Economic Assessment of the Proposed Portland Waterfront Cold Storage Facility

FINAL REPORT

June 2017

Prepared for:

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About Camoin Associates

Camoin Associates has provided economic development consulting services to municipalities, economic development agencies, and private enterprises since 1999. Through the services offered, Camoin Associates has had the opportunity to serve EDOs and local and state governments from Maine to California; corporations and organizations that include Lowes Home Improvement, FedEx, Volvo (Nova Bus) and the New York Islanders; as well as private developers proposing projects in excess of $600 million. Our reputation for detailed, place-specific, and accurate analysis has led to projects in 29 states and garnered attention from national media outlets including *Marketplace* (NPR), *Forbes* magazine, and *The Wall Street Journal*. Additionally, our marketing strategies have helped our clients gain both national and local media coverage for their projects in order to build public support and leverage additional funding. We are based in Saratoga Springs, NY, with regional offices in Portland, ME; Boston, MA; Richmond, VA; and Brattleboro, VT. To learn more about our experience and projects in all of our service lines, please visit our website at www.camoinassociates.com. You can also find us on Twitter @camoinassociate and on Facebook.

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Introduction

In 2015, the Maine Department of Transportation and the Maine Port Authority issued a request for proposals (RFP) for a cold storage facility on a strategic site along the city's waterfront. Two responses were received, only one of which was from a bidder that was deemed to be qualified. The qualified proposal was from Americold Logistics LLC, which is the largest company in the refrigerated storage industry nationally in terms of market share and currently operates an existing cold storage facility on Read Street in Portland.

In the original proposal, Americold submitted a multiple-design approach with the expectation that plans would be reviewed in conjunction with the Maine Port Authority. In issuing the RFP, Mane DOT and the Port Authority purposely did not specify design and size specifications in order to be able to receive proposals that made the most sense in the market and with regard to financial feasibility. Since the submission of the original proposal, Americold has solidified its plans and determined the design that would be most cost- and market-feasible. Anticipated users of the proposed facility include Eimskip and its customers, for storage of product being shipped to and from the US through the Port of Portland, as well as Maine and other US producers storing product to be transported via the port, rail, or road to other locations. This includes producers directly related to the Portland waterfront such as fish processors, wholesalers, and bait providers serving the fishing industry, as well as non-seafood products, such as produce.

Design details are presented in the following tables from Americold's Site Development Concept:

Table 1

PROJECT DATA	
DEVELOPABLE SITE AREA	±6.3 ACRES
PROPOSED BUILDING FOOTPRINT	120,140 GSF
PROPOSED BUILDING HEIGHT (INTERIOR CLEAR HEIGHT)	55'-0" (660")
EMPLOYEE PARKING	80 SPACES
TRUCK DOCK	14 DOORS
TRAILER DROP	15 SPACES
RAIL DOCK	3 DOORS

Table 2

BUILDING DATA	
WAREHOUSE FIRST FLOOR	120,140 SF
WAREHOUSE MEZZANINE	10,935 SF
WAREHOUSE TOTAL	131,075 SF
WAREHOUSE CLEAR HEIGHT	55'-0' (660")
PALLET STORAGE CAPACITY (DRY GOODS0	5,280 P.P.
PALLET STORAGE CAPACITY (FREEZER)	10,388 P.P.
PALLET TORAGE CAPACITY (BLAST)	196 P.P.
PALLET STORAGE CAPACITY TOTAL	15,864 P.P.

The City of Portland commissioned Camoin Associates to conduct an economic assessment of the proposed cold storage facility. The purpose of this assessment is to provide background on the key drivers, performance, and supply chain of the cold storage industry and provide context for Americold's proposal in light of industry and market tends. This context is used to help answer several important questions:

- Based on market conditions, how much capacity (building size and pallet/product volume) does a cold storage facility reasonably need to be competitive?
- How important is the proposed waterfront location to siting a cold storage facility to competitively serve demand?

This assessment will be utilized by the City as it progresses through consideration of the Americold proposal as part of its zoning text amendment process. While the assessment is meant to provide insight into the market conditions surrounding supply and demand for cold storage in Portland, it is not meant to answer whether Americold, or any other future developer, would invest in building a facility that is smaller in size than that which Americold has proposed. That determination can only be made by Americold based on its own market, feasibility, and risk assessment. It also is not meant to make a definitive determination as to the capacity to be utilized by Eimskip and its customers.

For this assessment, Camoin took the following approach:

- Analysis of market conditions based on national market research
- Interviews with potential users of the facility
- Review of data on comparable facilities near ports
- Review of the economic competitiveness model and facility demand model completed by engineering firm Woodard & Curran for the Maine Port Authority

Summary of Findings

The following are major findings from our assessment of the cold storage market nationally, regionally, and locally:

- Cold storage is part of critical infrastructure for supporting export-based economic strategies for selling to buyers outside of Maine and the US. While refrigerated storage services are primarily consumed by industries in the food sector, industry operators also provide a variety of services to pharmaceutical companies, hospitals, fur producers and other companies that require temperature-controlled storage facilities. Overall, this segment has grown significantly over the past five years as downstream customers have increasingly outsourced warehousing and distribution functions to improve operating efficiencies, and demand is expected to continue to grow over the next five years
- Currently, the supply of cold storage warehousing in the Portland area is rather limited, and demand exists for additional public cold storage capacity in the Portland region. Key drivers of demand include the increase in demand for and production of food products requiring refrigeration, specifically seafood; and increasing trade activity locally through the Port of Portland as well as nationally.
- A new cold storage facility in Portland would provide additional capacity for expanding local seafood processing operations. Cold storage users interviewed for this report mentioned that local cold storage capacity allows companies to better oversee their supply chains and ensure that storage conditions are adequate. In addition, in cases where goods are being shipped from Portland to Boston and back, there could be significant cost savings in being able to cut Boston out of the supply chain.
- Typical key success factors nationally for a cold storage facility include: optimum capacity utilization, ability to automate (for very large facilities), long-term contracts with operators, and appropriate facilities and related logistics infrastructure.
- It is critical that any new cold storage facility be price competitive with facilities that potential customers are currently utilizing elsewhere, especially those in the Boston area, which are most relevant to this analysis. Prices would have to be on par with existing facilities in order to induce users to make the switch to a local facility. Price competitiveness is also needed to meet the long-term state and local economic goals and objectives of the International Marine Terminal.
- In order to be able to charge a competitive price, a cold storage facility must be able to capitalize on economies of scale associated with the size of the facility. Square footage is less critical than cubic feet; because cold storage operators pay a premium for climate control, they want to maximize their vertical space.
- Americold's proposed facility with a capacity of 15,864 pallets reasonably falls within the capacity range that is being built in the market nationally and regionally. It is in the upper middle of the pack relative to other public facilities nationally, and compared to two key competitor facilities located near ports in Everett, Massachusetts, and Norfolk, Virginia, Americold's proposal for Portland is significantly smaller.
- Physical constraints associated with the waterfront site necessitate that the facility be built to an interior clearance height of 55' in order to achieve this level of capacity.
- While a smaller facility could potentially be profitable, the return on investment may not be sufficient for a prospective developer/operator who has many other investment opportunities. The lack of any qualified proposals received by the DOT and Port Authority for smaller facilities likely indicates that a smaller facility is not a competitive investment opportunity.
- Camoin's review of the Woodard & Curran model finds its model to be reasonable in terms of capacity utilization.

Cold Storage Industry Profile[1]

The cold storage industry is comprised of establishments that operate refrigerated warehousing and storage facilities. Temperature-controlled services include blast freezing and tempering. Over the past five years, the Refrigerated Storage industry nationally has benefited from rising levels of consumer spending and trade activity, which have increased the number of goods being shipped and generated demand for industry storage services. Additionally, while industry growth has been somewhat constrained by the decision of some downstream companies to manage their own warehouse facilities instead of outsourcing these functions to cold storage industry operators, this trend has not substantially hampered industry performance. Industry revenue is estimated to increase at an annualized rate of 2.4% to $5.3 billion over the five years to 2017, including growth of 4.0% in 2017 alone.

Profit, measured as earnings before interest and taxes, is expected to account for 15.8% of industry revenue in 2017, up from 15.4% in 2012. Profit margins within this industry are typically high due to low operating costs. For example, while the maintenance and utilities costs of running a refrigerated warehouse are high, expenses on marketing, legal fees and administration costs are often negligible. Industry profit margins have grown over the past five years primarily due to increased investment in new technologies.

Driver: Demand for food products

While the cold storage industry provides some services to pharmaceutical companies, hospitals and other players outside the food sector, companies involved in the production, distribution and sale of food products constitute the industry's most important downstream markets. To this end, the industry has benefited substantially from recent increases in the level of consumer spending. Over the five years to 2017, consumer spending increased at an annualized rate of 2.5%, enabling everyday consumers to spend more freely on food products. This generated revenue for industry operators engaged in the storage and transportation of those products. Moreover, as consumer spending increased, many consumers began purchasing high-quality, high-margin food brands instead of relying on low-cost generic brand foods, which increased revenue and expanded the profit margins of many downstream food retailers. This trend has placed downstream industries in a better position to demand storage, transportation and logistical services from industry operators, contributing to the Refrigerated Storage industry's strong growth during the five-year period.

Driver: Trade activity

Industry performance is also closely tied to trade activity, as refrigerated storage services are required for transporting most food products and medicines. Over the past five years, the total value of exports leaving the United States has grown at an annualized rate of 2.8%, while the value of imports entering the country has increased at an annualized rate of 3.9% during the same period. These trends have generated substantial revenue for the Refrigerated Storage industry as imported goods typically require industry operators to perform third-party warehousing services like repackaging and carrier tracking, while exported goods are frequently kept in coastal storage facilities prior to being shipped. Trade activity is expected to continue expanding in coming years, as a stronger dollar increases the purchasing power of US businesses and consumers. Despite the threat it poses to US manufacturing industries, a strong dollar will drive higher import volumes, increasing demand for industry storage services.

Driver: Vertical integration

In addition to trends in consumer spending and trade activity, demand for industry services is also significantly impacted by the level of vertical integration in downstream markets. Typically, clients in need of refrigerated storage services outsource these functions to industry operators in an attempt to improve profit margins by avoiding the

[1] IBISWorld Industry Reports. "Refrigerated Storage in the US." February 2017.

substantial costs associated with owning and operating a warehouse. However, in response to changing consumer preferences and the proliferation of Just-In-Time production, by which manufacturers attempt to reduce inventory and warehouse costs by receiving goods only as they are needed in the production process, many companies in the food sector have begun operating their distribution and storage functions internally, completely bypassing industry operators. While this integration provides companies with more flexibility and a greater degree of control over their products, private refrigerated warehouses require substantial capital investment and are generally more expensive than public warehouses run by industry operators. As a result, this form of vertical integration has generally been limited to large-scale food producers like Nestle, Kraft, and Unilever.

Major Companies

The Refrigerated Storage industry exhibits a relatively low level of market share concentration, with the industry's four largest players generating an estimated 36.4% of total industry revenue in 2017. Americold LLC is the largest player, with 15.3% of market share, followed by Lineage Logistics Holdings LLC with 11.5%.

Industry concentration has remained stable over the past five years as the consistent entry of new players into the market has been offset by acquisitions and consolidation on the part of the industry's leading companies. For example, Lineage Logistics' acquisition of Millard Refrigerated Services in 2014 substantially increased the company's share of industry revenue. At the same time, the number of industry enterprises has increased at an annualized rate of 2.2% over the past five years. Moving forward, the level of market share concentration in this industry is projected to remain low.

Industry Outlook

The Refrigerated Storage industry is expected to continue growing over the five years to 2022, supported by increasing demand from downstream markets and higher trade volumes. Improving economic conditions will enable consumers to purchase a greater variety of food products from grocery stores and other retail channels, boosting demand for refrigerated storage. Additionally, growing demand for pharmaceutical goods in countries such as China, Brazil and India will cause US pharmaceutical companies to rely on refrigerated storage facilities to store their goods before they are exported.

Downstream industries are projected to increasingly outsource their logistics and warehouse operations over the next five years, causing industry revenue to grow more substantially than it did during the previous five-year period. According to a 2016 study conducted by Capgemini Consulting, 73.0% of US shipping and transportation companies are expected to increase their use of outsourced logistics services in coming years, whereas just 35.0% are expected to rely more heavily on in-house operations. Overall, industry revenue is expected to increase at an annualized rate of 3.6% over the next five years, totaling $6.3 billion in 2022. This compares to annualized growth of 2.4% over the last five years.

Supply Chain

Generally, wholesalers, retailers, importers and exporters outsource the storage operations of their supply chain to specialized third-party refrigerated storage operators, either on an as-needed basis or by contract. These storage services can differ substantially in terms of the duration and temperature required, ranging from the short-term storage of fresh produce in tepid conditions to the sub-zero storage of ice cream and other frozen products for extended periods of time. While refrigerated storage services are primarily consumed by industries in the food sector, industry operators also provide a variety of services to pharmaceutical companies, hospitals, fur producers and other companies that require temperature-controlled storage facilities. Overall, this segment has grown significantly over the past five years as downstream customers have increasingly outsourced warehousing and distribution functions to improve operating efficiencies.

Nationally, about 39% of cold storage capacity is consumed by food (including seafood) wholesalers, 28% by manufacturers, 22% by retailers, and the remaining 12% by other goods, including pharmaceutical, floral, and fur products.[2]

Key Success Factors

The following factors are considered critical for the success of the industry overall and individual cold storage facilities:[3]

- **Optimum capacity utilization:** Maximum warehouse capacity utilization is crucial to maximizing profit, as unused storage space must nonetheless be kept cold, a costly expense.
- **Automation - reduces costs, particularly those associated with labor:** Increased warehouse automation increases the efficiency of operations by increasing the speed and accuracy of inventory management and the filling out of orders.
- **Output is sold under contract - incorporate long-term sales contracts:** Long-term contracts allow industry operators to negate the risk of a short-term decline in demand and ensure a stable medium-term source of revenue.
- **Provision of appropriate facilities:** Refrigerated warehouses must be meticulously designed to be continuously and efficiently kept at very specific temperatures, as well as equipped with substantial capital machinery.

Additionally, interviews and market research for this project revealed that proximity of a cold storage facility to related logistics infrastructure, such as ports, roads, and rail, are critical to market success.

[2] JLL. "Perspectives on cold storage investment opportunities." 2014.
[3] IBISWorld Industry Reports. "Refrigerated Storage in the US." February 2017.

Market Assessment

An understanding of the dynamics of the cold storage industry is critical for assessing the market viability of the Americold proposal. The above industry profile provides context for analyzing concerns around facility size, potential users, economies of scale, and price competitiveness.

Currently, the supply of cold storage warehousing in the Portland area is rather limited. For companies requiring cold storage capacity, the only options are to use the existing Americold facility on Read Street in Portland, or to build and use a private facility.

However, in order to capture this pent-up demand for cold storage in Portland, it is critical that any new cold storage facility be price competitive. Prices would have to be on par with the nearest existing competing facilities—most critically, those in the Boston-area—in order to induce users to make the switch. Engineering firm Woodard & Curran developed an economic competitiveness model to evaluate how a new facility might compete in the market. The firm found that the monthly cost of four cold storage facilities in Massachusetts ranged from $61.80 to $65.00 per pallet position, as provided by a local frozen seafood industry member. A new Portland facility would have to charge customers a price within or around that range in order to compete.

Transportation Costs

Transportation costs will play into the decision of potential users, but they are difficult to analyze due to the variety in structure of the supply chains involved. Woodard & Curran does not consider transportation costs in its competitiveness model, noting that due to the competitive nature of the industry, a cold storage facility may adjust its pricing to pull business away from a facility that is located closer to a particular customer. Some customers might accept a price higher than that offered at Boston facilities if the availability of a Portland facility obviates the need to haul product to and from Boston. However, for most customers, the facility needs to be competitively priced with Boston. Additionally, to continue port and export activities in Portland and Maine it is important for the facility to remain highly price competitive.

Automation

The ability to automate was identified through market research as a key success factor to the cold storage industry. Varying levels of automation can be built into a cold storage facility, and the degree to which automated features are economically feasible depends on the size of the facility. A fully automated facility employs what is known as an automated storage and retrieval system (AS/RS), consisting of a variety of computer-controlled systems for automatically placing and retrieving loads from defined storage locations. Such a system is only economically feasible for very large facilities with enough capacity and storage turnover to justify the high capital expenditures involved. The cold storage facility proposed by Americold for the waterfront would not include an AS/RS.

Economies of Scale

In order to be able to charge a competitive price, a cold storage facility must be able to capitalize on economies of scale associated with the size of the facility. Such facilities have high capital costs compared to conventional warehouse space. According to JLL, costs for cold storage facilities range from $150-$170 per square foot, compared to $60-$65 per square foot for conventional warehouse space.[4]

Importantly, square footage is less critical than cubic feet; because cold storage operators pay a premium for climate control, they want to maximize their vertical space. When sufficient land area is available to provide the necessary storage capacity, preferred ceiling heights on new buildings are between 36 and 40 feet—higher than the 22-foot

[4] JLL. "Perspectives on cold storage investment opportunities." 2014.

average clearance height for warehouses built 20 years ago.[5] Note that ceiling height is sometimes called "interior clearance height" and refers to the height inside the facility between the finished floor and the underside of the lowest obstruction hanging from the ceiling. The full height of the building from finished grade to the top of the roof structure may be considerably higher than the ceiling height.

Facility Size Comparison

According to the Agricultural Statistics Board, only 18.9% of all refrigerated storage facilities are estimated to have storage capacity totaling more than 5.0 million cubic feet, indicating the small size of most industry establishments. Additionally, most of these warehouses are owned by small- to medium-sized companies that operate on a regional level.[6]

Gross refrigerated storage capacity in the U.S. totaled 4.17 billion cubic feet as of 2015. Gross storage capacity refers to the total area under refrigeration, measured from wall to wall and floor to ceiling. Of that amount, approximately 82% was considered usable capacity, divided between freezer (about 77%) and cooler space (about 23%). Usable capacity is the actual area used for storing commodities and excludes space occupied by aisles, posts, coils, blowers, etc.[7]

Cold storage facilities can be public, private, or semi-private. Public facilities are maintained by an operator for storing food for external customers at specified rates per unit. Private and semi-private facilities are maintained by an operator to facilitate the operator's principal function as a producer, processor, or manufacturer of food products. The space is used to store the owner's products, although some space may be used by others at specified rates per unit stored. The proposed Americold facility is a public facility, as it would serve external customers.

Nationally, the number of public versus private/semi-private warehouses is split fairly evenly, with 53% public and 47% private/semi-private. However, in terms of gross capacity, public warehouses account for 75% all space, compared to 25% for private/semi-private. The average public refrigerated warehouse is approximately 4.1 million cubic feet, over 2.5 times larger than the average capacity of 1.5 million cubic feet for private/semi-private warehouses. The volume of the warehouse portion of the proposed Americold facility is 4.3 million cubic feet, near the average for public facilities.[8]

Table 3

Refrigerated Warehouse Number and Size, by Type, U.S., 2015			
	Public	Private and Semi-private	Total
Number of Warehouses	763	667	1,430
Percent of Warehouses	53%	47%	100%
Gross Capacity (1,000 cu. ft.)	3,138,463	1,030,460	4,168,923
Percent of Gross Capacity	75%	25%	100%
Average Capacity (1,000 cu. ft.)	4,113	1,545	2,915

Source: USDA

Fifty-nine percent (59%) of public warehouses have a gross capacity of at least 2.5 million cubic feet, compared to 21% of private/semi-private facilities. Thirty percent (30%) have a capacity of at least 5 million, compared to 6% for

[5] JLL. "Perspectives on cold storage investment opportunities." 2014.
[6] IBISWorld Industry Reports. "Refrigerated Storage in the US." February 2017.
[7] USDA. "Capacity of Refrigerated Warehouses: 2015 Summary." January 2016.
[8] Includes only warehouse capacity (excludes dock capacity, office space, etc.).

private/semi-private. This places the proposed Americold facility (55' ceiling height) in the upper middle of the pack relative to other public facilities nationally.

Table 4

Refrigerated Warehouses by Number and Size Group, U.S., 2015						
Gross Capacity (cu. ft.)	Public		Private and Semi-private		All	
	Number	Percent	Number	Percent	Number	Percent
0-499,999	74	10%	300	45%	374	26%
500,000-999,999	60	8%	106	16%	166	12%
1,000,000-2,499,999	178	23%	122	18%	300	21%
2,500,000-4,999,999	220	29%	100	15%	320	22%
5,000,000+	231	30%	39	6%	270	19%
All	763	100%	667	100%	1,430	100%

There is only one existing public cold storage facility in Maine, the Americold facility on Read Street in Portland. According to Americold's website, this facility has a capacity of 1.8 million cubic feet. The following table shows the number and gross capacity of all public refrigerated warehouse facilities in northeastern states from Maine to Virginia.

Table 5

Public Refrigerated Warehouses by State, Northeast			
	Number	Gross Capacity (1,000 cu. ft.)	Average Capacity (1,000 cu. ft.)
Connecticut	2	**	--
Delaware	5	17,963	3,593
Maine	1	**	--
Maryland	5	26,048	5,210
Massachusetts	20	81,747	4,087
New Hampshire	2	**	--
New Jersey	34	159,324	4,686
New York	27	55,267	2,047
Pennsylvania	38	209,608	5,516
Rhode Island	0	0	--
Vermont	1	**	--
Virginia	15	64,207	4,280

***Withheld in USDA data to avoid disclosing data for individual operations.*
--Unable to calculate due to withheld data

Source: USDA, Camoin Associates

The following table shows the proposed facility and the existing Read Street facility compared to two key competitor facilities in Everett, Massachusetts, and Norfolk, Virginia. Both of these facilities are located near ports, the Port of Boston and the Port of Virginia, respectively. These facilities are significantly larger than Americold's

proposal for Portland, and are also larger than the combined capacity of the proposed facility and the existing Read Street facility.

Table 6

Facility Volume Comparison, selected coastal facilities	
Facility	Facility Volume (cu. ft.)*
Americold Proposal	4.3 million
Americold - Read Street, Portland, ME	1.8 million
Preferred Freezer - Everett, MA	6.4 million
Preferred Freezer - Norfolk, VA	7.9 million

**Includes only warehouse capacity (excludes dock capacity, office space, etc.)*

Source: Americold; Preferred Freezer

Pricing

Woodard & Curran's competitiveness model[9] estimates the price per pallet that the cold storage facility operator would have to charge in order to achieve a return on investment that justifies the cost of developing such a facility. The model compares the required price per pallet under the Americold proposal, as well as a smaller illustrative example facility, as shown in the following table. Americold asserts that any loss in height relative to the proposed facility (and resulting loss in capacity) is expected to make the project financially infeasible.[10]

Table 7

Cold Storage Facility Comparison							
	Building Footprint (SF)	Warehouse Floorspace (SF)	Dock Floorspace (SF)	Warehouse Interior Clearance Height	Height to Top of Roof	Total Facility Volume* (Cu. Ft.)	Number of Pallet Positions
Americold proposal	120,140	78,090	29,100	55'	62'10"	4,906,050	15,864
Reduced height illustrative example	120,140	78,090	29,100	35'	45'0"	3,344,250	10,860

*Includes total square footage of warehouse space * clearance height + total square footage of dock space (rail and truck) * clearance height.

Source: Woodard & Curran

The relatively small size of the development site, approximately ±6.3 acres, limits the building footprint to about 120,000 GSF to allow for sufficient space on site for truck docking and trailer drops. Because the building footprint cannot be expanded, the only way for the facility developer to achieve the economies of scale associated with a larger facility is to build a taller structure. Site constraints explain why the interior clearance height of 55' in the Americold proposal is significantly higher than the typical range of 36' to 40' for recently constructed facilities nationally.

The Woodard & Curran model estimates a monthly cost per pallet position of $61.11 for the Americold proposal and $65.46 for the shorter example in order for the facility to operate profitably. The cost under the Americold proposal falls within the range of $61.80 to $65.00 for existing facilities in Massachusetts, indicating that such a facility would be price competitive with its nearest competitors. The cost to customers for the smaller example falls

[9] Woodard and Curran. "Proposed State of Maine West Commercial Street Cold Storage Facility: Model of Economic Competitiveness." 2017.

[10] Americold Presentation to City of Portland Economic Development Committee. November 1, 2016.

above this range, about 3.4% higher than the average for the four facilities considered, and 7% higher than the cost to customers under the Americold proposal.

Table 8

Monthly Customer Cost per Pallet Position	
Americold proposal	$61.11
Reduced height illustrative example	$65.46
MA Competitor Avg.	$63.28
MA Competitor Range	$61.80 - $65.00

Source: Woodard & Curran

Demand for cold storage is highly price elastic, meaning that customers are very sensitive to price and will opt for the facility that minimizes their logistics costs. For Portland seafood processors, this means that while the new facility might be more conveniently located than options in Massachusetts, they will only switch to the new facility if doing so is comparable to their existing costs. Some companies interviewed mentioned that while there are certainly advantages to having more cold storage capacity "in your backyard"—namely, the ability to ensure that product is being stored properly without having to travel out-of-state—the premium that the average company would be willing to pay for this convenience is minimal. Ultimately, price is the number one factor in deciding where to store refrigerated goods.

Capacity Utilization

Anticipated users of the proposed facility include Eimskip and its customers, for storage of product being shipped to and from the US through the Port of Portland, as well as Maine and other US producers storing product to be transported via the port, rail, or road to other locations. This includes producers directly related to the Portland waterfront such as fish processors, wholesalers, and bait providers serving the fishing industry, as well as non-seafood products, such as produce.

Currently, the supply of cold storage warehousing in the Portland area is rather limited. For companies requiring cold storage capacity, the only options are to use the existing Americold facility on Read Street in Portland, or to build and use a private facility. When the Americold facility and private facilities are full, users must turn to facilities outside of Maine, primarily in the Boston area. Some Portland area companies choose to use the Boston-area facilities as their primary cold storage capacity. For example, a company might receive shipments of seafood through the Port of Portland, from where it is shipped to Boston for storage and subsequently hauled back to Portland for processing. In other cases, already processed seafood is sent to Boston for storage until it is needed by downstream customers, which may be located globally.

A new cold storage facility in Portland would provide additional capacity for expanding local seafood processing operations. Interviews conducted for this report mentioned that local cold storage capacity allowed companies to better oversee their supply chain and ensure that storage conditions are adequate. In addition, in cases where goods are being shipping from Portland to Boston and back, there could be significant cost savings in being able to cut Boston out of the supply chain.

In addition to seafood, other products that could be stored at the facility include produce, such as wild blueberries. Wyman's, for example, is a large blueberry producer that currently must ship millions of pounds of fruit outside of Maine for cold storage and then ship it back into the state for processing. A cold storage facility in Portland would significantly cut down on these freight costs.

A key user of a new storage facility in Portland would be customers of Eimskip, an Icelandic logistics company that transports goods through the Port of Portland. Seafood requiring cold storage comprises a significant portion of Eimskip's cargo volumes through the port.

Woodard & Curran assessed the future storage needs of Eimskip's customers relative to the capacity of the proposed Americold facility to project the capacity utilization of the facility into the future.[11] The model employs the following data from independent sources to project utilization:

- Cold storage capacity need reported by Eimskip
- The total number of loaded containers shipped through the Port of Portland in 2014 and 2016.
- The number of Eimskip ships calls to the Port of Portland in 2014, 2015, and 2016.

Woodard & Curran fits trend lines to the data and arrives at the following findings and conclusion:

- The rates of growth for Eimskip's reported increases in cold storage capacity need, the projection of increased freight volume that would require cold storage based on 2014 through 2016 container data, and the increase in port calls by Eimskip ships between 2014 and 2016, as well as the projected frequency in 2020, are all similar. This indicates good precision in the evaluation methods used during this modeling effort, and that conclusions that may be drawn from this model are likely reliable.

  However, Woodard & Curran notes, as with all growth projections, the accuracy of the estimate decreases as the farther away one moves in time from the known data points. Further, with exponential business growth projections, it is expected that the rate of growth will at some point diminish until equilibrium is reached (e.g. due to market saturation or limitations in available shipping capacity). It is not known when equilibrium will occur, therefore, Woodard & Curran did not consider container growth projection data beyond approximately 2024.
- Based on the estimated growth in Eimskip's cold storage needs as assessed using the referenced data sources, the capacity of a 45-foot building would be exceeded between 2023 and 2024.
- Greater than 50% of the capacity of the proposed 65-foot building would be occupied Eimskip freight between approximately 2020 and 2021. Therefore, the majority of the proposed building would be occupied by marine-related uses in a relatively short time following the completion of construction.
- Based on projected growth rates, a building that is limited to 45 feet in height, with a resulting capacity of 10,860 pallet positions, would be insufficient to fill Eimskip's cold storage needs beyond 2023. As such, continuing to limit the allowable height for buildings in the Waterfront Port Development Zone to 45 feet would increase the risk of losing Eimskip as a container shipping partner for the Port of Portland.

Camoin Associates reviewed the Woodard & Curran model and considers its findings to be reasonable. Between 2017 and 2027, based on projections from Eimskip, the number of pallet positions used would increase from 4,760 to 14,280, or an average increase of 952 pallets per year. At this rate, Eimskip's needs would surpass the total 15,864 pallet position capacity of the proposed Americold facility by 2029.

Woodard & Curran compared this to 2014, 2015, and 2016 data on actual containers shipped through the Port of Portland by Eimskip. Containers were converted to pallets using standard conversion factors and divided by 12 to estimate monthly throughput of pallets transiting the port. A factor of 35% was applied to account for the share of pallets requiring cold storage, as provided by Eimskip. This amounts to 2,540 pallets in 2014, 2,860 pallets in 2015, and 3,470 pallets in 2016. Woodard & Curran projected these values forward using an exponential trend line. Under

[11] Woodard and Curran. "Proposed State of Maine West Commercial Street Storage Facility: Model of Eimskip Cold Storage Need." 2017.

a more conservative approach that assumes a linear growth rate consistent with the 2015-2016 change of 610 pallets per year, Eimskip demand would exceed the full capacity of the proposed Americold facility by 2037. Averaging Eimskip's projections with the linear historical trend model, capacity would be exceeded by 2032, or within 15 years. This averaging approach is still conservative as it is reasonable to assume some level of exponential growth early on as shipments initially increase through the port once the cold storage facility is operational, still bearing in mind that such growth cannot continue indefinitely.

We also note that Woodard & Curran's monthly pallet assumption is very conservative. Dividing annual pallets by 12 is equivalent to assuming a storage turnover rate of 12 times per year. Much of the facility would be dedicated to deep-freeze capacity for frozen seafood storage, which tends to have considerably slower turn. According to Americold, the total warehouse turnover rate at the existing Read Street facility was approximately 5 turns over the last year. Turns for bait were 4.58 per year and turns for seafood were 3.60 per year. Americold indicated that no more than 8 turns would be a reasonable assumption for the new facility.

Furthermore, it should be noted that optimizing capacity utilization is a key factor for maximizing the profitability of a cold storage warehouse. While excessive unused space harms profitability, a facility with too much inventory is also undesirable. An optimal facility utilization rate is around 80-85%. When the cubic capacity of the inventory in a facility exceeds 85%, productivity goes down, as there are not enough open slots to receive new inventory properly.[12] The above projections for the years by which facility capacity will be reached assume 100% capacity utilization, meaning that in reality, the facility will reach a desirable capacity utilization somewhat earlier.

We must stress that the most important evidence supporting the existence of sufficient demand for such a facility is Americold's proposal *per se*. Americold operates over 165 facilities in 6 countries[13] and has proven expertise and knowledge of the cold storage market. Moreover, the company is already very familiar with the needs of the Portland market given its existing facility on Read Street. Therefore, it can be assumed that Americold has put forth a proposal that it has deemed to be realistic given existing and future market conditions.

Waterfront Location

A unique feature of the proposed Portland Americold facility is its location along the waterfront and adjacent to the Port of Portland. The waterfront location would facilitate logistics for companies importing and exporting through the port. The importance of the waterfront location varies among cold storage-utilizing companies. For Eimskip it is critical. For some seafood processors located along the waterfront, access to a waterfront cold storage facilities precludes the need to navigate through Portland traffic to access the Read Street facility or other non-waterfront location, saving time and cost. Other companies interviewed for this assessment mentioned that the waterfront location would be beneficial but not critical

It is useful to think of a cold storage facility on the Portland waterfront as one of many pieces that would lend the Port of Portland a competitive advantage over other East Coast ports. A waterfront location would allow port users to leverage multiple transportation options and capitalize on time and cost savings. For example, cold storage users can also take advantage of the rail spur serving the site for shipping products to market. The presence of all these amenities in a single location will allow the port to attract a more diverse customer base and contribute to the long-term economic vitality of Portland Maine.

It is also important to note that increasing the capacity for cold storage in Portland fits with the City's existing Economic Plan by providing continued support for the International Marine Terminal and supporting a working

[12] International Association of Refrigerated Warehouses. "2006 IARW Productivity and Benchmarking Report Survey." p. 53.
[13] www.americold.com/locations

waterfront.[14] It also fits with the State's mission through the Maine Port Authority "to develop transportation infrastructure and multi-modal capacity, opening up new markets and transportation logistics for Maine businesses."[15]

[14] See Portland Economic Development Plan at this URL: www.portlandmaine.gov/530/Portland-Economic-Development-Plan.
[15] Maine Port Authority. www.maineports.com.

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