

Strategic Distribution Business Promotion Plan (SDBPP) of The Port Authority of New York and New Jersey

FINAL REPORT
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16. Abstract <p>The Port Authority of New York and New Jersey, recognizing the increasingly important role played by retail importers and their supply chain strategies on port container traffic and growth, have embarked on the development of a "Strategic Distribution Business Promotion Plan." This report presents the results of the first phase of this effort which was led by the Rutgers University team.</p> <p>The report presents the findings and observations from interviews conducted with 22 of the top 100 retail importers, delineating their objectives and criteria for the design of their distribution strategies, including the location of international distribution centers. The implications of these findings for the further development of the SDBPP, including the evaluation of potential investments and development have been identified and described.</p> <p>The report also classified and evaluated potential site developments in the Port of NY & NJ region. Site selection considerations and competitive assessment criteria were developed and applied.</p> <p>And finally, the report describes a detailed model that utilizes the findings of the previously described tasks to address the competitiveness of the Port of NY & NJ in the retail supply chain network. The model incorporates both operational and financial costs incurred by the importer through alternative ports in supplying their demand. The model demonstrates the sensitivity of port market share to key components of the distribution system and is a tool that can be used to evaluate candidate infrastructure projects intended to improve PONYNJ's market share in the import segment.</p>					
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Abstract

The Port Authority of New York and New Jersey, recognizing the increasingly important role played by retail importers and their supply chain strategies on port container traffic and growth, have embarked on the development of a “Strategic Distribution Business Promotion Plan.” This report presents the results of the first phase of this effort which was led by the Rutgers University team.

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Project Objective

The Port Authority of New York and New Jersey seeks to maximize the Port Region’s advantage in attracting and sustaining the business of import distributors. These importers play an increasingly important role in the determination of port of entry, and the import segment is the dominant component of containerized trade. Because of the economic benefits to the Port Region created by this trade, the Port Authority is taking the initiative to develop a strategy for developing and sustaining this crucial element of their business. The outreach and fact gathering, including interviews with top importers, the identification and evaluation of clusters of available sites, and the modeling and analysis of PONYNJ’s competitive position and the parameters affecting its competitiveness are key aspects of advancing the development of this strategy.

Project Scope

The project comprised three major tasks:

1. Import Distribution Demand Profiles

Based upon profiles of current and future intentions of twenty of the top one hundred distribution importers, prepare a detailed list of priority transportation infrastructure, site, and labor related factors that the Region needs to attain in order to attract business. The overall PANYNJ Development Strategy will be taken into account in formulating the priority transportation infrastructure plan.

2. Identification of Clusters of Available Sites

Based on currently available surveys, identify and rank clusters of closely located and sufficiently sized sites, in terms of their correspondence to site criteria delineated by the profiles. Describe the terms and obstacles in the way of the sites' immediate use. Estimate price per square foot of developed warehouse space. Describe access routes (truck, rail, and barge) linking these clusters with the port terminals.

3. Delineate Market Areas and Size in which PANYNJ Has a Competitive Advantage

Determine current all-in component logistics/transport costs from Northern Asia to inland BEA's (Atlantic Coast and Midwest/Southwest) via the Ports of SPB, Seattle/Tacoma, Savannah/Charleston, Norfolk and PONYNJ. Based on current costs, develop least cost market areas for the competitive ports. Based on PIERS data, estimate distribution imports to each port's market area. Evaluate the impact of cost components on PANYNJ's competitive position. Determine relative impact on expanding its market that would be brought about by improving cost components. Determine priority cost components and relate to results derived from industry profiles. Develop a range of forecasts of future import distribution traffic and related services (containers handled and estimated number of sites developed). The forecast range would consist of a baseline trend (continuation of business as usual) and a potential trend (wherein importers needs are met).

Results and Findings

Synopsis of Task 1 Findings, Results and Observations

The following general observations were made:

1. The “import distribution” business represents, from a product or supply-chain point of view, a wide and varied sector, composed of retail, parts and components, semi-manufactures, raw materials (dry & liquid bulk) and others. Of these, the largest single and most consistent (in terms of their logistics behavior) category, and most significant from the container volume point of view, is the retail importer. Retail importers consciously differentiate their supply-chains in terms of the value of product transported, i.e., high, medium, and low value.
2. Clearly retail importers are quite conscious of the cost, both operational and financial, of getting their finished goods to shelf. They keep track of them closely. They model them in detail and in their totality and they make decisions on the routing of their goods, accordingly. What is most important for our study is that once deciding upon the optimum route, they are prepared to make investments in the trade route of their choice. Once they make an investment, they tend to dedicate their shipments to that route. Such decisions are continuously reviewed, but under normal circumstances not changed in the short term.
3. The component of the preferred trade route¹ of greatest interest to the retail importer is the international DC, sometimes called the master DC. This interest stems from the fact that retail importers understand the great benefits derived from properly locating this component. Once having preliminarily identified the least cost, highest service trade route appropriate to their intended market, they “fix” their commercial plans by locating a multi-purpose distribution center as close as possible to the US gateway port on the route.
4. Without exception, retail importers interviewed are making use of such DC’s today or intend to do so in the near future. This intention stems from the realization on their part of the important benefits that they can earn from such DC’s. These include:
 - Transportation operational cost savings derived from trans-loading from ISO container to 53 foot domestic box or van;
 - The minimization of financial cost involved in holding safety stocks at the international DC instead of the regional warehouse or retail outlet.
 - The optimization of LCL trucking logistics between international DC’s and regional DC’s and retail outlets.
5. The competitive performance characteristics of the gateway port constitutes a key factor in the retail importers’ selection of where to locate its international DC. Three of the most often cited are also the same characteristics for which the PONYNJ is most often criticized. The three are:
 - Length of time for the terminal to clear the retail importers’ box from the ship and out the gate. PONYNJ terminals are seen as being the slowest amongst terminals of major gateway ports in the US;

¹ Typically the distribution manager of the retail importer see his/hers responsibility covering the entire supply-chain from foreign factory to US retail outlet, i.e., container trade route.

- Once out the gate, retail importers are sensitive to the congestion met by truckers in negotiating the feeder roadways linking the terminal to main highways. PONYNJ is seen as the most congested Atlantic port because truckers contend they are forced to pick up boxes a day before delivery and hold the boxes over night in their off-dock parking yards, before a morning departure and mid-day delivery to the DC. This performance results in higher operational and financial costs of using the Port.
- Cooperation on the part of the respective port authority is seen as crucial to retail importers in many areas; seen as a sort of one stop shop for guidance in optimizing coordination between the terminal and the inland transportation system, in selection of warehouse sites, in negotiating local and state incentives (related to site and access development, taxes, and labor training) and in arranging back haul use of import boxes for exports, thereby minimizing costs incurred by the importer for returning the box to the terminal. In terms of providing this type of coordinated service to retail importers, PONYNJ ranks a distant last place behind all other US gateway ports according to the survey

Implications of Task 1 Conclusions for Task 3 – Cost components:

Based on the above conclusions, the following key component costs (covering current circumstances) were included in the model:

- The length of time required to clear a box from the ship through the gate: According to retail importers is currently 4.5 days for PONYNJ, 2 for Savannah, 2.5 for Norfolk, 3 for SeaTac and 4 for SPB ports. The cost of handling in port remains the same as before.
- Duration and cost of trip from port to international DC: Owing to local congestion, use of trucking holding parks, the duration and trip cost between the gate and the international DC for PONYNJ should be 1.5 days and a cost of \$500. Duration and costs for the other ports should remain the same as originally modeled.
- Impact of Coordination: We have not measured this. No doubt it would show up in lack of incentives, taxes, labor training, site development and the more *general lack of alignment between terminal, trucking and warehouse operations.*

Implications of Task 1 Conclusions for Task 3 - Diagnostic Cost Analysis

The PONYNJ shows up lacking in another fundamental sense; in terms of coordinated alignment of all the services represented by the terminal and transportation from terminal to international DC. To be competitive with Savannah and Norfolk, a project dedicated to this purpose is needed - *the development of a Near Dock DC Complex* (NDDC). It would possess the following characteristics:

- The NDDC complex is linked to marine terminals by dedicated truck-way or automated delivery system affording immediate delivery of box without passing

the gate. Customs and security checks would be performed at the NDDC complex.

- Once at the NDDC complex, containers would be delivered to retail importers dedicated yards or “pods”. Delivery of containers from pods to warehouse docks would be by yard equipment on as-needed basis.
- The NDDC would possess sufficient space for the location of big box warehouses.
- The NDDC would also possess space for a storage yard where empties could be stored.
- The NDDC would have convenient truck and rail access to major highways and inter-modal rail services.
- The NDDC would be the focus of local, state, and federal incentive programs related to taxes, labor training, and environmental mitigation.

The NDDC would provide the following costs and duration variables for use in diagnostic modeling:

- The length of time required to clear a box from the ship through the gate: 1 day for PONYNJ, 2 for Savannah, 2.5 for Norfolk, 3 for SeaTac and 4 for SPB ports. The cost of handling in port remains the same as before.
- Duration and cost of trip from port to international DC: The duration and trip cost between the gate and the international DC for PONYNJ should be 1 hour and a cost of \$75. Duration and costs for the other ports should remain the same as originally modeled.

Synopsis of Task 2 Findings, Results and Observations

The selected cluster included the following types of international and import DCs:

1. Traditional North American Distribution Centers

These DCs tend to be quite large and generally exceed 500,000 square feet in size. Many exceed one million square feet. These facilities receive imported and domestic product and tend to be the location of value added activities. With value added activities, a typical North American DC can generate between 0.5 and 1 employee per 1,000 square feet of space.

2. Master/International Distribution Centers

The concept of master/international distribution centers is a recent development in the supply chain and represents a derivation of the North American DC concept. Master/international DCs focus on imported product. Similar in size and job generation potential, these facilities seek to be foreign trade zones. Master DCs also serve as the back up supply for regional DCs. If a regional DC does not have the product needed for a customer in stock, then the order is automatically routed to the Master DC for fulfillment. Master DCs then make use of nearby access to integrated carriers (such as FedEx and UPS) to overnight the critical shipments to customers.

3. Cross Dock/Transload Distribution Centers

In a cross dock operation, the contents of the containers are emptied near the port and then loaded into domestic trailers for distribution. Pure cross dock operations involve minimal storage and minimal value added activity.

Site Selection Considerations

The study found the following key site selection factors:

- Availability and cost of labor
- Incentives
- Proximity to markets
- Cost and time of construction (including construction costs and cost and length of permitting).
- Property Size
- Cost of Property
- Transportation Infrastructure and Access to the region and specific site
- Utilities
- Foreign Trade Zone status

Regional Competitive Assessment

The regional competitive assessment considered three components:

1. Lease Rate Comparison

The asking lease rates for the PONYNJ region are similar to the asking lease rates in the Inland Empire, a major DC node for the Ports of Los Angeles and Long Beach and slightly lower than the Hampton Roads area in Virginia. The New Jersey rates are higher than areas in Pennsylvania, Chicago and Seattle.

Within the New Jersey area, the asking lease rates vary considerably. Asking lease rates for existing and proposed industrial property immediately adjacent to Port Newark/Elizabeth is reported as being in the \$8.50-to-\$11.00 per square foot range. In comparison to this near-port pricing, asking lease rates proximate to the Port of Savannah are reportedly in the \$3.00 per square foot range.

2. Property Availability

The expansion of the Portfields initiative combined with the availability of sites in New Jersey and eastern PA indicates that the region does have sufficient capacity to support additional DC development. However, the land, development and lease rate costs may be higher compared to such areas as the Port of Savannah. The Portfields program has expanded and now includes over 20 sites. Because these sites are environmentally challenged and some are on former wetlands, development costs can be high.

In “greenfield” locations within the region, infilling of availability properties and redevelopment of existing properties continues to add to the stock of available DC facilities in the area.

3. Labor Availability

The discussions and research also revealed a growing shortage of labor to support DC operations throughout the US. Significant shortfalls in available labor was reported to have affected major DC deals in the Harrisburg area, Joliet, IL, and Orange County, NY, as well as other areas in the US.

The supply of labor in New Jersey and eastern PA is considered a strength by some of the individuals interviewed. Labor in New Jersey is largely drawn from communities with newly migrated and under-employed populations, including Newark, Elizabeth, Perth Amboy and Trenton. However, some shortages are now being reported in New Jersey and the issue should be addressed.

Synopsis of Task 3 Findings and Results

Task 3 of the Strategic Distribution Business Promotion Plan addresses the Retail importer supply-chain network competitiveness of PONYNJ. To carry out this analysis, it was necessary to determine the current all-in component logistics/transport costs from Northern Asia to U.S. inland destinations within a market defined as 1000 miles of the port of New York/New Jersey. The competitive performance in this market for the following ports were studied - Ports of SPB, Seattle/Tacoma, Savannah/Charleston, Norfolk and NYNJ. The analysis took into account the least cost market areas for the competitive ports, estimated distribution of Asian imports to each port's market area and other factors to evaluate the impact of cost components on PONYNJ's competitive position. The task also determined relative impact on expanding PONYNJ's market that would be brought about by improving cost components. A range of forecasts of future import distribution traffic was developed.

A model was developed to evaluate port performance incorporating the outputs of Task 1 and Task 2 which identifies various models used by major importers and warehouse characteristics. The model is designed to be used as a "research tool" for evaluating the relative performance of candidate infrastructure projects whose proposed objective is to expand PONYNJ's capture of retail importer trade flows. The model "Retail Importer Supply-Chain Network Competitiveness Model" (RISC-NC) is a Node and Link model of the entire logistic chain from foreign port to consumption destination. The model incorporates both operational and financial costs incurred within the logistic chain, which includes time and operational costs of the ocean voyage link and those incurred at the US port, time and operational costs in moving boxes to international distribution centers (IDC), costs associated to International distribution center infrastructures, time and Operational costs in moving boxes from IDCs to regional distribution centers (RDC).

The Model outputs segment costs, breakdown of operational and financial costs, identification of optimal Port-IDC combination to serve a RDC, quantification of pipeline safety and replenishment stock required as a result of trade flow fluctuations, warehouse footprints and jobs associated with a given region.

The model simulation shows how sensitive market share is to pipeline cost in relation to the commodity value. Under the present condition scenario, high value, time sensitive commodities are served more cost effectively through ports other than PONYNJ. For low value commodities, operational costs are more dominant than pipeline inventory costs, in which case PANYNJ displays a competitive edge for serving its proximal market.

A hypothetical scenario was implemented in the model specifically conceived to minimize the operational and financial costs of key factors determining PONYNJ's performance, i.e., berth-to-gate time it takes to clear the box through the terminal and cost and time required to move the box from the terminal to the IDC. The scenario focuses on alignment of supply chain components, incentives, labor availability, and coordination between terminal, trucking and rail access, empty box storage and DC operations. The simulation is based on a 5 year forecast of demand to 2011.

The results of simulating the hypothetical scenario indicate that minimizing time and cost of aforementioned critical factors result in significant increases in market capture for medium and high value commodity imports by PONYNJ.

Future Work

Based on analysis of supply chain costs through different gateway ports to serve retail importers' needs, as identified by in-depth interviews with 22 companies, a hypothetical example project possessing standards of performance required to give PONYNJ the competitive edge was conceived (NDDC) in Phase 1 of this study. The hypothetical example is specifically conceived to afford retail importers using PONYNJ significant savings in supply chain costs, both operational, financial and those due to lack of alignment, namely in reducing:

- the length of time required to clear a box from the CT, i.e., off the ship & through the gate.
- duration and cost of trip from port to international DC.

And in focusing on:

- Alignment of supply chain components, incentives, labor availability, and coordination between terminal, trucking and rail access, empty box storage and warehouse operations.

In Phase 2, the products of Phase 1² will be used to evaluate actual projects already proposed by both public and private entities as means to improve the competitiveness of the Port. Where appropriate, the project's scope may be expanded in the aim of optimizing their benefits to customers, the port and the region's economy and environment. Following discussions between the Consultants, project sponsors and the PONYNJ, a detailed project feasibility will be conducted. If the results so warrant, the

² Phase 1 products include 1) retail importers' survey results, 2) economic model of PONYNJ's competitive advantage in the retail importers' market, 3) a hypothetical example project maximizing PONYNJ's advantage.

project (expanded) will be subjected to a market test with the retail importer participants in the Phase 1 survey. Finally, a report and presentation of implementation recommendations will be developed and submitted.

In terms of tasks, it is suggested that Phase 2 consist of the following:

Task	Description
1.	Identify, interview sponsors and collect data and plans of all appropriate projects proposed by private or public sector entities for sites in region whose size, proximity to the Port and access conditions satisfy competitive constraints.
2.	Analyze performance impact of projects utilizing Phase 1 products.
3.	Expand scope of projects where appropriate, utilizing project elements supplied by others.
4.	Conduct conceptual operations, funding, financial, environmental and implementation evaluation (Strategic Business Plan) of projects and prioritize.
5.	Review recommendations with PONYNJ and conduct discussions between PA and project sponsors regarding ways and means of joining forces to optimize regional benefits.
6.	Based on results of discussion, expand Strategic Business Plan of selected project(s) to a preliminary feasibility level.
7.	Test market acceptance of project by presenting it to companies interviewed in Phase 1.
8.	Finalize recommendations.
9.	Prepare and submit final presentation and report.