

New Uses for Office Buildings: Life Science, Medical and Multifamily Conversions

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MARCH
2022



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Author Acknowledgements

The author would like to thank Shawn Moura, PhD, Director of Research at NAIOP, for his support throughout the process from proposal development to final product. Thank you also to CoStar and Yardi for sharing their data. Many others deserve recognition for the useful information or referrals they provided:

David Amborski, Ryerson University; Jordan Angel and Alexander Quinn, JLL; Allen Arender and Austin Haynes, Holladay Properties; Jay Atkinson, Paceline Investors; Robert (Bob) Balder and Tom Campanella, Cornell University; Matt Berry, The John Buck Company; Liz Berthelette and Jay Leslie, Newmark; Gene Boyer, HB Development, LLC; Trevor Boz, WSP USA; Jessica Brock, Greg Capps and Casey Angel, Longfellow Real Estate Partners; Karen Burges, NAIOP San Diego; Paul Ciminelli, Ciminelli Company; Tim Conrey, Adnan Sheikh and Claudia Yates, Scheer Partners; Dale Dekker, DPS Design; Chip Desmone, Desmone Architects; John Duffy, Spring Garden Construction; Jasmine Forbes, City of Gaithersburg, Maryland; Margarita Foster, Justin Sethi and Patrick Worley, CoStar; Robert Fuller, Steven Paynter and Paul Wilhelms, Gensler; Steve Gifford, Deanna Medina, Shefali Raichaudhuri, Alex Rivillas and Michael Stevenson, Perkins Eastman; Scot Humphrey, Edgewater Ventures; Romulus Iconar and Adrian Roca-Rozenberg, Yardi Matrix/RENTCafé; Liz Kamper, CBRE; Jay Keller and Jean Dufresne, SPACE Architects + Planners; Len Kutyla, James & Kutyla Architects; Janine La Marca, Jaros, Baum & Bolles; Jennifer LeFurgy, PhD, NAIOP; Beth Malizia, Alabama Fertility Specialists; Joe Marinucci, Downtown Cleveland Alliance (retired); Lesley McAdams, RM REIM; Neal McFarlane, McFarlane Architects; Phil Mobley, Avison Young; Jaime Northam, Ryan Companies; Colleen O'Connor, BioMed Realty; Stephanie Pater, Real Professionals Network; Roberto Quercia, UNC-CH; Doug Ressler, Yardi Matrix; Gregg Sandreuter, HM Partners LLC; Mark Shelburne, Novogradac Consulting; Robert Simons, Cleveland State University; David Spriggs, Draper Aden Associates and Rebeka Studer, Phase3 Real Estate Partners.

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300 Morris St., Durham, North Carolina.
Courtesy Longfellow Real Estate Partners.

Executive Summary

A decline in office utilization due to the COVID-19 pandemic has raised office vacancy rates to levels previously reached during the 2008 recession. At the same time, other property types—including life science, medical office and multifamily—are in demand. More favorable market conditions for these property types are leading building owners and developers in many markets across the United States to consider converting existing office buildings to new uses.

The NAIOP Research Foundation commissioned this report to evaluate the risks and opportunities associated with office building conversions. The author conducted a review of recent publications and market data on office conversions and interviewed developers, architects and other commercial real estate professionals to provide an overview of the key considerations that go into converting an office building to a life science, medical office or multifamily use.

As with any type of adaptive reuse project, local market conditions and a building's existing design features determine whether it is a suitable candidate for conversion and which new use will provide the best return on investment. Multistory life science building conversions can produce strong returns but generally occur in a limited number of markets that host an existing cluster of life science companies, research universities and medical institutions. Office-to-multifamily building conversions occur in a broader number of markets, but Yardi Matrix data reveal that almost all these conversions occur in urban locations, and a large majority of the original office buildings are more than 50 years old. By contrast, a broader range of office buildings, including one- or two-story buildings in suburban locations, can be good candidates for a full or partial conversion to medical office, so long as they are located near hospitals and areas with growing populations.

This report reveals that converting an existing office building can offer several advantages over new construction:

- **Permits and other approvals are easier to obtain than for new construction.** Life science and medical office uses are usually permitted by an office building's current zoning. Conversion of an existing building to multifamily use in a commercial area will usually encounter less community opposition than new construction in a residential area.
- **Conversions can be completed more quickly, and material and labor costs are lower than for new construction.** These advantages are more pronounced when new construction would require demolishing an existing building, which can add substantial time and cost to a project.
- **Conversion projects are more environmentally friendly than new construction.** Conversion preserves the carbon that is embodied in an existing building's structure, and less energy and fewer carbon-intensive building materials are needed than for most new construction.
- **In some cases, a building can be partially leased during the conversion.** Tenants can lease floors that are not currently undergoing conversion. This additional income can lower project risk and increase returns.

Not all office properties are suitable for conversion to new uses, and the economics that currently favor the conversion of some buildings to life science, medical office and multifamily uses are likely to change over time. However, as the report demonstrates, conversion is an established development strategy that will likely remain a viable option that adds value to underperforming office buildings for the foreseeable future.

Introduction

Real estate owners are considering whether to convert their office buildings to take advantage of higher investment returns from alternative uses. Cost, time frame and risk influence the conversion decision. From the cost perspective, conversions can be less expensive than new construction, especially when redevelopment of a property is the alternative. Demolition costs are avoided, and labor and material costs are lower. From the time perspective, conversions bring space to market much sooner than new construction. In land-constrained markets, a significant amount of time is needed to find an appropriate site and negotiate an option to purchase. From the risk perspective, conversions significantly reduce or even eliminate entitlement risk. In addition, market risk is lower because the development period is much shorter. Therefore, the conversion of office buildings to other uses is one reasonable response to the decrease in demand for office space that has occurred in many U.S. markets.¹

The social benefits are also noteworthy. The environmental impacts of conversions compared to demolition and rebuilding are much lower. An existing building consumed energy when component materials were fabricated and assembled during construction, but this energy investment is lost when the building is demolished. Furthermore, additional energy is required to demolish the building, haul debris to landfills, manufacture and supply new materials and construct the building. Given the total amount of energy required for demolition followed by new construction, the conversion of existing buildings is a viable alternative to reduce greenhouse gas emissions while meeting demand for commercial space.

Strong demand and constrained supply have resulted in higher rents and rent growth for other uses amenable to office conversions, most prominently life science. The pandemic has increased demand for life science products and services, and smaller-scale conversions to medical office space are also occurring. Office conversions to multifamily residential have increased over the last decade.

The life science sector covers a wide range of business activities including biotech, biomedicine and pharmaceuticals, among many others.² The sector encompasses businesses of different ages and sizes engaging in three major activities that impact the use of space: management and administrative work,

research and development (R&D), and manufacturing. Administrative/managerial/headquarters functions occupy general office space. Manufacturing facilities are housed in high-bay industrial space that is primarily owner occupied. Flex space offers labs and other facilities for R&D (50%-70%) as well as associated office space (30%-50%).³ One focus of this report is the conversion of office buildings to flex space for life science R&D labs and associated administrative work—from “white collar” to “white coats.”

The conversion to medical office does not represent a new use as it is a more specialized way to use office space. Medical offices are found primarily in suburban areas close to highways and residential areas, clustering in corridors with easy access to medical centers. The buildings are usually one or two stories and less than 50,000 square feet. They are distinguished from health care facilities that conduct major medical procedures and provide for overnight stays.

Whereas the interest in life science and medical conversions is driven primarily by market-based opportunities, multifamily adaptive reuse projects are also advocated to increase the supply of affordable units. From the 1950s until the new millennium, decentralized, low-density suburban development effectively segregated areas where households lived from locations where companies conducted business. However, the locational preferences of millennials and Generation Z have generated demand for housing in and near employment centers, including the downtowns of cities. Office buildings as well as hotels, warehouses, schools and abandoned factories have become candidates to be repurposed to meet the demand for housing.

Converting an existing office building to other potential uses is not as prevalent. Although demand is currently strong for industrial space, data centers, self-storage and refrigerated warehouses, the cost basis of construction for these types of facilities and associated rent levels are well below the threshold for typical office buildings. The retail sector is generally weak, except for credit tenants with net leases such as chain pharmacies and grocers. These tenants occupy smaller single-story buildings built more cheaply than office space. Finally, excess supply makes hospitality an unattractive alternative for conversion.

Analysis and Discussion

Office space is designated Class A, Class B or Class C. Physical, functional and economic obsolescence increases from Class A to Class C, correlating with the increase in building age. Total square footage, floor-plate size, ceiling height, column spacing, number of stories, design features, building amenities, available surface or structured parking and site location also influence the classification. The categories are not absolute but vary across markets.

Currently, most markets have an excess supply of office space. Class B or C buildings are more likely candidates for conversion than Class A buildings. As leases expire, existing tenants will consider trading up from Class B or C space to Class A space. Most new tenants will prefer to pay higher rents for higher-quality Class A space where rent concessions are available and escalations are modest. As a result, vacancy rates are likely to increase from Class A to Class C, while the opportunity cost of conversion should decrease from Class A to Class C.

Class B or C buildings garner lower rents but tend to have higher maintenance requirements, which make them better conversion candidates. On the other hand, Class A buildings with structural features such as taller ceiling heights, larger open floor plates and attractive architecture may be more cost-effective to convert than Class C buildings since they should command higher rents after conversion. In some markets, Class B buildings may present an attractive compromise offering structural features comparable to Class A buildings but less obsolescence than Class C buildings. Thus, the best candidates for conversion will vary from market to market depending on the demand for, and supply of, office space relative to the proposed new use.

Although growing market demand is primarily met with new supply, the conversion of existing space has become more attractive primarily because less time is needed to bring the renovated property to market. The construction period is about three times faster, and the time required for development review is usually shorter. Conversions may be an appealing option in denser urban areas where developable land is at a premium, compared to suburban locations with short development review periods and undeveloped land.

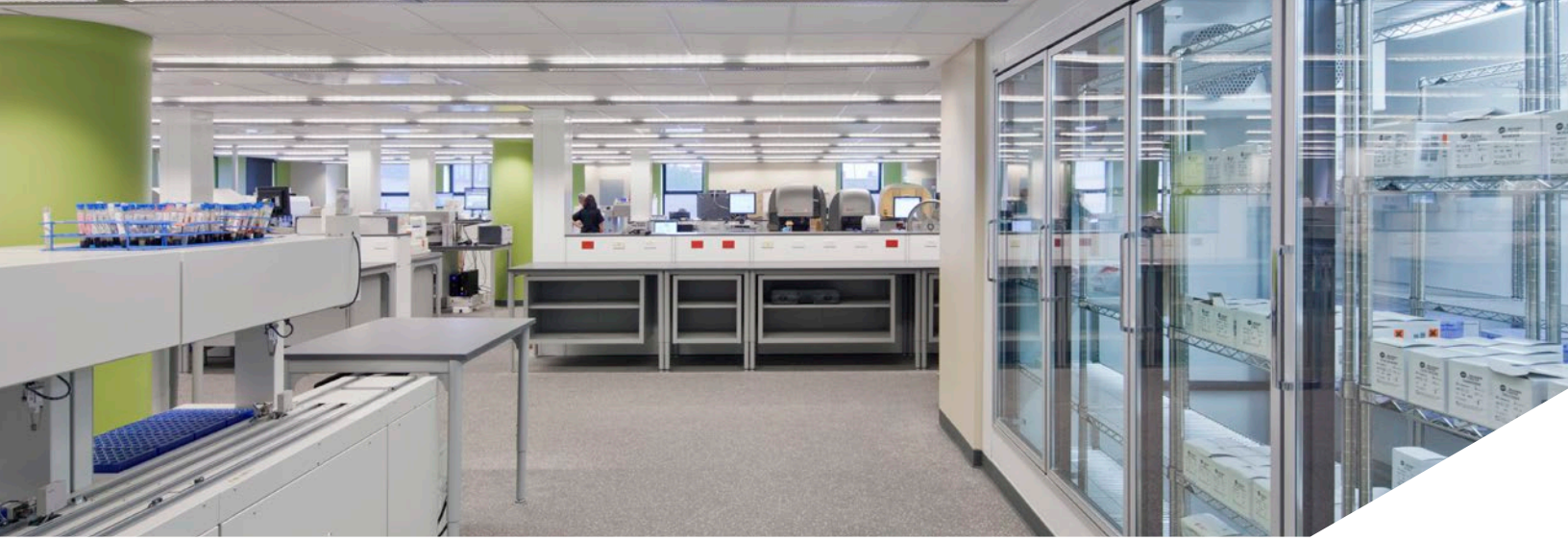
The primary relevant factors include the availability and cost of vacant sites, the complexity and risk associated with development review requirements, the length of time needed to get entitlements and the challenges posed by new construction. When considering conversions, developers assess these factors as well as design and engineering options, comparative construction costs, leasing risks and financing to determine feasibility on a case-by-case basis.

Usually, the office building to be converted is vacant or will be vacant before construction begins. Partially occupied buildings can also be converted. In some cases, owners can offer lease terminations without penalty, find tenants comparable space elsewhere, and even pay their moving expenses. In other cases, conversions proceed with some building occupancy, as described in the case studies section beginning on page 14.

Life Science Conversions

The life science sector has major advantages compared to other sectors that generate demand for office space. Life science employees are less likely to work remotely and need more space than a general office user. Additionally, the tenants occupying life science buildings engage in economic activity that is more resistant to recessions. Opportunities for growth primarily depend on the success of firms developing new science and technology applications. For example, advances in mRNA and related gene therapy technologies promise many applications, including viral disease vaccines and cancer treatments. In addition, drug approval times have never been shorter, and National Institutes of Health funding to support medical research is expected to increase.

One indicator of the strong growth in this sector is the hedging behavior of life science companies in undersupplied markets. In these areas, some companies are willing to sign leases during entitlements and construction to lock in space that they may need in the near term. Banking space in this way enables them to take on additional space as they need it. If they do not need the space, they can easily sublet or assign the lease to another life science company.



Lab Interior. Copyright Andrew Rugge and Sarah Mechling. *Courtesy Perkins Eastman.* ■

In the future, more development of life science facilities (both R&D lab space and manufacturing) is likely to take place within U.S. borders. The preference for “reshoring” facilities is one outcome of the pandemic that demonstrated the risks of lean and efficient supply chains. Now, companies are emphasizing resilience which involves having access to alternative proximate sources of equipment, materials and labor.

Finally, property development for life science companies will be sustained by robust investment from venture capital, IPOs and other sources. Cushman & Wakefield estimates investments of \$70 billion in 2020 and \$90 billion in 2021.⁴

Not surprisingly, life science properties have outperformed office properties. In general, vacancies have been less than half the office vacancy rate, and rents are substantially higher and increasing faster than rents for general office space. These factors make the prospects for life science conversions over the next several years promising. However, the flood of investment dollars targeting this sector could fund projects that oversupply the market. With so much capital chasing deals, it is likely that some life science players, especially the most recent market entrants, will experience financial distress at some point.

Two reports by Newmark concisely describe the life science sector, identify the leading life science real estate companies and provide statistics on the major life science markets. The largest property owners are Alexandria Real Estate Equities (40.1 million square feet, 381 properties), a public REIT, followed by BioMed Realty (16 million square feet, 106 properties), a portfolio company of Blackstone

considered to be an institutional investor/developer. The companies ranked third and fourth are Healthpeak Properties and Ventas, both public REITs. Longfellow Real Estate Partners ranked fifth (6.5 million square feet, 45 properties) is the largest private life science development company. Alexandria Real Estate Equities, BioMed Realty, Longfellow Real Estate Partners and 14th-ranked Phase3 Real Estate Partners are discussed in Appendix A.⁵

For life science lab space, conversions are an attractive alternative to new construction in the three core markets for medical research: Boston, San Diego and San Francisco. These markets have the combination of strong demand, limited supply of buildings and vacant sites, and lengthy development review periods, as well as robust regional economies.⁶ Conversions in these markets, fueled by ample equity capital from many sources, take far less time than ground-up development (about 18 months vs. 2-3 years).

In addition to these three markets, the life science sector is growing in Austin, Chicago, Denver, Houston, Los Angeles, New York City, Philadelphia, Raleigh-Durham, Seattle, Maryland, New Jersey⁷ and three Canadian markets: Montreal, Toronto and Vancouver.⁸

Statistics provided by Newmark for the top 14 markets in the United States are quite informative. In July 2021, these markets accounted for 151.3 million square feet of life science space. Ongoing construction (27.5 million square feet) and proposed projects (85.1 million square feet) will add 112.6 million square feet to this inventory within the next several years, which represents an impressive 74% increase. Ongoing construction consisted of 18.2 million square feet in new construction and 9.3 million square feet from the

renovation of existing properties, about a 2:1 ratio. This result underscores the importance of conversions in generating space for the life science sector. It seems reasonable to expect that conversions could account for as much as one-third of the increase in the life science lab/flex inventory.⁹

Within metro areas, life science flex space tends to be clustered in specific corridors serving both young, growing life science firms and large, established companies. Universities, medical research facilities, hospitals and health clinics are often nearby. They provide access to scientists doing cutting-edge research, medical practitioners and related professional staff. Access to scientific, technical and professional talent who work at these companies or at research facilities and live within reasonable commuting time is the primary reason for clustering. This clustering can lead to more successful talent recruitment and longer employee retention when proximate to vibrant employment centers that offer diverse uses, connectivity, density and walkable urban forms.¹⁰

When a firm receives FDA approval for its product, it often sells the innovation or possibly the firm itself to a larger company near the cluster for manufacturing and distribution. On the other hand, when a firm's R&D fails, their scientists and other staff can usually find employment within the same cluster. As a result, both product innovation and new-company formation tend to be higher in these spatial clusters.

The scope and scale of conversion projects in these areas also vary. In the hottest markets, such as the San Francisco Bay Area and Greater Boston, large life science real estate companies are taking on Class A and Class B high-rise and mid-rise office conversions targeting potential tenants that range from better-established companies to well-financed startups. Smaller developers are converting Class B or Class C low-rise office buildings often on a purely speculative, turnkey basis with financing from private-equity sources.¹¹ Target tenants are smaller, newer companies seeking 5,000 to 15,000 square feet that may be migrating from incubator or accelerator space.¹²

Conversions are often more attractive than ground-up development in the life science sector because prospective tenants frequently need to lease space on short notice. Life science companies normally require fully outfitted R&D labs soon after they receive

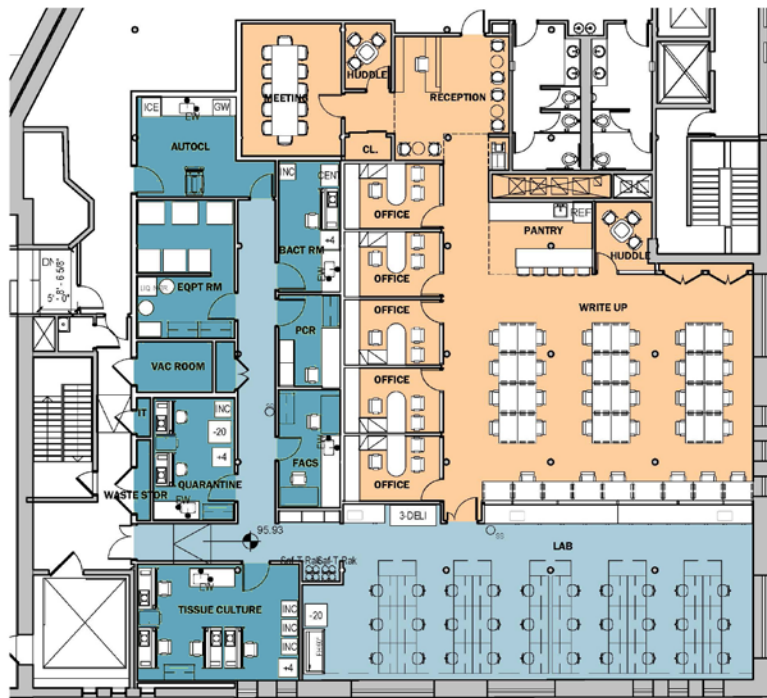
funding. A development company that has the basic shell and mechanical infrastructure in place is more attractive to tenants because operational lab space can usually be added within six to nine months after lease signing. Although conversions are preferred because of shorter development periods, life science real estate companies have demolished old, one-story office buildings when they can be replaced with much denser mid-rise or high-rise flex lab buildings usually larger than 50,000 square feet.¹³

Conversion Requirements

Many requirements must be met when considering office conversion to life science use, specifically the provision of space for laboratories and collaborative work. The following information addresses the areas of concern but not specific requirements except for illustrative purposes. Like commercial real estate development in general, major office conversions do not usually proceed on a purely speculative basis. Anchor tenants are identified up front when possible, and building specifications are designed to meet their needs. Generally, the building is largely completed with final tenant improvements added after the lease is signed and finished in time for building occupancy. It is not uncommon for tenants to share the cost of very specific tenant improvements, which has the benefit of encouraging longer leases.

The development company proposing office conversion to R&D lab space must comply with local zoning. This is usually not difficult because most office buildings are in a district that allows office use. However, special use permits may be required for extensive renovations. Less extensive renovations that modify the exterior or rooftop are often approved at the administrative level without formal reviews.

However, labs working with live viruses, flammable chemicals and other hazardous materials must comply with specific biohazard guidelines in state building codes.¹⁴ Specific code requirements exist for fire safety that regulate the amount and type of chemicals, the size of the lab ("control area"), the number of hours a fire must be contained within the control area and the lab's location in the building. States draw from the International Building Code (IBC) or the National Fire Protection Association's code, NFPA 45, which is less restrictive than the IBC. Both codes impose constraints that make it more feasible to locate R&D



Life science flex layout showing lab space (in blue) and office space (in peach). Copyright Andrew Rugge and Sarah Mechling. Courtesy Perkins Eastman. ■

lab work on the lower floors of the building. Generally, biology-based life science R&D uses fewer volatile, flammable materials than chemistry-based life science labs. The biology-based labs can be located on the upper floors of mid-rise or high-rise structures with the chemistry-based labs located on the lower floors.

The primary considerations for life science buildings are protecting the health and safety of occupants, accommodating specialized equipment and handling dangerous materials. Addressing these issues usually requires starting with the “cold shell” where all interior finishes must be added. The building design needs to accommodate additions and upgrades. The following five areas cover the most important topics.

- **Site constraints.** The area around the building needs to handle trash storage, shipping/receiving and utilities. The site should be large enough to provide access for larger vehicles and to store hazardous materials. There should also be space to install pads for backup generators and utility tanks outside the building footprint. Greater flexibility for site adaptation exists because life science users need more space per employee than office users, which reduces the amount of

surface area devoted to parking given the square footage of the building. In addition, parking ratios may have been lowered in the jurisdiction since the office was originally built, which would further reduce the parking area. Where a parking deck serves the building, excess deck space can be repurposed for storage or other uses.

- **Structural requirements.** Steel frame structures are highly preferred. Reinforced concrete buildings and other construction types can be considered, but they are more costly and difficult to convert partly because additional shaft openings are usually needed to accommodate the intensive mechanical systems. The roof must be able to sustain the weight of HVAC equipment that may be placed there. These multistory buildings should have floor-to-ceiling clearance of 14 feet or more. Generally, life science users expect to occupy “smart buildings.” It should be feasible to install conduits for data as well as other utilities in walls and floors. The floors need to support heavier loads than general office space, often designed for live loads of only 50 pounds per square foot or less. Live-load capacity of at least 100 pounds per square foot is often cited for life science conversions, with higher requirements in specific areas to handle very heavy equipment. Partition walls require another 25 pounds per square foot of load capacity. Sprinklers should already be installed but may have to be upgraded for better fire safety. The ability to buffer noise and vibrations should also be feasible to address. Both large floor plates and wide column spacing are an advantage given the preferred open lab space layouts. Loading docks for freight on the ground floor can be an additional asset.¹⁵
- **Elevator size and capacity.** At least one elevator should be large enough to handle biosafety cabinets and fume hoods (as large as eight feet long). This equipment is needed to house hazardous substances such as viruses safely. There should be a separate freight elevator (or the ability to install one) to handle supplies and materials. Lift capacities of 4,500-5,000 pounds are often cited.
- **HVAC systems.** Specific requirements exist for HVAC. Unlike general office buildings, air cannot recirculate. “Single-pass air” requires large exhaust fans and usually rooftop equipment for proper exhaust dispersion. Lab ventilation should

be at least six air changes per hour compared to two in general office space. In labs where refrigeration and other equipment throw off heat, air-exchange requirements often increase to 10-12 per hour. Some lab areas must maintain positive pressure, meaning that no outside air can enter the space when doors are opened. Temperature and humidity must also be controlled. Roof screening of HVAC equipment may be needed, which adds cost.

- **Electrical power.** There will be heavy demand for power from the local provider. Installation may involve extensive and costly upgrades to 220 volts or higher in all lab spaces. Power disruption is catastrophic for ongoing experiments as well as for materials in cold storage, making back-up generators necessary. A related issue for both electrical power and air circulation pertains to the maintenance and repair of systems that run 24-7. Controls are programmed to have systems run at minimal levels during nonbusiness hours. Some maintenance can be completed during these periods.¹⁶

With reasonable due diligence addressing these topics, office owners can determine the feasibility of converting their property to life science lab space. Several major architectural firms as well as regional design professionals have developed the expertise to design and execute such conversions.¹⁷ For more information on recent life science conversion projects, please refer to Appendix A.

Medical Office Conversions

The conversion of a building into an office for a doctor, dentist or other medical specialist is a smaller-scale, less complicated version of a life science conversion.

Developers and investors often seek value-add opportunities when they own or acquire general office space and renovate it for medical offices, which are expected to generate higher rents and longer-term leases. Office properties that are attractive conversion targets offer visible sites easy to reach from nearby highways within areas experiencing population growth and favorable demographics. They are often found in medical corridors with good access to hospitals, specialized medical treatment centers and intensive-care facilities. The buildings are either vacant or occupied by office tenants with leases soon to expire.

They should already be compliant with Americans with Disabilities Act (ADA) guidelines. In some markets, vacant retail space is being converted for medical office practices that expect frequent visits from clientele (“medtail”). These conversions could potentially compete with office conversions. At the same time, this client orientation is making some existing medical office space less viable and increasing the demand for better-located medical office space.¹⁸

The easiest conversions involve plumbing upgrades and sinks installed in examination rooms. More extensive installations and structural renovations are needed for medical offices that use cold storage equipment or imaging machines. Offices where minor surgery is conducted must provide well-equipped operation and recovery rooms. As the complexity of procedures increases, the construction type, sprinkler system, plumbing and electrical system require closer scrutiny. Abundant electrical power with back-up capability is often necessary.

Sites zoned for office would usually allow medical office. If not, the difficulty of rezoning would depend on the specific jurisdiction. Good sites have parking spaces close to entrances at a ratio of four to five spaces per 1,000 square feet of office space. An ideal building for conversion would be one that had wide corridors, ample ceiling heights, an appealing lobby, floor plates easy to subdivide and a robust sprinkler system. In two-story buildings, an elevator large enough for a gurney is desirable.

The most extensive work is usually focused on upgrading electric power (plus back-up generator installation) and the HVAC system with proper ventilation and air flow to accommodate multiple users. A thorough study of a building’s mechanical, electrical and plumbing (MEP) systems is often useful to assess the needs of potential medical users and to determine how to meet them.¹⁹ See page 18 for a case study on general office conversion to medical office.

Multifamily Adaptive Reuse

The economic factors affecting office-to-multifamily conversions are less straightforward than those associated with life science or medical office conversions. Attractive markets are those where multifamily vacancies are lower than office vacancies, rent levels are at least comparable, and multifamily rent growth is expected to exceed office rent growth.

Recent trends portend continued strong demand for multifamily rental. Marcus & Millichap reports very strong performance of multifamily in the second quarter of 2021, with record absorption of more than 218,000 units, rent growth over 4% and vacancies down 70 basis points to 3.8%.

In addition to being more environmentally sustainable, adaptive reuse projects realize several advantages over new construction. Although construction and development contingencies may be larger in anticipation of change orders, overall cost and time reductions in the 15%-20% range or higher are often cited for adaptive reuse. Less construction time directly translates into lower development period risk. Labor costs constitute a larger share of total project cost for adaptive reuse projects than new construction since these projects use fewer new materials. Since the cost of materials has increased more than construction labor, construction costs for adaptive reuse projects have increased less over time than new construction projects. In some places, older buildings have more market appeal than new construction because they help maintain the uniqueness and authenticity of an area. This public benefit has prompted modest subsidies for adaptive reuse in some jurisdictions. Finally, because the building envelope exists, it is often possible to phase building occupancy as renovations are completed. If inspections can be completed and a certificate of occupancy issued, the renovated floor or part of the building can be occupied. The combination of less time to project completion and cash inflows from partial occupancy during construction have positive impacts on returns.

Conversions from Other Property Types

Office-to-multifamily conversions face competition from building conversions involving other property types. The conversion of hospitality facilities is more feasible for several reasons. First, hotels are easier and less expensive to renovate since they were originally built for residential use and have most of the necessary plumbing, electrical and HVAC systems. Second, the distress level in the hospitality sector has been higher than in the office sector, making purchases at deep discounts more probable.²⁰ Abandoned factories, schools and government buildings often have unique architecture that has market appeal. Industrial buildings and warehouses may have prime locations (for example, proximity

to waterways or transportation facilities). Factory conversions are especially attractive when the building is at least 50 years old and therefore may qualify for historic preservation tax credits. Notwithstanding the competition from other property types, however, office conversions to multifamily have occurred and are planned in many U.S. cities, reflecting the strong demand for housing in most growing markets.

The combination of less time to project completion and cash inflows from partial occupancy during construction have positive impacts on returns.

Unlike conversions to life science or medical office, systematic information exists about conversions to multifamily. Yardi Matrix compiles comprehensive data on adaptive reuse projects in the United States that generate at least 50 multifamily rental units.²¹ The project-level data provided by RENTCafé are organized into four categories: projects that are completed, under construction, planned or prospective.²² In August 2021, including all uses that are being converted to multifamily, there were 150 prospective projects, 135 planned projects and 155 projects under construction. These are expected to supply 25,735 units, 21,989 units and 22,964 units of additional multifamily, respectively.²³

Since 1950, 1,971 adaptive reuse projects have been completed, generating 256,690 multifamily units. Projects have increased in frequency from an average of 124 per decade during the period from 1950 to 1999, to 467 from 2000 to 2009, and to 885 since 2010. Chicago has the highest number of adaptive reuse projects (95), while New York City has the greatest number of units (18,488) as well as the largest project—the adaptive reuse of a historic bank building constructed in 1931 and converted in 2004, resulting in 767 apartment units.²⁴

The 885 buildings that have been converted to multifamily since 2010 are distributed among 278 cities. Half of these buildings are in 24 cities, each of which has at least 10 projects. The top locations are Chicago (46), Philadelphia (34) and Los Angeles (31). Kansas City, Missouri; St. Louis; Cleveland; Washington, D.C.; Milwaukee and Baltimore have more than 20 multifamily projects each.

Tables 1 and 2 show the distribution of buildings and units by property type for two time periods: 1950-2021 and 2010-2021.

The share of adaptive reuse projects involving factories, warehouses, schools and all other properties since 2010 is about the same as the share during the entire period beginning in 1950. Interesting changes have occurred between the other two property types. Hotels account for 14% of buildings since 2010, down from 23% for the entire period from 1950. On the other hand, the share of office buildings has increased, accounting for 25% of the buildings (222) and 32% of the units produced (35,667) since 2010, compared to only 17% of buildings and 21% of units for the entire period. Since hotels present easier conversion targets from the supply side, the growing prominence of office buildings is likely to reflect recent changes on the

demand side. Younger singles and couples wanting to move downtown and to other urban areas are probably the dominant cohort renting these units, along with empty nesters seeking urban amenities.

Recent Office to Multifamily Conversions

Table 3 (on page 10) presents more detailed information on the 222 office buildings converted since 2010. The number of buildings converted decreased as project size increased. About 70% of the projects produced fewer than 200 units, while only about 10% produced more than 300 units. Four of the nine office conversions that generated more than 400 units are in New York City, including the largest one with 644 units. The other large projects are in five different cities: Alexandria, Virginia; Philadelphia; San Francisco; Union, New Jersey; and Washington, D.C.

TABLE 1 Multifamily Adaptive Reuse Projects 1950–2021

Property Type	Number of Buildings	Percent of Buildings	Number of Units	Percent of Units
Hotel	446	22.9%	60,756	23.7%
Factory	451	22.8%	56,060	21.8%
Office Building	343	17.3%	54,189	21.1%
Warehouse	143	7.2%	18,609	7.2%
School	204	10.3%	17,124	6.7%
Other	384	19.5%	49,393	19.4%
TOTALS	1,971	100.0%	256,690	100.0%

Source: RENTCafé & Yardi Matrix

TABLE 2 Multifamily Adaptive Reuse Projects, 2010–2021

Property Type	Number of Buildings	Percent of Buildings	Number of Units	Percent of Units
Office Building	222	25.1%	35,667	31.6%
Factory	196	22.1%	22,128	19.6%
Hotel	127	14.4%	15,491	13.7%
Warehouse	77	8.7%	9,943	8.8%
School	83	9.4%	6,661	5.9%
Other	180	20.3%	23,157	20.5%
TOTALS	885	100.0%	113,047	100.0%

Source: RENTCafé & Yardi Matrix

More than 80% of the buildings converted were more than 50 years old, with the modal category being buildings from 75-99 years old (69 buildings). Sixty-four buildings were over 100 years old when converted, including 15 that were constructed before 1900. Properties at least 50 years old could qualify for historic preservation tax credits, which creates an additional incentive for adaptive reuse.

The converted office properties are in locations that can be described as urban rather than suburban. These properties are found in the downtowns of major cities, in downtowns of secondary cities, in secondary employment centers close to larger cities, or in urban neighborhoods. The fact that 60% of the buildings are over 75 years old and more than 80% are over 50 (see Table 3) strongly supports the conclusion that they have urban/central city footprints because over time cities grow outward from their centers. Many suburban office properties are newer, dating from the 1960s or more recently. Even the property that could be considered more suburban than the rest has strong urban features. It is the 70-unit project in Itasca, Illinois, immediately west of O'Hare Airport and about 25 miles from the Chicago Loop. This five-story office building, originally constructed in 1991, was converted to apartments for seniors in 2012.

Conversion Requirements

Most new apartment projects are opposed by nearby homeowners due to perceived concerns such as increased traffic, burdens on local schools and lowered property values. This can cause contentious,

time-consuming and costly development review processes. The typical situation for adaptive reuse projects is very different. Since these buildings are more likely to be found in urban commercial areas, they are seldom adjacent to single-family residential neighborhoods. Furthermore, many are in central business districts where flexible zoning allows greater density and a mix of land uses. Nearby commercial properties can benefit from conversions to residential as they add purchasing power, and the office market is improved because the overall inventory of existing office space is reduced.

Parking requirements pose another constraint for typical apartment projects, and they increase unit costs as well. These requirements would seldom constrain office conversion projects. The required parking for office property is often quoted at four spaces per 1,000 square feet. Urban one-bedroom apartments average 600 square feet to 800 square feet. Even parking at two vehicles per apartment unit would require fewer spaces than the same amount of office space. Often, the requirement is one space per apartment or less since many urban projects are near public transit. In addition, urban multifamily projects frequently benefit from shared parking arrangements with adjacent commercial uses that further reduce the required amount of parking.

Office conversion to multifamily is more challenging than conversion to life science or medical office. New kitchens, new bathrooms and MEP system upgrades are needed and are costly to install. The most

TABLE 3 Office to Multifamily Adaptive Reuse Projects Since 2010

Project Size in Units	Number of Buildings	Percent of Buildings	Building Age in Years	Number of Buildings	Percent of Buildings
Over 400	9	4.1%	Over 100	64	28.8%
300-399	13	5.9%	75-99	69	31.1%
200-299	44	19.8%	50-74	50	22.5%
100-199	70	31.5%	25-49	36	16.2%
50-99	86	38.7%	Under 25	3	1.4%
TOTALS	222	100.0%	TOTALS	222	100.0%

Source: RENTCafé & Yardi Matrix

important constraints, however, are the building width for low-rise buildings and the location of the building core for mid-rise and high-rise buildings. For two- or three-story walkups, the building width should be no more than 65-70 feet. This width accommodates apartment units located on both sides of a six-foot corridor (double-loaded corridor) that runs down the middle of the floor. Low-rise office buildings with this width can be configured in a U-shape, E-shape, L-shape, H-shape, square with open interior space or simple rectangle.

Office conversion to multifamily is more challenging than conversion to life science or medical office.

For mid-rise and high-rise office building conversions, having a centralized interior core is the most critical factor. The distance from the perimeter of the interior core to the exterior walls of the building should not be more than 36 feet, and 31 feet is optimal. With six feet devoted to the corridor, the remaining distance to the exterior wall would be 25 feet. A unit that is 25 feet by 25 feet (625 square feet) is the ideal size for urban one-bedroom units in many markets. The bedrooms and living space are placed on the 25-foot window side of the building with kitchens, bathrooms and closets on the interior side. Smaller one-bedroom and studio units have 16 feet to 20 feet along window walls. To have attractive designs, two-bedroom units often take advantage of corner locations to create L-shaped layouts.

Wide low-rise buildings or mid-/high-rise buildings with cores that are not centered can be accommodated but with much lower efficiency ratios (rentable building area/gross building area) and greater design complexity and cost. It is important to avoid an unattractive “boxcar” unit that is too narrow and long. One basic problem is the lack of natural light penetration into the interior of this type of unit. The other problem is the creation of units that are larger than the ideal size range and therefore become too expensive for the market.²⁵

Old Class C office buildings have been the most attractive adaptive reuse targets compared to newer and higher-quality office space for both economic and physical reasons. Older office buildings garner lower rents due to various forms of obsolescence and usually

require higher maintenance expenses. Even the casual observer can detect the stark physical differences between older office buildings and newer ones. Newer buildings are larger, wider and taller. Steel frame buildings with glass skins look very different from brick facades punctuated by rows of windows. Newer office buildings are sealed for energy efficiency, whereas older ones have functioning windows. Centralized HVAC was not incorporated in office building designs until the 1960s. These differences make older office buildings much more attractive multifamily conversion targets. The Yardi Matrix data provides support for this point. Since 2010, the average age of office buildings when the conversion was completed was 80.2 years.

Some of the design characteristics of older office buildings make them more attractive for multifamily conversions. Functioning windows in these buildings can be beneficial. If they are in good condition, they can usually be incorporated into the adaptive reuse at minimal cost. On the other hand, the fenestration that may be needed in newer office buildings is more costly. Older office buildings have floor-to-ceiling heights of about 11 feet, which is less than heights found in newer offices. However, 11 feet exceeds the 9.5-foot heights found in most apartment buildings. Extra height increases the volume of smaller units and can accommodate HVAC and other systems that need to be installed.

One advantage of newer office buildings is that they have centralized HVAC and other utilities. Buildings with centralized systems are much more energy efficient than traditional apartments where each unit has its own utility connections. With centralized systems, the rent includes utilities and is set to cover the energy consumption of the average tenant. Centralized systems are likely to become required for new apartment projects given the growing attention to climate change mitigation.

Architects have creatively designed apartment units for a variety of floor plate dimensions in mid/high-rise buildings with central cores. They usually begin laying out units at the four corners of the building. These units will have the advantage of natural light on two sides and may garner rent premiums as a result. Next, they design units along the length of the building that are not more than 30 feet deep with sufficient widths to avoid a “boxcar” appearance. This design constrains the number and layout of units along the width of the building. Although the objective is to



Floorplan for multifamily units within a typical multistory rectangular building. *Courtesy Gensler.* ■

minimize the residual unrented interior space, the core area must accommodate important functions. It is devoted to elevators, stairwells (required by fire safety codes), trash chutes, sprinkler risers, mechanical systems and other utilities.

For cost effectiveness, the location of kitchens and bathrooms must be in the same location on every floor to line up the plumbing. Identical unit layouts on every floor also simplify and reduce the cost of installing HVAC and other MEP systems. The stacking plan indicates how to accomplish these objectives.

Many of these points are illustrated in the multifamily case studies starting on page 20. The two conversions described involve high-rise buildings

that are relatively wide (118 feet and 100 feet), but both have large centrally located cores.

Adaptive Reuse Projects for Affordable Housing

As indicated in Table 2, office conversions since 2010 resulted in the production of 35,667 multifamily rental units across the United States in projects of 50 units or more. Although Yardi does not track rental rates, they do apply a rating system to properties from A+ to C-. Based on this system, it is likely that the more affordable units are rated C+, C or C-. Only about 5% of the rated properties fall within this C range. On the other hand, many websites advertising these multifamily properties describe them as offering “luxury” units.

Yet the need for affordable housing has become the most serious problem facing many jurisdictions. Housing prices and rents continue to increase faster than household incomes. Existing affordable units like Class C apartment communities are being converted to Class A apartments or to other uses. Older apartments tend to have

preferred relatively central locations, making them prime conversion targets as cities grow outward.

Several government programs exist to produce more affordable housing, including federal, state and local tax credit programs. These programs provide a subsidy that increases income or reduces costs to make an affordable housing project feasible. The most frequent subsidy to reduce development costs pertains to site acquisition. Local governments often use property they own to encourage affordable housing development. The site is offered at no cost or written down to reduce total development cost.²⁶ Of course, in the case of adaptive reuse projects, the site includes a building to be repurposed for housing. When obsolete government office buildings are available, local governments can contribute the property to reduce overall project costs.

Additional strategies exist for reducing total development costs. Most attention has been devoted to reducing

Adaptive reuse projects have one major advantage over new construction to achieve affordability: per-unit construction costs for such projects can be about 30% lower.

the regulatory burden that local governments impose. One significant burden in some states (for example, California and Florida) pertains to development impact fees. Organizations committed to providing affordable housing can pay the applicable impact fee on behalf of the developer.²⁷ Another consideration is to make sure that the applicable zoning allows the office conversion to produce the maximum number of dwelling units. Expedited development reviews are also helpful.

Aside from cost reductions, two market-based approaches exist that can generate sufficiently high returns while maintaining affordability. Adaptive reuse projects designed as co-living arrangements reduce rents per person by having three to five individuals share one unit.²⁸ Micro apartments, usually 300-500 square feet, have lower rents per unit than studios but still charge high enough rent per square foot to yield acceptable returns. Although co-living and

micro apartments can provide affordable housing for individuals or couples, subsidies are generally required to produce affordable units that are large enough for families.

Adaptive reuse projects have one major advantage over new construction to achieve affordability: per-unit construction costs for such projects can be about 30% lower than the cost of demolishing an existing building and replacing it with new construction. In built-out areas, demolition and new construction on tight urban sites are very challenging and costly. Adaptive reuse projects are generally less expensive if the existing building is structurally sound and sufficiently functional to avoid major costs for reconstruction or MEP systems.²⁹ For these reasons, public subsidies will generate a greater number of affordable units when adaptive reuse projects receive the subsidies than when the subsidies are targeted to new construction.

Life Science and Medical Office

Longfellow Conversion at DurhamID— Durham, North Carolina

Longfellow Real Estate Partners is currently converting 100,000 square feet at 300 Morris Street, an office building it had previously developed at the Durham Innovation District in downtown Durham, North Carolina, into life science uses to meet demand for lab space.

In 2018, Longfellow developed two LEED Gold certified office buildings designed by Duda Paine totaling 350,000 square feet of rentable building area at 200 Morris Street and 300 Morris Street. The buildings responded to strong market demand and were fully leased soon after completion. The initial tenants included Duke University's Clinical Research Institute and WeWork, among several others. The city of Durham financed the adjacent eight-story parking deck with 1,225 spaces on the eastern side of the block at 325 Roney Street. Morris Green, a pocket park, added a nearby amenity across Roney Street. The area has a Walk Score of 92.

These developments were envisioned in the DurhamID master plan and urban design framework that CBT Architects and Greenberg Consultants completed earlier for their clients: Longfellow, Duke University and Measurement Inc., owner of most of the acreage. The master plan encompassed 27 acres and proposed 1.7 million square feet of residential (300 units), office (1 million square feet), retail and other development. The plan also addressed circulation, amenities, parking and the adaptive reuse of historic buildings. DurhamID was intended to serve as Durham's research hub for life science and technology.

Longfellow envisioned converting 100,000 square feet of office space at 300 Morris Street into state-of-the-art life science lab space to address the undersupply of lab space in downtown Durham. In August 2020, Longfellow paid \$138 million to gain full ownership of



Courtesy Longfellow Real Estate Partners. ■

the two Morris Street properties. That same month, WeWork announced its plans to leave 300 Morris Street by the end of 2020, reducing its presence in downtown Durham. Duke University's Clinical Research Institute continued to lease 200 Morris Street as its sole office tenant.³⁰

Longfellow hired MHA Works as architects and DPR Construction to execute a design-build project. With this delivery system, subcontractors had early access to the building during the design phase. This reduced the likelihood of errors and omissions that result in costly change orders, allowing for a smaller construction contingency. The construction contract was cost-plus with a guaranteed maximum price. DPR hired the subcontractors for the MEP systems and the other specialized trades. None of the proposed lab space was released before construction began.³¹



Courtesy Longfellow Real Estate Partners. ■

Plans for the lab space were completed by the end of 2020. In January 2021, Longfellow secured the building permit from the city of Durham. Construction work began in the second quarter of 2021 and is expected to be completed by the end of 2021 or early 2022. The plan for the seven-story building is to construct the lab space on the top three floors, which were previously occupied by WeWork, and on the third floor. Longfellow occupies most of the second floor. The other second-floor tenants are Kimley-Horn consultants and Cherry Bekaert accountants. The fourth floor is occupied by Spreedly, a young fintech company with a long-term lease. The first floor is designed primarily as retail space. The building was 68% vacant at the end of 2021.

Longfellow is actively marketing the lab space in addition to four retail spaces on the first floor. The lab suites range from 5,500 square feet to 14,800 square feet. The larger labs are on the third and fifth floors. There are three smaller labs on the sixth floor, and four on the seventh floor. Each lab includes a fume hood, lab benches, backup power generation, and capacity for hazardous materials storage, treatment and disposal. A tenant improvement allowance will be offered to meet the specific requirements of tenants signing longer-term leases.

The leases will be triple net with tenants paying all operating expenses including real estate taxes, insurance, utilities and common area maintenance. Rental rates will be in range of \$45-\$50 per square foot. In the third quarter of 2021, asking rents for office space in downtown Durham averaged \$29 per square foot according to CoStar. Lease terms are expected

to be three to seven years with renewal options. The negotiated rent will depend on the lease term and whether additional tenant improvements are provided. Longfellow expects to achieve stabilized occupancy by the third quarter of 2022. It will provide property management services from its on-site offices.³²

Longfellow developed 300 Morris Street in 2018 and knew that conversion to lab space would be feasible. There were no problems with the zoning, building code or other regulations. The building has loading dock access, service corridors, elevators (including a freight elevator large enough to handle oversized equipment), an adjacent parking deck with ample capacity, and areas that can be used for the storage and disposal of hazardous materials. The most serious problem that has arisen is supply chain disruptions caused by the pandemic. The delivery of metal studs and mechanical equipment has been delayed.

The seven-story, steel frame building is 167,400 square feet of gross building area with floor plates about 25,000 square feet and ceiling heights of approximately 14 feet. The floor loads are adequate to sustain the weight of lab equipment. Two exterior chases on the interior parking deck side of the building are being added to provide new exhaust systems for the labs. The structure can handle noise and vibration without additional modification. The existing sprinkler system is adequate. The electric power is sufficient. A back-up generator will be installed on the roof. The HVAC system will be upgraded to provide single-pass air flow as well as adequate ventilation, temperature and humidity control designed to meet tenants' needs. HVAC equipment will be located at the back of each floor and on the roof. One new feature is the addition of electro-chromatic glass that automatically adjusts a window's tinting to optimize the amount of exterior light entering the building.

When construction began, the existing tenants were observing COVID-19 protocols and working remotely. In the spring of 2021, when employees began returning to the office, the demolition work proved to be disruptive. Most of the subsequent construction was scheduled after hours to accommodate the needs of the existing tenants. The construction is being completed floor-by-floor starting with the seventh floor. As leases are signed, new tenants will occupy the building when their space becomes available. Therefore, tenants will be paying rent while space on the lower floors is being completed. These cash flows will positively impact returns.³³



Courtesy Sheer Partners Inc. ■

South Duvall Conversion—Gaithersburg, Maryland

In March 2018, South Duvall Commercial Real Estate Investments purchased an underperforming office building at 704 Quince Orchard Road in Gaithersburg, Maryland, to provide Class A life science lab space to meet market demand.

The property, originally constructed in 1982, is located in an office park that eventually became part of Montgomery County's "DNA Alley" (due to a large number of biotech companies in the area). Over the next 30 years, the park lost tenants and gradually declined. When purchased by South Duvall, the property was less than 60% occupied.

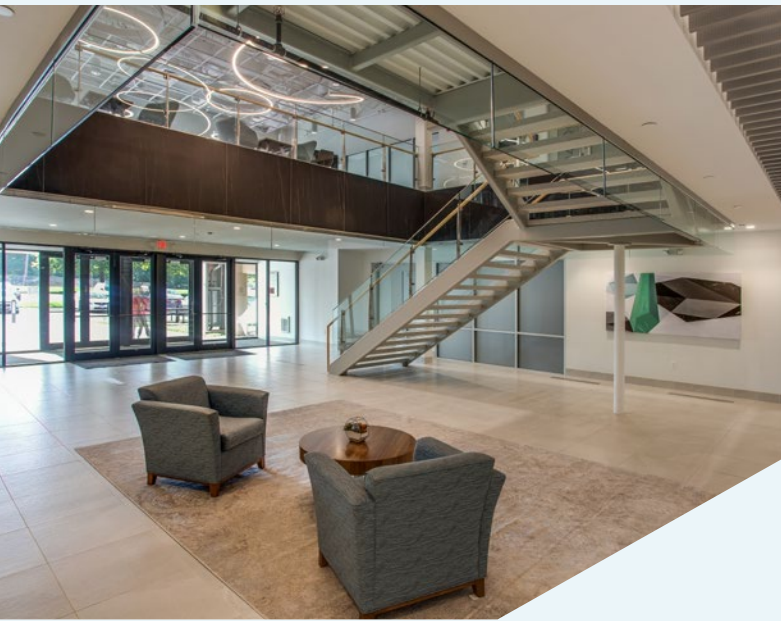
This suburban property with 12 other office and flex buildings is now part of the Gaithersburg Life Sciences Cluster. It is less than one mile from an I-270 interchange with neighborhood and big box retail to the north and suburban residential areas to the west. It is directly across Quince Orchard Road from the National Institute of Standards and Technology (NIST). The NIST campus has 62 structures, including a fire station and a day care facility, on 579 acres adjacent to I-270 on the west side. Gaithersburg is on the northwest end of the I-270 biotech corridor, which extends approximately 15 miles to the southeast along the interstate highway to Bethesda, Maryland, where the National Institutes of Health are headquartered.

The entity that owns 704 Quince Orchard Road consists of Scheer Partners, Inc., and Alexandria Real Estate Equities. Scheer Partners has 20 years of experience in all aspects of biotech real estate—office, labs and manufacturing. Founded in 1991, Scheer offers tenant and landlord representation, strategic

consulting, construction management, development, and investment sales and acquisitions. Headquartered in Rockville, the company provides its integrated commercial real estate services in the mid-Atlantic region. Alexandria, the largest life science real estate company in the country, has significant holdings in the I-270 corridor. The \$6.875 million acquisition (\$86 per square foot) in March 2018 was less than half the \$14.250 million price (\$178 per square foot) paid by the previous owner in June 2007.

Soon after the acquisition, Scheer Partners hired Gaudreau Inc. to redesign the interior and JennErik Engineering for engineering services.³⁴ Using the design-bid-build delivery system, Scheer selected Edgely Construction Group, a general contractor based in Silver Spring, Maryland, to do the construction under a cost-plus contract with a guaranteed maximum price that included a 10% contingency. Edgely assembled the team to execute the renovation. Scheer Partners provided the construction-management services that emphasized accommodating existing tenants' specific needs.

The conversion began in May 2018 with the demolition of interior finishes. The entitlement process was straightforward, as rezoning was not required. The site plan, which involved exterior modifications, was approved in July 2018. The building permit for new construction was pulled at the end of August 2018. In September 2018, the city approved the location of the gas generator at the rear of the building. In November 2018, the project received the first of several certificates of occupancy. In March 2019, Gaithersburg's mayor and council held a work session and tour at 704 Quince Orchard Road to highlight the nearly completed facility.



Courtesy Sheer Partners Inc. ■

Scheer Partners began gutting interior finishes with two existing tenants whose leases were about to expire, one on the first floor and the other on the second floor. They then executed the conversion in three phases: the base building phase, core and shell phase, and the interior buildout phase moving from the first to the third floor. Scheer Partners was able to get certificates of occupancy after each phase, which enabled new tenants to move in and begin paying rent. They installed new systems and air shafts, paying attention to segregating air flows among lab suites, including maintaining positive pressure between the main lab area and support labs. They also installed steel reinforcement to carry the heavier roof load. The entire third floor was upfit for one tenant. The second floor was renovated on spec into 4,000-5,000-square-foot suites with 60% for R&D lab space including four-foot hoods and 40% for office space. The first floor was designed with an open floorplate that has many of the building's amenities.

The building occupancy increased as the renovation proceeded. The greatest challenge involved installing new fresh air/exhaust shafts that went through occupied space. The work was completed after hours, and the tenants' leases had to be modified to reflect

their smaller occupied footprint. Tenants were also sensitive to construction-generated dust. Filters were changed constantly. In one work area, the windows were temporarily removed to directly dissipate dust. COVID-19 also affected the conversion. One of Edgely's subcontractors came on site infected with COVID, and the project had to be stopped for 10 days.

All five lab spaces were preleased before the final certificate of occupancy was received. Cartesian Therapeutics occupied its space in May 2019. Three other tenants moved in during 2019. Neuraly Inc., which focuses on treatments for neurodegenerative diseases, leased the entire third floor of about 27,000 square feet. Novavax and nine other tenants completed the occupancy of the 79,931-square-foot building (rentable building area). Novavax received \$1.6 billion from Operation Warp Speed in 2020 to promote its vaccine development program. By March 2020, the building achieved 100% occupancy with 12 tenants. Whereas asking rents in the third quarter of 2021 were about \$20 per square foot for flex space in this market according to CoStar, rent at 704 Quince Orchard Road is estimated at \$30 per square foot.³⁵

The renovated three-story building has lab suites that meet all MEP requirements for life science labs, three passenger elevators, and common-area amenities including a café/kitchen with snacks and drinks, game area, a wellness center with lockers and showers, conference rooms, lounge and shared lab/support area. The larger conference room is intended to serve as a hub for biotech industry events supported by strategic relationships Scheer Partners has established with Advanced BioScience Labs, BioHealth Innovation and Smithers Avanza. The first VWR self-serve store in the Washington, D.C., area is in the building, selling lab equipment and supplies.

The reinforced concrete building with brick veneer skin and 300 surface parking spaces, primarily in front and to the rear of the building, occupies a 4.17-acre site for a floor area ratio (FAR) of 0.44. Other notable features are an atrium lobby with a grand staircase, a prominent canopy at the entrance with LED lighting, and an outdoor plaza that has work areas. HVAC equipment is located on the roof.³⁶



Courtesy Alabama Fertility Specialists. ■

Alabama Fertility Specialists Medical Office Conversion—Homewood, Alabama

In 2019, a one-story office building near Birmingham, Alabama, was converted to medical office use by Alabama Fertility Specialists (AFS).³⁷ The building, at 3490 Independence Drive in Homewood, Alabama, was originally constructed in 1975. The American Mining Insurance Company was the building's owner and sole occupant for 20 years until the sale in 2019. Independence Drive is also Route 31, one of the major north-south highways in Birmingham. The property is about one-half mile north of Route 149, which serves as an important suburban east-west connector. This location is excellent for medical office because it is situated only three miles from the UAB medical complex in midtown Birmingham and is even closer to several major urban and suburban medical facilities.

The slightly elevated 1.5-acre site accommodates the building, 60 surface parking spaces and attractive landscaping. The building frontage that faces the parking area is about 180 feet. The Route 31 side of the building is about 150 feet. Total heated area is 21,072 square feet, according to the Jefferson County Tax Assessor. The building entrance leads to an interior atrium of about 3,000 square feet that is 30 feet wide and 100 feet long.³⁸

AFS had rented space in this submarket since its founding in 2004. After reviewing many rental options, the three AFS partners decided to purchase and renovate an existing property. They established Eloise LLC to serve as the ownership entity and in June 2019 purchased 3490 Independence Drive in a private sale for more than \$4 million net of transaction costs.

Eloise LLC was able to secure a loan from Commerce One Bank in Birmingham at a loan-to-value ratio over 80% to finance the purchase of the property. Eloise LLC paid transaction costs and provided equity while the partners individually guaranteed the construction loan. When the project was completed, the property was appraised at \$9.2 million. AFS qualified as a female-owned business and was able to secure a Section 504 loan from SBA, which covered the renovation and tenant improvements on very attractive financing terms.

The senior partner at AFS took the lead role for Eloise LLC to carry out the renovation. She hired Williams Blackstock Architects (WBA) of Birmingham to develop plans and specs for the renovation and Brasfield & Gorrie (B&G) General Contractors to execute the renovation. Brasfield hired Ai Corporate Interiors as its subcontractor.

The building renovation was estimated to cost more than \$4 million. About 86% was devoted to interior structural work, including fees, and the rest of the budget was devoted to interior finishes, roof work and furniture. AFS spent about \$1 million for tenant improvements, primarily to purchase specialized lab equipment needed for its practice.

Eloise, WBA and B&G were able to complete design work and secure a building permit from the City of Homewood by the end of 2019. B&G began the renovation in January 2020 and encountered several problems that required additional time and money to solve. The most serious was with the atrium. The owners planned to retain the mature plants in the atrium, but they had to be removed to meet air quality standards. Removing these plants and finishing

the atrium added costs. The other significant problems related to the need to add structural support near the atrium and rerouting the gas line that originally ran under the slab.

Despite these challenges, B&G finished the renovation in eight months and received a certificate of occupancy in August 2020. AFS moved into the building later that month. The renovation was completed on time despite the COVID-19 pandemic, primarily because B&G pre-ordered materials before March 2020.

The 3,000-square-foot atrium area serves as the entrance, check-in and waiting room. To the left of the renovated atrium is more than 12,000 square feet built out as typical medical office space. It includes examination rooms with equipment (ultrasound) and sinks, X-ray room, offices for the doctors and nurses, a conference room and circulation space. To the right of the atrium is about 5,000 square feet of specialized space subdivided into six rooms: a pre-operation/post-operation room, a processing room, a room for medical procedures, a sperm collection room, a lab for in vitro fertilization, and a tank room with refrigeration and other equipment for the storage of eggs, sperm and embryos. All rooms in this area have air filtration, temperature and humidity levels that are precisely specified and controlled. In addition, the three rooms for fertility procedures, the lab space and the storage

tanks must maintain positive air pressure. The special HVAC system that serves this part of the building sits on the roof directly above the lab spaces. There is also a natural gas generator outside the building on its west side to provide back-up electrical power.

The building has no vacancy. AFS occupies more than 15,000 square feet with the three doctors who are members of Eloise LLC, 36 staff members and two more infertility doctors who joined the practice in September 2021. Dry Eye Center, a practice of three optometrists offering the full range of eye care services, rents the remaining available space, about 3,200 square feet. They occupy the front-right corner of the building that has a separate entrance and fire exit.

As is typical for such situations, Eloise LLC owns the property, which provides the collateral for the permanent loan. It makes monthly debt-service payments to Commerce One. AFS and Dry Eye Center pay monthly rent to Eloise LLC that covers debt service, property insurance, property taxes, maintenance and related expenses.

Most medical practices would have found a capable real estate developer and signed a long-term lease commitment to enable that developer to secure financing and execute the conversion. In this case, the AFS partners were far more entrepreneurial, lowering the cost of conversion by taking on development risk.³⁹

Multifamily Adaptive Reuse

The 222 adaptive reuse projects involving office buildings and completed since 2010 are distributed among 89 cities.⁴⁰ The top eight cities were: Philadelphia (12), Chicago (11), Los Angeles (11), Cleveland (10), Baltimore (9), St. Louis (9), Pittsburgh (8), and Kansas City, Missouri (8). Since 2010, Chicago and Philadelphia have also been the most frequent locations for adaptive reuse projects involving buildings of all types. Two adaptive reuse projects, one in each of these two cities, were selected and are described in this section to provide additional insights about office conversions to multifamily. Table 4 contains

information on these properties. Both offer high-end amenities that include high-speed internet, 24-hour security and front-desk services.

These projects appear to be targeting young professionals, professional couples and older single adults. The amenities, including fitness centers and pet-friendly features, appeal to these cohorts. The unit mix correlates with one-person or two-person households. The Alfred, located inside the Chicago Loop, is comprised of 94% studios or one-bedroom units. In Franklin Tower, which is less centrally located than The Alfred, 83% are one-bedroom units.

TABLE 4		Multifamily Adaptive Reuse Examples			
	FRANKLIN TOWER		THE ALFRED		
ADDRESS	200 N 16th St. Philadelphia		30 E Adams St. Chicago		
Year Converted	2019		2019		
Age in 2019	39		94		
Apts Total	549		176		
Parcel Acreage	0.91		0.31		
RBA Total	582K		137K		
Stories	24		14		
FAR	10.04		10.16		
Parking Spaces	450		0		
	# OF UNITS	AVG SF	# OF UNITS	AVG SF	
Studio	2	400	44	558	
1 BR	455	671	121	638	
2 BR	90	1103	11	1144	
3 BR	2	1500	–	–	
Vacancy Rate	4.0%		13.4%		
Average Rent/SF	\$2.95		\$2.96		
Area Rent/SF	\$2.81		\$3.22		
Parking/Month	\$238		N/A		
Subarea	Center City		The Loop		
Walkscore	93		97		
Transit Score	100		100		

Source: CoStar, data from the second quarter of 2021.

Additional information about each property is available at their respective websites, franklin-tower.com and www.livethealfred.com.



The office building to the left was reclad with energy-efficient glass and aluminum framing. *Courtesy CoStar.* ■

Franklin Tower—Philadelphia, Pennsylvania

Franklin Tower contains 549 apartments in center city Philadelphia. The building was constructed in 1980 to serve as the North American headquarters of GlaxoSmithKline. GSK moved out in 2012 to occupy a newly constructed office building located in Navy Yard Corporate Center in South Philadelphia. The \$140 million conversion began in 2016 and was completed in 2019.⁴¹ PMC Property Group, which is headquartered in Philadelphia, carried out the conversion as a design-build project with its internal construction team. PMC currently owns and manages the property. Gensler provided architectural services.

Franklin Tower is 24 stories tall with 582,500 square feet of rentable building area, including about 4,500 square feet of ground-floor retail space. The high-rise is on the corner of North 16th Street and Race Street just south of the Vine Street Expressway (I-676). It is about five blocks northwest of City Hall. To the west of the tower on North 17th Street is the Sheraton Philadelphia Downtown. Between the two buildings is a parking deck of 476 spaces with two levels underground that serves both the hotel and the tower.⁴² Between the building and Sheraton is a pedestrian street with outdoor seating and a dog park.

Located on floors 2-24 are the 549 apartments that were converted from office space.⁴³ The amenities include a furnished rooftop lounge and terrace, fitness center, Peloton cycles and studio, business center with private workspaces, bicycle storage and bike share,

playroom for kids, and tenant storage. There is also an indoor basketball court on the first-floor north side of the building between retail space fronting 16th Street and the rear entrance.

Franklin Tower is a rectangular building, 240 feet along North 16th Street and 118 feet along Race Street, with two L-shaped notches at the northeast and southwest corners. The design creates an interesting primary entrance from Race Street and a secondary entrance from the pedestrian courtyard between the tower and the hotel. Residents access the low-rise and mid-rise elevators from the secondary entrance and the high-rise elevators from the Race Street entrance.

The steel frame office tower with white precast concrete skin was completely reclad with a window wall of energy-efficient glass and thermal-improved aluminum framing. The result is a dramatic silver-blue tower that appears to change color with different light angles and intensities. Vertical strips encircle the building; horizontal members define each floor. The balconies wrap the building on the ninth floor and are associated with the two units at the L-notches and two end units on all other floors. They are cut into the façade and are therefore within the building envelope.⁴⁴

The 23 residential floors each have 24 apartments replicating eight unit-designs for the one-bedroom units and one design each for studios, two-bedroom and three-bedroom units. Each floor has 10 units along the length of the building on both sides, with two-deep units at each end. The layout is both

functional and attractive despite the depth of some of the units. The units along the length of the building are almost all one-bedroom, about 17 feet wide and 33 feet deep. The deep units at both ends, about 18 feet by 60 feet, are all two-bedroom units, which have more rooms to break up the depth. Since the balconies associated with the two-bedroom units and some one-bedroom units are cut into the building envelope, they have ceilings. Their width further reduces the interior depth of these units.

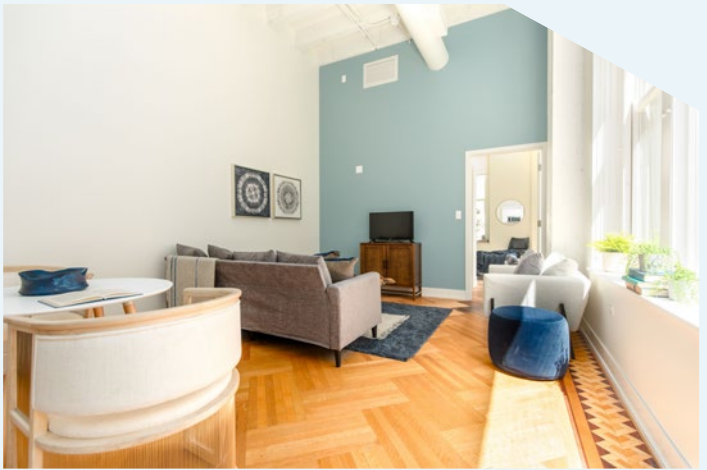
The designs include mirror-image units fitting together while also taking advantage of the notched areas to offer interesting layouts with more light penetration. Floor-to-ceiling windows and nine-foot ceilings increase the spaciousness of the units. The window walls have operable vents that can reduce HVAC loads.

Even with the substantial depth of the units along the width of the building, the remaining central core area is quite large. Its inner section is devoted to six elevators serving different groupings of floors, mechanical and other utility shafts, and two adjacent stairwells running in opposite directions. On every floor, there are two additional rooms in the core space. One provides laundry facilities; the other area offers various amenities.⁴⁵

The conversion of Franklin Tower proceeded rather smoothly, but the redesign of floors 2-8 from office to apartments delayed completion. The conversion of the lower floors took longer because construction crews had to work shorter hours to accommodate apartment residents on the upper floors.



The conversion of the building preserved its historic façade. *Courtesy SPACE Architects + Planners.* ■



An apartment interior after the conversion. *Courtesy SPACE Architects + Planners.* ■

The Alfred—Chicago, Illinois

The Alfred is located on the north side of East Adams Street within the Chicago Loop at the corner of South Wabash Avenue. It is two blocks east of State Street and two blocks west of Millennium Park. The conversion of this 1925 office building began in 2017 and was completed in 2019. Construction costs were \$30 million to \$33 million. The 136,800-square-foot building contains 176 apartments, primarily one-bedroom units.⁴⁶ Cedar Street Companies, which has developed other adaptive reuse projects in Chicago, owns the property and manages it under its FLATS brand. SPACE Architects + Planners, a Chicago-based firm, did the design work. Amenities include a 13th-floor lounge and connecting rooftop terrace, lobby area coffee shop, front-desk service, bicycle storage and gym. The Alfred is situated in a transit-rich environment with a perfect Transit score of 100 and Walk score of 97. Because of the elevated train station at the South Wabash Avenue corner, the zoning does not require any dedicated parking to be associated with the property. A multistory parking deck on East Adams Street, directly across from the property, is available to residents who may have cars.

The office tower was originally called the Hartman Building and designed in neo-classical style by architect Alfred Alschuler, which is the source of the building's current name. The concrete building, which is 14 stories and about 140 feet tall, has a brick and terra cotta facade. The building is 116 feet long and 100 feet wide with a 40-foot-by-40-foot section at the northwest corner. The typical floor plan for the apartments has rectangular and L-shaped units nested around the perimeter, with the core area devoted to elevators, stairwells and utility conduits. The stacking plan repeats this pattern on all floors for maximum efficiency.

The façade was unchanged to take advantage of historic preservation tax credits. The major external treatments involved brick and masonry restoration and replacement of the windows. Two antiquated exterior fire escapes were removed. A partial 14th floor was added to the partial 13th floor to house the new HVAC system. Removing old equipment located on the original roof provided open outdoor space for the large furnished terrace that is connected to the indoor lounge. The new HVAC system had several positive impacts in addition to greater energy efficiency. Duct work requiring less space exposed more of the ceiling area, giving the units a loft-like feel.

Most interior features were restored, renewed and maintained as part of the historic renovation. These features include both wood and poured-concrete flooring, bay windows, terrazzo tiles and marble walls in an iconic lobby and elevator area. There were five original elevator banks, and three were restored. The others were turned into a trash room and chute on each floor. The building core also includes utility and electrical rooms on each floor and two stairwells as required by code. One stairwell had to be added. The generous areas near the elevators on every floor reduced rentable space but had to be maintained to take advantage of the historic tax credits.

Several challenges faced by the design and construction team are inherent to adaptive reuse projects, especially when the building is almost 100 years old. The concrete slab was different on every floor, which made it difficult to line up the plumbing cores. Other conditions were only discovered after demolition, which required changing details of the plan. Restaurants on the first floor had to remain open. Crews worked from midnight to 4 a.m. to complete the floors immediately above them. The team met weekly on site to find solutions to the problems that arose.⁴⁷

Conclusions

Although it is difficult to estimate the amount of office space that will become available as long-term leases expire in the years ahead, there will probably be an excess supply of office buildings in most markets. This outcome is leading property owners and developers to actively seek alternative uses for these office properties. Strong demand exists for life science lab space, medical office space and rental apartments in many markets due in part to the continuing threat of new viruses, chronic health conditions, an aging population and internal migration.

Fueled by readily available capital, conversions to life science lab space should continue to accelerate, potentially leading to oversupply. The primary constraints on supply are the expertise needed to execute conversion projects successfully and the stringent structural, systems, site and location requirements that must be met for the creation of marketable life science lab space.

The potential of adaptive reuse for multifamily rental is easier to assess but harder to accomplish. First, the office property may have less market appeal and be more expensive to convert than competing property types such as hotels, factories, warehouses or schools. Second, the renovation costs may be too high relative to the delta between apartment rents and office rents in the specific market. Finally, the age, design, size and floor-plate dimensions of the building influence the potential for adaptive reuse. When providing affordable units is contemplated, the availability of public subsidies is necessary.

The continued use of office buildings for adaptive reuse multifamily projects is also likely to accelerate. Certainly, the 440 adaptive reuse projects of 50 units or more that are either proposed, planned/seeking entitlements or under construction reflect the sustained demand for multifamily rental properties. The excess demand for affordable rental units will continue even as governments provide subsidies to stimulate the production of new affordable units and the maintenance of existing ones. Furthermore, public support for office conversions to revitalize urban areas with residential adaptive reuse projects and other new development is growing.⁴⁸

In addition to positive market factors, the reuse of existing buildings to meet the demand for space is far more sustainable than new construction, especially when the demolition of existing structures is involved. Property conversions and reuse thus offer a viable way to meet market demand and mitigate greenhouse gas emissions.

Appendix A: Life Science Real Estate Company Projects

Alexandria Real Estate Equities, BioMed Realty, Longfellow Real Estate Partners and Phase3 Real Estate Partners are leading firms in the life science real estate sector that have completed or planned conversions of office space. Collectively, these four companies have developed or own a sizable share of the life science flex inventory that exists in the United States.⁴⁹ Principals with these companies and their designers, contractors and brokers have considerable knowledge about the ways to convert general office space to life science real estate. As noted, the percentage of the life science flex inventory coming from conversions depends on the availability of vacant sites, the cost of existing office properties, the time required to secure entitlements, and the physical and financial feasibility of conversions.⁵⁰

Alexandria currently plans to increase its life science portfolio in Greater Boston by converting four office buildings in the submarkets of Cambridge and Fenway/Kenmore. The primary drivers of these conversions are the strong and growing demand for life science space in Boston clusters, including from Alexandria's existing tenants, and the struggling office market there. Ample, underutilized office supply in the Boston market will continue to feed the geographically constrained yet growing life science sector.⁵¹

BioMed tracks the growth of existing tenants and tries to reposition them into more suitable space. To meet growing demand from its tenants and the life science industry in the East Coast markets, BioMed has recently acquired the 1.4-million-square-foot Assembly Square site in Somerville, Massachusetts. The company has also purchased three office properties in Boston with the intention of converting them to life science lab space. The most prominent is the former Manulife Tower at 601 Congress Street in the Seaport district, renamed Seaport Science Center. This vacant Class A LEED Platinum office building was built in 2004. BioMed purchased the 13-story tower in December 2020 for about \$362 million. The 490,000-square-foot building has floor plates that range in size up to 55,000 square feet (rentable building area). The 1.46-acre site accommodates the building (FAR 7.7) and 265 parking spaces. The building will be converted to lab/office space consistent with safety guidelines. The design includes a combination of energy-efficient systems, large floor plates and floor-to-ceiling windows. The final product will also offer many amenities including a café, fitness center, bike storage and adjacent parking.

The other two BioMed properties are in the South End, one at 1000 Washington Street and the other at 321 Harrison Avenue. The Washington Street property is an 11-story office tower of 242,000 square feet with average floor plates of 22,600 square feet on a 0.67-acre site (FAR 8.26). Originally constructed in 1982, the building was renovated in 2018. It is currently about 80% occupied. Specific plans for the building will depend on future changes in occupancy. The Harrison Avenue property was originally a three-story, 72,000-square-foot concrete parking deck with 309 spaces on a 1.9 acre site. The building addition is under construction where eight stories are being built above the deck. Floors 4-11, which will have an average floor plate of 21,000 square feet, are expected to be completed in the third quarter of 2022. The redeveloped building will be about 234,000 square feet.⁵²

Longfellow has several major conversion projects underway. In addition to an office-to-life-science conversion in Emeryville, California, in the Bay Area, it received funding from Mesa West, based in Los Angeles, to purchase two office buildings in the San Mateo Bay Center (901 and 951 Mariners Island Boulevard) that are part of the emerging life-science cluster there. Longfellow plans to convert these buildings, about 124,000 square feet each that were built in 1982, to Class A R&D lab and office space for life science and creative tech companies.

Longfellow has become more active in North Carolina, where it plans to convert general office and suburban flex space to life science labs near the Research Triangle Park (Discovery at Perimeter Park) and then develop four new life science facilities to create 600,000 square feet of Class A lab space with related amenities and community spaces on an adjacent 23-acre site. It also plans to build an eight-story, 220,000-square-foot tower on a 1.5-acre site for life science companies in 2023 as part of HUB RTP, which will create a 2-million-square-foot mixed-use urban center at build-out. Longfellow also has investments in downtown Durham. The ongoing conversion of office space there is the focus of the first life science case study presented above.⁵³

Phase3 properties focuses on the three major life science markets: Boston, San Francisco and San Diego, where Phase3 Real Estate Partners is headquartered. The Genesis property in South San Francisco (see cover) is one of their most prominent. It features two attractive towers, ground-level restaurant with convenience retail and structured parking, located on a prominent site where Highway 101 curves past the base of San Bruno Mountain.⁵⁴ The 12-story tower (340,000 square feet with 33,000-square-foot floor plates) was built in 2007. This tower and the adjacent 21-story tower (375,000 square feet with 20,000-square-foot floor plates) were designed by SOM and called Centennial Towers to mark the 100th anniversary of the founding of South San Francisco. Phase3 purchased the property in 2015 and converted the 12-story building from general office space to flex R&D space. In 2017, Phase3 erected the steel frame and curtainwall of the 21-story building as designed by SOM but otherwise completely changed the interior build-out from general office to life science flex space.⁵⁵ McFarlane Architects, based in San Diego, did the design work for these two conversions.

With the completion of this project, now called Genesis Tower 1 and Tower 2, Phase3 offered the first high-rise lab space available on the West Coast. High occupancy rates indicate that these properties have had strong market appeal.⁵⁶

Appendix B: Definition of Terms

Conversions are not precisely defined in real estate practice. A building may be renovated, rehabilitated, remodeled or refurbished to better serve existing users. Renovation suggests significant changes made to all or part of the building or building systems. It is usually more extensive and costly than building rehabilitation, remodeling or refurbishing. Rehabilitation suggests updating systems and finishes. Adaptive reuse is a specific type of renovation that maintains many original features of the building, especially ones with historic significance.⁵⁷

Alternatively, a building may be demolished completely so that the site can be redeveloped for a different (presumably higher and better) use. To be precise, this is not a building conversion but a change of site use because the building is removed to make the site available for new construction.

Office conversions involve renovations of the structure and building systems to serve new users. The term “general” is used in this report with reference to typical office space. Conversions to life science, specifically R&D lab space and associated office space, represent a change from general office to flex space. Conversions to multifamily represent a change from general office to new residential use. Conversions to medical office represent a change from general office use to a more specific type of office use.

Among the **major property types**, offices provide the workspace for a wide range of service activities provided by businesses, government and nonprofits. Multifamily residential, retail, hospitality and industrial comprise the remaining major income-generating property types. Industrial includes warehouse space and flex space, which is a combination of warehouse and office space.

The **life science** sector refers to businesses, university and government research institutions, nonprofit medical labs and other organizations devoted to protecting and improving organism life, including understanding diseases, finding disease treatments, protecting the environment, and enhancing human health and safety. Life science companies encompass biomedicine, biophysics, biotechnology, cell biology, environmental sciences, life systems technologies, nanotechnology, neuroscience, (bio)pharmaceuticals, nutraceuticals and cosmeceuticals, among others. Any R&D activity that deals with plants, animals or human life is part of the life science sector.⁵⁸

Affordable housing is defined by the U.S. Department of Housing & Urban Development as housing that costs households 30% of gross household income or less, including utilities. Households qualifying to occupy units produced under the Low-Income Housing Tax Credit Program (LIHTC) must earn 60% of the area median income (AMI) or less. The qualifying income levels depend on median income in the metro area and the size of the household.

Affordable housing is often distinguished from workforce housing and market rate housing. The Terwilliger Center for Housing at ULI considers workforce housing that is affordable to households earning between 60% and either 100% or 120% of AMI. Market-rate housing refers to all other units in the metro area requiring higher incomes.

Endnotes

- ¹ Andrew Nelson forecasts a 15% reduction in office space demand. See Andrew Nelson, “Office is the New Retail: A Dynamic Property Sector Faces Painful Adjustments and a Bifurcated Recovery,” *Real Estate Issues*, v. 45, no. 9 (May 28, 2021), <https://www.cre.org/real-estate-issues/office-is-the-new-retail-a-dynamic-property-sector-faces-painful-adjustments-and-a-bifurcated-recovery/>. Office vacancies at 16.8% in 3Q21 were the highest since 2010, according to CBRE. See “Q3 2021 US Office Figures,” CBRE, <https://www.cbre.us/research-and-reports/Q3-2021-US-Office-Figures>.
- ² See the Appendix for the definitions of key terms used in this report.
- ³ Most traditional non-lab flex space is housed in one-story buildings located in suburban areas often near major transportation nodes. The front of the building is devoted to office space and the back is warehouse space often with loading docks. In contrast to typical flex space, the flex R&D lab space for life science companies featured in this study has very specific construction requirements, is often developed in multi-story office buildings, and has a smaller percentage of space devoted to office use.
- ⁴ For example, the Canada Pension Plan Investment Board and Greystar formed a partnership with \$1.2 billion in equity to develop life science space in U.S. markets. See Paul Bubny, “CPP, Greystar Launch JV to Develop Life Science Real Estate,” *Connect National*, July 9, 2021, <https://www.connectcre.com/stories/cpp-greystar-launch-jv-to-develop-life-science-real-estate/>.
- ⁵ “2021 Mid-Year Life Science National Overview & Top Market Clusters,” Newmark, <https://www.nmrk.com/insights/thought-leadership/2021-mid-year-life-science-national-overview-top-market-clusters>; “2020 Year-End: Life Science National Overview & Top Market Clusters,” Newmark, <https://www.nmrk.com/insights/thought-leadership/2020-life-sciences-national-overview-and-top-market-clusters>. The number of properties and square footage data for these companies are updated through July 2021.
- ⁶ Patricia Kirk, “What It Takes to Convert Office Buildings to Biolab Space?” *Wealth Management Real Estate*, March 1, 2021, <https://www.wealthmanagement.com/investment/what-it-takes-convert-office-buildings-biolab-space>. This article cites Boston rents over \$100/sf in some instances and landlord’s need for long-term leases from 10-15 years to amortize tenant improvements of around \$300/sf.
- ⁷ The Maryland-based companies tend to be clustered in the I-270 corridor. In New Jersey, companies are located near major highways in the New York City metro region.
- ⁸ “Life Sciences on the Rise—North American Report,” Cushman & Wakefield, 2021, <https://www.cushmanwakefield.com/en/united-states/insights/life-science-report>; “Life Sciences Emerging Markets Index: Poised for a New Paradigm of Growth,” JLL, 2021, <https://www.us.jll.com/en/trends-and-insights/research/life-sciences-emerging-markets-index>.
- ⁹ “2021 Mid-Year Life Science National Overview,” 22. Weighted average rents and vacancies in these 14 markets were estimated at \$44-72 per sf and 7.2%, respectively. Leases are triple net with annual escalations of 2.5%, and lease terms of 10 years with 5-year renewal options for blue chip companies.
- ¹⁰ Emil Malizia and Yan Chen, “Vibrancy and Property Performance of Major U.S. Employment Centers,” *Real Estate Issues*, v. 42, no. 13 (November 13, 2018), <https://www.cre.org/real-estate-issues/vibrancy-and-property-performance-of-major-u-s-employment-centers/>.
- ¹¹ In addition to the infusion of equity capital, this financing also includes debt capital often structured as five-year, non-recourse bridge loans. Commercial banks and other regulated financial intermediaries do not have the risk tolerance to offer debt on these terms.
- ¹² Communication with Jay Atkinson, Paceline Investors, August 2021. Smaller conversions to create low-rise flex lab space in the Bay Area may have acquisition costs of about \$250/sf, upgrades of \$250/sf or higher, and possibly require additional tenant improvements.
- ¹³ For example, both Alexandria Real Estate Equities and Longfellow Real Estate Partners have carried out demolitions followed by redevelopment in the Bay Area and San Diego markets.
- ¹⁴ The Centers for Disease Control have established biosafety level (BSL) standards which range from level 1 to 4. Life science lab conversions often attain BSL 3.
- ¹⁵ In areas with seismic activity, regulations limit the amount of mass that can be added to an existing building that may constrain the planned renovation.
- ¹⁶ Tate Chandler, “Bay Area Builders Convert General Office Space for Life Science Tenants,” *The Registry*, May 10, 2021, <https://news.theregistrysf.com/bay-area-builders-convert-general-office-space-for-life-sciences-tenants/>; Corina Stef, “Repositioning commercial Buildings into Life Science Facilities: Q & A.” *Commercial Property Executive*, September 02, 2020, <https://www.commercialsearch.com/news/repositioning-commercial-buildings-into-life-science-facilities-qa/>; Phil Mobley, “Life Sciences: Office-to-Lab Conversions Can be Difficult, But More Owners Are Finding Them Worthwhile,” Avison Young’s commercial real estate blog, April 10, 2021, https://www.avisonyoung.com/en_US/blog/-/post/view/life-sciences-office-to-lab-conversions-can-be-difficult-but-more-owners-are-finding-them-worthwhile; David Bendet, Darrel Fullbright, and Justin Cratty, “Real Estate’s Big Pivot to Science,” *Gensler Blog*, January 5, 2021, <https://www.gensler.com/blog/real-estate-adaptive-reuse-and-life-sciences-research>; Leonora Georgeoglou and Dan Ringler, “8 Tips for Converting Office Space to Life Sciences Labs,” *Building Design + Construction*, March 10, 2021, <https://www.bdcnetwork.com/8-tips-converting-office-space-life-sciences-labs>. Neal McFarlane, AIA, provided comments that improved this section.

- ¹⁷ For example, Perkins Eastman has compiled extensive information on conversion requirements. For further information, contact Steve Gifford, sgifford@perkinseastman.com.
- ¹⁸ Barrie Scardina, “Medtail: When Healthcare Meets Retail,” Cushman & Wakefield, September 21, 2021, <https://www.cushmanwakefield.com/en/united-states/insights/us-articles/medtail-when-healthcare-meets-retail>.
- ¹⁹ Interview with Jaime Northam, Ryan Companies, June 2021, and subsequent communications. She suggested additional modifications including entry way enhancements (such as automatic sliding doors), signage upgrades, wayfinding, efficient and plentiful lighting, and upgraded sturdy finishes.
- ²⁰ Foreclosures have been less frequent than anticipated however because many hotel owners have negotiated forbearance agreements with their lenders.
- ²¹ Yardi Systems provides market intelligence on many commercial property types including multifamily. RENTCafé, part of Yardi Systems, is conducting an ongoing analysis of adaptive reuse projects based on data compiled by Yardi Matrix. It is appropriate to call these conversions adaptive reuse projects as noted in the Appendix.
- ²² Planned projects are going through development review seeking entitlements. Prospective projects have been announced but their status is uncertain. For example, it is not yet clear whether the prospective project will be developed for rent or for sale (condominiums).
- ²³ The two largest among the 150 prospective projects are in Los Angeles and Kissimmee, FL. In Los Angeles, the historic Sears Roebuck distribution center built in 1927 is expected to result in 1,030 multifamily units. In Florida, Disney’s Orlando Sun Resort & Spa that was built in 1974 is expected to generate 960 multifamily units. Among the 135 planned projects undergoing development review, the largest is on Euclid Avenue in Cleveland where the historic Huntington Office Building built in 1923 anticipates the construction of 860 multifamily units. Among the 155 adaptive reuse projects under construction, there are five projects that will each offer over 400 units in Alexandria, VA, Brooklyn, Honolulu, Long Beach, CA, and Washington, DC.
- ²⁴ RENTCafé analysis of Yardi Matrix data and Brett Widness, “Yesterday’s Factories, Today’s Apartments,” *Urban Land*, November 4, 2020, <https://urbanland.uli.org/economy-markets-trends/yesterdays-factories-todays-apartments-multifamily-conversions-reach-all-time-high-in-the-united-states/>.
- ²⁵ Interviews with Steven Paynter, Gensler and Len Kutyla, James & Kutyla, August 2021.
- ²⁶ The site can also be made available for development with a ground lease that creates the subsidy by charging very low rent.
- ²⁷ Local governments cannot waive impact fees since they are imposed by regulation. However, impact taxes can be graduated or eliminated for affordable housing projects.
- ²⁸ Co-living involves unrelated individuals occupying private bedroom/study space and sharing the kitchen, dining room, and living room. Co-living rental projects are different than co-housing which is a form of cooperative ownership.
- ²⁹ Historic reuse projects are an exception to this rule, as they are often more expensive than equivalent new construction even after the tax credit subsidy is accounted for.
- ³⁰ The Institute will leave this facility in 2022, and Google has announced plans to locate a facility in Durham that will sublease the space.
- ³¹ Longfellow did not provide information on total development cost or permanent financing for the conversion.
- ³² The anticipated rent premium provides an upper limit on conversion costs. If one assumes a \$20 per sf rent premium each year, 10-year lease, and 5% discount rate, \$154 is the present value. Adding \$60 per sf for tenant improvements in typical office space equals \$214 per sf. Allowing for a reasonable 10% profit margin gives \$190-195 per sf as an upper limit on conversion costs.
- ³³ For additional information including building visuals, elevations, floor plans, and maps, see “Durham ID,” <https://durhamid.com/> and “Durham.ID Master Plan,” Longfellow Real Estate Partners, <http://www.lfrep.com/property/durham-id-master-plan>.
- ³⁴ Gaudreau’s staff of over 30 employees included engineers and planners as well as architects. In November 2019, the Baltimore-based firm merged with EwingCole, a full-service design firm headquartered in Philadelphia.
- ³⁵ This \$10 per sf rent premium generates a present value of \$77 with a 10-year lease and 5% discount rate. Thus, the upper limit on conversion costs accounting for \$60 per sf for tenant improvements in typical office space and a 10% profit margin would be \$120-125 per sf.
- ³⁶ Extensive visuals and detailed descriptions of 704 are available. See “704 Quince Orchard Road, Gaithersburg Maryland: Next Generation Lab Building,” Scheer Partners, <https://scheerpartners.com/wp-content/uploads/2019/09/704-Quince-Orchard-Office-to-Lab-Conversion-Construction-Mgmt.pdf>.
- ³⁷ AFS’ patient services include fertility testing, fertility treatment, in vitro fertilization, donor eggs, and reproductive surgery. In 2019 when the building was purchased, the partnership consisted of three doctors, 15 nurses, and other staff. See www.alabamafertility.com
- ³⁸ A satellite map of the building is available at www.alabamafertility.com/contact. Note the building’s non-rectangular shape, its entrance oriented to the parking area, and HVAC equipment on the roof.
- ³⁹ Dr. Beth Malizia, senior partner at AFS, who took on the developer role for Eloise LLC, provided the documentation used in this case study.
- ⁴⁰ Data from Yardi Matrix.

- ⁴¹ CoStar data on sales price and refinancing suggest that total development cost was about \$180 million or about \$330,000 per unit. Total development cost for new construction would have been about \$410,000 per unit in Philadelphia during the 2016-19 period. Therefore, the conversion cost appears to be about 20% less than new construction. More importantly, it would have taken a new project far more than 3 years to be entitled and built.
- ⁴² The zoning required only 0.3 spaces per unit or 165 spaces for Franklin Tower. In an auto-oriented suburban area, 549 apartments would require two spaces per unit or 1,098 parking spaces.
- ⁴³ The original plan retained office space on floors 2-8, but robust demand for the residential units and soft office demand led PMC to revise the plan and ask Gensler to design residential units on floors 2-24. Zoning permitted both residential and office in this area by right.
- ⁴⁴ "Franklin Tower Transforms Former Offices Into Luxury Living, Re-Clad in Glass and Metal with Wood Grain Finishes from Linetec," *Prism*, September 25, 2019, <http://prismpub.com/franklin-tower-transforms-former-offices-into-luxury-living-re-clad-in-glass-and-metal-with-wood-grain-finishes-from-linetec/>.
- ⁴⁵ Conversations and correspondence with Robert Fuller, Gensler, August and November 2021.
- ⁴⁶ Adding the sales price from CoStar to construction costs gives about \$46 million or \$206,000 per unit which is almost 19% less than the estimated cost of new construction in Chicago.
- ⁴⁷ Communications with Jay Keller, SPACE Architects + Planners, who served as lead architect, August and October 2021.
- ⁴⁸ The Downtown Revitalization Act proposed in July 2021 would establish a Qualified Office Conversion Tax Credit structured like the historic preservation tax credit. The legislation is designed to encourage the conversion of office space to alternative uses. Qualifying investments would have to devote 20% of the project to affordable housing.
- ⁴⁹ Life science real estate companies typically own non-headquarters office space and flex space devoted to R&D laboratories and the associated administrative space. The major life science companies typically own their headquarter offices and manufacturing facilities.
- ⁵⁰ Other major real estate development and investment companies are planning office conversions to life science. For example, Boston Properties, the largest publicly held developer and owner of office properties, acquired the Shady Grove Bio+Tech Campus in Rockville, MD and plans to convert the seven-office building campus to labs and R&D space for biotech tenants in the D.C. area. See Katie Burke, "One of the Nation's Largest Developers Bets \$681 Million on Biotech as Office Properties Sputter Back to Life," CoStar News, July 28, 2021, <https://www.costar.com/article/125217421/one-of-the-nation%20s-largest-developers-bets-681-million-on-biotech-as-office-properties-sputter-back-to-life>.
- ⁵¹ Communication from Phil Mobley, Avison Young, Boston, July 2021.
- ⁵² Communication with Colleen O'Connor, BioMed Realty, August 2021.
- ⁵³ Communications with Jessica Brock, Greg Capps, and Casey Angel, Longfellow Real Estate Partners, July-August 2021.
- ⁵⁴ Eight acres of the 20-acre site were developed with the remainder dedicated to conservancy in perpetuity.
- ⁵⁵ One unique problem in the 21-story building related to segregating air exhaust from air intake. The building did not have enough area on the roof to segregate these functions adequately. The solution was to use the roof only for air exhaust and design air intake facilities on each floor.
- ⁵⁶ Communications with Rebecka Studer, Phase3 Real Estate Partners, August 2021. Unless otherwise noted, most of the building specific information in this section came from the CoStar database. CoStar's building square footage data refers to rentable building area.
- ⁵⁷ These historic features and finishes cannot be replicated in new construction. Additional benefits include relatively easy approval when zoning is in place and shorter construction periods. Tatiana Walk-Morris cites seven advantages of adaptive reuse: preserving the architecture of the past, growing smarter and more sustainably (smaller carbon footprints), improving public health, boosting market values, encouraging associated investment, exploiting tax incentives, and saving construction time and money. See Tatiana Walk-Morris, "New Lives for Old Spaces," *Planning Magazine*, Spring 2021, 24-31, <https://www.planning.org/publications/document/9213837/>.
- ⁵⁸ See <https://straitresearch.com/blog/everything-that-you-need-to-know-about-the-life-sciences-industry-in-2020/> and M. Hopkinson, M. Charlton, and S. Ryan, "Understanding the Life Sciences Sector," ULI, 2021.

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