JUNE
2022

New Places and New Spaces for E-commerce Distribution:

Three Strategies Bringing Industrial and Retail Real Estate Closer Together

By Dustin C. Read, PhD/JD

NAIOP RESEARCH FOUNDATION

About NAIOP

NAIOP, the Commercial Real Estate Development Association, is the leading organization for developers, owners and related professionals in office, industrial, retail and mixed-use real estate. NAIOP comprises some 20,000 members in North America. NAIOP advances responsible commercial real estate development and advocates for effective public policy. For more information, visit naiop.org.

The NAIOP Research Foundation was established in 2000 as a 501(c)(3) organization to support the work of individuals and organizations engaged in real estate development, investment and operations. The Foundation's core purpose is to provide information about how real properties, especially office, industrial and mixed-use properties, impact and benefit communities throughout North America. The initial funding for the Research Foundation was underwritten by NAIOP and its Founding Governors with an endowment established to support future research. For more information, visit naiop.org/foundation.

About the Author

Dustin C. Read, PhD/JD, has two decades of experience conducting real estate research. In addition to holding academic positions at Clemson University, Virginia Tech and UNC Charlotte over the course of his career, he has consulted with numerous public- and private-sector organizations to promote socially responsible real estate development. Dr. Read is a NAIOP Research Foundation Distinguished Fellow, an inductee into the Institute of Real Estate Management's Academy of Authors, and an eight-time recipient of honors from the American Real Estate Society for his contributions to real estate theory and practice.

Disclaimer

This project is intended to provide information and insights to industry practitioners and does not constitute advice or recommendations. NAIOP disclaims any liability for actions taken as a result of this project and its findings.

Cover Photo: Illustration of a planned industrial facility resulting from the conversion of the Rustic Hills North Shopping Center in Colorado Springs, Colorado, by Brennan Investment Group. *Courtesy Brennan Investment Group.* ■

Contents

Executive Summary

The COVID-19 pandemic dramatically accelerated demand for e-commerce. Correspondingly, it accelerated demand for distribution space from which to fulfill purchases made online. These conditions have led developers in land-constrained markets to consider new formats for distribution buildings and pursue redevelopment projects that would not have been feasible before 2020. At the same time, brick-and-mortar retailers have responded to customer preferences by expanding online order pickup services and shipping orders from retail stores. Together, these trends are contributing to the convergence of industrial and retail real estate, with implications for developers, investors and building owners.

The NAIOP Research Foundation commissioned this report to examine three trends related to this convergence: the conversion of shopping centers to distribution centers, adding distribution uses to existing retail buildings, and the development of mixed-use properties that include both distribution and retail. The author conducted secondary research and interviewed developers, investors, architects, analysts and other commercial real estate professionals to identify the opportunities and risks associated with each strategy. Some findings include:

- **Functionally obsolete shopping centers can be attractive targets for conversion to distribution space given their size and location.** However, developers should weigh these advantages against the costs associated with converting or demolishing existing buildings, possible political opposition and the difficulty of acquiring full control of a shopping center.
- **Retailers are adding distribution capacity and online order pickup and return services to existing retail stores to enhance their customers' shopping experience.** New retail development can facilitate this strategy and minimize congestion in parking lots and store aisles by tailoring building and parking lot design to the needs of both in-store and online customers.
- **Some developers are pioneering mixed-use developments that colocate retail and industrial space.** Locations near transportation networks and population centers often support both uses and onsite retail can serve as an amenity for logistics workers. However, pedestrian safety requires careful planning to segregate industrial and retail traffic, and developers should be prepared to address local concerns about a development's traffic impact on adjacent roads.

Introduction

In 2021, e-commerce sales represented over 13% of total U.S. retail sales, and that number is anticipated to increase.[1] The trend is contributing to unprecedented levels of demand for industrial space from which to fulfill online orders, and correspondingly to unprecedented levels of growth in industrial rental rates in areas that allow for fast, inexpensive and convenient delivery of goods to end consumers.[2]

Some real estate developers are seeking to exploit market conditions by building e-commerce distribution space in unconventional places. Notable examples include converting vacant big box stores and malls into last-mile distribution centers,[3] accommodating distribution activities from operational retail outlets,[4] and including space for distribution in mixed-use development projects that also have a retail component.[5] Each of these strategies arguably has merit but may also pose significant challenges that should not be overlooked.

This report, sponsored by the NAIOP Research Foundation, examines these three strategies to introduce readers to new places and new spaces for e-commerce distribution. It draws on trade literature, case studies and conversations with industry professionals. Findings suggest industrial and retail spaces are converging in interesting ways and are likely to coexist in more diverse forms and settings than they have in the past.

Strategy: Converting Vacant Big Box Stores and Malls into Last-Mile Distribution Centers

Fulfilling online orders requires a substantial amount of industrial space, and perhaps as much as three times more industrial space than other modes of distribution in the absence of advanced technologies.[6] This is because warehouses used in e-commerce fulfillment must provide retailers, as well as the third-party logistics companies with whom they work, with sufficient space to pick, pack, ship and process returns for larger assortments of goods than are typically held on the shelves of retail stores. Demand for space is satisfied in large distribution centers located outside of densely populated urban areas as well as smaller facilities located within such areas.[7] The latter, often referred to as last-mile distribution centers, are an essential part of modern supply chains because they help facilitate same-day deliveries that consumers have grown to expect.[8]

Unfortunately for retailers who sell goods online, the supply of space in distribution centers—including last-mile—has not kept up with demand. This is evidenced by rapidly rising rental rates in industrial submarkets across the U.S., including prime submarkets where Newmark estimates that rents for new distribution space have gone up by 24.3% over the past two years alone.[9] Rent escalations of this magnitude encourage real estate developers to get creative,[10] and that is just what a small but growing number have done by converting vacant big box stores and malls into last-mile distribution centers. These conversions may come in the form of full or partial adaptive reuse of retail structures or in the form of ground-up industrial construction after obsolete retail structures are demolished. CBRE reports that dozens of retail-to-industrial conversions have been completed already,[11] and more may be coming soon.[12]

Retail-to-industrial conversions are conceptually appealing because vacant big box stores and malls often sit on large parcels of land near transportation networks and residential neighborhoods that are suitable for last-mile distribution.[13] Adaptive reuse of existing retail buildings, parking lots and infrastructure can also be a cost-effective alternative to new development. That said, one should not jump to the conclusion that these conversions are easy. Real estate developers must overcome a myriad of obstacles, some of which are economic, legal and political.[14]

Recognizing Obstacles to Successful Retail-to-Industrial Conversions

The economics of retail-to-industrial conversions can be quite challenging. Big box stores and malls already have infrastructure in place, but that does not mean the infrastructure is in the right place or of the right size to accommodate traditional distribution centers. Existing retail buildings may also have ceiling heights, floor load capacities and loading bay locations that are suboptimal for e-commerce distribution activities.[15]

The cost of addressing these problems is likely to vary from project to project and may make the adaptive reuse of buildings a less financially appealing alternative than it initially appears.[16] "Anything is possible with such a shortage of space available for e-commerce distribution," said **Garrick Brown**, director of advisory services and business development at Lockehouse Retail Group. "But [converting retail space into industrial space] is often better in theory than it is in practice."

As for legal obstacles, they come in many different forms. Some of the most common include cotenancy and exclusivity clauses in leases, reciprocal easement agreements, and loan covenants that respectively allow tenants, adjacent property owners and lenders to exert control over how space in vacant big box stores and malls is used even though they do not own or occupy the space.[17] These parties may oppose retail-to-industrial conversions because they view e-commerce as a threat to traditional brick-and-mortar retail establishments or believe the presence of non-retail tenants will erode a shopping center's value.[18] Overcoming these concerns may prove essential if real estate developers are to effectively breathe life into failing retail properties.

Aerial view of Middle Georgia Industrial Park, a retail-to-industrial conversion in Macon, Georgia, completed by Ultimate Realty. *Courtesy Ultimate Realty*. ■

Middle Georgia Industrial Park and Rustic Hills North Shopping Center

Westgate Shopping Center, originally constructed in 1961, was the first fully enclosed mall in both the city of Macon and state of Georgia. Changing consumer preferences led to its redevelopment as a retail power center in the mid-1990s, but this did not result in long-term success. Less than 20 years later, the property was largely vacant and in need of help. Ultimate Realty acquired the six-building, 411,000-plus-square-foot property with the intent of converting it into the Middle Georgia Industrial Park. The plan was viable because the property benefited from 18- to 24-foot ceiling heights, proximity to Interstates 75 and 16, and surplus land available for truck parking and build-to-suit opportunities. Acquiring the asset for approximately $8 per square foot and receiving local tax incentives via the Macon Bright program also provided the company with the financial flexibility to upgrade signage and landscaping, improve loading docks, enhance lighting systems and add ESFR sprinklers to select buildings. The property is now 100% occupied. Some of the variables that made the project work included a low purchase price, great industrial location, clear plan for adaptive reuse and the services of a third-party leasing team with a national footprint.

Brennan Investment Group is early in the process of converting the five-building, 220,000-plus-square-foot Rustic Hills North Shopping Center in Colorado Springs, Colorado, into an industrial facility. The property was originally constructed as a grocery-anchored shopping center and operated as such for over 30 years until Albertson's moved out in 2006. One of the five buildings will be demolished, one left in place for small-shop retail tenants, and three others transformed into industrial and light-manufacturing space. The size of the buildings slated for adaptive reuse and their 15- to 16-foot ceiling heights make them particularly well suited for smaller industrial tenants. Brennan Investment Group hopes to take advantage of the property's location on a heavily travelled thoroughfare in a growing, middle-income area where high-quality industrial space is currently in short supply. Planned improvements include changing the property's façade to make it appear more like a traditional distribution center, relocating dock doors to accommodate intensified truck traffic, a roof replacement, and incorporating screening into the project to prevent the property from having a visual impact on a nearby residential neighborhood.

Brennan Investment Group is converting a former grocery-anchored shopping center in Colorado Springs, Colorado, into an industrial facility. Façade and dock door improvements are planned to ensure the building no longer appears or functions like a retail asset. A site map of the property is featured in the Appendix. *Courtesy Brennan Investment Group*. ■

Finally, and perhaps most importantly, is the risk of political opposition.[19] Elected officials are sometimes reluctant to support the rezoning of high-profile retail properties for industrial uses. This reluctance may stem from concerns that industrial properties will generate negative externalities (e.g., truck traffic, noise) or from hopes that retail properties could someday rebound and produce the property and sales tax revenues they did in the past.[20] In either event, it may fall to real estate developers to overcome inaccurate perceptions and demonstrate that retail-to-industrial conversions are beneficial to the communities in which properties are located.

"People often oppose the development of distribution centers near their neighborhoods because they think it is all about 53-foot trailers coming in and out all day," said **Matt Powers**, managing director at JLL. "They need to be [shown] what different types of distribution look like. A facility 30 miles out of town is going to operate differently than a last-mile facility, and that isn't always evident to the layperson. Last-mile distribution may also be the best option for a property when it no longer makes sense for any type of retail."

The economic, legal and political complexities of retail-to-industrial conversions help explain why they have occurred in relatively small numbers in the past and may continue to occur in relatively small numbers in the future. Prologis foresees no more than 100 million square feet of such conversions over the next 10 years—an amount that represents less than 3% of anticipated industrial deliveries.[21] These figures suggest conversions are a niche type of real estate investment that developers should approach with a great deal of caution, and with full awareness that modern last-mile distribution facilities cannot always be easily set up in vacant space that was not initially designed with that use in mind.[22] "You have to buy the property for nearly nothing," said **Brandon Isner**, Americas head of retail thought leadership at CBRE. "Otherwise, the cost of converting retail to industrial can be more expensive than the cost of building new."

Thoughtfully Evaluating Conversion Opportunities

The starting point for conversion feasibility studies is assessing whether industrial space is the most appropriate use for a site. "There's no substitute for highest and best use analysis," said **John Morris**, executive managing director at CBRE. "Industrial has to beat out all of the other alternatives on a risk-adjusted basis." This is by no means a forgone conclusion as real estate developers have found success converting vacant big box stores and malls into a variety of things ranging from off-price retailers to educational complexes to medical facilities.[23]

Candidates for conversion must also offer locational advantages that are not readily available elsewhere. In addition to convenient and cost-effective access to population centers, obsolete retail properties generally must be in areas with a scarcity of raw

land suitable for industrial development and in municipalities where policymakers are eager to partner with the private sector on revitalization efforts.[24] These conditions increase the economic attractiveness of retail-to-industrial conversions by putting real estate developers in a position to deliver industrial space to submarkets where it might not otherwise exist.

As for evaluating the physical characteristics of retail buildings to determine if they can be converted, the checklist is rather straightforward. Buildings well-positioned for conversion are single-story and have high ceilings, floorplans that allow for the unencumbered movement of goods and an ample number of loading bays, as well as other features distributors typically demand.[25] Stand-alone big box stores have these features more often than power centers or malls, which is why adaptive reuse of the former is more common than the latter.[26] Yet, companies like Brennan Investment Group and Ultimate Realty are converting power centers.[27]

Chris Copenhaver, senior director at Cushman & Wakefield, encouraged real estate developers not to underestimate the amount of work that goes into a conversion: "Old retail centers often have old HVAC systems that need to be replaced, sprinkler systems that need to be improved, lighting that needs to be replaced and dock doors that need to be moved or reconfigured," he said. "They also have façades that need to be modified to look more like traditional industrial buildings. Owners have to commit to doing these things well to change a property's image in the market."

Retail-to-Industrial Reality Check

Retail-to-industrial conversions are conceptually appealing because:

- Vacant big box stores and struggling shopping malls exist in many urban and suburban submarkets throughout the country.
- These properties often sit on large parcels of land with abundant parking that benefit from proximity to population centers and transportation networks.
- Adaptive reuse of retail structures or total redevelopment of retail sites may serve as a means of satisfying robust demand for last-mile distribution space.

Retail-to-industrial conversions can be difficult because:

- Fragmented land ownership, political opposition and legal obstacles such as cumbersome cotenancy clauses, reciprocal easement agreements and loan covenants can all make the conversion process lengthy.
- The cost of adaptive reuse may be prohibitively high when existing retail structures do not satisfy the demands of sophisticated industrial tenants.
- Distribution space may not be the highest and best use of retail properties located on primary commercial arterials.

Points to consider:

- Approach retail-to-industrial conversions with caution and focus on properties in land-constrained markets that can be bought well below reproduction cost.
- Collaborate with municipalities that have come to realize retail properties may no longer be suitable for the purposes for which they were built.
- Avoid assuming retail buildings can be converted to industrial buildings quickly and at a manageable expense simply because they have similar physical characteristics.

Strategy: Accommodating Distribution Activities from Operational Retail Outlets

Another way the worlds of retail and industrial real estate are colliding is less conspicuous than outright retail-to-industrial conversions, but nonetheless observable in shopping centers across the country. General and specialty retailers alike are using space in their brick-and-mortar stores to fulfill purchases made online.[28] The trend is part of a much broader movement toward omnichannel retailing, where the objective is to effectively integrate online and in-store retail environments to provide consumers with a significant amount of flexibility when searching for goods, trying them, purchasing them and returning them if necessary.[29]

Real estate owners should be intimately familiar with the most common omnichannel retail strategies because they are changing how tenants use retail and industrial space throughout their supply chains. One of those strategies is "buy online, pick up in store" (BOPIS). While it existed long before COVID-19, it became far more prominent during the pandemic due to changing consumer preferences and public health regulations that forced many retailers to close their doors to walk-in traffic.[30] Over 75% of large retailers in the U.S. now offer a BOPIS option.[31] This has been a boon for retailers because it prevents them from incurring last-mile distribution costs, reduces their reliance on third-party logistics providers and increases the likelihood of online shoppers making in-store purchases when picking up orders.[32]

Closely related to BOPIS is "buy online, return in store" (BORIS). There is abundant evidence that the convenience consumers enjoy from purchasing products online does not extend to returning products due to shipping fees, lengthy time periods to obtain refunds and difficulty tracking the status of transactions.[33] In fact, survey data suggests that over 80% of consumers prefer to return products in store irrespective of where they bought them.[34] This creates an opportunity for retailers with geographically dispersed brick-and-mortar outlets to enhance their customers' online shopping experiences by making the return process easy. Retailers who do so may have a marked competitive advantage considering goods purchased online are returned roughly three times more often than those purchased in store.[35] The logistical advantages of BORIS can vary greatly depending on whether retailers restock store shelves with returned goods or send them back to a centralized distribution center, making this omnichannel strategy more about customer satisfaction than supply chain cost savings.[36]

Ship-from-store is a third omnichannel retail strategy blurring the lines of demarcation between industrial and retail real estate. Retailers that engage in this practice use a portion of their operational retail outlets as microfulfillment centers to reduce shipping time and cost and to enhance the customer experience.[37] Some retailers choose to ship directly from all their stores and others from only a few that are in areas with both high online sales volume and reliable third-party logistics services.[38] Either of these approaches may be appropriate depending on the configuration of a retailer's stores and the demographic profile of the areas in which those stores are situated.

Predicting the Disruptive Impact of Emerging Technologies

One-size-fits-all strategies are rare in the realm of omnichannel retailing. Those who engage in BOPIS, BORIS and ship-from-store must therefore do so in a manner consistent with their long-range business plans.[39] However, this can be a difficult task due to the rapid pace at which new technologies are entering the marketplace and changing the last-mile distribution game.

Something as seemingly simple as curbside pickup may have dimensions retailers and retail property owners have not fully thought through. "Curbside pickup makes a lot of sense," said **Paula Rosenblum**, managing partner and cofounder of RSR Research. "But there aren't a lot of accepted best practices for doing it well. Where should pickup take place? Who should manage it? What technologies are needed to make it work efficiently? Who pays for that technology? The answers to all these questions may differ across large and small shopping centers, urban and suburban shopping centers, and shopping centers differing in quality and tenant mix."

Geoffrey Kasselman, SIOR, LEED AP, senior vice president, workplace strategies at CRG/Clayco, put forth other questions yet to be answered: "Infill sites are advantageous for e-commerce distribution today, but may not be forever," he said. "Autonomous vehicles, electric vehicles and drones, for example, could make it possible to ship more goods, more hours of the day, from more remote locations, and still satisfy consumer demands for same-day shipping." The comment illustrates the difficulty of predicting the dynamics of where fulfillment will occur in the future and how stores, vehicles and technologies (both old and new) will be used in the process.

Automated fulfillment systems muddy the water further. These systems designed by companies such as Fabric and Takeoff facilitate the automated retrieval of frequently purchased items from dedicated racks so they can be shipped more quickly and conveniently.[40] The principal advantages of incorporating these systems into operational retail outlets is the ability to stock goods for walk-in customers and e-commerce customers from the same delivery trucks and shift product from one to the other based on prevailing demand. The principal disadvantage is lower distribution throughput than is possible in traditional distribution centers or dark stores.

To adequately weigh the pros and cons of automated fulfillment systems and other emerging technologies, **Miya Knights**, director and publisher of Retail Technology Magazine, contended that it is essential for retailers to form partnerships. "Clever retailers aren't going it alone," she said. "They are working together to stand apart. They are collaborating with technology providers who can help them satisfy customers' purchase requirements—and they are doing it without creating artificial distinction as to what is retail space and what is industrial space."

Takeoff Technologies

Takeoff Technologies Inc. was founded in 2016 to help grocery retailers participate in e-commerce more efficiently. The company specializes in the design, development, implementation and performance of automated fulfillment systems called Micro Fulfillment Centers that operate alongside a retailer's employees. Depending upon client needs, these systems can be incorporated into distribution centers, dark stores or operational retail outlets, all with the potential to dramatically reduce the time and cost of preparing online orders for pickup or delivery. By automating the picking and packing of the relatively small number of products that make up a vast majority of grocers' sales, the software, hardware and expertise provided by companies such as Takeoff are making ship-from-store a more profitable option for retailers and a more convenient option for the customers those retailers serve.

Systems developed by Takeoff Technologies use small shuttles such as the one pictured to move frequently purchased goods through Micro Fulfillment Centers, thereby making it more convenient and cost effective for grocers to engage in e-commerce. *Courtesy Takeoff Technologies*. ■

Examining the Implications for Real Estate Owners

Omnichannel retailing and microfulfillment have important implications for real estate owners. First and foremost, their emergence supports the proposition that stores will continue to play a critical role in retail supply chains despite the proliferation of e-commerce.[41] This leaves real estate developers and owners with the task of figuring out exactly what that role will be.

"Planning and programming for in-store distribution is still very much in its infancy from a property owner's perspective," said **Anjee Solanki**, U.S. retail head at Colliers International. "Things that matter to tenants are changing, and [retail] property owners have to respond."

Despite the uncertainties that exist, real estate developers and owners can potentially benefit from designing, leasing and operating retail properties with omnichannel retailing and microfulfillment in mind. Design innovations are in order because most shopping centers and malls are arranged to keep customers onsite rather than distribute goods off-site.[42] Areas for curbside pickup, outgoing delivery truck traffic and reverse logistics are a low priority as a result.[43] This leaves both e-commerce and traditional customers to navigate congested parking lots and crowded store aisles never intended to accommodate BOPIS, BORIS and ship-from-store activities.

Design features as simple as improved wayfinding, dedicated parking for online purchasers picking up goods onsite, and defined areas for processing returns can go a long way toward improving the shopping experience, while simultaneously creating a more profitable environment for landlords and tenants alike.

Jose Sanchez, mixed-use design leader at DLR Group, suggested that shopping center retrofits must not only make microfulfillment efficient, but also enjoyable for consumers. "I think [BOPIS], for example, is going to evolve a lot like ridesharing did," he said. "Property owners initially responded to ridesharing by designating areas for pickups and drop-offs, but eventually invested in things like covered seating and lounges. The same is likely to happen for curbside pickups. Property owners are going to provide space for it that is convenient, comfortable and safe; space that doesn't make the customer feel like they are in the way."

Fillogic

Founded in 2018, Fillogic has quicky emerged as a leading provider of "logistics as a service." The company operates mall-based microdistribution hubs in properties owned by Brookfield, Simon Property Group, Tanger Factory Outlets and others. These hubs range from 4,000 to 25,000 square feet in size and occupy underutilized space in malls that often falls outside the gross leasable area. Some of the services Fillogic provides mall tenants on a fee basis include receiving inbound merchandise, fulfilling e-commerce orders through curbside pickup or ship-from-store, restocking shelves and managing returns. Outsourcing these activities allows mall tenants who don't have extensive back-of-the-house space to engage in many different forms of omnichannel retailing at a reasonable cost and without diminishing the in-store experience.

Fillogic operates micro-distribution centers at shopping malls owned by some of the largest players in the real estate industry. Some of the services it provides to the tenants of these properties include fulfilling e-commerce orders and managing returns. *Courtesy Fillogic.* ■

As for negotiating leases, real estate investors should take properties' microfulfillment potential into account. This means avoiding percentage-rent provisions that do not generate supplemental income for property owners when in-store experiences yield online sales,[44] as well as cotenancy clauses that provide one tenant with lease-termination rights in the event another tenant engages in distribution activities.[45] Thoughtfully designed leases should accommodate tenants' e-commerce needs, while rewarding real estate investors for doing so.

Improved real estate operations may result from offering logistics-as-a-service.[46] Several prominent mall owners are partnering with companies like Fillogic to set up microfulfillment centers in underutilized parts of their properties that are both high-tech and customer-service-oriented.[47] These centers help tenants process curbside pickups, shipments and returns in an orderly manner and at a cost lower than they could achieve on their own.[48] Ship-from-store, ship-from-shelf and ship-from-store site (e.g., directly from an adjacent micro-fulfillment center) are all possible for retailers with this assistance.

Design innovations, lease modifications, and logistics-as-a-service can undoubtedly make microfulfillment at the store level easier for tenants, but one must not lose sight of the paradigm shift they collectively represent for real estate investors. "Most companies who buy shopping centers and malls want passive income," said **Shlomo Chopp**, managing partner at Case Equity Partners and founder of ShopFulfill Corp, developer of the retailOS platform that aids retailers in onsite fulfillment. "They don't want to be in the business of being in business with their tenants. [Retail] has to evolve if property owners want to remain competitive."

Christina Tong, economist at CBRE, agreed that real estate developers are responding slowly to emerging trends, but she argued that it could be due in part to prevailing market conditions. "There isn't a lot of evidence [yet] that real estate developers are designing and constructing retail buildings with hybrid uses in mind," she said. "But that could be because there isn't a lot of retail development going on in general. Deliveries are at historic lows." She went on to say that many of the durable impacts of microfulfillment on the real estate industry are yet to be seen.

Distribution from Operational Retail Outlets Reality Check

Distribution from operational retail outlets is conceptually appealing because:

- Retailers increasingly realize that omnichannel strategies such as buy online, pickup in store; buy online, return in store; and ship-from-store strongly appeal to customers.
- Brick-and-mortar stores are well located for last-mile distribution because they are close to the places where customers live and work.
- Property owners who help their tenants implement omnichannel strategies are likely to position themselves for long-term success.

Distribution from operational retail outlets can be extremely difficult because:

- Economies of scale make it challenging for smaller retailers to roll out omnichannel strategies in a cost-effective manner.
- Rapidly evolving technologies and a dearth of generally accepted best practices make it difficult for retailers to determine what omnichannel strategies are right for them.
- Helping tenants successfully implement omnichannel strategies is a new frontier for many retail property owners, and it requires a paradigm shift in their approach.

Real estate developers participating in such transactions should consider:

- Designing retail properties with omnichannel strategies in mind to better meet tenants' needs and to improve the experience of both online and traditional customers.
- Avoiding cotenancy clauses and percentage-rent clauses in leases that prevent or diminish the value of accommodating omnichannel strategies.
- Exploring ways to offer logistics-as-a-service to tenants who need assistance making omnichannel strategies a profitable endeavor.

Strategy: Including Distribution Space in Mixed-Use Development Projects

Omnichannel retailing and microfulfillment are largely tenant-driven trends. Thus, it is useful to juxtapose them with direct efforts on the part of real estate developers to integrate industrial space and retail space into purposefully designed mixed-use development projects. This is happening in a diverse array of locales, albeit sparingly, for reasons worth exploring.

From a market perspective, including industrial space and retail space in the same project is logical in that both thrive when located on primary commercial arterials and in areas with strong demographics.[49] Retail outlets also serve as amenities for those who work in industrial parks, just as those who work in industrial parks serve as a reliable customer base for retail outlets.[50] These factors suggest colocating retail space and industrial space can be beneficial when steps are taken to prevent one from creating negative externalities for the other.

The devil is, of course, in the details, and real estate developers must eliminate potential sources of friction between industrial and retail tenants as best they can. "Eighteen-wheelers and [pedestrians] don't mix," said **Spencer Levy**, global chief client officer and senior economic advisor at CBRE. "So think about how to keep them from interacting in ways you don't want them to interact." Strategies for doing so include increasing the number of ingress and egress points throughout a development project to segregate retail and industrial traffic, as well as conducting traffic studies to understand how trucks will move throughout a site.

Fortunately for real estate developers interested in delivering mixed-use projects with both a retail and industrial component, municipal policymakers are coming around to the idea that modern distribution facilities are not inherently incompatible with retail, office or multifamily space.[51] There are even those who believe this type of industrial development can create jobs, limit traffic congestion and reduce pollution. Real estate developers committed to helping cities accomplish these goals may therefore find themselves with allies in the public sector.[52]

Ben Conwell, senior managing director of Cushman & Wakefield, spoke to the prospects of successfully mixing purpose-built last-mile delivery facilities with other real estate product types: "Industrial space can be a perfectly fine neighbor to retail space or any other land use as long as it is well executed." He went on to note "well executed" is a context-specific term.

Synergistically Mixing Industrial and Retail Space

Developing multiple acres of small retail pad sites on the periphery of industrial parks is one model of mixed-use development that can be observed in the field. United Properties, for example, has done this to good effect on numerous occasions.[53] Another model can be observed in Dade County, Florida, at Prologis Beacon Lakes. Several million square feet of industrial space operates alongside big box stores and small shop space in an environment where over 5,000 people come to work each day.[54]

Prologis Beacon Lakes in Miami, Florida, serves as an example of how large industrial and retail centers can coexist in a planned business park environment. Site maps for this development are featured in the Appendix. *Courtesy JLL.* ■

United Properties and Prologis Beacon Lakes

United Properties uses the term "next-gen mixed-use development" to describe its practice of wrapping industrial parks with pad sites for small, single- or multitenant retail buildings. The strategy is advantageous because it maximizes the value of land located on high-traffic corridors, while also providing industrial tenants with convenient access to desirable amenities. Service retailers coexist with distributors and light manufacturers in these unique settings. United Properties has utilized the strategy successfully on at least three occasions in the Denver metropolitan area, where it has developed industrial parks alongside pads for national retailers such as 7-Eleven and Starbucks. Other, perhaps more surprising, retail tenants found in these projects include a childcare center, fitness studio and multiple fast-casual restaurants.

Prologis Beacon Lakes in Miami offers additional evidence that mixing industrial and retail space can be synergistic in some instances. Approximately five million square feet of the former sits adjacent to approximately 450,000 square feet of the latter in a 600-acre business park. E-commerce distribution, among other industrial activities, takes place in proximity to big box retailers such as Ashley Furniture, Dick's Sporting Goods and Home Depot, as well as national restaurant chains such as Chili's, Chipotle and Jersey Mike's Subs. The combination of industrial and retail tenants works well in this setting due to the project's location on a frontage road, ample daytime population, and thoughtfully designed points of ingress and egress.

Another Prologis project (in the planning phase as of early 2022) has the potential to expand the mixed-use development genre even further. The company acquired Hilltop Mall in Richmond, California, in 2021 with the intention of demolishing it and using the 77-acre site in the East Bay submarket for a combination of housing, office, retail and logistics facilities.[55] Buildings for e-commerce distribution are anticipated to be in the product mix due to the property's size and location.[56] If the project successfully breaks ground in two to three years, it will represent Prologis' foray into a type of mixed-use development once thought unfeasible by many real estate investors.[57]

Ed Klimek, principal at KSS Architects, believes these types of projects are the beginning of an exciting trend. He foresees a time when industrial, office, residential and retail space are routinely included in both horizontal and vertical mixed-use developments to garner economic benefits that none of these types of real estate could achieve on their own. "Forward-thinking real estate developers have an opportunity to create ecosystems that promote creation, innovation, and economic efficiency," he said. "Those who do so will set themselves apart."

Winning Public Support, Designing to Reduce Friction, and Underwriting Conservatively

Since most municipal zoning ordinances and related land-use regulations do not contemplate the forms of mixed-use development discussed here, real estate developers must garner public support for new concepts.[58] This requires open conversations with policymakers and the constituencies they serve about a project's potential impact on the surrounding area. Developers engaging in these conversations need defensible information about the amount of traffic e-commerce distribution facilities will generate and how that compares to other potential site uses.[59] In some cases, it may be advantageous to point out that last-mile distribution activities frequently take place outside of peak traffic hours and have a less dramatic effect on local road networks than one might expect.[60]

Designing mixed-use projects to maximize the benefits and minimize the burdens of colocating industrial and retail space is just as important. This starts with ensuring customers, employees and delivery trucks can access sites easily and circulate within them safely and efficiently, but it does not end there.[61] Industrial buildings must accommodate sufficient distribution throughput despite being located next to retail buildings, just as retail buildings must provide customers with an enjoyable shopping experience despite being located next to industrial buildings. Compromises cannot be made at the expense of falling short of market standards if these two real estate product types are to successfully operate side-by-side.

Kevin Evernham, regional vice president at Ware Malcomb, acknowledged that retail is going to logistics and logistics is going to retail and that these spaces can be designed to work together, but he warned that there are institutional pressures that keep developers from leaping headlong into this form of mixed-use development. "Debt and equity investors want predictability," he said. "They generally don't want to put their money into something that is new and unproven. Only the pioneers of [the real estate development industry] have the courage to take risks that ultimately change the way we shop and behave."

To appease investor demands, it may therefore prove necessary to conservatively underwrite mixed-use development projects with integrated industrial and retail components. **Ibrahiim Banyaan**, economist at CBRE, spoke to the issue directly: "Industrial rents are going up rapidly right now, and it is leading people to think new types of development are possible," he said. "That is true at some level, but [developers] shouldn't be planning projects based on historic relationships between e-commerce sales and demand for e-commerce distribution space. The ratios are going to change as supply chain managers respond to rising real estate costs and find more efficient ways to get products to consumers. Rent growth will taper off when that happens, and some of the creative types of industrial development [that] people are discussing simply won't work."

Industrial Mixed-Use Reality Check

Mixed-use development with retail and industrial space is conceptually appealing because:

- Retail tenants and industrial tenants that engage in e-commerce distribution often benefit from locations with similar attributes.
- Industrial tenants with a relatively large number of employees working onsite often value proximity to retail outlets.
- Thoughtfully designed projects can stimulate economic development, reduce traffic congestion and improve surrounding neighborhoods in many other ways.

Mixed-use development with retail and industrial space can be extremely difficult because:

- Most municipal land-use regulations do not contemplate this form of development and therefore present obstacles to obtaining entitlements.
- Community support for such projects may be limited due to misconceptions about what modern last-mile distribution space looks like and how it operates.
- Providing retail customers with a safe and enjoyable shopping experience can be challenging in environments with significant delivery truck traffic.

Real estate developers participating in such transactions should consider:

- Presenting public officials and other stakeholders with defensible information about the amount of traffic projects with industrial and retail components will generate.
- Segregating industrial traffic from retail traffic to the extent possible to ensure both can navigate sites safely and efficiently.
- Underwriting conservatively to ensure industrial space can produce sufficient rent to warrant its inclusion in mixed-use projects otherwise comprised of retail space.

Closing Thoughts

Opinions among knowledgeable parties differ about the magnitude of impact the trends discussed in this report will have on the real estate industry. However, there is one thing most tend to agree upon—it is no longer appropriate to think about retail and industrial real estate as tangentially related product types that largely compete in separate markets. They are becoming more and more interconnected each day, and real estate developers must understand the implications.

Tray Anderson, supply chain executive at Veyer Logistics, offered the following: "Too much attention is being given to the conversion of retail space into industrial space," he said. "The thing people should be focusing on is the disappearing distinction between the two. Companies need to stop thinking about brick-and-mortar stores as entities separate and apart from their distribution operations, and the real estate professionals they work with need to do the same." **Larry Kilduff**, president and CEO of the Kilduff Company, added: "It doesn't matter if you call it retail space or industrial space—companies want it if it gets products closer to consumers."

A logical first step toward helping companies think more holistically about their real estate requirements is making sure the right parties are at the table when real estate advice is given and real estate decisions are made. Some real estate owners and operators are already doing this by forming working groups comprised of both industrial and retail real estate experts who can collectively speak to supply chain issues. Others are ensuring prospective tenants' supply chain managers are involved in lease negotiations along with their directors of corporate real estate, as logistics teams and retail teams have historically operated in silos in many organizations. These practices recognize that industrial and retail real estate ultimately serve the same purpose of helping companies get their products to customers in ways that they value.

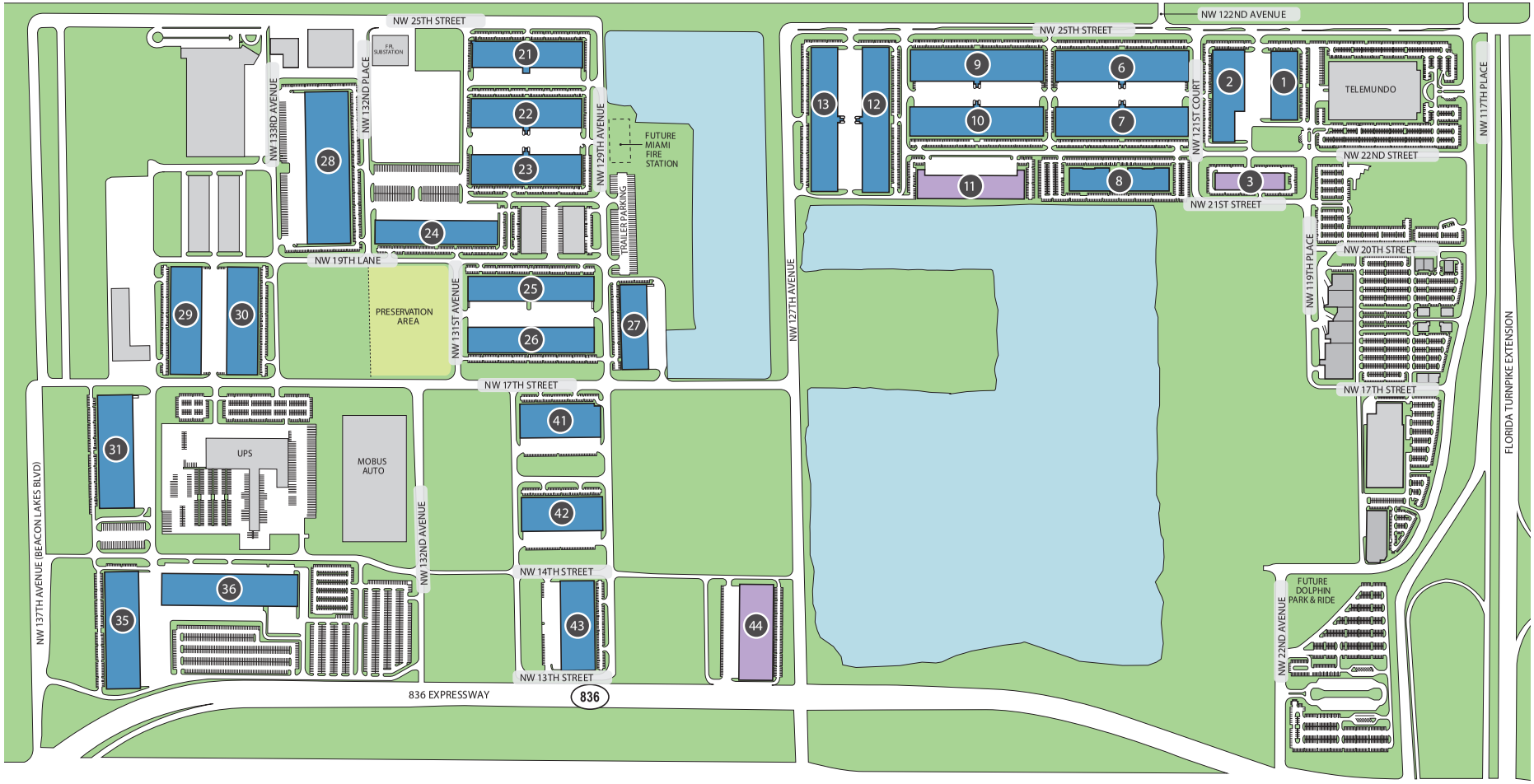
Curt Bimschleger, managing director at Deloitte, succinctly described the importance of looking at both industrial and retail real estate from a supply chain perspective: "Rent is often an insignificant cost in comparison to the cost of getting a product to the end consumer," he said. "[Retail and industrial] property owners who recognize this aren't selling space—they are selling supply chain efficiencies. Clients hire us [as consultants] to help them quantify and articulate these efficiencies [to prospective tenants]." He went on to note that it will become increasingly important for retail real estate owners to understand how their properties fit into retailers' distribution networks to maximize the rent levels they are able to achieve.

Real estate owners and operators should also be cognizant of the fact that real estate decisions in the industrial and retail sectors are unlikely to be driven solely by efforts to optimize supply chains. Companies are under increasing pressure to minimize the environmental and social impacts of their real estate portfolios and run the risk of becoming less competitive if they do not. Environmental, social and governance (ESG) initiatives must therefore be considered. These initiatives may encourage users of both industrial and retail space to look for creative ways to shrink their real estate portfolios when possible, or increase the amount of space they occupy in buildings with environmentally friendly leases, net-zero-carbon emissions, and related design features that conserve water and energy.[62]

"Neither property owners nor tenants have fully come to grips with what is coming down the pike in terms of ESG," said **David Zoba**, global retail leasing board chair at JLL. "Companies with large environmental footprints are going to be penalized in the marketplace when everything is measured, captured and reported. It will change how [industrial and retail] property owners and tenants view space, use space and interact with each other."

No one is certain how quickly bright-line distinctions between industrial and retail space will disappear, how market participants will react or how ESG initiatives will shape corporate real estate portfolios. However, it stands to reason that all these factors may influence the prospects of retail-to-industrial conversions, microfulfillment from operational retail outlets, and mixed-use development that includes industrial and retail components. Real estate developers who are mindful of them may therefore succeed in such projects when others fail.

Appendix: Maps and Site Plans



COMPLETED
PLANNED DEVELOPMENT
NON-PROLOGIS BUILDING

BLDG #	TOTAL BLDG SF
1	94,099 sf
2	132,012 sf
3	56,800 sf
6	206,800 sf
7	193,090 sf
8	101,634 sf
9	206,800 sf
10	193,090 sf

BLDG #	TOTAL BLDG SF
11	132,840 sf
12	189,740 sf
13	189,906 sf
21	146,788 sf
22	164,937 sf
23	166,305 sf
24	157,258 sf
25	158,285 sf

BLDG #	TOTAL BLDG SF
26	153,833 sf
27	111,162 sf
28	335,841 sf
29	167,791 sf
30	167,516 sf
31	200,795 sf
35	200,000 sf
36	216,780 sf

BLDG #	TOTAL BLDG SF
41	135,943 sf
42	136,800 sf
43	162,411 sf
44	163,200 sf

Beacon Lakes A: A map of Prologis Beacon Lakes. *Courtesy JLL.* ■

Beacon Lakes B: This map shows the location of retail outlets adjacent to Prologis Beacon Lakes. *Courtesy JLL.* ■

Rustic Hills: A site plan of Brennan Investment Group's retail-to-industrial conversion in Colorado Springs, Colorado. *Courtesy Brennan Investment Group.* ■

Endnotes

[1] U.S. Census Bureau News, "Quarterly Retail e-commerce Sales, 2nd Quarter 2021," news release, August 19, 2021, https://www2.census.gov/retail/releases/historical/ecomm/21q2.pdf.

[2] CBRE, "Industrial & Logistics: 2021 U.S. Real Estate Market Outlook," 2021, https://www.cbre.us/research-and-reports/2021-US-Real-Estate-Market-Outlook-Industrial-Logistics.

[3] Ron Derven, and Jennifer LeFurgy, "Retail-to-Warehouse Conversions Gain Momentum," *Development*, Fall 2019, https://www.naiop.org/Research-and-Publications/Magazine/2019/Fall-2019/Development-Ownership/Retail-to-Warehouse--Conversions--Gain-Momentum.

[4] Daphne Howland, "Fitch: e-commerce Fulfillment, Retail Locations are Converging," Retail Dive, May 31, 2017, https://www.retaildive.com/news/fitch-e-commerce-fulfillment-retail-locations-are-converging/443879/.

[5] Kathy Chouteau, "Prologis Closes on Hilltop Mall Acquisition, Releases Statement on Plans," *The Richmond Standard*, April 22, 2021, https://richmondstandard.com/richmond/2021/04/22/prologis-closes-on-hilltop-mall-acquisition-releases-statement-on-plans/.

[6] Prologis, "e-commerce and a New Demand Model for Logistics Real Estate," July 14, 2014, https://www.prologis.com/news-research/global-insights/e-commerce-and-new-demand-model-logistics-real-estate.

[7] Margarita Foster, "3 Warehouse Types for e-commerce Distribution," LoopNet, July 15, 2021, https://www.loopnet.com/learn/3-warehouse-types-for-e-commerce-distribution/2061349385/.

[8] "Other Voices: The New Space Race in Warehouses and Distribution Centers," *Modern Materials Handling*, December 27, 2019, https://www.mmh.com/article/other_voices_the_new_space_race_in_warehouses_and_distribution_centers.

[9] Lisa DeNight, "Double Digits: The New Rent Metrics for Prime Warehouse Space," Newmark, September 2021, https://www.nmrk.com/insights/thought-leadership/double-digits-the-new-rent-metrics-for-prime-warehouse-space.

[10] Nathan Casey, and Wendy Acho, "Reimagining Industrial Space," *Commercial Property Executive*,November 17, 2021, https://www.commercialsearch.com/news/reimagining-industrial-space/.

[11] CBRE, "U.S. MarketFlash: Retail-to-Industrial Property Conversions Accelerate," July 21, 2020, https://www.cbre.us/research-and-reports/US-MarketFlash-Retail-to-Industrial-Property-Conversions-Accelerate.

[12] Les Shaver, "Here's How Mall Redevelopments Could Tank Property Values," GlobeSt.com, October 19, 2020, https://www.globest.com/2020/10/19/heres-how-mall-redevelopments-could-tank-property-values/.

[13] Jason Beske, "Repurposing Retail Centers: Profiles in Adaptation, Repositioning, and Redevelopment," NAIOP Research Foundation, December 2019, https://www.naiop.org/en/Research-and-Publications/Reports/Repurposing-Retail-Centers-Profiles-in-Adaptation-Repositioning-and-Redevelopment.

[14] Marianne Skorupski, "Retail-to-Industrial Transformation: As the Retail Landscape Changes, Can Outdated Mall Anchors be Reborn as Fulfillment Centers?" Newmark, June 2021, https://www.nmrk.com/insights/thought-leadership/retail-to-industrial-transformation-as-the-retail-landscape-changes-can-outdated-mall-anchors-be-reborn-as-fulfillment-centers.

[15] Barrie Scardina, "Retail-to-Warehouse Conversion: Is it Really Happening?" Cushman & Wakefield, December 7, 2020, https://www.cushmanwakefield.com/en/united-states/insights/us-articles/2019-10-indust-retail-to-warehouse-conversion-a-lasting-fad.

[16] Logan Nagal, "Warehouse Conversions are Far from a Distressed Retail Silver Bullet," Propmodo, October 28, 2020, https://www.propmodo.com/warehouse-conversions-are-far-from-a-distressed-retail-silver-bullet/.

[17] Michael Hoban, "The Industrial Conversion," *SIOR Report*, December 29, 2020, https://www.sior.com/education-and-insights/insights/magazine/sior-report-article-listings/winter-2020/the-industrial-conversion; David A. Lewis, Jessica M. Caamano, and Daniel E. Rottenberg, "Last Minute Shifts to Last-Mile Delivery Centers: Considerations for Retail Landlords," Retail Law Advisor Blog, August 12, 2020, https://www.goulstonstorrs.com/retail-law-advisor/last-minute-shifts-to-last-mile-delivery-centers-considerations-for-retail-landlords/.

[18] George Anderson, "Will Amazon Install Distribution Hubs in Malls across America?" Retail Wire, August 10, 2020, https://retailwire.com/discussion/will-amazon-install-distribution-hubs-in-malls-across-america/.

[19] Erika Morphy, "Where are All the Retail-to-Industrial Conversions?" GlobeSt.com, October 17, 2019, https://www.globest.com/2019/10/17/where-are-all-the-retail-to-industrial-conversions/.

[20] ICSC, "Opportunities and Challenges for Retail to Warehouse Conversion," August 19, 2020, https://www.icsc.com/uploads/t07-subpage/Retail_to_Warehouse_Conversion_Industry_Sector_Series.pdf.

[21] Prologis, "Logistics Real Estate – Sizing the Retail Conversion Opportunity," September 14, 2020, https://www.prologis.com/news-research/global-insights/logistics-real-estate-sizing-retail-conversion-opportunity.

[22] Daniel J. Sernovitz, "JLL's Retail-to-Industrial Initiative Falters in D.C. Area Amid Industry Challenges," *Washington Business Journal*, December 17, 2021, https://www.bizjournals.com/washington/news/2021/12/17/jll-retail-to-industrial-program-fails-to-deliver.html.

[23] Beske, "Repurposing Retail."

[24] Alyssa Rinelli, "New Leases on Life: Malls Converting to Fulfilment Centers, Other Non-Retail Uses," *Forbes*, August 14, 2021, https://www.forbes.com/sites/zengernews/2021/08/14/new-leases-on-life-malls-converting-to-fulfillment-centers-other-non-retail-uses/?sh=573b8a4142fa.

[25] Marianne Wilson, "Converting Former Big-Box Stores to Warehouse Space: Challenges, Opportunities," *Chain Store Age*, January 21, 2021, https://chainstoreage.com/converting-former-big-box-stores-warehouse-space-challenges-opportunities.

[26] Glenn Brill Brill, "Now is the Time for Regional Mall Redevelopments," REBusiness Online, September 10, 2021, https://rebusinessonline.com/regional-mall-redevelopment-the-future-is-now/.

[27] Brennan Investment Group, "Brennan Acquires Colorado Springs Retail Complex for Industrial Conversion," news release, October 28, 2021, https://brennanllc.com/news/brennan-acquires-colorado-springs-retail-complex-for-industrial-conversion/; Pavel Cazacu, "Georgia Retail Property to Undergo Redevelopment," *Commercial Property Executive*, April 3, 2020, https://www.commercialsearch.com/news/georgia-retail-property-to-undergo-redevelopment/.

[28] Joanne Heyob, "Who Will Seize the Opportunity to Turn Stores into Fulfillment Centers?" Retail Wire, July 31, 2019, https://retailwire.com/discussion/who-will-seize-the-opportunity-to-turn-stores-into-fulfillment-centers/.

[29] CBRE, "The Definitive Guide to Omnichannel Real Estate," https://www.cbre.us/real-estate-services/real-estate-industries/omnichannel/the-definitive-guide-to-omnichannel-real-estate.

[30] Michael Ketzenberg, and Serkan Akturk, "How 'Buy Online, Pick Up In-Store' Gives Retailers an Edge," *Harvard Business Review*, May 25, 2021, https://hbr.org/2021/05/how-buy-online-pick-up-in-store-gives-retailers-an-edge.

[31] Sapna Maheshwari, and Michael Corkery, "Customers Still Like to Shop in Person, Even if They Get Only to the Curb," *The New York Times*, October 9, 2020, https://www.nytimes.com/2020/10/09/business/retailers-curbside-pickup.html.

[32] Jim Barnes, "Why Retailers Should Actively Nudge Consumers to Buy Online, Pick Up in Store (BOPIS)," *Forbes*, January 8, 2021, https://www.forbes.com/sites/forbestechcouncil/2021/01/08/why-retailers-should-actively-nudge-consumers-to-buy-online-pick-up-in-store-bopis/.

[33] Beth Owens, "Have You Met BORIS: Why You Should Offer Buy Online, Return In-Store," Whiplash blog, August 4, 2021, https://whiplash.com/blog/buy-online-return-in-store/.

[34] Dan Leberman, "Buy Online Return in Store (BORIS) and Buy Online Pickup in Store (BOPIS): The Two Acronyms All Small Businesses Should Know," Inc.com, March 26, 2015, https://www.inc.com/dan-leberman/buy-online-return-in-store-boris-and-buy-online-pickup-in-store-bopis-the-two-ac.html.

[35] Courtney Reagan, "That Sweater You Don't Like is a Trillion-Dollar Problem for Retailers. These Companies Want to Fix It." CNBC, January 12, 2019, https://www.cnbc.com/2019/01/10/growing-online-sales-means-more-returns-and-trash-for-landfills.html.

[36] Brian Kilcourse and Steve Rowen, "BOPIS & BORIS: Good or Bad for Retailers?" Retail Systems Research website, April 23, 2020, https://www.rsrresearch.com/research/bopis-boris-good-or-bad-for-retailers.

[37] Geoffery Metz, "Ship-From-Store Unites Industrial and Retail Real Estate," GlobeSt.com, May 20, 2014, https://www.globest.com/sites/globest/2014/05/20/ship-from-store-unites-industrial-and-retail-real-estate/.

[38] Mark Reilly, "Best Buy Boosting Ship-From-Store Efforts in Best on Online Buying," *Minneapolis/St. Paul Business Journal*, August 26, 2020, https://www.bizjournals.com/twincities/news/2020/08/26/best-buy-ship-from-store-pilot.html

[39] McKinsey & Company, "Future of Retail Operations: Winning in a Digital Era," January 2020, https://www.mckinsey.com/industries/retail/our-insights/future-of-retail-operations-winning-in-a-digital-era.

[40] Steve Weikal, and James Robert Scott, "The Evolution of the Warehouse: Trends in Technology, Design, Development, and Delivery," NAIOP Research Foundation, October 2020, https://www.naiop.org/en/Research-and-Publications/Reports/The-Evolution-of-the-Warehouse; Parcel Pending, "Leveraging Brick and Mortar Stores for Fulfillment," 2021, https://www.parcelpending.com/blog/leveraging-brick-and-mortar-stores-for-fulfillment/; Jenny McTaggart, "The Age of Micro Fulfillment," *Progressive Grocer*, April 16, 2021, https://progressivegrocer.com/age-micro-fulfillment.

[41] Brookfield, "The Future of Retail: Places to Connect, Explore and Engage," December 7, 2020, https://www.brookfield.com/insights/future-retail-places-connect-explore-and-engage.

[42] Anna Hensel, "Retailers are Racing to Turn Stores into Fulfillment Hubs," Modern Retail, August 27, 2020, https://www.modernretail.co/retailers/retailers-are-racing-to-turn-stores-into-fulfillment-hubs/.

[43] Parija Kavilanz, "Curbside Pickup is Great for Everyone, but It's a Headache for Malls," CNN, June 29, 2020, https://edition.cnn.com/2020/06/29/business/curbside-pickup-malls-pandemic/index.html.

[44] John R. Pariseault, "Re-Considering Percentage Rent in an Omni-Channel World," March 17, 2015, Law360, https://www.law360.com/articles/632103/reconsidering-percentage-rent-in-an-omnichannel-world.

[45] Sebastian Obando, "Retailers Experiment with Mini Distribution Centers in Their Stores," Wealth Management.com, July 29, 2019, https://www.wealthmanagement.com/retail/retailers-experiment-mini-distribution-centers-their-stores.

[46] John Egan, "Why Mall Landlords are Turning Empty Anchors into Fulfillment Centers," Wealth Management.com, July 27, 2020, https://www.wealthmanagement.com/retail/why-mall-landlords-are-turning-empty-anchors-fulfillment-centers.

[47] Tasha Norman, "Mall Owners Open Micro Distribution Hubs for e-commerce Fulfillment," GlobeSt.com, June 25, 2020, https://www.globest.com/2020/06/25/mall-owners-open-micro-distribution-hubs-for-e-commerce-fulfillment/.

[48] PYMNTS, "Mall-Based Micro-Distribution Centers Put Fulfillment 'Closest to the Population.'" PYMNTS.com, September 3, 2021, https://www.pymnts.com/news/retail/2021/mall-based-micro-distribution-centers-put-fulfillment-closest-to-population/.

[49] Steve Backman, and Tracy Hammer, "Mixed Retail-Industrial Uses Present a New Opportunity for Investors," *National Real Estate Investor*, November 17, 2020, https://www.nreionline.com/industrial/mixed-retail-industrial-uses-present-new-opportunity-investors.

[50] Mile High CRE, "United Properties Find Success with 'Next Gen Mixed-Use' Development," Mile High CRE, May 29, 2018, https://milehighcre.com/united-properties-find-success-with-next-gen-mixed-use-development/.

[51] Nancey Green Leigh, "Strengthening Urban Industry: The Importance of Infrastructure and Location," in *Infrastructure and Land Policies*, eds. Gregory K. Ingram and Karin L. Brandt (Cambridge MA: Lincoln Institute of Land Policy, 2013), 318-340.

[52] Gary Tarnoff and Meenakshi Srinivasan, "Planning Can Prevent Problems Where e-commerce Hubs and Neighborhoods Meet," *Crain's New York Business*, April 13, 2021, https://www.crainsnewyork.com/op-ed/planning-can-prevent-problems-where-e-commerce-hubs-and-neighborhoods-meet.

[53] Mile High CRE, "United Properties."

[54] Lidia Dinkova, "Prologis Plans to Expand its Beacon Lakes Business Park in Miami-Dade," The Real Deal.com, May 3, 2021, https://therealdeal.com/miami/2021/05/03/prologis-plans-to-expand-its-beacon-lakes-business-park-in-miami-dade/.

[55] George Avalos, "Prologis Buys Former Hilltop Mall Site in Richmond," *East Bay Times*, April 23, 2021, https://www.eastbaytimes.com/2021/04/23/real-estate-prologis-buys-former-hilltop-mall-site-in-richmond/.

[56] Kelsi Maree Borland, "Prologis Expands Beyond Industrial with New Mixed-Use Build," GlobeSt.com, April 26, 2021, https://www.globest.com/2021/04/26/prologis-expands-beyond-industrial-with-new-mixed-use-build/.

[57] Kathy Chouteau, "Prologis, New Owner of Hilltop Mall Property, Donates Backpacks to Local Kids, Offers Update on Site's Future," *The Richmond Standard*, October 21, 2021, https://richmondstandard.com/richmond/2021/10/21/prologis-new-owner-of-hilltop-mall-property-donates-backpacks-to-local-kids-offers-update-on-sites-future/.

[58] Logan Nagel, "Communities are Learning How to Live with New Urban Logistic Centers," Propmodo, March 2, 2020, https://www.propmodo.com/communities-are-learning-how-to-live-with-new-urban-logistic-centers/.

[59] Brion Sargent, and Rick Ferrara, "Distribution Center Design and Last-Mile Logistics," Gensler blog, December 3, 2021, https://www.gensler.com/blog/distribution-center-design-and-last-mile-logistics.

[60] Christopher L. Kabatt, and Michael J. Workosky, "Last-Mile Home Delivery: How Traffic Studies Help Connect Delivery Stations to Your Front Door," Wells and Associates blog, May 3, 2021, https://www.wellsandassociates.com/blog/last-mile-delivery-station-traffic-studies/.

[61] Katy Daneker, Dave France, and Will Matzek, "8 Tips for Developing Last-Mile Distribution Centers," Kimley Horn website, March 31, 2021, https://www.kimley-horn.com/8-tips-for-developing-last-mile-distribution-center/.

[62] CBRE, "ESG & Real Estate: Top 10 Things Investors Need to Know," January 3, 2022, https://www.cbre.com/insights/reports/esg-and-real-estate-the-top-10-things-investors-need-to-know.

"The work of the Foundation is absolutely essential to anyone involved in industrial, office, retail and mixed-use development. The Foundation's projects are a blueprint for shaping the future and a road map that helps to ensure the success of the developments where we live, work and play."

Ronald L. Rayevich, Founding Chair
NAIOP Research Foundation

RECENT NAIOP RESEARCH FOUNDATION-FUNDED RESEARCH

Available at naiop.org/research

Office Space Demand Forecast, Second Quarter 2022

Findings from the Development Approvals Index (2022)

Seeing Past the Pandemic: Industrial Demand and U.S. Seaports (2022)

New Uses for Office Buildings: Life Science, Medical and Multifamily Conversions (2022)

Industrial Space Demand Forecast, First Quarter 2022

Economic Impacts of Commercial Real Estate, U.S. Edition (2022)

How the Other Half Builds: Small-Scale Development in Tertiary Markets (2021)

Office Space Demand Forecast, Fourth Quarter 2021

A Two-Dimensional Approach to Evaluating Commercial Real Estate Markets (2021)

Industrial Space Demand Forecast, Third Quarter 2021

Office Space Demand Forecast, Second Quarter 2021

An Overview of Emerging Construction Technologies (2021)

The Development Approvals Index: A New Tool to Evaluate Local Approvals Processes (2021)

The Evolution of the Warehouse: Trends in Technology, Design, Development and Delivery (2020)

Working Together as a Team: Negotiating With Tenants and Leasing Space During COVID-19 (2020)

Using Capital Improvements to Create Competitive Advantage in the COVID-19 Era (2020)

Navigating a Safe Return to Work: Best Practices for U.S. Office Building Owners and Tenants (2020)

A New Look at Market Tier and Ranking Systems (2020)

There are many ways to give to the Foundation and support projects and initiatives that advance the commercial real estate industry. If you would like to contribute to the Foundation, please contact Bennett Gray, vice president, National Forums and NAIOP Research Foundation, at 703-904-7100, ext. 168, or gray@naiop.org.

For information about the Foundation's research, please contact Jennifer LeFurgy, PhD, vice president, Knowledge and Research, NAIOP at 703-904-7100, ext. 125, or lefurgy@naiop.org.

NAIOP | RESEARCH FOUNDATION

We're Shaping the Future

2355 Dulles Corner Boulevard, Suite 750
Herndon, VA 20171-3034

703-904-7100
naiop.org/researchfoundation