EXHIBIT C – OP's Commercial to Residential Conversion Report

Assessment of Commercial to Residential Conversions in the District of Columbia

DC Office of Planning Analysis, Q2 2020

District of Columbia
Office of Planning

Draft Prepared November 2020

ACKNOWLEDGEMENTS

This Document was developed by the DC Office of Planning with input from staff at partner agencies including the Office of the Deputy Mayor for Planning and Economic Development and the Department of Housing and Community Development.

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INTRODUCTION

OP assessed the District's real estate market for conditions that support conversion of commercial properties (including office and hotel)[1] to housing. The analysis builds on 2019 findings from the *Office to Affordable Housing Task Force* to inform implementation of the *Comprehensive Plan* and Mayor Bowser's *Housing Framework for Equity and Growth*. This is a technical resource intended for policymakers and real estate professionals.

Commercial to residential conversions represent an opportunity to create both market rate and affordable housing units—adding to the District's needed supply—but for these conversions to make economic sense, they necessitate specific characteristics. Therefore, OP characterized and evaluated the potential of the District's real estate market to support conversions using several geographic scales (from the region to specific sites) and across three conversion approaches, as follows:

> ***1) Office Conversion:*** This conversion approach retains an existing office building and reuses its superstructure to create housing through a gut rehab. This is one of the fastest ways to generate new housing, because conversion does not require significant structural construction, excavation, or sheeting and shoring.
>
> ***2) Site Redevelopment:*** This conversion approach involves partial or full removal of existing commercial building(s) on a specific site followed by new construction, which—due to market forces—typically uses a greater portion of zoning envelope than the building(s) replaced. This approach can produce multi-family buildings that can yield deeper affordability and/or a larger number of affordable housing units.
>
> ***3) Hotel Conversion:*** This conversion approach retains an existing hotel building and reuses it to create housing. This approach is physically the most straightforward as well as time and cost effective since hotels are designed in a manner that readily accommodates residential uses, including through features such as floor plates, window and plumbing configuration, and hallway loading/light penetration. OP has less available data on how specific hotel properties are performing than it does for the preceding two conversion approaches. As a result, analysis of conversion is conducted with higher-level data pertaining to the District and hotel categories nationally.

Objectives of this Analysis

This analysis seeks to inform the District's housing production potential of commercial to residential conversions by:

- Assessing the current (post-COVID-19) outlook for the District's commercial (office and hotel) and multi-family housing real estate markets.
- Characterizing the magnitude of opportunity for conversion or redevelopment of existing commercial properties to residential use through an analysis of commercial real estate market

[1] Note: This study did not evaluate adaptive reuse potential for retail properties, which may present additional opportunities for housing due to changing practices and trade patterns in related industries. However, retail uses tend to use deep floor plates, and have window and plumbing configurations that present specific challenges, which would need to be studied as part of an opportunity assessment.

fundamentals across several levels of geography (including the metropolitan region, Comprehensive Plan Planning Areas, and office submarkets).

- Updating the District's understanding of site-specific characteristics that support adaptive reuse and redevelopment to housing.

Summary of Findings

1) **Opportunities for all three approaches to conversion (office, hotel, and site redevelopment) are limited, specifically:**
    - Potential is highest in the Rock Creek West Planning Area (whose boundaries are roughly similar to those of the Uptown Office Submarket) and to a lesser extent in the Near Northwest and Upper Northeast Planning Areas, where office and hotel demand show indications of decline.
    - Buildings most likely to support conversion have specific characteristics, such as high vacancy, lack of renovation for many years, a building design that could support conversion, and/or outdated floor configurations (such as office suites featuring large document production and storage areas). As an example, the Dupont Circle Office Submarket within the Near Northwest Planning Area has a large number of office buildings constructed between 1970 and 1990 that were designed with a paper record-driven workplace in mind. Some buildings in this area have vacancy rates and capitalization cycles that may support conversion.

2) **The high volume of unabsorbed new housing supply in the District is likely to significantly reduce construction of new housing stock, including conversions, until the market significantly absorbs excess supply.**
    - Over the next three years, the District's Class A multi-family residential market is expected to have excess supply, when office vacancy will likely be highest.
    - Conversions will become more likely when residential absorption is one year from matching demand. This horizon enables new unit construction timed to deliver as the market comes back into balance between supply and demand.

3) **The District's office market is oversupplied with space, which is likely to pose a long-term challenge. This is a result of macro and microeconomic factors pre-dating COVID-19 that the public health emergency has exacerbated.**
    - Prior to the COVID-19 public health emergency, exceptional demand for Trophy Class office space among anchor tenants in the District drove elevated vacancy in the Class A office market. Trophy Class office space is a subset of the Class A office market defined by the highest quality architecture and materials. These spaces are designed with a strong emphasis on collaboration in a digital era where document production and storage are much less important.
    - Demand for Trophy Class space generated a wave of new office construction that was not proportional to demand for new office space. As a result, the District's office market is over supplied with space, which is likely to pose a long-term challenge.
    - Oversupply triggered by Trophy Class construction and amplified by COVID-19 is likely to extend throughout the District's office market reaching every class and submarket.
    - Office vacancy will likely be highest and longest lasting in submarkets further from the White House and Capitol Building, which are the two primary epicenters of the District's office market.

4) **Office conversion potential is higher in Class B and Class C office buildings experiencing lower demand.**
    - Prior to the COVID-19 public health emergency, vacancy in the District's Class B office space generally stayed low, in the 7% to 8% range, reflecting high demand for the limited supply of lower-cost office space. Importantly, vacancy in these buildings began climbing quickly before COVID-19 in the second quarter (Q2) 2019 reaching an elevated rate of 11.8% in Q2 2020.
    - This increased vacancy is likely a function of significantly decreased price distinction between Class B and older Class A office space. Higher vacancy in the Class B office market in conjunction with broader oversupply in the Class A office market increases the likelihood of office to residential conversions in submarkets with lower demand. In these submarkets, Class B office building owners may have trouble retaining existing tenants and attracting new tenants, which increases the likelihood of conversion.
    - Lower rents and high vacancy in Class B office buildings is likely to erode rents and vacancy in the Class C office market. Due to the high levels of persistent vacancy in the District's office market, Class C office buildings may have the longest path to recovery. As a result, they may have an increased likelihood of converting to residential use.

5) **In established office markets, long-term property value is significantly higher for office buildings than residential buildings, which will likely dissuade most property owners from converting their office buildings to residential use.**
    - In these office buildings, property owners are likely to absorb short-term losses of rental income resulting from vacancy to preserve the higher value of their building in the long-term.
    - Conversions to residential use are very difficult to finance if the commercial building requires a significant capital investment to convert to housing that ultimately results in a loss of value due to the change of use. Even if short-term operating income is higher with the new use through a decrease in vacancy, the long-term earning potential of the buildings is diminished in these instances.

6) **Oversupply in the District's hotel market that pre-dated COVID-19, combined with the potential for weaker demand post-COVID-19 hotel owners may be more likely to consider conversion.**
    - The District's hotel market showed indications of oversupply prior to COVID-19 due to inefficiencies caused by increasing segmentation of the hotel industry, which resulted in new hotel construction as part of global brand strategies despite unproven demand.
    - The oversupply of hotel rooms reduces profitability for typical hotels and reduces the likelihood that property owners will make further investments in the market.
    - Under typical conditions hotel construction would likely slow until supply and demand came back into balance. However, post COVID-19, recovery may be protracted for some parts of the District's hotel markets, which could encourage some owners to seek conversion opportunities.

RECOMMENDATIONS

This report has determined a range of analyses that could be conducted in the future to help identify specific conversion opportunities, as follows:

1) **Examine the Rock Creek West Planning Area in greater detail:** Identify and further examine office and hotel buildings with high vacancy and/or expiring leases in the Rock Creek West Planning Area. This planning area has office and hotel buildings that present some of the strongest opportunities citywide for conversion to housing or redevelopment as housing (See Figure 2 for map of Comprehensive Plan Planning Areas).

2) **Review specific building typologies in Central Washington and Near Northwest Planning Areas:** Identify and further examine wedge-shaped buildings in the Central Washington and Near Northwest Planning Areas (See Figure 14 for more information about wedge-shaped buildings). In established centrally located office districts, these buildings are the most likely building typology to convert for residential use due to their high percent of façade with street frontage. For this type of building, conversion to residential use may present a cost-effective opportunity due to their revenue potential derived from views, window configuration, and internal layout.

3) **Identify older hotels that are economically disadvantaged by their location:** Hotels that have not been renovated within the last ten years serving contracting office markets, extended stay guests, group travel, and low-cost segments may be particularly likely to accommodate conversion to residential use.

4) **Analyze office expansion opportunities in the Near Northwest Planning Area:** In this area, Class A residential has a small price advantage over Class C office, which is most likely to result in conversions to housing if buildings are expanded to offset any rentable building area lost to conversion by adding net new floor area. Analyze the feasibility of adding density or redeveloping adjoining property for residential use in the Near Northwest Planning Area. Analysis should also consider the architectural feasibility of converting to Class A residential standards and financial performance.

5) **Evaluate leases and market conditions in the Upper Northeast Planning Area:** The planning area hosts several office buildings serving production, distribution and repair uses. In the District, these uses are evolving, which may present residential conversion opportunities. Determine if these office buildings are likely to convert to residential use as stand-alone sites or as part of larger redevelopment initiatives.

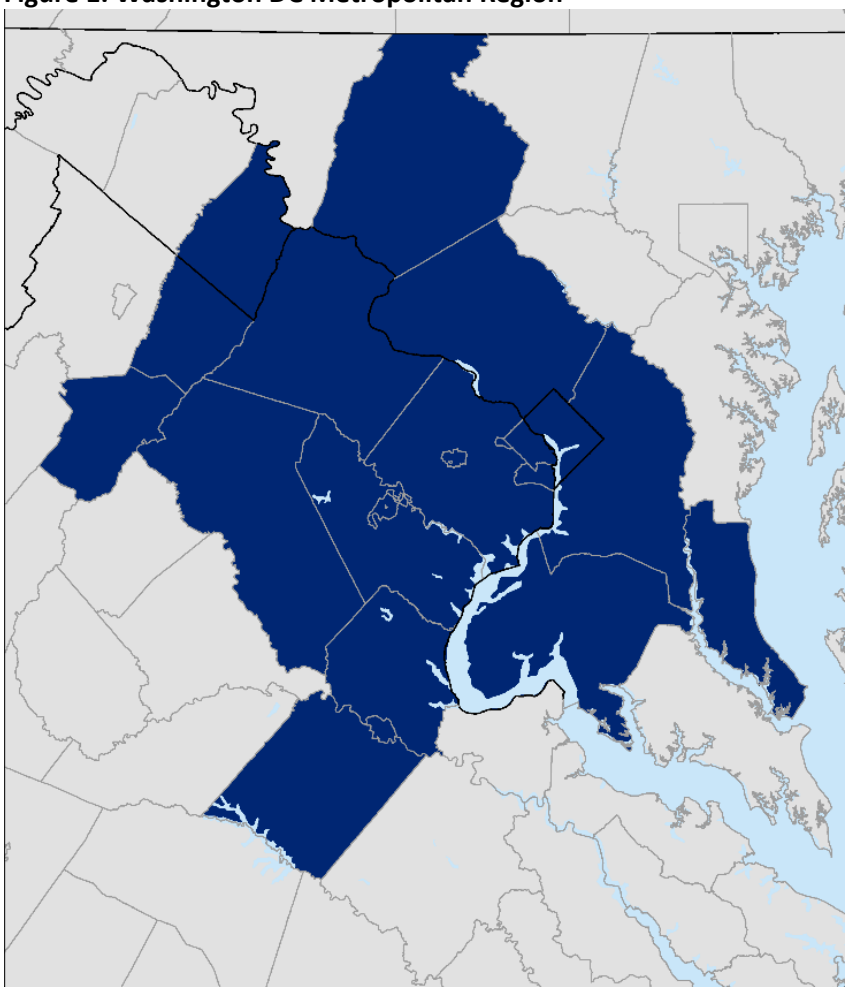
6) **Conduct property-level analysis of internal Office Submarket trends in the West End:** This submarket has been volatile for several years. There may be portions of the submarket that are ready to transition to residential use. Conduct an analysis of building level trends to determine if there are internal patterns to the submarket that may facilitate targeted conversion opportunities.

Overview of Geographic Scales Used in this Analysis

In order to best identify the opportunity for commercial to residential conversion and redevelopment, this analysis uses three distinct analytic geographies:

1) ***The Metropolitan Region:*** Analyzing office market conditions across the metropolitan region provides macroeconomic context to interpret place-based trends.
    - This geography enables analysis of relative residential and office demand.
    - While this study evaluates conditions at the metropolitan region level of geography, this analysis primarily illustrates how the current recession and COVID-19 are likely to impact the District's commercial and residential real estate markets.
    - Citywide trends are similar to regional trends but less valuable for interpreting place-based trends because they do not provide as complete of a picture of macroeconomic supply and demand pressures. Citywide trends were not included in this report to increase clarity by emphasizing the metropolitan region as the base unit of economic analysis.

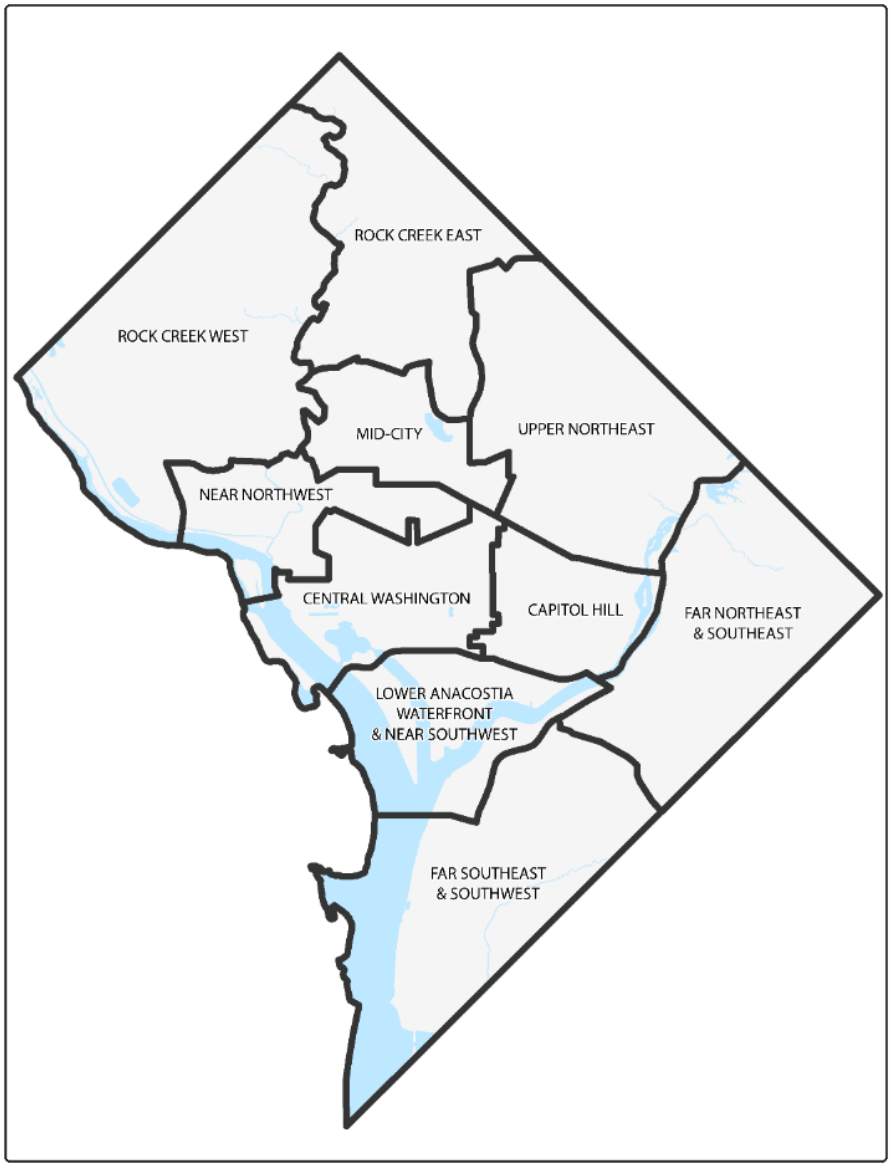
Figure 1. Washington DC Metropolitan Region



Source: DC Office of Planning

2) ***DC Comprehensive Plan Planning Areas:*** Planning Areas provide a useful sub-regional geographic unit for understanding residential and commercial demand with greater resolution.
   - An added benefit of Planning Areas is that they are the basis for key District policy including affordable housing production.
   - In this analysis, OP uses the Planning Area geographic level of analysis to link regional and submarket insights and assemble a framework for potential investment that is directly aligned with the District's geographic housing production targets among other policies.

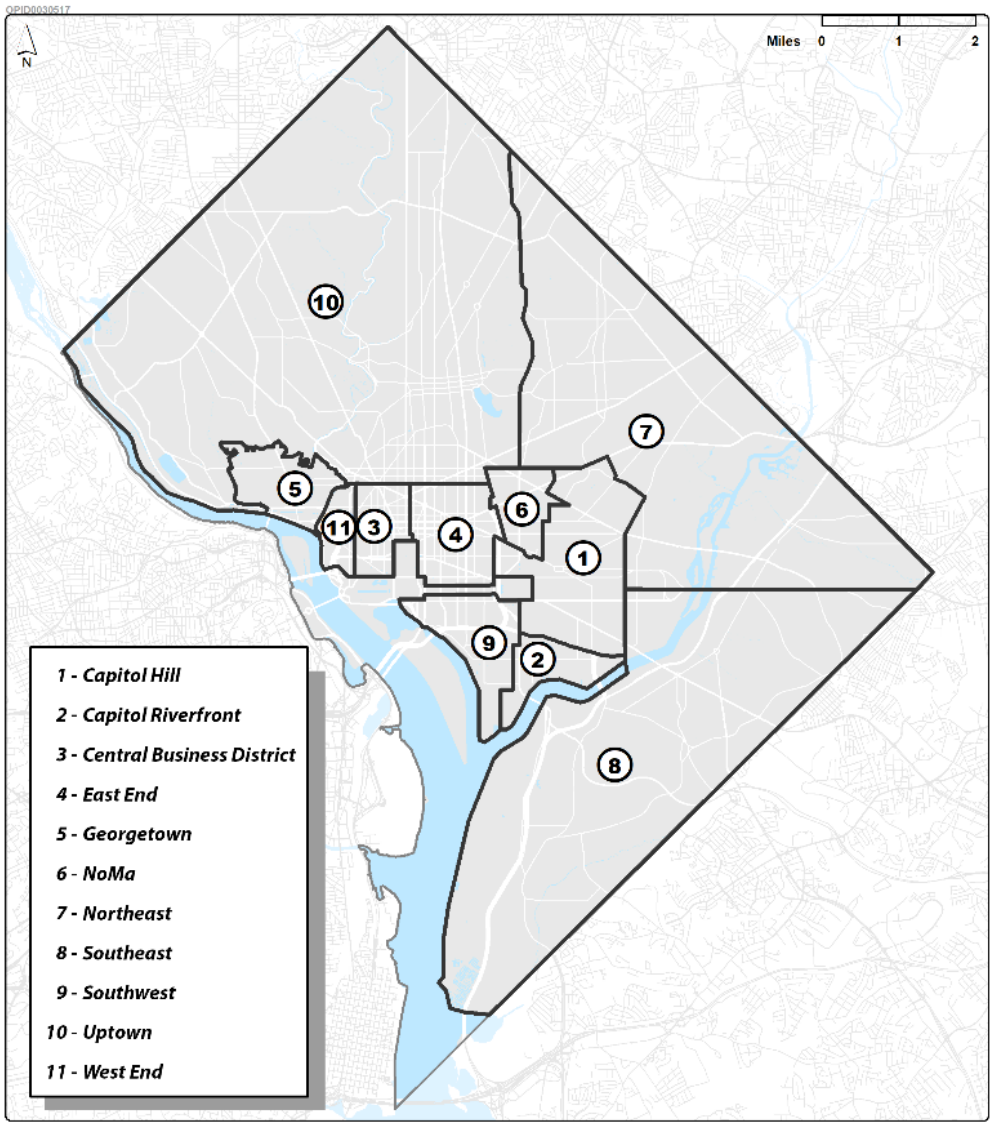
Figure 2. DC Comprehensive Plan Planning Areas



Source: DC Office of Planning

3) ***Submarkets:*** Office submarkets are a specialized geography tailored to place-based conditions in the office market.
   - Submarkets are defined by mutually exclusive clusters of common building and tenant types that vary in scale from a from blocks to wards.
   - Analyzing office market fundamentals at the submarket level presents the most efficient way to identify groups of properties that may be candidates for conversion or redevelopment.
   - However, residential markets use a separate set of submarkets (i.e. geographic units), which limits comparison across segments using this geography.

Figure 3. Washington, DC CoStar Office Submarkets



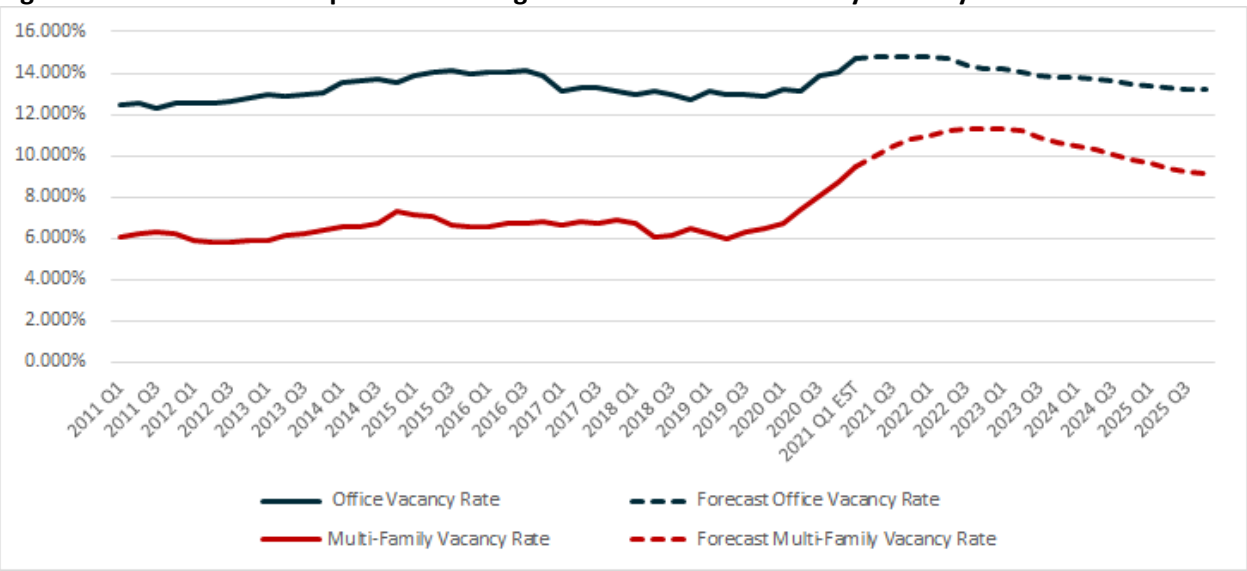
Source: CoStar

REGIONAL MARKET ANALYSIS

This study starts with the regional perspective to provide context for subsequent finer grained analysis. Metropolitan regions are the most reliable geographic unit for economic modelling. The Census Bureau identifies these regions based on county-level commuting patterns, which illuminate each region's housing and labor markets. Comparing regional forecasts for office and multi-family vacancy rates as well as rent growth provides insight for the likelihood of foreseeable commercial to residential conversions.

Figure 4 shows that both office and multi-family vacancy rates have increased significantly in 2020. The chart shows that each property type is likely to require more than five years to reach pre-COVID levels. The simultaneously elevated and prolonged vacancy in each commercial real estate segment indicate that at the regional scale, it is unlikely that widespread conversions of office buildings to residential use would occur. High vacancy rates indicate that short-term demand for multi-family housing can be accommodated by the region's existing supply.

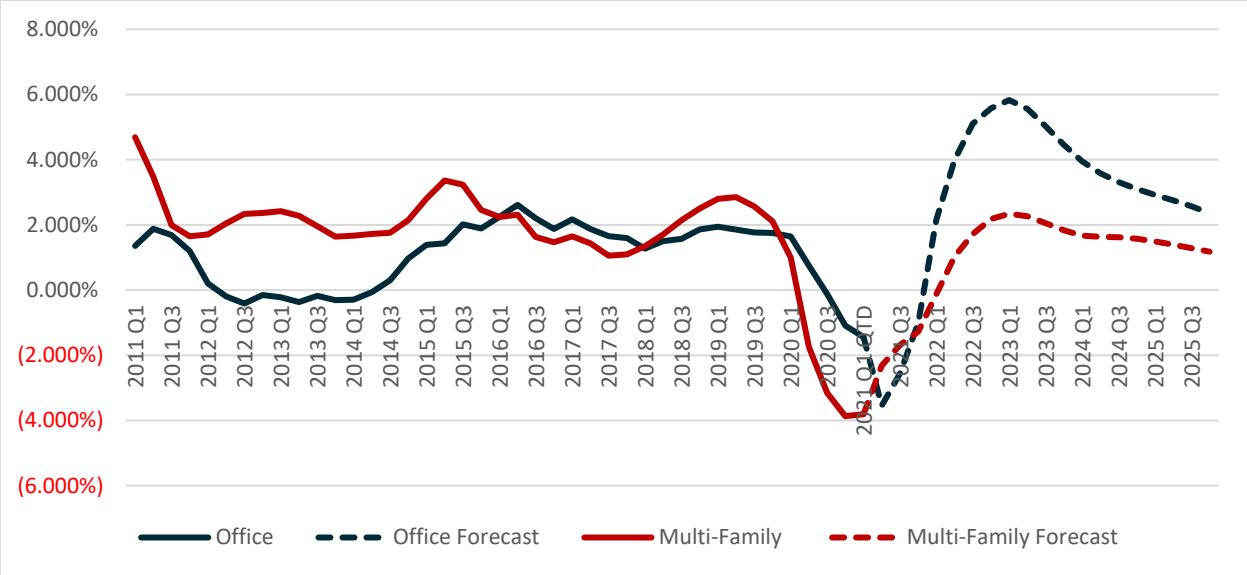
Figure 4. Forecast of Metropolitan Washington Office and Multi-Family Vacancy Rates



Source: CoStar

Below, Figure 5 details annual rent growth in the region's multi-family and office markets. Sustained positive rent growth is a leading indicator for the production of additional apartments and office buildings. The chart below indicates that both office and multi-family segments of the market are likely to resume rent growth by early 2022. This forecast suggests that office building owners are likely to endure elevated short-term vacancy rather than pursue a cost-intensive change to convert their building's use to residential, a less valuable, but potentially more stable use.

Figure 5. Forecast of Metropolitan Washington Office and Multi-Family Rent Growth



Source: CoStar

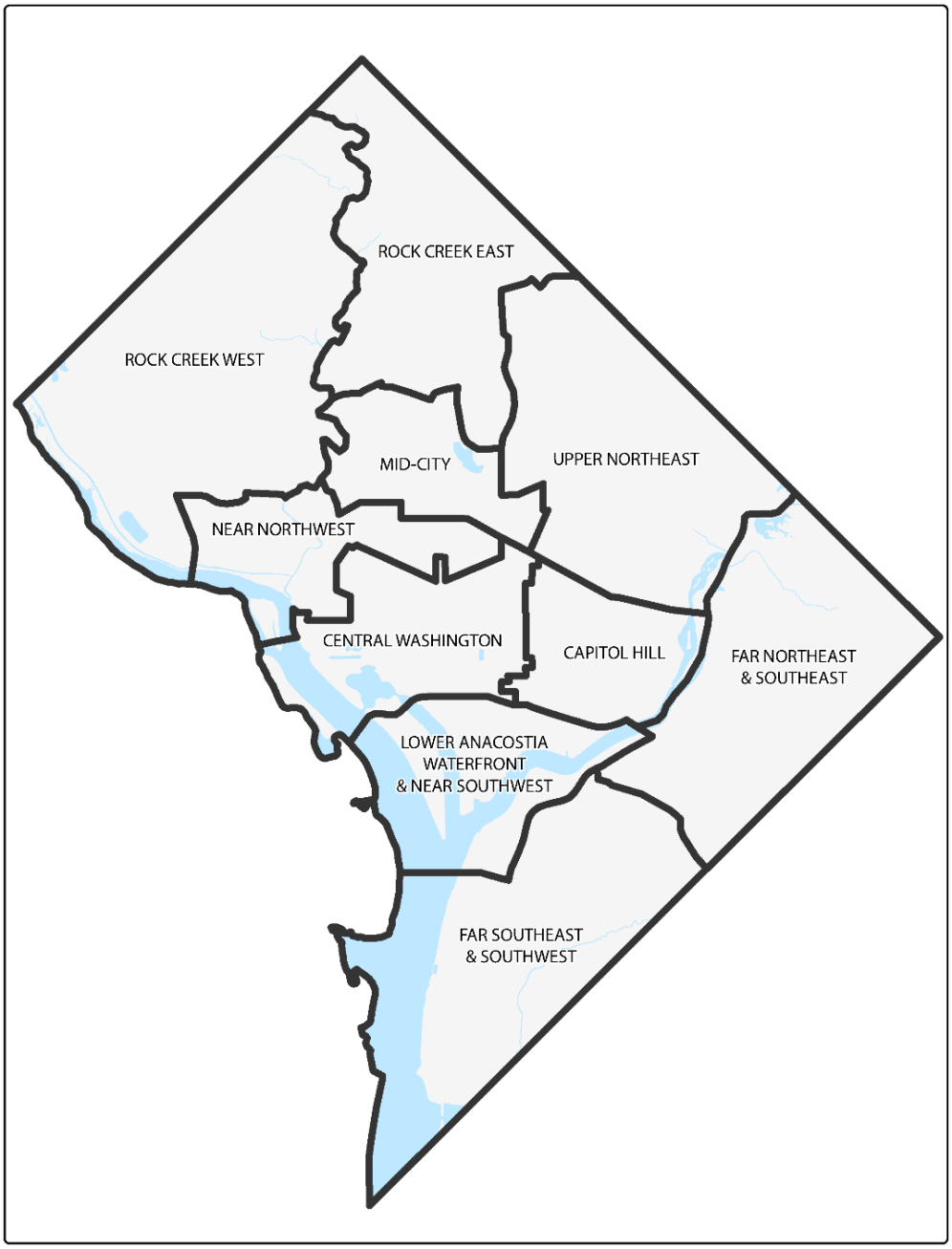
Together, these charts show that in the aggregate, at the regional level, few office buildings are likely to convert to residential use. However, prior to COVID-19 there were indications that some areas and specific buildings were not well positioned for continued use as office space. Subsequent sections of this assessment evaluate planning area and submarket conditions for potential conversions to better understand those opportunities in the District.

PLANNING AREAS: COMPARISON OF RENTS

This section compares housing and office rents across District Comprehensive Plan Planning Areas, in order to identify areas where it could be financially advantageous for a property owner to convert an office property to a residential property. Planning Areas, shown in Figure 6 below, are a uniquely beneficial framework for comparing housing and office values. They reflect geographic and economically distinct areas of the District. These areas are more reflective of on-the-ground distinctions between communities than Wards, while providing large enough areas to facilitate meaningful comparison of office and residential markets. This geography is helpful because localized office and residential market conditions are typically analyzed with smaller, sector-specific submarkets that differ significantly between office and residential markets. The combination of these factors enables Planning Areas to be an effective mid-scale geography to identify opportunities areas for conversion.

OP analyzed the financial likelihood of Planning Areas to support office to residential conversions. This discussion focuses on four of the District's total 10 Planning Areas—as these four areas have the greatest likelihood of supporting conversions: Rock Creek West, Central Washington, Upper Northeast, and Near Northwest. These Planning Areas were identified by comparing the findings of the office submarket conversion analysis (described in the following section) with a land use analysis. Central Washington was added as a benchmark since it is the District's primary office market.
Importantly, the Central Washington Planning Area contains aging Class C office space also evaluated for financial feasibility of conversion as part of this analysis.

Figure 6: DC Comprehensive Plan Planning Areas



Source: DC Office of Planning

Comparing office and residential rents by building class (see Table 2, below), several key takeaways emerge:

- Class A office is more valuable than Class A residential in every market
- Class A and Class C office buildings are significantly more valuable than Class A residential in Central Washington. This disparity indicates that conversions from office to residential use are unlikely in Central Washington because the premium on office use is too high. Due to limited if any unused FAR in Central Washington, redevelopment is even less likely than conversion in Central Washington.
- Rock Creek West has the clearest price advantage for converting office to residential use. It is the most likely to support conversion or redevelopment due to the significantly higher value for Class A Residential over Class C Office. Additionally, the configuration of typical office sites in the planning area efficiently accommodates residential uses through conversion or redevelopment.
- Conversions may be financially feasible in the Near Northwest Planning Area if an office building can be converted to a residential use without reducing its footprint or by incorporating additions.
- The Upper Northeast Planning Area is undergoing transition and may support conversions as part of larger redevelopment.

Table 2. Comparison of Commercial and Multi-Family Rents by Planning Area

Planning Area	Rock Creek West[2]	Near Northwest	Central Washington	Upper Northeast
Rent Difference Per Square Foot Annual Office A to Residential A	$1.06	$10.62	$20.03	N/A
Rent Difference Per Square Foot Office A to Office C	$5.59	$12.39	$13.02	N/A
Rent Difference Per Square Foot Office C to Residential A	($4.53)	($1.77)	$7.01	($7.45)

Source: CoStar, DC Office of Planning

Figure 7 depicts the spatial distribution of conversion feasibility based on the differences in office and residential rent shown in Table 2. The Rock Creek West Planning Area, followed by the Near Northwest and Upper Northeast Planning Areas, have greater likelihoods of supporting commercial to residential conversions than the District's other seven Planning Areas (including Central Washington).

[2] RCW only has 4 Class A office buildings, which limits the reliability of figures for the planning area. Further analysis of the building stock was used to draw conclusions. UNE technically has one Class A office building according to CoStar, however that building is used as a restaurant incubator. This use is atypical and does not represent a true comparison.

Table 3. Market Feasibility of Commercial to Residential Conversion

Conversion Potential	Planning Areas			
	Rock Creek West	Near Northwest	Central Washington	Upper Northeast
Widespread				
Site Specific				

Likely Somewhat Likely Less Likely

Source: OP, analysis of CoStar data

Detailed Analyses for Individual Comprehensive Plan Planning Areas

Rock Creek West

This Planning Area is the most likely to support office to residential conversion and redevelopment due to the relative performance of the office and residential markets, based on analysis of achievable rents by building type and class.

Rock Creek West's office market is notably weak as discussed in the following section addressing submarket performance indicators. The submarket discussion analyzes the Uptown Office Submarket, which has a similar boundary to the Rock Creek West Planning Area. The weakness is reflected by the small differential in rents between Class A and C office, as well as underperforming fundamentals including occupancy, net absorption, and rent growth, among others.

Rock Creek West's residential market tells the opposite story. Class A residential buildings are nearly as valuable as Class A office and may be more profitable when the area's elevated office vacancy rate, which is significant and sustained, is considered. The clearest opportunity for conversion is among Class C office buildings, which are worth significantly less per square foot than Class A residential buildings. This measure is conservative because the average building age for Class A apartment buildings in the Planning Area is older than the building age of typical Class A buildings citywide. Newer buildings in the Planning Area are likely to significantly exceed the current average for the class.

The newest multi-family buildings constructed in the Rock Creek West Planning Area command some of the highest rents per square foot in the District, while older Class A buildings have not achieved the same magnitude of rent growth seen in more dynamic Planning Areas. Specifically, residential buildings constructed in Rock Creek West since 2015 command $1.22 more per square foot than typical Class A residential in the Planning Area. The new construction rents are a more accurate reflection of the rents an office conversion would seek to achieve than Class A rents in general.

Another important factor contributing to conversion likelihood is the configuration of office buildings. Rock Creek West office buildings frequently utilize lower proportions of their lots than more centrally located office buildings. As a result, the operating income each site can generate is fairly comparable between office and residential, which provides an advantage over more dense parts of the District.

Upper Northeast

This Planning Area may present opportunities for conversion and redevelopment of aging Class C office buildings to residential use.

Class A residential buildings in the Upper Northeast Planning Area earn $7.45 more per square foot than Class C office, which indicates that the market would support conversions. Notably, the Planning Area does not have any conventionally defined Class A office buildings, indicating that redevelopment or reconstruction of these sites would most likely be residential. These conversions face two barriers: location and demand. Many of the area's office buildings are located in production, distribution, and repair (PDR) areas, which are not well suited to ad hoc redevelopment due to limited supportive facilities and amenities necessary to serve residential uses. Larger redevelopment is challenged by an elevated residential vacancy in the Planning Area due to a significant increase in supply over recent years that has outpaced demand.

Central Washington

Conversion and redevelopment opportunities in this Planning Area are unlikely in the short term, due to the high value of office buildings and decreasing demand for residential.

In Central Washington, Class C office buildings command $7.01 more per square foot than do Class A residential buildings. Additionally, Class A office buildings command $13.02 more per square foot than Class C office buildings, and Trophy Class office buildings command $4.19 over the Class A office average. Within the Planning Area, Class C office vacancy is fairly low, at 6.27%, as a result of increasing competition for lower cost, centrally located office space. Based on previous trends, Class C office buildings are most likely to continue operating in their current configuration or upgrade to Class A in the out years as the District's office market recovers.

Class A office vacancy is a complicating factor in Central Washington. For several years, Class A office buildings have been carrying near record high vacancies due in part to demand for Trophy Class office space by many existing tenants in the Planning Area. Class A office vacancy in Central Washington is compounded by anemic job growth in the area contributing to elevated vacancy across the office market as the supply of office space expanded with new Trophy Class buildings. Looking forward, Class A office vacancy in this Planning Area is likely to reach historic levels and remain high over the next two to three years, which will limit demand for upgrading older office properties.

There may be some site-specific opportunities for office to residential conversion along the periphery of the Central Washington Planning Area, particularly to the north and west. Additionally, several large Class B office buildings mostly clustered in the western part of the Planning Area are at risk of losing major federal tenants. If these buildings lose their anchor tenants, it is possible that property owners may pursue a residential conversion or redevelopment if the outlook for Class A office deteriorates further.

Another important factor is contraction of coworking, which drove new leasing of Class A prior to COVID-19. These businesses are at increased risk of leaving large portions of some buildings vacant during a period of historically low demand. Office buildings that are more than 10 years old that lose co-working tenants that occupied most or all floor area may be more likely to convert to residential use.

Completely vacant Class B and Class C buildings are the most likely portion of the Central Washington building stock to convert to residential use. Still, the strong likelihood that the office market will return necessitates that any residential conversion achieves a high-enough value to mitigate the opportunity cost

of conversion. As a result, buildings best suited for residential use, which can realize exceptional rent premiums, are much more likely to convert. Key factors for conversion include the following: slab-to-slab heights that accommodate Class A residential celling heights, a high ratio of the façade with open views to minimize the number of units that require discounted rents, and column spacing that allows for optimal layouts. Notably, demand for micro-units is likely to be very low, which may inhibit conversion of buildings with tighter column spacing.

Another factor limiting the likelihood of conversions in Central Washington is falling demand for apartments in the CBD. Fall 2020 CoStar analysis demonstrates that rents are falling the fastest in centrally located submarkets, which reduces the likelihood of office to residential conversions in Central Washington.

Conversions from hotels are more complex and depend on market segment, location, time since last renovation, capacity of the plumbing system, and the nature of any franchise agreements. However, despite these complicating factors, some hotels may present conversion opportunities in this Planning Area. Further analysis will be needed to better understand the potential for these conversions.

Near Northwest

Conversion and redevelopment opportunities in this Planning Area are limited to buildings in less prime locations and older office buildings.

The Near Northwest Planning Area may be able to support some office to residential conversions. Class A residential commands $1.77 per square foot more than Class C office. Under stronger office market conditions, Class C office buildings in this area would be most likely to be upgraded to Class A office, which commands $10.62 per square foot premium. The long-term opportunity cost of converting to a use with lower earning potential will limit the number of property owners that are likely to pursue this option. However, it is possible that less prime office locations may be reused or redeveloped as housing, which may have stronger demand than office in the short and medium-term.

Near Northwest may favor redevelopment of older office buildings facilitated by increased future land use capacity under OP's proposed Future Land Use Map. Similar to Central Washington, this Planning Area may support hotel to residential conversions under certain circumstances where building, financial, and business conditions align.

OFFICE SUBMARKET KEY INDICATORS ANALYSIS

Office Submarkets are a specialized geography used to analyze localized conditions within the regional office market. Submarkets are the smallest summary geography commonly used to analyze commercial real estate conditions and they are uniquely beneficial for developing an understanding of how business fundamentals differ within the District.

This section analyzes key indicators at the submarket level providing a detailed assessment of where the office market's real estate fundamentals are most likely to support conversions. In order to develop a fine-grained understanding of where commercial to residential conversions are most likely to be financially viable, OP conducted an analysis of the District's office submarkets' real estate fundamentals. Table 4, below, summarizes the submarket analysis using the same blue-color coding system as is used in Table 1. A map of the District's office submarkets is depicted by Figure 7.

The submarkets with the strongest conversion potential largely overlap the Planning Areas with the strongest potential. Table 4 shows that the Uptown Submarket (largely in the Rock Creek West Planning Area) has the strongest potential to support office to residential conversions followed by the Dupont Circle (in the Near Northwest Planning Area) and Northeast Submarkets (largely in the Upper Northeast Planning Area). Dupont Circle has more sites with conversion potential and the extent of conversions is likely to be driven by the strength of office demand recovery in more centrally located submarkets. The Northeast Submarket is less likely to support conversions in the next two years because a large portion of residential supply is currently delivering in the area. Conversions in this area may be part of larger site redevelopments.

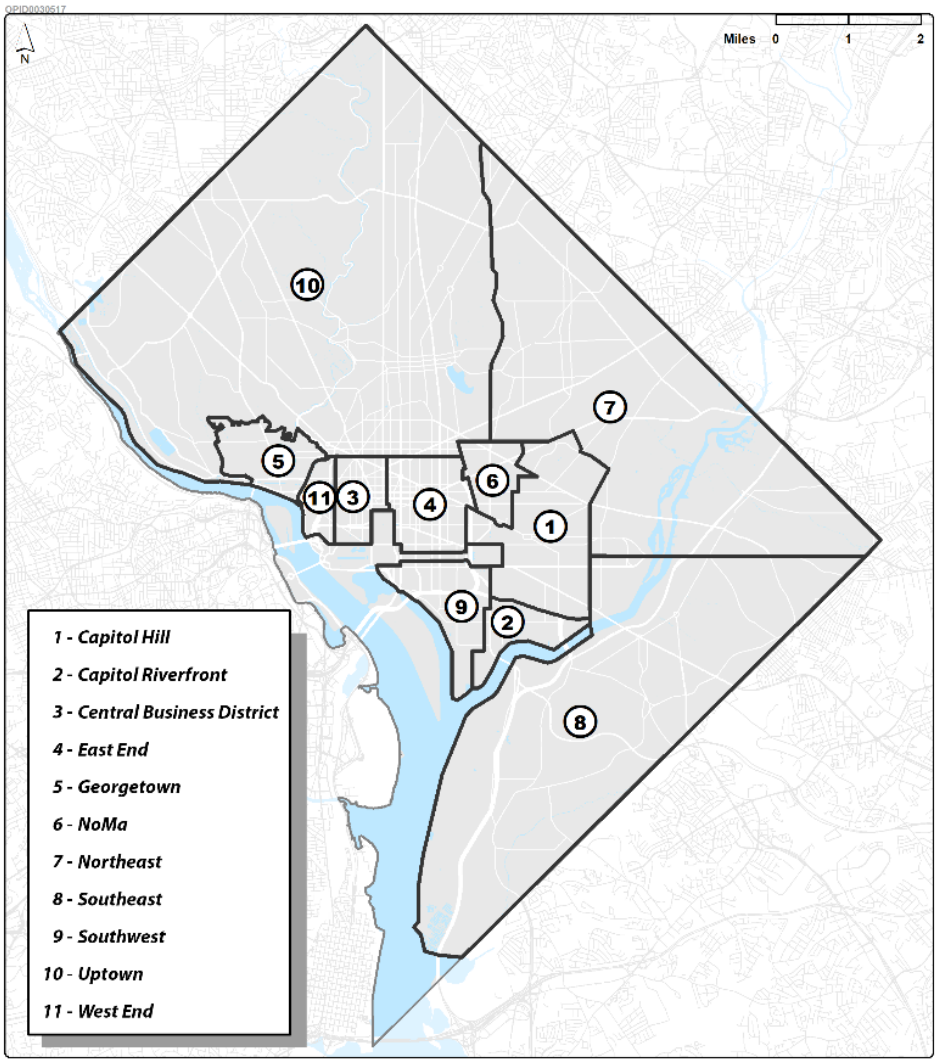
Table 4. Conversion Likelihood by Geographic Scale in Office Submarkets

Conversion Likelihood		**Office Submarkets**			
		Uptown	**Dupont Circle**	**West End**	**Northeast**
Geographic Scale of Conversion Opportunity	Widespread Opportunity				
	Clusters of Opportunity				
	Site Specific Opportunities				

Most Likely Somewhat Likely Less Likely

Source: OP analysis, of CoStar data

Figure 7. Washington, DC CoStar Office Submarkets



Source: CoStar

Office Vacancy

Office vacancy rates are a leading performance indicator for commercial real estate. Some vacancy is needed to prevent excessive speculation and to enable a fluid market. Additionally, episodically elevated vacancy rates can accompany markets that are in transition, which is often triggered by the departure of major tenants. However, persistently high vacancy rates at the submarket level indicate a structural change in demand, which may also suggest that the market may be responsive to conversions.

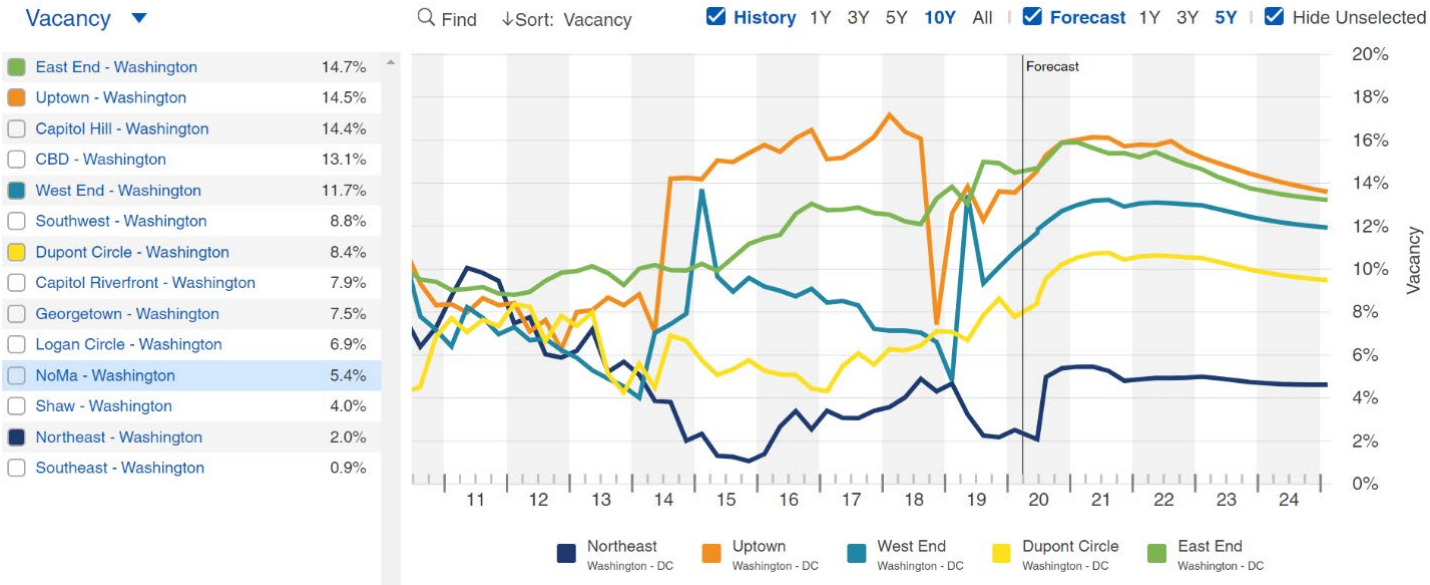
As shown in Figure 8, below, the Uptown Office Submarket has had and is likely to continue experiencing elevated levels of vacancy. This submarket has been a leading location where commercial properties have been converted to residential use.

Conversely, the East End Submarket's vacancy has been driven by new supply of Trophy Class office buildings that are slow to lease middle floors. In the West End Submarket, volatile vacancy rates indicate

the market is undergoing a period of change. Other fundamentals including rent per square foot and absorption indicate that the submarket is currently less likely to support conversion. However, the West End Submarket's volatility indicates that market conditions should be monitored. The Dupont Circle Submarket shows modest but steadily growing vacancy rates. However, they remain relatively low, indicating that vacancy is not likely to be a driving factor for conversion in the Submarket.

Importantly, the Central Business District Submarket, which had an elevated vacancy rate that was 13.1% in Q2 2020 was omitted from the chart below for clarity because the Submarket's other fundamentals including supply growth and rent per square foot indicate that it is unlikely to support widespread conversions.

Figure 8. Office Vacancy by Selected DC Submarkets



Source: CoStar

Office Rent Growth

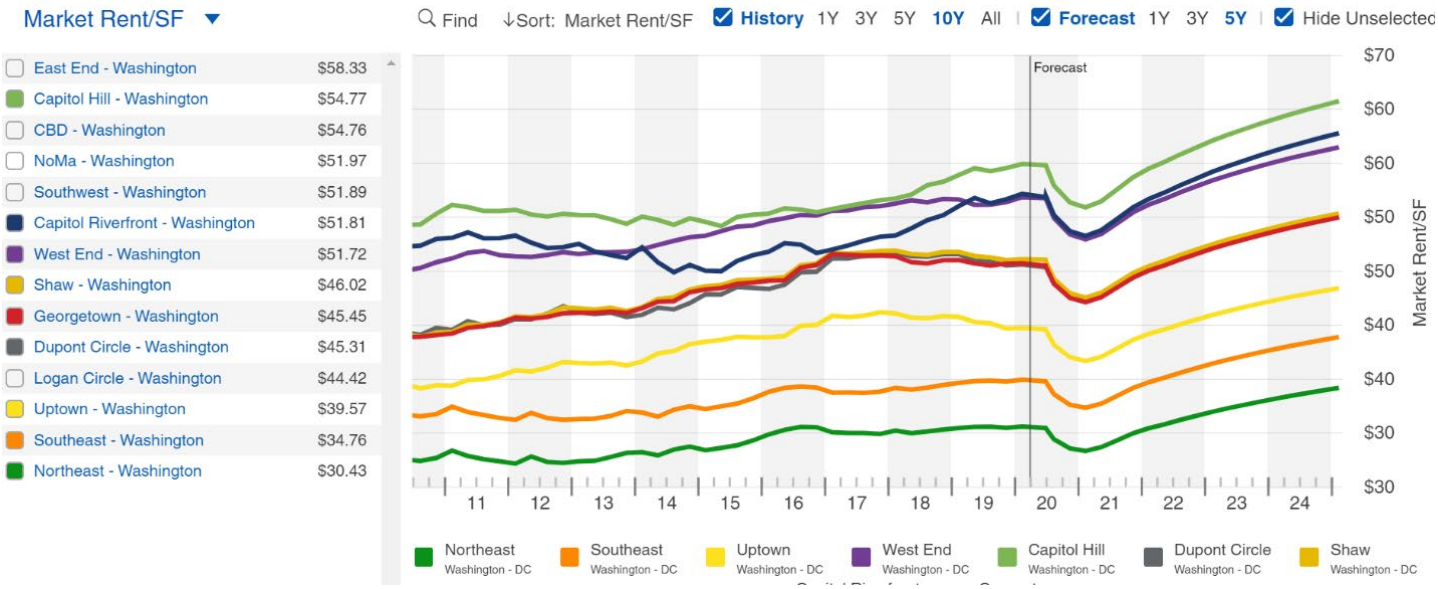
Rent growth is a strong indicator of potential investment profits, which helps identify where future investment is most and least likely. Submarkets with higher rent growth are more likely to attract additional investment, while Submarkets with lower rent growth may have difficulty attracting investment and may be more responsive to conversions.

As of October 2020, office rents in the District have only fallen 1% since March 2020. However, rent concessions and tenant improvement packages continued a near-decade-long climb, reaching the highest combined value on record of $238 per square foot according to the real estate services firm Savills. Growing concessions and tenant improvement packages diminish rental rates as a key indicator. They may also indicate greater risks of significant declines in office values. As a result, absorption and vacancy rates are increasingly important factors to consider for contextualizing rent data.

Figure 9 shows that the Uptown Submarket experienced the most pronounced decline in office rent growth. While the Georgetown, Shaw, and Dupont Circle Submarkets showed slight declines in rent preceded by steady growth earlier in the decade. The Southeast Submarket and Northeast Submarket

trended up slightly; however, their low market rents indicate weaker demand overall. The Capitol Hill, Capitol Riverfront, and West End Submarkets' office rents have generally performed well, but not outstandingly, in recent years. Rents on this chart reflect base rents and do not include other occupancy expenses associated with typical triple net office leases.

Figure 9. DC Office Submarkets Market Rents Per Square Foot



Source: CoStar

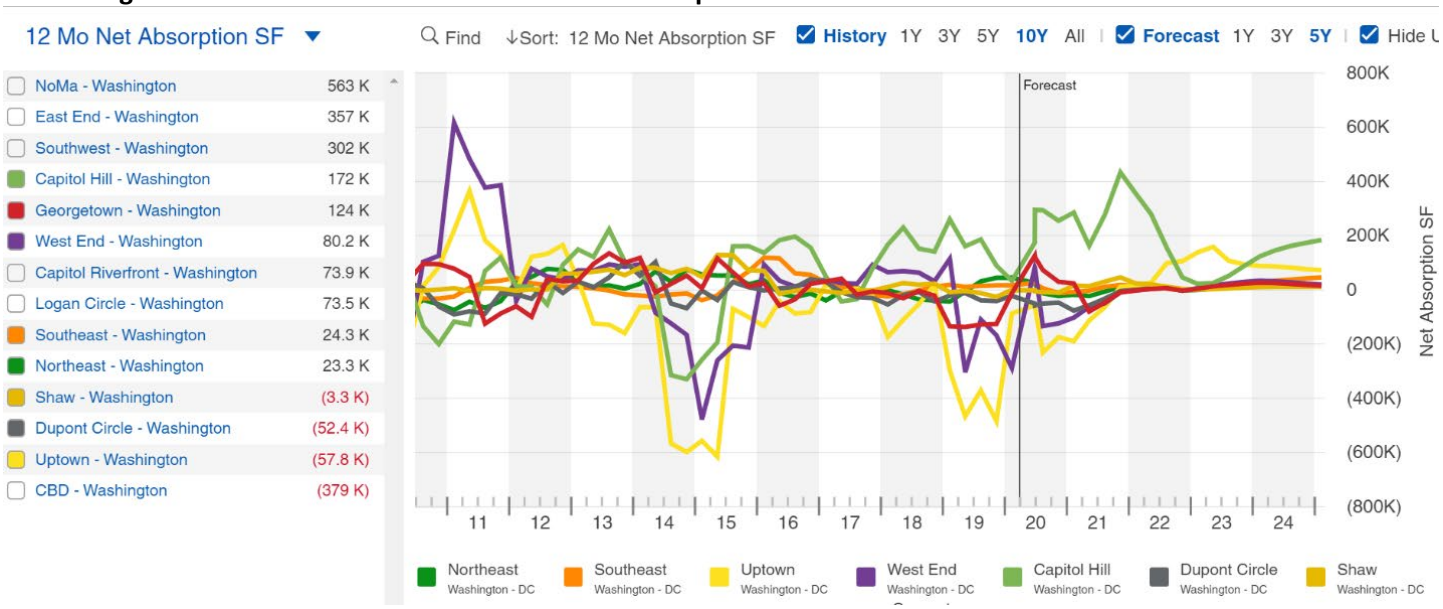
Net Absorption Office

Churn between office tenants coming and going within an office submarket is a constant. Net absorption tracks whether more office space is being leased or vacated during each quarter. Episodic changes indicate trends, such as large tenants moving to other submarkets or lease-up of new buildings, which introduce new capacity. Generally, steady or growing net absorption indicates a healthy submarket and persistently negative net absorption indicates weakening demand for the submarket.

Figure 10 shows that four submarkets had negative net office absorption over the past year. The Uptown Submarket had the most significant negative absorption; notably, the Submarket is not expected to experience positive absorption in the foreseeable future. The West End Submarket stands out for its volatility. A period of high net absorption a decade ago followed by two periods of steep negative net absorption in more recent years indicate a market in transition. Prior to COVID-19, volatility in the West End Submarket reflected both the demand for and increasing supply of top-quality, centrally located office space.

Growth in the Northeast Submarket partially reflects its large geographic area along with accelerating real estate development. In this Submarket, office space distributed across a significant number of smaller properties has been a factor in past performance and several larger projects, such as Senator Square, near the Minnesota Benning Metro Station, are part of the forecast for future absorption.

Figure 10. Office Submarket 12-Month Net Absorption



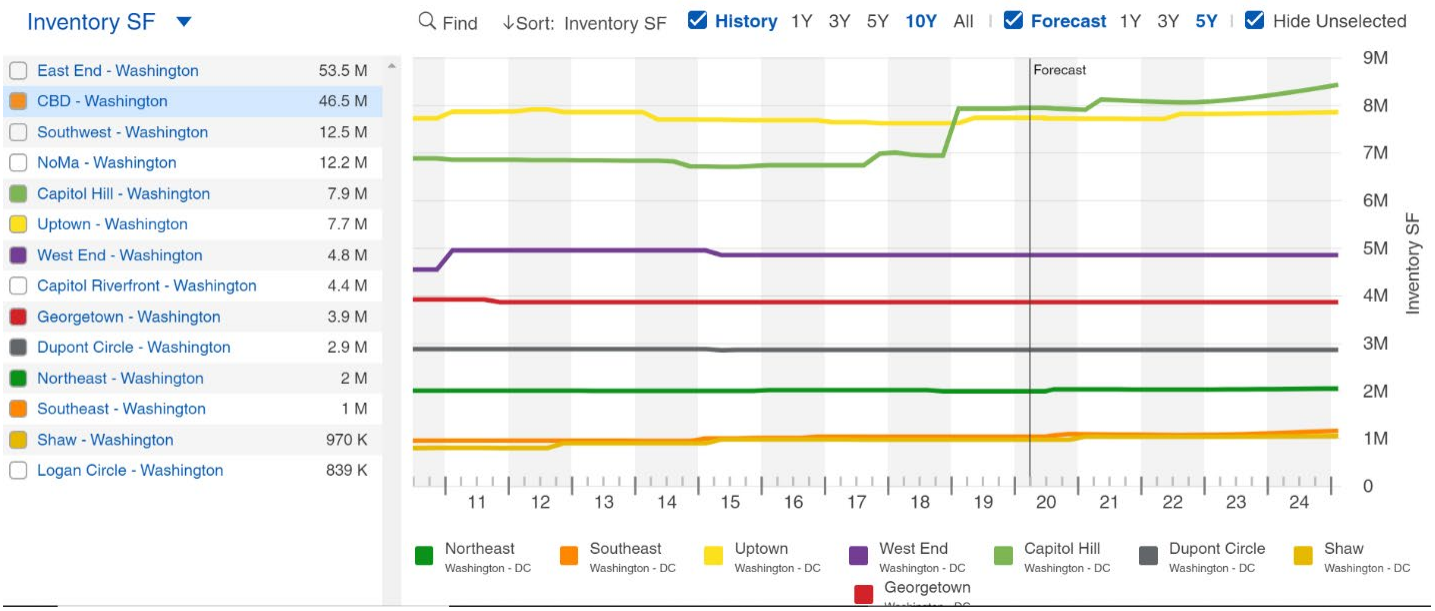
Source: CoStar

Office Submarket Inventory

Inventory is the amount of office space available within a submarket. Inventory growth reflects delivery of new buildings, while contraction indicates demolition or use change. Many of the District's submarkets have little, if any, open land. In these areas, new construction typically replaces existing structures with larger or more dense structures, which reflect smaller changes to inventory. However, in emerging submarkets, such as Capitol Riverfront and NoMA, changes in use have facilitated millions of square feet of net new office space. Due to this structural difference, emerging markets were withheld from the chart below. Additionally, the scale was adjusted to omit the CBD Submarket, which has more than four times as much office space as the next-largest established submarket. Focusing on established office submarkets outside the CBD Submarket enables a smaller y-axis scale that shows key differences between these submarkets.

Figure 11 shows that among submarkets outside of the CBD Submarket, the Capitol Hill and Uptown Submarkets have the largest inventory. The biggest takeaway is that the Uptown Submarket's large inventory combined with weakening fundamentals presents some of the strongest opportunities for office to residential conversion.

Figure 11. Office Submarket Inventory



Source: CoStar

Rent vs. Occupancy

The key performance indicators of office market performance are often interdependent. One particularly useful pair of indicators is rent and occupancy, which work together to generate a building's operating income. In some cases, a submarket may have high occupancy at the expense of relatively low rents (see for example, the Northeast Submarket shown as the dark green dot in upper left-hand corner of Figure 12 below). This combination of factors indicates low demand relative to other submarkets. One reason these submarkets have such high occupancy is that long-term vacant office space, which is typically obsolete in configuration and/or finish, is frequently taken off the market, deflating total inventory and artificially inflating occupancy. Occupancy above 95% indicates a market that may have too little inventory, excessively low prices, or artificially small inventory.

The healthiest submarkets will establish rents that generate vacancy rates between 8% and 12%. Figure 12 shows how the Georgetown and Dupont Circle Submarkets are in this range. These are some of the District's best-established submarkets outside of the CBD. However, it is important to note that other market fundamentals in these submarkets, such as rent growth, indicate that they may be relatively less attractive prospects for future investment. The value of office buildings in these submarkets already reflects the combination of high-rents and occupancy, meaning that a future investor may have difficulty earning a large enough return to outweigh other investment opportunities.

Figure 12 illustrates how both Uptown and Capitol Hill are relatively large submarkets, at 7.7 and 7.9 million square feet, respectively. Each of these submarkets has a high vacancy rate, approaching 15%. A key difference between these submarkets is Capitol Hill's $55 per square foot market rent is near the District's average of $53 per square foot, while the Uptown Submarket generates less than $40 per square foot. Notably, the Capitol Hill Submarket has also experienced growing inventory, which may be applying downward pressure on occupancy. Conversely, the combination of high vacancy, low rents, and declining absorption indicate that the Uptown Submarket may be a strong candidate for office to residential conversion.

Figure 12. Office Submarket Rent Compared to Occupancy

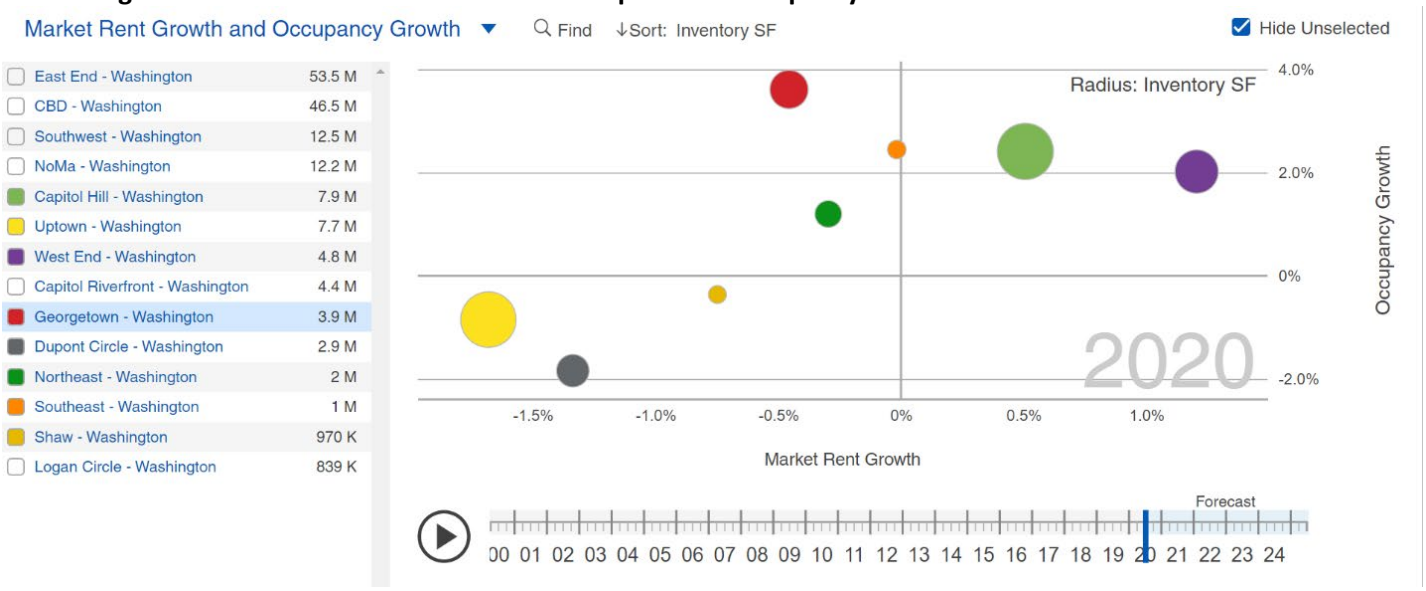
Source: CoStar

Rent Growth vs. Occupancy Growth

The combination of rent and occupancy growth are good indicators of where real estate investors are likely to continue investing or make new investments. Submarkets with consistently declining rent and occupancy are most likely to support use changes. The chart below reflects Q2 2020 conditions among the District's established office submarkets.

Based on Figure 13, below, the Uptown and Dupont Circle Submarkets demonstrate particularly weak fundamentals including rents falling at a rate between 1% and 1.5% per year along with occupancy growth that is falling by as much as 2% per year. The Capitol Hill and West End Submarkets each have stronger fundamentals, including annual rent growth of 0.5% to 1% per year, and more than 2% occupancy growth per year, indicating these submarkets are less likely to support conversions. Sustained rent growth below 2% a year indicates that a submarket is losing value because inflation is likely to outstrip the value or rent growth.

Figure 13. Office Market Rent Growth Compared to Occupancy Growth



Source: CoStar

DESIGN AND ARCHITECTURE CONSIDERATIONS

Design and Architecture considerations are essential to the conversion potential of a specific commercial building or site. OP has identified the following design considerations for commercial to residential conversions, as informed by a review of prior architectural analysis from the Golden Triangle BID and the Downtown BID, along with site-specific assessments.

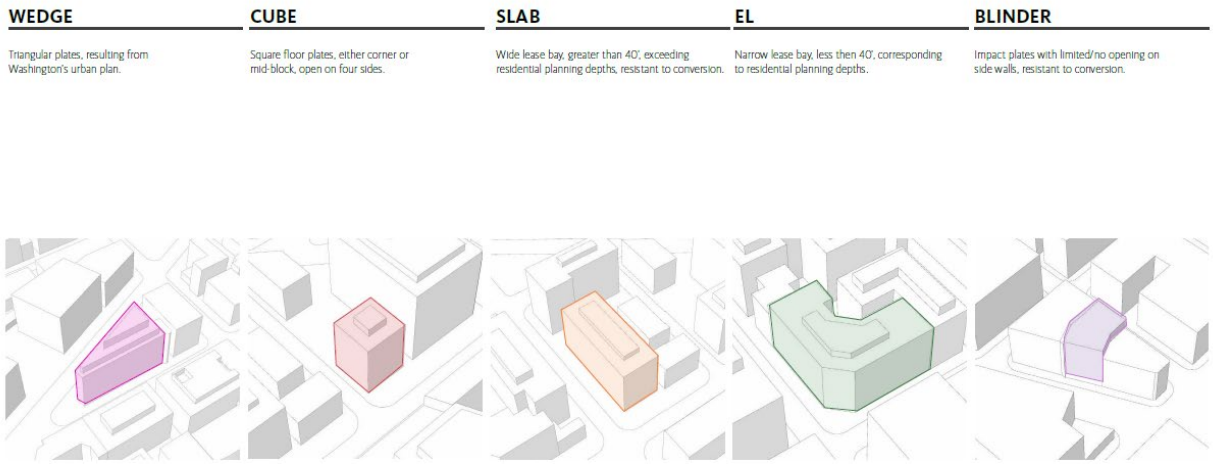
Building construction and configuration are among the leading factors that support or inhibit a commercial to residential conversion. Research from the Downtown and Golden Triangle BIDs indicates that many but not all of the District's commercial building typologies can be cost effectively converted to residential use. Their study identified seven office building typologies that are present in Downtown and found that three of those have high potential to support conversions: wedge, cube, and light slab (light slab is a subset of slab style office buildings depicted in Figure 14. The distinction between slab and light slab construction is the thickness of the horizontal concrete slabs separating floors in reinforced concrete buildings.)

Among these three building typologies, wedge buildings have the strongest conversion potential because they typically have floor plates with depths comparable to residential buildings and afford the most frontage with unobstructed views. Cube buildings, which are typically located on the corner of a block, also present important opportunities for conversion. However, the strongest candidates have at least three building faces that afford predominately unobstructed views. Light slab buildings present a different type of opportunity, their construction facilitates more cost-effective floor plate modification to enable light access. However, these buildings may be less able to support structural additions due to lower load capacity compared to other types of construction.

Column and slab spacing are also important considerations. In reinforced concrete buildings, slabs form the horizontal structure between floors and columns form the vertical structure within floors. Slab spacing will likely need to be sufficient to meet Class A residential standards requiring 9.5 feet clear. These heights

will enable the converted building to achieve market rate rents that make conversion financially viable. Column spacing is another important consideration. Column spacing narrower than a typical one-bedroom apartment is likely to produce inefficient layouts with units that have limited access to daylight. Preliminary research indicates that column spacing under 20 feet is likely to be challenging for conversions; however, further study on column spacing would be beneficial for developing a greater understanding of this potential impediment.

Figure 14. Central Washington Building Typologies



Source: Gensler analysis of design parameters for urban office to residential conversion

Structural capacity to support vertical additions is also important. Most conversions of office buildings to residential use remove building floor area and/or generate higher than typical rates of unleasable building area. The ability for a building to support a vertical addition both structurally and in terms of its maximum allowable zoning envelope (which is itself guided by Comprehensive Plan future land use policy), can be a deciding factor. Additions can offset losses of leasable building area from the original office building configuration. As a result, residential buildings may be more feasible by reducing the financial gap caused by modifying the structures of office building to support residential use.

Hotels present several additional considerations. The capacity of plumbing stacks can be a key factor. Apartment buildings with dishwashers and washing machines generate much higher volumes of wastewater than typical hotel rooms. This difference can require new plumbing stacks for conversion, which reduces cost efficacy significantly. Banquet and restaurant facilities can be challenging to cost effectively incorporate in conversions. Buildings with these elements have been most effectively converted to luxury senior housing, which provides onsite programming and services. Extended stay hotels have been found to provide some of the best conversion opportunities because their unit dimensions, plumbing, and mechanical equipment is most similar to the needs of apartment buildings.

Analysis of Building Quality and Its Impact on Conversion

Building quality is one of the leading factors in assessing the likelihood of commercial to residential conversions. This analysis uses data from the real estate information firm CoStar. CoStar uses a proprietary building quality rating system in addition to the conventional “Class A / B / C” system. The proprietary system ranks properties on a “Five Star” scale, with “1-Star” designating the lowest quality, and “5-Star” the highest. This star system is particularly helpful for analyzing the District’s Class A properties that

segment into two categories: “trophy class” and “commodity grade.” The 4-Star rating is used for properties that straddle the conventional break between Class A and B properties. This is helpful because these buildings historically perform well in the District, serving robust demand from numerous government and nonprofit tenants. Similarly, 3-Star buildings straddle the divide between class B and C, with more emphasis on conventionally defined Class B properties. And lastly, 1-Star and 2-Star buildings represent the lowest quality, including obsolete buildings. Obsolete buildings due not conform to current market standards for a variety of reasons including level of amenity, state of repair, and structural configuration, such as celling heights.

Prior to COVID-19, 4-Star and 5-Star office buildings had been posting elevated vacancy due to high demand for top-floor space in trophy class buildings, declining space per employee, and limited demand for additional office space among the District’s leading industries. These factors drove higher vacancy rates because they generated demand for new 5-Star Trophy Class office buildings that cannibalized demand for existing 4-Star Class A buildings. Conversely, vacancy had been relatively low in 3-Star buildings due to high demand for affordably priced, centrally located office space.

Under the most likely economic forecast scenario, office vacancy in buildings ranked as 4- and 5-Star is likely to remain high, while vacancy in buildings ranked as 3-Star is likely to increase significantly. The highest quality office buildings are not likely candidates for office to residential conversion, because their long-term revenue potential is much greater as an office building. Notably, vacancy in 3-Star properties is expected to continue growing for nearly a year after vacancy rates drop in the top-quality buildings. These 3-Star buildings are the most likely undergo office to residential conversions because they are most likely to require recapitalization, which may be best supported by a shift to residential use.

Breaking down the residential market by building quality shows the inverse: top quality buildings are expected to see a steep and pronounced surge in vacancy due to large amounts of new supply being delivered during a period of reduced demand. Lower quality residential buildings are likely to see little if any change due to potential increased demand from tenants trading down in order to achieve lower housing costs.

OP has less access to information about hotel building quality. However, the limited available CoStar data indicates that centrally located hotels are typically rated as high-quality buildings that are less likely to convert for residential use. While a small number of hotels outside of Central Washington are more likely to include properties with lower building quality that may be more conducive to conversion.

APPENDIX A: METHODOLOGY

This analysis was conducted in the following three steps:

1) Regional Market Analysis
2) Planning Area Analysis
3) Submarket Analysis

Findings are derived from these steps to then identify specific properties and characterize varying levels of potential for office to housing conversion or redevelopment.

Regional Market Analysis

Supply and demand are analyzed for the region's office and residential markets in order to provide the context necessary to assess place-based opportunities. Supply and demand are assessed using CoStar market data on quarterly vacancy, quarterly absorption, and quarterly supply.

The COVID-19 public health emergency is injecting an unprecedented level of uncertainty into the global economic outlook. This analysis compares office and multi-family vacancy rates and rent growth trends at the metropolitan level. It evaluates macro-economic conditions that may support or resist conversions of office buildings to residential use. Conversions are more likely if office vacancy is forecasted to remain elevated while multi-family vacancy is forecast to be low.

Rent growth is a key indicator for new apartment and office construction, respectively. It indicates that supply is tight and demand is growing, which means that an investor can make a reasonable profit developing new buildings. Forecasts of rent growth help identify the likelihood that an office building owner may agree that their asset has declined in value and therefore may be a better fit for a different, type of use, such as residential.

Data for this analysis are drawn from *CoStar*, a commercial real estate information service. The analysis also uses a scenario that addresses downside risks to commercial real estate based on data provided by *Oxford Economics.* The scenario was selected due to the impact of widespread and largely successful remote work in the region's Business and Professional Service Sector as well as the Government Sector. The success of these programs and employee preference indicate that though the economy as a whole is likely to recover more quickly, the office and multi-family portions of the real estate market are likely to recover more slowly.

Planning Area Analysis

Conversion potential is also analyzed using by the geographies defined in the District's *DC Comprehensive* Plan as "Planning Areas" (see Figure 2). Boundaries of these Planning Areas remain constant, unlike Census Tracts, Wards and other boundaries that are adjusted over time. Using Planning Areas helps align the conversion analysis with the Mayor's October 2019 *Housing Equity Report*, which established housing production targets by Planning Area, providing the ability to directly compare the conversion feasibility (examined in this report) to the housing production goals contained in the *Housing Equity Report*.

This analysis focuses on four of the District's 10 Planning Areas: Rock Creek West, Near Northwest, Central Washington, and Upper Northeast. These were identified based the findings of this report's office submarket analysis and outputs from OP's *Development Capacity Model* that used four primary screening criteria: number of parcels that (1) have significant development capacity on or directly adjacent to parcels

with significant development capacity; (2) contain office buildings built between 1950 and 1990; (3) properties are not historic landmarks; (4) properties are privately owned. These were established in prior development capacity research conducted by OP. (Note: historic buildings can and do convert from commercial to residential use. However, feasibility must be assessed on a site by site basis, which is beyond the scope of this study.)

Within each Planning Area, rents per square foot per year were assessed for Class A and C office buildings as well as Class A residential buildings. This analysis approximates the average operating income achieved by Class A office buildings in the District to set a benchmark for what a renovated Class C office building could achieve. Similarly, the average value per square foot for Class A residential buildings in the District is used as the benchmark for the value per square foot converting an existing office use could achieve.

Class B office buildings are not included in the analysis. Historical data indicate they generally perform well due to high demand for quality lower cost office space. Demand is high in part because the stock of Class B buildings has been contracting due to more than a decade of upgrades and redevelopment of these buildings to Class A standards. A strong majority of Class B office buildings are located in and near downtown submarkets that have sustained demand for decades. The long-term value of office buildings in these densely developed parts of the District is likely to outweigh shorter-term opportunities for residential buildings, which would have difficulty fully utilizing large floor plate buildings with limited street frontage. Where appropriate, future studies may investigate the conversion potential for these buildings in greater detail.

Submarket Analysis

The business fundamentals of the office market are analyzed at the submarket level. Submarket data are drawn from CoStar and consist of delineated mutually exclusive geographic areas that represent distinctive areas within the broader office market. Office submarkets differ from residential submarkets. A map of DC's CoStar office submarkets is provided in Figure 5.

Business fundamentals including vacancy, absorption, and rent growth are assessed for each office submarket by comparing to previous years and assessing forecasts of each metric over the next five years.

Office submarkets are especially well suited to identifying place-based opportunities in and near Downtown, whereas other geographies, such Planning Areas, tend to be less sensitive to market variations. In Central Washington, office submarkets are much finer grained than Planning Areas, while in the areas beyond the Central Washington submarket grow exponentially, becoming larger than Planning Areas in the parts of the District farthest from downtown.

APPENDIX B: OFFICE-TO-AFFORDABLE HOUSING TASK FORCE LIST OF CONVERSIONS 2002 TO 2018

Figure 2. District of Columbia Office-to-Housing Conversions, 2002-2018

				Office				Hotel		Other
Year	Building/Building Address	New Use	Developer	Office SF	SF	Units	Afford	SF	Rooms	SF
Completed										
2002	806 15th St NW -- Sofitel Hotel	Hotel	Sofitel	54,000	154,000	-	-	154,000	237	-
2008	733 15th St NW --The Woodward	Residential -- Apartments	SJG Properties	164,000	164,000	189	-	-	-	-
2009	1255 25th St -- WestEnd25	Residential -- Apartments	Vornado	273,000	273,000	283	-	-	-	-
2013	1151 Fourth St SW -- The Lex	Residential -- Apartments	Urban Atlantic/JBG	198,000	198,000	266	-	-	-	-
2014	1150 Fourth St SW -- The Leo	Residential -- Apartments	Urban Atlantic/JBG	200,000	200,000	264	-	-	-	-
2015	1522 K St NW -- Hyatt Place	Hotel	Songy Highroads	80,000	-	-	-	80,000	164	-
2016	1100 Penn Ave NW -- Old Post Office	Hotel	Trump Hotels International	375,000	-	-	-	375,000	270	-
2017	2501 M St NW	Residential -- Condos	Tasea Invsmnt Co & Auger	98,000	98,000	59	-	-	-	-
2017	300 D St SW	Museum of the Bible	Museum of the Bible	391,000	-	-	-	-	-	391,000
2017	1025 15th St NW -- Architect Hotel	Hotel	Honey Bee Hospitality	29,000	-	-	-	29,000	50	-
2018	1255 22nd St NW -- Legacy West End	Residential -- Apartments	1255 22nd Street Lap	116,000	178,000	197	15	-	-	-
2018	4000 Brandywine St NW -- Frequency	Residential -- Apartments	Urban Investment Properties	50,000	50,000	100	8	-	-	-
2018	1108 16th St NW -- The Adele	Residential -- Condos	Red Multifamily Dev/Ellisdale	19,000	19,000	13	-	-	-	-
2019	4000 Connecticut Ave NW	School PK--12th Grade	Whittle School & Studios	650,000	-	-	-	-	-	650,000
				2,697,000	1,334,000	1,371	23	638,000	721	1,041,000
Under Construction										
	2100 2nd St SW -- Riverpoint	Residential -- Apartments	Akridge, Western	609,265	500,000	450	36	-	-	-
	1900 Half St SW	Residential -- Apartments	Douglas Development	478,000	481,000	462	37	-	-	15,000
	3900 Wisconsin Ave NW	Mixed Use	Roadside	228,000	-	-	-	148,000	145	80,000
	2225 Georgia Ave NW	Residential -- Apartments	Howard University	123,000	123,000	176	176	-	-	-
				1,438,265	1,104,000	1,088	249	148,000	145	95,000
Planned										
	4620 Wisconsin Ave NW	Residential -- Apartments	Urban Investment Properties	130,000	130,000	146	12	-	-	-
	515 22nd St NW	Residential -- Apartments	Insight	102,000	102,000	153	13	-	-	-
	3939 Wisconsin Ave NW	School	Sidwell Friends	40,000	-	-		-	-	40,000
	4250 Connecticut Ave NW	School	UDC (buying from Bernstein)	213,000	-	-		-	-	213,000
	4000 Wisconsin Ave NW	Residential -- Apartments	Donohoe Development	492,000	716,000	716	70	-	-	
	5151 Wisconsin Ave NW	Residential -- Apartments	Donohoe Development	105,000	180,000	280	22	-	-	17,000
	1724 Kalorama Rd NW	Add'l residential units	Jubilee Housing	27,000	27,000	47	4	-	-	
				1,109,000	1,155,000	1,342	121	-	-	270,000
		Total Completed, Under Construction and Planned		5,244,265	3,593,000	3,801	393	786,000	866	1,406,000

Source: DowntownDC BID