

Building an urban life sciences district in Midtown Cleveland: An opportunistic  
development proposal that requires private and public collaboration

by

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Submitted to the Program in Real Estate Development in Conjunction with the Center for  
Real Estate in Partial Fulfillment of the Requirements for the Degree of

Master of Science in Real Estate Development  
at the  
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# **Building an urban life sciences district in Midtown Cleveland: An opportunistic development proposal that requires private and public collaboration**

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## **Abstract**

The life science industry in the United States has experienced exceptional growth in the past half-decade. Private and public funding continues to pour into life sciences; top talent is the key source of new products and innovations; and lab space is one of the fastest pre-leased asset classes in all of real estate. With the number two best hospital in the world — *accompanied by other top hospitals and medical universities* — it is hard to believe that Cleveland, Ohio has not yet overcome its nickname as the “Mistake on the Lake.” This thesis aims to validate and propose an urban life sciences ecosystem in Midtown Cleveland by amalgamating Cleveland’s existing life science infrastructure and talent with the international demand for new biotech and pharmaceutical research and development.

The thesis is sectioned into six chapters, the first chapter being the explanation of the thesis and its overall framework. Chapters II and III provide overviews of both Cleveland and the life science industry, whereas Chapter IV melds these two subjects together and explains the potential opportunity for life science development in Cleveland. This chapter also discusses the recent Cleveland Innovation District and the public-nonprofit partnerships currently in place. Finally, Chapter V presents a development proposal of a ten-acre site in Midtown Cleveland, focusing attention on one laboratory building in particular. The thesis concludes in Chapter VI with the writer’s final thoughts and key financial considerations.

**Thesis Supervisor: Professor Kairos Shen**

**Title: Executive Director of the MIT Center for Real Estate & Associate Professor of Practice**



# Contents

	<b>Title Page</b> .....	<b>1</b>
	<b>Abstract</b> .....	<b>2</b>
	<b>Contents</b> .....	<b>3</b>
<b>I</b>	<b>Building the framework</b> .....	<b>4</b>
	Motivation	
	Thesis Structure	
	Research Methodology	
<b>II</b>	<b>Introduction to Cleveland, Ohio</b> .....	<b>6</b>
	Introduction	
	Overview: Population, affordability, & crime	
	Leading industries	
	Cleveland’ real estate market: Multifamily, industrial, and retail	
	Relevant public and private capital projects	
<b>III</b>	<b>Life science in the United States</b> .....	<b>32</b>
	Introduction	
	Technical and financial considerations for new lab development	
	Cambridge as a case study	
<b>IV</b>	<b>Cleveland and life science, together</b> .....	<b>45</b>
	Introduction	
	Lab space as a real estate asset class	
	Life science talent	
	Incubation and funding	
	Cleveland Innovation District	
<b>V</b>	<b>Midtown development strategy</b> .....	<b>63</b>
	Context	
	Concept	
	Execution	
<b>VI</b>	<b>Conclusion</b> .....	<b>113</b>
	Summary	
	Financial considerations	
	Final thoughts	
	<b>Appendix</b> .....	<b>116</b>
	<b>References</b> .....	<b>119</b>
	<b>Acknowledgments</b> .....	<b>136</b>

# **I Building the framework**

## **Motivation**

The purpose of this thesis is to analyze whether Cleveland has the potential of fostering a private-sector life science community, one that succeeds in real estate development as well as the commercialization of life science products. Although Cleveland is home to some of the best hospitals and universities in the world, it has historically been dominated by non-profit clinical development. Given the State's recent push for a life science innovation district in Cleveland, now may be an opportune time to evaluate whether Cleveland and its anchor institutions have the ability to cultivate a start-up ecosystem, one that commercializes new products, retains local talent, and incubates venture capital fundraising. If Cleveland is able to prove its success in life science research and talent, it could very well compete with other life science communities, which in turn would create new laboratory product in the market.

## **Thesis structure**

As detailed in the abstract, the thesis is comprised of six chapters. Chapter I provides a detailed explanation of the thesis and its overall framework. Chapters II, II, and IV discuss the Cleveland market, the life science industry, and the relationship that these subjects have with one another. Chapter V presents a detailed development proposal of a ten-acre site in Midtown Cleveland, focusing attention on a single laboratory building in particular. Finally, the thesis concludes with the writer's final thoughts and key financial considerations.

## Research methodology

The research methodology for this thesis is primarily qualitative — *articles and reports* — and interview-based. Together, the research and interviews support one another; however, the first-hand interviews open doors to new thoughts and opinions that otherwise may not be published in journals or online articles.

Interviews were conducted with a broad range of industry professionals. The group of industries and professions targeted include hospitals, universities, city and state organizations, non-profits, local and non-local real estate developers, brokers, biotech and pharmaceutical companies, and startups. Given the technicalities and infancy of this growing asset class, it was essential to understand the full life cycle of life science real estate development, from market due diligence to lease-up.

## II Cleveland is more than a flyover city

### Introduction

“Cleveland’s story is one of industry, innovation and resilience that is characterized by risk taking, artistry, and grit. It’s a sports-craved city also known for culture and rock ‘n’ roll as well as outdoor recreation and an award winning culinary and brewery scene.”<sup>1</sup>

Equidistant between Chicago and New York, Cleveland is the point where the East Coast meets the Midwest. It is a city founded on manufacturing that has slowly transitioned into a global healthcare leader. The Cleveland Clinic, for example, is ranked the number two best hospital in the world, number two for specialized care, and number one for cardiac surgery.<sup>2</sup> Unlike many other life science communities though, Cleveland remains affordable and ripe for “surban” opportunity — *a city that offers its residents an opportunity to experience city living while simultaneously providing a suburban community.*<sup>3</sup>

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<sup>1</sup> Roger Sands, “Why doesn't Cleveland get the love it deserves?” (Cleveland: Forbes Magazine, 2022)

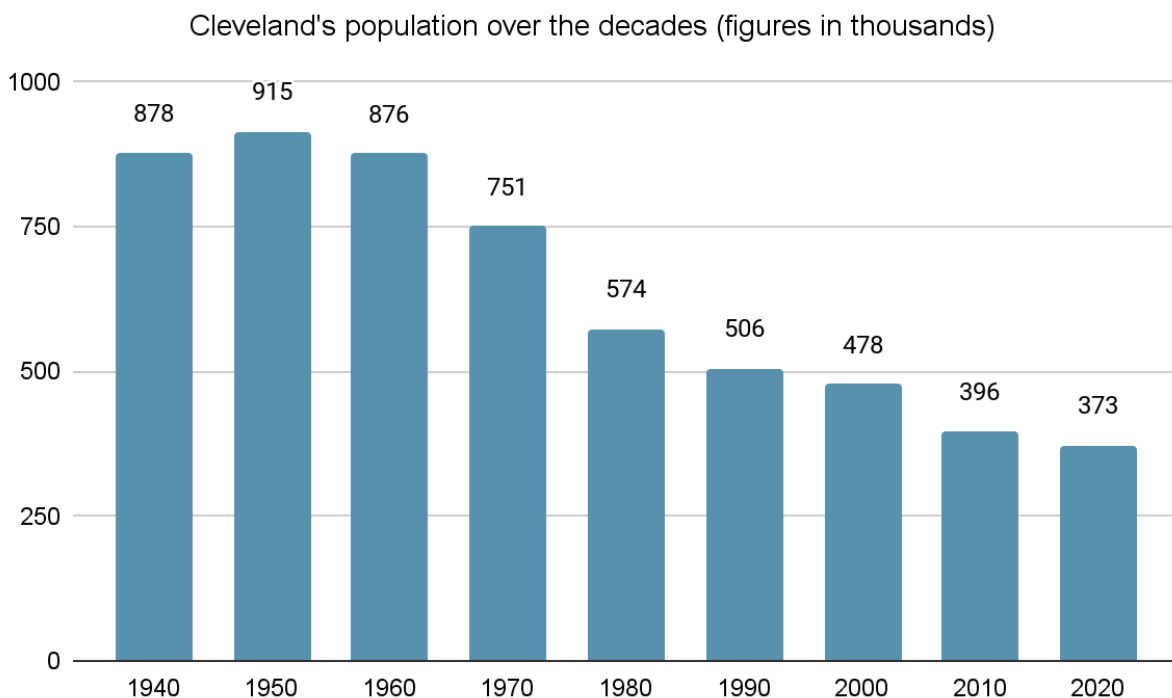
<sup>2</sup> “Cleveland Clinic ranked no. 2 hospital in the world by Newsweek” (Cleveland: Cleveland Clinic, 2022)

<sup>3</sup> “Surban Areas – Bringing Suburban and Urban Together” (Cleveland: Reonomy, 2018)

## Overview: Population, affordability, & crime

### *Population decline & above-average per capita GDP*

Cleveland is Ohio's second largest city based on population, positioned in between Columbus and Cincinnati.<sup>4</sup> It is the largest city in Cuyahoga County with a population of 372,624 residents.<sup>5</sup> From the outside looking in, you may think that Cleveland is an unimpressive city with a shrinking population. For example, Cleveland's population over the past several decades has continued to decrease with a peak of 914,808 in 1950 and a low of 372,624 in 2020.<sup>6</sup> *Is this not a clear sign of urban decline?*



**Figure 1:** Cleveland's population from 1940 to 2020<sup>7</sup>

<sup>4</sup> "10 largest cities in Ohio" (Cleveland: World Population Review, 2022)

<sup>5</sup> "Census 2020 in Cleveland" (Cleveland: Cleveland City Planning Commission, 2020)

<sup>6</sup> "Census 2020 in Cleveland" (Cleveland: Cleveland City Planning Commission, 2020)

<sup>7</sup> "Census 2020 in Cleveland" (Cleveland: Cleveland City Planning Commission, 2020)

Historically, the United States has used two economic models to measure urban growth: Demand v. asset.<sup>8</sup> The former measures a multitude of different factors, including job growth and affordability; the latter measures the attraction of corporations, educators, and amenities within a given city.

In an analysis published in *The Washington Post*, Pete Saunders presents an interesting counter to these older methods of measuring urban growth. Pete reviewed data on population growth and per capita GDP growth of 106 metro areas that had more than 500,000 people since 2010. Through his research, Pete determined that “population growth may no longer be the best way to measure the health of U.S. cities.”<sup>9</sup> Although many Sun Belt metros grew in population — *a trend that was extremely evident during the COVID-19 pandemic* — these cities experienced a lower per capita GDP than the overall average. The Rust Belt metros, including Cleveland, “outpaced the average per capita GDP gains yet actually lost population.”<sup>10</sup> Cleveland — *unlike the Sun Belt metros* — remains extremely affordable while producing above average economic opportunities for its residents.

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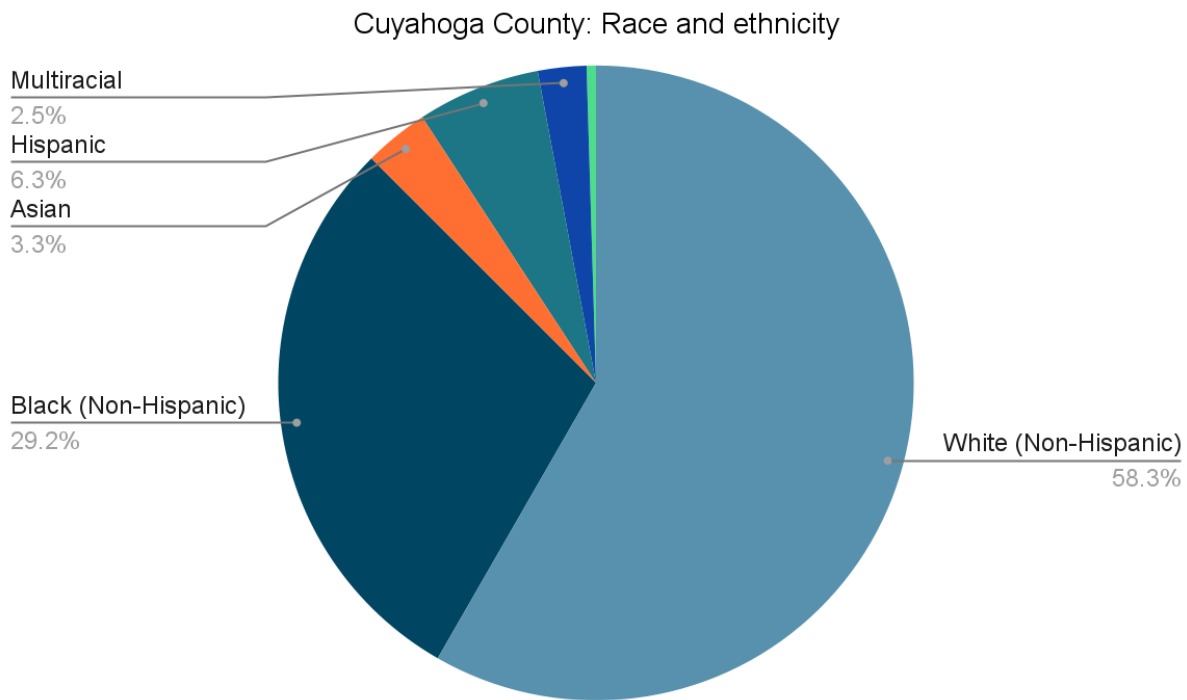
<sup>8</sup> Pete Saunders, “The ‘best places to live’ may not be the best places to live” (The Washington Post, 2021)

<sup>9</sup> Pete Saunders, “The ‘best places to live’ may not be the best places to live” (The Washington Post, 2021)

<sup>10</sup> Pete Saunders, “The ‘best places to live’ may not be the best places to live” (The Washington Post, 2021)

### *Race and ethnicity*

Although Cleveland’s population has declined over the years, its diversity in race and ethnicity continues to grow. According to the 2020 Census results, “the multi-racial population nearly tripled, the Hispanic population more than tripled, and the number of Asian residents increased by about one-third.”<sup>11</sup> Refer to Figure 2 for the full race and ethnicity breakdown in Cuyahoga County.



**Figure 2:** Cuyahoga County: Race and ethnicity<sup>12</sup>

<sup>11</sup> Courtney Astolfi et al., “Cuyahoga County cities are growing increasingly diverse, census 2020 shows” (Cleveland: Cleveland.com, 2021)

<sup>12</sup> “Data USA: Cuyahoga County, Ohio” (Data USA, 2022)

Specifically for Downtown Cleveland, “population grew 45 to 185 percent in eight Census tracts since 2010,”<sup>13</sup> driven mainly by childrenless millennials — *those born between 1981 and 1996*<sup>14</sup> — seeking closer proximity to nightlife, restaurants, and friends. This change in population has also resulted in a change in demographics. In the past decade, white residents have increased by three percent, whereas Black residents have decreased by four percent.<sup>15</sup>

### *Affordability*

With home prices increasing faster than wages in almost 90 percent of the United States, cost of living and affordability are top-of-mind subjects for many Americans.<sup>16</sup> According to ATTOM Data Solutions, Cuyahoga County (Cleveland) tied with Allegheny County (Pittsburgh) as “the most affordable [county] for renting among those with a population of at least [one] million.”<sup>17</sup> Only 23.7 percent of average local wages are required to rent in Cuyahoga County.<sup>18</sup> Not only that, Cuyahoga County ranked third as “the most affordable for owning among counties with a population of at least [one] million.”<sup>19</sup> Only 22.0 percent of average local wages are required to own in Cuyahoga County.<sup>20</sup>

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<sup>13</sup> Ken Prendergast, “Cleveland: Growing faster than the national average, and shrinking” (Cleveland: NEOTrans, 2021)

<sup>14</sup> Michael Dimock, “Defining generations: Where millennials end and generation Z begins” (Pew Research, 2019)

<sup>15</sup> Courtney Astolfi et al., “Cuyahoga County cities are growing increasingly diverse, census 2020 shows” (Cleveland: Cleveland.com, 2021)

<sup>16</sup> “Home ownership more affordable than renting in majority of U.S. Housing Markets” (ATTOM, 2022)

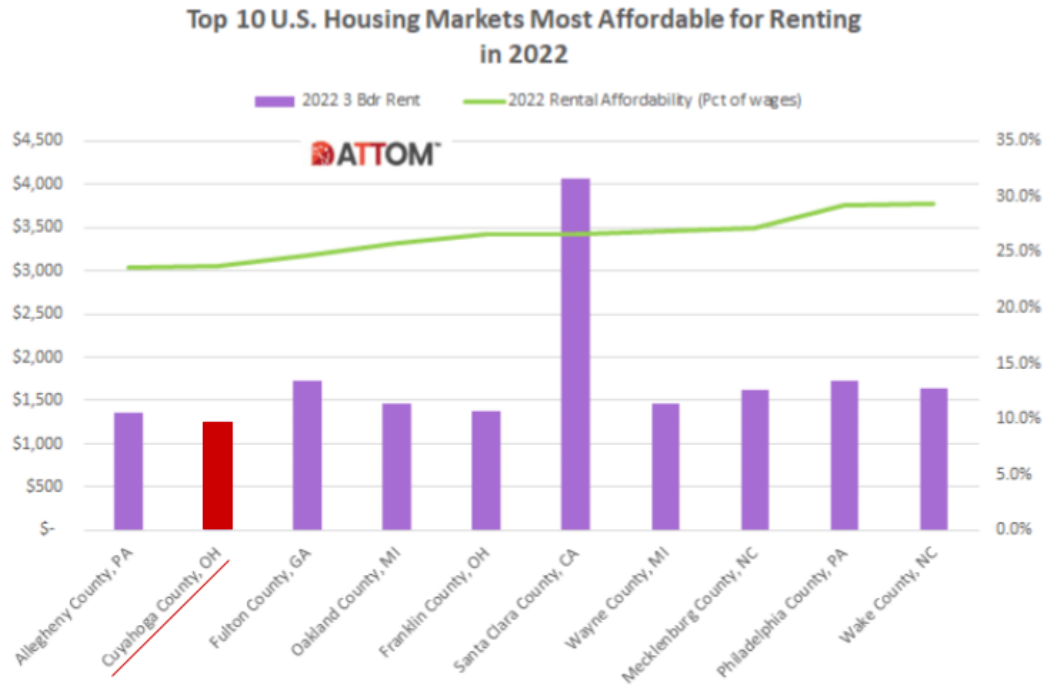
<sup>17</sup> Christine Stricker, “Top 10 U.S. housing markets most affordable for renting in 2022” (ATTOM, 2022)

<sup>18</sup> Christine Stricker, “Top 10 U.S. housing markets most affordable for renting in 2022” (ATTOM, 2022)

<sup>19</sup> Christine Stricker, “Top 10 U.S. housing markets most affordable for renting in 2022” (ATTOM, 2022)

<sup>20</sup> Christine Stricker, “Top 10 U.S. housing markets most affordable for renting in 2022” (ATTOM, 2022)





**Image 1:** Top 10 U.S. housing markets most affordable for renting in 2022<sup>21</sup>

### *Home value appreciation*

Over the past five years, home values in Cleveland have increased by nearly 116 percent.<sup>22</sup> In the last year alone, home values increased by 18.9 percent.<sup>23</sup> Although some may question — *given today's economic climate* — whether these high increases may take a turn for the worse, Cleveland is actually one of the most recession-resistant markets in the United States. According to a report published in Redfin News, Cleveland ranked in the top four markets with lowest risk of a housing downturn.<sup>24</sup> The report measured the following variables in its analysis: Home price volatility, home sale flips, average loan-to-value, and home-price-to-income ratio.<sup>25</sup>

<sup>21</sup> Christine Stricker, “Top 10 U.S. housing markets most affordable for renting in 2022” (ATTOM, 2022)

<sup>22</sup> “Cleveland home values” (Cleveland: Zillow, 2022)

<sup>23</sup> “Cleveland home values” (Cleveland: Zillow, 2022)

<sup>24</sup> Tim Ellis, “Rochester, Buffalo and Hartford least at risk of a housing downturn in the next recession” (Redfin, 2020)

<sup>25</sup> Tim Ellis, “Rochester, Buffalo and Hartford least at risk of a housing downturn in the next recession” (Redfin, 2020)

### *Cleveland's top obstacle: Crime*

In order to encourage out-of-city companies and developers to invest in Cleveland as well as attract top talent, Cleveland needs to overcome a major obstacle: Crime. According to data released by the FBI for calendar year 2020, Cleveland's crime rate was higher than the U.S. average in all major categories, both violence-related and property crimes.<sup>26</sup>

	<b>Murder</b>	<b>Rape</b>	<b>Robbery</b>	<b>Assault</b>	<b>Burglary</b>	<b>Theft</b>	<b>Vehicle Theft</b>
Cleveland	0.43	1.05	4.28	11.10	9.91	23.63	7.89
United States	0.07	0.38	0.73	2.78	3.12	13.90	2.45
<b>Delta</b>	<b>0.36 ↑</b>	<b>0.67 ↑</b>	<b>3.55 ↑</b>	<b>8.32 ↑</b>	<b>6.79 ↑</b>	<b>9.73 ↑</b>	<b>5.44 ↑</b>

**Figure 3:** Cleveland v. USA: Violent crimes and property crimes<sup>27</sup>

Mayor Justin Bibb — *recently elected in November 2021* — increased the 2022 city budget for Public Safety by \$17.8 million. This includes training 180 new police cadets, 80 fire cadets, and 35 emergency medical service personnel.<sup>28</sup> Although this increase in budget is a good first step, many individuals in City Council question whether Mayor Bibb will be able to locate and retain these new police officers, especially since “the department is roughly 200 short [already] of its recommended 1,700.”<sup>29</sup>

<sup>26</sup> “Cleveland, Oh: Crime rates” (Neighborhood Scout, 2020)

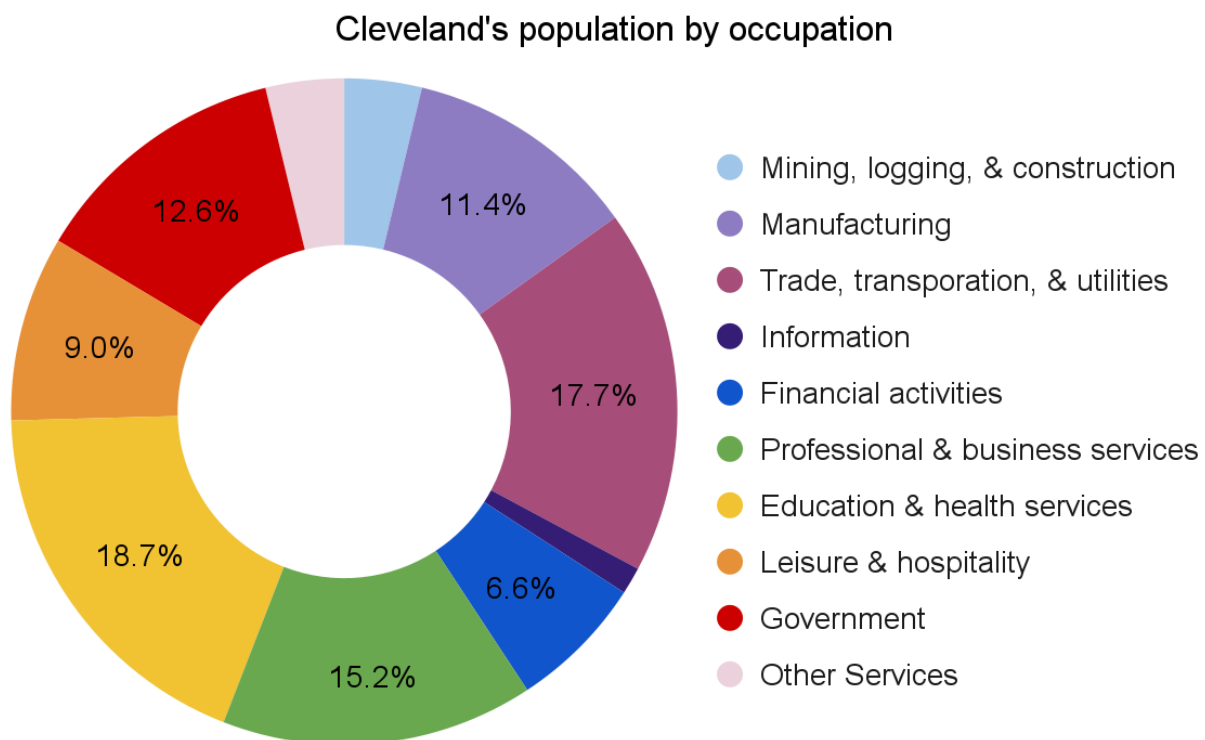
<sup>27</sup> “Cleveland, Oh: Crime rates” (Neighborhood Scout, 2020)

<sup>28</sup> Mark Obrea, “Bibb's first-year budget tries to fulfill campaign promises in the face of heat from Council” (Cleveland: The Land, 2022)

<sup>29</sup> Mark Obrea, “Bibb's first-year budget tries to fulfill campaign promises in the face of heat from Council” (Cleveland: The Land, 2022)

## Leading industries

Cleveland was once the leader of iron and steel manufacturing in the United States; and since its peak in the 1950s, Cleveland has struggled to forego its past as a manufacturing hub and transition into a knowledge-based workforce. Overtime, however, Cleveland started to invest in other knowledge sectors, like healthcare, technology, and finance. As of April 2022, the 'eds and meds' sector outranked all other industries, totaling 18.7 percent of Cleveland's jobs.<sup>30</sup> Lastly, the unemployment rate as of May 2022 in Cleveland was 5.5%, according to the U.S. Bureau of Labor Statistics.<sup>31</sup>



**Figure 4:** Cleveland's population by occupation <sup>32</sup>

<sup>30</sup> "Cleveland economy at a glance" (Cleveland: US Bureau of Labor Statistics, 2022)

<sup>31</sup> "Cleveland economy at a glance" (Cleveland: US Bureau of Labor Statistics, 2022)

<sup>32</sup> "Cleveland economy at a glance" (Cleveland: US Bureau of Labor Statistics, 2022)

The following five industries are top focuses for The City of Cleveland’s Economic Development division:

### *Healthcare and life science*

Cleveland is home to some of the best hospitals in the country, including the Cleveland Clinic, University Hospitals, The MetroHealth System, and Louis Stokes Cleveland VA Medical Center. Collectively, these major institutions employ over 100,000 employees and continue to grow in patient care and research.<sup>33</sup> Given the State’s recent effort to grow the life science sector, research — *not just patient care* — is now a top priority for many of these institutions.

### *Advanced materials & manufacturing*

Cleveland’s manufacturing industry remains relatively strong, particularly in steel and metals production. One of Cleveland’s top employers, Sherwin-Williams, is a great example of a company that started in Cleveland nearly 150 years ago and is now “one of the largest producers of paints and coatings” in the United States and worldwide.<sup>34</sup> The company proudly displayed its loyalty to Cleveland by announcing its new one million square foot headquarters in Downtown Cleveland, an estimated \$300 million investment. It also announced a new 600,000 square foot Research & Development Center in Brecksville, Ohio.<sup>35</sup> Both groundbreakings occurred in late 2021. Remaining in Downtown Cleveland was very important to Sherwin, especially with Cleveland’s recent re-urbanization. “Some of [Sherwin’s] younger talent and newer talent is moving Downtown and walking to work,” mentioned Graig Kluge, Global Corporate Real Estate Manager at Sherwin-Williams.

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<sup>33</sup> “2021 Year-End | Facts + Figures” (Cleveland Clinic, 2021); “2021 Annual Report” (University Hospitals, 2021); “2021 Annual Report” (VA Northeast Ohio Healthcare System, 2021); “About Us” (The MetroHealth System, 2021)

<sup>34</sup> “Cleveland: Advanced materials & manufacturing” (City of Cleveland Economic Development, 2022)

<sup>35</sup> “Sherwin-Williams Plans to build new global headquarters in Downtown Cleveland and R&D center in Brecksville” (Cleveland: The Sherwin-Williams Company, 2020)

### *Food and agriculture*

Food and agriculture is one of Ohio’s top industries aided by a “workforce of more than 23,000 and the world’s second largest fresh water supply sourced directly from Lake Erie.”<sup>36</sup> As of 2018 in Northeast Ohio, food manufacturing was a \$3.02 billion industry.<sup>37</sup>

### *Information technology*

Data centers continue to grow in and around the Cleveland market due to the “cheap power, abundant fiber-optic, and safe storing options.”<sup>38</sup> In addition to this growth in data centers, the growth in talent is also soaring. According to The City of Cleveland’s Economic Development division, Cleveland is ranked as the “8th fastest growing market in tech talent” and the “10th fastest growing market in software developers.”<sup>39</sup>

### *Financial services*

Cleveland is also well-positioned for the financial services industry. Fifth Third, Huntington, US Bank, and First Merit all have large investment networks in the Cleveland market. Additionally, the Federal Reserve Bank of Cleveland — *one of 12 Reserve Banks in the United States* — also provides a steady influx of new jobs and opportunities in the Cleveland market.<sup>40</sup>

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<sup>36</sup> “Cleveland: Food industry” (City of Cleveland Economic Development, 2022)

<sup>37</sup> “Cleveland: Food industry” (City of Cleveland Economic Development, 2022)

<sup>38</sup> “Cleveland: Info tech” (City of Cleveland Economic Development, 2022)

<sup>39</sup> “Cleveland: Info tech” (City of Cleveland Economic Development, 2022)

<sup>40</sup> “Financial statements for the Federal Reserve Bank of Cleveland” (Federal Reserve Bank of Cleveland, 2022)

## Cleveland's real estate market

### *Multifamily*

Although Cleveland's population decreased in the latest 2020 Census, Downtown is having the opposite effect. Steady subsequent development grew the population [in Downtown Cleveland] by 102% between 2000 and 2017.<sup>41</sup> In 2015, 15,000 people lived Downtown. By 2021, that number surpassed 20,000.<sup>42</sup>

Despite the overhaul of the residential tax abatement policy in Cleveland, high construction costs, rising interest rates, and a looming recession, Cleveland's multifamily market is performing tremendously well. According to Yardi Matrix, average rental rates exceeded the \$1,000 threshold for the first time in the Cleveland metro.<sup>43</sup> Not only that, Yardi estimated Downtown Cleveland's occupancy at 90.3 percent and Ohio City at 96.4 percent.<sup>44</sup> As a result of these higher-than-normal occupancy rates for Cleveland, developers continue to build more multifamily product in the market. It is estimated that an additional 4,479 units were under construction as of February 2022.<sup>45</sup>

A large majority of this new multifamily product in Downtown is a result of conversions: Office vacancies are extremely high, and there is simply not enough multifamily product in the Downtown. Graig Kluge believes that Cleveland will continue to see "a lot of the existing office space, Class B and C, be repurposed as multifamily." To-date, nearly seven million square feet of office space has been converted to

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<sup>41</sup> Karin Rice, "Population boom: Downtown Cleveland will see 20K residents by year end as DCA sets new goal of 30K" (Cleveland: FreshWater, 2020)

<sup>42</sup> Eric Heisig, "Downtown Cleveland Alliance CEO addresses growing center city population, efforts to attract visitors" (Cleveland: Cleveland.com, 2021)

<sup>43</sup> Tudor Scolca, "Cleveland Ohio Housing Market - April 2022" (Cleveland: Yardi Matrix, 2022)

<sup>44</sup> Stan Bullard, "Cleveland's building boom in apartments carries on" (Cleveland: Crain's Business, 2022)

<sup>45</sup> Tudor Scolca, "Cleveland Ohio housing market - April 2022" (Cleveland: Yardi Matrix, 2022)

multifamily. This is according to Andrew Batson, Senior Vice President of Research and Strategy at JLL. Andrew also mentioned that the majority of this new multifamily product “targets middle to upper income [individuals]” and “the majority of talent [occupying these apartments] are in the medical, legal, and finance professions.”

As higher paying renters enter the market, so do their expectations for higher quality finishes. According to Nate Kelly, President and Managing Director of Cushman & Wakefield | CRESCO Real Estate, “trends that are occurring nationally are occurring locally. Individuals and corporations want higher quality products; they want flexibility; and they want density so that they are closer to friends, work, and nightlife. These trends are very consistent in Cleveland.”

Finally, demand for more housing in and around University Circle — *a major focus of today’s thesis* — is expected to increase very quickly in the coming years. Local developers anticipate that there is demand for nearly 10,000 new housing units in this area over the next decade.<sup>46</sup>

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<sup>46</sup> Ken Prendergast, “Hough Bakeries redevelopment plan revealed” (Cleveland: NeoTrans, 2021)

## Office

As mentioned in the previous multifamily subsection, the conversion of office into residential is a continued trend in Downtown Cleveland. According to JLL's "Q2-2022 Cleveland Office Outlook," office vacancies in Cleveland declined from 15.5 percent at the beginning of the year to 14.5 percent by the end of Q2. This was mainly driven by conversion projects.

Midtown, unlike Downtown and the suburbs, has continued to perform extremely well, achieving a low 4.4 percent vacancy rate in Q2-2022. In addition to this conversion trend, JLL reports that tenants continue to favor Class A office space over Class B by a factor of three to one.<sup>47</sup>

Cleveland Submarkets	Inventory	Vacancy Rate	Avg. Asking Rent
Downtown	14,763,446	18.4%	\$20.65
Midtown	1,243,934	4.4%	\$20.35
Suburbs	23,457,900	12.5%	\$20.07

**Figure 5:** Overview of Cleveland's office submarkets, relevant in today's thesis<sup>48</sup>

<sup>47</sup> Andrew Batson, "Cleveland Office Insight | Q2 2022" (Cleveland: JLL, 2022, pg.1)

<sup>48</sup> "Cleveland Office Insight | Q2 2022" (Cleveland: Jones Lang LaSalle IP, Inc., 2022)



### *Industrial*

According to JLL's "Q2-2022 Industrial Insight" report, industrial demand is extremely strong in Northeast Ohio. Nate Kelly noted that he has nearly three years of demand for industrial space in the Cleveland market. "We have an inventory problem, which is not sustainable in the long run," noted Kelly. Total vacancy is 3.8 percent, and nearly 2.2 million square feet of new development is currently under construction. Additionally, "more than half the construction in the region is on a speculative basis."<sup>49</sup>

### *Retail*

According to Colliers' "2022 Q1 Retail Cleveland Report," the retail market at the beginning of 2022 showed a positive outlook. Colliers notes that as mandates and face masks decreased, foot traffic — *especially in Cleveland's Downtown* — increased. Total vacancy is 8.5 percent, and approximately 487,000 square feet of new retail development is currently in pipeline.<sup>50</sup>

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<sup>49</sup> Joe Warren, "Cleveland: Industrial Insight | Q2 2022" (Cleveland: JLL, 2022, pg. 1)

<sup>50</sup> Jay Emery, "2022 Q1 Retail Cleveland Report Colliers" (Cleveland: Colliers, 2022, pg. 1)

## Large-scale public and private investments

### *Public infrastructure projects*

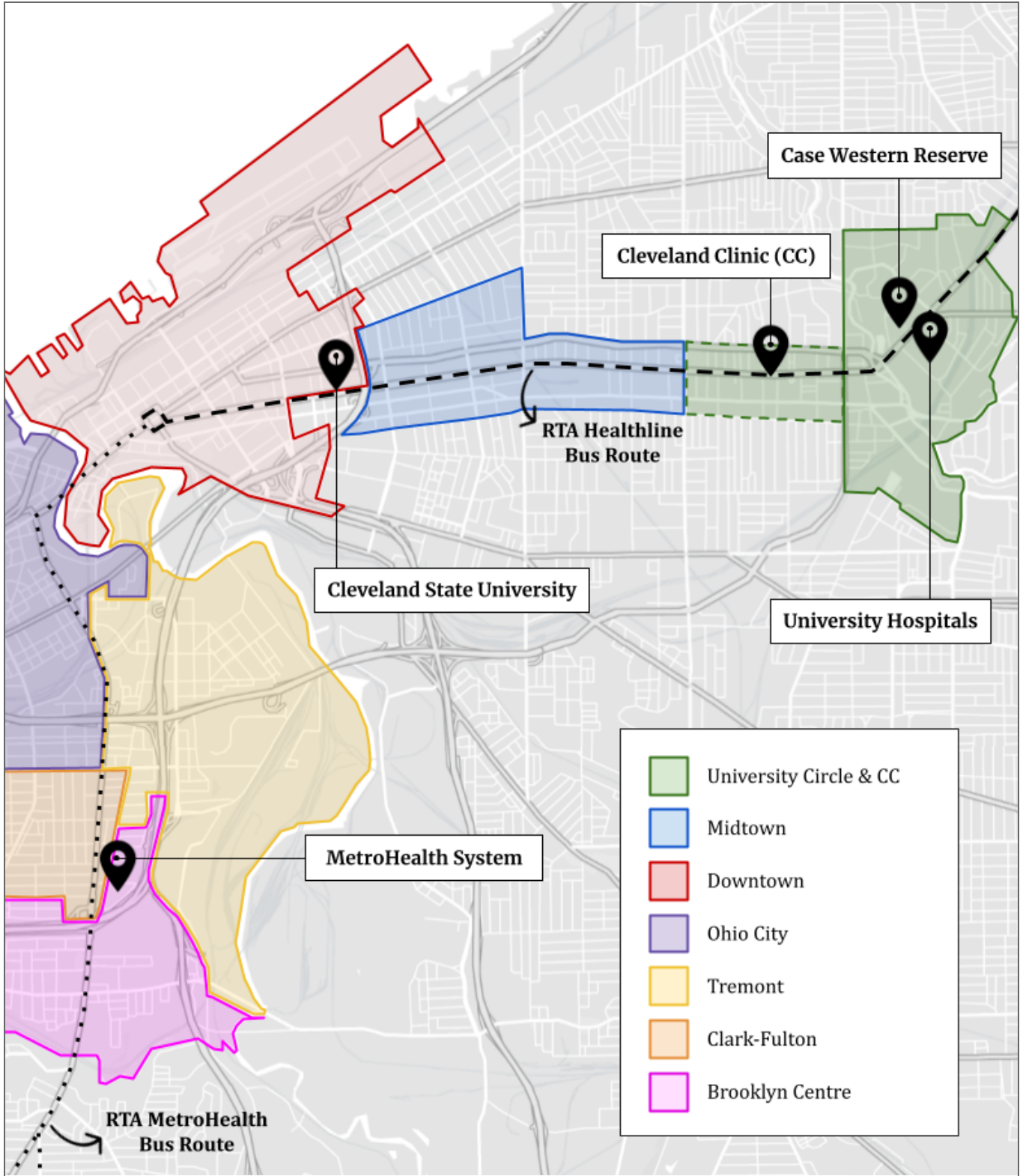
Before diving into the large private-sector developments in and around Cleveland, it is important to highlight the successful infrastructure-related projects completed by the City of Cleveland, which have encouraged new private development.

Cleveland's most famous — *and successful* — infrastructure project is the Regional Transit Authority (RTA) Healthline constructed in 2008 at a total investment of \$200 million. The Healthline serves approximately 20,000 residents daily and connects Downtown Cleveland to University Circle.<sup>51</sup> Following the Healthline's tremendous success, the MetroHealth Line was created to better connect Downtown Cleveland with The MetroHealth System's Main Campus (refer to Figure 6). Since its creation, the RTA Healthline is estimated to have catalyzed nearly \$9.5 billion in new development along the Euclid Corridor.<sup>52</sup>

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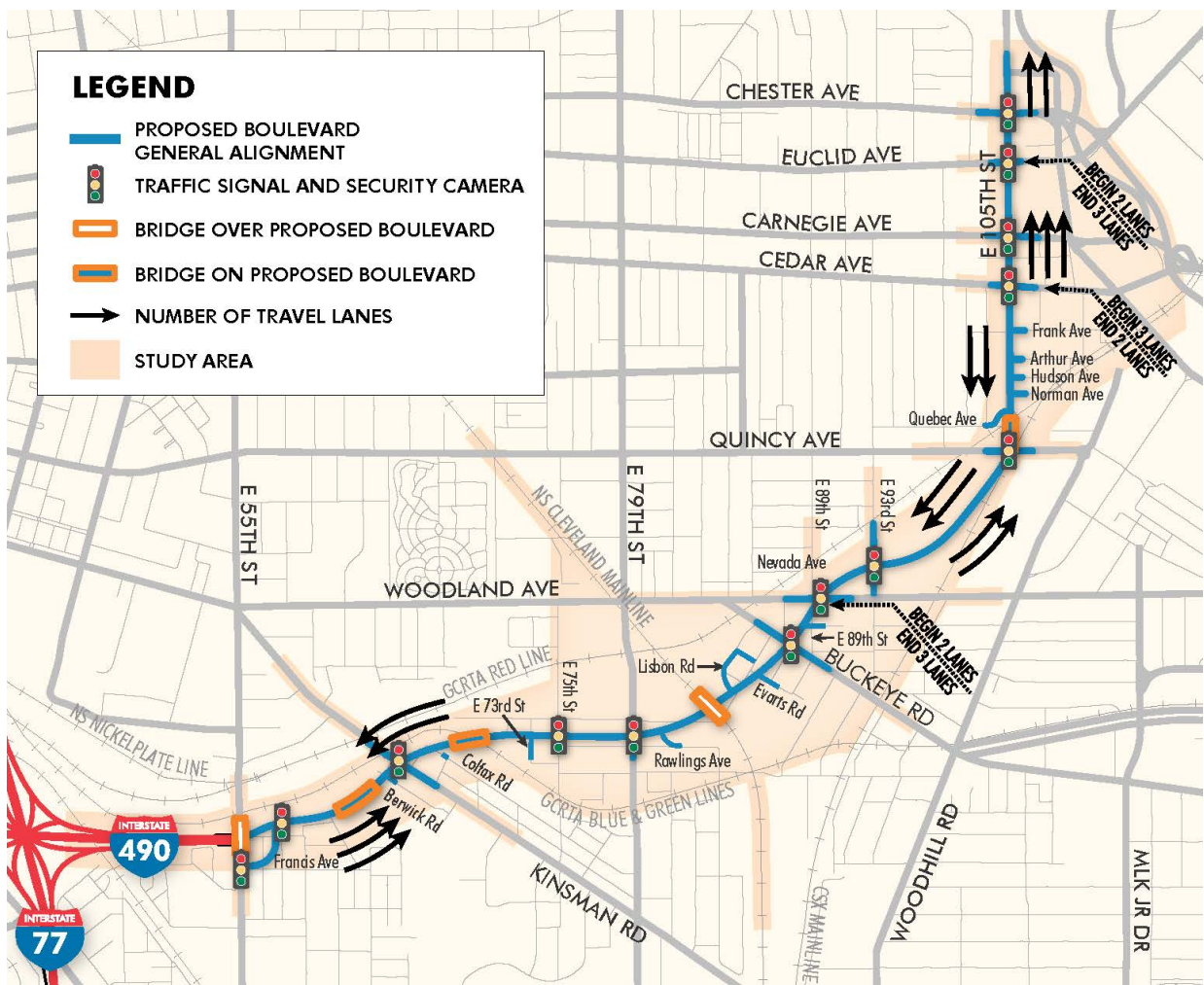
<sup>51</sup> Grant Segall, "RTA says Healthline had 10-year payback of \$9.5 billion, 'woke up' euclid corridor" (Cleveland: Cleveland.com, 2018)

<sup>52</sup> Grant Segall, "RTA says Healthline had 10-year payback of \$9.5 billion, 'woke up' euclid corridor" (Cleveland: Cleveland.com, 2018)



**Figure 6:** RTA Healthline & RTA MetroHealth bus routes

University Circle has continued to grow in size and density in the past decade. As a result of such growth, Cleveland created the Opportunity Corridor, a \$257 million, three-mile boulevard that connects I-490 to University Circle.<sup>53</sup> Similar to Euclid Avenue before the RTA Healthline was established, the Opportunity Corridor was considered the “Forgotten Triangle”; however, this new project — *completed in November 2021* — hopes to create similar economic and development activity leading into and out of University Circle.<sup>54</sup>



**Image 2:** Opportunity Corridor’s infrastructure enhancements <sup>55</sup>

<sup>53</sup> Kaylee Remington and Robin Goist, “Opportunity corridor boulevard officially opens in Cleveland (photos)” (Cleveland: Cleveland.com, 2021)

<sup>54</sup> “Opportunity Corridor overview” (Cleveland: Ohio Department of Transportation, 2022)

<sup>55</sup> “Opportunity Corridor” (Cleveland: Ohio Department of Transportation, 2022)

### *Private-sector developments*

As of July 2022, the Greater Cleveland area is continuing to develop a large variety of real estate products, including new hospitals, medical research facilities, multifamily residences, offices, hotels, and museums.

The map on the following page (Figure 8) showcases both current and future construction projects that meet the below criteria. This list does not include projects still in the planning phase. Criteria include:

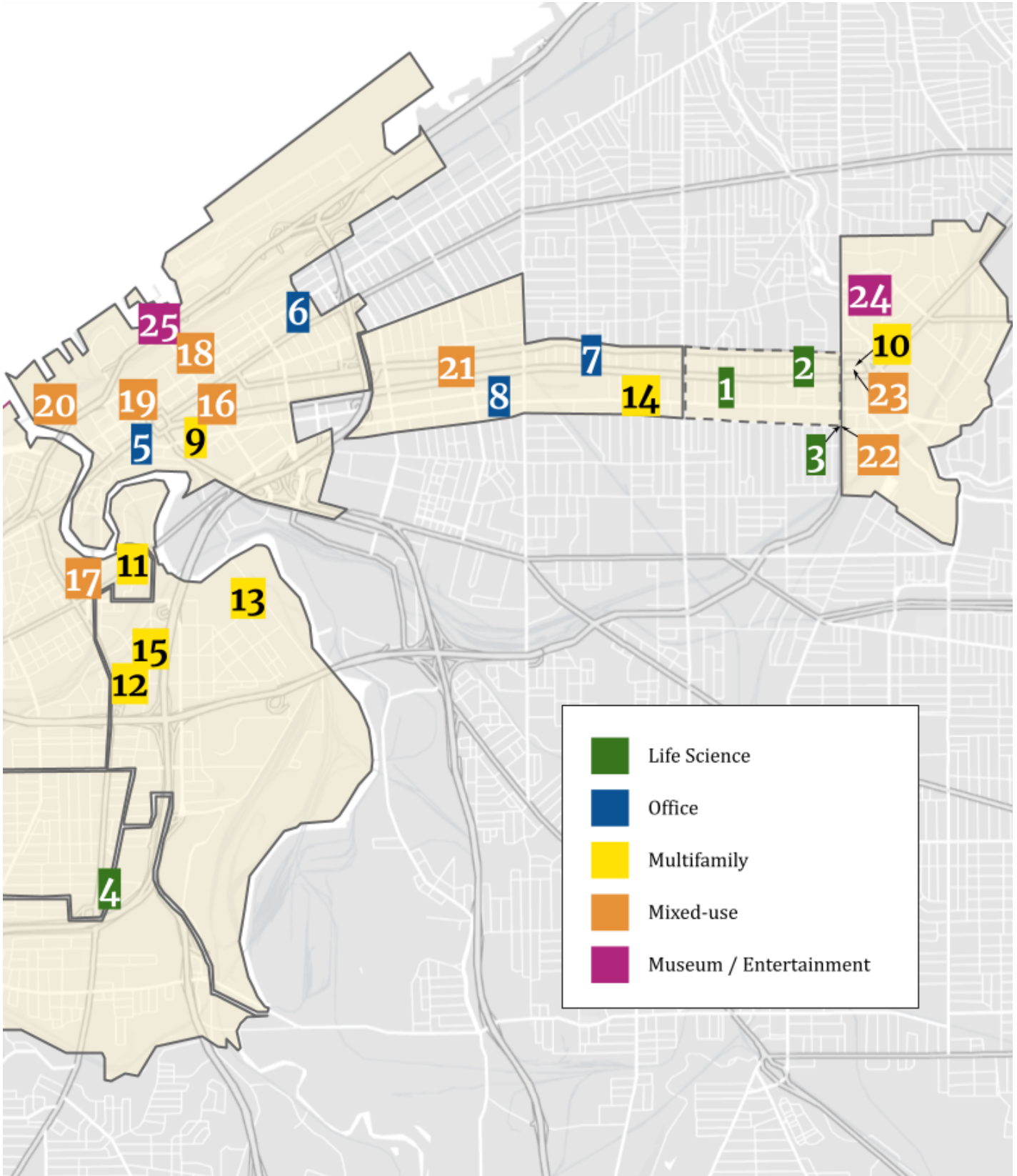
1. The project exceeds \$20 million in construction value;
2. The project has been approved by the City and/or has finalized its financing; and lastly,
3. The project is anticipated to be completed on or before 2026.

The total value of these 25 mega projects in the specified neighborhoods below is approximately \$4.63 billion. The per category breakdown is as such:

**Figure #7: 25 mega projects in and around Cleveland**

	<b>Construction Value (\$ million)</b>	<b>Square Feet (in millions) / Apartment Count</b>
Life science	~\$2,550*	2.26 SF
Office	\$395	1.27 SF
Multifamily	\$372.9	1,388 apartment units
Mixed-use	\$1,060	3.57 SF
Museum / entertainment	\$250	0.1 SF

**\* Note:** The “Life Science Construction Value” may be inflated by the Cleveland Clinic’s \$1.3 billion capital expenditure budget, which includes potential new buildings and renovations in Ohio, Florida and London. The exact allocation of this capital has not yet been announced.



**Figure 8:** Current and future construction projects in Greater Cleveland area



## Life science development

The Cleveland Clinic and The MetroHealth System are currently developing several mega-projects in the Greater Cleveland area. Collectively, the two campuses have approximately \$2.75 billion in new infrastructure projects currently underway.

### 1 Cleveland Clinic: Neurological Institute<sup>56</sup>

Type: New construction  
Use: Hospital / medical research  
Square Feet: 1,000,000  
Construction Budget: \$1.3 billion for several projects, including the Neurological Institute

Image 3<sup>57</sup>



### 2 Cleveland Clinic: Cole Eye Institute expansion<sup>58</sup>

Type: New construction  
Use: Hospital / medical research  
Square Feet: 150,000  
Construction Budget: \$1.3 billion for several projects, including the Cole Eye expansion

Image 4<sup>59</sup>



### 3 Cleveland Clinic (CC): Global Center for Pathogen Research & Human Health<sup>60</sup>

Type: New construction  
Use: Medical research  
Square Feet: 400,000  
Construction Budget: \$500M (\$300m from CC, \$155M from State, and \$110 from JobsOhio)

*Rendering not yet released*

### 4 MetroHealth: Campus transformation<sup>61</sup>

Type: New construction and renovations  
Use: Hospital  
Square Feet: 710,000 (Glick Center specifically)  
Construction Budget: \$946 million

Image 5<sup>62</sup>



<sup>56</sup> “Cleveland Clinic announces details of \$1.3 billion in capital investments” (Cleveland: Cleveland Clinic, 2022)

<sup>57</sup> “Cleveland Clinic Neurological Institute” (Cleveland: Cleveland Clinic, 2022)

<sup>58</sup> “Cleveland Clinic announces details of \$1.3 billion in capital investments” (Cleveland: Cleveland Clinic, 2022)

<sup>59</sup> “Cole Eye Institute expansion” (Cleveland: Cleveland Clinic, 2019)

<sup>60</sup> Eric Heisig, “Ohio officials, Cleveland Clinic detail how \$265m in state money will be used for 'innovation district'” (Cleveland: Cleveland.com, 2021)

<sup>61</sup> “MetroHealth transformation” (Cleveland: The MetroHealth System, 2022)

<sup>62</sup> “Current renderings: The MetroHealth Glick Center” (Cleveland: The MetroHealth System)

## Office development

### 5 Sherwin-Williams: New headquarters<sup>63</sup>

Type: New construction  
Use: Office  
Square Feet: 1,000,000  
Construction Budget: \$300 million

Image 6<sup>64</sup>



### 6 CrossCountry Mortgage: New headquarters<sup>65</sup>

Type: Redevelopment  
Use: Office  
Square Feet: 168,000  
Construction Budget: \$46 million

Image 7<sup>66</sup>



### 7 Cleveland Foundation: New headquarters<sup>67</sup>

Type: New construction  
Use: Office / mixed-use civic hub  
Square Feet: 54,000  
Construction Budget: \$27 million

Image 8<sup>68</sup>



### 8 Minute Men Staffing: New headquarters<sup>69</sup>

Type: Renovation and expansion  
Use: Office  
Square Feet: 45,000  
Construction Budget: \$22 million

Image 9<sup>70</sup>



<sup>63</sup> “Sherwin-Williams global headquarters: About the project” (Cleveland: The Sherwin-Williams Company)

<sup>64</sup> “Sherwin-Williams global headquarters: Rendering” (Cleveland: The Sherwin-Williams Company)

<sup>65</sup> “CrossCountry Mortgage celebrates launch of new headquarters project” (Cleveland: CrossCountry Mortgage, Inc., 2021)

<sup>66</sup> “CrossCountry Mortgage headquarters: Rendering” (Cleveland: CrossCountry Mortgage, Inc., 2021)

<sup>67</sup> Harry Boomer, “Building a better Cleveland, in Hough neighborhood's Ward 7” (Cleveland: Cleveland 19, 2021)

<sup>68</sup> “Cleveland Foundation HQ: Rendering” (Cleveland: The Cleveland Foundation)

<sup>69</sup> “Midtown 2022 overview” (Cleveland: MidTown Cleveland, LLC, 2022)

<sup>70</sup> “Headquarters expansion & renovation rendering” (Cleveland: Independence Construction, 2022).



## Multifamily development

### 9 City Club Apartments<sup>71</sup>

Type: New construction  
Use: Residential and ground floor retail  
Square Feet: 254,625 (304 units, not including the penthouses)  
Construction Budget: \$85–\$100 million

Image 10<sup>72</sup>



### 10 White Oak Realty: Artisan Residence<sup>73</sup>

Type: New construction  
Use: Residential and ground floor retail  
Square Feet: 422,000 (298 units)  
Construction Budget: \$80 million

Image 11<sup>74</sup>



### 11 Marous Brothers: Waterford Bluffs<sup>75</sup>

Type: New construction  
Use: Residential and ground floor retail  
Apartment Count: 241 units (SF not listed)  
Construction Budget: \$65 million

Image 12<sup>76</sup>



### 12 MAVREK Development: TREO Project<sup>77</sup>

Type: New construction  
Use: Residential  
Square Feet: 211,516 (171 units)  
Construction Budget: \$38.5 million

Image 13<sup>78</sup>



<sup>71</sup> Ken Prendergast, “City Club apartments tower may rise in November” (Cleveland: NEOtrans, 2020)

<sup>72</sup> “City Club’s apartment hotel rendering” (Cleveland: 3 WYKC Studios, 2021)

<sup>73</sup> “Circle Square: The Artisan.” (Cleveland: AMHigley)

<sup>74</sup> “Circle Square, The Artisan Rendering” (Cleveland: AMHigley)

<sup>75</sup> Eric Heisig “Construction begins on five-story, 240-unit apartment building near Cleveland’s West Side Market” (Cleveland: Cleveland.com, 2021)

<sup>76</sup> “Waterford Bluffs rendering” (Cleveland: Waterford Bluffs)

<sup>77</sup> “The TREO Project” (Cleveland: Cleveland Development Advisors, 2021)

<sup>78</sup> “Treo” (Cleveland: Krueger Group, 2021)

**13 J Roc Development: Electric Gardens<sup>79</sup>**

Type: New construction  
Use: Residential and office (*less than 10,000 SF*)  
Apartment Count: 130 units (SF not listed)  
Construction Budget: \$33.4 million

**Image 14<sup>80</sup>**



**14 Signet Real Estate Group: Foundry Lofts<sup>81</sup>**

Type: New construction  
Use: Residential  
Square Feet: 112,000 (160 units)  
Construction Budget: \$30 million

**Image 15<sup>82</sup>**



**15 Sustainable Community Assoc.: The Lincoln<sup>83</sup>**

Type: New construction  
Use: Residential  
Square Feet: 107,300 (84 units)  
Construction Budget: \$26 million

**Image 16<sup>84</sup>**



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<sup>79</sup> “Electric Gardens” (Cleveland: Cleveland Development Advisors, 2021)

<sup>80</sup> “Electric Gardens rendering” (Cleveland: J Roc in Partnership with DiGeronimo Companies)

<sup>81</sup> “Foundry Lofts” (Signet Real Estate Group, 2022)

<sup>82</sup> “Foundry Lofts rendering” (Cleveland: Signet Real Estate Group, 2022)

<sup>83</sup> Karin Connelly Rice, “Going up Green: The Lincoln Apartments Will Have Living Façade, Revitalize the Scranton Corridor” (Cleveland: FreshWater, 2021)

<sup>84</sup> “The Lincoln rendering” (Cleveland: Bialosky)

## Mixed-use development

For context, the following projects were identified as “mixed use” because they included at least 10,000 square feet of a second use type.

### 16 The Millennia Companies: The Centennial<sup>85</sup>

Type: Renovation and retrofit  
Use: Mixed-use apartments, hotel, and retail  
Square Feet: 1.36 million  
Construction Budget: \$465 million  
(\$40 million in state tax credits)

Image 17<sup>86</sup>



### 17 Harbor Bay Real Estate Advisors: INTRO<sup>87</sup>

Type: New construction  
Use: Residential and retail  
Square Feet: 515,000 (297 units; also includes 36,000 SF of retail)  
Construction Budget: \$150 million

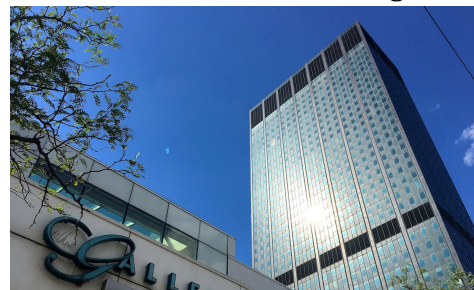
Image 18<sup>88</sup>



### 18 James Kassou: Erieview Tower<sup>89</sup>

Type: Redevelopment  
Use Type: Office, residential, and W Hotel  
Square Feet: 430,000  
Construction Budget: \$93.4 million

Image 19<sup>90</sup>



<sup>85</sup> Michelle Jarboe, “The Centennial, in Downtown Cleveland, wins \$40 million in tax credits for 'transformational' projects” (Cleveland: Crain’s Cleveland Business, 2022)

<sup>86</sup> “The Centennial rendering.” (Cleveland: McCartan and Nova Concepts, 2022)

<sup>87</sup> Kevin Barry, “Intro Cleveland reaches full height while Ohio City waits for it to revitalize West 25th Street” (Cleveland: News 5 Cleveland, 2021)

<sup>88</sup> “Intro rendering” (Cleveland: Entrata, Inc.)

<sup>89</sup> Michelle Jarboe “Tower at Erieview Apartments will carry the W Brand, in Marriott's first foray into rentals” (Cleveland: Crain’s Cleveland Business, 2022)

<sup>90</sup> Eric Heisig “Marriott’s ‘W’ apartments’ branding destined for Erieview Tower in Downtown Cleveland” (Cleveland: Crain’s Cleveland Business, 2022)



**19 K&D Group: 55 Public Square<sup>91</sup>**

Type: Redevelopment  
Use: Office and residential  
Square Feet: 430,000  
Construction Budget: \$85 million

**Image 20<sup>92</sup>**



**20 Akara Partners: Flats East Bank phase 3B<sup>93</sup>**

Type: New construction  
Use: Residential and retail  
Square Feet: 213,376 (229 units; also includes 10,000 SF of retail)  
Construction Budget: \$84.4 million

**Image 21<sup>94</sup>**



**21 Dream Hotel<sup>95</sup>**

Type: New construction  
Use: Hotel and conference / meeting venue  
Square Feet: 207-room hotel, 100,000 SF of meeting space, and 400-space parking deck  
(Assumes 250,000 square feet total)  
Construction Budget: \$60 million

**Image 22<sup>96</sup>**



**22 Fairmount Properties: Cedar Ave Develop.<sup>97</sup>**

Type: New construction  
Use: Residential and retail  
Square Feet: 190,000 (196 apartment units; also includes a 40,000 SF grocery store)  
Construction Budget: \$60 million

**Image 23<sup>98</sup>**



<sup>91</sup> Stand Bullard “55 Public Square's remake lands more than \$85 Million in financing” (Cleveland: Crain's Cleveland Business, 2021)

<sup>92</sup> Berardi, “55 Public Square ground floor rendering” (Cleveland: Berardi, 2021)

<sup>93</sup> Ken Prendergast “Flats East Bank plans reveal \$84 million project” (Cleveland: NEOtrans, 2021)

<sup>94</sup> “Kenect Cleveland rendering” (Cleveland: GP and Akara Partner; 2021)

<sup>95</sup> Steven Litt, “Dream Hotel Group announces plans to complete 207-room hotel at Masonic Temple by 2022” (Cleveland: Cleveland.com, 2020)

<sup>96</sup> “Dream Hotel rendering” Cleveland: Bialosky, 2020)

<sup>97</sup> Steven Litt, “Cleveland Planning Commission oks plan for new apartments and supermarket in food desert south of Cleveland Clinic along Opportunity Corridor” (Cleveland: Cleveland.com, 2021)

<sup>98</sup> “Cedar Avenue mixed-use rendering” (Cleveland: Bialosky, 2021)

### 23 MLK Branch & Library Loft Apartments<sup>99</sup>

Type: New construction  
Use: Residential and public library  
Square Feet: 184,000 (298 units and two-story MLK Branch of the Cleveland Public Library)  
Construction Budget: \$60 million

Image 24<sup>100</sup>



## Museum / entertainment development

### 24 Cleveland Museum of Natural History<sup>101</sup>

Type: Renovation and expansion  
Use: Museum and public spaces  
Square Feet: 50,000 SF expansion; also includes reinstallation of exhibitions and development of new public spaces  
Construction Budget: \$150 million

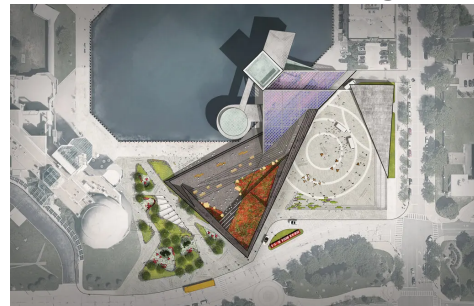
Image 25<sup>102</sup>



### 25 Rock & Roll Hall of Fame<sup>103</sup>

Type: Renovation and expansion  
Use: Museum and entertainment  
Square Feet: 50,000  
Construction Budget: \$100 million

Image 26<sup>104</sup>



<sup>99</sup> Ken Prendergast, “Library Lofts construction starts” (Cleveland: NEOtrans, 2022)

<sup>100</sup> “Library Lofts rendering” (Cleveland: Bialosky, 2019)

<sup>101</sup> “Museum completely reconceptualizes all exhibits” (Cleveland: Cleveland Museum of Natural History, 2021)

<sup>102</sup> “Cleveland Museum of Natural History rendering.” (Cleveland: DLR Group, 2019)

<sup>103</sup> “Rock & Roll Hall of Fame unveils renderings for Museum’s expansion” (Cleveland: WKYC 3 Studios, 2020)

<sup>104</sup> “Rock Hall of Fame expansion rendering” (Cleveland: Practice for Architecture and Urbanism, 2020)

## III Life science in the United States

### Introduction

In recent years, the world has been hugely impacted by life science innovation. The COVID-19 pandemic has claimed over one million American lives, and nearly 594 million doses of the vaccine have been issued in the United States as of June 2022.<sup>105</sup>

The current state of the life science industry is a revolving door of new capital, competition for new talent, and a lack of laboratory inventory. Capital is constantly chasing new innovations; companies are continuously poaching top talent; and lab space is quickly pre-leased to multinational or hyper growth start-ups. These trends pose an interesting question to states, cities, and private investors looking to foster life science innovation hubs.

#### *Public and private capital*

Driven primarily by the COVID-19 pandemic, the biotechnology and pharmaceutical industries have experienced tremendous funding growth in the past several years. Between 2020 and 2021, private equity and public offering investment in North America totaled \$86.3 billion. This “exceeded the combined four-year total between 2016 and 2019 (\$82.3 billion).”<sup>106</sup> In addition to the private sector growth, the National Institutes of Health (NIH) funded \$33.5 billion in 2021, with the top 10 markets accounting for half of NIH’s funding.<sup>107</sup>

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<sup>105</sup> “More than 12.2 billion shots given: Covid-19 Tracker” (Bloomberg, 2022)

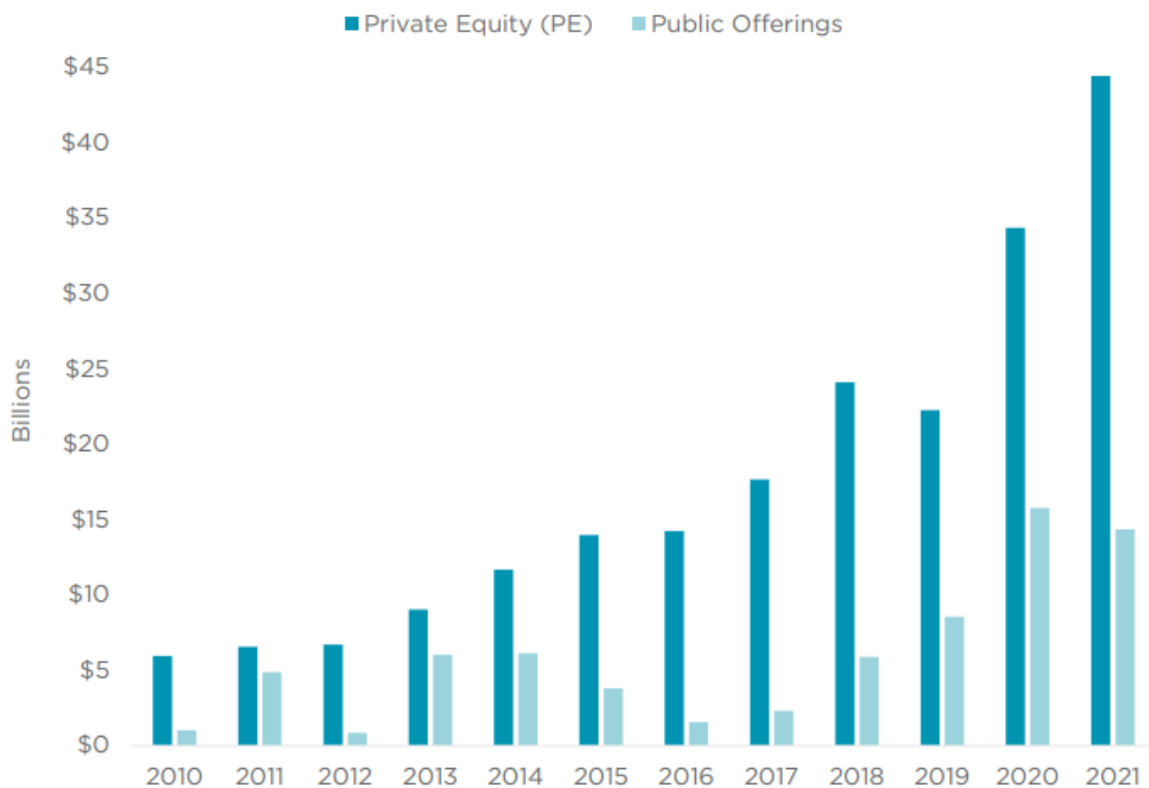
<sup>106</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.5)

<sup>107</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.4)

*Will this increase in funding eventually peak?* All signs say no. According to JLL’s 2021 “Life Sciences Real Estate Outlook,” “worldwide pharmaceutical sales are predicted to escalate at a compound annual rate of 7.4 percent through 2026, to nearly \$1.4 trillion in sales.”<sup>108</sup> Additionally, with a staggering 910 drugs currently in phase three clinical trials at a 59.0 percent success rate, nearly 536 new therapeutic drugs could be introduced to the market in the next several years.<sup>109</sup> The evidence speaks for itself: Growth is here to stay!

## Investment in Biotech up 12.7% YoY

### North American Venture & Public Offering Capital



**Image 27:** North American venture and public offering capital in biotechnology <sup>110</sup>

<sup>108</sup> Julia Georgules et al., “2021 Life Sciences Real Estate Outlook | United States” (JLL, 2022, pg. 8)

<sup>109</sup> Julia Georgules et al., “2021 Life Sciences Real Estate Outlook | United States” (JLL, 2022, pg. 11)

<sup>110</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.5)

### *Talent<sup>111</sup>*

Life science talent has continuously outpaced the United States' job market by approximately 5.6 percent per year since 2011. In 2020 and 2021 alone, job growth in life sciences grew by 7.9 percent and 11.4 percent, respectively. Although the industry has experienced tremendous growth in new talent, most of these jobs — *approximately 45 percent* — are concentrated within the top 10 life science communities.

### *Real estate lab market*

Life science laboratory, although high in investor demand, is still an extremely niche real estate asset class. As of 2021, laboratory inventory in the United States totaled 147 million square feet. Compared to industrial at 13.6 billion and office at 4.3 billion, this total number of square feet for lab space is extremely small.<sup>112</sup>

Given the substantial increase in private equity and public offering capital, it makes sense that nearly 17.1 million square feet of new laboratory inventory is currently being constructed in the top 10 U.S. life science hubs.<sup>113</sup> Even with this increase in supply though, vacancies remain extremely tight, which continues to increase asking rental rates. Since 2015, “lab space rents have increased by an average of 72 [percent].”<sup>114</sup>

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<sup>111</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.7)

<sup>112</sup> Julia Georgules et al., “2021 Life Sciences Real Estate Outlook | United States” (JLL, 2022, pg. 20)

<sup>113</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.10)

<sup>114</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.11)



## Technical & financial considerations for new lab development

Developing life science lab space is no easy task. It requires a strong technical knowledge of design elements that are otherwise atypical in standard office or industrial development. Partnering with the right general contractor and architect is essential when developing this type of space. Below is a brief overview of the technical components — *and trends* — that developers need to consider when developing new lab space.

### *Major design considerations*

Different from any other type of real estate asset, lab space requires many technical design considerations, which increases construction costs substantially. These include:

1. **Higher floor-to-floor heights:** The ideal floor height for new development is a minimum 14.0’.
2. **Sufficient vibration capacity:** Vibration can severely impact lab experiments, so it is essential to enhance structural vibration attenuation as much as possible.<sup>115</sup>
3. **Superior HVAC systems:** Labs consume a lot of energy because HVAC systems must deliver strong filtration and high air change rates due to the potentially hazardous chemicals used in the labs.<sup>116</sup>

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<sup>115</sup> “Tips to designing purpose-built life science spaces” (Hines, 2021)

<sup>116</sup> “HVAC for laboratories: Ventilation, lab types & equipment” (Therma, 2021)

4. **Load capacity:** Depending on the equipment used within the space, lab floor loading is typically a minimum of 100 pounds per square foot.<sup>117</sup>
5. **Mechanical, electrical, and plumbing (MEP) systems:** An MEP penthouse or rooftop equipment is necessary for generators and increased water and sewer capacity.<sup>118</sup>
6. **First floor access:** Loading docks, trash, and chemical storage need to be properly vetted during the design phase.

*Varying space types within a single asset*

There are many different space types within a lab building. To be brief, definitions for the most common types are included below:

1. **Wet labs:** These rooms are used for the manipulation of biological matter, chemicals, and hazardous materials.<sup>119</sup>
2. **Dry labs:** These rooms are focused on computation, physics, and engineering.<sup>120</sup>
3. **Environmental rooms:** These can either be cold (refrigeration) or warm rooms; they are designed to control temperature and humidity.<sup>121</sup>

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<sup>117</sup> “Tips to designing purpose-built life science spaces” (Hines, 2021)

<sup>118</sup> “How to reposition a building for life science tenants” (SGA, 2021)

<sup>119</sup> Mark Paskanik and Matthew Decker, “Wet Labs vs dry labs from lab design experts” (CRB, 2022)

<sup>120</sup> Mark Paskanik and Matthew Decker, “Wet Labs vs dry labs from lab design experts” (CRB, 2022)

<sup>121</sup> “Cold & warm room safety” (The George Washington University, 2022)

### *Major trends in life science development*

In addition to understanding the latest design technicalities, it is also important to acknowledge the most recent trends in life science real estate. These include:

1. **Office and lab collaboration:** Life science buildings are not usually 100 percent lab space. The typical life science program is 60 percent lab and 40 percent office. It is important when designing the asset that there is a clear flow between the office and lab space in order to increase employee productivity.
2. **Floor plate sizes:** The ideal floor plate size for lab space has continued to increase in the past several years. Based on the market and potential tenantship, the lease market is now targeting 30,000 to 40,000 square foot floor plates.<sup>122</sup>
3. **Flexible, modular labs:** In an interview with Shefali Shah, Global Corporate Real Estate Strategy and Transformation Lead at Merck, Merck “continues to pursue more modular labs so that [it] can use the space for all types of purposes.”

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<sup>122</sup> Saner et al., “Laboratory and Bio/Life Sciences Subcommittee Report” (Brookline: Economic Development Advisory Board, 2021)

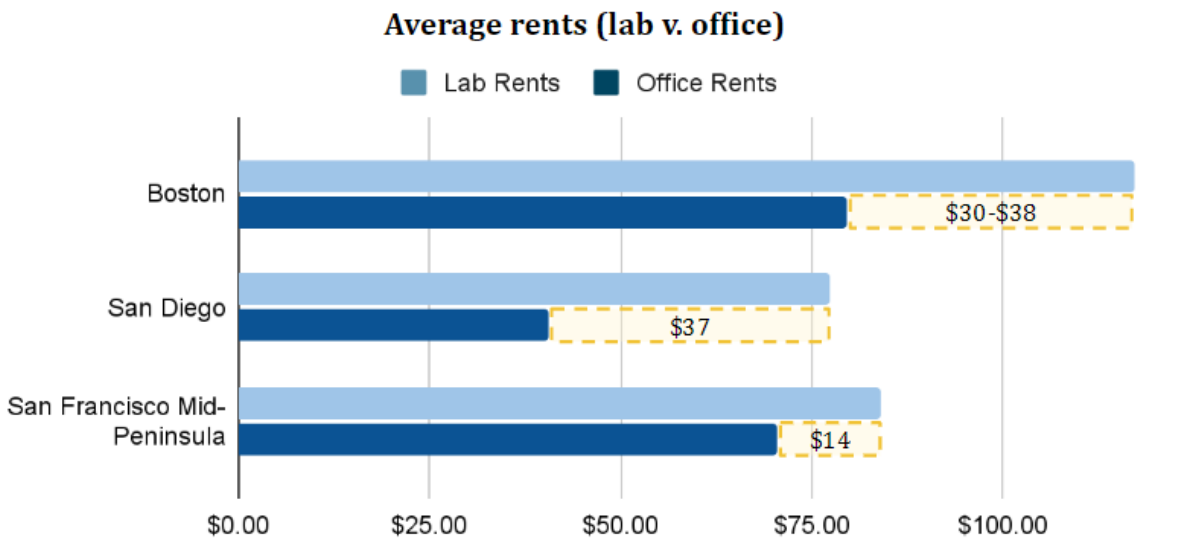


**Image 28:** Example of a hybrid lab-office by Greatland Realty Partners<sup>123</sup>

<sup>123</sup> “New construction life science opportunity: 1050 Waltham Street, Lexington, MA” (Lexington: Greatland Partners, 2021)

*Financial considerations*

Life science lab space typically has a substantial rent premium compared to standard office space. This is driven primarily by demand outpacing supply in almost all life science markets; however, it is also driven by the extremely high tenant improvement allowances provided to tenants so that they can properly build-out their facilities. Figure 9 displays such rent premiums in the major growth markets of Boston, San Diego, and the San Francisco Bay.

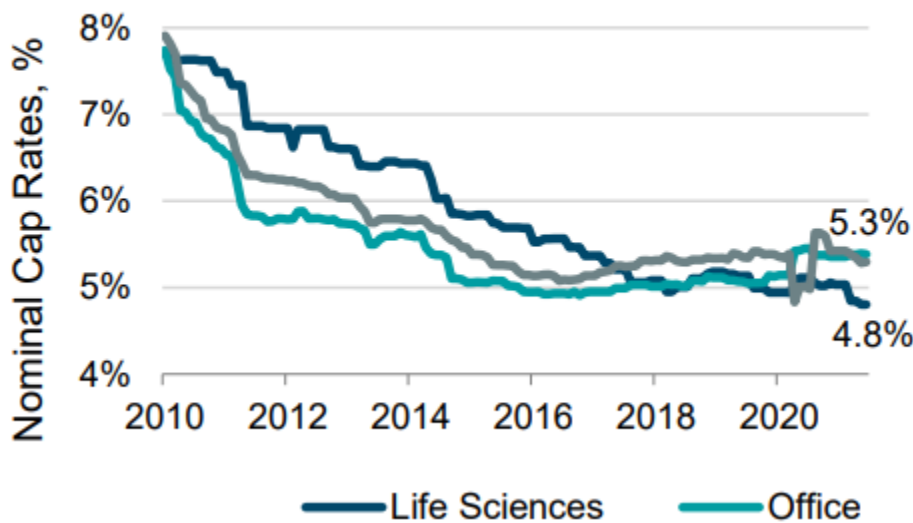


**Figure 9:** Comparison of average rents between lab and office space<sup>124</sup>

<sup>124</sup> “Greater Boston Life Sciences: 2022 Market Insight Report” (Boston: Cresa, 2022, pg. 3); “Boston - Q1 2022 Office Market Report” (Boston: Cresa, 2022, pgs. 1-2); Zach DiSalvo et al., “Q1 2022 Market Overview: San Diego Life Sciences” (San Diego: CBRE, 2022, pg. 2); Patrick Ashton, “San Diego Office Insight | Q2 2022” (San Diego: JLL, 2022, pg. 1); Laura Waxmann, “Demand — and rents — for Bay Area lab space are just as hot as ever” (San Francisco Bay: San Francisco Business Times, 2021); Crystal Fok, “SF Mid-Peninsula Office Insight | Q2 2022” (San Francisco Bay: JLL, 2022, pg. 1)

Another important financial measurement to consider are cap rates associated with life science development and acquisitions. According to DWS Group’s alternative research, life science cap rates continue to compress, especially in markets that foster innovation and collaboration. In its September 2021 report, DWS references Green Street Advisors data: “Life science cap rates were 4.8% in July 2021, almost 50 bps lower than those of traditional office.”<sup>125</sup> Figure 29 displays this compression of life science cap rates over time compared to traditional office.

**CHART 6. GSA NOMINAL CAP RATES**



**Image 29:** Green Street Advisors’s (GSA) research on nominal cap rate compression<sup>126</sup>

<sup>125</sup> Kevin White & Liliana Diaconu, “Biotech boom leading growth in life science real estate” (DWS, 2021, p. 7)

<sup>126</sup> Kevin White & Liliana Diaconu, “Biotech boom leading growth in life science real estate” (DWS, 2021, p. 7)

## Cambridge as a case study

### *History of Kendall Square*

Cambridge, specifically Kendall Square, is considered the “most innovative square mile on the planet earth.”<sup>127</sup> *But how did this all come to be? What is the secret sauce that drives such life science innovation?*

In order to best address these questions, interviews were conducted with Maureen McCaffrey, Director of Real Estate at MITIMCo, and Jim Doolin, Senior Advisor at the Harvard Allston Land Company. For clarification, MITIMCo resides within Massachusetts Institute of Technology’s (MIT) endowment, supporting the university through returns generated via its real estate portfolio.

Twenty years ago, Kendall Square was not a life sciences destination. There were very few companies in Cambridge at the time; however, thanks to the trailblazing efforts of Biogen in the 80s and 90s, a spark started to be lit. The first major company to step foot into Kendall Square was Swiss drugmaker Novartis in 2003; the company eventually named Cambridge its global research headquarters.<sup>128</sup> As the life science flame continued to grow, other biotech and pharmaceutical companies — *like Pfizer, AstraZeneca, Amgen, and Baxter* — entered the neighborhood. The desire for lab space in Kendall Square quickly became one of the hottest products in the United States, especially during and following the COVID-19 pandemic. Today, demand outpaces supply, and market rents continue to rise well above \$125 per square foot triple net.

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<sup>127</sup> “CIC Cambridge: Our story” (Cambridge: CIC, 2022)

<sup>128</sup> Michael Blanding, “The past and future of Kendall Square” (Cambridge: MIT Technology Review, 2015)

Cambridge Submarkets	Market Size (Square Feet)	Vacancy Rate	Class A Rent / SF (NNN)
East Cambridge	8,496,992	0.2%	\$125
Mid Cambridge	3,219,139	0.1%	\$115
West Cambridge	2,152,141	2.8%	\$110

**Figure 11:** Cresa and the Life Sciences CRE Market in Spring/Winter 2022, Cambridge<sup>129</sup>

*But why did these companies choose Cambridge instead of other global markets?* The simplest answer was university talent, both from MIT and Harvard University. According to Maureen McCaffrey, there are three major reasons why companies continue to choose Cambridge, including its ability:

1. To pull human resources from the academic institutions;
2. To interact with students, faculty, and any companies originating from these academic institutions; and
3. To invest in new, smaller start ups.

Aside from the strong talentpool and startup community, companies value the “collision” that Cambridge has to offer. “People that are working on the same thing in the same area are constantly bumping into one another and helping one another,” stated Maureen. This clustering effect — *or organic collaboration* — has helped many companies achieve even greater innovation than originally anticipated.

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<sup>129</sup> “Greater Boston Life Sciences: 2022 Market Insight Report” (Boston: Cresa, 2022, pg. 3)



### *Real estate strategies*

Cambridge's growth did not just happen overnight. Nor did the universities sit idle while major biotech and pharmaceutical companies stepped into the neighborhood. Both MIT and Harvard played major roles in the real estate anatomy of Cambridge. A major reason for their involvement was the large amount of underutilized land that these institutions owned. Harvard, for example, invests in its land: It not only obtains the necessary permits, but it also creates pad-ready land that is prime for redevelopment.

According to Jim Doolin, "thinking through the design and tenantry [of a real estate asset] is extremely important to Harvard." Additionally, in every request for proposal, Harvard is "explicit about the requirements for innovative and small tenants looking for opportunities to partner with Harvard faculty." In Harvard's Enterprise Research Campus, for example, a portion of the asset must be dedicated to both first cycle start ups and growth labs. Lastly, retail placemaking is extremely important to Harvard in order to encourage minority and locally owned businesses to remain present in the local community.

### *Challenge for Case Western Reserve*

Case Western Reserve owns 267 acres in University Circle as well as a 400-acre farm located in Hunting Valley, Ohio.<sup>130</sup> Although Case Western is not the focus of this thesis, it will play a major role in the continued expansion of Cleveland's life science community — *that is, if it decides to reposition its real estate strategy sometime in the near future.*

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<sup>130</sup> "CWRU at a glance" (Cleveland: Case Western Reserve University, 2021)

Perhaps a recommendation to Case Western, Jim Doolin poses a basic question to institutions with large quantities of land: “What is the overall mission of your development strategy?” If Case is focused on growing innovation and entrepreneurship, now may be the opportune time for the university to mimic MIT and Harvard’s real estate strategies in hopes of attracting new and exciting opportunities for its students and faculty.

## IV Cleveland and life science, together

### Introduction

“They’re not going to come here if you don’t have the talent. They’re not going to come here if you don’t have the real estate. They’re not going to come here if you don’t have the investment dollars.” (Michael Lalich, an Economic Development Practitioner previously with the Health-Tech Corridor Innovation District).

This chapter focuses on just that: Lab inventory, talent, and private funding. Cleveland’s talent has the ability to compete with a large majority of other institutions and life science communities; however, it currently lacks real estate inventory and private funding. Talent will draw businesses to Cleveland; however, without capital partners and experienced lab developers, Cleveland cannot compete with other life science hubs in the United States.

### Lab space: Supply and demand

#### *Existing inventory*

Private incubation lab space in Cleveland is essentially non-existent. Although Cleveland is blessed with fantastic healthcare providers and universities, “the available inventory of lab space is generally controlled by non-profits,” states Nate Kelly. Andrew Batson confirms Kelly’s perspective: “All the life science that exists in Cleveland exists on the Cleveland Clinic campus; it’s almost all purpose-built and owner occupied.”

The lack of inventory in laboratory space is not just a concern for those working in Cleveland. It is an issue that is recognized by both the State of Ohio and the broader United States. Andrew Deye, Vice

President of Strategy at JobsOhio, recognizes that Ohio “needs to strengthen its wet lab portfolio” in order to retain both talent and businesses within the State. Finally, Michael Lalich reiterates this sentiment stating, “Not having a good portfolio of lab space puts a region at a disadvantage. At this time, Cleveland is behind some [of the] leading bioscience hubs when it comes to high quality available lab facilities; although, I think our situation is probably what most of the country is facing, except for the top handful of markets.”

Finally, this lack of lab space has been recognized by the educational anchor institution of the Cleveland Innovation District: Case Western Reserve. In an interview with Joe Jankowski, Chief Innovation Officer at Case, he, too, has noticed the shortage of lab space in the Cleveland market. “There is very little lab space for companies in Cleveland. Case has its own incubation space at BioEnterprise, which is the only walkable incubator close to Case. It’s been at capacity forever. Even during COVID, it never stopped. There is always a waitlist.”

#### *Lack of developer experience*

Given the technicalities of this asset class, it is essential to have experienced lab developers within the market. Unfortunately for Cleveland, local developers have not produced this asset before. Nor is there an appetite from local developers to invest time and capital into lab space today. Nate Kelly states, “We need profit-motivated developers who may need to come from out-of-market.” The product is unfortunately too risky for local developers.

#### *Demand*

There is demand for lab space in Cleveland; however, life science companies move at a much faster pace than standard office tenants.

Timing is everything for biotech and pharmaceutical companies. Nate Kelly explains a situation that he runs into constantly: “People expect lab space to be available [in Cleveland], but when I show pictures of what it could be in 18 months, I get laughed at.” As an example, if Nate receives an opportunity from a colleague in Boston representing a life science company, he says that he is “unable to answer their request in the next six months.” The lack of any private lab space immediately turns away potential real estate opportunities.

Case Western, too, has the same issue as private companies. Although the University has massive goals to increase research as part of the Cleveland Innovation District, Joe Jankowski confirms that “[Case] does not have enough lab space; and if we want to hire new faculty and grow companies, there is unfortunately nowhere for them to grow.” Case Western has the demand; however, the supply is lacking.

#### *Potential rental rates*

The only potential lab space to quote in University Circle is the old BioEnterprise building, 11000 Cedar Avenue, which is in close proximity to Case Western, University Hospitals, and the Cleveland Clinic. Aram Nerpouni, ex-President and CEO of BioEnterprise and the new Managing Director of Talent for The Manufacturing Advocacy and Growth Network (MAGNET), stated that the lab space typically achieved \$25 to \$30 per square foot in rents.

Although these rents are quite low, it is important to note that the space was built nearly twenty years ago; and thus, it could potentially be considered an older and lower-quality lab product. It is also largely occupied by Case Western, which limits non-Case entrepreneurs or businesses to utilize the space. In speaking with

Peter Volas, Senior Director of Real Estate at the Cleveland Clinic, he noted that as part of the Clinic's expansion, it "plans to lease some of its space to larger multinational firms, both biotech and pharmaceutical." Although rental rates will be very dependent on demand and construction costs, Peter thinks the Clinic may be able to achieve \$50+ per square foot rents, but the Clinic has done no deals to-date so it may be too early to tell for sure.

*Lack of supply results in an exit of intellectual property and talent*

In addition to companies not remaining in Cleveland, this lack of lab space is also pushing life science companies out of state. According to data provided by Case Western Reserve University, approximately 48 percent of student-founded start-ups in the past five years have remained in Ohio. That means nearly 50 percent of university start-ups have exited the State altogether. One of the reasons for leaving, as mentioned by Joe Jankowski, may be due to the lack of lab space for these companies to run their businesses.

This is not just a Cleveland issue; this is a State issue as well. AveXis Inc., originated at Nationwide Children's Hospital and Ohio State, sold to Novartis for \$8.7 billion in 2018.<sup>131</sup> The company relocated and expanded its business in Durham, North Carolina. According to Andrew Deye, AveXis left the State because North Carolina had a better downstream innovation ecosystem. "These innovations did not come from North Carolina," states Deye. "They came from Columbus. We're trying to prevent that from happening again." Funding from the State and JobsOhio to build out the Cincinnati, Columbus, and Cleveland Innovation Districts is a positive step towards retaining more of these companies in the future.

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<sup>131</sup> "Ohio State startup acquired for \$8.7B" (Columbus: The Ohio State University, 2018)

## Talent

### *Clustering is key*

Top talent is by far one of the hottest commodities in the United States. Similar to their employers, life science talent prefers to cluster. *Why?* Following the COVID-19 pandemic, a large majority of office jobs were able to remain remote; however, lab work requires in-person attention. While the tech industry's talent may become more geographically widespread, the life science industry will remain local and clustered. And for this reason, the talent will follow the jobs.

In order to retain and foster talent going forward, it will be especially important that the State partner closely not just with medical and educational institutions but with private real estate developers, urban planners, and architects. Collectively, they will help “create destination” and encourage talent clustering.

### *Perspectives from biotech and pharmaceutical companies*

Michael Wythe, Senior Director of Real Estate & Corporate Facilities at Moderna, and Shefali Shah, Global Corporate Real Estate Strategy and Transformation Lead at Merck, both agree: Talent is the top focus of their real estate strategies. Shefali confirmed that most of the talent hired by Merck is research-focused. “The reason we are attracted to Boston is because of MIT and Harvard. We are attracted to the West coast for similar reasons. That’s where the research talent is.” Michael reconfirms Shefali’s opinion: “Nine times out of ten, the number one priority for our search is talent attraction and retention; and retention is just as important as attraction given the level of competition.” Interestingly, both Michael and Shefali shared a similar opinion: University relationships tend to be more valuable than hospital relationships. This is because the universities tend to

focus more on research than the hospitals. Peter Volas from the Cleveland Clinic agrees: “Hospital-sponsored research doesn’t seem to get the same type of spinoff that you really need. We almost have to create these opportunities, which is a part of the Clinic’s expansion plan.”

### *Education as an anchor*

It is without question that life science communities sprout from the innovative minds entering and exiting universities’ classrooms. *But do some universities have a “secret sauce” more so than others? Why is it that private sector companies are now choosing tertiary markets like Baltimore or Pittsburgh over Cleveland?*

The table on the following pages compares a list of universities that are located in life science growth markets, including Boston, Baltimore, California (primarily, San Diego and the San Francisco Bay area), New York, Pittsburgh, and Raleigh-Durham.

Ohio is a strong contender as one of the leading markets for life science education and research. Case Western in particular ranks 21st in the world for new utility patents.<sup>132</sup> It is also ranked as the top 24 best medical schools for research in the United States.<sup>133</sup> Although its funding from the National Institutes of Health (NIH) is much lower compared to other universities, its graduating talent is just as competitive — *if not more competitive* — than other life science focused universities.

The categories used in the university ranking analysis are explained further on the following page.

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<sup>132</sup> “Worldwide universities granted U.S. utility patents” (National Academy of Inventors, 2020, pgs. 2–3)

<sup>133</sup> “2023 Best Medical Schools: Research” (U.S. News & World Report L.P., 2022)



1. **2023 Best Medical Schools for Research:** Annual report released by U.S. News & World Report ranking the best medical schools for research in the United States.<sup>134</sup>
2. **CWTS Leiden Ranking: Biomedical & Health Science:** The Center for Science and Technology Studies (Dutch acronym: CWTS) is a “set of bibliometric indicators that provide statistics at the level of universities on scientific impact, collaboration, open access publishing, and gender diversity.”<sup>135</sup> The data analyzed focuses only on the United States from 2017 through 2020.<sup>136</sup>
3. **InCites Essential Science Indicators Ranking:** Reporting tool that analyzes top-performing science-related research.<sup>137</sup> “ESI surveys more than 11,000 journals from around the world to rank authors, institutions, countries, and journals in 22 broad fields based on publication and citation performance.”<sup>138</sup>
4. **NIH Funding:** President Biden submitted his proposed budget of \$62.5 billion for the NIH to Congress in March 2022.<sup>139</sup> A small portion of last year’s allocation (2021) can be found in the table on the following page.<sup>140</sup>
5. **Utility Patent Ranking:** Annual report published by the National Academy of Inventors that ranks global universities with the most U.S. utility patents.<sup>141</sup>

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<sup>134</sup> “2023 Best Medical Schools: Research” (U.S. News & World Report L.P., 2022)

<sup>135</sup> “CWTS Leiden Ranking: Indicators” (Center for Science and Technology Studies, Leiden University, 2022)

<sup>136</sup> “CWTS Leiden Ranking 2022” (Center for Science and Technology Studies, Leiden University, 2022)

<sup>137</sup> “InCites Essential Science Indicators: Top papers by research fields” (Clarivate, 2022)

<sup>138</sup> “About Essential Science Indicators” (Clarivate, 2022)

<sup>139</sup> “FY 2023 President's budget” (National Institutes of Health, 2022)

<sup>140</sup> “NIH awards by location and organization” (National Institutes of Health, 2022)

<sup>141</sup> “Worldwide universities granted U.S. utility patents” (National Academy of Inventors, 2020, pgs. 2–3)

**Figure 12:** University comparisons across major life science markets

University	2023 Best Medical Schools for Research (U.S. Only)	CWTS Leiden Ranking - Biomedical & Health Science (U.S. Only)	InCites Essential Science Indicators Ranking (Global)	NIH Funding 2021 (U.S. Only)	Utility Patent Ranking (Global)
<b>Case Western</b>	<b>24</b>	<b>8</b>	<b>43</b>	<b>\$177M</b>	<b>21</b>
<b>Ohio State</b>	<b>30</b>	<b>20</b>	<b>31</b>	<b>\$230M</b>	<b>56</b>
<b>U. Cincinnati</b>	<b>43</b>	<b>29</b>	<b>69</b>	<b>\$87M</b>	<b>-</b>
<b>Cleveland State</b>	<b>-</b>	<b>-</b>	<b>716</b>	<b>\$5M</b>	<b>-</b>
MIT	-	59	14	\$116M	2
Harvard	1	1	1	\$408M	10
Boston U.	32	37	46	\$231M	55
UMass, Amherst	47	112	148	\$37M	27
Johns Hopkins	3 (tie)	2	2	\$824M	5
U.M. Baltimore	29	44	60	\$241M	-
U.C. Berkeley	-	61	29	\$172M	1*
U.C.L.A.	19	13	5	\$590M	1*
U.C.S.D.	20	16	16	\$550M	1*
U.C.S.F.	3 (tie)	5	8	\$709M	1*
U.S.C.	28	30	40	\$316M	51
Stanford	8	9	7	\$611M	3
Caltech	-	132	110	\$86M	8
Columbia	3 (tie)	14	15	\$649M	19
Icahn at M. Sinai	11 (tie)	27	27	\$441M	-
NYU	2	25	28	\$881M	37
U. Pittsburgh	14 (tie)	7	18	\$598M	20
U. North Carolina	25	15	4	\$498M	38
Duke	6 (tie)	11	19	\$731M	30

\* "University of California, The Regents Of" collectively (Berkeley, UCLA, UCSD, UCSF) rank #1 for total patents

## **Incubation and funding**

To better answer how Cleveland can attract more private funding, let's look at New York City as an example. Although New York dominates Cleveland in size, it, too, has struggled to convince developers to build life science lab space, although it is now starting to pick up pace. Additionally, New York, like Cleveland, has also struggled to produce a large life science start-up community. In an interview with Warren Hagist, Associate Director of Real Estate at SmartLabs, he offered a lesson-learned for other growing life science communities: "I think I would have started by building incubator space first and had them fill up rather than trying to build all parts of the ecosystem all at once. This retains homegrown talent and companies at the earliest stages, when they're less likely to relocate outside the cluster."

The State of Ohio, coincidentally, is doing just that in its latest policies. According to Michael Lalich, "JobsOhio, the State's economic development organization, is investing in research capabilities through its innovation district program in order to increase pipeline at the early stage." Case Western Reserve holds a similar sentiment. In an interview with Katie Brancato, Vice President and Chief of Staff in the Office of the President at Case Western Reserve, she communicated the President's plan to increase research from \$400 million to \$600 million per year over ten years with a major priority of providing a better ecosystem for its faculty, staff, and students to spin-out new companies.

# Cleveland Innovation District

## Introduction

The Cleveland Innovation District was established in early 2021 as a collaboration among five major anchor institutions: The Cleveland Clinic, University Hospitals, The MetroHealth System, Case Western Reserve, and Cleveland State University. The State of Ohio and JobsOhio are the other non-institutional collaborators.

The district initially drew on \$155 million from the State of Ohio, via the Ohio Development Services Agency (DSA); \$110 million from JobsOhio; and \$300 million from the Cleveland Clinic. This \$565 million investment is anticipated to create 20,000 jobs and \$3 billion of economic impact in the next decade.<sup>142</sup> The primary objective of the Cleveland Innovation District — *anchored by the Global Center for Pathogen Research and Human Health* — is researching infectious diseases.

## JobsOhio's major goals

JobsOhio is a private non-profit economic development corporation with the goal of creating new jobs and capital investments in the State of Ohio. The organization's innovation strategy has three main programs:

1. Placemaking, pertaining to new innovation districts;
2. Growth Capital Fund; and
3. Research and development grants.<sup>143</sup>

These three pillars have allowed JobsOhio to create three innovation districts in the State of Ohio: Columbus, Cincinnati, and Cleveland.

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<sup>142</sup> Eric Heisig and Emily Bamforth, "Cleveland new home of state-funded 'Innovation District,' with hospitals, universities working to boost research, jobs." (Cleveland: *Cleveland.com*, 2022)

<sup>143</sup> "Programs & services." (JobsOhio, 2022)

Each of these cities has a Carnegie 1 Institution, or R-1. These include Ohio State University, University of Cincinnati, and Case Western Reserve. Each innovation district seems to be developing its own specialization. Cincinnati, for example, focuses on the subject of digital futures; Columbus specializes in cell and gene therapy; and now Cleveland will be tackling infectious diseases and big data.

## **Cleveland’s major players & responsibilities**

The five anchor institutions participating in the Cleveland Innovation District — *Cleveland Clinic, University Hospital, The MetroHealth System, Case Western Reserve, and Cleveland State University* — have all agreed to help attract new businesses and talent, increase research output, and create 20,000 jobs in the next ten years. Clearer roles and responsibilities are outlined below.

### *Cleveland Clinic*

The Cleveland Clinic, as of July 2022, has taken the largest role — *based on committed capital spend* — pertaining to the Cleveland Innovation District. Unlike the other anchor institutions, the Cleveland Clinic is growing its real estate footprint. In May 2022, the Cleveland Clinic announced \$1.3 billion in new real estate investments. These projects include a 1,000,000 square foot Neurological Institute, 150,000 square foot Cole Eye Institute expansion, and 400,000 square foot Global Center for Pathogen Research and Human Health. These projects are expected to add more than 2,000 direct and 7,500 indirect jobs. Most of this work is being supported by philanthropic donations; however, \$265 million is also being provided by the State of Ohio and JobsOhio, specifically for the 400,000 square foot Global Center for Pathogen Research and Human Health.<sup>144</sup>

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<sup>144</sup> “Cleveland Clinic announces details of \$1.3 billion in capital investments” (Cleveland: Cleveland Clinic, 2022)



**Image 30:** Neurological Institute rendering<sup>145</sup>

It is important to note that although much of the Cleveland Clinic's history has been clinical and patient care focused, this new capital investment is the Clinic's largest research effort in its history, a potential foreshadowing of private-public partnerships in the next decade. One such example is the recent Series B fundraising by Centerline Biomedical, a start-up that spun out of Cleveland Clinic in 2014. The \$33 million funding was led by the Cleveland Clinic and now includes another major partner: GE Healthcare.<sup>146</sup>

In addition to new start-ups spinning out of the Cleveland Clinic, the hospital has also formed top-grade enterprise partnerships. In March 2021, Cleveland Clinic and IBM publicized its 10-year partnership — *the Discovery Accelerator* — that will utilize a quantum computing

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<sup>145</sup> "Cleveland Clinic Neurological Institute" (Cleveland: Cleveland Clinic, 2022)

<sup>146</sup> Andrea Park, "GE Healthcare joins \$33M funding for Cleveland Clinic spinout Centerline Biomedical" (Cleveland: Fierce Biotech, 2022)

system to advance research in life science and healthcare. According to IBM, this program plans to “use advanced computational technology to generate and analyze data to help enhance research in the new Global Center for Pathogen Research and Human Health, in areas such as: genomics, single cell transcriptomics, population health, clinical applications, and chemical and drug discovery.”<sup>147</sup>

In addition to its partnership with IBM, Cleveland Clinic formed an additional private-public partnership with Brooks Automation. Together, they built the first building in the Cleveland Innovation District: The Cleveland Clinic BioRepository. This 22,000 square foot building will safely store biological samples for future research and advancement in clinical treatments.



**Image 31:**  
Cleveland  
Clinic Bio-  
repository<sup>148</sup>

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<sup>147</sup> “Cleveland Clinic and IBM unveil landmark 10-year partnership to accelerate discovery in healthcare and life sciences.” (Cleveland: IBM, 2021)

<sup>148</sup> “Biorepository Building: Cleveland Clinic x Brooks Automation.” (Cleveland: Cleveland Clinic, 2021)

### *University Hospitals*

University Hospitals is focused on medical research and product innovation as part of its collaboration with JobsOhio. As one of the anchor institutions involved, it intends to lead efforts focused on global health and emerging infections.<sup>149</sup> As of November 2021, University Hospitals agreed to hire 235 workers and invest \$233 million in new research over a decade; JobsOhio would commit \$17.5 million to University Hospitals as part of this collaboration.<sup>150</sup>

### *The MetroHealth System*

The MetroHealth System is currently undergoing the construction of The MetroHealth Glick Center and reimagination of its main campus. The \$946 million project is scheduled to be completed in October 2022. The majority of the capital investment is for clinical care expansion.

In addition to its campus transformation, MetroHealth announced in January 2021 — *in response to the Cleveland Innovation District collaboration* — the creation of the Community Response Care Institute. MetroHealth prides itself on being an expert in population health, medical informatics, modeling, and community health dynamics and drivers.<sup>151</sup> Through this new program, MetroHealth will invest \$30 million over the next five years to advance these areas of research, in hopes of studying diseases at the community level.<sup>152</sup>

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<sup>149</sup> “Governor DeWine, Lt. Governor Husted unveil Cleveland Innovation District.” (Cleveland: University Hospitals, 2021)

<sup>150</sup> Eric Heisig, “Ohio officials, Cleveland Clinic detail how \$265m in state money will be used for 'innovation district'” (Cleveland: Cleveland.com, 2021)

<sup>151</sup> “MetroHealth plays integral role in launching new program to monitor disease” (Cleveland: The MetroHealth System, 2021)

<sup>152</sup> “MetroHealth plays integral role in launching new program to monitor disease” (Cleveland: The MetroHealth System, 2021)





**Image 32:** MetroHealth’s newest hospital tower; scheduled completion is October 2022<sup>153</sup>

### *Case Western Reserve*

Case Western is tasked with creating a talent pipeline that aligns with the goals of the Cleveland Innovation District. The university will “concentrate on advancing [its] expertise in areas that include but are not limited to artificial intelligence, big data, and drug development, with a particular emphasis on their implications for cancer, infections diseases, neurological disorders and cardiac issues.”<sup>154</sup> As of November 2021, Case Western agreed to invest \$175 million in new research over a decade; JobsOhio would commit \$17.5 million to Case as part of this collaboration.<sup>155</sup>

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<sup>153</sup> “Current renderings: The MetroHealth Glick Center” (Cleveland: The MetroHealth System)

<sup>154</sup> Scott Cowen, “Cleveland Innovation District: Our opportunity” (Cleveland: Case Western Reserve, 2021)

<sup>155</sup> Eric Heisig, “Ohio officials, Cleveland Clinic detail how \$265m in state money will be used for 'innovation district'” (Cleveland: Cleveland.com, 2021)

*Cleveland State University*

Cleveland State University (CSU) — *similar to Case Western* — is tasked with creating a talent pipeline that aligns with the goals of the Cleveland Innovation District, especially since 80 percent of its graduates remain in Northeast Ohio. In order to achieve this, CSU intends to “increase the number of higher education degrees, certificates, adult learning opportunities and virtual educational programming in key STEM fields.” It also intends to “invest in building classrooms, teaching labs, residence halls, and research.”<sup>156</sup> As of November 2021, Cleveland State agreed to achieve 9,500 degrees and 3,500 certificates in exchange for \$20 million in collaboration with JobsOhio.<sup>157</sup>

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<sup>156</sup> “Cleveland State University to become ‘talent pipeline’ for State initiative linking Cleveland's medical and health care leaders” (Cleveland: Cleveland State University, 2021)

<sup>157</sup> Eric Heisig, “Ohio officials, Cleveland Clinic detail how \$265m in state money will be used for 'innovation district’” (Cleveland: Cleveland.com, 2021)



## **Advanced Research Projects Agency for Health**

The Advanced Research Projects Agency for Health (ARPA-H) is an independent agency recently proposed by President Biden and funded by Congress in 2022. The agency was funded \$6.5 billion with a mission to “champion innovative ideas in health and medicine focused on time-limited projects related to a range of diseases, including cancer, infectious diseases like COVID-19, and Alzheimer’s disease.”<sup>158</sup>

The headquarters for this new agency has not yet been released, and many life science communities are raising their hands in hopes of winning this grand prize. Eleven members of Northern Ohio’s congressional delegation wrote to President Biden on June 6, 2022.<sup>159</sup> In their letter, they described why they believed Cleveland would be the best fit for ARPA-H’s headquarters, especially given President Biden’s commitment to equity in communities like Cleveland, Ohio. In describing the Cleveland market, Aram Nerpouni states, “We have some of the best healthcare research and delivery in the world as well as very meaningful health disparities.” Based on this reasonable sentiment, Cleveland could be a great option.

Keep your eyes on the progress of this program. Cleveland could very well be a front runner.

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<sup>158</sup> Kim Palmer, “Cleveland leaders seek to bring \$6.5 billion health research agency to the City” (Cleveland: Crain’s Cleveland Business, 2022)

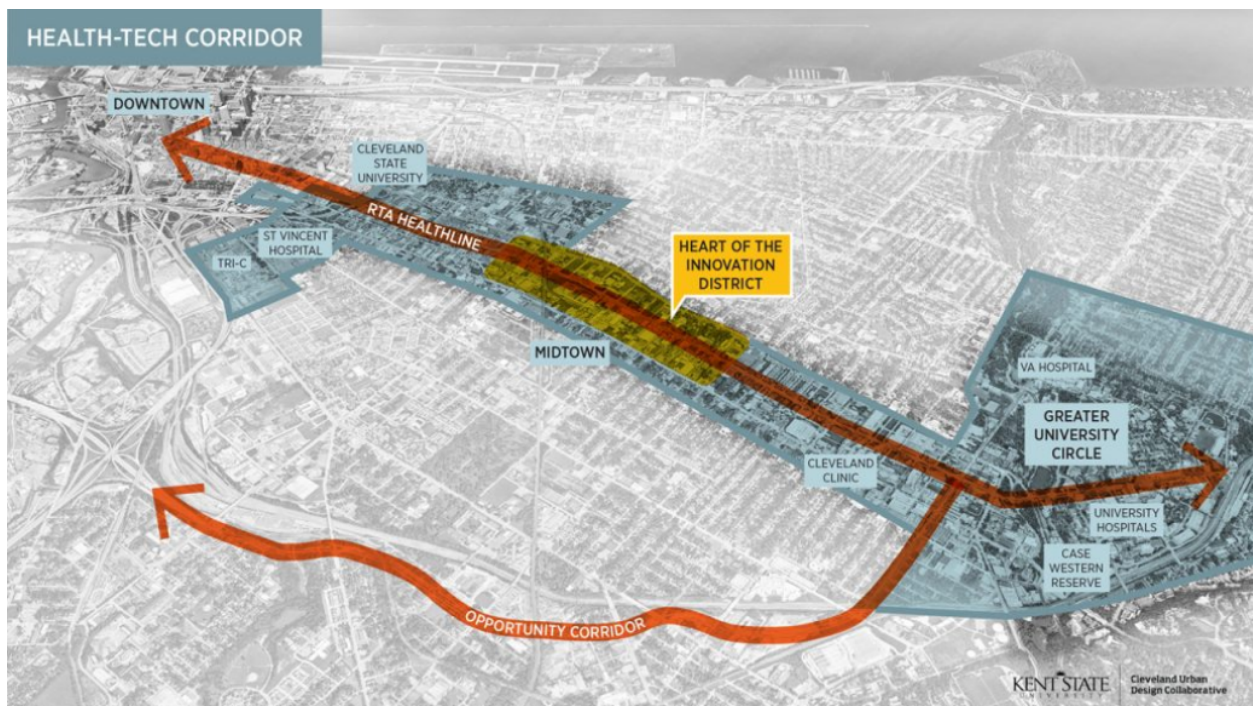
<sup>159</sup> Shontel Brown, et al, “Advanced Research Projects Agency for Health (ARPA-H)” (Northeast Ohio: Congress of the United States, 2022)

## V Midtown development strategy

### Context

#### Introduction

Midtown Cleveland was rebranded as the Health-Tech Corridor (HTC) in 2010, a public-nonprofit collaboration between BioEnterprise, The Cleveland Foundation, the City of Cleveland, and MidTown Cleveland, Inc. The HTC's goal was to partner and support companies, preferably life science, with entrepreneurial support services, access to top talent, and potential venture capital funding.



**Image 33:** Health-Tech Corridor in Midtown Cleveland<sup>160</sup>

<sup>160</sup> "Cleveland Health-Tech Corridor" (Cleveland: Health Tech Corridor)

Through research and interviews, it is evident that there is strong demand for lab space in Cleveland; however, scarcity of land is evident in and around University Circle. Midtown's Health Tech Corridor is well positioned to offer larger land parcels for life science development in the Cleveland Market, hence the focus of this thesis.

The development proposal will first contextualize the target area, focusing particular attention on how this overlooked corridor between Downtown and University Circle is ripe for opportunity. Second, the vision for the two parcel development site will be conceptualized, focusing particular attention on one life science building — *that being the Pilot Project*. Finally, the development proposal will present the financial feasibility of this life science asset, including any State or City funding required to ensure a successful project.

## **Reintroducing the target area**

### *Brief history of Midtown Cleveland*

Much like many of the neighborhoods in and around Downtown Cleveland, Midtown and its residents experienced an unfortunate disinvestment in the neighborhood in prior decades, driven mainly by racism, redlining, and white flight. This context is important, relevant still today, and a necessary component of any and all development strategies going forward. Developers should look to The MetroHealth System to best understand how their development strategy should consider the residents of the local community. In an interview with Walter Jones, Senior Vice President of Campus Transformation, and Greg Zucca, Director of Economic & Community Transformation, both agreed that although Cleveland has some of the best hospitals in the country, it also has some of the worst health outcomes. Greg states,



“We are on the cutting edge of looking beyond just medical care. We look at access to transportation as well as clean and affordable housing as part of our strategy. We are focused on investments in the community and economic development of our neighborhood.” In order to achieve equitable opportunities, affordable housing, and reliable healthcare for those in the community, it is essential that Midtown’s residents are a focal point of today’s development proposal.



**Figure 14:** Ariel view from Cleveland Clinic to Downtown<sup>161</sup>

<sup>161</sup> “Aerial View: Downtown Cleveland at the West End of the Health Tech Corridor and University Circle at the East End” (Cleveland: NeoTrans, 2021)

### *Expanding businesses and development opportunities*

The development site is perfectly nestled in between Downtown Cleveland and University Circle (refer to Figure 14). Although the RTA Healthline has encouraged new development along Euclid Avenue, most of this investment is occurring either in Downtown or University Circle; the corridor — *that is, Midtown Cleveland* — has been relatively ignored to-date.

To combat this, MidTown Cleveland, Inc., a non-profit community development organization, developed a strategic plan in 2017 to encourage new development and opportunities for those in the Midtown neighborhood. The organization’s Neighborhood Plan is defined as “a place-based, holistic, living neighborhood plan representing a guiding vision of the people, places, organizations, and built environment that will further connect the Midtown neighborhood physically and socially.”<sup>162</sup>

According to MidTown Cleveland, Midtown is home to nearly 650 organizations, 11 headquarters, 18,000 employees, and 2,000 residents; and these numbers continue to grow as new businesses enter the neighborhood.<sup>163</sup> As depicted in Figure 15, Midtown is home to several large employers, including Applied Industrial Technologies, Pierre’s Ice Cream Company, and UH Rainbow Ahuja Center for Women and Children. The community is also ripe with culture and entertainment. The Children’s Museum of Cleveland, Agora Theatre and Ballroom, and TempleLive at Cleveland Masonic offer music and entertainment for both local residents and visitors.

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<sup>162</sup> “Neighborhood Vision Plan.” (Cleveland: MidTown Cleveland, Inc.)

<sup>163</sup> “Who already calls Midtown home? .” (Cleveland: MidTown Cleveland, Inc.)



In addition to the existing businesses in Midtown, new development projects are constantly being introduced to the neighborhood. Approximately \$166 million in new projects and renovations are currently underway in Midtown, of which 37 percent is allocated to office development, 36 percent to hotels, 18 percent to multifamily, and eight percent to entertainment.



**Figure 15:** Midtown Cleveland - (1) Recent projects & established businesses and (2) projects under construction

## Recent projects & established businesses

<p><b>1 Applied Industrial Technologies<sup>164</sup></b></p> <p>Type: Headquarters            Use: Office and manufacturing            Square Feet: 146,000 (9.6 Acres)            Employees: 4,700</p>	<p><b>6 Dave's Market &amp; Eatery</b></p> <p>Type: New construction, 2019            Use: Grocery store            Square Feet: 55,000</p>
<p><b>2 Children's Museum of Cleveland<sup>165</sup></b></p> <p>Type: Retrofit in 2017            Use: Museum            Square Feet: 40,000            Construction Budget: \$10.3 million</p>	<p><b>7 Abeona Therapeutics</b></p> <p>Type: New facility as of June 2015            Use: Life science manufacturing            Square Feet: 16,000</p>
<p><b>3 Agora Theater and Ballroom<sup>166</sup></b></p> <p>Type: Retrofit in 2019            Use: Entertainment            Capacity: 2,000 persons            Construction Budget: \$3 million</p>	<p><b>8 Midtown Tech Park</b></p> <p>Use: Office and lab space            Square Feet: 128,000            Companies: JumpStart, Cleveland HeartLab, Cleveland Eye Bank, &amp; University Hospitals</p>
<p><b>4 UH Rainbow Ahuja Center for Women and Children<sup>167</sup></b></p> <p>Type: New construction, 2018            Use: Medicine / hospital            Square Feet: 40,000            Construction Budget: \$26 million</p>	<p><b>9 Tru by Hilton<sup>168</sup></b></p> <p>Type: New construction, 2019            Use: Hotel            Capacity: 114 rooms            Construction Budget: \$12M million</p>
<p><b>5 Pierre's Ice Cream Co</b></p> <p>Type: Headquarters            Use: Manufacturing            Acres: 13.94 acres</p>	

<sup>164</sup> Michelle Jarboe, The Plain Dealer "Applied Industrial Technologies could buy Cleveland headquarters through publicly subsidized deal" (Cleveland: Cleveland.com, 2014)

<sup>165</sup> Steven Litt, "First look: Children's Museum of Cleveland ready to reopen Nov. 6 in Euclid Avenue mansion" (Cleveland: Cleveland.com, 2017)

<sup>166</sup> Cuck Yarborough, The Plain Dealer "Agora undergoes a \$3 million-plus facelift and emerges as a jewel among Cleveland concert venues." (Cleveland: Cleveland.com, 2018)

<sup>167</sup> "\$10m gift from Ahuja family to help invigorate Women & Children's Center" (Cleveland: University Hospital)

<sup>168</sup> Susan Glaser, "Tru by Hilton opens in Cleveland, first new Midtown hotel in decades" (Cleveland: Cleveland.com, 2019)

## Projects under construction

<p>10 <b>TempleLive at Cleveland Masonic</b><sup>169</sup></p> <p>Type: Renovation            Use: Entertainment            Square Feet: 200,000 (2,300 seats)            Construction Budget: \$18 million</p>	<p>13 <b>Manufacturing Advocacy and Growth Network (MAGNET)</b><sup>170</sup></p> <p>Type: Renovation            Use: Headquarters            Square Feet: 80,000            Construction Budget: \$13 million</p>
<p>11 <b>Dream Hotel</b><sup>171</sup></p> <p>Type: New construction            Use: Hotel            Capacity: 207-room hotel and 100,000 SF of meeting and event space            Construction Budget: \$60 million</p>	<p>14 <b>Cleveland Foundation</b><sup>172</sup></p> <p>Type: New construction            Use: Headquarters / civic-hub            Square Feet: 54,000            Construction Budget: \$27 million</p>
<p>12 <b>Minute Men Staffing</b><sup>173</sup></p> <p>Type: New construction            Use: Headquarters            Square Feet: 45,000            Construction Budget: \$22 million</p>	<p>15 <b>The Lofts</b><sup>174</sup></p> <p>Type: New construction            Use: Multifamily            Square Feet: 112,000 (160 units)            Construction Budget: \$30 million</p>

<sup>169</sup> “TempleLive restarts Cleveland work, plans to buy a 'gold dome' and names new president” (Cleveland: 5 News Online, 2021)

<sup>170</sup> Eric Heisig, “Cleveland board oks transformation of former Midtown school into manufacturing Hub” (Cleveland: Cleveland.com, 2021)

<sup>171</sup> Steven Litt, “Dream Hotel Group announces plans to complete 207-room hotel at Masonic Temple by 2022” (Cleveland: Cleveland.com, 2020)

<sup>172</sup> Harry Boomer, “Building a better Cleveland, in Hough neighborhood's Ward 7” (Cleveland: Cleveland 19, 2021)

<sup>173</sup> “Midtown 2022 Overview” (Cleveland: MidTown Cleveland, LLC, 2022)

<sup>174</sup> “Foundry Lofts” (Signet Real Estate Group, 2022)

## **Development site**

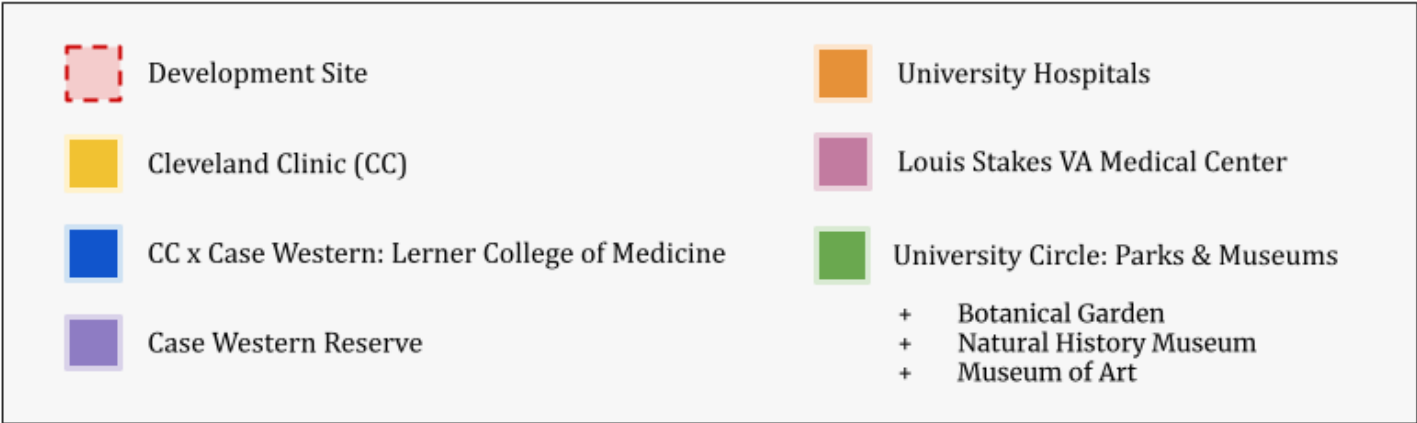
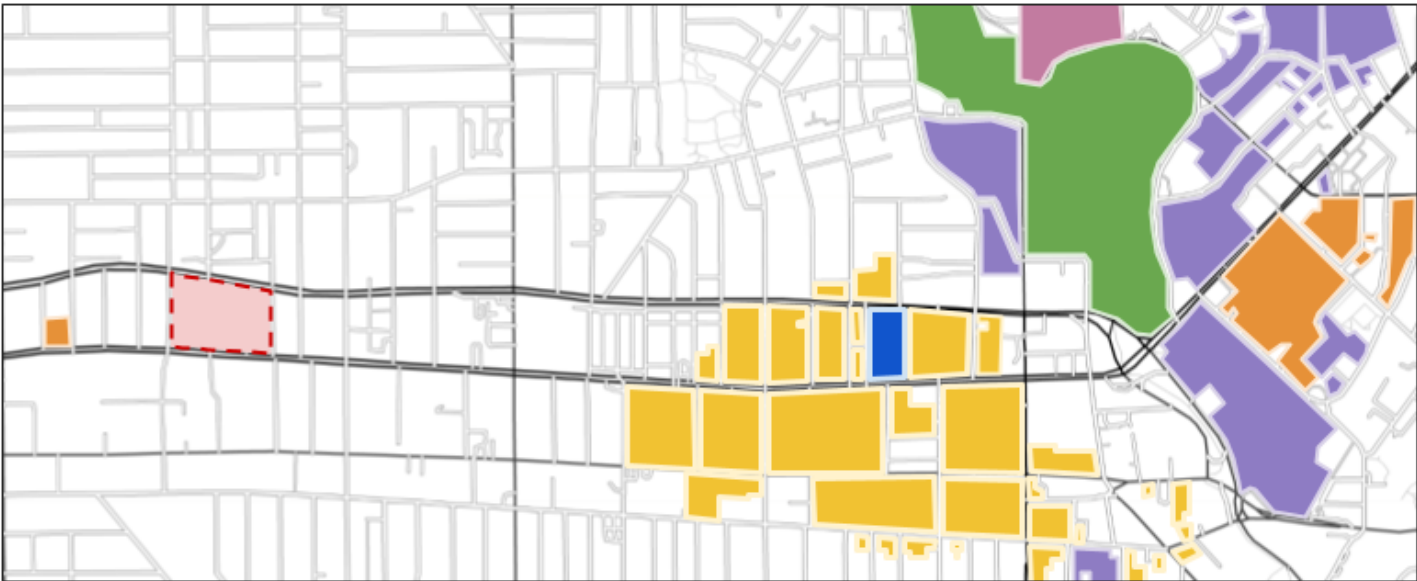
The development site totals approximately 9.9 acres, spread across two large parcels in the heart of Midtown Cleveland. The parcels are bound by Chester and Euclid Avenue in the North and South as well as East 66th and East 63rd Street in the East and West; East 65th Street runs directly through the two parcels running North and South.

Aside from its large parcels, the development site offers three major advantages. The first is its proximity to University Circle and its significant anchor institutions. Given the expansion plans of many of these institutions and their demand for lab space, there may be an ability to pre-lease a large portion of the asset to one or more of these institutions, a must-win scenario if the City and State were to offer funding and/or tax incentives as part of the Cleveland Innovation District. The second advantage is accessibility to the site. Both public and private transportation options offer convenient access to and from the development site. Lastly, the existing zoning promotes mixed-use programming and the development of research laboratories.

## **Proximity to University Circle**

The proposed development site is in close proximity to University Circle and four of the five anchor institutions involved in the Cleveland Innovation District: The Cleveland Clinic, University Hospitals, Case Western Reserve University, and Cleveland State University. It is important to note that many, if not all, of these anchor institutions are incredibly land locked by the City's past parcelization of small single or multi-family homes. Although these institutions continuously capture small parcels over the years, amalgamating these into one large parcel can take decades to achieve.

Midtown's corridor, between Chester Avenue and Carnegie Avenue (refer to Figure 18), offers these institutions access to larger parcels due to the efforts of MidTown Cleveland, Inc. University Hospitals, for example, expanded outside of University Circle in 2018. The hospital took down 40,000 square feet in Midtown for UH Rainbow Ahuja Center for Women and Children (refer to Figure 16). David Sylvan, Director of Real Estate and Property Management at University Hospitals, noted that the "food desert and healthcare access challenges [in the Midtown area] were the catalysts for driving us into the community in the first place." In partnership with Dave's Market and Eatery, University Hospitals' new Rainbow Center for Women and Children's facility helped to curate "food as a medicine" and nutritional programs for residents in the neighborhood. Since then, University Hospitals has taken additional space in the Midtown area for diabetes programming.

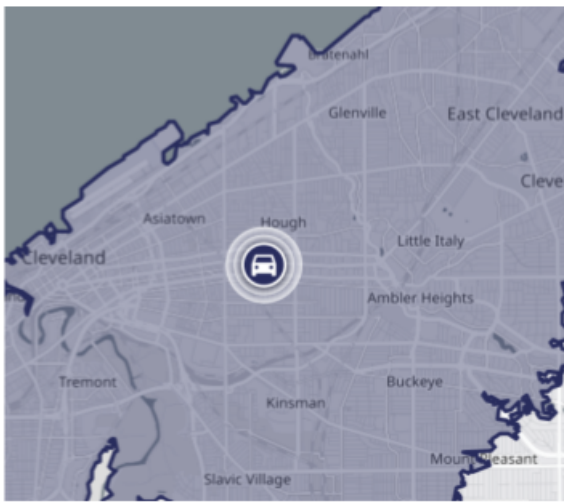


**Figure 16:** Development site in context of neighboring anchor institutions

## Transit and accessibility

A strong network of transportation options and routes is essential for every new development project. Similar to many other metros with large suburban populations, Cleveland is an extremely car-centric city; and this tends to be the most popular option for working individuals. Figure 17 shows how far an individual can travel in twenty minutes from the proposed development site.

### Driving



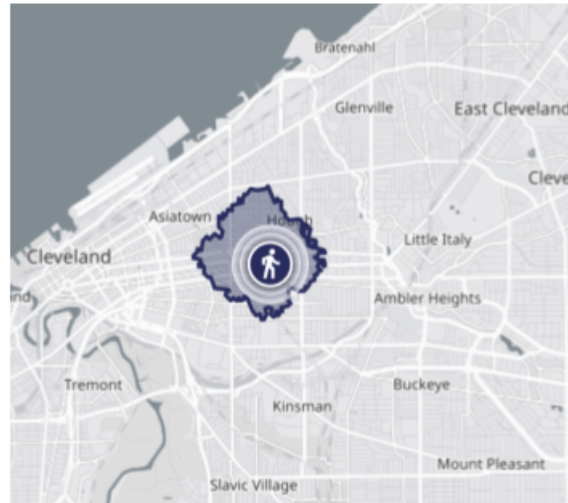
### Public Transportation (Bus)



### Cycling



### Walking

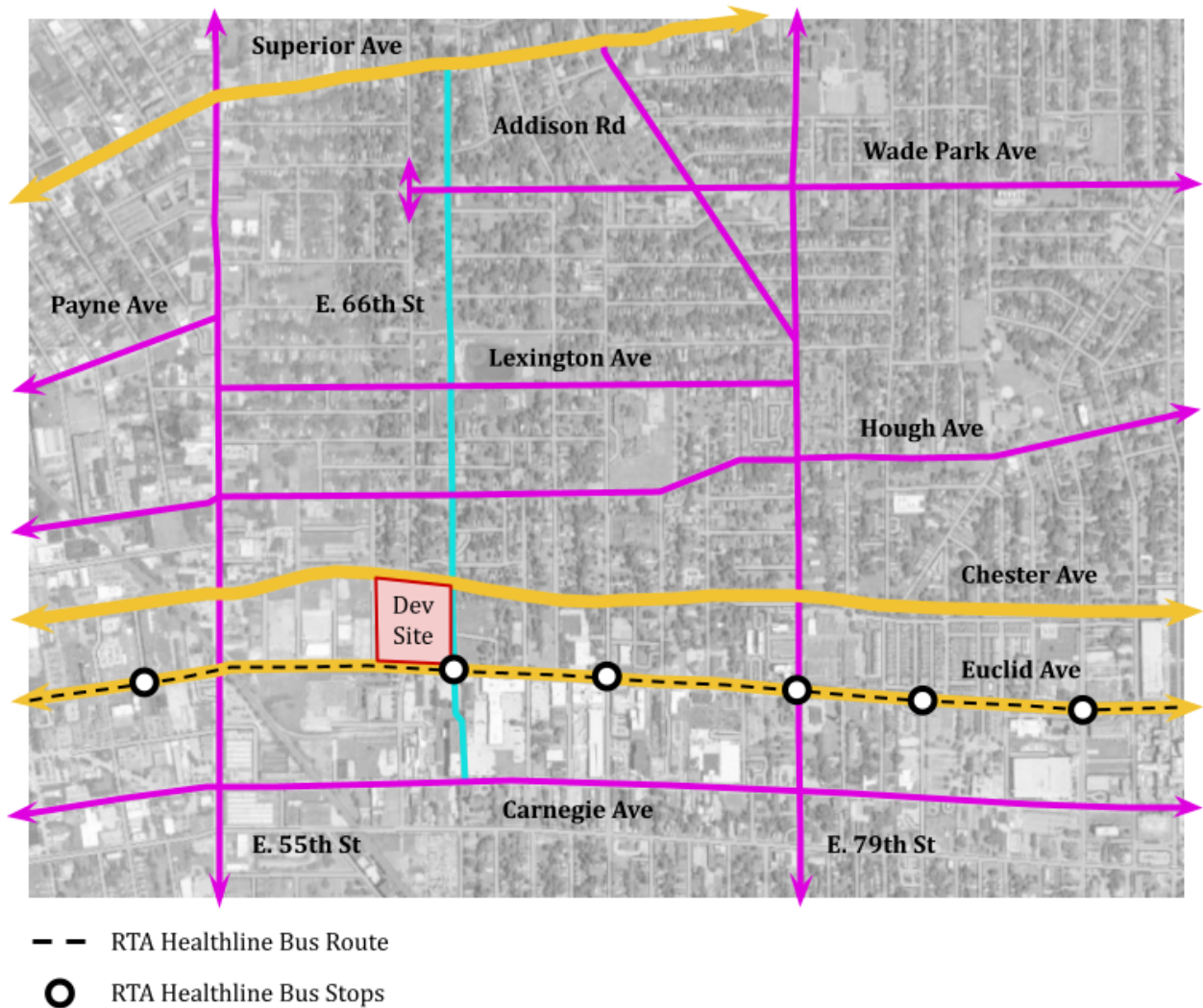


**Figure 17:** Distance traveled in 20 minutes by car, public transportation (bus), bike, or walk<sup>175</sup>

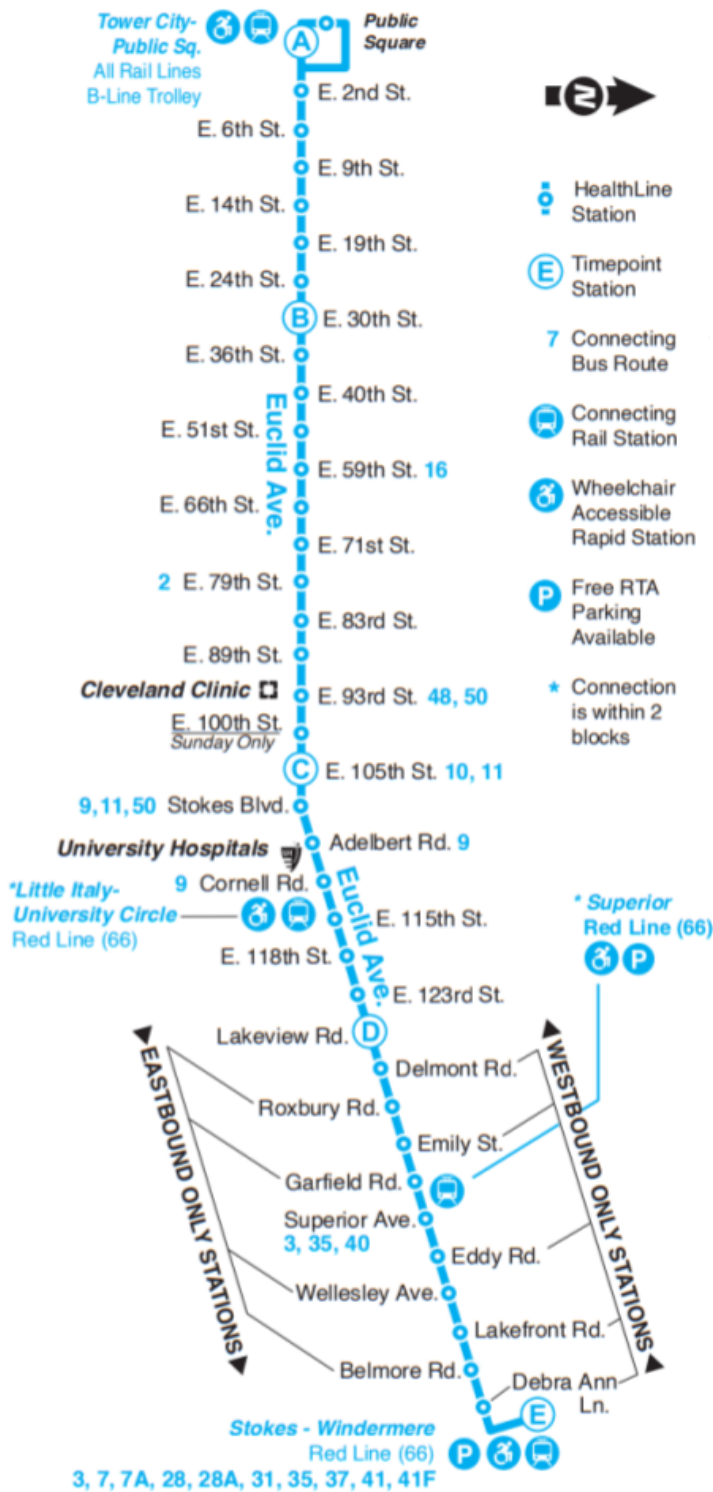
<sup>175</sup> "Drive time radius & other modes" (Cleveland: TravelTime, 2022)

Commuting by car to the existing development site is quite easy, given the strong network of major roads connecting both the Downtown and University Circle. According to Richard Barga, Managing Director at MidTown Cleveland, Inc., “companies are interested in Midtown due to its proximity to both downtown and University Circle, the two largest employment hubs in NE Ohio, as well as its convenient multimodal access by car and bus.” Figure 18 shows the site’s immediate access to both Chester Avenue and Euclid Avenue, running both East and West. It also shows the convenient access to East 66th Street, running North and South. These interconnecting roads lead to many major interstate highways, including I-90, I-77, I-490, and I-71.

**Figure 18:** Major transit routes, both car and bus







The second most popular option is the RTA Healthline that connects Cleveland’s Downtown with University Circle. Specifically for those utilizing the RTA Healthline, total time and distance from the development site to one of the major anchor institutions includes:

**Cleveland State:** 11 minutes  
(1.3 miles)

**Cleveland Clinic:** 11 minutes  
(1.4 miles)

**Case Western:** 17 minutes  
(2.0 miles)

**University Hospitals:** 21 minutes  
(2.5 miles)

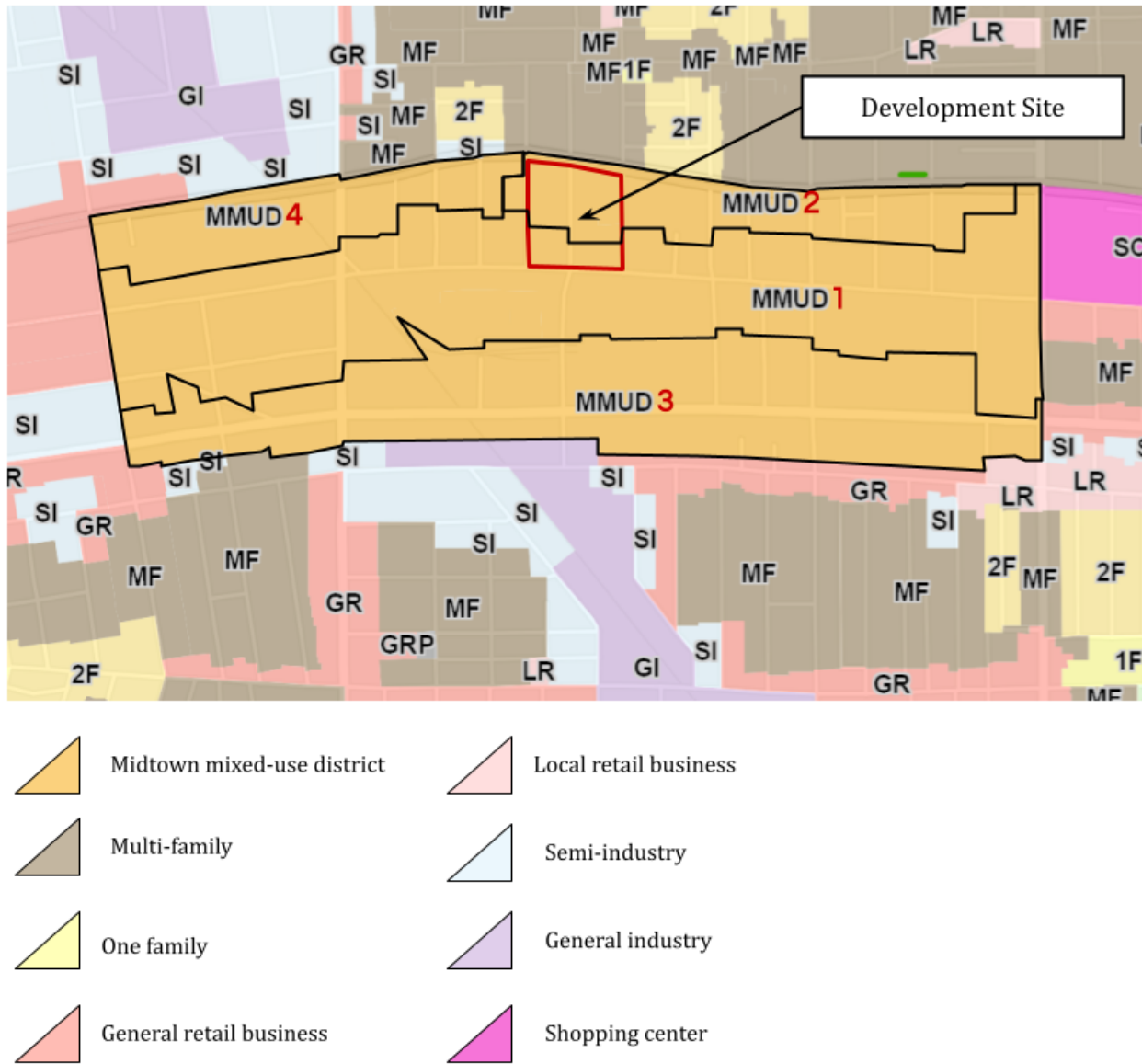
**MetroHealth Systems:** 48 minutes  
(5.1 miles); this includes transfer to the RTA MetroHealth line

Image 34: RTA Healthline bus stops<sup>176</sup>

<sup>176</sup> “RTA Healthline: East & Westbound stops.” (Cleveland: Greater Cleveland Regional Transit Authority, 2022)

## Zoning

Both parcels of the development site sit within the Midtown Mixed-Use District (MMUD) as shown in Figure 19; however, both parcels technically straddle two different sub-areas within MMUD, those being MMUD-1 and MMUD-2.<sup>177</sup>



**Figure 19:** Local zoning in and around Midtown Cleveland<sup>178</sup>

<sup>177</sup> “Cleveland City Planning Commission Zoning Viewer.” (Cleveland: Cleveland City Planning Commission, 2022)

<sup>178</sup> “Cleveland City Planning Commission Zoning Viewer.” (Cleveland: Cleveland City Planning Commission, 2022)

The Midtown Mixed-Use District code, established by the City of Cleveland's Code of Ordinances, describes its intentions for the district's development intensity and urban form as such:

- (a) "Encourages a pedestrian-oriented mix of uses including retail, residential, offices and light industrial;
- (b) Expands the available economic development options while strengthening the existing uses found in the Midtown District;
- (c) Encourages a compact land development pattern that increases resident and employment densities to support the Greater Cleveland Regional Transit Authority's (GCRTA) Euclid Corridor Transportation Project investment and facilitates transit usage to/from the Midtown area;
- (d) Ensures that new development and/or redevelopment will occur in a unified manner consistent with the Midtown Cleveland Inc. Strategic Plan as adopted by the Cleveland City Planning Commission;
- (e) Establishes design criteria for new development or redevelopment to ensure that an aesthetically pleasing and pedestrian friendly environment is provided."<sup>179</sup>

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<sup>179</sup> "City of Cleveland, Ohio Code of Ordinances" (Cleveland: Cleveland City Council, 2022, Chapter 34 - Midtown Mixed-Use District)

As noted earlier, the proposed development site straddles two sub-areas: MMUD-1 and MMUD-2. The boundaries, permitted uses, building and parking setback requirements, and height and width requirements are detailed on the following pages (refer to Figure 20). All information has been taken directly from Chapter 344 of the Midtown Mixed-Use District zoning code.<sup>180</sup> The permitted uses denoted with the star icon (★) represent uses that have the highest likelihood of being incorporated into the development site’s final programming. It is important to note that the development site — *both MMUD-1 and MMUD-2* — permits the use of research laboratories.

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<sup>180</sup> “City of Cleveland, Ohio Code of Ordinances” (Cleveland: Cleveland City Council, 2022, Chapter 34 - Midtown Mixed-Use District)

**Figure 20:** Permitted uses, building & parking setback requirements, and building width & height requirements

	Permitted Uses	MMUD-1	MMUD-2
★	Apartment House or Multiple Dwelling Units <sup>1</sup>	Permitted	Permitted
	Townhouse Unit, Row House or Dwelling, Single-Family Attached <sup>1</sup>	Conditional	Permitted
★	Residential above first floor retail	Permitted	
★	Live-work residential dwelling	Permitted	Permitted
★	Retail	Permitted <sup>2</sup>	Accessory
★	Retail, stand alone	Permitted	
	Personal services	Permitted <sup>2</sup>	
★	Research laboratories	Permitted	Permitted
★	Professional and administrative offices	Permitted	Accessory
	Sales office (with only samples of products)	Permitted <sup>2</sup>	
	Financial offices, bank	Permitted	Accessory
★	Business services	Permitted <sup>2</sup>	
★	Restaurants, dine-in	Permitted	Accessory
	Walk-up ATM, similar	Permitted	Permitted
	Drive-thru facilities	Conditional	
	Indoor recreation facility	Permitted <sup>2</sup>	Accessory
	Outdoor display	Accessory	
	Application of MMUD-1 uses and standards		Conditional <sup>3</sup>
	Playgrounds, Parks	Accessory	Permitted
	Churches and places of worship	Permitted	
	Day care centers, children and adults	Permitted <sup>2</sup>	
	Libraries and museums	Permitted	
	Schools and educational facilities	Permitted	
	Government offices	Permitted	
★	Parking garages and off-street parking	Accessory	Accessory
★	Signs	Accessory	Accessory

Notes pertaining to 'Permitted Uses' table:

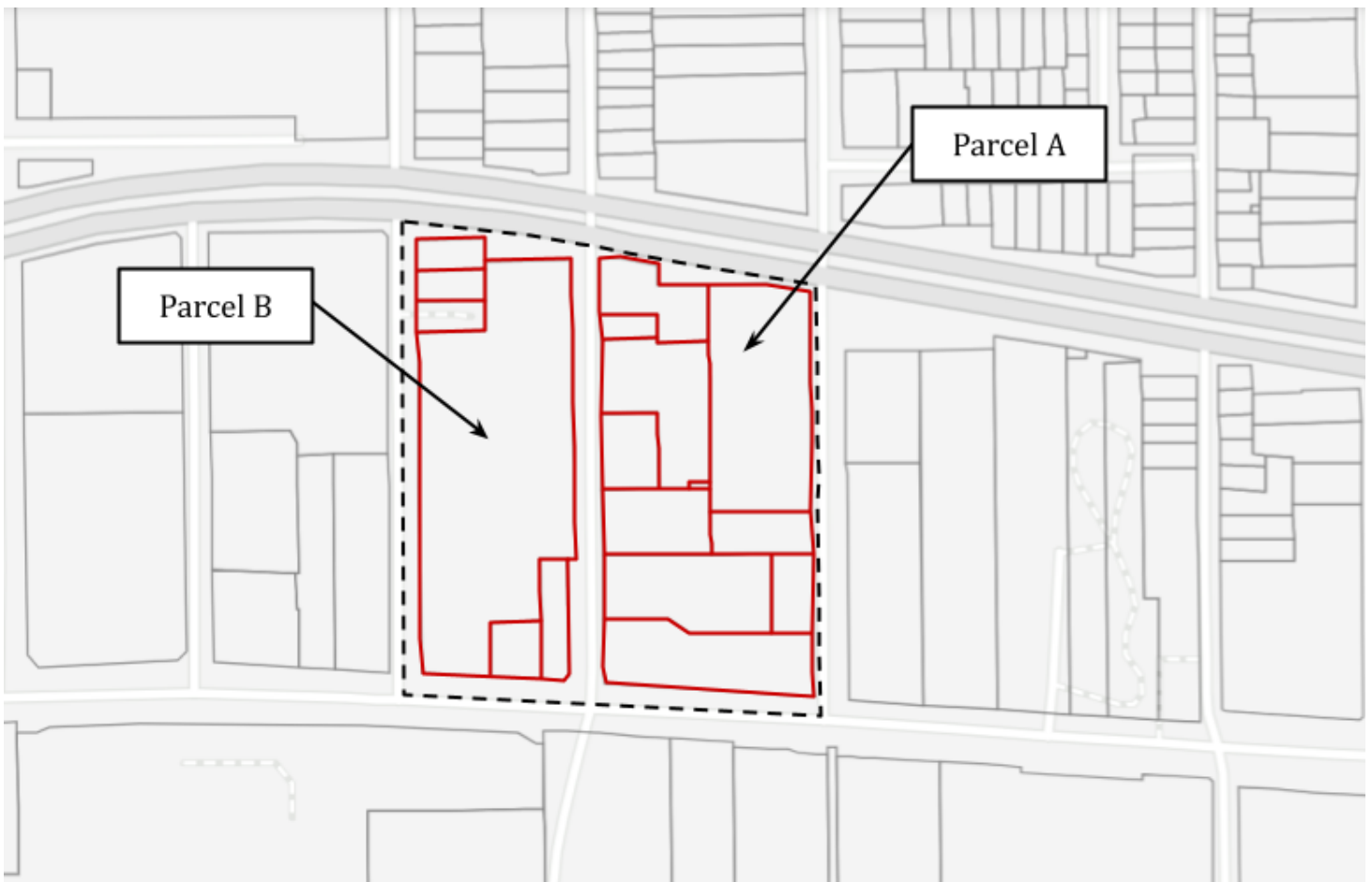
- (1) Residential projects, both apartment and townhouse/attached housing projects, in the MMUD-1 will include at least 60% of the ground floor area of the project as retail, day care, or similar use providing tenant/resident amenity or service.
- (2) These uses are permitted in the MMUD-1 when part of a mixed-use project, meaning that the project includes uses other than the proposed use that account for at least 50% of the total square footage of the building area.
- (3) The City Planning Commission may allow the extension of uses permitted in the MMUD-1 to the MMUD-2 when a mixed-use project proposed for an MMUD-1 parcel extends through to the MMUD-2 and is complementary to the primary residential uses permitted in the MMUD-2.

Building & Parking Setback Requirements	MMUD-1	MMUD-2
Building front setback from street right-of-way: minimum	None	20 feet
Building front setback from street right-of-way: maximum	10 feet	30 feet
Building side and rear setback from residential district property line	25 feet	25 feet
Building side and rear setback from non-residential district property	None	10 feet
Parking from street: minimum	5 feet	30 feet
Parking from street: maximum	None	None
Parking from rear or side lot line of adjacent residential district	10 feet	10 feet
Parking from rear or side lot line of adjacent non-residential district	5 feet	5 feet

Building Width & Height Requirements	MMUD-1	MMUD-2
Buildings fronting Euclide, Chester and Carnegie	80%	50%
Buildings fronting on the side streets (perpendicular to above)	50%	50%
Minimum height requirement	3 stories	None
Maximum height requirement	115 feet	60 feet

## Parcels and ownership

The existing development site is currently broken into many different parcels, as depicted in Figure 21. This extreme parcelization of land has been a major obstacle for redevelopment opportunities throughout Cleveland. The previous zoning map is a good example of this, in which most of the surrounding area is sliced into mini parcels with small multi-family or single-family homes.



**Figure 21:** Development site parcel map<sup>181</sup>

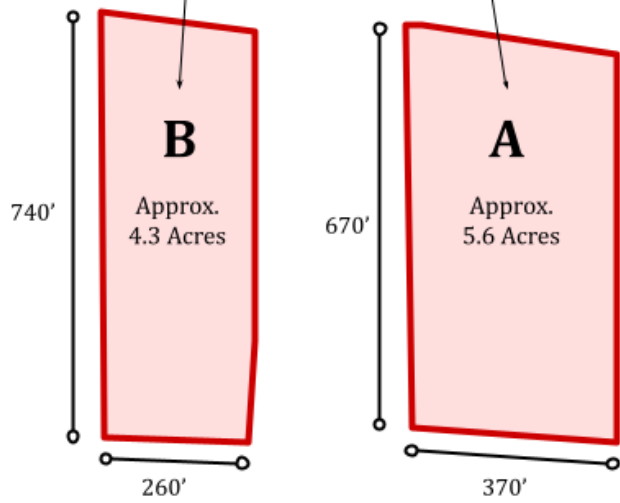
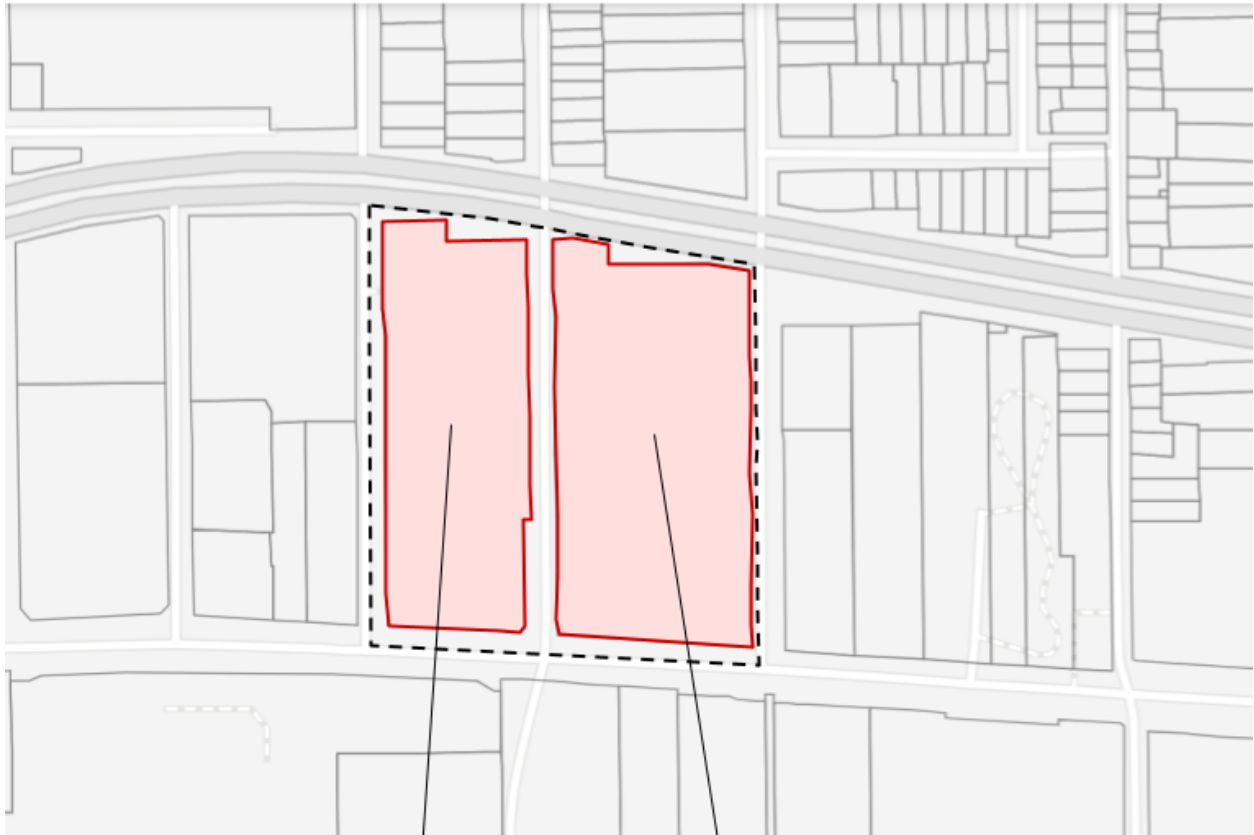
<sup>181</sup> “Cleveland City Planning Commission Zoning Viewer” (Cleveland: Cleveland City Planning Commission, 2022)

MidTown Cleveland, Inc. is currently in the process of amalgamating the sixteen parcels. According to Richard Barga, “our strategy has been to acquire these parcels in an attempt to create larger development sites to fully maximize the potential for density and scale of urban sites.” The new owner of these parcels will be The Cleveland Foundation. Once fully amalgamated, Parcel A will total approximately 5.6 acres and Parcel B will total approximately 4.3 acres. In total, the development site’s land coverage will be approximately 9.9 acres.

**Parcel A:** The north section of the development site includes the Cleveland Fire Station 17. The two parcels immediately to the east are now owned by The Cleveland Foundation. The southeast corner is currently under construction for The Cleveland Foundation’s newest headquarters. The parcels east of the Cleveland Foundation are owned by Durham Tavern Museum, which is the oldest building still standing in the City of Cleveland. There are existing plans to expand the green space surrounding the museum in hopes of making the space more accessible to the general public. Finally, south of Parcel B are parking lots and vacant land, which could add additional development opportunities in the future.

**Parcel B:** The nearest four parcels north of the development site are City-owned parcels. These vacant parcels could add additional development opportunities in the future; however, they are limited to multi-family zoning only. The northwest section of Parcel B includes a 55,000 square foot grocery store — *Dave’s Market & Eatery* — that adds tremendous value to both the neighborhood and future development. The west and southwest section includes industrial warehouse space as well as B2B retail storefronts on Euclid Avenue. Finally, south of Parcel B is manufacturing and warehouse space owned by Pierre’s Ice Cream Company.





**Figure 22:** Parcel amalgamation - two parcels

## Concept

### Objective

The objective of this development proposal is to introduce a private-public partnership to create new laboratory research facilities in Midtown Cleveland. The ultimate goal is to spark innovation. As mentioned by David Sylvan, “you have to create a destination in order to attract and retain talent.”

This thesis proposes a total of 1.1 million square feet of buildable area (684,273 square feet excluding parking) with the majority (46.0 percent) being allocated to life science laboratory space.

The following sections will discuss design and concept of the full site; however, the financing section will focus only on Asset A — *the Pilot Project* — a 170,400 square foot lab building with an additional 75,900 square foot below-grade parking garage (refer to Figure 23). In order for Phase II to commence, Phase I needs to prove its financial viability given its sizable development cost of \$137 million.

Figure 23: Development site asset identification



- Life science labs
- Multifamily
- Parking garage
- Retail entrances
- Green space / roof decks

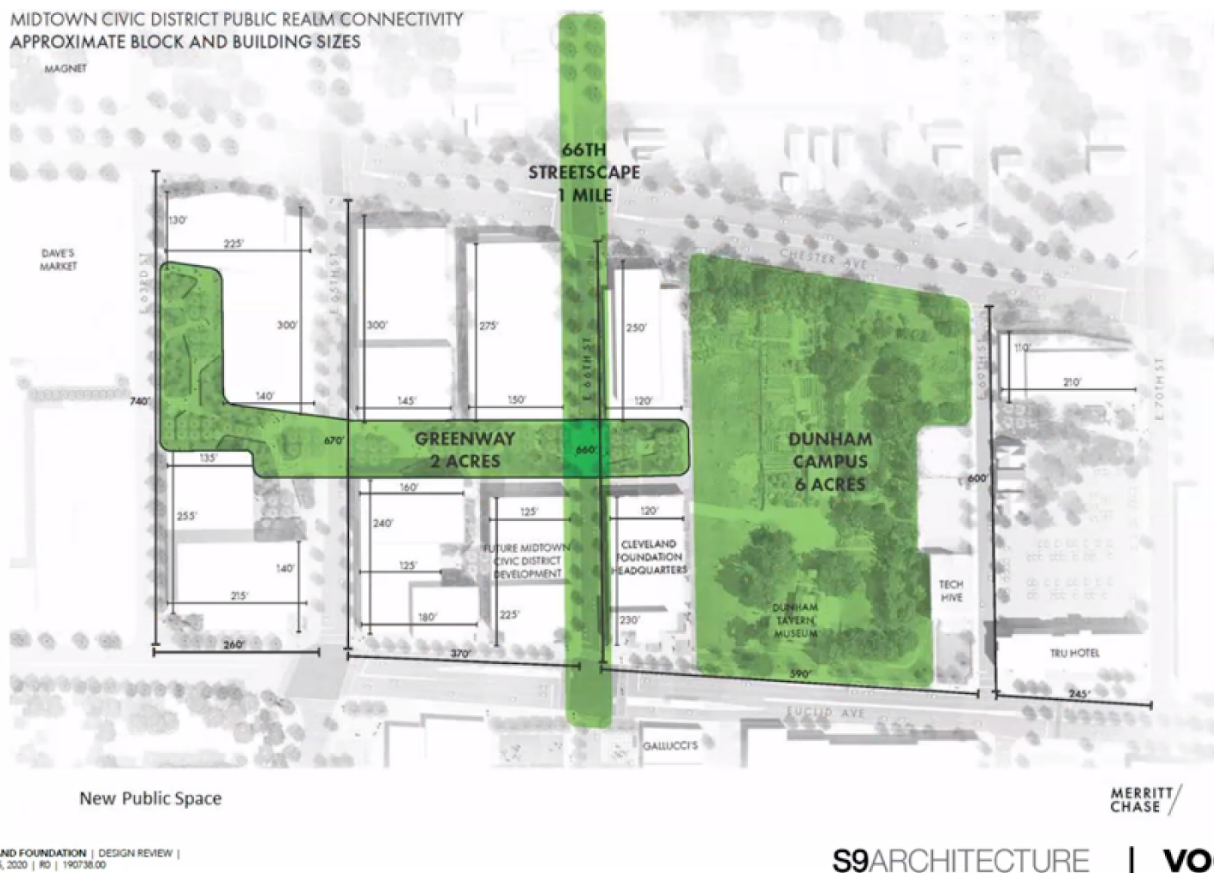
Pilot Project

## **Development mission**

This Midtown development strategy will be the Midwest market leader in life science incubation and entrepreneurship. The plan should proactively fold the context into the concept by working hand-in-hand with local neighborhood communities and non-profit economic development organizations. The residents are the primary stakeholders that should be at the forefront of every conversation. According to Walter Jones and Greg Zucca, MetroHealth, for example, partners with local high schools to teach science and health as well as provide mentorship to young students. Similar efforts need to be implemented following construction completion of the development site in order to improve urban living for future generations. Thoughtful open space, affordable housing opportunities, and healthy and sustainable building designs also need to be at the forefront of the planning process. Collectively, this Midtown life science community will reshape the corridor between Downtown and University Circle, for the better.

## Prior concepts

An initial master plan study was completed in 2020, focusing on the green path connection between the newly announced Cleveland Foundation headquarters. This greenway connected East 63rd Street to the Dunham Tavern Museum. It also included a newly designed streetscape on East 66th Street. Since the plan’s release in November 2020, no new developments — *other than the Cleveland Foundation’s headquarters* — have been solidified.



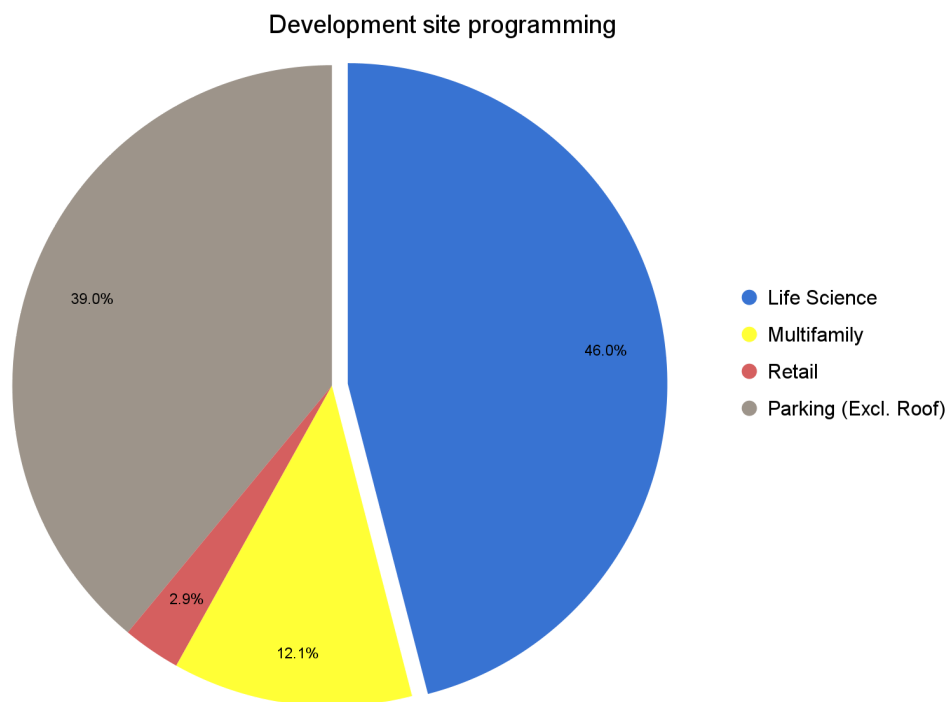
**Image 35:** Midtown redevelopment plan, approximate block and building sizes<sup>182</sup>

<sup>182</sup> Merritt Chase, et al. "Midtown Civic District public realm connectivity." (Cleveland: *Cleveland.com*, 2020)

## Program

### *Full master plan*

Given the high demand and lack of supply for private life science real estate, the majority (46 percent) of the development site is allocated to new laboratory space. Additional programming elements include parking (39 percent), multifamily (12.1 percent), and retail (2.9 percent).



**Figure 24:** Development site programming across both parcels

**Figure 25: Total development site programming**

<b>Building ID</b>	<b>GBA Excl. Parking</b>	<b>Retail SF</b>	<b>Parking SF</b>	<b>No. Parking Spaces <sup>1</sup></b>	<b>Total Building Area</b>
Life Science - A	170,400	-	75,900	237	246,300
Life Science - B	204,186	14,142	75,900	237	294,228
Life Science - C	140,800	13,200	65,000	203	219,000
Multifamily - D	136,045	-	31,680	99	167,725
Parking Garage - E	-	5,500	188,540 <sup>2</sup>	690 <sup>3</sup>	194,040
<b>Totals</b>	<b>651,431</b>	<b>32,842</b>	<b>437,020</b>	<b>1,466 spaces</b>	<b>1,121,293</b>

<sup>1</sup> Number of parking spaces assumes 320 square feet per parking spot, inclusive of circulation

<sup>2</sup> Includes the buildable area only, excluding the rooftop parking

<sup>3</sup> Includes rooftop parking deck

### *Parking ratio*

Cleveland's workforce tends to favor transportation via car, thus it is essential to incorporate a parking facility within this new workforce ecosystem. Additionally, each building — *except for the garage* — would include one level of below-grade parking. Refer to Figure 25 for parking space and square foot estimates.

According to § 349.04 Required Parking Spaces in Cleveland's Code of Ordinances, if the laboratory buildings were to be classified as "health or medical centers," one parking space is required for every 200 square feet of gross floor area. Retail sale uses require one parking space per building and one parking space for every 100 square feet of gross floor area.<sup>183</sup> Lastly, assuming a 90 percent efficiency and an average unit size of 800 square feet, the multifamily building would require 153 parking spaces. The assumed parking ratio — *based on the 1,466 spaces (refer to Figure 25)* — would be 0.57 for the total site.

Efforts would need to be undertaken with the Cleveland City Planning Commission in order to approve this less than 1:1 parking ratio; however, given the strong public transportation system along Euclid Avenue via the RTA Healthline, the City may very well support this ratio and encourage workforce employees to use local buses.

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<sup>183</sup> "City of Cleveland, Ohio Code of Ordinances" (Cleveland: Cleveland City Council, 2022, § 349.07 Access and Maintenance of Off-Street Parking Spaces)



*Multifamily and open space*

Based on the growing demand for new multifamily development in and around University Circle, this new workforce could absorb 120 to 160 new rental units. This new life science ecosystem may encourage multifamily developers to move west from University Circle to chase new development opportunities in Midtown.

Lastly, the program will include a large portion of open green space for both tenants and the general public to enjoy. Of the total land, 46 percent (approximately 4.5 acres) is allocated to open space, whereas 54 percent is allocated to building area.

## Massing studies

Image 36: Northeast





**Image 37: Northwest**





**Image 38: Southeast**





Image 39: Southwest





Image 40: Public open space



## Design

### *New construction*

As part of MidTown Cleveland's strategy to amalgamate the existing small parcels into two large parcels, all existing structures on the proposed development site are to be demolished. Thus, the design strategy is entirely new construction. No existing structures will be reused or retrofitted.

### *Precedents: Life science buildings*

Cleveland is historically a manufacturing city, and it would be a real shame to disregard its past when designing its future. Through the design process, it would be best to incorporate modern manufacturing elements to the design of the development site. Contemporary industrial facades — *via prefabricated weathering steel panels* — would blend well with the existing neighborhood and culture, while still achieving the functionality of a life science laboratory. Additionally, the open green courtyards connecting these buildings would blend extremely well with the uniqueness of the building facades.



**Image 41:** (top) Double loaded corridor design reference; **Image 42:** (left) Lab-office hybrid reference; **Image 43:** (middle) Courtyard reference; **Image 44:** (right) Facade reference <sup>184 185 186 187</sup>

<sup>184</sup> "School Group Cobalt Architects." (Neully: Inui)

<sup>185</sup> "University of Kansas, Earth, Energy and Environment Center." Lawrence: CannonDesign, 2018)

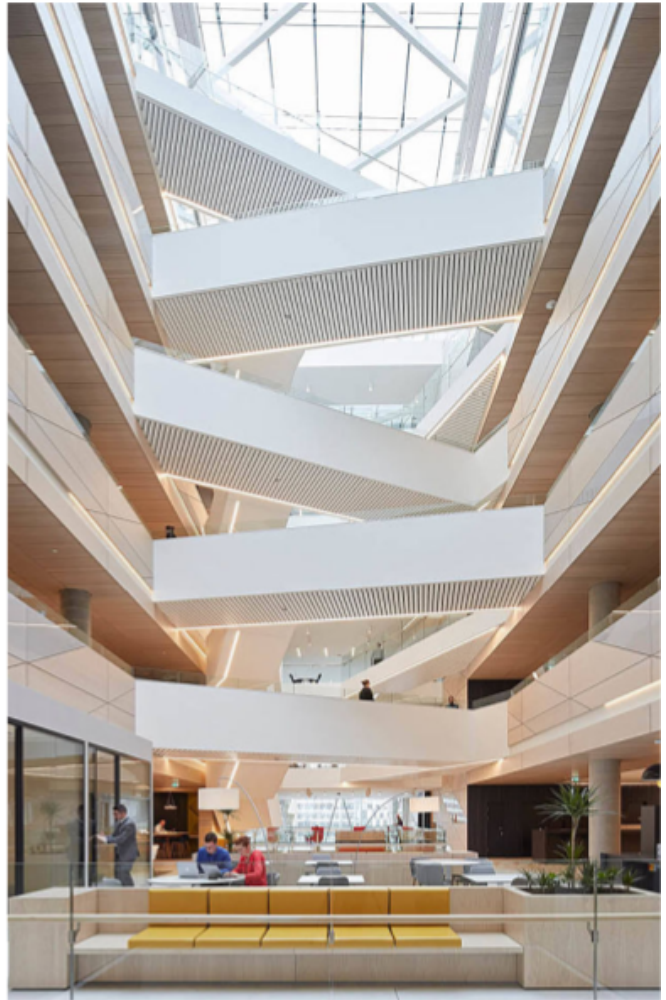
<sup>186</sup> "Riverlight." (London: Gillespies, 2018)

<sup>187</sup> "YULIN Artistic Center facade" (Chongqing: Challenge Design, 2019)



*Precedents: Added amenities / design features*

Through the design process, it is extremely important to envision a workplace that empowers employees to complete their best work. Some preliminary design elements that can be introduced to the master plan include interconnecting bridges, specifically for Assets A and B. These bridges can act as a connection point between large enterprise companies and small startups. These bridges can also encourage businesses to grow throughout the building as new innovations are further productized. Additionally, green rooftops and outdoor food courts can offer employees an opportunity to break away from the lab and socialize with coworkers or other likeminded innovators.



**Image 45:** (top left) Green roof space for employees; **Image 46:** (bottom left) Activated outdoor “food court,” either food trucks or pop-up pods; **Image 47:** (right) Grand lobby with interconnecting bridges <sup>188 189 190</sup>

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<sup>188</sup> “Tract office space” (Melbourne: Tract)

<sup>189</sup> “Manifesto Smichov, Prague” (Smichov: Alex shoots buildings and CHYBIK + KRISTOF)

<sup>190</sup> “Central Bank of Ireland” (Dublin: Henry J Lyons, 2017)

## Execution

### Key partners in the neighborhood plan

In order for this development proposal to be successful, it is essential that the developer partner with local non-profits and economic development organizations. These include:

*MidTown Cleveland, Inc.:* This economic development organization will be essential for all real estate transactions (i.e. the ground lease).

*Northeast Ohio Areawide Coordinating Agency:* This is the transportation and environmental planning agency that represents officials in Greater Cleveland.<sup>191</sup> The agency helped to develop the Transportation for Livable Communities Initiative, a recent project focused on the reconstruction of East 66th Street. It is essential that the developer partner with this agency and initiative, especially given that the development site borders E. 66th Street. A strong partnership with this agency would ensure that the needs of the community are thoroughly understood and incorporated into the development strategy prior to pursuing any approvals.

*Team Neo and JumpStart:* Both of these organizations focus on transforming communities through entrepreneurship and business development. These organizations will be essential partners during the marketing and lease-up phases. Following a successful development strategy, these organizations could propose wet lab facilities to entrepreneurs and businesses looking to grow in the State of Ohio.

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<sup>191</sup> “About NOACA” (Northeast Ohio: Northeast Ohio Areawide Coordinating Agency)

## Phasing

### *Pilot project*

Asset A on Parcel A will act as the pilot project — *Phase I* — for the entire development proposal. *Why start with a pilot instead of overlapping the construction of multiple buildings at once?* Cleveland to-date has no private incubation space in the market, which means there are no case studies available to pitch investors and financiers on large scale master plan developments. The intent is to start with one building — *approximately 170,000 square feet of lab space* — and build a successful case study, one that will help finance the remaining assets in the development proposal.

### *Phasing after successful pilot project*

Following a successful pilot project, Phase II can commence, allowing the design and construction activities of these multiple assets to overlap, resulting in potential cost savings and shortened timelines. Figure 26 describes this phasing plan overtime. Asset B and Asset E should be prioritized first. Asset B helps solidify a life science ecosystem on Parcel A, thus establishing an organic collaboration among on-site employees. Asset E is essential for increasing the parking ratio required in the Cleveland market. Next, Asset C should start construction. The different timelines between Asset B and Asset C guarantees that not too much space is introduced to the market at one time, and lease-up strategies can be staggered. Finally, Asset D — *the multifamily asset* — can start construction. Following the completion of this new life science community, housing will be a hot commodity for employees.

Although vibrations should be considered when developing a phasing strategy, the master plan outlined here should not be a major concern. Noise disruption may be the biggest complaint; however, a geotechnical engineer should complete a full study of the land in order to fully validate that vibrations will not be an issue for Phase II through IV.

Figure 26: Development phasing strategy



- |  |  |
|--|--|
|  Phase I: Pilot project |  Phase III: Final lab asset |
|  Phase II: Lab & garage |  Phase IV: Multifamily      |

## Financing

### *Ground lease*

Ground leases tend to be very popular with city, non-profit, or university-owned land in large metropolitan areas. For this specific development thesis, a 99-year ground lease is recommended between the developer and The Cleveland Foundation. Assuming a monthly payment of \$7,485 with two percent annual escalations, the present value of the land for Asset A is \$1,712,110, or \$856,057 per acre. The 99-year ground lease term would result in a total payment of \$27,407,143.

The price per acre listed above ties in nicely with the local sales comparisons from prior years. The average price per acre totals \$745,349. Figure 27 provides a list of sales comparables in the surrounding area of the development site for the past two years.

Address	Product Type	Date Sold	No. Acres	Price / Acre
4410 Perkins Ave	Land + Improvements	8/14/20	0.27	\$1,333,333
7214 Euclid Ave	Land + Improvements	10/1/20	5.89	\$407,471
4317 Chester Ave	Land + Improvements	10/3/20	0.41	\$975,610
1778 E 63rd St	Land + Improvements	11/1/20	3.10	\$928,921
5000 Euclid Ave	Land + Improvements	1/4/21	1.51	\$1,700,000
1551 E 93rd St	Land	6/16/21	0.77	\$190,319
9620 Hough Ave	Land	12/16/21	2.68	\$970,149
1826 E 82nd St	Land	1/1/22	0.88	\$90,797

**Figure 27:** Sale comparables in the last two years

### *Total sources*

The capital used to fund the project assumes a very simple debt and investor equity split, both for the construction loan and permanent loan. The construction loan has a 35-month duration with a 70% loan-to-cost, whereas the permanent loan assumes a 30-year fixed rate at 60% loan-to-value.

For the avoidance of any doubt, this project relies heavily on State and City subsidies. Without the financial support similar to the anchor institutions involved in the Cleveland Innovation District, this project — *and the incubation space necessary to grow a life science ecosystem* — will not succeed due to the extremely high cost of construction and low rental rates, as of July 2022.

### *Total uses*

Construction costs have been extremely volatile in the past several years, driven primarily by the COVID-19 pandemic, supply chain shortages, inflation, and the ever-increasing interest rate. Budgeting for construction costs today is extremely different than several years ago. The estimates in Figure 28 consider the current economic environment and uncertainty in today's global market; the total all-in development cost has been validated by professionals working in the life science space today.

Total development costs for a new 170,400 square foot Class-A lab facility (246,300 square feet including below-grade parking) in Midtown is estimated to be \$136.5 million, or \$801 per square foot.

**Note:** The cost per square foot measured on the following page is based on the lab space only; the parking is allocated as a below-the-line item in the “Total Sources” section in order to differentiate between the varying costs per space type.



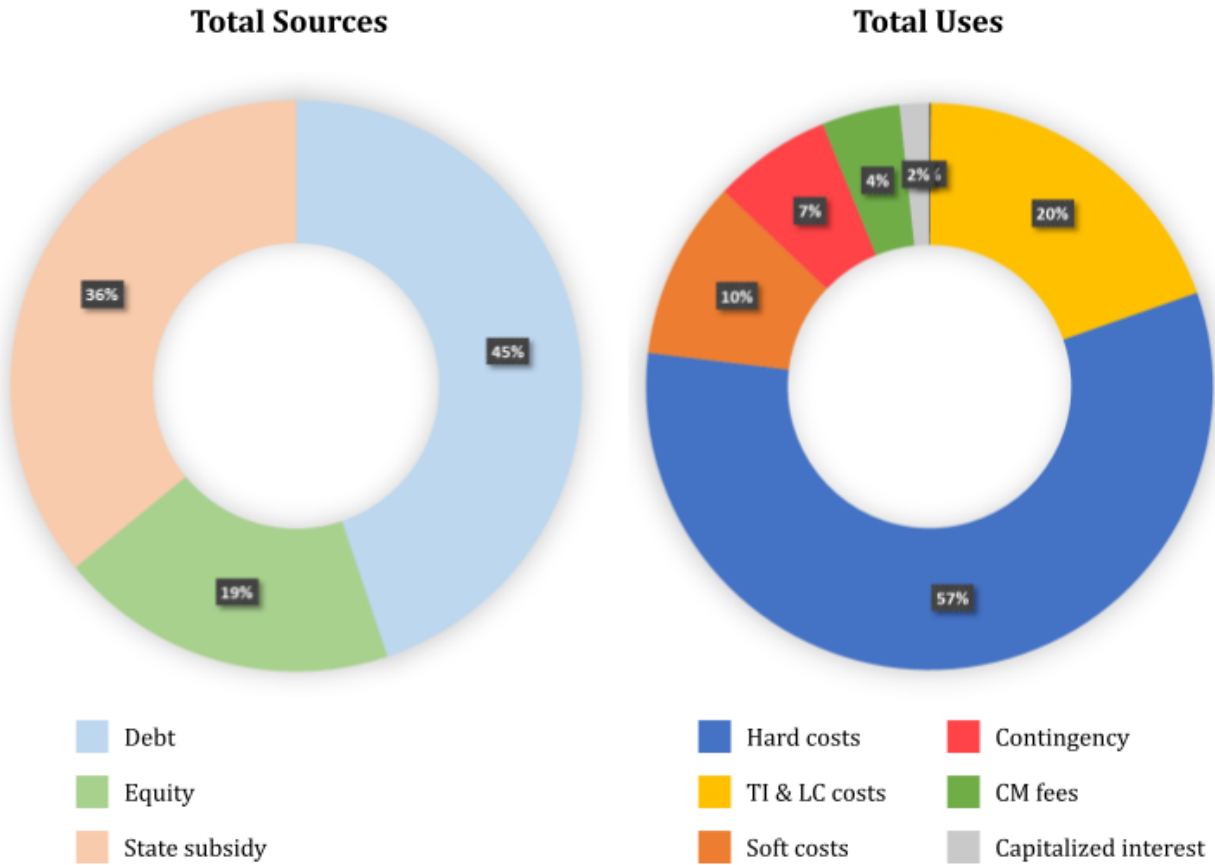
**Figure 28:** Total development costs for Phase 1 Asset A

Total Sources	Cost / GSF	Life (\$M)
Debt	\$359	\$61.2
Equity	\$154	\$26.2
State Subsidy	\$288	\$49.1
<b>Total</b>	<b>\$801 (170,400 SF)</b>	<b>\$136.5</b>

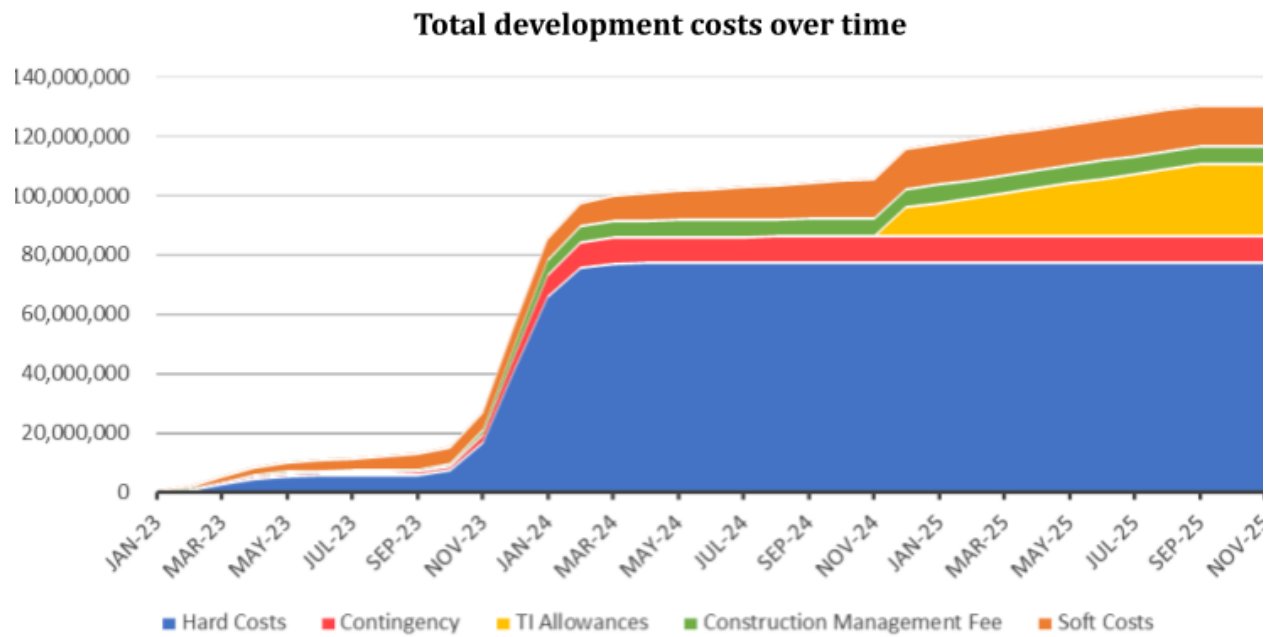
Total Uses	Cost / GSF	Life
Land Acquisition Price	\$0	\$0 (ground lease)
Land Closing Costs	\$0	\$0.1
Construction Mgmt Fee	\$35	\$6.0
Tenant Improvements (TI)*	\$142	\$24.1
Leasing Commissions	\$14	\$2.4
Hard Costs	\$420	\$71.5
Soft Costs	\$81	\$13.8
Contingency	\$54	\$9.1
Operating Shortfalls	\$1	\$0.2
Capitalized Interest	\$14	\$2.3
Loan Fees	\$6	\$1.0
<b>Total (before parking)</b>	<b>\$767</b>	<b>\$130.5</b>

Below-grade parking	\$80 (75,900 SF)	\$6.0
<b>Total (after parking)</b>	<b>\$801 (170,400 SF)</b>	<b>\$136.5</b>

\* **Note:** TI's assume \$175 per rentable SF, or \$142 per gross building area



**Figure 29:** Total sources and uses



**Figure 30:** Development costs over 24 months, assuming January 2023 start date (s-curve)

### *State and City subsidies*

There is a reason life science lab space is not developed as frequently as other building products. It goes without question that demand for any type of space is essential; however, the lab product itself is extremely expensive to build. For this reason alone, local developers — *as indicated by the lack of supply in Cleveland today* — are not willing to take the risk of building lab space. **This is where the State needs to step-in and provide the same subsidies to private developers that are being offered to non-profit hospitals and universities.** In order to increase wet lab supply in the State of Ohio, private developers need assurance that similar — *or better* — return on costs will be achieved compared to other product types.

Assuming the pre-leasing and income strategy outlined further below, Asset A in Phase I is not economically viable without the support of public incentives. In order to fill-in this financing gap, the State of Ohio and JobsOhio would need to provide **\$49.1 million, or \$288 per square foot (based on the 170,400 square foot lab building, excluding parking)** to support the development of Asset A. For context, the State of Ohio and JobsOhio invested \$200 million to help launch Cleveland Clinic’s Global Center for Pathogen Research & Human Health.<sup>192</sup> At approximately 400,000 square feet in size, this subsidy translates to \$500 per square foot.

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<sup>192</sup> “\$500 million partnership forms Global Center for Pathogen Research & Human Health.” (Cleveland: Cleveland Clinic, 2021)

Research has indicated that the lack of wet lab space in Ohio is a major issue. If the State wants to build an incubator ecosystem in order to retain talent and grow businesses, subsidies will need to be provided to developers partaking in this risk.

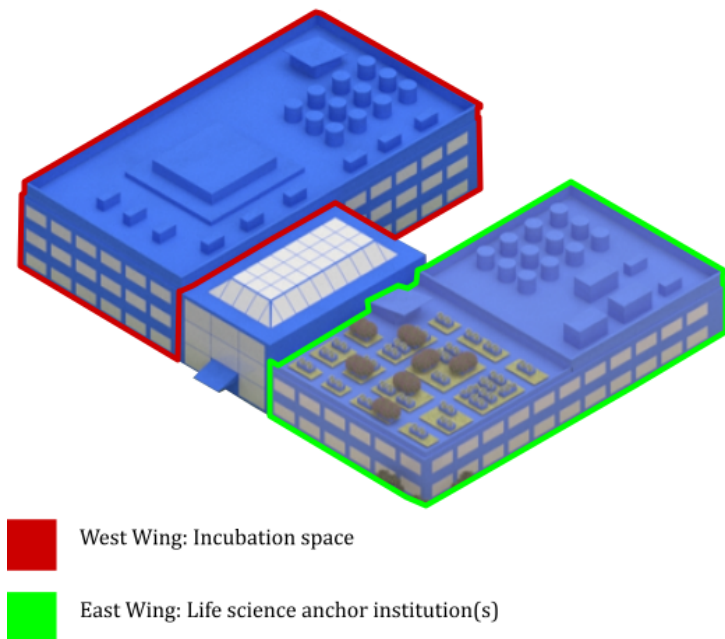
Additionally, it is important to note that approximately \$24 million of the total development costs is allocated to tenant improvement allowances, funds provided by landlords to tenants to help build-out their desired spaces. Thus, the \$48.9 million subsidy from the State can be thought of similarly as an improvement allowance that not only aids the developer, but also supports future tenants' success as well.

Lastly, this development proposal calls on the City of Cleveland to provide the developer similar property tax benefits currently afforded to the non-profit institutions involved in the Cleveland Innovation District. Although these non-profit organizations are tax-exempt for the foreseeable future, today's thesis requests a 15-year tax abatement in order to introduce — *and retain* — successful wet lab facilities in the Cleveland market.

### *Pre-leasing*

Understandably, both the State and private-sector investors may desire — *or require* — that at least 40% of the asset is pre-leased prior to construction commencement.

One of the major benefits for leasing instead of owning lab space — *as part of a company's internal real estate strategy* — is the massive reduction in upfront costs associated with constructing new space. Many of the anchor institutions involved in the Cleveland Innovation District are not investing in new construction. Instead, they want to use their capital and State-based subsidies for research and development. Leasing, instead of owning, allows these anchor institutions to expand their research programs while simultaneously avoiding large upfront construction-related expenses. Partnering with one or two of these anchor institutions could easily capture 40 percent of the asset's pre-lease strategy.



Asset A is designed with the intention of serving both start-ups and large enterprise companies or non-profits. The West Wing — *or incubator wing* — totals 82,800 gross building square feet (GSF), or 67,056 rentable square feet (RSF). The East Wing totals 55,200 GSF, or 44,704 RSF. This two-floor wing would cater primarily to one or two anchor institutions involved in the Cleveland Innovation District.

**Figure 31:** Space breakdown between incubation and enterprise

### *Income*

As detailed in Chapter II, “Life science: Funding, talent, & real estate,” lab rents continue to increase in life science cities throughout the United States. Although Cleveland has no comparables to easily reference, research has implied that **\$50 per square foot NNN** rents are very possible, especially for Class A new development. Although a steady 3% annual rental escalation has been applied in the underwriting, it may be safe to assume that once this product is introduced to the market, rents could exponentially grow similarly to other markets, which have averaged a 72 percent growth since 2015.<sup>193</sup>

### *Returns*

Based on the prior assumptions, the existing deal achieves a **15.35 percent levered return on investment**. Additional assumptions include a total hold period of 84 months, stabilized net operating income (NOI) of \$7.1 million, and an exit cap rate of 6.5 percent.

Another important financial metric is the total return on cost, which is simply the asset’s NOI divided by the development costs of the project. Assuming the above NOI and a total development cost after subsidies (\$7.1 million / \$87.5 million), the total **return on cost for the project is 8.15 percent**; the return on cost without subsidies would be 5.22 percent.

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<sup>193</sup> David Smith and Sandy Romero, “2022 Q1 | Life Sciences Update North American Report” (Cushman & Wakefield, 2022, pg.11)

## VI Conclusion

### Summary

Cleveland, Ohio — *once the leading manufacturer in the United States* — is now poised to make a major “career change,” one that prioritizes a knowledge-based workforce in medicine, biotechnology, and pharmaceuticals. The City, in partnership with the State of Ohio, is moving in the right direction; however, there are key elements that need to be considered by all parties involved in the Cleveland Innovation District.

First, it is essential that these anchor institutions look outside the walls of their campuses and start forming partnerships with private-sector companies who have a goal of commercializing innovation. Cleveland is a phenomenal clinical care provider; however, in order to retain talent, build an incubator ecosystem, and attract out-of-state capital, these anchor institutions need to focus more on research and the commercialization of life science products.

Second, interviews proved that the lack of wet lab supply in the State of Ohio is a major issue, and one that is pushing start-ups out-of-state. If the State is dedicated to branding itself as the life science hub of the Midwest, then it will need to allocate a larger portion of its budget towards expanding wet lab facilities across the state. This will require that the State begin working hand-in-hand with the private sector development community, subsidizing a large portion of these early laboratory projects.

Lastly, it is without question that talent is the top reason for the success of any life science community. It is essential that Case Western Reserve, like its neighbors, adopt a culture of innovation and entrepreneurship. Opening its doors to private-sector companies should not be seen as a parasitic or competitive relationship. Instead, these university-corporate relationships are mutualistic where both parties benefit from one another's research and innovation.

To the anchor institutions of the Cleveland Innovation District: Boisterously market your research to the investment community. You'll be surprised at who comes calling.

## **Financial considerations**

The timing of today's development proposal is extremely critical for the reader to understand. This thesis was written during the Summer of 2022, a time in which financial markets transitioned from bull to bear, the Federal Reserve hit its highest rate hike in 28 years, inflation swelled to a 40-year high, and social issues and international war consumed headline news. *How do these domestic and international elements impact today's thesis?*

Put simply, the financial success of this project is limited by these unprecedented events. State and City-sponsored subsidies are essential for this project to succeed; however, even with these subsidies, the return on investment and return on cost may not be appetizing enough for private sector investors. Following a correction in the supply chain, reduction in construction costs, and stabilization of interest rates, this project could be viewed as an attractive opportunistic investment by both developers and institutional investors.



## Final thoughts

The success of this proposal depends on the willingness of the State and anchor institutions involved in the Cleveland Innovation District to play ball with private real estate developers. For the avoidance of any doubt, this project relies heavily on State subsidies and the pre-leasing activity from one or more of these anchor institutions. Without either, this project — *and the incubation space necessary to grow a life science ecosystem* — will not succeed due to the extremely high cost of construction and low rental rates, as of July 2022.

Supply needs to actually exist in the market in order to grow competition and increase rental rates. Without supply, top talent and entrepreneurs will continue to seek other markets that will provide them jobs, security, and a destination to foster innovation. The subsidies offered to non-profit institutions need to be offered to national lab developers as well. Research has proven that demand for this product exists. It now depends on the State and City to determine whether they will help subsidize the massive construction costs required to grow — *and retain* — businesses of the future. The actions of the State to-date prove promising.

# Appendix

## Appendix A: Financial assumptions

Item	Assumption
Total building area	170,400 SF + 75,900 SF parking
Efficiency	81.00%
Total rentable area	138,000 SF
Closing costs	\$100,000
Escrow closing date	12/31/2022
Hold period	84 Months
Ground lease (GL)	\$7,485 / month
GL annual escalations	2.00%
Occupancy rate	95.00%
Rental rate (2023)	\$50.00 NNN
Annual escalations	3.00%
Broker commissions	5.00%
Lease terms	5 years
Free rent	5 months
Below-grade parking	446 spots
Parking fee / month	\$100.00
Lease-up period	10 months
Property Taxes	15-year abatement
Insurance	\$1.50 / SF
CAM	\$2.50 / SF
Annual expense growth	2.50%
Mgmt Fee as % of EGR	2.00%

Item	Assumption
Construction loan: Loan to cost (LTC)	70.00%
Interest rate	LIBOR
Interest rate spread	4.00%
Loan fees	1.00%
Loan term	35 months
Permanent loan LTV	60.00%
Fixed / floating	Fixed
Interest rate	5.00%
Interest rate spread	1.00%
Interest-only period	36-months
Loan fees	1.00%
Amortization	30 years
Construction timeline	24 months
Hard costs	\$420 / SF
Soft costs	\$80 / SF
Parking (hard + soft)	\$80 / SF
TI allowances	\$175 / SF
Contingency	10%
Annual capital reserve	\$1.00 / SF
Exit cap rate	6.50%
Costs of sale (% price)	2.50%
Disposition Fee	1.00%

## Appendix B: 84-month cash flow

Year	0	1	2	3	4	5	6	7
Month Ending	12/31/2022	12/31/2023	12/31/2024	12/31/2025	12/31/2026	12/31/2027	12/31/2028	12/31/2028
<b>Revenue</b>								
Base Rental Revenue		0	0	5,490,158	7,320,210	7,320,210	7,320,210	7,320,210
Vacancy Risk		0	0	(274,508)	(366,011)	(366,011)	(366,011)	(366,011)
Parking		0	0	381,330	508,440	508,440	508,440	508,440
Free Rent		0	0	(2,928,084)	(122,004)	0	0	0
Credit Loss		0	0	(26,689)	(73,406)	(74,626)	(74,626)	(74,626)
<b>Net Rental Income</b>		<b>0</b>	<b>0</b>	<b>2,642,207</b>	<b>7,267,230</b>	<b>7,388,013</b>	<b>7,388,013</b>	<b>7,388,013</b>
<b>Other Income</b>								
Reimbursements (NNN)		0	0	370,640	599,456	614,442	629,803	645,548
Percentage Rent		0	0	0	0	0	0	0
<b>Total Other Income</b>		<b>0</b>	<b>0</b>	<b>370,640</b>	<b>599,456</b>	<b>614,442</b>	<b>629,803</b>	<b>645,548</b>
<b>Effective Gross Revenue</b>		<b>0</b>	<b>0</b>	<b>3,012,847</b>	<b>7,866,685</b>	<b>8,002,455</b>	<b>8,017,816</b>	<b>8,033,561</b>
<b>Operating Expenses</b>								
Ground Lease		(89,821)	(91,618)	(93,450)	(95,319)	(97,225)	(99,170)	(101,153)
Property Taxes		0	0	0	0	0	0	0
Insurance		0	(8,841)	(190,294)	(222,916)	(228,489)	(234,202)	(240,057)
CAM		0	0	(276,052)	(376,539)	(385,953)	(395,602)	(405,492)
Management Fee		0	0	(60,257)	(157,334)	(160,049)	(160,356)	(160,671)
Other		0	0	0	0	0	0	0
<b>Total Operating Expenses</b>		<b>(89,821)</b>	<b>(100,458)</b>	<b>(620,053)</b>	<b>(852,109)</b>	<b>(871,717)</b>	<b>(889,329)</b>	<b>(907,373)</b>
<b>Net Operating Income</b>		<b>(89,821)</b>	<b>(100,458)</b>	<b>2,392,793</b>	<b>7,014,577</b>	<b>7,130,739</b>	<b>7,128,487</b>	<b>7,126,189</b>
<b>Capital Expenses</b>								
State Subsidy		24,537,600	24,537,600	0	0	0	0	0
Construction Expenses		(53,653,050)	(46,966,972)	0	0	0	0	0
Tenant Improvements		0	0	(14,490,000)	0	0	0	0
Leasing Commissions		0	(830,178)	(1,533,897)	0	0	0	0
Capital Reserves		0	(11,788)	(144,986)	(148,611)	(152,326)	(156,134)	(160,038)
<b>Total Capital Expenses</b>		<b>(29,115,450)</b>	<b>(32,931,337)</b>	<b>(16,168,884)</b>	<b>(148,611)</b>	<b>(152,326)</b>	<b>(156,134)</b>	<b>(160,038)</b>
<b>Cash Flow Before Debt Service</b>		<b>(29,205,271)</b>	<b>(33,031,795)</b>	<b>(13,776,090)</b>	<b>6,865,966</b>	<b>6,978,412</b>	<b>6,972,352</b>	<b>6,966,151</b>
<b>Partnership Expenses</b>								
Asset Management Fee		0	0	0	0	0	0	0
Construction Management Fee		(3,219,183)	(2,818,018)	0	0	0	0	0
<b>Acquisition Information</b>								
Land Acquisition Price	(1)							
Land Acquisition Fee	0							
Closing Costs	(100,000)							
<b>Sale Information</b>								
Sale Proceeds		0	0	0	0	0	0	111,673,569
Costs of Sale		0	0	0	0	0	0	(2,791,839)
Disposition Fee		0	0	0	0	0	0	(1,116,736)
<b>Total Unlevered Cash Flow</b>	<b>(100,001)</b>	<b>(32,424,454)</b>	<b>(36,849,813)</b>	<b>(13,776,090)</b>	<b>6,865,966</b>	<b>6,978,412</b>	<b>6,972,352</b>	<b>114,791,145</b>
<b>Loan Information</b>								
Construction/Permanent Loan Proceeds	0	6,901,792	35,849,813	79,821,644	0	0	0	0
Principal Payment		0	0	0	0	0	(63,373)	(785,648)
Interest Payment		0	0	(1,635,829)	(3,819,539)	(3,819,539)	(3,819,539)	(3,794,364)
Loan Payoff		0	0	(61,214,555)	0	0	0	(62,809,957)
Loan Fees	(612,146)	0	0	(636,590)	0	0	0	0
<b>Total Levered Cash Flow</b>	<b>(712,147)</b>	<b>(25,522,663)</b>	<b>0</b>	<b>2,558,580</b>	<b>3,046,427</b>	<b>3,158,874</b>	<b>3,089,441</b>	<b>47,341,174</b>
<b>Investor Distributions</b>								
Beginning Cash Balance	0	0	0	0	0	0	0	0
Positive Cash Flow	0	0	0	2,558,580	3,046,427	3,158,874	3,089,441	47,341,174
Capital Contributions	(712,147)	(25,522,663)	0	0	0	0	0	0
Capital Distributions	0	0	0	2,558,580	3,046,427	3,158,874	3,089,441	47,341,174
Ending Cash Balance	0	0	0	0	0	0	0	0
<b>Total Investor Cash Flow</b>	<b>(712,147)</b>	<b>(25,522,663)</b>	<b>0</b>	<b>2,558,580</b>	<b>3,046,427</b>	<b>3,158,874</b>	<b>3,089,441</b>	<b>47,341,174</b>
<b>Unlevered Cash-on-Cash Return</b>		0.00%	0.00%	0.00%	8.36%	8.49%	8.49%	8.48%
<b>Levered Cash-on-Cash Return</b>		0.00%	0.00%	0.00%	11.61%	12.04%	11.78%	9.10%

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Andrew Batson: Senior Vice President of Research & Strategy, JLL

Andrew Deye: Vice President, JobsOhio

Aram Nerpouni: Managing Director of Talent, Manufacturing Advocacy & Growth Network

David Sylvan: President of Innovation & Ventures, University Hospitals

Graig Kluge: Global Corporate Real Estate Manager, Sherwin-Williams

Greg Zucca: Director of Economic & Community Transformation, The MetroHealth System

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