

Container Competitive Strategies of Two Atlantic Ports

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ABSTRACT

With large new-generation container ships "load centering" at fewer ports, competition between ports for container traffic is expected to reach fever pitch. The level of business required to justify massive investments in modern port facilities will be attained only if efficient port and inland transport services at competitive rates are aggressively produced and marketed. The contrasting strategies of the ports of Halifax and New York and New Jersey (NY-NJ) for attracting containerized cargo are reviewed in light of their respective markets, transport characteristics, regulatory constraints, and competitive postures. Although both ports are investing heavily in new facilities and pressing for modified labor rules, NY-NJ has pursued and reached agreement with railroads on double-stack container services. Halifax, on the other hand, is giving priority to establishing alternative rail services on the Montreal route to create effective competition with Canadian National Railways (CN Rail). Although CN Rail has experimented with double-stack container cars, no innovative inland transportation arrangements have been consummated. Without greater efficiency in overland movements to and from Halifax, Montreal will probably continue to significantly constrain Halifax's competitive position until large container ships that cannot reach Montreal begin to dominate the trade, which will further stiffen competition from NY-NJ.

Mass containerization of ocean freight was successfully inaugurated in 1956 when a ship owned by Pan Atlantic Steamship Corporation departed from Port Newark, New Jersey, destined to Houston, Texas, with 58 freight containers. From this modest beginning, containerized freight handled by ocean carriers has grown dramatically. More than 300 ports around the world now have container-handling facilities and some 70 percent of U.S. ocean liner trade is containerized.

In recent years fierce competition among steamship lines and between railroads and truck lines has fueled a search for greater efficiency in ocean as well as inland transportation of containers. Container ships with capacity of approximately 4,400 20-ft equivalent units (TEUs) are being placed in service and 10,000-TEU ships are envisioned, which will result in a reduction in the number of ports of call to maximize productivity, a trend popularly known as load centering. Although trucking continues to dominate the movement of containers to and from shipside at U.S. ports and modest feeder services are provided by coastal vessels, there has recently been a sharp increase in railroad movement of containers between ports and inland points using a new generation of two-tier (double-stacked) intermodal rail cars.

These developments, accelerated by the loosening of regulatory reins on land transportation through the Staggers Rail Act of 1980 and the Motor Carrier Act of 1980 and on ocean shipping through the Shipping Act of 1984, have greatly intensified competition between ports. As individual ports strive to become regional load centers, expenditures on specialized general cargo facilities (primarily container facilities) are expected to increase dramatically. During the 1983-1989 period, such

expenditures should reach approximately 55.5 percent of total U.S. port investment compared with 38.2 percent during the 1973-1982 period (1).

In this paper are profiled the markets, transportation infrastructures, regulatory issues, competitive postures, and evolving competitive strategies of two North American ports, Halifax and New York-New Jersey (NY-NJ), as each works to improve its position in the rapidly changing world trade scene. Particular stress is given to the manner in which the two ports have sought maximum advantage from utilization of innovative railroad service in conjunction with the new generation of container ships. Although Halifax is not expected to divert significant traffic from NY-NJ, the two ports will be competing for much traffic currently moving directly between Europe and Montreal, while Halifax will be fighting a defensive battle to preserve its present inland markets.

MARKETS

Located on the eastern shore of Nova Scotia, Halifax is on the Great Circle Route between North America and Europe. As the most easterly mainland port, as indicated by the map in Figure 1, Halifax is the closest North American port to Europe. With costs of owning and operating new mega-container ships ranging upwards of \$50,000 per day (2), the shorter voyages between Europe and Halifax are attractive to ship operators offering transatlantic or round-the-world services. Mileage between selected European ports and NY-NJ and Halifax is given in the following table.

European Port	NY-NJ	Halifax
Amsterdam	3,411	2,792
Cherbourg	3,127	2,690
Copenhagen	3,934	3,322
Hamburg	3,634	3,001
Southampton	3,156	2,562

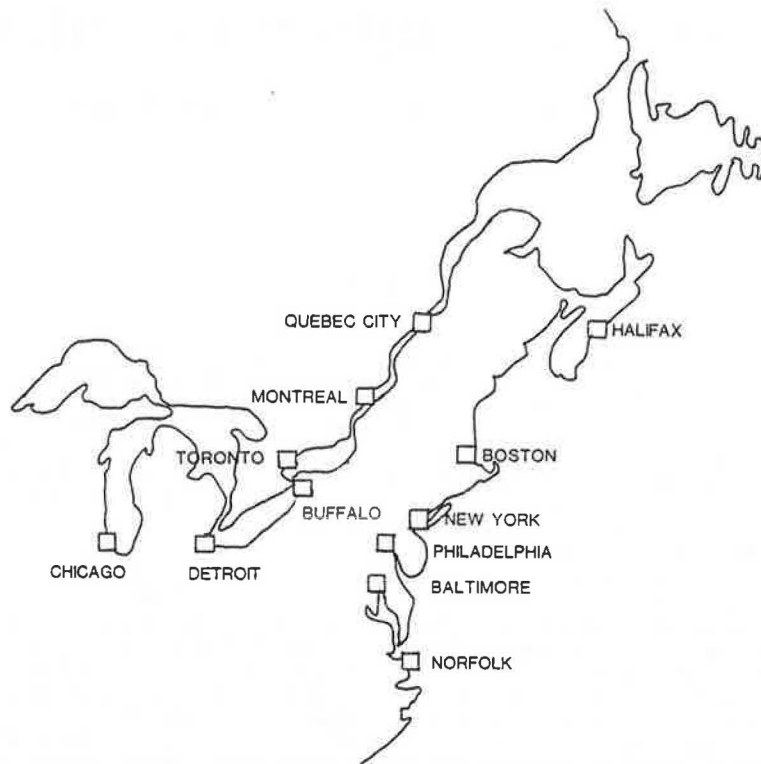


FIGURE 1 North Atlantic and Seaway ports.

During the first 6 months of 1984, cargo moved through Halifax at an annual rate of approximately 16.1 million tons, of which 2.2 million tons were containerized. The percentage of tonnage represented by each major commodity handled at the Port of Halifax in 1982 is given in Table 1.

TABLE 1 Tonnage Percentages of Major Commodities Handled at Port of Halifax, 1982^a

Cargo	Percentage	Cargo	Percentage
Bulk Cargo		General Cargo	
Crude oil	30.6	Container	12.6
Refined oil	27.0	Break-bulk	3.0
Gypsum	18.0	Ro-ro ^b	1.4
Grain	5.1	Total general	17.0
Other bulk	2.3		
Total bulk	83.0		

^aInformation is from Halifax-Dartmouth Port Commission as of January 1983 and is partly estimated.

^bVehicles and motorized equipment rolled on and off ship on their own wheels.

With Canadian population and commercial activities concentrated in southern Quebec and southeastern Ontario, the future prospects of the Port of Halifax depend on its inland links with these two areas as well as with the densely populated areas of the mid-western United States, such as Chicago and Detroit. In 1983 approximately 80.5 percent of overseas container traffic moving through Halifax originated or terminated in Quebec and Ontario, predominantly Montreal (768 mi from Halifax) and Toronto (1,107 mi inland), and an additional 8.2 percent originated or terminated in the U.S. Midwest, primarily Chicago (1,619 mi from Halifax). Origins and terminations of the remaining 11.3 percent of Halifax container traffic were divided between the Atlantic provinces

of Canada (3.9 percent) and the New England states (7.4 percent) (telephone conversation with Halifax-Dartmouth Port Commission).

As might be expected with such a high percentage of Halifax container traffic moving long distances inland, about 88.8 percent moved via rail; the remaining 11.2 percent included highway and coastal vessel feeder traffic to and from other Canadian and New England ports.

In sharp contrast with Halifax, NY-NJ is located closer to major freight consuming and generating areas. The 1980 population of New York, New Jersey, and Pennsylvania alone, for instance, totaled 36.8 million people, some 2.4 times the combined population of Ontario and Quebec, the primary economic hinterland of the Port of Halifax. In addition, as the data in the following table indicate, NY-NJ is some 400 to 600 mi closer to major North American markets outside the New York-New Jersey-Pennsylvania area.

Distance to	From	
	NY-NJ	Halifax
Montreal	383	768
Toronto	509	1,107
Detroit	763	1,335
Chicago	988	1,619

In 1984, 60.3 million tons of cargo in foreign trade moved through NY-NJ, including 14.7 million tons of general cargo of which approximately 11.5 million tons (78.2 percent) was containerized. Approximately 84 percent of the general cargo moving through NY-NJ originates or terminates domestically within a radius of 300 mi, and almost all of it is carried inland by truck. Truck movements of general cargo to and from inland points accounted for some 95 to 97 percent of the total market, with the remainder moving via rail and water feeder service (telephone conversation with Port of New York and

TABLE 2 Tonnage Percentages of Leading Commodities Moved Through NY-NJ, 1984^a

Commodity	Percentage	Commodity	Percentage
Import		Export	
Alcoholic beverages	8.4	Waste paper	20.7
Bananas	6.7	Plastic materials	5.0
Hydrocarbons	5.3	Textile waste	3.4
Road motor vehicles	5.0	Machinery (general)	3.0
Coffee	2.7	Organic products	2.3
Vegetables and vegetable preparations	2.5	Road motor vehicles	2.1
Plastic and rubber materials	2.2	Paper and paperboard	2.0
Lumber	2.1	Hydrocarbons	1.8
Alcohols	2.1	Steel plates and sheet	1.7
Fixed vegetable oils	2.0	Photo supplies	1.7
Other commodities	61.0	Other commodities	56.3
Total import	100.0	Total export	100.0

^aInformation is from Port Authority of New York and New Jersey and is partly estimated.

New Jersey). The following table gives a summary of the proximity of NY-NJ and Halifax to respective markets and modes of inland transportation.

	NY-NJ (%)	Halifax (%)
Markets		
Within 300 mi	84	
Beyond 700 mi		88
Inland transportation		
Truck	96	
Rail		89
Other	4	11

Given in Table 2 are the 10 leading import and export oceanborne general cargo commodities, in terms of tonnage percentage, which moved through NY-NJ in 1984.

In both ports, and indeed in all ports, containerized traffic has an importance that far transcends its relative tonnage. Because it has now largely superseded break-bulk handling, it constitutes the standard by which competitive port posture is measured in the movement of high-value manufactured products. In contrast with bulk commodities such as petroleum and coal, which are far more rigid in their movement patterns, containerizable commodities are highly sensitive to rate and service fluctuations and thus more susceptible to interport rivalries.

TRANSPORTATION INFRASTRUCTURE

With a depth of nearly 70 ft at low tide, Halifax is one of the world's deepest ports. Two container terminals are located in the port: Halifax International Container Terminal, which is accessible directly from the ocean, and Fairview Cove Container Terminal, located at the inland mouth of the Narrows in Bedford Basin. Both terminals are served by Canadian National Railways (CN Rail) and Canadian Pacific Limited (CP Rail), through its subsidiary Dominion Atlantic Railway, as well as several trucking firms.

The Port of New York and New Jersey has five separate container facilities:

- Port Newark-Elizabethport Marine Terminal, the world's first and largest container terminal;
- Northeast Marine Terminal, located on the Brooklyn shoreline just north of the Narrows in Upper New York Bay;
- Global Marine Terminal, located on the west shore of Upper New York Bay;
- Howland Hook Terminal on the west side of Staten Island; and

- Red Hook Container Terminal, located in the Atlantic Basin area of the Brooklyn Port Authority Marine Terminal.

All five have both highway and rail access.

REGULATORY ISSUES

U.S. ports have recently gained significant advantages over their competitors to the north as a result of deregulatory legislation that has affected both marine traffic and inland connections. These laws and concomitant regulations have fostered increased competition between ports and carriers and created an environment much more conducive to innovation than that which it superseded. In time, however, and probably sooner rather than later, these advantages will be countered by Canadian responses.

The Staggers Rail Act of 1980 opened the floodgates to contract rate making and new, market-responsive, innovative, and cost-saving inland transportation alternatives. Although the Interstate Commerce Commission had permitted the negotiation of contracts between railroads and individual shippers since 1978, the 1980 legislation initiated widespread promotion of the concept. Dedicated trains using advanced technologies may now be used to exploit cost and service advantages heretofore unavailable because of rate-making rigidities.

Motor carrier deregulation, which was enacted almost simultaneously with that affecting railroads, has led to a rapid increase in the number of trucking companies providing container services and, some would claim, destructive competition as rates have plummeted in key markets.

Liberalization of regulation on the inland portion of international freight movements also has heightened competition among ports within the United States. The leverage that large ports can now exert over railroads, and the railroads' desire to retain traffic flows, has intensified pressures on inland carriers to reduce rates wherever volume or potential volume is heaviest. For example, Consolidated Rail Corporation (Conrail) has largely equalized container rates from Chicago to New York, Philadelphia, and Baltimore, whereas in 1977, due to its greater proximity to midwestern cities, Baltimore held a 12 percent rate advantage over New York and a 3 percent advantage over Philadelphia. Although this rate equalization suggests divergence from seemingly efficient cost-based pricing and return to former port equalization policies, the example is a manifestation of market power influence on rate setting. The new level of competition between ports (aggravated by

the apprehension that a port will wither away if it cannot achieve load center status) has strengthened the competitive threat of U.S. Atlantic ports vis-à-vis their Canadian counterparts, primarily Halifax and Montreal.

The Shipping Act of 1984 has brought some of the advantages of inland transportation deregulation to the marine mode. The act encouraged contract rate flexibility and, by not substantively changing tariff filing requirements for noncontract movements, produced even greater incentives to contract. This, combined with restructuring of the transatlantic conferences, has created a no-holds-barred environment in the United States. Because of a lack of corresponding legislation, however, the Canadians compete at substantial disadvantage.

Compensating freedoms, spurred by the loss of transborder traffic caused by the current imbalance in Canadian and U.S. regulatory regimes, inevitably will be instituted in Canada. At present, Canadian railways are in the uncomfortable posture of being both confined by archaic Canadian regulations and subject to U.S. antitrust laws; this situation is unpalatable not only to the railways but to ports, such as Halifax, that depend on Canadian rail service for transborder as well as domestic market position. New transportation legislation, soon to be introduced in Canada, will undoubtedly redress the imbalance.

The Canadian Ministry of Transport, in July 1985, issued a white paper entitled Freedom to Move: A Framework for Transportation Reform, which summarizes several proposals, some of which would directly meet the competitive thrust of the United States. The report is intended, after a review and comment period, to inform new legislation. In the report, greater flexibility in transportation arrangements and promotion of intermodalism are advocated, confidential contracts would be permitted for railways and marine carriers, and multimodal rates could be quoted by shipping conferences. Despite the continued role of conferences, steps would be taken against collusion and independent action would be encouraged.

COMPETITIVE POSTURE

Halifax Versus Montreal

The prime competition to the Port of Halifax for container traffic has historically come from the Port of Montreal. During the 5-year period between 1979 and 1983, container tonnage moving through Montreal exceeded Halifax tonnage by approximately 85 percent. Steamship lines serving Montreal, unlike those stopping at Halifax, operate exclusively between Montreal and Europe. The relative volume of container traffic through these two ports obviously indicates that operating their present container ships on the St. Lawrence River between Montreal and the Atlantic is more attractive to several ocean carriers than putting in at Halifax and shipping containers between Halifax and inland points via land transport modes (rail or truck, or both).

With (a) third, fourth, and successive generations of container ships entering service, (b) navigation on the St. Lawrence impeded by winter conditions, (c) draft limitations at the Port of Montreal of increasing concern to some, and (d) a 1,000-mi round-trip voyage (on what is essentially an inland waterway) inherent to the service, the ability of the steamship lines now serving Montreal directly to compete with mega-ship service between Halifax and Europe and alternate land or water feeder service between Halifax and Montreal will come increasingly into question.

NY-NJ Versus Philadelphia, Baltimore, and Hampton Roads

Competition for load center status between the U.S. North Atlantic ports of NY-NJ, Philadelphia, Baltimore, and Hampton Roads (Norfolk-Newport News) is sharpened by the declining share as well as total tonnage of U.S. foreign trade moving through these and Great Lakes ports. This declining share stems from shifts in U.S. population and industry from the Northeast and Midwest to the South and the West as well as from shifts in U.S. trade from Europe to Asia. Between 1970 and 1983, the total volume of international cargo moved through all U.S. North Atlantic ports declined from 258.1 million tons to 202.0 million tons. The 1970 level accounted for approximately 46 percent of the total U.S. market, whereas the 1983 tonnage represented only about 28 percent of the U.S. total. During the same period, changes in U.S. market shares of ports in other U.S. regions included increases for the Gulf Region of from 22 to 41 percent and for the Pacific Region of from 14 to 17 percent while the South Atlantic Region held in the 7 to 8 percent range and the Great Lakes Region share dropped from 11 to 7 percent (2).

In terms of total tonnage, NY-NJ, Philadelphia, and Hampton Roads each handled volume in the 28 to 30 percent range of the 1983 total for the four U.S. North Atlantic ports while 12 percent passed through Baltimore. In terms of general cargo tonnage, however, NY-NJ handled 54.1 percent, Philadelphia 19.0 percent, Baltimore 17.2 percent, and Hampton Roads 9.7 percent of the 1983 total for these four ports. In container traffic alone, NY-NJ is even more outstanding, as indicated by the data in Table 3 (1).

TABLE 3 Container Traffic Through Four U.S. North Atlantic Ports, 1984 (1)

Port	Thousand TEUs	Percentage
New York-New Jersey	2,235.00	67.0
Baltimore	627.00	18.8
Hampton Roads	313.76	9.4
Philadelphia	162.00	4.8
Total	3,337.76	100.0

Although shifts in U.S. trade from Europe to Asia took tonnage away from Atlantic Coast ports, they stimulated the advent of container trains in which containers are stacked two high (double stacked) on well-type rail cars. These trains generally consist of 20 cars, each containing five platforms. Two 20-ft or one 40-ft container is loaded on the lower tier of each platform and a 40-, 45-, or 48-ft container may be loaded on the second tier provided the longer boxes are equipped with locking features at 40-ft locations. Several of these trains are now operating between such points as Los Angeles, Chicago, and New York; Los Angeles and Atlanta; Oakland and Chicago; Oakland, Houston, and New Orleans; Seattle, Chicago, and New York; Tacoma, Chicago, and New York; Baltimore and Chicago; and New York and Chicago. Cars operating on some of these trains are owned or leased by steamship lines and on others are owned or leased by the railroads.

The high cost of new-generation container ships operating up the Delaware Bay to call at Philadelphia and up Chesapeake Bay or using the Chesapeake and Delaware Canal to serve Baltimore puts these ports at a disadvantage, over which they will have no control but which will need to be offset, compared with NY-NJ and Hampton Roads, which have direct ocean

access. With equal ocean accessibility, competitive inland transportation to the Midwest, and shifts in population and industry from the Northeast and Midwest to the South, it appears that Hampton Roads will be in good position to attract container traffic from NY-NJ.

Halifax Versus NY-NJ

With Halifax standing to gain from the uneconomic aspects of a voyage by large container ships up the St. Lawrence River to Montreal, it may appear that the future of Halifax is secure: it need only be patient and prepare for attractive increases in container business. Unfortunately for Halifax, NY-NJ is lurking in the background. Given the sheer size of NY-NJ's container traffic market, its ocean accessibility, and its proximity to primary Canadian markets, NY-NJ is the obvious U.S. port against which Halifax should direct its future container traffic strategy.

Faced with declining volume, some of which has been diverted to Montreal, it is certain that NY-NJ would be quick to seize an opportunity to recapture lost business. For several years U.S. ports have been losing traffic to Montreal and on several occasions have petitioned Congress to intervene, but Congress has not acted to block the diversions and is not likely to do so. More than 60 percent of container traffic handled by the Port of Montreal is estimated to originate or terminate in the United States, primarily in the Midwest. Even in the absence of mega-ship service, Montreal will remain a formidable competitor. The past success of that port in competing for container traffic is proof enough that it will strive to offset any disadvantage flowing from increased use of big container ships. The Port of Montreal's 5-year plan includes expenditures of about \$260 million (Canadian) for improvements in container terminals, grain elevators, and the port's own railway facilities; and its marketing department reportedly will soon be strengthened.

Halifax must not only address the possibility that NY-NJ may capture Montreal traffic, which would otherwise be diverted to Halifax, but, more important, it must be concerned that whatever tactics NY-NJ may find successful in diverting Montreal traffic could possibly also be successful in capturing traffic now moving through Halifax to and from Montreal, Toronto, and points west.

STRATEGIES

In the continuous and ever more heated competition to maximize its portion of world trade, a port needs not only ocean accessibility and attractive inland transportation services but also a strong marketing structure, modern facilities to efficiently handle containers, and reasonable labor arrangements so that its own costs can be controlled. A deficiency in any one of these areas, which cannot be offset by other advantages, will reduce the competitive advantage inherent in geography.

Both Halifax and NY-NJ are investing heavily in port facilities. During the past 5 years, Halifax's expenditure on container facilities has totaled more than \$60 million, and the second phase of an expansion project to increase capacity by 25 percent was recently completed (3). The 5-year plan proposed by the Port Authority of New York and New Jersey includes the following expenditures on container or related facilities (4):

- \$110 million to \$115 million for deepening channels leading to container terminals at Elizabeth, Newark, and Staten Island;

- \$100 million to \$110 million to improve Howland Hook Terminal on Staten Island; this terminal is used by United States Lines, which already operates its new 4,400-TEU container ships to NY-NJ as part of its round-the-world service;

- \$35 million to \$50 million on improvements at Port Elizabeth;

- \$30 million to \$35 million on improvements at Port Newark; and

- \$5 million to \$10 million on intermodal rail yard facilities.

NY-NJ's assessment on containerized cargo to fund longshoremen's fringe benefits and job security has always been higher than that of any other North American port. In May 1985, however, the New York Shipping Association and the International Longshoremen's Association agreed on a revised formula that reduced the assessment from \$8.90 to \$5.85 per ton. This will translate into an estimated saving of about \$100 per 40-ft container moving to or from inland points located 260 or more miles from the port. Even with the attractive 34 percent reduction, NY-NJ's assessment is still more than twice Canadian rates, which were reduced 40 percent in 1984 and may soon be adjusted downward again.

Another move made by NY-NJ as part of its strategy to compete with other North American ports is direct involvement in minibridge service, which diverts some of its Far Eastern traffic to West Coast ports. In July 1985 the port began serving as an agent for Conrail's double-stack container trains operating between New York and Chicago. To operate these trains over the former Erie Lackawanna Railroad, clearances had to be increased at two points. Even this was deemed an inadequate competitive response. Conrail, in 1985, budgeted \$10 million to raise bridge clearances on the superior route of the former New York Central Railroad (5).

CN Rail built and experimented with a double-stack container car as far back as 1971, but the many heavier-than-average 20-ft containers moving westward out of Halifax would overload that car if it were fully double stacked. Although CN Rail recently has been experimenting again with double-stack container cars, it has contended that shipper needs for competitive prices and service can be met with single-stack cars. CN Rail concedes, however, that some eastern Canadian traffic already has been diverted to U.S. double-stack rail service.

Of more fundamental concern to the Port of Halifax is the monopoly position of CN Rail on container traffic movements to and from its inland markets. Although CP Rail now reaches Halifax, that carrier's route is so circuitous and restrictive (ferry service between Digby, Nova Scotia, and St. John, New Brunswick) as to render the service ineffective.

As a major part of its strategy to stay in the container traffic hunt, the Port of Halifax is proposing that the federal government, by amendment of the Railway Act, provide for shared use of the CN Rail line between Halifax and Montreal, thus allowing CP Rail to also operate on it. Arguments advanced in support of this proposal include

- The line is in good condition and has considerable excess capacity;

- Additional utilization of the line by CP Rail will reduce the unit fixed cost that must be borne by shippers in rates charged; and

- Head-to-head competition between CN Rail and CP Rail would be expected to induce improvements in rates and service in the Halifax-Montreal corridor and, possibly, in the adjoining Montreal-Toronto or Montreal-Chicago corridors as well.

Although this proposal is worthy of pursuit by the Port of Halifax, extensive private interests and regional political concerns suggest that considerable time and some degree of compromise may be required before the issue is resolved. In the interim, Halifax will need to continue working with CN Rail on developing services and rates that meet the competitive requirements of the port.

The competition between Halifax and NY-NJ is not envisioned as a winner-take-all battle. It can reasonably be expected that many steamship lines will select NY-NJ as a load center, others will choose Halifax, and still others may serve both ports. The battle for comparative port advantage, which in former times was concerned only with attracting steamship lines and with inland rail rates, has now, as has been shown, widened to encompass inland rail service as well, especially for container traffic.

In the final analysis, the success of a port will be directly proportional to its ability not only to conceive and implement programs to provide quality port service at reasonable cost but also to consummate and orchestrate arrangements with and between steamship lines and inland transport carriers, which will minimize the total costs of moving containers in a timely fashion between the hinterlands and the high seas. In a world increasingly sensitive to marketing strategies, such arrangements will be increasingly important because they are customer responsive--they enhance shipper satisfaction.

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