show cumulative projected buildout by use type for each 5-year period through 2026, 2031, 2036, and 2041. This represents total cumulative demand for space in SF through each period. For example, under the midrange projection, there is expected total demand of 11.1MSF of space across use types through 2026, and 22.2MSF through 2031 (which includes the 11.1MSF through 2026).

## Projected Space Demand (SF) through 2041, Low Projection

	5-Yr Demand through 2026	10-Yr Demand through 2031	15-Yr Demand through 2036	20-Yr Demand through 2041
Office	100,000	200,000	300,000	400,000
Medical Office	150,000	300,000	450,000	600,000
Distribution/Logistics	1,000,000	2,000,000	3,000,000	4,000,000
Manufacturing	100,000	200,000	300,000	400,000
Data Centers	2,000,000	4,000,000	6,000,000	8,000,000
Lab	50,000	100,000	150,000	200,000
<b>Total</b>	<b>3,400,000</b>	<b>6,800,000</b>	<b>10,200,000</b>	<b>13,600,000</b>

Source: Camoin Associates

## Projected Space Demand (SF) through 2041, Midrange Projection

	5-Yr Demand through 2026	10-Yr Demand through 2031	15-Yr Demand through 2036	20-Yr Demand through 2041
Office	175,000	350,000	525,000	700,000
Medical Office	200,000	400,000	600,000	800,000
Distribution/Logistics	3,000,000	6,000,000	9,000,000	12,000,000
Manufacturing	550,000	1,100,000	1,650,000	2,200,000
Data Centers	7,000,000	14,000,000	21,000,000	28,000,000
Lab	212,500	425,000	637,500	850,000
<b>Total</b>	<b>11,137,500</b>	<b>22,275,000</b>	<b>33,412,500</b>	<b>44,550,000</b>

Source: Camoin Associates

## Projected Space Demand (SF) through 2041, High Projection

	5-Yr Demand through 2026	10-Yr Demand through 2031	15-Yr Demand through 2036	20-Yr Demand through 2041
Office	250,000	500,000	750,000	1,000,000
Medical Office	250,000	500,000	750,000	1,000,000
Distribution/Logistics	5,000,000	10,000,000	15,000,000	20,000,000
Manufacturing	1,000,000	2,000,000	3,000,000	4,000,000
Data Centers	12,000,000	24,000,000	36,000,000	48,000,000
Lab	375,000	750,000	1,125,000	1,500,000
<b>Total</b>	<b>18,875,000</b>	<b>37,750,000</b>	<b>56,625,000</b>	<b>75,500,000</b>

Source: Camoin Associates

# Projected Space Demand by Facility Type

Projected Prince William County space demand by facility type are summarized in the following tables and charts. 20-year space demand is projected to range from 13.6MSF under the low scenario to 75.5MSF under the high scenario.

Data centers account for 63% of future space demand under the midrange scenario, and distribution centers another 27%. No other use accounts for more than 5%.

## 20-Year Projected Space Demand (SF), 2021-2041

	Low	Midrange	High
Office	400,000	700,000	1,000,000
Medical Office	600,000	800,000	1,000,000
Distribution/Logistics	4,000,000	12,000,000	20,000,000
Manufacturing	400,000	2,200,000	4,000,000
Data Centers	8,000,000	28,000,000	48,000,000
Lab	200,000	850,000	1,500,000
<b>Total</b>	<b>13,600,000</b>	<b>44,550,000</b>	<b>75,500,000</b>

Source: Camoin Associates

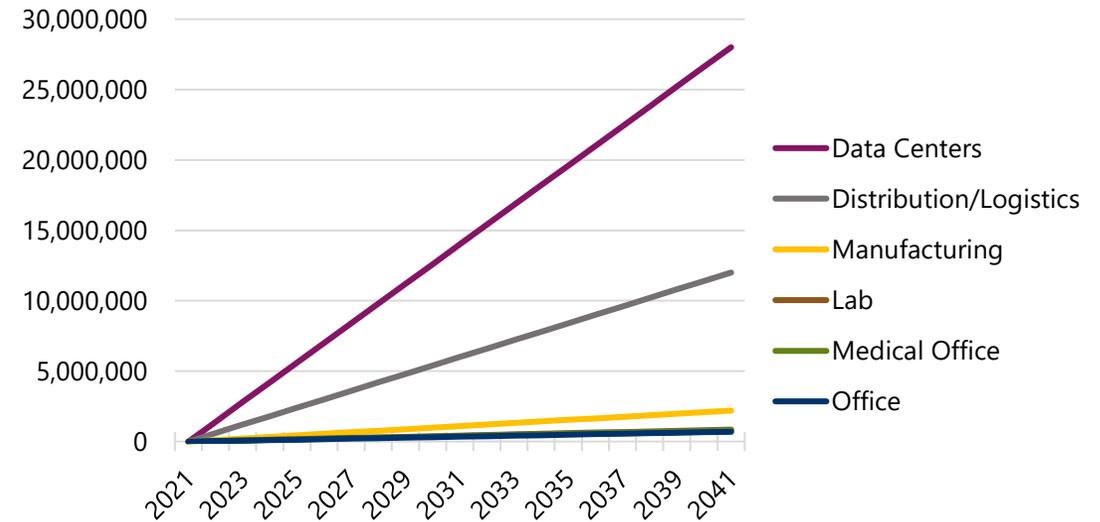
## 20-Year Projected Space Demand (SF), 2021-2041

### Share of Total

	Low	Midrange	High
Office	3%	2%	1%
Medical Office	4%	2%	1%
Distribution/Logistics	29%	27%	26%
Manufacturing	3%	5%	5%
Data Centers	59%	63%	64%
Lab	1%	2%	2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

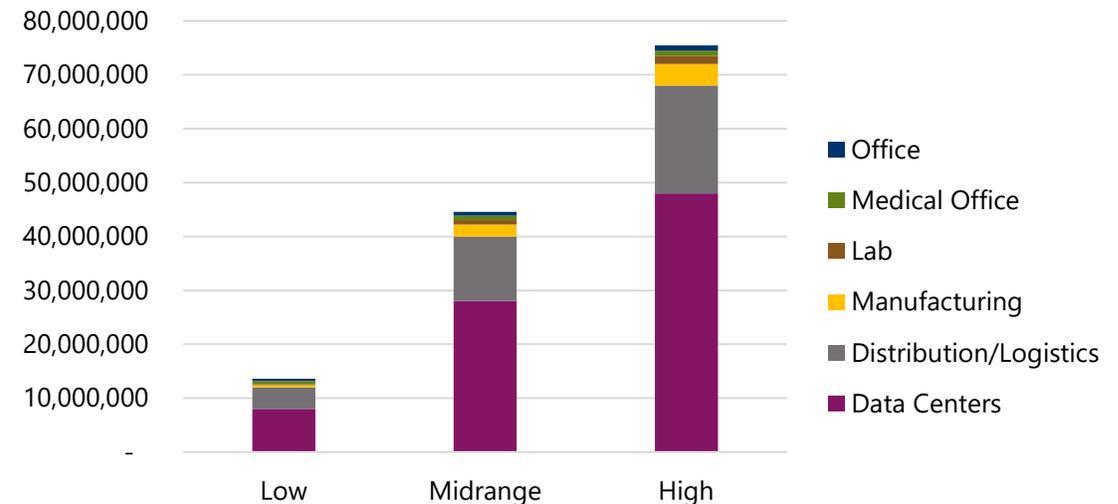
Source: Camoin Associates

## Projected Space Demand (SF), Midrange Scenario



Source: Camoin Associates Projections

## 20-Year Projected Space Demand (SF), 2021-2041



Source: Camoin Associates Projections



# Space Demand by Targeted Industry

To show how projected space demand corresponds to the county's targeted industries, we developed a "crosswalk" between facility type and targeted industry based on typical space needs of the sub-industries within each cluster. The crosswalk was developed under the following assumptions:

- Projected office space demand reflects economy-wide office development rather than office needs specific to the target industries. The level of demand quantified is specific to standalone or "pure" office space that is not secondary to another use, as in a flex industrial building that incorporates both industrial and office space. The county's six targeted industries are estimated to account for about 25% of projected office demand, based on current and projected employment share. Of this demand, Federal Government Contracting and ICT are expected to account for the vast majority: 40% and 50%, respectively. Other clusters will account for the remaining 10%.
- Medical office space demand is assumed to correspond entirely to the Healthcare cluster.

- Distribution/logistics space demand corresponds entirely to the Logistics cluster.
- Manufacturing space demand corresponds to the Advanced Manufacturing cluster, which is estimated to represent about 40% of total projected manufacturing space demand based on current and projected employment share. Remaining demand will come from manufacturing industries outside the cluster.
- Data center demand space demand corresponds entirely to the ICT cluster.
- Lab space demand corresponds entirely to the Life Sciences cluster.

The matrix below shows how projected space demand (midrange scenario) is allocated across the six facility types and six targeted industries. Note that office and manufacturing space demand is reduced to account for the fact that targeted industries account for a subset of total demand.

**20-Year Projected Space Demand (SF) by Facility Type by Target Industry**

	Midrange 20-Yr Demand Projection (SF)	Target Industry Share (%)	Target Industry Share (SF)	Advanced Manufacturing	Federal Gov't Contracting	Healthcare	ICT	Life Sciences	Logistics
Office	700,000	25%	175,000	-	70,000	-	87,500	8,750	8,750
Medical Office	800,000	100%	800,000	-	-	800,000	-	-	-
Distribution/Logistics	12,000,000	100%	12,000,000	-	-	-	-	-	12,000,000
Manufacturing	2,200,000	40%	880,000	880,000	-	-	-	-	-
Data Centers	28,000,000	100%	28,000,000	-	-	-	28,000,000	-	-
Lab	850,000	100%	850,000	-	-	-	-	850,000	-
<b>Total</b>	<b>44,550,000</b>	<b>96%</b>	<b>42,705,000</b>	<b>880,000</b>	<b>70,000</b>	<b>800,000</b>	<b>28,087,500</b>	<b>858,750</b>	<b>12,008,750</b>

Source: Camoin Associates



# Space Demand by Targeted Industry

The following charts and tables summarize space demand by targeted industry under the low, midrange, and high growth scenarios. Expectedly, the ICT and Logistics sectors account for the lion's share of demand since they are associated with the high-space-utilizing data center and distribution center facility types.

## 20-Year Projected Space Demand (SF) by Target Industry, 2021-2041

	Low	Midrange	High
Advanced Manufacturing	160,000	880,000	1,600,000
Federal Gov't Contracting	40,000	70,000	100,000
Healthcare	600,000	800,000	1,000,000
ICT	8,050,000	28,087,500	48,125,000
Life Sciences	205,000	858,750	1,512,500
Logistics	4,005,000	12,008,750	20,012,500
<b>Total</b>	<b>13,060,000</b>	<b>42,705,000</b>	<b>72,350,000</b>

Source: Camoin Associates

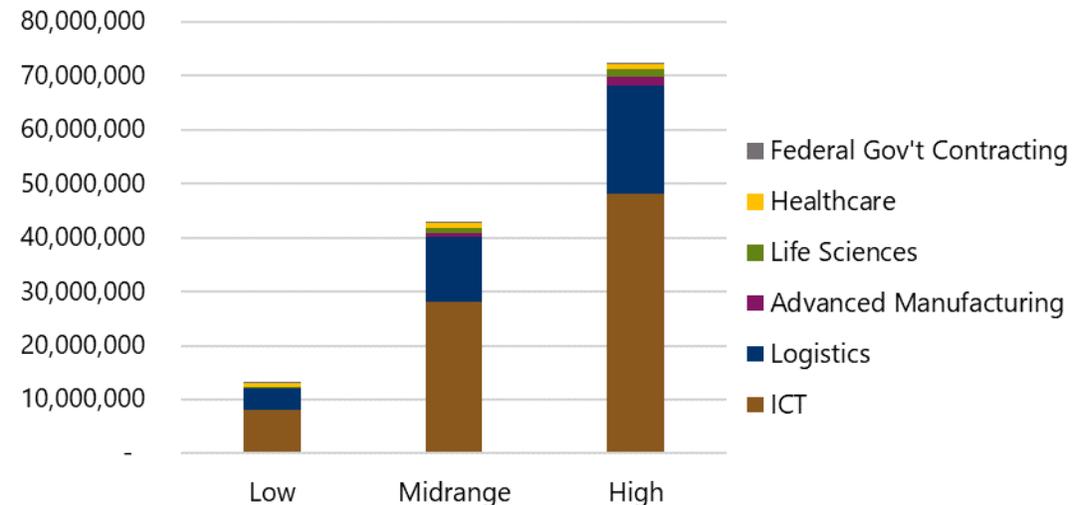
## 20-Year Projected Space Demand (SF) by Target Industry, 2021-2041

### Share of Total

	Low	Midrange	High
Advanced Manufacturing	1%	2%	2%
Federal Gov't Contracting	0%	0%	0%
Healthcare	5%	2%	1%
ICT	62%	66%	67%
Life Sciences	2%	2%	2%
Logistics	31%	28%	28%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Camoin Associates

## 20-Year Projected Space Demand (SF) by Target Industry



Source: Camoin Associates Projections



## 5. SUPPLY ANALYSIS

# Supply Analysis Assumptions

To determine the capacity of land parcels within the county to support projected land demand from targeted industries, we examined buildout potential based on the county's zoning and future land use classifications. The county's Build-Out Analysis, updated annually, contains information on the amount of additional development that the county can support. Planning staff perform a series of calculations incorporating developable parcel acreage and floor area ratios (FARs) to estimate remaining buildout potential in Prince William County. For the purposes of this analysis, the county is carved into a series of "component areas" based on current and future development potential. These component areas and the corresponding acreage and gross floor area available for future buildout are presented on the following page, as adapted from the 2020 Build-Out Analysis.

For the purposes of evaluating targeted industry buildout capacity, the county's existing developed area, residential development inventory, rural area, and non-residential inventory committed for other uses are considered not available for target industry development.

Areas suitable for targeted industry development can be grouped into two categories: (1) Areas currently zoned to support target industry development and (2) Areas with future-land use designations that would support target industry development.

The first category is further divided into "uncommitted" and "committed" parcels. Uncommitted parcels are not known to be targeted for a specific type of development and are generally available to be built on. Uncommitted parcels include approximately 2,250 acres and offer an overall buildout potential of about 22.8MSF (assuming the "average" FARs used in the Build-Out Analysis). Certain committed parcels are already owned by data center developers and will likely be built out as such in the future. These parcels committed to data centers

total 823 acres and could support 12.7MSF of data center development. There are also parcels currently committed to "other uses" not relevant to the target industries and are not considered to offer buildout capacity for the purpose of this analysis.

The second category is comprised of several component areas that are intended for future development consistent with their long-range land use designations. While not immediately available for development, re-zoning of these areas is likely to occur in the foreseeable future. This category includes the following component areas:

- Undeveloped Area (in the county's development area but currently zoned A-1)
- Sector Plans covering I-66/Route 29 and Government Center
- Revitalization Areas of Woodbridge, Triangle, and Yorkshire
- Small Areas Plans covering Innovation Park, Independent Hill, Dale City, The Landing, and North Woodbridge.

These component areas that make up the second category collectively include approximately 3,800 acres poised for development or redevelopment and offer an overall buildout potential of about 24.1MSF.

County-wide across all component areas, a total of 7,436 acres either currently are or will likely be available for development of 64.9 MSF of non-residential space, including both targeted industry facility types and other non-residential space types such as retail, hotel, civic, and institutional.



# Summary of Buildout Capacity by Component Area

## Non-Residential Future Buildout Capacity, Prince William County, as of 12/31/2020

Component Areas	Component Area Description	Future Use Potential Determined By	Available Acreage for Non-Residential (Undeveloped or Underdeveloped)	Additional Non-Residential Buildout Capacity (Gross Floor Area, in millions of SF)	Available Acreage for Potential Data Center Buildout	Data Center Potential Buildout Capacity (millions of SF)
<b>No Targeted Industry Buildout Capacity</b>						
Developed Area	Area containing projects that have reached completion, no additional land area available for development	N/A	-	-	-	-
Non-Residential Inventory, Committed for Other Uses	Contains projects that have rezoning approval and are known to be committed for other uses	Zoning	579	5.4	-	-
<b>Areas Currently Zoned for Target Industry Buildout</b>						
Non-Residential Inventory, Uncommitted	Contains projects that have rezoning approval - Re-zoned for higher-intensity use but unbuilt and not known to be committed for a certain use	Zoning	2,256	22.8	330	5.0
Non-Residential Inventory, Committed for Data Centers	Contains projects that have rezoning approval and are known to be owned by known data center developers	Zoning	823	12.6	823	12.7
<b>Total</b>			<b>3,079</b>	<b>35.4</b>	<b>1,153</b>	<b>17.7</b>
<b>Areas Designated for Future Non-Residential Zoning</b>						
Undeveloped Area	A-1 zoned land not in the rural area and not developed; also includes some undeveloped R-4 and B-1 zoned lands currently planned for a different use; assumes these areas will be rezoned to higher intensity	Long-Range Land Use Class	1,039	8.7	1,029	8.7
Sector Plans	I-66/Route 29 and Government Center mixed-use plans - currently zoned A-1	Long-Range Land Use Class	238	1.8	238	1.8
Revitalizations Areas	Woodbridge, Triangle, and Yorkshire - underutilized commercial corridors; zoned non-ag and assumed will be rezoned to higher intensity	Long-Range Land Use Class	298	1.4	234	1.0
Small Area Plans*	Detailed land use plans for small areas	Small Area Plan/Long-Range Land Use Class	2,203	12.2	777	4.2
<b>Total</b>			<b>3,778</b>	<b>24.1</b>	<b>2,278</b>	<b>15.7</b>
<b>Areas Not Intended for Future Non-Residential Development</b>						
Residential Inventory	Areas containing residential projects that have rezoning approval and can be in any phase of development	N/A	-	-	-	-
Rural Area	Area intended to be preserved as low-intensity uses	N/A	-	-	-	-
<b>Grand Total, All Component Areas</b>			<b>7,436</b>	<b>64.9</b>	<b>3,431</b>	<b>33.4</b>

\*GFA modified to include only office and industrial portion of new buildout capacity for non-residential total.

Source: Prince William County Buildout Analysis 2020



# Conformance of Use Types with Zoning Districts

A review of the County's Zoning Code was performed to determine which zoning districts allow the facility types relevant to the county's target industries. This review can be summarized as follows and informs assumptions used to apportion buildout capacity by facility type.

- **Office** – Allowed by right in all non-residential districts
- **Medical Office** – Allowed by right in all non-residential districts EXCEPT industrial districts
- **Distribution**
  - Allowed by right in M/T;
  - Up to 350KSF allowed by right in M-1 if inside overlay;
  - Up to 250KSF allowed by right in M-2 if inside overlay;
  - Under 80KSF allowed by right in M-1 & M-2 if outside overlay.
- **Manufacturing** – Allowed by right in M-1, M-2, & M-T.
- **Data Centers** – Allowed by right in all office and industrial districts if in overlay. Allowed with SUP in office and industrial districts if outside overlay. Allowed with SUP in B-1.
- **Lab**
  - Non-HAZMAT research and development uses allowed by right in all office and industrial districts.
  - HAZMAT research and development use allowed with SUP in M-1.

- All uses allowed in PBD and PMD if allowed in an underlying "land bay." Land bays may be designated as B-1, B-2, any office district, or M-2.

For component areas that are expected to be re-zoned in the future, their designated long-range land use classifications were cross-referenced against zoning districts per the Zoning and Comprehensive Plan Designations Compatibility Matrix found in the county's 2008 Comprehensive Plan (see appendix). The table on the following page presents assumptions employed for determining target industry facility type compatibility with both zoning districts and long-range land use classifications.



### Facility Type Compatibility with Zoning Districts and Long-Range Land Use Classifications

Zoning District	Description	Office	Medical Office	Distribution Center	Manufacturing / Industrial	Data Centers	Lab/R&D
<b>B-1</b>	General Business	■	■	○	○	▲	○
<b>B-2</b>	Neighborhood Business	■	■	○	○	○	○
<b>B-3</b>	Convenience Retail	■	■	○	○	○	○
<b>O(L)</b>	Low-Rise Office	■	■	○	○	▲	▲
<b>O(M)</b>	Mid-Rise Office	■	■	○	○	▲	▲
<b>O(H)</b>	High-Rise Office	■	■	○	○	▲	▲
<b>O(F)</b>	Office/Flex (R&D)	■	■	○	○	▲	▲
<b>M-1</b>	Heavy Industrial	■	○	▲	■	▲	■
<b>M-2</b>	Light Industrial	■	○	▲	■	▲	▲
<b>M/T</b>	Industrial/Transportation	■	○	■	■	▲	▲
<b>PBD</b>	Planned Business District	■	▲	○	▲	▲	▲
<b>PMD</b>	Planned Mixed Use District	■	▲	○	▲	▲	▲
<b>V</b>	Village	■	■	○	○	○	○

Long-Range Land Use	Description	Office	Medical Office	Distribution Center	Manufacturing / Industrial	Data Centers	Lab/R&D
<b>CEC</b>	Community Employment Center	■	■	○	○	▲	▲
<b>EI</b>	Industrial Employment	■	○	▲	■	▲	▲
<b>FEC</b>	Flexible Use Employment Center	■	○	▲	■	▲	▲
<b>GC</b>	General Commercial	■	■	○	○	▲	○
<b>NC</b>	Neighborhood Commercial	■	■	○	○	○	○
<b>O</b>	Office	■	■	○	○	▲	▲
<b>RCC</b>	Regional Commercial Center	■	■	○	○	▲	○
<b>REC</b>	Regional Employment Center	■	■	○	○	▲	▲
<b>UMU</b>	Urban Mixed-Use	■	■	○	○	▲	▲
<b>VMU</b>	Village Mixed-Use	■	■	○	○	○	○

**Key:**

■ = Allowed by right

▲ = Allowed with conditions

○ = Not allowed

**Source:** Prince William County Zoning Code; assumptions made by Camoin Associates



# Uncommitted Parcels by Acreage and Zoning District

As of 12/31/2020, there were 313 parcels in the county's non-residential inventory that were uncommitted for development, meaning that they are zoned appropriately for non-residential development and are not committed for known projects. These parcels are available for future non-residential buildout. The 313 parcels comprise a total of 2,256 acres and could support buildout of approximately 23MSF.

The average parcel size across all parcels is 7.2 acres. 85% of these parcels are less than 10 acres in area. There are only 16 parcels larger than 30 acres.

**Uncommitted Parcels by Acreage and Zoning District, as of 12/31/2020**

Zoning District	Number of Parcels by Acreage Range							Total Parcels	Total Acres	Average Parcel Size	Buildout Potential (SF)
	0-10	10-20	20-30	30-40	40-50	50-60	60-100				
A-1	4	3	-	-	-	-	-	7	52	7.4	102,666
B-1	97	11	1	1	-	1	1	112	620	5.5	5,462,169
B-2	6	-	-	-	-	-	-	6	18	2.9	134,915
B-3	4	-	-	-	-	-	-	4	5	1.2	16,302
M/T	1	-	-	-	-	-	-	1	4	4.0	623,627
M-1	26	1	-	-	-	2	-	29	206	7.1	1,976,387
M-2	35	4	1	-	-	2	1	43	419	9.7	3,686,602
O(F)	1	-	-	-	-	-	-	1	1	0.9	26,983
O(H)	5	-	-	-	-	-	-	5	17	3.5	207,413
O(L)	10	1	-	-	-	-	-	11	33	3.0	179,970
O(M)	13	2	-	-	-	-	-	15	86	5.7	787,049
PBD	14	1	1	-	-	1	2	19	330	17.4	2,585,626
PMD	27	5	1	1	2	-	1	37	362	9.8	5,961,514
PMR	6	-	-	-	-	-	-	6	19	3.2	246,910
RPC	13	-	-	1	-	-	-	14	79	5.6	762,159
SR-1	1	-	-	-	-	-	-	1	5	5.0	20,000
V	2	-	-	-	-	-	-	2	2	1.0	15,810
<b>Total</b>	<b>265</b>	<b>28</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>5</b>	<b>313</b>	<b>2,256</b>	<b>7.2</b>	<b>22,796,101</b>

Source: Prince William County Planning Department



# Uncommitted Parcels in Data Center Overlay

Of the 313 uncommitted parcels, 79 parcels both fall within the Data Center Opportunity Zone Overlay District (DCOZOD) and have zoning that is compatible with data center development. These 79 parcels comprise a total of 684 acres.

The average parcel size across all parcels is 8.7 acres. 82% of these parcels are less than 10 acres in area. There are only 6 parcels larger than 30 acres, which is generally the minimum acceptable size for data center development. Many developers seek sites larger than 100 acres. These 6 parcels collectively comprise 330 acres and could support an estimated 5MSF of data center development (assuming an FAR of 0.35).

This is in addition to the 12.7MSF of data center space expected to be built out on "committed" parcels totaling 823 acres, shown at in the bottom table at right.

**Uncommitted Parcels in DCOZOD, by Acreage and Zoning District**

Zoning District	Number of Parcels by Acreage Range							Total Parcels	Total Acres	Average Parcel Size
	0-10	10-20	20-30	30-40	40-50	50-60	60-100			
<b>B-1</b>	14	-	-	-	-	-	-	14	30	2.1
B-3	4	-	-	-	-	-	-	4	5	1.2
<b>M/T</b>	1	-	-	-	-	-	-	1	4	4.0
<b>M-1</b>	17	1	-	-	-	2	-	20	181	9.1
<b>M-2</b>	21	3	-	-	-	-	-	24	130	5.4
<b>O(H)</b>	2	-	-	-	-	-	-	2	8	3.8
<b>O(L)</b>	1	1	-	-	-	-	-	2	15	7.3
<b>O(M)</b>	1	-	-	-	-	-	-	1	6	6.4
<b>PBD</b>	5	1	-	-	-	1	1	8	177	22.1
<b>PMD</b>	3	1	1	1	1	-	-	7	133	19.0
PMR	2	-	-	-	-	-	-	2	4	2.2
<b>Total</b>	<b>71</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>85</b>	<b>693</b>	<b>8.2</b>
<b>Total in Compatible Districts*</b>	<b>65</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>79</b>	<b>684</b>	<b>8.7</b>

\*Zoning districts compatible with data center development are bolded in the first column.

**Note:** Data center development is permitted in PBD and PMD if allowed in an underlying "land bay." Land bays may be designated as B-1, B-2, any office district, or M-2.

**Source:** Prince William County Planning Department

**Committed Data Center Parcels**

Zoning District	Acreage	Buildout Potential (SF)
M-2	295	2,773,104
PBD	528	9,903,473
<b>Total</b>	<b>823</b>	<b>12,676,577</b>

**Source:** Prince William County Planning Dept.



# Areas with Future Land Uses Consistent with Target Industries

Buildout capacity for the undeveloped area, sector plans, and revitalization areas by land use classification are shown in the table below. These areas are not currently zoned to support non-residential development but have been identified for future re-zoning.

Please refer to the Prince William County 2020 Build-Out analysis for a discussion of methodology used to determine buildout capacity.

**Buildout of Undeveloped Area, Sector Plans, and Revitalization Areas by Land Use Classification**

Long-Range Land Use Class	Classification Full Name	Undeveloped Area		Sector Plans		Revitalization Areas		Total	
		Undeveloped A-1 Acreage	Avg GFA (SF)	Undeveloped A-1 Acreage	Avg GFA (SF)	Revitalization Acreage	Avg GFA (SF)	Total Acreage	Avg GFA (SF)
CEC	Community Employment Center	180	884,250	99	485,105	43	213,029	322	1,582,384
EI	Industrial Employment	40	323,836	-	-	-	-	40	323,836
FEC	Flexible Use Employment Center	625	5,106,041	-	-	-	-	625	5,106,041
GC	General Commercial	68	444,960	-	-	94	522,629	162	967,589
NC	Neighborhood Commercial	8	38,513	-	-	15	73,508	23	112,021
O	Office	3	25,577	134	1,313,334	14	139,466	151	1,478,377
RCC	Regional Commercial Center	4	17,703	5	24,503	-	-	9	42,206
REC	Regional Employment Center	109	1,886,693	-	-	-	-	109	1,886,693
UMU	Urban Mixed-Use	-	-	-	-	83	536,899	83	536,899
VMU	Village Mixed-Use	-	-	-	-	49	392,000	49	392,000
Existing							(439,888)	-	(439,888)
<b>Total</b>		<b>1,037</b>	<b>8,727,573</b>	<b>238</b>	<b>1,822,942</b>	<b>298</b>	<b>1,437,643</b>	<b>1,573</b>	<b>11,988,158</b>

Source: Prince William County Buildout Analysis 2020



# Small Area Plans Consistent with Target Industries

The compatibility of the county's five small area plans (SAPs) vary with respect to their ability to support target industry land uses. In developing these plans, underlying calculations were made by planning staff to estimate acreage and gross floor area that can support future general office and industrial uses. Given the nature of target industry land uses, these figures were assumed to represent the portion of overall SAP buildout capacity that can support these uses.

It is estimated that across the five SAPs, approximately 12.2MSF of new office and industrial buildout could be supported if rezoned in the future in a way that is consistent with currently assigned future land use classifications.

It is assumed that data centers can be accommodated in the industrial acreage portions of each SAP. There is a total of approximately 777 acres of industrial land in the SAPs, which could support about 4.2MSF of industrial buildout.

## Small Area Plan Buildout Potential

Small Area Plan	Acreage (Vacant and Under-Developed Land)		Office + Industrial			
	Industrial Acreage*	Office GFA (SF)	Industrial GFA (SF)	GFA (SF)		
Innovation Park	807	396	3,574,019	3,056,600	6,630,619	
Independent Hill	238	261	351,527	153,681	505,208	
Dale City	468	-	1,829,576	-	1,829,576	
The Landing	319	51	1,033,876	880,220	1,914,096	
North Woodbridge	371	69	1,262,180	78,251	1,340,431	
<b>Total</b>	<b>2,203</b>	<b>777</b>	<b>8,051,178</b>	<b>4,168,752</b>	<b>12,219,930</b>	

\*Portion of vacant and under-developed acreage that could accommodate industrial development. It is assumed that only industrial acreage within the small area plans can accommodate future data center buildout.

Source: PWC Planning Department



# Buildout Capacity by Facility Type

Based on the supply analysis, county buildout capacity by targeted industry facility type is summarized as follows. It is important to note that there is overlap in buildout capacity across facility types. There is a total of 46.3MSF of buildout capacity in the county, of which 21.6MSF is currently zoned to support target industry development and 24.6MSF is designated for future rezoning to support such development. Different portions of this capacity can be used by multiple facility types.

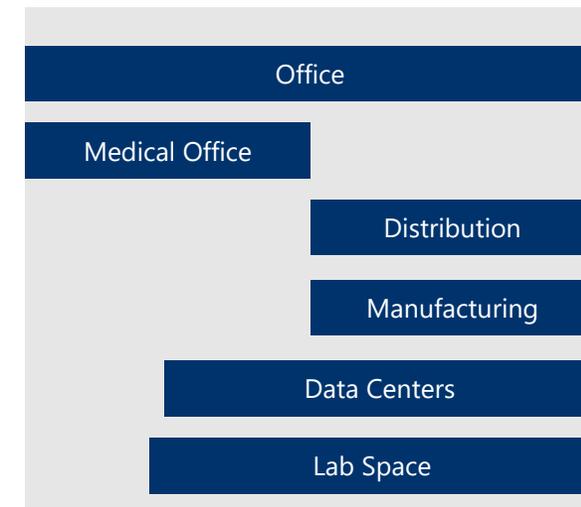
Currently zoned buildout capacity is split between planned zoning districts (i.e., PBD and PMD) and other zones. The zoning designations of "land bays" in planned districts determines the type of development that can occur in each bay. Planned districts account for nearly 40% of buildout capacity in currently zoned areas, which means that actual buildout capacity could be lower if land bays are not zoned to support target industry development.

- Office is the least constrained of all facility types because it can be developed by right in any non-residential district. Though certainly unlikely, 100% (46.3MSF) of target industry buildout capacity could theoretically be used for office development.
- About 66% (30.4MSF) of buildout capacity could be used for medical office space, including 8.5MSF of capacity in currently zoned planned districts. Medical office would be excluded only from industrial districts or M-2 (light industrial) land bays in planned districts.
- Distribution centers are permitted by right in industrial areas and could account for about 34% (15.9MSF) of buildout capacity. They are limited in size in M-1 and M-2

if outside of the E-Commerce Overlay. Distribution centers are often several hundred thousand square feet, often requiring sites of 20 to 50 acres or more. The true amount of distribution center buildout capacity is limited by the number of large, contiguous sites in close proximity to transportation infrastructure.

- Manufacturing space could be developed in up to 53% (24.4MSF) of county buildout capacity, including 8.5MSF of manufacturing space that could be built in planned districts if designated as M-2 land bays that are sufficiently large.
- 85% (39.2MSF) of buildout capacity could be used for Lab/R&D space if non-hazmat. 4% (2.0MSF) could be used for hazmat Lab/R&D space.

## Visual Representation of Buildout Capacity Overlap Across Facility Types



## Buildout Capacity (SF) by Facility Type

Facility Type	Currently Zoned Areas				Total Buildout Capacity	Pct. of Total
	Outside Planned Districts	Inside Planned Districts	Currently Zoned Total	Future Zoned Areas		
Office	13,117,227	8,547,140	21,664,367	24,647,976	46,312,343	100%
Medical Office	6,830,612	8,547,140	15,377,752	15,049,347	30,427,099	66%
Distribution/Logistics	6,286,615	-	6,286,615	9,598,629	15,885,244	34%
Manufacturing	6,286,615	8,547,140	14,833,755	9,598,629	24,432,384	53%
Data Centers*	9,160,617	8,547,140	17,707,757	15,652,889	33,360,646	72%
Lab	7,488,030	8,547,140	16,035,170	23,134,160	39,169,330	85%
<b>Total Capacity</b>	<b>13,117,227</b>	<b>8,547,140</b>	<b>21,664,367</b>	<b>24,647,976</b>	<b>46,312,343</b>	<b>100%</b>

\*Currently zoned areas from data centers includes land inventory committed to data center projects + non-committed land within the DCOZOD on parcels larger than 30 acres.

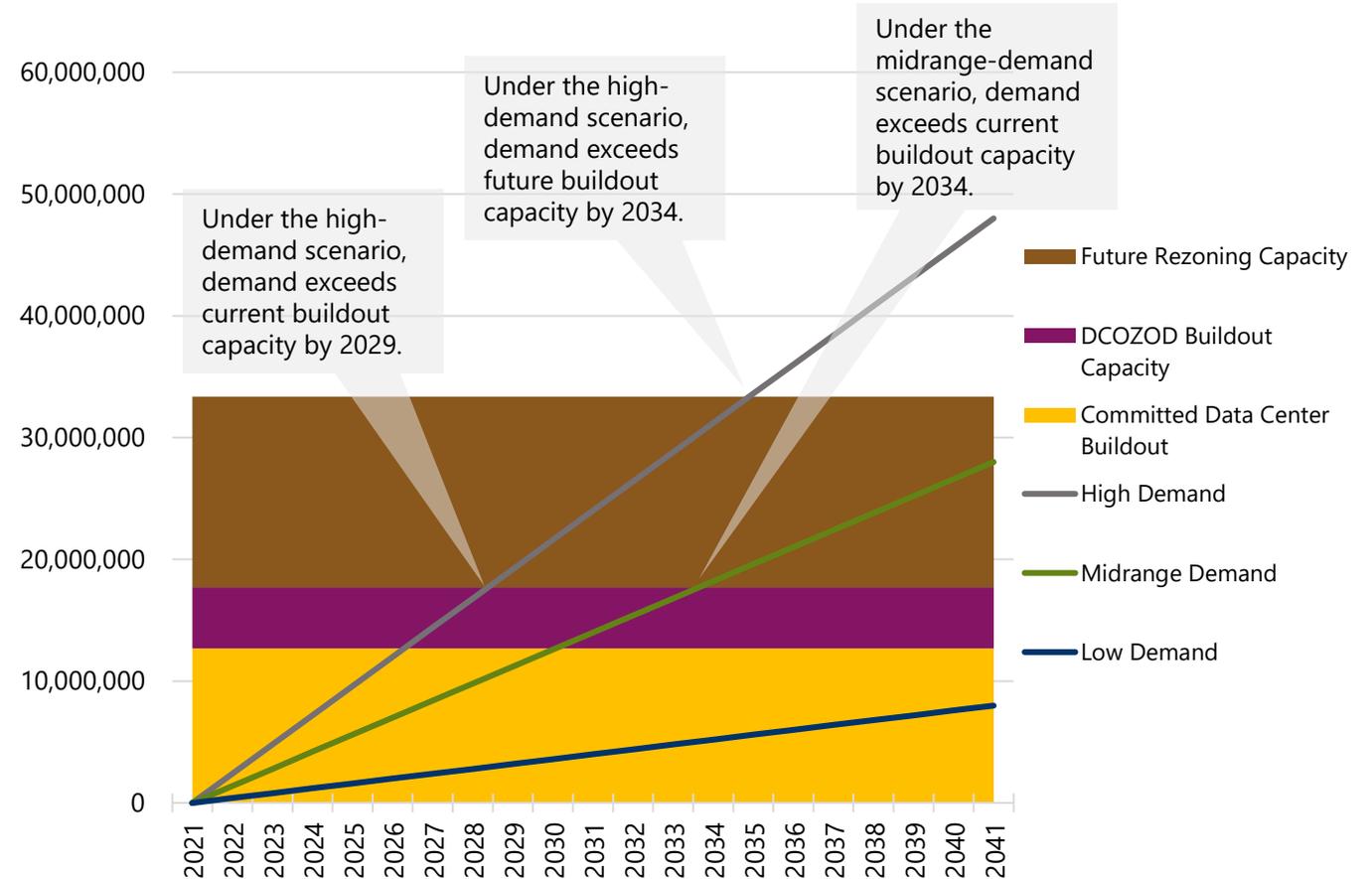
Source: Camoin Associates



# Data Center Buildout Capacity

- Current buildout capacity for data centers based on current zoning includes (1) 12.7MSF based on committed projects that have not yet been completed and (2) 5.0MSF of space that can be built on parcels within the DCOZOD that are at least 30 acres in size. This equates to 17.7MSF of buildout capacity for data centers based on current zoning.
- Another 15.7MSF of data center development could be supported in future zoned areas, for a total buildout capacity (current + future) of 33.4MSF, representing 81% of total buildout capacity county-wide.
- This compares to projected future new demand for data centers of 8MSF under the low scenario, 28MSF under the midrange scenario, and 48MSF under the high scenario.
- Under the high-demand scenario, new data center demand would exceed current buildout capacity (committed projects + suitable unbuilt parcels in the DCOZOD) by 2029. If future rezoning buildout capacity is considered, demand exceeds total buildout capacity by 2034. This assumes (unrealistically) that data centers are developed on every parcel where they are permitted under future zoning.
- Under the midrange-demand scenario, new data center demand would exceed current buildout capacity by 2034. Under the low-demand scenario, demand would remain below current buildout capacity over the course of the 20-year projection period.

**Data Center Buildout Capacity vs Demand (Building SF)**



Source: Prince William County Planning Department; Camoin Associates Projections



# Projected Demand vs. Buildout Capacity

Examining projected demand across target industry facility types, the county's estimated current buildout capacity of 21.7MSF is expected to fall short of the midrange demand scenario of 44.6MSF over 20 years. If all future buildout capacity is considered (for a total of 46.3MSF of capacity), midrange demand can just barely be accommodated.

The table and chart at right compare projected space demand and buildout capacity (current and future supply) under each scenario.

Office, medical office, manufacturing, and lab space can each be accommodated under the high scenario in areas that are currently zoned. Both data centers and distribution/logistics exceed current-zone buildout capacity under the midrange scenario and future-zone buildout capacity under the high scenario.

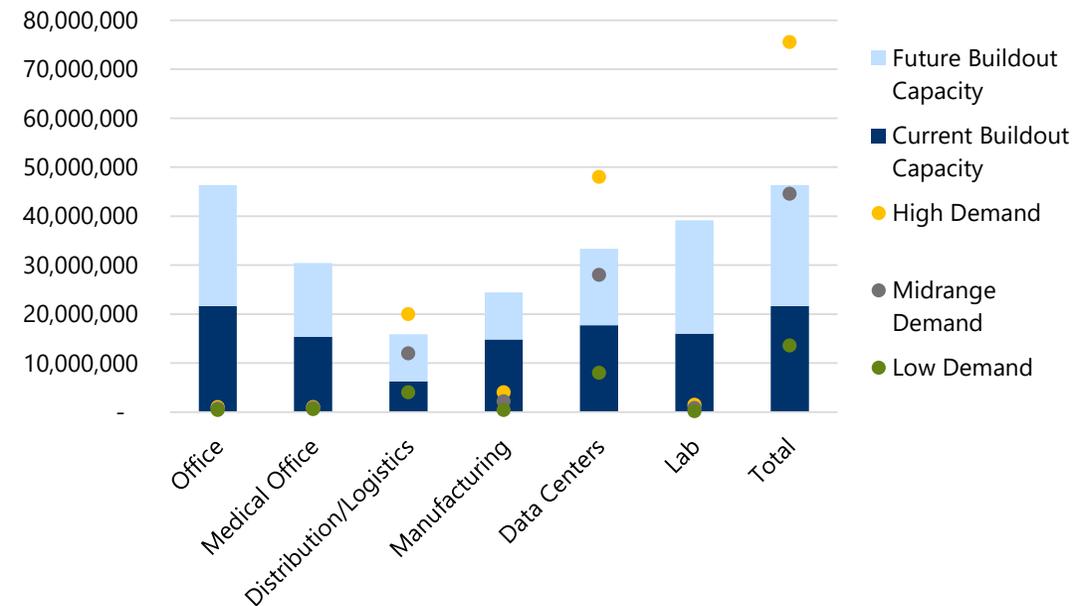
**Data centers, by far, demand the most space.** With data centers excluded, current buildout capacity alone exceeds low and midrange demand by a wide margin.

20-Year Projected Demand vs. Buildout Capacity (SF), by Facility Type

Facility Type	Buildout Capacity			Projected Demand		
	Current	Future	Total	Low	Midrange	High
Office	21,664,367	24,647,976	46,312,343	400,000	700,000	1,000,000
Medical Office	15,377,752	15,049,347	30,427,099	600,000	800,000	1,000,000
Distribution/Logistics	6,286,615	9,598,629	15,885,244	4,000,000	12,000,000	20,000,000
Manufacturing	14,833,755	9,598,629	24,432,384	400,000	2,200,000	4,000,000
Data Centers	17,707,757	15,652,889	33,360,646	8,000,000	28,000,000	48,000,000
Lab	16,035,170	23,134,160	39,169,330	200,000	850,000	1,500,000
<b>Total</b>	<b>21,664,367</b>	<b>24,647,976</b>	<b>46,312,343</b>	<b>13,600,000</b>	<b>44,550,000</b>	<b>75,500,000</b>
<b>Total, Excluding Data Centers</b>	<b>21,664,367</b>	<b>24,647,976</b>	<b>46,312,343</b>	<b>5,600,000</b>	<b>16,550,000</b>	<b>27,500,000</b>

Source: Camoin Associates

20-Year Projected Demand vs. Buildout Capacity (SF), by Facility Type



Source: Camoin Associates



# FAR Considerations

It should be noted that the outcome of the analysis is quite sensitive to floor area ratio (FAR) assumptions used. The county's buildout capacity was determined using the "average" FAR assumptions used in the county's 2020 Build-Out Analysis, which ranged from 0.1 to 0.5, depending on the district. Using inputs from the Build-Out Analysis, the average FAR across all component areas used for the Target Industry Land Need Analysis was approximately 0.20. Accordingly, the available land area for development or redevelopment of 7,467 acres yields a buildout capacity of 64.2MSF. Under a higher density scenario with an average FAR of 0.50, buildout capacity could be as high as 162MSF.

The tables below convert building square footage demand to acres for the six facility types using FARs of 0.2 and 0.5. This land demand over 20 years can be compared to the 7,467 acres available to show

how differing policies toward density can increase or slow the rate of land consumption.

The FAR of 0.2 assumed for this analysis yields a 20-year land demand total of 5,114 acres by 2041 under the midrange scenario, or 256 acres per year. An FAR of 0.5 would lower total land demand to 2,045 acres over 20 years, or 102 acres per year. This compares to current built-out land in the relevant use type categories of approximately 3,689 acres.

The lower-density scenario resulting in the consumption of 5,114 acres for targeted industry development over the next 20 years would represent a 139% increase in acres of built-out land in the relevant use categories. By contrast, the higher-density scenario would represent a 55% increase.

**20-Year Projected Land Demand (Acres), Avg. FAR of 0.2**

Facility Type	Projected Demand		
	Low	Midrange	High
Office	46	80	115
Medical Office	69	92	115
Distribution/Logistics	459	1,377	2,296
Manufacturing	46	253	459
Data Centers	918	3,214	5,510
Lab	23	98	172
<b>Total</b>	<b>1,561</b>	<b>5,114</b>	<b>8,666</b>
<b>Total, Excluding Data Centers</b>	<b>643</b>	<b>1,900</b>	<b>3,157</b>

Source: Camoin Associates

**20-Year Projected Land Demand (Acres), Avg. FAR of 0.5**

Facility Type	Projected Demand		
	Low	Midrange	High
Office	18	32	46
Medical Office	28	37	46
Distribution/Logistics	184	551	918
Manufacturing	18	101	184
Data Centers	367	1,286	2,204
Lab	9	39	69
<b>Total</b>	<b>624</b>	<b>2,045</b>	<b>3,466</b>
<b>Total, Excluding Data Centers</b>	<b>257</b>	<b>760</b>	<b>1,263</b>

Source: Camoin Associates





## 6. APPENDICES

# Appendix: Zoning Compatibility Matrix

This matrix from the PWC Comprehensive Plan was used to determine which targeted industry facility types correspond to future land use designations.

COMPATIBILITY MATRIX  
ZONING AND COMPREHENSIVE PLAN DESIGNATIONS  
NON-RESIDENTIAL

		COMPREHENSIVE PLAN DESIGNATIONS											
		CEC	REC	RCC	MTN	O	FEC	EI	GC	NC	CR	UMU	VMU
ZONING DISTRICTS	B-1			●					●			● <sup>4</sup>	
	B-2									●			
	B-3										●		
	O(L)	●				●			●				
	O(M)	●	●		●	●	●					● <sup>4</sup>	
	O(H)		●		●	●						● <sup>4</sup>	
	O(F)		● <sup>1</sup>			● <sup>1</sup>	●	●					
	M-1							●					
	M-2						●	● <sup>2</sup>					
	M/T							●					
	PBD	●	●		●	●	●					●	
	PMD <sup>3</sup>	●	●		●							●	
	V												●

<sup>1</sup> Only as part of a PBD/mixed-use zoning/development. Proffers would be requested to limit O(F) uses in these designations to office and office-like/office-compatible uses.

<sup>2</sup> Only as transition area and transition uses within EI planned area.

<sup>3</sup> Town centers may only be established in Centers of Commerce or Centers of Community unless specifically identified in a sector plan.

<sup>4</sup> B-1 only if other required components are included.

Figure 4 - Compatibility Matrix - Zoning and Comprehensive Plan Designations - Non-Residential

Source: 2008 Prince William County Comprehensive Plan



# References

- Data Center Market Viability Review, memo and map, May 27, 2021
- *Data Center Market Study*, prepared for Prince William County, BAE Urban Economics, 2021
- *Loudoun Data Center Land Study*, prepared for Loudoun County, ARUP USA, 2021
- *Dale City Small Area Plan*, 2019
- *Independent Hill Small Area Plan*, 2021
- *Innovation Park Small Area Plan*, 2020
- *The Landing Small Area Plan*, 2019
- *North Woodbridge Small Area Plan*, 2019
- Prince William County Comprehensive Plan, 2008
- Prince William County Build-Out Analysis as of December 31, 2020, prepared 2021
- Prince William County Zoning Code
- Zoning Text Amendment, Distribution and Fulfillment Centers
- Prince William County Economic Development Project Wins Database
- Prince William County Parcel Database
- Prince William County Target Industry Analysis, Camoin Associates, 2018
- *2021 Life Sciences Real Estate Outlook*, JLL, 2021
- *Life Sciences on the Rise*, Cushman & Wakefield, 2021
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- Long-Term Economic Projections, US Congressional Budget Office, 2021
- *The Impact of Data Centers on the State and Local Economies of Virginia*, prepared for Northern Virginia Technology Council, Magnum Economics, 2020
- *Emerging Trends in Real Estate®: United States 2022*, Urban Land Institute

