Intelligent Investment

Cold Storage Demand Grows Amid Tailwinds

U.S. INDUSTRIAL & LOGISTICS VIEWPOINT

Investors still hungry for temperature-controlled industrial assets

CBRE RESEARCH
JUNE 2022
Key Takeaways

• An expected rise in e-commerce's share of total U.S. grocery sales to 21.5% by 2025 from 13% in 2021 will drive demand for cold storage, particularly within the grocery distribution segment.

• As of Q2 2022, there was 3.3 million sq. ft. of speculative cold storage development underway in the U.S., up from only 300,000 sq. ft. in 2019.

• Despite the uptick in speculative development, new entrants must navigate a challenging market, with high construction costs, complex user requirements and other barriers to entry.

• Investor interest in cold storage increased during the pandemic. Nearly 40% of respondents to CBRE's 2022 U.S. Investors Intention Survey are pursuing cold storage assets this year, up from 22% in 2021 and 7% in 2019.
Outsourcing Common for Cold Storage Industry

More outsourcing is occurring throughout the broader industrial market with third-party logistics (3PL) providers accounting for 34% of total leasing activity this year through May, up from 30% in the same period of last year. This trend is particularly common in the cold storage industry due to costs and more complex technology systems.

Consolidation within the public refrigerated warehouse (PRW) industry has accelerated since 2019, when Lineage Logistics and Americold accounted for 61% of North America’s total cold storage space. Today, these two companies account for 71%, according to Global Cold Chain Alliance. United States Cold Storage controls 10%. Indeed, there are few key players in this highly specialized and competitive industry. As technological systems become more sophisticated, the benefits of economies of scale far outweigh the operational challenges brought on by increased size.

**Figure 1: Largest Refrigerated Warehouse Companies in North America**

- Lineage Logistics: 43%
- Americold Logistics: 28%
- United States Cold Storage: 10%
- Interstate Warehousing, Inc.: 7%
- VersaCold Logistics Services: 3%
- Conestoga Cold Storage: 3%
- Congebec Logistics, Inc.: 3%
- RLS Logistics: 3%
- Burris Logistics: 1%
- NewCold Holdings, LLC: 1%
- Others: 1%


Share of total industrial leasing activity by 3PL providers due to higher costs and greater supply chain complexity

34%

Combined share of North America’s total cold storage space by the top two public refrigerated warehouse companies

71%
Although outsourcing to 3PLs is growing for the overall industrial market, it appears to be declining for cold storage, meaning more private and semiprivate operators are gaining market share. According to the U.S. Department of Agriculture (USDA), 72% of the refrigerated storage capacity in the U.S. is outsourced to PRW companies, down from 75% five years ago. The remaining 28% includes in-house cold chain operators, up from 25% five years ago.

Sizing the Market

The U.S. currently has 3.7 billion cubic feet of gross refrigerated storage capacity, up by 2.2% from 2020, according to the USDA. Although it’s difficult to precisely calculate the total U.S. cold storage real estate footprint, CBRE estimates that it is approximately 225 million sq. ft.

The U.S. currently has 3.7 billion cubic feet of gross refrigerated storage capacity, up by 2.2% from 2020, according to the USDA.

### Figure 2: Top 10 States for Cold Storage Capacity

<table>
<thead>
<tr>
<th>State</th>
<th>Industrial Cold Storage Cubic Feet (Millions)</th>
<th>Industrial Cold Storage Footprint* (Millions Sq. Ft.)</th>
<th>Population (Millions)</th>
<th>Cold Storage Cubic Feet Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>395.9</td>
<td>16.5</td>
<td>39.2</td>
<td>10.1</td>
</tr>
<tr>
<td>Washington</td>
<td>294.3</td>
<td>12.3</td>
<td>7.7</td>
<td>38.2</td>
</tr>
<tr>
<td>Florida</td>
<td>241.7</td>
<td>10.1</td>
<td>10.9</td>
<td>8.9</td>
</tr>
<tr>
<td>Texas</td>
<td>262.0</td>
<td>10.9</td>
<td>21.8</td>
<td>11.1</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>284.8</td>
<td>11.9</td>
<td>5.9</td>
<td>48.3</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>232.5</td>
<td>9.7</td>
<td>13.0</td>
<td>17.9</td>
</tr>
<tr>
<td>Illinois</td>
<td>182.3</td>
<td>7.6</td>
<td>12.7</td>
<td>14.4</td>
</tr>
<tr>
<td>Georgia</td>
<td>178.7</td>
<td>7.4</td>
<td>10.8</td>
<td>16.5</td>
</tr>
<tr>
<td>Oregon</td>
<td>140.6</td>
<td>5.9</td>
<td>4.2</td>
<td>33.5</td>
</tr>
<tr>
<td>New Jersey</td>
<td>136.9</td>
<td>5.7</td>
<td>9.3</td>
<td>14.7</td>
</tr>
</tbody>
</table>

*Sq. ft. estimated from USDA cubic ft. using a height of 24 ft. and 85% footprint efficiency.
Source: USDA – Capacity of Refrigerated Warehouses; Census, CBRE Research, January 2022.
Drivers of Cold Storage Demand

Cold storage demand has traditionally followed population growth and demographic changes. For example, recent migration patterns have generated more food & beverage demand in states like Florida, Arizona and Texas, resulting in the need for more cold storage capacity to store and distribute perishable items.

Other drivers of cold storage demand include online sales of food items that require temperature-controlled space, like frozen snacks, meat and poultry. Edible perishables make up a small but growing percentage of total online grocery spending. As of October 2021, refrigerated and frozen foods captured 9% and 13%, respectively, of total e-commerce grocery sales, up from 4% for each category in early 2020, according to data provider IRI. Online purchasing of refrigerated and frozen foods rose by 58% year-over-year as of October 2021.

Figure 3: Breakout of Online Category Penetration

Cold Chain Challenged but Resilient

With increased demand for perishables, cold storage capacity has been strained by transportation backlogs, inflation and labor shortages exacerbated by the pandemic. This has led to declining stock levels of primary food commodities. Cold storage warehouses typically have steady utilization rates for commodities held in facilities near major population centers, but there was a 6.8% year-over-year drop in Q4 2021, according to the USDA. Meanwhile, U.S. imports of perishable foods increased last year, rising by 27% for meat and 15% for dairy, for example. What this means is that growth in cold storage utilization is creating new sources of demand as warehouses struggle to maintain normal stock levels.

Figure 4: Total Stock Levels of Primary Food Commodities, Rolling 4-Quarter Average

Cold storage is a resilient sector whose stock levels have recovered from past disruptions like Swine Flu in 2009 and severe droughts that limited availability of certain fresh foods in 2014. If supply chain volatility eases this year, utilization rates are expected to bounce back as operators work to replenish grocery stores and serve direct-to-consumer demand.

Grocery and Restaurant Sales Above Pre-COVID Levels

Grocery and restaurant sales have recently exceeded pre-pandemic levels. Restaurants have particularly benefited from widespread COVID vaccinations, the easing of capacity restrictions and healthy consumer balance sheets. Although economic conditions tend to dictate how frequently people eat out, they don’t dramatically impact the demand for cold storage space either way. Food products still need to go through warehouses, whether their destination is to a restaurant, grocery store or directly to the consumer. As a result, cold storage benefits from steady demand and is insulated from societal or economic disruptions. Although inflation and economic uncertainty pose a risk to retail sales, there is no evidence of softening in the grocery or restaurant segments and Americans are consuming more than they have in the past.

Figure 5: U.S. Grocery Sales vs. Restaurant Sales

Note: Seasonally adjusted.
Source: U.S. Census Bureau, CBRE Research, April 2022.
Grocery Sector Poised for Change

The pandemic has caused more U.S. consumers to shop for groceries online. E-commerce grocery sales surged to nearly $98 billion via pickup, delivery and ship-to-home channels last year, according to the latest Brick-Meets-Click/Mercatus Grocery Shopping Survey. Online penetration of total grocery sales reached almost 13% in 2021, up roughly 2 percentage points from 2020 and 10 percentage points from the pre-COVID share in 2019. By 2025, e-commerce is projected to capture 21.5% of total grocery sales, up from the 13.5% pre-pandemic projection, according to Mercatus/Incisiv. Some estimates are even higher. According to a recent McKinsey & Company survey, grocery executives expect their companies’ e-commerce penetration to more than double in the next three to five years to an average of 23% but may reach as high as 35%.

Online grocery shopping has evolved from a matter of safety and basic convenience during the pandemic to becoming part of consumers’ shopping routine as food retailers get more sophisticated. For example, another recent McKinsey & Company survey found that 63% of consumers who shop for groceries online prefer home delivery over click-and-collect service, up from 48% in 2021.

As the online grocery market continues to grow, figuring out how to fulfill orders is critically important. It’s not a one-size-fits all solution, and grocers will need to find the right mix of automated “micro-fulfillment centers” (MFCs), manual dark stores and in-store fulfillment. Many grocers are locating MFCs close to their customers to improve speed at a lower cost while also implementing centralized fulfillment centers to handle larger order volumes and support next-day delivery in highly populated regions. Some grocers such as Ahold Delhaize, Wakefern and H-E-B have partnered with technology companies such as Dematic, Takeoff Technologies and Swisslog to expand fulfillment capabilities through MFCs. Google and Microsoft have also developed artificial intelligence to assist grocers with inventory replenishment, such as monitoring online grocery lists by consumers.

In partnership with British online grocer Ocado, Kroger plans 16 fulfillment centers across the U.S. to accommodate next day, same day and immediate delivery services. The first was opened last year in Cincinnati, followed by others in Groveland, FL—a new market for Kroger—and Atlanta and South Dallas. More are scheduled to open soon in Austin, San Antonio, Birmingham and Cleveland. These large facilities form a dynamic network with stores and offer reliability, scale and efficiency.

---

Real Estate Just One Piece of the Pie

Although real estate is one component, it has the potential to make or break a company’s fulfillment network. Demand for cold storage space is expected to continue outstripping supply over the next three to five years. The overall industrial real estate vacancy rate is just 3.1% and the cold storage vacancy rate is estimated to be even less than that given robust tenant demand. Cold storage real estate leasing and sales activity rose by an average 43% from 2017 to 2021, according to CBRE. Development has ticked up in recent years, especially with more institutional capital flocking to the sector. There is 3.3 million sq. ft. of speculative development currently underway in the U.S. (Figure 8), up from only 300,000 sq. ft. in 2019.

Investors are attracted to the cold storage sector given its growth prospects and higher yields compared with the traditional warehouse sector. However, robust demand has driven the cap rate spread between cold storage and dry warehouses to as low as 50 basis points (bps) in core markets. And investor interest has surged from pre-pandemic levels given the positive tailwinds to the sector. According to CBRE’s 2022 U.S. Investor Intentions Survey, 39% of respondents said they were pursuing cold storage assets, up from 22% in 2021 and just 7% in 2019. This momentum is expected to continue as the online grocery segment grows, particularly in demographically strong markets.

![Figure 6: Share of Investors Pursuing Alternative Investment Sectors](source)

Cold Storage Development & Design

In 2019, CBRE Research predicted the following three emerging trends in cold storage development that were later accelerated by the COVID pandemic:

1. An increase in speculative development.
3. Greater automation in the design and operation of cold storage facilities.

Speculative development has increased since CBRE Research started tracking activity in early 2019. The first facility built by a non-operator was completed in mid-2019 by Hunt Southwest in Fort Worth and leased to cold storage operator Emergent Cold. About a year later, Lineage Logistics acquired Emergent Cold and purchased the building from Hunt Southwest.
New speculative development of cold storage facilities is challenging for five primary reasons: high construction and operating costs, the risk of not securing a tenant before completion, the unique expertise required of developers and operators, the complexity of user requirements and the inflexibility in converting from cold to dry warehousing should the need arise. Despite these challenges, there currently are 12 speculative cold storage projects totaling 3.3 million sq. ft. in eight markets. Another 60 development projects are planned or proposed.

**Figure 8: Map of Development Projects Underway**

Texas has largely led recent speculative cold storage development, driven by solid demographic fundamentals. The state has nearly 2.7 million sq. ft. of speculative cold storage projects that were delivered or remain underway since 2019. Dallas/Ft. Worth is a top Texas market for cold storage facilities, handling distribution of Midwest agricultural products throughout the South. Dallas/Ft. Worth’s population is projected to surpass that of Chicago in 2035 to become the third most populous urban region in the U.S. with 9.4 million residents. It is also part of the 20-million-resident Texas Triangle megaregion, which includes the state’s other major cities of Austin, Houston and San Antonio. Together, they generated an economic output of $1.5 trillion in 2021.

Kroger and Ocado recently opened a fully automated e-commerce fulfillment center in South Dallas to provide grocery delivery across the greater metropolitan area. Grocery business growth is being driven by automated e-commerce fulfillment centers like this. According to technology research firm Interact Analysis, warehouse automation investment is expected to reach $69 billion in 2025, up from $30 billion in 2020.

Houston also is seeing rapid growth of its cold storage market, since its port handles distribution of seafood from the Gulf of Mexico and fruits and vegetables from Central and South America.
Energy Efficiency is Key

Given land constraints and high construction costs, development of taller cold storage facilities with 50-foot-plus clear heights is becoming the norm. According to Ware Malcomb, an architectural firm specializing in cold storage design, taller facilities increase both storage capacity and energy efficiency, with rooftop refrigeration units distributing cold air downward to cool the entire building. Some new facilities also are incorporating alternative energy sources, which are particularly attractive to investors focused on environmental sustainability to lower operational costs.

What’s Next?

The cold storage industry will continue to benefit from tailwinds, providing opportunities for both industrial real estate occupiers and investors. Nevertheless, despite an increase in speculative development over the past three years, the product type will remain dominated by build-to-suit projects given unique user requirements and high construction and operating costs. Going forward, these higher costs will make it increasingly difficult to achieve the yields necessary to justify new speculative development.

Whatever the method of new development, demand for cold-storage space will remain high. Population shifts, changed eating habits and increased adoption of online grocery ordering will ensure this for the foreseeable future.