

Steering Enterprise: How the real estate community and government can work together to modernize the country's maritime infrastructure



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INTRODUCTION

Industrial real estate in the U.S. is experiencing the one of the longest and strongest expansions on record. The expansion is being fueled by e-commerce companies such as Amazon, and the trend is likely to increase as retailers and logistics services focus on improving last mile delivery. Despite analysts' optimistic forecasts for industrial real estate, however, U.S. state and federal policy makers have not adequately invested in the country's maritime and intermodal infrastructure in preparation for either the increased traffic e-commerce has facilitated, or the expansion of the Panama Canal (Economist, 2013). Congress can aid the expansion by presenting a bill to the President that focuses on modernization and maintenance of maritime and intermodal infrastructure. The bill should modernize the country's existing port facilities, invest in intermodal transportation, provide education for rural river ports to guide local harbor administrators to adopt economic development methods through promotion and advertisement of regional economic integration and competitiveness, and expand the number of ports that are capable to host "mega-ships." This paper will outline why an initiative to modernize and maintain maritime and intermodal infrastructure is not only important to U.S. commerce and national security, but also essential to accommodating the needs of industrial real estate in the next decades.

1. LITERATURE REVIEW

Maritime and intermodal infrastructure handle physical distribution of imports and exports, from storage and warehousing, materials handling, unitization and packaging, and transportation from plants to distribution centers to end consumers (Benson and Whitehead, 1985). The relationship between supply chain to the needs of port users are extremely important (Ganesan, George, Jap, Palmatier, Weitz, 2009).

Industrial real estate benefits from the demand for warehousing and distribution space that imports and exports through maritime and intermodal infrastructure generates (McGowan, 2005). Industrial space has three primary divisions: manufacturing, R&D, and warehouse space (Mueller, Mueller, 2007). Locations for industrial space are defined as a 'spatial resource allocation problems,' whereby facilities serve a spatially distributed set of demands/customers (Brandeau, Chiu 1989).

Maritime and intermodal infrastructure are crucial to U.S. logistics, and logistics represents 10 percent to 15 percent of OECD economies (Rushton, Oxley, Croucher, 2000). New trends in global trade are shifting logistics channels, and e-commerce is increasing competition and eroding margins, thereby putting pressure on vendors to improve inventory turnover and levels of customer service (Ellram, 1999). In anticipation of demand, retailers used to be passive recipients of products sent from manufacturers, but technology has allowed retailers to control, organize, and manage supply chain to efficiently react to and chase demand (Sribbins, 1994). As technology becomes more sophisticated, retailers and other companies constantly attempt to improve efficiency in last-mile delivery, technically

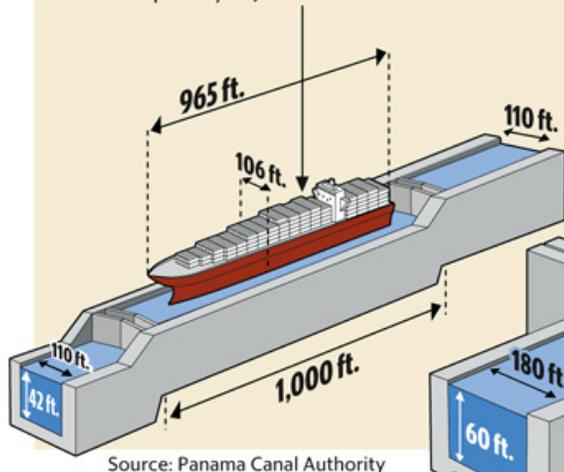
defined as spoke terminal operations. This is done by enhancing their ability to collect and deliver freight over short distances using smaller capacity vehicles (Zapfel, Wasner, 2002).

Last-mile delivery consists of collection and delivery points that cover a specified geographic area connected through a distribution hub (Gue, Bartholdi, 2000). As companies shift toward last-mile delivery, the current industrial real estate expansion continues to widen, despite space and logistics constraints spoke terminal experiences (Greasley, Assi, 2012). In search for faster, cheaper, and flexible on-demand delivery service, logistic constraints are exacerbated when U.S. e-commerce companies emulate the increasingly popular same-day delivery operations of competitor Chinese e-commerce and logistics services such as companies like Alibaba and ZTO (Zhou, Lin, 2018).

Ports and surrounding industrial space play a crucial role in modern supply chains, whereby disruptions in equipment risk delays and have economic consequences for port and industrial space operators, as well as port and industrial space users (Mennis, Platis, Lagoudis, Nikitakos, 2008). Maritime and intermodal infrastructure require modern upgrades adhering to the highest standards of quality, aesthetics and functionality in order to attract businesses and investors (GOTT, 2008). Existing port designs that are not able to adapt to modern needs will suffer economically, and efficiency will decline (Pun, Nurse, 2010). During the last two decades, private finance and services have invested in maritime and intermodal infrastructure whereas the U.S. public sector has scaled back investment prohibiting maritime and intermodal infrastructure to accommodate country's freight transportation and distribution needs

Old locks

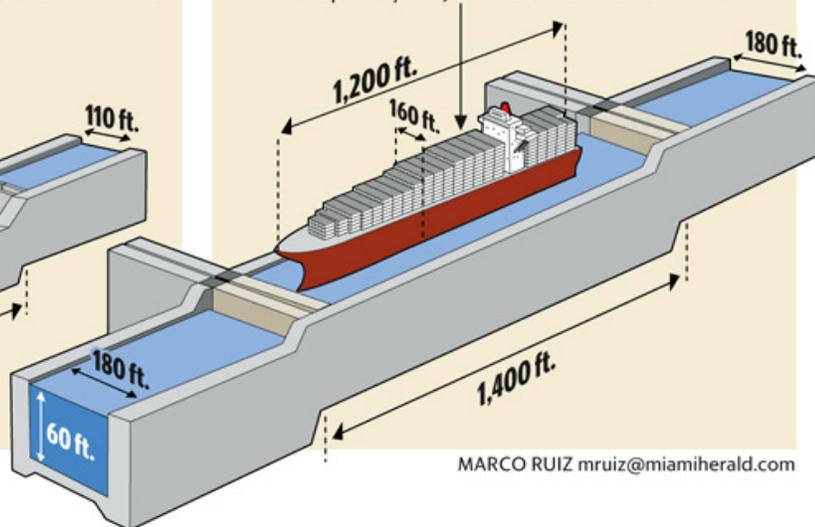
Vessel capacity: **5,000 standard containers**



Source: Panama Canal Authority

Neopanamax locks

Vessel capacity: **13,000 standard containers**



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Figure 1. Old Locks Compared To Neopanamax Locks. Source: Miami Herald (2016).

(Vanelslander, Chomat, Roumboutsos, Bonnet, 2014). Meanwhile, the maritime and intermodal infrastructure around the globe is being developed through innovative financial vehicles that increase global competition for trade (Annamalai, Hari, 2016). This affects global competition which in turn shifts trade patterns (Lam, Yap, 2011).

Port areas within the U.S. that have made maritime and intermodal investment a priority, such as the Ports of Los Angeles and Long Beach, which have invested in accommodating Neopanamax ships and economic development initiatives, have seen industrial real estate development remain strong despite challenges posed by external market forces (Ryan, 2009). Further destinations are being reached as the Path of Goods Movement is being shifted through global competition and larger ships, thus making rural river port areas potentially attractive places for public and private investment (Mueller, Mueller, 2007). Keeping in mind the immense impact maritime and intermodal investment has on surrounding industrial real estate, it is in the national interest to prioritize maritime and intermodal infrastructure investment in throughout the country because of the importance of trade to the economy (McGowan, 2005).

2. INDUSTRIAL REAL ESTATE EXPANSION

Industrial real estate is experiencing a 30-year low in vacancy rates while net absorption is set to exceed 600 million square feet over the next three years (Cushman & Wakefield). Additionally, the sector's net absorption surpassed 1.3 billion square feet accumulated since 2010. Logistics and

distribution services, principal drivers of the expansion, are pushing up rents, currently 4.2 percent year on year, as demand for more space increases. The boom in industrial has mostly been focused on the U.S. coasts in port areas that offer deeper channels, wider turning basins, and large container terminals (JLL).

Completed a little more than a year ago, the Panama Canal Expansion Program created an opportunity for Asian shipping companies to send "mega-ships," commonly known as Neopanamax ships, through the Panama Canal to reach the seaports of the U.S. East and Gulf Coasts. Maersk Sealand, Hanjin, Evergreen, and APL continually pioneer the construction of larger containerships to create better economies of scale that result in lower costs for customers and higher profits for themselves (McGowan, 2005). The previous generation of Panamax cargo ships have capacity to hold 52,500 tons whereas the new Neopanamax cargo ships carry 120,000 tons. It is not difficult to see that an American port capable of docking Neopanamax class ships could significantly increase the demand for warehousing and logistics facilities in a port's geographic region. Much of the U.S. maritime infrastructure however, i.e. ocean and inland ports and waterways, have been needing investment and upgrades for decades. This neglect is a deterrent for private investment and expansion. Meanwhile, states' port facilities not capable of hosting Neopanamax ships remain in need of funding for upgrades to stay competitive.

To be sure, a few regions have made maritime investment a priority. Today, the ports of Seattle-Tacoma, Oakland, Los

Angeles, Long Beach, New York/New Jersey, Baltimore, Norfolk Virginia, Charleston, Savannah, Jacksonville, Miami, and Houston host Neopanamax ships. These regions capable of hosting these giant ships continue experience increasing industrial real estate occupancy levels and command the highest rents for warehouse and distribution spaces. These twelve regions command rents as high as \$10 per square foot annually. JLL estimates that in port, airport, and global infrastructure markets, close to 25.4 million square feet of industrial real estate is under construction, more than sixty-five percent of which is attributable to these ports (JLL, 2017).

3. CONGESTION

Because twelve ports are capable of handling Neopanamax ships, their increased amount of cargo handling has caused severe cargo handling and storage strains as well as infrastructure congestion. This certainly impacts the potential of industrial real estate in port areas. While twelve

port regions of the U.S. can economically benefit their industrial real estate sectors through hosting Neopanamax ships, most port regions cannot and are years behind. To remedy this, ports need deeper shipping channels and wider turning basins, services provided by the U.S. Army Corps of Engineers, as well as new cranes and container terminals. Each ship must stop at several ports to make its journey economically viable. Enhancing ports to accommodate these vessel requirements will exponentially affect the number of Neopanamax ships docking along the coast.

The American Association of Port Authorities (AAPA) has alerted Congress to the crucial need to modernize and maintain federal navigation channels through waterside investments. Despite the forty-five percent projected growth of freight in the U.S. by 2045, the AAPA maintains that keeping a safe and efficient movement of freight in U.S. waterways is not only a national security issue, but also an economic imperative. Failure to invest in modernization

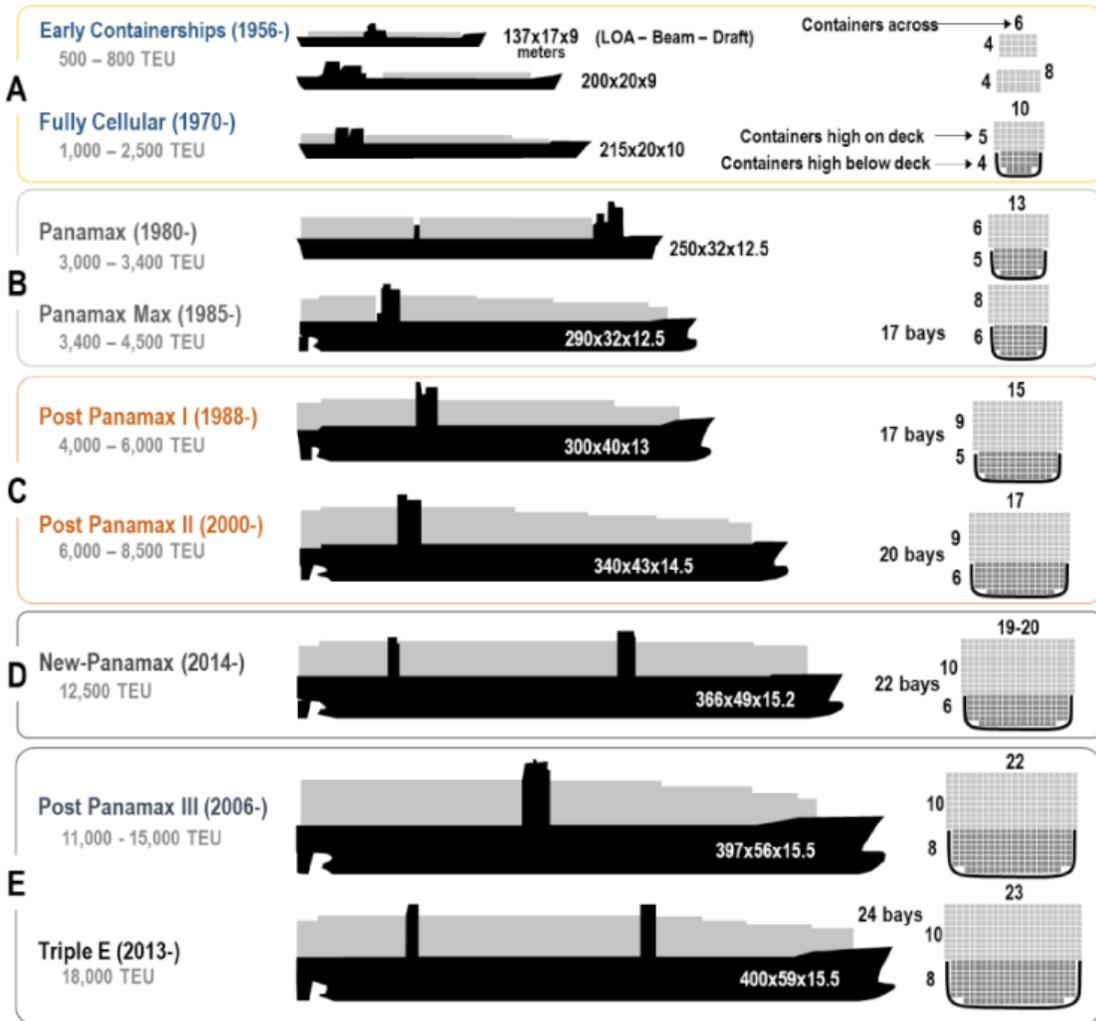


Figure 2. Evolution of Containerships. Source: The Geography of Transport Systems (2012).

and maintenance will result in a loss of \$4 trillion GDP by 2025 and will cause a \$9.3 billion U.S. trade loss projected from the use of undersized vessels in shallow harbors and narrow channels by 2020 (American Association of Port Authorities). Congress has an opportunity to address the issue this year if it can be persuaded to include maritime and intermodal infrastructure investment in the administration's infrastructure agenda. Direction would have to come from the U.S. House of Representatives Committee on House Transportation and Infrastructure and the U.S. Senate Commerce Committee, with the cooperation of the administration's Secretary of Transportation. These directives would then have to be funded by the House and Senate Transportation, Housing, and Urban Development Appropriations Committees. Individual states also have a role to play alongside Congressional leaders to improve maritime and intermodal infrastructure.

4. FEDERAL INFRASTRUCTURE PROGRAMS

Aside from asking their Congressional delegations to make maritime and intermodal infrastructure a priority, states and local governments can make maritime and intermodal infrastructure funding a priority by taking full advantage of the many federally approved financing tools available, such as specially designed loans and infrastructure bonds, federally administered infrastructure programs for states, enhanced lines of credit, waivers, and state infrastructure banks (Annamalai, Hari, 2016). State governors should also make a concerted effort to lobby Congress to remove bureaucratic impediments that make funding difficult to obtain. For instance, the Congestion Mitigation and Air Quality Improvement Program (CMAQ) was intended to fund transportation projects that reduce transportation-related emissions. The program is ideal for improving intermodal facilities that move containers onto rail. Unfortunately, such a program is limited to economically distressed areas and many freight transportation projects are not eligible. Impediments such as this severely restrict CMAQ and similar programs from functioning as they should (U.S. Department of Transportation).

Additionally, Federal programs that were created to target major transportation needs, such as the National Highway System (NHS) or the Surface Transportation System (STP), were also created to facilitate the transportation of freight. Because federal aid is allocated through a formula, states or local governments must match federal aid. If a project is multijurisdictional, or beyond a state boundary, then state or local government funding matches become difficult

to invest, rendering many multistate freight investments ineligible and federal programs inflexible. Many states are knowledgeable enough to use these tools, despite not having made maritime and intermodal infrastructure a priority. While many states are aware of these programs, many local governments lack the sophistication required to use them. The need for these financial instruments will continue to increase as more inland and rural river ports are needed to satisfy the increasing demands of last-mile delivery. An inability to use these tools makes effectiveness and competitiveness difficult to attain.

Furthermore, while tasked with directing the success of ports, not all individual members of governing port authorities have either the understanding of economic development practices or the knowledge regarding port enterprise. This can often impede a region's optimal development of warehousing, logistics and supply chain services, and ancillary services that enlarge a port region's attractiveness (Benson and Whitehead, 1985). Any member chosen to serve in the direction of port activity, whether administrator or business person, must be educated on port operations, marketing, and economic development strategy, as well as existing federally approved financing tools (Miller, 2017).

5. A CASE FOR INVESTMENT

To understand the significance of rural river ports in the U.S. transportation network, one must understand their role and scope. The U.S. inland waterway system is divided into five main systems including the Mississippi River system, the Ohio River Basin system, the Gulf Intercoastal Waterway system, the Great Lakes waterway system, and the Pacific Coast system. Together, these contain 12,000 miles of shipping lanes with 300 commercial marine ports and 240 locks. According to the U.S. Chamber of Commerce, fifty-six percent of crude petroleum, refined into gasoline and sold at neighborhood gas stations, travels inside these inland waterway systems (U.S. Chamber). The U.S. inland waterway system also moves twenty-two percent of chemicals used in consumer products, nineteen percent of nonmetallic minerals used in construction materials and energy production, and sixty percent of U.S. grain, and nineteen percent of all U.S. agricultural products. The system moves 12-15% of ton-miles of U.S. freight (Grossardt, Burton, 2014).

Consider the impact an improvement in maritime and intermodal infrastructure could have on real estate along these systems if authorities made concerted efforts to



Figure 3. Alexandria Container Ship. Source: Marine Traffic (2018).

modernize and maintain these systems. Many of the ports in these systems are underfunded and provide great opportunities for economic development, manufacturing, wet and dry bulk transportation, retail, agriculture, and last mile delivery because of their geography in the heart of the country and their proximity to cities and transportation networks (McGowan, 2005). For instance, in the Mississippi River System, the Port of New Orleans has access to six Class 1 railroads and a great opportunity for maritime investment in the U.S. since it is located on the mouth of the Mississippi. There are many other rural river ports in the Mississippi River system, as well as other systems, that could greatly benefit from investment. If prioritized, they could greatly increase the competitive capabilities of companies that rely on importing, exporting, and using local products in value-added processing activities (National Research Council, 1994).

Port infrastructure not only requires investment in its channels, cranes and facilities, but also requires investment in surrounding transportation infrastructure so goods can be delivered to warehouses via the barges, trucks and trains to disperse cargo. Port and transportation infrastructure is vital to growth for industrial real estate in port regions. In 2016, Chiquita Banana relocated from the Port of New Orleans citing port congestion and a lack of facility investment from the State of Louisiana (LaRose, Rainey, 2016).

The Port of New Orleans is years behind the capability to host a Neopanamax ship. Congestion at the port also makes it difficult for smaller barges to do business. Shipping via barge up through the Mississippi River System makes sense. According to a study by the Iowa Department of Transportation, one river barge can move 1500 tons of cargo from a Neopanamax ship and travel

514 miles on a single gallon of fuel. By increasing the amount of cargo sent through the Mississippi River System, the demand for industrial real estate space in port regions will significantly increase, reflecting the gains made in port regions that currently host Neopanamax ships. This logic is not exclusive to the Mississippi River System. Industrial real estate in U.S. port regions across the country stand to benefit if local, state, and federal investment is prioritized. No single authority should, however, be solely responsible for port investment.

Unfortunately, \$6.2 billion worth of maritime infrastructure projects, an amount relatively modest by comparison to other forms of transport, are federally authorized but have been waiting on funding for years. Federally authorized maritime infrastructure projects currently under construction are awaiting an additional \$2.1 billion to be completed. The Federal Office of Management and Budget recently funded only \$26.6 million out of the authorized \$105 million meant for investment under the Inland Waterways Trust Fund in the latest FY 18 government budget (Waterways Council). The American Society of Civil Engineers estimates that by 2025, \$37 billion in public funding will be needed for inland waterways and marine port investment. It is also estimated that \$154.1 billion is needed for rail and \$157 billion is needed for airports. These vast sums needed to modernize and maintain maritime and intermodal infrastructure is not only important to U.S. commerce and national security, but also essential to accommodating the needs of industrial real estate in the next decades (American Society of Engineers).

6. CONCLUSION

These vast sums needed to modernize and maintain maritime and intermodal infrastructure not only present an immanent problem to U.S. commerce and national security, but also present magnificent development possibilities for the real estate industry. The real estate industry should focus on two things to open this potential. Because the real estate industry follows demand for space, it must work to originate demand through promoting and supporting a regional integrative economic development initiative that matches the local needs of production with global resources and logistics networks in regions where intermodal and maritime infrastructure can be utilized (Ganesan, George, Jap, Palmatier, Weitz, 2009). The nature of political dynamics also tends to respond to the immediate needs of a supportive corporate community. The real estate community must drive an integrative economic development strategy in order to make a case to political leadership that

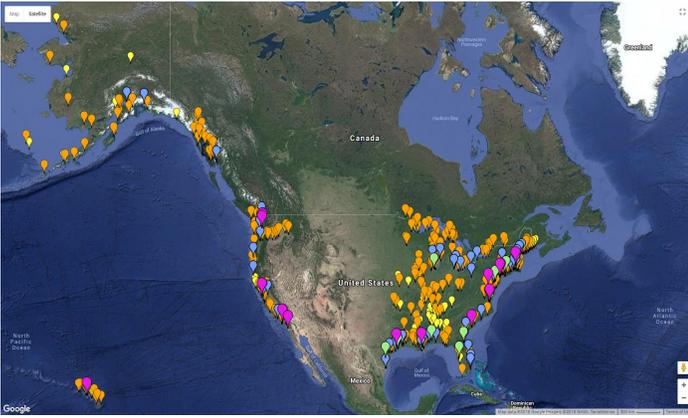


Figure 4. Ports In The U.S. Source: Google Earth. (2018).

public investment is not only warranted, but necessary to the national interest.

Such a monumental initiative should be coordinated by the leaders of industry in the real estate community in their respective fields, from agriculture and finance to e-commerce and logistics. History displays how railroads and the mining industry led to the development of the western frontier and enhanced the prosperity of the country. Today, the mightiest of U.S. enterprise are in a similar position to pioneer a path to inspire our leaders to invest in the future and restore the nation's maritime and intermodal capability. With Washington D.C. focused on infrastructure in 2018, now seems like a good time to start.

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