Big Ships, Big Challenges:

The Impact of Mega Container Vessels on U.S. Port Authorities

By

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BIOGRAPHY

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Noel Hacegaba serves as the Acting Deputy Executive Director and Chief Operating Officer for the Port of Long Beach. He oversees the daily business activities of the Port, which includes four bureaus, 17 divisions and 550 employees.

Previously, Dr. Hacegaba served as the Executive Officer to the Board of Harbor Commissioners and managed the day-to-day operations of the Commission, including all administrative, policy and communications functions. Dr. Hacegaba also participated in international trade missions and represented the Board in front of customers, elected officials and all other port stakeholders.

Dr. Hacegaba has more than 17 years of public and private sector experience spanning a variety of industries and capacities. Prior to joining the Port of Long Beach, he worked for Republic Services, the nation's second-largest environmental services company, where he was the principal contract administrator and negotiator for several government contracts totaling $200 million. He also directed business development, government affairs and marketing activities in the company’s largest market.

Earlier, he served as Assistant Chief of Staff for the Long Beach City Prosecutor's Office, where he supported the elected City Prosecutor with the administration of the department, including the budget and public policy. He also directed all communications and government affairs functions and was responsible for implementing and managing various successful programs.

Dr. Hacegaba is a graduate of the University of Southern California, where he earned degrees in economics (BA and MA), business administration (BS) and urban planning (MPL). He also earned his doctorate in public administration at the University of La Verne, where he continues to serve on the faculty of the school's College of Business and Public Management. Dr. Hacegaba is also a graduate of the Coro Fellows Program in Public Affairs, one of the nation's premier post-graduate fellowship programs.

ABSTRACT

The average size of container vessels calling U.S. ports has grown considerably over the past five years, and the trend towards even larger vessels is expected to continue in the years to come. According to industry analysts, almost half of current ship orders are for vessels exceeding 12,000 TEU's.

Larger vessels provide many advantages to liners, shippers and beneficial cargo owners, not the least of which is the reduction in the per-container cost to transport cargo. However, it is thought that few or no advantages trickle down to the port authorities, which are pressured to deliver water (dredging) and landside (capital, infrastructure and productivity) improvements to accommodate the bigger ships, whose advantages may be diminished without such improvements.

According the American Association of Port Authorities, U.S. ports are expected to spend $46 billion in port improvements by 2017. The Port of Long Beach alone is investing $4.5 billion on a 10-year capital improvement program. But, while many port authorities have committed to spending billions of dollars to prepare for the bigger vessels (10,000-plus TEU's), there is no guarantee that the mega ships will call their port. On top of the excess capacity seen at ports across the nation, liners are forming new shipping alliances to maximize the economies of scale made possible by the mega vessels. The combination of the growing vessel capacity and the formation of new alliances is creating a new and daunting challenge for U.S. port authorities, which have to make important decisions with significant long-term ramifications.

As U.S. port authorities prepare to welcome the mega vessels to their ports, this paper will assess the effects that these and related alliances may have on the port authorities. In the process, the paper will seek to identify the role of the port authority and address the fiscal and political factors that should be considered as part of the decision-making process. The findings of the paper will help policymakers and executives at U.S. port authorities understand their role as they position their ports to benefit from the changing landscape in the maritime shipping industry.

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INTRODUCTION

The rapid pace at which container vessels are growing is affecting the entire supply chain. While beneficial cargo owners have the ability to quickly adjust their business models to accommodate the mega vessels (10,000-plus TEU's), ports – fixed assets with limited resources – are not as nimble. The deployment of these mega ships presents physical, financial and operational challenges that must be met by port authorities across the country.

Even for ports that will not see the mega vessels calling at their ports any time soon, the arrival of the larger ships is creating a cascading effect in which the ships being replaced by the mega vessels on the major trade lanes are being deployed in the smaller trade routes. Thus, the strain of larger vessels has the potential to affect all ports, big and small.

Shipping lines are investing in mega vessels to create economies of scale. Larger vessels allow the lines to reduce the slot cost, or the cost per container. However, these economies of scale can only be maximized when the vessels are at full capacity. This need to fill the extra capacity generated by the bigger ships has led carriers to enter into vessel sharing agreements with other carriers to improve the chances of filling the larger ships. While vessel sharing agreements are not new, the size, reach and market concentration of recent alliances are.

The combination of bigger ships and vessel sharing agreements presents new challenge for port authorities. The concentration of the alliances is providing them with leverage and options that ports do not have. On top of this, ports across the country have excess capacity. Recognizing this, carriers and their related alliances are capitalizing on the excess capacity by pitting ports against each other for favorable rates and other financial incentives.

In addition to financial incentives, carriers are requesting that ports make capital improvements that require significant financial investments and time. According to the American Association of Port Authorities (AAPA), U.S. ports plan to spend $46 billion by 2017. Ports across the country are racing to obtain adequate water draft, berth size, crane height, terminal space and rail connections. Few ports across the country can meet all of these requirements today. And, even those that can cannot be guaranteed that the bigger ships will call their port.

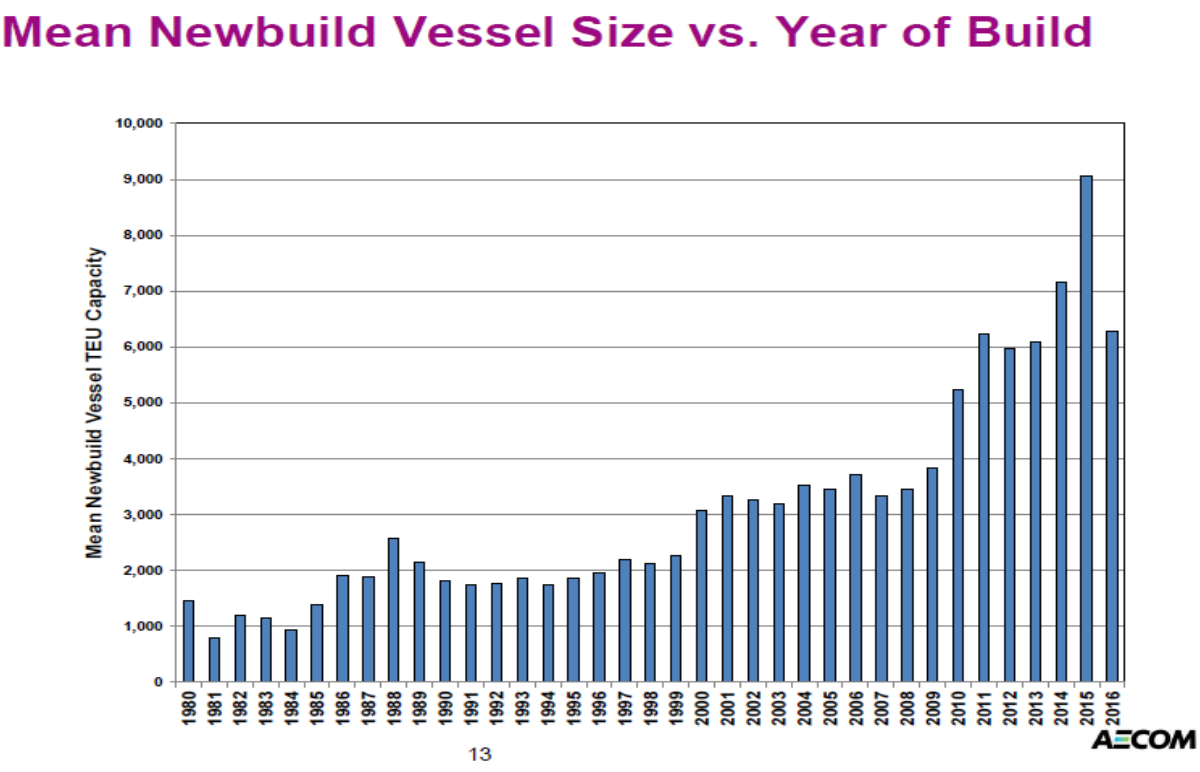
At the same time, the new alliances are creating financial uncertainty for port authorities. Carriers that currently call at a particular port may shift their cargo to neighboring ports in accordance with the vessel deployment strategy agreed upon by the alliance partners. Although this scenario may play out in only those regions where alliance partners call at neighboring ports, the potential consequences for those ports could be considerable.

All of these changes in the industry are leaving ports in a vulnerable position. As a result, the role of the port authority is more important today. Port authorities must be able to evaluate how the changes in the industry could impact their port and identify ways in which some of these challenges can be mitigated. This paper examines the effects of the mega vessels and related alliances on U.S. ports authorities and also discusses the role of the port authority in navigating these changes.

THE EVOLUTION OF CONTAINER SHIP SIZE

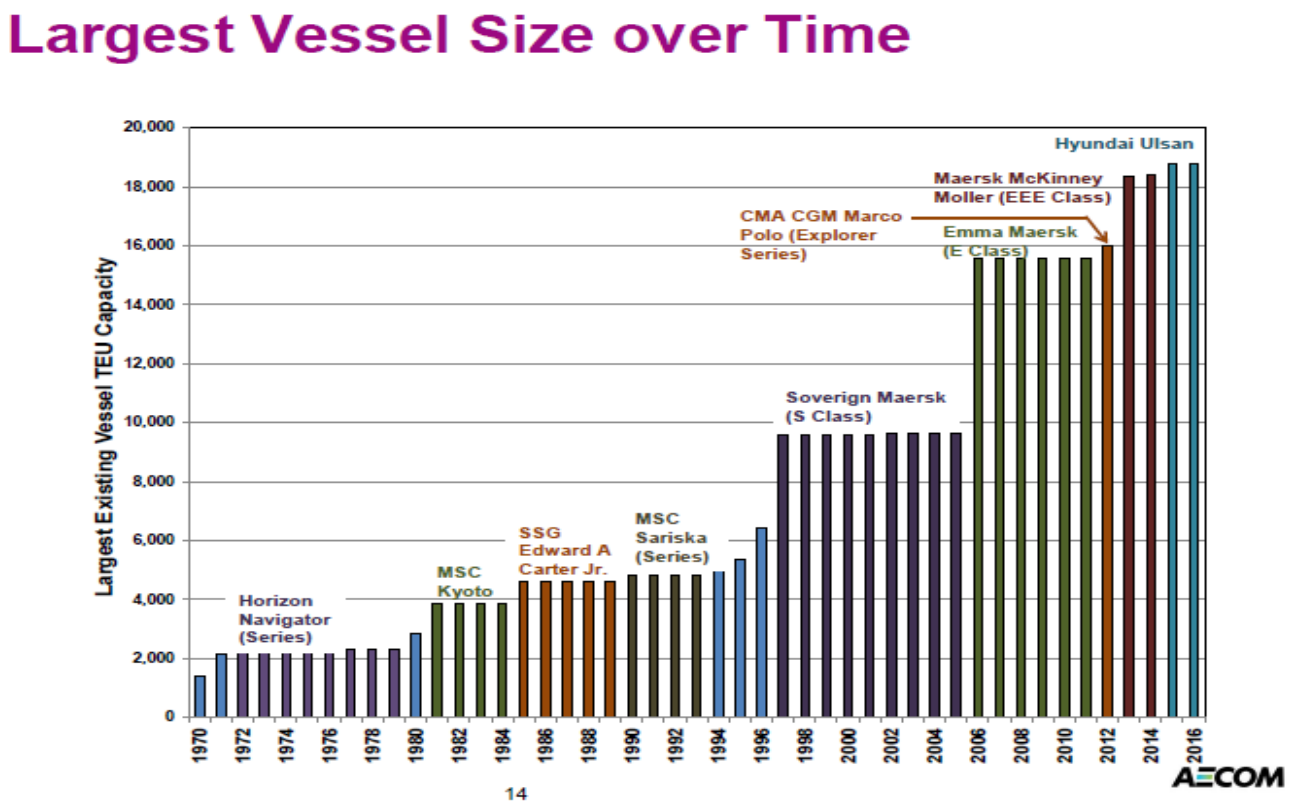
The average size of container vessels calling U.S. ports has grown considerably over the past five years, and the trend towards even larger vessels is expected to continue in the years to come. According to Drewery Maritime Consultants (Solomon 2014), an estimated 42 percent of current ship orders are for vessels exceeding 12,000 TEU.

A review of the average size of vessels since 1980 shows a steady upward trend up until 2010, when the growth in average vessel size outpaced the historical growth in vessel capacity. This sharp increase was driven primarily by the arrival of the 10,000 TEU vessels.



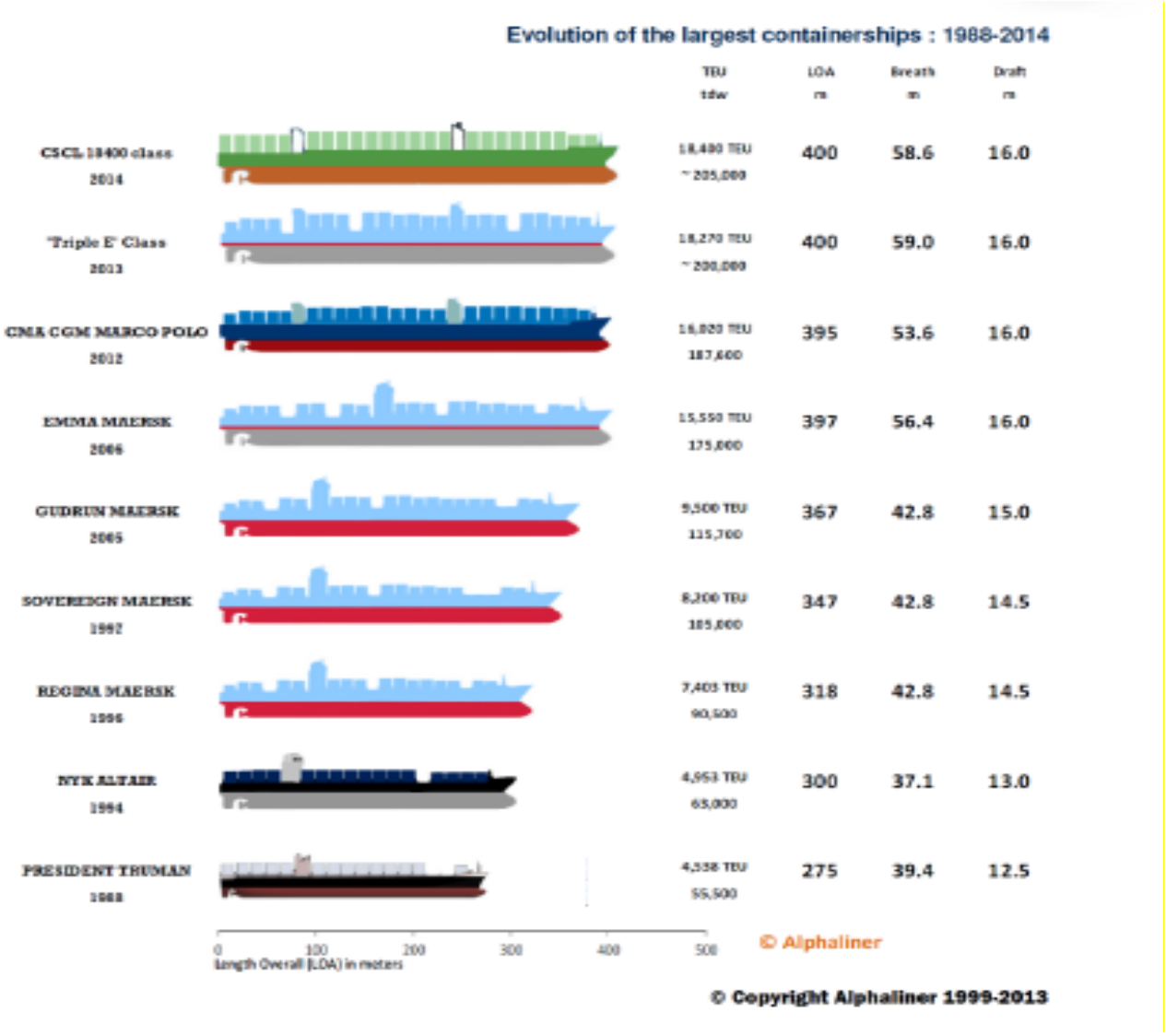
Source: Sisson, M. (2013). "Impact and Opportunities from Global Change." Presented at AAPA Facilities Engineering Seminar on November 6, 2013.

A look at the largest vessel type by year reveals a sharper increase in vessel capacity. This analysis tracks the largest vessel type from each year instead of the average size. From 1970 to 2014, the largest vessel type grew from 1,800 TEU to over 18,000 TEU. This represents a growth in vessel capacity of 900% during this period. An 18,000 TEU vessel is three times the capacity of the biggest ships only two decades ago.



Source: Sisson, M. (2013). “Impact and Opportunities from Global Change.” Presented at AAPA Facilities Engineering Seminar on November 6, 2013.

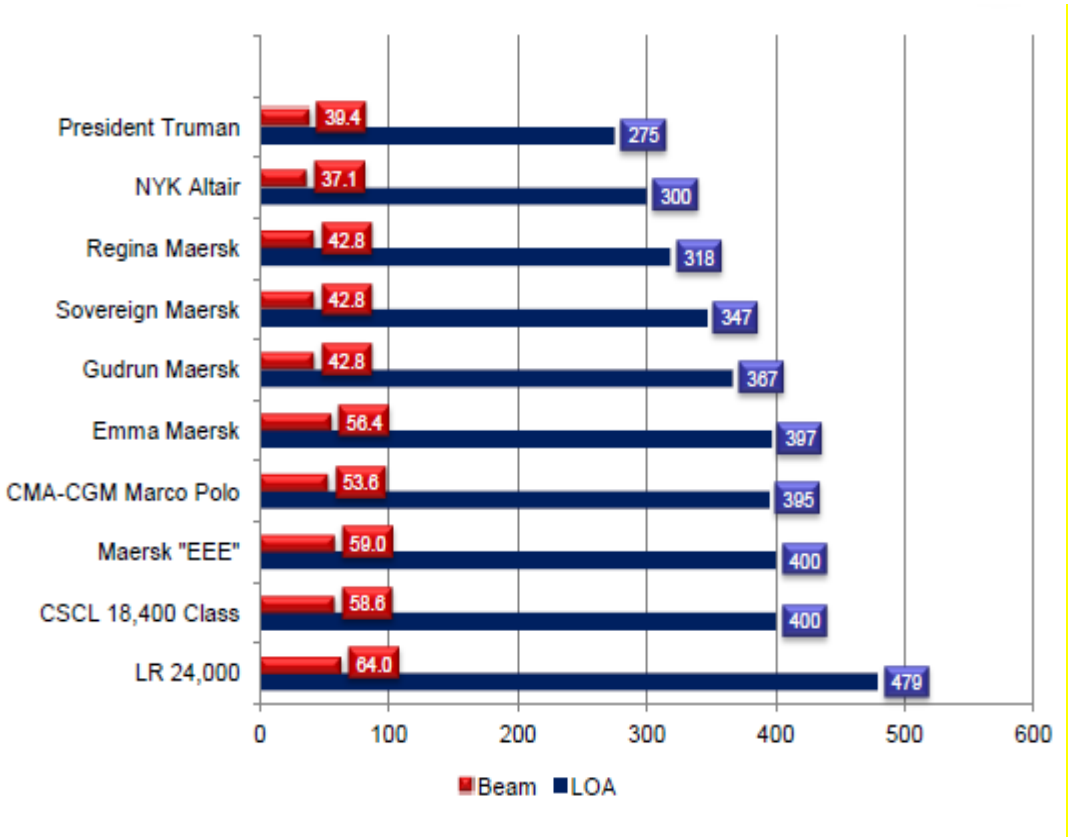
According to Rothberg (2013), vessel size has increased significantly with a marked increase from 1996 to 2013. The growth in capacity, measured in TEU, has increased by 148.5% over this period, while the increase in length overall (LOA) over this period was 45.5% and the beam grew by 49.7%.



Source: Rothberg, S. (2013). "Market-Driven Far-Reaching Scenarios: Impact and Opportunities Resulting from Global Change." Presented at AAPA Facilities Engineering Seminar on November 6, 2013.

As the aforementioned charts show, the trend towards even larger vessels is expected to continue in the years to come. In fact, Rothberg (2013) reports that delivery of the 22,000 and 24,000 TEU ships currently on order may be delivered sooner than expected. Industry observers predict that 22,000 TEU ships could come into service by 2018. And, LR already has a design in place for a 24,415 TEU vessel.

Future Vessel Size (in Meters)



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Although 18,000 TEU vessels are the largest in service currently, ships that carry more than 10,000 TEUs are still considered large and have limited options with regard to trade lanes and to ports that can accommodate them. These vessels, for example, are too large to transit the existing, pre-expansion Panama Canal. In 2000, 15 percent of the world's container capacity moved on post-Panamax (vessels too large to transit the Panama Canal) vessels. That number increased to 44 percent by 2011. The largest container ships serving North America were in the 10,000 TEU range up until 2012 when vessels carrying 12,500 TEUs began calling at the San Pedro Bay ports. That year, the MSC Beatrice arrived at the Port of Long Beach. With a capacity of 13,800

TEUs (1200 feet long, 167 feet wide), it became the largest vessel to call at a North American port.

From a port authority's perspective, it is important to understand the economic forces driving carriers to expand the capacity of their vessels. According to Brooks (2014), the global recession and a gradual recovery in cargo demand have contributed to billions of dollars in collective losses among carriers in four of the past five years. In the wake of the economic downturn, ocean carriers have responded to competitive pressures by reducing operational costs. Running larger, more efficient ships on major trade lanes is one way they have achieved that. Larger vessels allow for economies of scale, reducing the cost of shipping each container. In addition, new ship designs allow for more fuel efficient operations. For example, the Triple E class, which stands for energy, efficiency, and environmental improvements, can carry up to 18,000 TEUs. These ships reach up to 1,300 feet long and 200 feet wide. The Triple E's also have a top speed that is less than earlier generations of ships, reinforcing a recent trend in the industry toward slow steaming.

With slow steaming, carriers reduce vessel speed in order to burn less fuel, thereby reducing emissions as well as operating costs. Five years ago, the average speed of the largest vessels at that time was in the range of 20-25 knots (Streng 2012). Today, the average speed has dropped to 15-17 knots. But, while slow steaming has cut fuel costs for shipping lines, Streng (2012) also suggests that the cost savings achieved by the larger vessels are not obvious for the entire supply chain. Due to the increase in

transportation duration, the capital and insurance costs of the goods transported have gone up. Still, any reduction in fuel usage can lead to significant cost savings as some carriers spend up to $4 billion in fuel each year.

A comparison of the cost per day at sea shows how the cost per TEU falls as the size of the vessel increases.

Table 1: Cost Comparison between Vessels of Different Sizes

Vessel Size	Total Cost / Day at Sea	Cost per TEU / Day at Sea
12,500	$155,382	$12.43
18,000	$197,198	$10.96
22,000	$220,892	$10.04
24,000	$229,693	$9.57

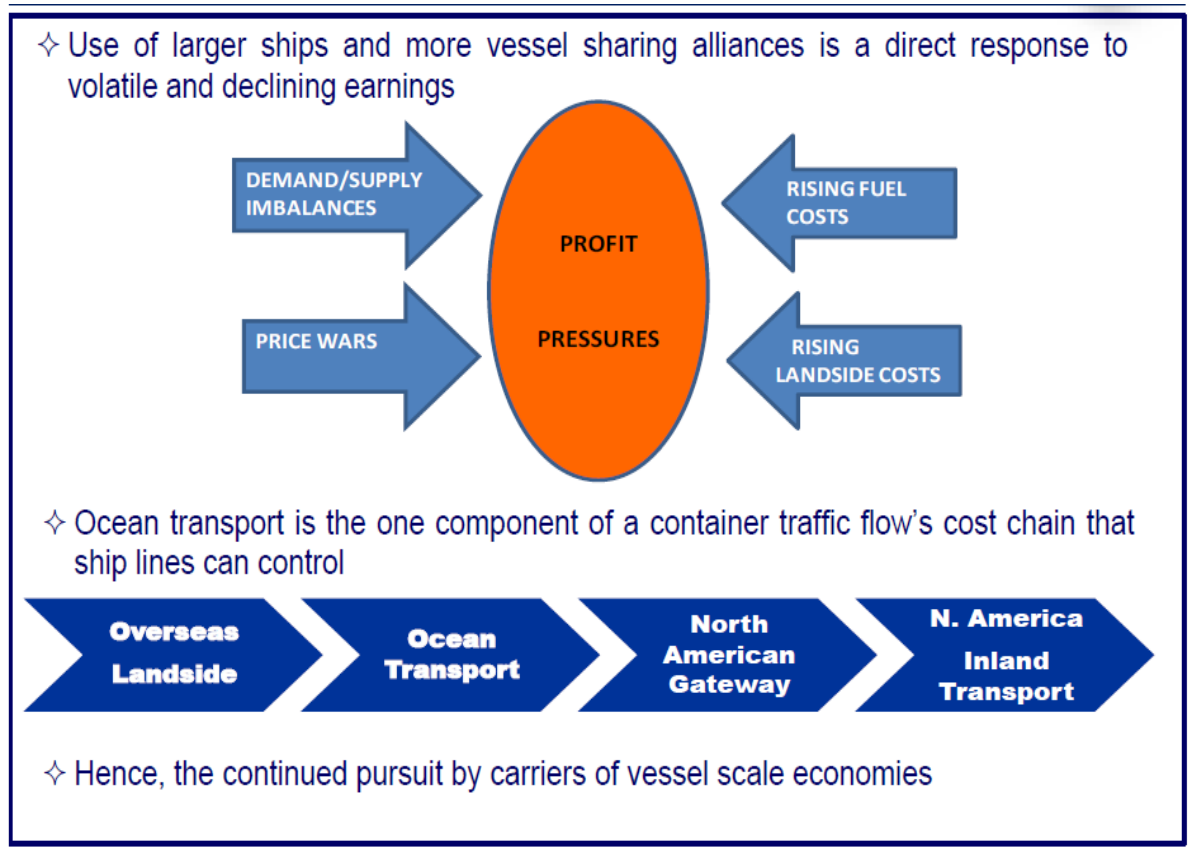
Source: Van Marle (2013).

As the above table shows, the total cost per day at sea goes up as the vessel size increases. While a 12,500 TEU vessel is expected to incur total costs per day at sea of $155,382, the same cost for a 24,000 TEU vessel is estimated at $229,693. At the same time, the cost per slot falls as the vessel size grows. Using the slot cost in a 12,500 TEU vessel as the baseline, the per TEU cost falls by 11.83 percent in an 18,000 TEU vessel, 19.23 percent in a 22,000 TEU vessel and by 23.01 percent in a 24,000 TEU vessel. The slot cost savings become even more significant when a carrier's total TEU volume is taken into account.

Other reports, such as the one published by Dijkstra (2008), found a reduction of 23 percent per container slot comparing a 12,000 TEU vessel to a 4,000 TEU vessel. Furthermore, Wright (2011) reported Maersk's Triple E Class (18,000 TEU) to be 26 percent more cost efficient than the E class (15,000 TEU).

It is important to note that the impact of the mega ships extends well beyond the major trade lanes and the biggest ports. As the larger vessels visit the biggest ports, the cascading effect, or "the process of moving larger vessels from main trades onto smaller trades as they are displaced from the main trades by the entrance of even larger ships, such as the Triple-E" (van Marle 2013). Under this scenario, the biggest ships like Maersk Line's Triple E vessels are poised to dominate the Asia-Europe route, which will move the next-largest group of ships to trade lanes like Asia-Africa, Europe-South America, or intra-Asia routes. In summary, "the 18,000 TEU size has implications for all ports around the world, not just the ports that are going to serve them" (van Marle 2013).

Rothberg (2014) also attributes the decision of carriers to invest in larger vessels to volatile and declining earnings in the carrier business and summarized some of the economic factors in the chart below.



Source: Rothberg, S. (2014). "Technologies, Economics and Changes in Selected U.S. Ocean Cargo Flows." Presented at AAPA Commissioners Seminar on June 4, 2014.

Carriers are continually looking for ways to scale the economics of vessels. With cost savings as a major factor in their decision-making process, carriers are less concerned with the routing of cargo. "Nobody really cares how cargo is routed, as long as it's at the lowest possible cost and it's not damaged when it gets there," said economic consultant Paul Bingham (Newton 2014). This means carriers are no longer committed to specific gateways for the long term as they have been in the past. There is no loyalty to specific ports.

But Lars Jensen, CEO of SeaIntel Consulting, said earlier this year at the Journal of Commerce's Trans-Pacific Maritime Conference that, "[f]or a number of the carriers, this

is a matter of survival." Jensen, who is a former Maersk executive, also stressed there will be significant demands on ports and terminals. Some of those demands stem from another trend closely related to the growing size of vessels. In order to fill the growing capacity of vessels and take advantage of economies of scale, carriers are strengthening and, in some cases, forming new alliances with other carriers. The decisions those alliances make with respect to vessel deployment and choice of terminals will impact ports.

THE EMERGENCE OF MEGA ALLIANCES

By creating economies of scale, carriers can reduce their round-trip slot costs by millions of dollars. According to Brooks (2014), the average slot cost of $1,250 per TEU drops 40 percent when going from a 5,000 TEU ship to an 8,000 TEU vessel, and by 60 percent when going to a 14,000 TEU ship. That equates to a savings of $1.2 million per round-trip voyage in the Asia-Europe trade. But, as Brooks notes, "…those savings only occur if the ship sails full." The goal of filling ships to capacity is what is driving the string of newly-created or recently-strengthened vessel-sharing alliances.

For decades, ocean carriers have shared ships through vessel sharing agreements, enabling them to lower costs and increase efficiency by splitting up the available slots for containers (McCabe 2014). It's a model that has also been adopted by the airlines, which form alliances to share seats, enabling them to fill their respective airplanes.

According to the U.S. Federal Maritime Commission (FMC), the agency that regulates shipping in the United States has allowed more than 220 vessel-sharing agreements to advance. During that period, it has not denied a single request. Many of them, however, were relatively routine transactions, affecting fewer than 100 slots on vessels that carry thousands of containers. So, while vessel sharing agreements are not new, the size, reach and market concentration of recent alliances such as G6 and P3 are unprecedented.

In February of this year, the G6 alliance, formed in 2011 and composed of APL, Hapag-Lloyd, Hyundai Merchant Marine, Mitsui O.S.K. Lines, Nippon Yusen Kaisha (NYK) and Orient Overseas Container Line, said it would expand its joint services to the trans-Pacific and trans-Atlantic trade lanes during the second quarter. It is estimated that G6 will control roughly a third of the Far East-U.S. West Coast market and about 40 percent of the northern European-U.S. trade (McCabe 2014).

The P3 alliance is a partnership between Denmark's Maersk Line, Switzerland-based Mediterranean Shipping CO. and France's CMA CGM, the world's three largest shipping lines. According to the FMC, early estimates showed that this alliance would control about 42 percent of the Asia-to-Europe route, 24 percent of the trans-Pacific route and 40 to 42 percent of the trans-Atlantic route.

However, in June of this year, the Chinese government rejected the P3 on grounds that the three shipping giants would control too much of the market in the Asia-Europe trade. This came on the heels of the FMC's approval and the decision by European regulators to decline to intervene, though antitrust authorities said they would watch the competitive impact closely. Maersk, MSC and CMA CGM responded to China's decision by saying they would no longer pursue the partnership. Although the full effect of the P3 appears to have faded, the carriers need to continue to fill their ships to maximize their economies of scale. P3 aside, this could continue to incentivize the three carriers to continue sharing vessels in some way.

THE IMPACT OF MEGA VESSELS ON PORTS

According to Curtis Spencer, President and CEO of IMS Worldwide Inc., the key question facing ports is how vessel rotations will be influenced by the combination of alliances and larger ships (Solomon 2014). For example, alliances could lead to the movement of cargo from one port to another, especially between neighboring ports such as Los Angeles and Long Beach. APM Terminals, a subsidiary of Maersk Line, is located within the Port of Los Angeles. MSC and CMA CGM currently call at Port of Long Beach terminals. The vessel deployment decisions made by the three carriers could change the flow of cargo from one terminal or port to another, which could impact port revenues.

The threat of such cargo movements has already led ports to offer financial incentives to carriers. The Journal of Commerce's Bill Mongelluzzo (2013) described some of those incentives, which are targeted at attracting incremental cargo, in an article titled "US Ports Dangle New Incentives to Lure Services".

Excess terminal capacity is another factor affecting a port's ability to respond to the pressures of big ships and alliances. According Rothberg (2013), ports across the country have excess capacity. The table below shows containerized capacity by region.

Table 2: Port Containerized Capacity by U.S. Region

Region	No. of Terminals	Regional Capacity (million TEU/year)	Estimated Regional Throughput (million TEU/year)	Capacity Utilization
Pacific Northwest (Prince Rupert, Vancouver, Seattle, Tacoma, Portland)	17	11.5	6.9	60%
Pacific Southwest (Oakland, Los Angeles, Long Beach)	20	25	16.3	65%
West Gulf (Freeport, Houston, New Orleans)	7	3.7	2.4	65%
East Gulf (Gulfport, Mobile, Tampa)	3	1.5	0.5	33%
South Atlantic (Miami, Port Everglades, West Palm Beach, Jacksonville, Savannah, Charleston, Wilmington (NC))	17	11.6	7.5	65%
North Atlantic (Hampton Roads, Baltimore, Wilmington (DE), Chester, Philadelphia, New York/New Jersey, Boston)	17	14.5	9.1	63%

Source: Rothberg (2013)

This excess capacity, in combination with the threat of new vessel deployments stemming from the larger ships and vessel sharing agreements, gives carriers more leverage and flexibility at the expense of ports. According to Jean Godwin, AAPA's Executive Vice President and General Counsel, this inflexibility means that ports, "can be whipsawed by the other players" (Solomon 2014). While liners, shippers and beneficial cargo owners have the ability to quickly adjust their business models to

prepare for the changes in the shipping business, ports do not have that ability. As Solomon notes, “the ports that succeed in this new environment will have strong supporting infrastructure for road and rail access.”

Culinane and Khanna (2000) report that shipping lines have for years been demanding ever shorter port stays in order to make the economies of scale work. They note that, “[t]he bigger the ship, the greater the cost of hours lost in port, and an increased port stay is a diseconomy of scale”. For the economies of scale to work, shipping lines either need to reduce the number of port calls or they need to get handled faster by increasing berth productivity. With larger vessels, the importance of fast handling becomes even more important.

Paul Avery, Associate Editor at World Cargo News, said, “[y]ou have this big crunch through the terminal where you’re trying to force more and more containers through the system” (McCabe 2014). Indeed, this is an issue facing ports worldwide, not just U.S. terminals like Hampton Roads, where the Virginia Port Authority’s multi-million dollar operating losses have been attributed to cargo backups (McCabe 2014). In light of this, the Virginia Port Authority has “moved aggressively to streamline the port’s operations, knowing that its inefficiencies will be magnified in the era of mega-ships.” The Port Authority’s Chief Commercial Officer Tom Capozzi commented in the same article that the norm for Hampton Roads was five ships calling per week on a typical trade lane, each carrying the equivalent of 4,000 20-foot containers and unloading 800 of them over five days. According to Capozzi, the Port may now get two 9,000-unit vessels,

each discharging up to 2,000 containers over two days. Capozzi expects, “a lot more bottleneck effects, and there’s going to be a lot more strain on a port in terms of infrastructure” (McCabe 2014).

Severe congestion has been a challenge at some of the biggest container gateways in the U.S. Commenting on the prospects of bigger ships calling at the nation’s biggest ports, the Journal of Commerce’s Peter Tirschwell said at this year’s Trans-Pacific Maritime Conference that, “[h]igher growth, accelerating trade volumes, is actually, at this moment, a fairly frightening prospect.”

In article titled “Enhancing Productivity,” Tirschwell (2014) further commented: “As mega-container ships replace smaller vessels in major east-west and north-south trades, terminals are struggling to turn the ships around and move containers through their facilities in a timely manner”.

But as industry veterans have acknowledged, ports have long struggled to adjust to the ever-larger ships that container lines have deployed over the years. Tirschwell (2014) notes that, “[i]t’s a lot easier for a carrier CEO to sign an order for a new ship than for a port to deepen its draft so that ships can enter or leave fully loaded. One takes 10 minutes, the other 10 years”. The difference with today’s scenario is that ships are growing at “an accelerating, some would say alarming, rate as carriers become fixated on reducing operating costs as the key to profitability.”

Tirschwell further notes that this is intensifying the “pressure on terminals to perform, because carriers can’t realize the potential cost savings of their mega-ships if they’re

always playing catch-up to stay on schedule because of port delays, which raise fuel costs". And, the consequences of being late are also growing because larger ships take up more time at port and berth windows are becoming more limited.

This brings us to the subject of terminal operations. Culinane and Khanna (2000) ask: "Who pays the bill of the upgrades needed to facilitate the larger vessels, and who pays the bill to handle them in shorter periods of time, whilst the volume exchanged per call increases?" Although these questions only seem relevant for the ports handling the biggest vessels, the same challenges arise for regional ports. So, what are the consequences for terminals? The most obvious ones are clearly the design and capability of the quay (draught, strength) and the quay cranes (outreach, air draft).

In terms of operational costs, including depreciation for waterside and yard, Culinane and Khanna report that the change from a 4,000 TEU vessel to an 18,000 TEU vessel increases operational costs by 17 percent. On top of this, the equipment needs to be upgraded, and the fleet of yard equipment must be expanded. Adding all of this up, Culinane and Khanna estimate an investment in the range of $53 million to $75 million.

Rothberg (2013) summarizes the impacts of the larger ships on the physical infrastructure of the ports as follows:

- Access channels width and depth
- Air draft
- Depth alongside
- Quay length

- STS height, outreach and width
- Increased exchanges of containers from each ship
- Landside capacity
- Yard equipment and TOS
- Road, rail and barge access
- Hinterland connections
- Capacity to expand

Despite the additional costs that ports and terminals would have to incur – in dredging, infrastructure and capital, among others – to prepare themselves for the mega vessels, carriers have not been shy about their demands. In a presentation at the AAPA Facilities Engineering Seminar, Rothberg (2013) asked: What do shipping lines want?

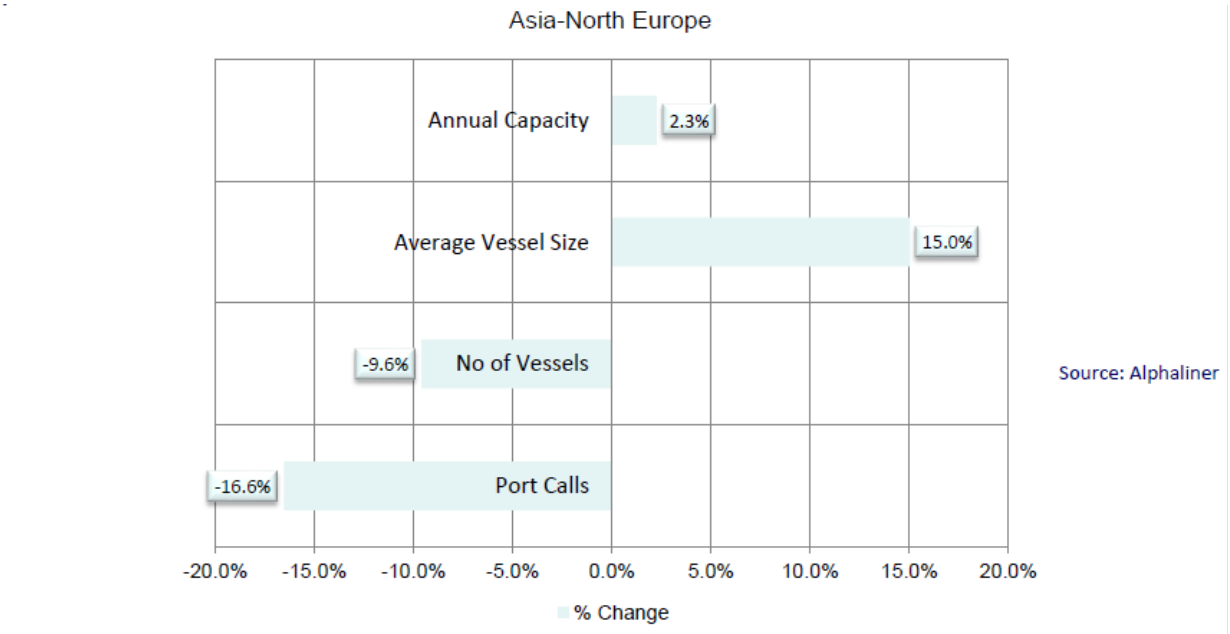
A quote from Maersk Line summarizes carriers' answer to this question: "A quantum leap in productivity at the berth and in handling the vessel from pilot to pilot with the maximum speed, with due regard to safety." This translates into berthing on arrival, sufficient berthing space, ample cranes and other equipment, guaranteed berthing slots, high productivity, competitive tariffs and, above all, lower terminal through-put costs.

The bottom line is that the trend toward larger vessels will have significant implications for ports that compete to service them as well as for the land side warehouse, trucking and rail operations that must accommodate an increase in volumes. Those increased

volumes will likely be flowing through a fewer number of larger trade gateways such as the San Pedro Bay port complex.

Rothberg (2014) reports that the deployment of 13,000 to 18,000 TEU ships, in conjunction with the formation and expansion of vessel sharing alliances, has already resulted in fewer sailings and reductions in port calls in Asia/North Europe trade over the past five years.

Service Impacts of Larger Ships



Source: Rothberg, S. (2014). "Technologies, Economics and Changes in Selected U.S. Ocean Cargo Flows." Presented at AAPA Commissioners Seminar on June 4, 2014.

In summary, the key challenges for container port infrastructure include:

- Dealing with excess capacity and over-investment in container terminals in selected ports.
- Securing permits for new terminals and supporting infrastructure in major container ports.

- Obtaining federal/state funds for dredging projects.
- Improving rail connectivity.
- Improving productivity.

On this last point, improved productivity is nothing new but it is now even more important. And, it doesn't just mean faster turnaround times for ships. It also means cargo moving quicker through ports, which benefits shippers' supply chains and improves the overall flow of trade. This focus on productivity is expanding the role of port authorities, especially at landlord ports, which find themselves navigating the many changes taking shape in the industry.

THE ROLE OF THE PORT AUTHORITY

According to Rothberg (2013), the needs of carriers and port operators are not always compatible. As previously explained, carriers have an economic incentive to deploy larger ships. Secondly, the pace at which larger ships are being deployed is faster than the time it takes to develop more efficient terminals at a majority of ports. Thirdly, lines will remain focused on costs, which will put pressure on port tariffs. And, finally, ports are expected to anticipate and deliver the required service by addressing physical and operational issues and making major capital expenditures. As McCabe (2014) noted, "the new, giant alliances provide the carriers a way to afford the costs of operating mega-ships. That may not translate into a benefit for ports."

Recent trends in the shipping industry are challenging the traditional role of port authorities, especially in the case of landlord ports. Such ports have to decide how to prioritize their development plans to accommodate the larger vessels. This has considerable financial and long-term implications. Port authorities also have to assume the role of facilitator and bring port stakeholders together to address common issues such as productivity and congestion. Port authorities also have to determine whether it makes sense to offer financial incentives directly to carriers to retain their business. All of this has to be done while balancing the commercial interests of the port with the needs of their host community. As fiduciaries, port leaders have to decide how they will respond to the demands of the larger vessels and alliances and what tools they will use. Jean Godwin, Executive Vice President and General Counsel of AAPA, captured this

well when she said, “[u]nlike carriers and shippers, ports cannot move their assets, which are the product of the investment of billions of dollars of public funds” (Solomon 2014).

What are port authorities to do in the current environment? One response has been greater collaboration among neighboring ports. Earlier this year, the Ports of Seattle and Tacoma asked the FMC for authority to gather and share information about each other’s operations, facilities and rates, subject to appropriate legal oversight. The level of collaboration between the two ports is the first of its kind. In their written request, the ports told the FMC that the discussions would be designed to “identify potential options for responding to unprecedented industry pressures” (Solomon 2014).

In a February report, Drewry called the Seattle-Tacoma request a “ground-breaking move which could be copied by other ports” hoping to counter the threats from bigger ships and liner alliances (Solomon 2014). Could this collaboration mark the first of more to come? Will more port authorities seek to collaborate to fend off some of the competitive pressures brought on by larger ships and vessel agreements?

Other ports do not see the need for greater cooperation than what is currently allowed under the limited antitrust immunity. The Ports of Los Angeles and Long Beach, the nation’s two busiest, compete for cargo while they cooperate on environmental, security and regional planning issues. Yet, James I. Newsome III, President and CEO of the South Carolina State Ports Authority, said regionally co-located ports, “need to seriously

evaluate the impact of the mega-alliances and whether it makes sense to forge closer commercial cooperation as a response" (Solomon 2014).

Preparing for the larger ships is "a critical aspect of any port's job", according to John Reinhart, a former Maersk Line Chief Executive who took over as the Virginia authority's CEO in February (McCabe 2014). Even landlord port authorities are taking a more active role in preparing for the larger vessels and alliances. In the San Pedro Bay, the Ports of Los Angeles and Long Beach, for example, are working jointly with port stakeholders on an effort to bring a grey chassis pool system to the port complex. The stakeholder group includes representatives from shipping lines, terminal operators, labor, beneficial cargo owners, trucking companies, railroads and the two ports.

In addition, the Long Beach Harbor Commission, the Port of Long Beach's governing body, established a committee to explore ways to improve productivity at the port. The aim is to bring awareness to the need for improved efficiencies, identify opportunities, explore options and present concepts and ideas to the port's stakeholders. Although the Port of Long Beach is a landlord port, it uses its authority to bring attention to issues of common importance to the port's partners and to facilitate solutions among the stakeholders.

Another way the Port of Long Beach attempts to encourage productivity in the terminals is through financial incentives. In June of this year, the Board of Harbor Commissioners approved a two-year program that offers carriers a discount for all incremental cargo

that is moved to and from terminals on rail, facilitating the flow of cargo into and out of the terminals.

In addition to a focus on productivity, big ships are requiring ports to invest heavily into their infrastructure. The American Association of Port Authorities has reported that U.S. ports plan to spend $46 billion by 2017. Miami has already spent $2 billion on improvements, including four new mega-cranes to handle the expected increase in container traffic, and it is spending another $1 billion to build a tunnel for truck traffic between the harbor and U.S. I-95. The Ports of Savannah and Charleston are, between them, spending almost $1 billion in dredging projects to deepen their harbors. The Port Authority of New York/New Jersey is spending $1.2 billion to raise the Bayonne Bridge by 60 feet so that larger ships can enter the Ports of Newark and Elizabeth unobstructed (Newton 2014). The Port of Long Beach is spending $4.5 billion over 10 years to replace an aging bridge with one that will be taller, wider and more modern. It is also building a new mega terminal with a capacity of three million TEU's that will be the world's greenest and enhancing rail connections throughout the port.

Ports around the world are also investing in infrastructure. Canada has already invested $3 billion in 93 projects under the Asia-Pacific Gateway and Corridor Initiative. In Europe, where the big ships started and are more prevalent, the Port of Rotterdam is investing $932 million in new facilities and equipment at the new Maasvlakte 2 facility. DP World is also investing about $2.3 billion at the London Gateway container port on the Thames, with both facilities designed to support mega ships. In addition to port

facilities, larger ships may require infrastructure improvements, including expanded railroad and highway capacity, to handle cargo from the ships.

It should be noted that investments in infrastructure not only require significant amounts of funding, but they also take time to plan, bid and build the projects. As ports continue to invest heavily in port infrastructure, port authorities should also consider pursuing a freight strategy that encompasses the entire supply chain, from gateway to destination. A national freight policy could help ports plan more strategically. It could also help guide the disbursement of federal funding. Without a freight strategy in place, some have observed that many ports receive some funding but no port receives enough. Instead, a national plan could focus attention on the entire supply chain and help prioritize projects of national significance and reduce the number of redundant projects at individual ports. Advocating for such a plan could help the nation's supply chain better prepare for industry changes such as the larger vessels and the alliances.

In Canada, the federal government has taken a proactive stance on freight policy and port development. The government, for example, has invested heavily in the development of Prince Rupert, a former logging community in northern British Columbia. As a result, today Prince Rupert is a busy gateway that is competing with U.S. West Coast ports. The Canadian government hopes Prince Rupert will become a major transit point for cargo. The port promotes itself as offering "the shortest trade route with Asia" and being "only 100 hours to Chicago" (Newton 2014).

If the U.S. were to develop a national freight strategy, it could provide funding for critical projects of national significance. It could also help to prioritize the projects. However, some ports may argue that a national freight plan would let the federal government – and not the market – decide which ports will succeed and which will not. The concern is that this could reduce competition between ports. However, while infrastructure is certainly a major factor that carriers look at to decide where to call, it is not the only factor. Holding infrastructure investments neutral, ports can continue to compete based on productivity, reliability and fees.

The role of the port authority has never been more critical. The big ships are a game-changer and the port authorities that respond strategically will have the best opportunity for success.

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