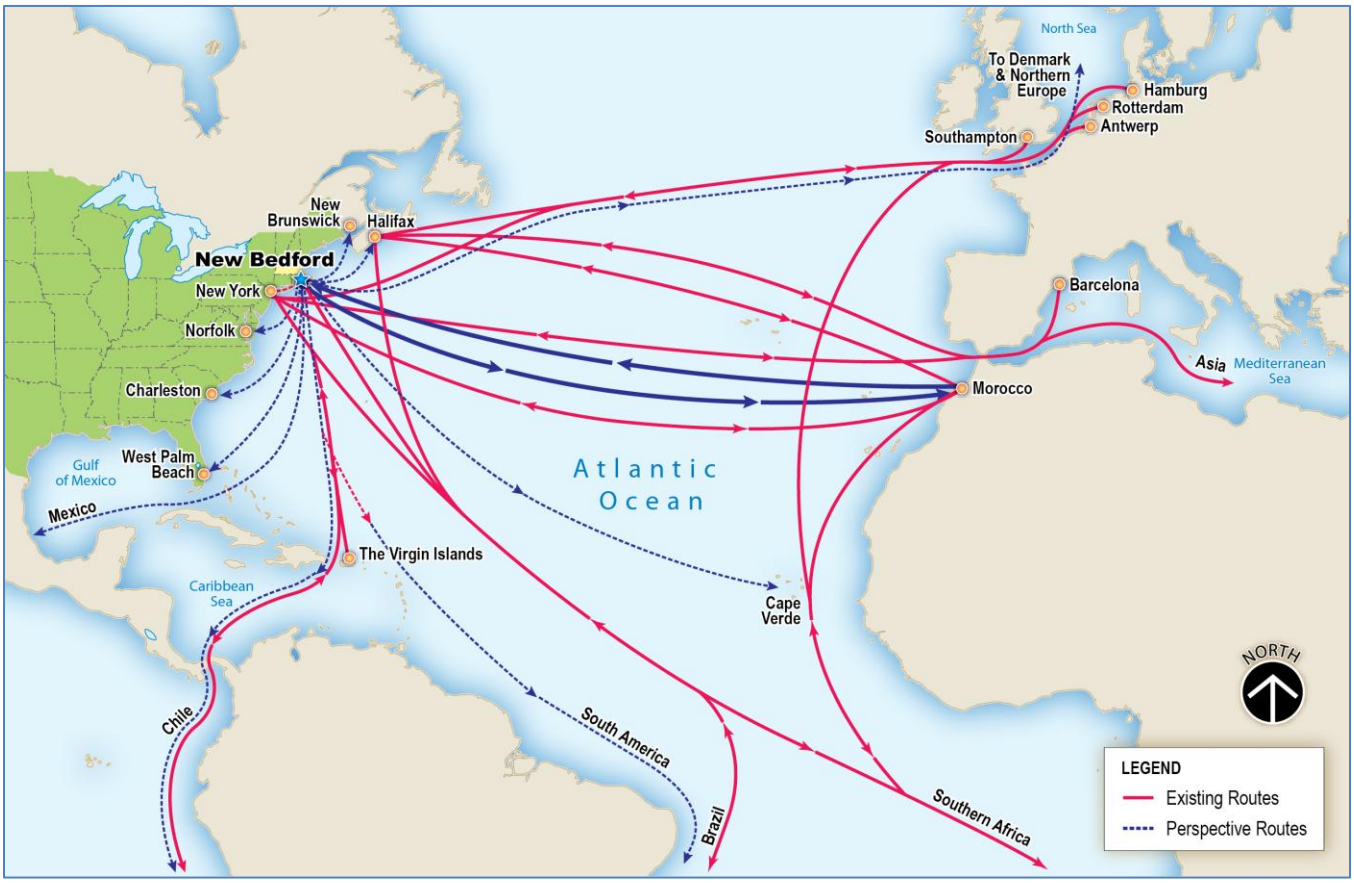
New Bedford Business Development Study and Commodity Analysis

Connecting to the World



Submitted by

HDR

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Port of New Bedford Business Development Plan and Commodity Analysis

HDR Engineering, Inc. (HDR) examined the general status of the New England international cargo market as a potential indicator of commodity-handling opportunities for the Port of New Bedford. The research focused on what goods are most prevalent, where the goods are being shipped to, who the largest shippers are, and how the goods are being shipped.

All record keeping of freight exports is based on bills of lading and the records produced in accordance with the public reporting requirements of the U.S. government, specifically the Census Bureau and U.S. Customs and Border Protection. General port data is also collected and maintained by the U.S. Army Corps of Engineers. These data sources are the only consistent means of volume analysis for U.S. Ports. This information, however, does not capture the commodities or products produced in the New England region that are being transported to domestic ports outside of the region for export. Typically, the point of origin for freight leaving the U.S. is recorded and credited to the port where the cargo is exported. As a result, it is difficult to track the freight to its exact point of origin. Regardless, it is likely that New England shippers are using New England ports whenever cost-effective and efficient, for at least a portion of their freight. It should be noted that most of the cargo originating in or destined for New England is moving by rail or truck to seaports outside of the region. Rail and truck transportation are the major competitors to ports in New England, as rates can be more cost-effective for shippers when considering the total cost of moving commodities. In order for New England ports to be more competitive, they either need waterborne feeder options or direct services, as is the case with Boston or the break bulk services that exist throughout New England.

Ports are often categorized by the type of cargo and direction of throughput that constitutes their highest volume of shipments. Optimally, ports should have a diverse mix of different cargoes and as close to an equal balance of imports and exports as possible. A diverse cargo base compensates for cycles in supply and demand requirements for individual commodities. A balance of imports and exports reduces a shipper's repositioning costs for equipment such as containers, or a vessel's operating costs, which is passed onto the shipper, if there is no subsequent cargo. New England ports handle far more imports than exports, causing them to be categorized as unbalanced and import-based. The available public data, from which such assumptions are drawn, does not always present an accurate profile of the type or amount of cargo being handled. For example, in regard to exports, ports such as Portland, ME or Davisville, RI may not appear to be of much significance. Portland imports over 23,000,000 metric tons of petroleum products annually, making it the largest foreign import transit port in the United States. Since most of the cargo is destined, by pipeline, for Canada, Portland is classified as primarily a petroleum port. This far overshadows the 3.9 million tons of pulp and paper products exported by container last year—which some consider more significant on account of the direct and indirect employment generated by that freight. In contrast, Davisville imports and processes nearly 125,000 new automobiles each year. Although their facilities are capable of handling many other commodities, the port does not have any significant imports other than automobiles or any export, which classifies it as a niche import cargo port. This often limits a ports market potential, as it has with Portland and Davisville, due to market perception.

New England ports have attracted a wide range of cargoes because of cost and efficiency advantages to the shippers. A profile of various prominent import and export cargo movements by geographic location indicated the following:

- **Boston, MA:** Manufactured goods, non-metal minerals, equipment/machinery, chemicals, automobiles, pulp and paper
- **Bridgeport, CT:** Sand and gravel, chemicals, bananas
- **Chelsea River, MA:** Non-metal minerals, chemicals, refined petroleum products
- **Eastport, ME:** Pulp and paper waste, seafood
- **Fall River, MA:** Chemicals, refined petroleum products
- **Mystic River, MA:** Iron and steel scrap, fabricated metal products, non-metal minerals, machinery
- **New Bedford, MA:** Sand and gravel, agricultural produce, seafood, refined petroleum products
- **New Haven, CT:** Chemicals, refined petroleum products, iron and steel scrap, non-metal minerals, sand and gravel
- **New London, CT:** Lumber, copper, steel
- **Norwalk, CT:** Sand and gravel
- **Portland, ME:** Refined petroleum, crude oil, clay, non-metal minerals, pulp and paper, manufactured goods
- **Portsmouth, NH:** Non-metal minerals, gypsum, scrap metal
- **Providence, RI:** Iron and steel scrap, non-metal minerals, concrete and cement, chemicals, steel
- **Quonset Point/Davisville, RI:** Automobiles
- **Rockland, ME:** Concrete and cement
- **Salem, MA:** Household goods (HHG)
- **Searsport, ME:** Non-metal minerals, chemicals, gypsum
- **Town River, Quincy, MA:** Vegetable oil
- **Weymouth, MA:** Chemicals

Excluding petroleum and coal, which represent both significant domestic moves and specialized handling, the total tonnage of commodities moving through New England ports are represented in the following graph by state. Overall, Massachusetts ports, due primarily to the Port of Boston, handle the largest amount of tonnage for the range of commodities indicated earlier.

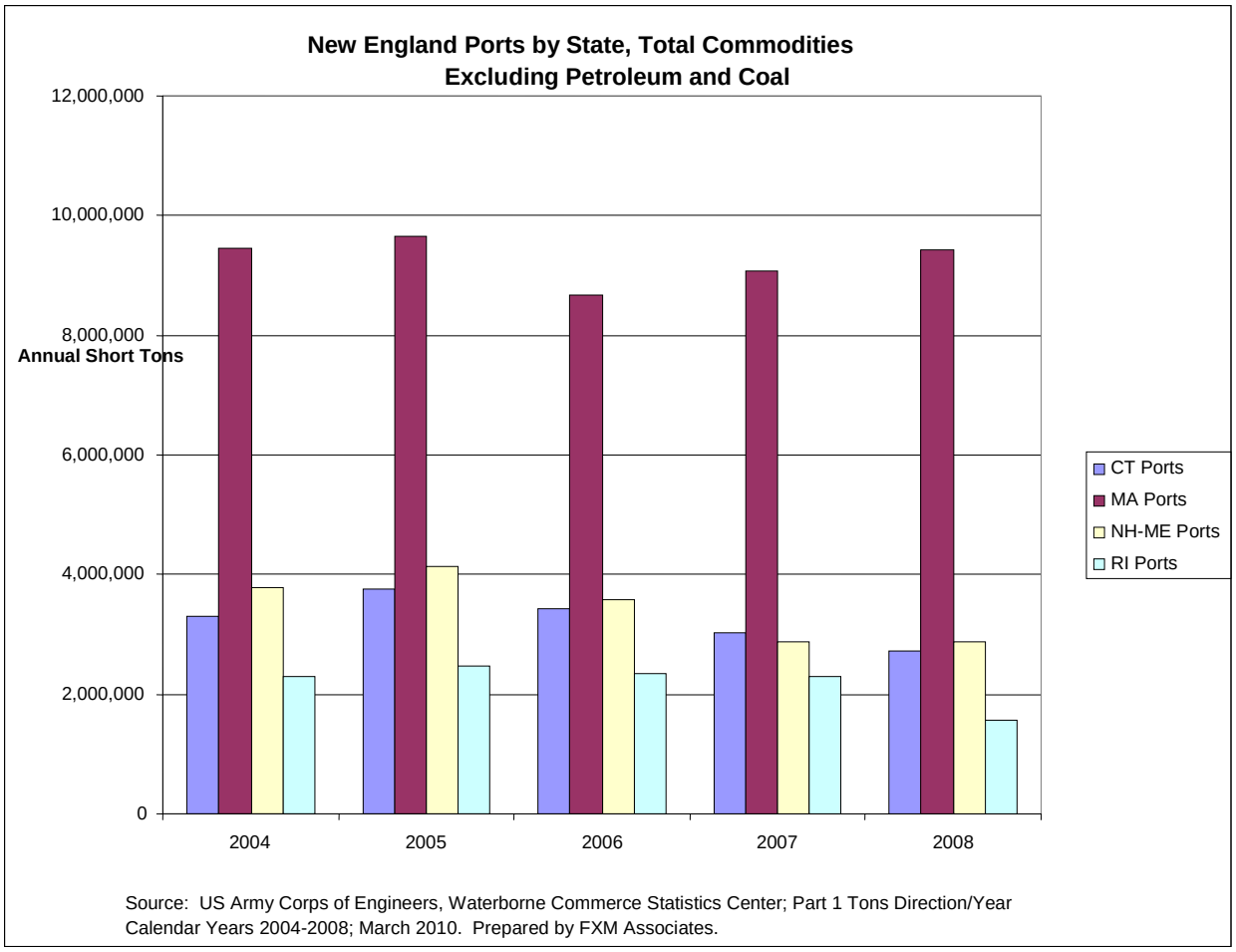

Figure 1 New England Port Cargo Tonnages 2008

The handling of dry bulk commodities is also significant for New England ports. For example, seasonal commodities, such as road salt used by state and municipal agencies during the winter, are delivered year round to provide enough of a stockpile in winter so that if demand is higher due to weather conditions, the agency is prepared to handle it. The commodity is handled either in several selected New England ports, or moved by rail from New York, Canada, or other domestic sources into parts of the region where it is redistributed by truck to public entities. Demand for land and terminal space is becoming more significant in larger ports driving up the cost of handling dry bulk commodities. In addition, long haul rail and truck transportation costs are increasing. Shippers are looking to move commodities in the most cost-effective means possible between origin and destination points. All-water transportation with deliveries to the nearest accessible port area reduces the overall cost shippers and consignees, including municipal and other public agencies.

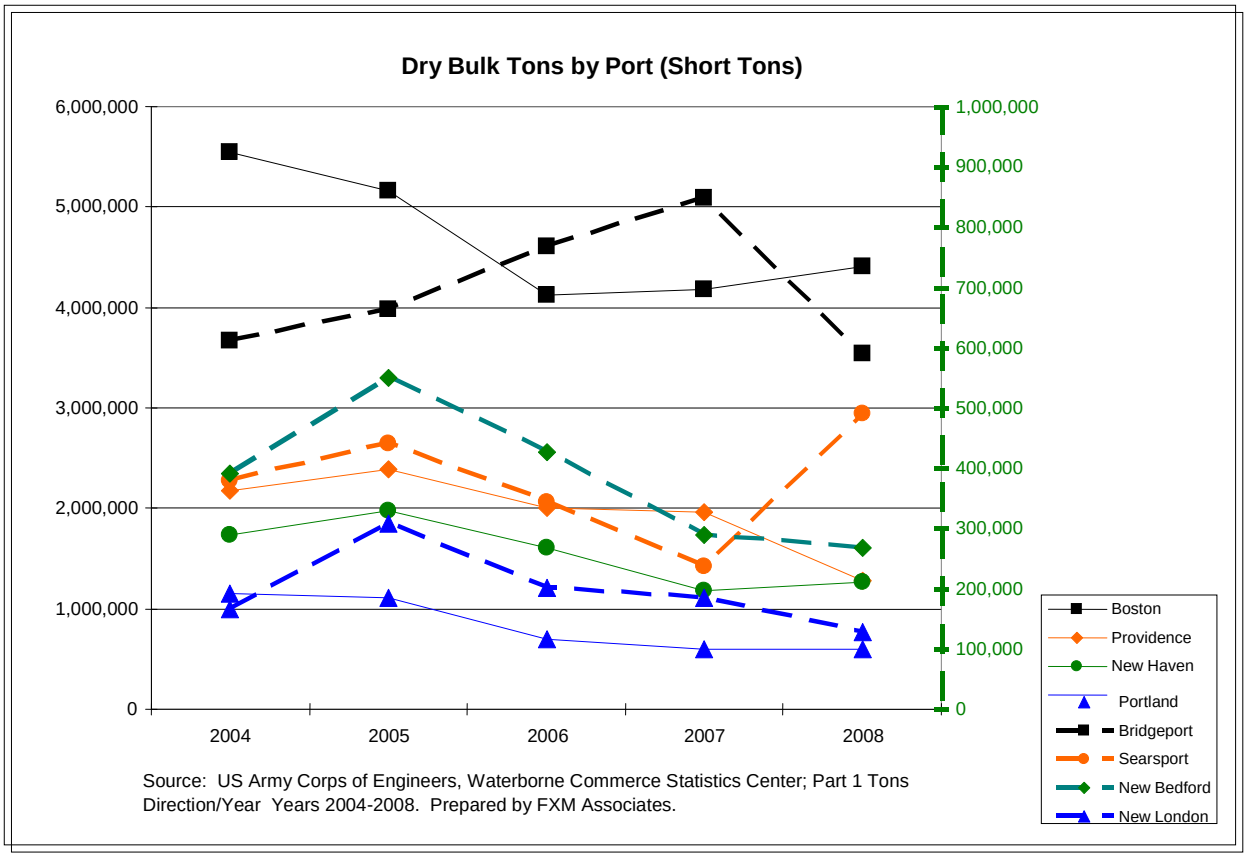

Figure 2 Dry Bulk Tonnages by Port in New England

In evaluating the profile of the Port of New Bedford for 2008, as compared with available federal data, the port has a range of commodities that it handles that is consistent with the rest of New England. The port has a variety of facilities, some of which are ideally suited to handling specific types of freight, and others that are far more flexible. The critical elements in developing revenue-generating facilities are their adaptability to a wide range of changing market demands, flexibility on the terminal site, and no limiting infrastructure. The recently announced plans to develop the South Terminal for the processing of wind turbine components will provide the port with a new and usable facility that will outlast the construction and installation of the Cape Wind project. A financial analysis completed for Mass Energy Cooperative as part of their study of port facilities by FXM Associates for offshore wind projects indicated that the South Terminal facility could generate enough commerce outside of the wind energy industry to sustain the facility. Along with the other existing public and private facilities in the port, the Port of New Bedford can develop a diversified cargo-handling base that would provide the port with a wide range of capabilities to handle different types of commodities. Critical to this mix would be the ability to develop a throughput balance with increased exports. The port needs to identify and take advantage of opportunities that complement its higher-value imports.

New Bedford handles an estimated $230 million in cargo annually, consisting of mostly bulk and break bulk commodities, totaling 345,423 short tons. Approximately 9% of the total cargo handled cargo is international.

Commodity	Note	Total-Short Tons	Domestic	Foreign
Total		345,423	317,895	27,528
Petroleum	1	74,269	74,269	0
Chemicals	2	2,505	0	2,505
Crude Materials	3	240,428	240,428	0
Manufactured Goods	4	15	0	15
Food-Farm Products	5	23,154	0	23,154
Machinery	6	3,213	3,198	15
Other	7	1,839	0	1,839

Notes: 1.Gasoline, Kerosene, Distillate Fuel Oil 2.Sodium Hydroxide 3.Sand and Gravel 4.Smelted Products 5.Fish (not shellfish), Vegetables, Fruits, Nuts, Food Products 6.Machinery, Manufactured Wood Products 7.Unknown or otherwise not classified.

Figure 3 Port of New Bedford Cargo Tonnages by Commodity

Despite New England's balance of moves favoring imports, exports are still significant. The largest volume of exports from New England consist of scrap metal, used automobiles, waste paper, pulp and paper products, cattle hides, furs and frozen seafood. New England also exports cargo with high value proportional to their volume, including medical Instruments, computers, pharmaceutical products, electric machinery, semiconductors, and similar commodities; however, these types of cargo do not generally travel by water.

As an indicator, HDR looked at the smaller volumes of various commodities moving through the Port of Boston, which provides a sample profile of the New England market as a whole and what opportunities may exist for export that New Bedford may attract. The Port of Boston represents the only major containerized ocean carrier shipping option in New England. This does not, however, represent the total volume of New England exports or the potential export opportunity. As an example, Boston handled 9,341 TEU's of pulp and paper products last year. That is less than 5% of the estimate of the full export capacity of the pulp and paper industry in the State of Maine alone. This indicates that Maine pulp and paper mills are finding other ports from which to export their product approximately 95% of the time. As an example, pulp and paper is moved by rail to the Port of New York and New Jersey where it is transloaded into containers for export. Due to potentially lower transload costs in New Bedford, as well as heavy weight rail access and faster turnaround on rail equipment, there exists a potential opportunity for developing containerized New Bedford exports connecting via all-water service on the marine highway system to several larger hub ports.

Selected New England Port Export Profile

To provide a comparative base, export data for eight (8) selected New England ports was collected. The ports were selected based on volume of exports and availability of data. Dollar values were estimated based on claimed value as available from Bills of Lading. It should be noted, however, that monetary values are incomplete as Customs does not

publish all of the collected values due to Privacy of Information Rulings in 19 CFR Part 103; volumes tend to be more complete and less prone to sampling errors since they can be cross verified over multiple sources. The eight (8) selected ports represent the majority of all exports out of all New England ports and provide a basis for analysis of the New England export market as a whole. This analysis does not fully cover what is being produced in New England or the full market potential as it is based on data covering what has moved through these various ports.

A total of 28,889 shipments was exported from the eight (8) highlighted New England ports over the course of 2009. The total estimated value of these shipments was approximately $10,097,253,000. The data shows that 15,689 of these shipments, valued at approximately $7,230,963,000, were not containerized and were moved as bulk or roll-on/roll-off (RO-RO) cargo. This comprises 54% of the total number of shipments and 72% of the total value of shipments. An analysis of the data suggests that this proportion favors non-containerized methods of transporting cargoes. The total value of the exported cargo is likely higher, as 1,855 or 6% of the shipments that were analyzed do not have a listed value. While it is possible that some of these shipments do not have monetary value, such as containers that are being repositioned to Asia, the data suggests that the majority of these shipments are valuable. Thus, the total value of New England export shipments shown above, based on the available data, can be considered conservative. This indicates that there may be a larger market opportunity available for New Bedford. A breakdown of the value and composition of shipments exported from the eight (8) indicated New England ports shows the following for calendar year 2009:

Boston, MA

- **a.** Total value of shipments: $7,007,606,000.
- **b.** Total amount of containerized freight: 54,649 TEUs.
- **c.** Composition: Primarily used cars and waste paper (based on number of shipments) and scrap metal (based on value of shipments).
- **d.** Waste paper is approximately 23,974 TEUs of containerized export out of Boston.
- **e.** Pulp and paper constitutes 9,341 TEU's of containerized export.

Eastport, ME

- **a.** Total value of shipments: $58,902,000.
- **b.** Total amount of containerized freight: None, all freight was shipped in bulk.
- **c.** Composition: Primarily wood pulp and seafood

New Haven, CT

- **a.** Total value of shipments: $143,250,000.
- **b.** Total amount of containerized freight: None, all freight was shipped in bulk,
- **c.** Composition: Scrap metal and refined petroleum products.

Portland, ME

- **a.** Total value of shipments: $3,791,000.
- **b.** Total amount of containerized freight: A containerized barge service between Portland and the Port of New York and New Jersey operated during the 2009. The service handled 4,760 TEU's of pulp on the barge service from Portland in 2009. The service was suspended in September of 2009.
- **c.** Composition: Pulp and paper products, manufactured goods.

Portsmouth, NH

- **a.** Total value of shipments: $110,832,000.

b. Total amount of containerized freight: None, all freight was shipped in bulk.
c. Composition: Scrap metal.

Providence, RI

a. Total value of shipments: $2,767,059,000.
b. Total amount of containerized freight: None, all freight was shipped in bulk.
c. Composition: Scrap metal
d. Two shipments of over $1 billion each were listed being exported to Turkey from Providence. Based on the reported high value, it is likely that the material being exported was low weight and high value such as copper, tin or titanium.

Salem, MA

a. Total value of shipments: $5,813,000.
b. Total amount of containerized freight: 140 TEU's.
c. Composition: Household goods (HHGs) bound for Bermuda handled by a single carrier.

New Bedford, MA

a. Total value of shipments: $10,394,766.
b. Total amount of containerized freight: None, all freight was shipped in bulk.
c. Composition: Agricultural products, HHG's, bulk .

Port	Estimated Value of Shipments (in USD)	Volume of Containerized Freight (in TEUs)	Composition
Boston, MA	$ 7,007,606,000	58,649	Used Cars, Waste Paper, Scrap Metal
Eastport, ME	$ 58,902,000	All Bulk	Seafood and Wood Pulp
New Haven, CT	$ 143,250,000	All Bulk	Scrap Metal and Fuel
Portland, ME	$ 3,791,000	All Bulk	Pulp & Paper Products
Portsmouth, NH	$ 110,832,000	All Bulk	Scrap Metal
Providence, RI	$ 2,767,059,000	All Bulk	Scrap Metal
Salem, MA	$ 5,813,000	140	HHGs
New Bedford	$10,394,766	All Bulk	HHG's, Agricultural, bulk

Figure 4 Export Commodities and Values for Selected New England Ports

Goods

A wide variety of goods is being exported by New England ports. The majority of these export shipments are used cars, exported by a variety of shippers, constituting well over 16,000 of the nearly 29,000 shipments examined. The total value of these shipments was approximately $300,933,000. Proportional to the total value of shipments, however, the total value of all the used car shipments is very small, comprising only 3% of the total value of New England's exports. These shipments are shipped RO-RO and are originating almost exclusively in Boston.

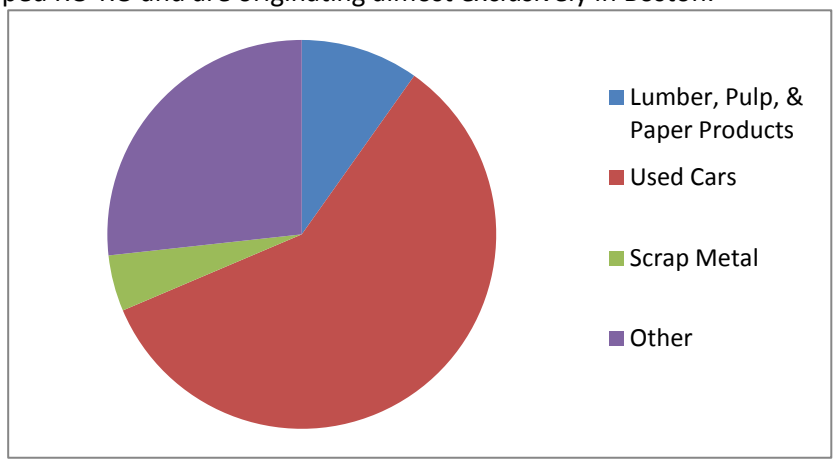

Figure 5 Goods by Number of Shipments

Scrap metal comprises the majority of the value of shipments from New England ports. The total value of scrap metal shipments from New England ports was approximately $7,188,372,000, and accounted for 1,350 shipments. This means that scrap metal accounts for 71% of the total value of New England exports, but only 5% of the total number of shipments. The bulk of the value of scrap metal shipments is accounted for by four (4) shipments of scrap metal, two (2) originating in Boston and two (2) originating in Providence, whose combined value is approximately $6,474,715,000. If these shipments are written off as outliers (i.e., data that are so extreme that they skew the results of this analysis), scrap metal still comprises 20% of the remaining export market—more than twice that of its closest competitor, used cars.

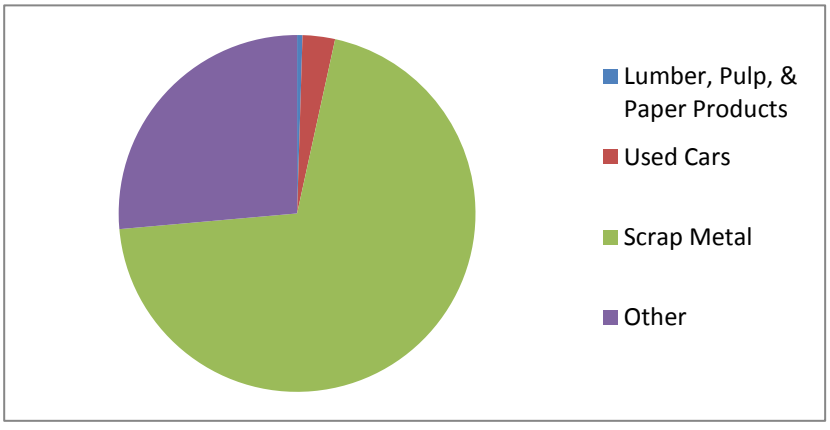

Figure 6 Goods by Estimated Value

The remainder of the export market is comprised of wood pulp, paper, waste paper, lumber, seafood, electronics, household goods, animal hides and furs, plastics, and food items, to name a few. None of these items constitutes a

large enough value to be statistically relevant on an individual basis, but taken collectively, they constitute about a quarter of both the total value and the total number of shipments of exported goods from New England ports. Being that Boston is the only major container port in New England, it has the largest diversity of exported items, thus giving the best example of what potential markets exist in New England for export. Figure 7 illustrates the breakdown of Boston-based containerized exports by commodity type (ranked by how many TEUs each commodity commands).

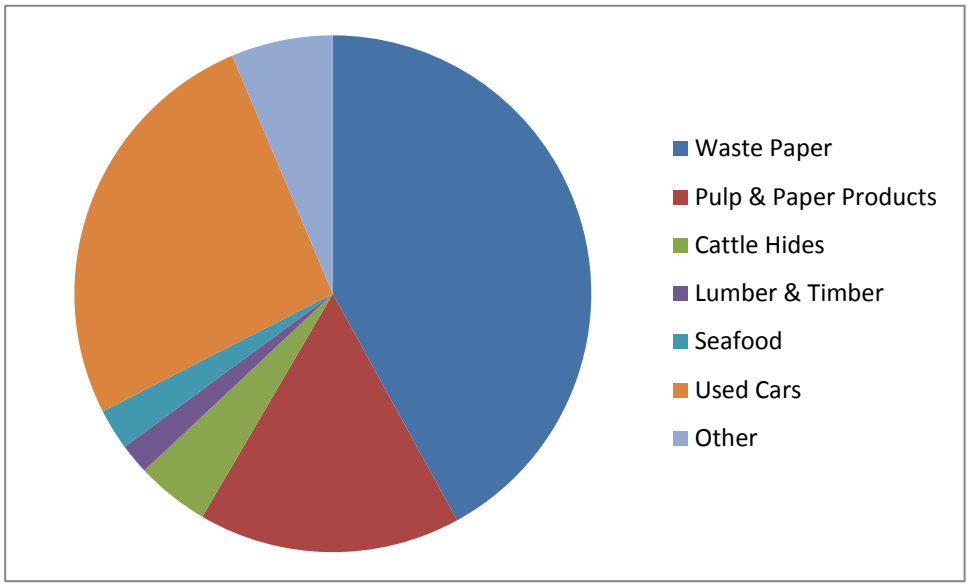

Figure 7 Boston Exports by Commodity

Shippers

In terms of number of shipments generated by each shipper, no single shipper dominates the market. There is a wide distribution of shippers for each of the commodities being shipped and all of the shippers exclusively handle used cars. The largest shippers, in terms of number of shipments generated, included the following:

- Swiss Shipping Lines, generating 2,159 shipments
- Global Auto LLC, generating 899 shipments
- Golden Trust Shipping, generating 878 shipments
- The Sallaum group, generating 833 shipments
- MGM Global Trading, generating 822 shipments

In terms of value of shipments generated, the market is dominated by Schnitzer Steel, which generated 42 shipments with a combined total value of approximately $5,393,483,000. Their freight was comprised entirely of scrap metal, which was all shipped in bulk. Schnitzer has some of their own port facilities in Providence, RI, Everett, MA and Portland, ME; however, they also have six (6) facilities in New Hampshire and one in Massachusetts that are inland.

Ports of Arrival

The vast majority of export shipments from New England arrived in Cotonou, Benin, which is located on the west coast of Africa. A total of 8,180 of the 28,889 export shipments arrived in Cotonou, representing 28% of total outbound cargo. The shipments all originated in Boston, and were overwhelmingly, although not exclusively, comprised of used cars. The next most significant destination for export cargo was Beirut, Lebanon, where 3,895 shipments or 13% of the total outbound cargo arrived, again comprised primarily of used cars. Antwerp, Belgium was the third largest destination with 2,481 shipments, or 9% of the total. The goods arriving in Antwerp were widely distributed, including wood pulp and paper products, electronics, household goods, seafood, animal hides and furs, used cars, and scrap metal. The majority of these goods were destined for other countries after arriving in Antwerp.

Waste Paper Destination Analysis

The waste paper market out of Boston is a potential opportunity. More than 78% of the waste paper leaving Boston is destined for China. The next most common destination countries are Belgium and Germany, each representing about 4 percent of the total volume of wastepaper exported. The largest shippers for this outbound wastepaper are American Chung Nam, generating 32 percent of the volume of waste paper; Potential Industries, Inc, with 21 percent; and JC Horizon Limited with 7 percent. The three largest ports of arrival are Shanghai (5,372 TEUs), Qindao (3,749 TEUs), and Bremerhaven (3,553 TEUs).

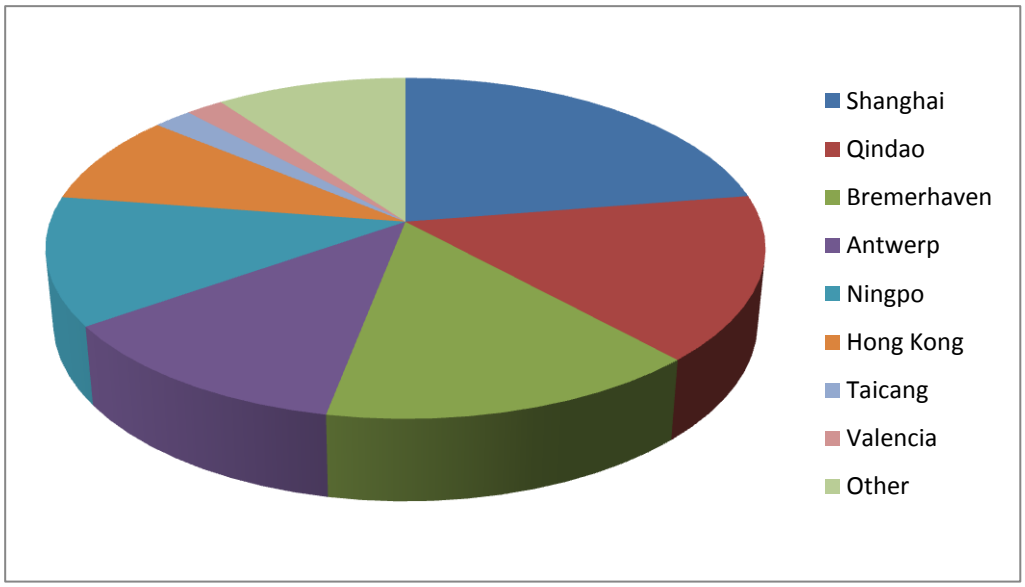

Figure 8 Waste Paper Destinations from Boston

Pulp and Paper Destination Analysis

Japan was the most popular destination country for containerized paper products, commanding over two-thirds (71%) of the total volume of pulp and paper products exported from New England ports. China was the next most popular with 10%, followed in turn by Korea, with 4%. Sea Trade International was the most common shipper, generating 76% of the shipments of pulp and paper products out of New England ports. They were followed by SD Warren Co., with 7%, and Newport CH International, with 4%. The most popular ports for pulp and paper were Tokyo (1,394 TEUs), Osaka (1,102 TEUs), and Nagoya (746 TEUs).

Nearly 300,000 short tons of wood pulp were exported out of Eastport, ME in 2009. For the most part, this product shipped in bulk and was sent to Northern China and Japan. Eastport is an example of a port with one significant paper mill nearby providing consistent bulk exports. Most other mills in New England are not as favorably situated and are having difficulty finding competitive access into export markets. Profit margins are very low for exported pulp and higher cost transportation has limited export opportunities for the production facilities. There is a significant amount of available production capacity in the New England pulp and paper mills that could be utilized for increased and profitable production if lower cost transportation services were available.

The chart below illustrates that Sea Trade International is handling the majority of containerized pulp and paper out of Boston. While this is a significant percent of the Boston pulp and paper market, it is still a small amount of the New England pulp and paper export market as a whole. A significant amount of pulp and paper is being railed and trucked out of New England to other ports for export. Assuming that Sea Trade International is a significant exporter of New England pulp and paper products in other ports as well, it may be a good idea to evaluate what potential opportunities exist with the company. Their information can be found at: www.seatrade-usa.com. Their Secaucus, NJ office is handling most of their North American pulp and paper exports. Yachun Wu is the President and can be reached at 201-422-8688. This, again, does not represent all of the pulp and paper leaving New England; it is merely all of that which is leaving New England via New England ports.

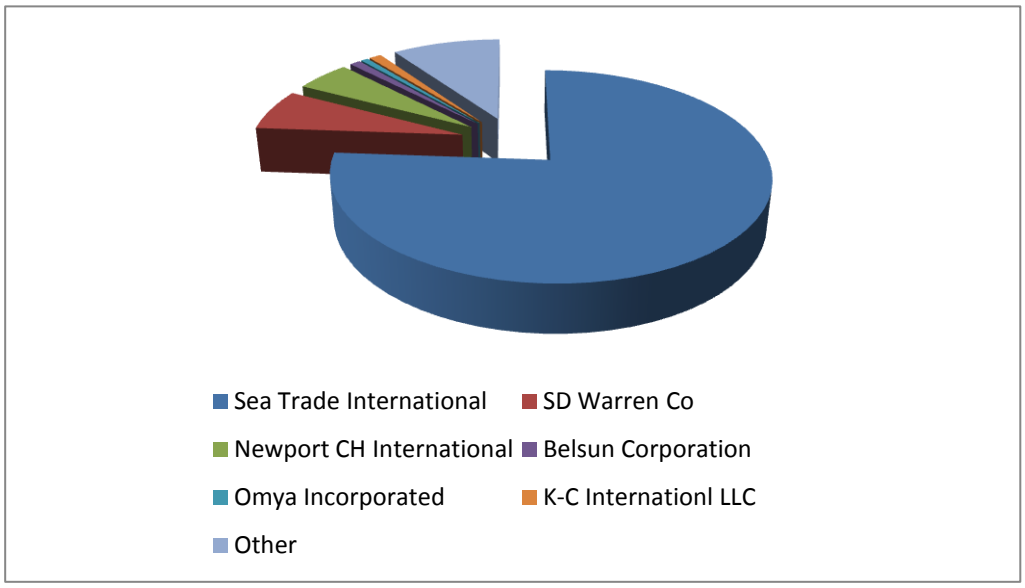

Figure 9 Pulp & Paper Export Shippers via Boston

New Bedford Export and Import Breakdown

New Bedford freight traffic is primarily comprised of domestic inbound and outbound freight, which is freight going to or coming from other ports in the U.S. This freight accounts for about 90% of the total freight moved through the Port of New Bedford. The port handles a small amount of international export tonnage annually, which is primarily break bulk cargo and consists mostly of fresh and frozen fish, such as herring, bound for northern Europe and household goods (HHG) bound for Cape Verde and Africa. Foreign import traffic rounds out the remainder of the New Bedford freight picture, with 27,528 short tons in 2008.

The Port of New Bedford, however, handles the largest amount of foreign import tonnage of perishable agricultural commodities in New England. Most of the product, consisting of North African (Morocco) fruit, is handled break bulk and the port averages around 25 purpose built refrigerator ship calls, commonly called reefer ships, annually. Foreign import traffic, including fruits and nuts, totals over 20,300 short tons or 73% of the total foreign freight.

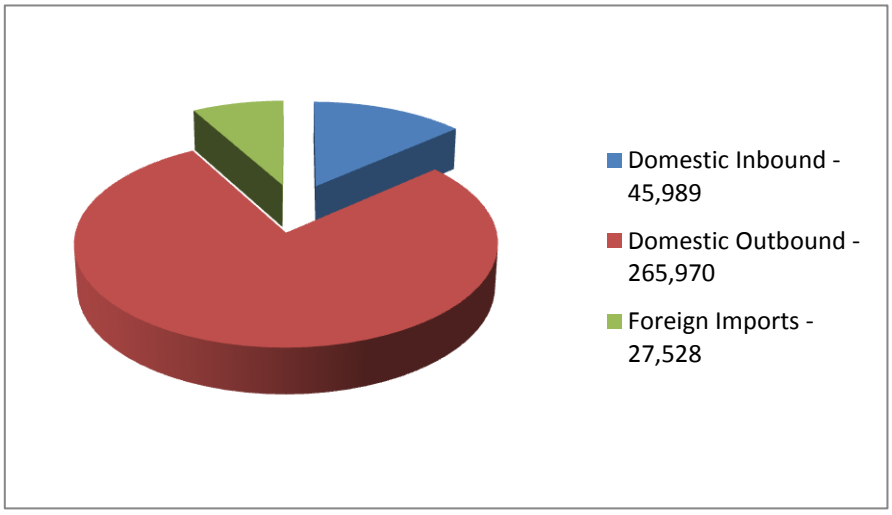

Figure 10 New Bedford Freight 2008 (Short Tons)

In considering cargo prospects for New Bedford, the valuable marine fisheries trade needs also to be considered. In looking at imports and exports, marine fisheries statistics are not accounted for given that the fish is sourced or hunted locally and landed and is then processed in one form or another prior to its next evolution in the supply chain. The processed fish and products were considered in the export statistics used to analyze what is departing from New England ports. For example, Boston exported 1,459 TEU's of mostly frozen seafood in 2008. The total value of these exports was just over $32 million. New Bedford landed 146.4 million pounds of seafood in 2008 valued at $241.3 million according to the *NOAA U.S. Commercial Fishery Landings, 2008*. If all of Boston's seafood traffic originated in New Bedford, it would only have handled 13% of New Bedford's catch. This indicates that while New Bedford has a significant resource in its fisheries, the majority of the catch is either being consumed domestically or transported over land to ports outside of New England for export.

The majority of New Bedford large ship traffic is domestic outbound sand and gravel, with 240,428 short tons in 2008. This commodity alone accounts for 70% of all of the freight volume that moves through the Port of New Bedford. According to the Army Corps of Engineers Waterborne Commerce Statistics, there were minimal exports from New

Bedford in 2008. The only measurable foreign commerce passing through New Bedford in 2008 was the imported freight, as stated previously.

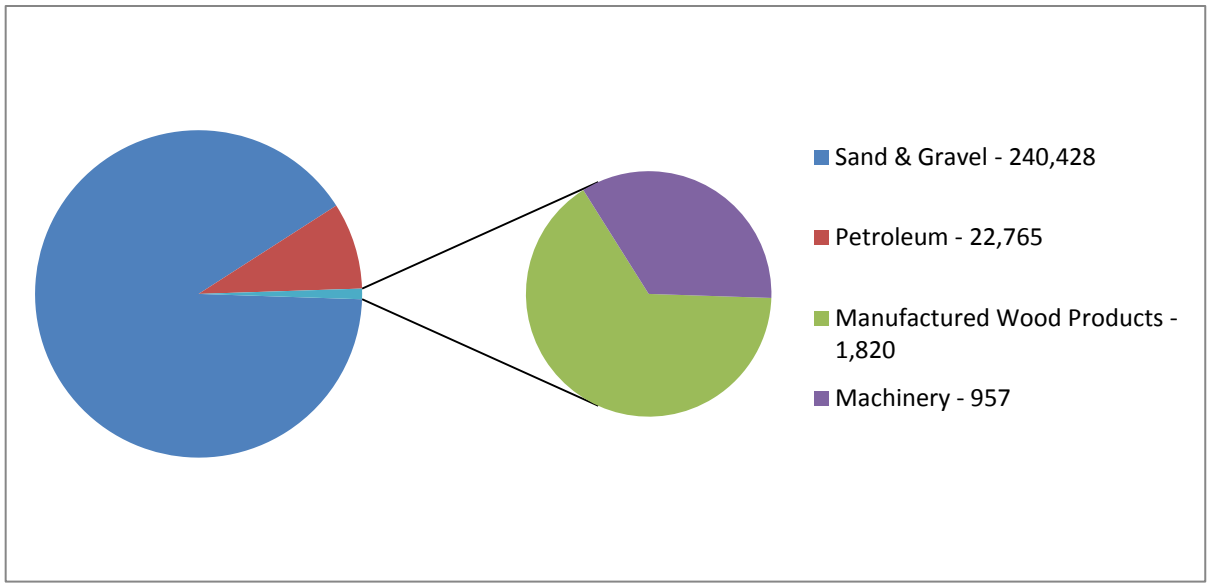

Figure 11 Total Outbound Freight 2008 (short tons)

Petroleum dominates the inbound traffic in New Bedford, with 45,568 short tons in 2008. Fruits and nuts make up a substantial import volume with 20,300 short tons. The chart below illustrates the inbound volumes for New Bedford, not including marine fishery landings. Commodities marked with "FI" indicate Foreign Imports.

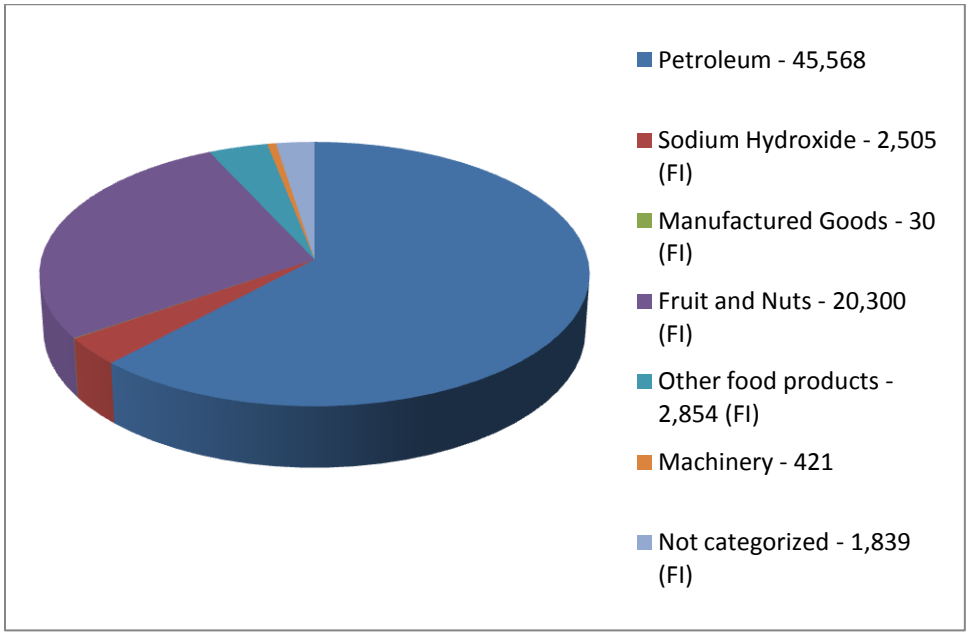

Figure 12 Total Inbound Freight 2008 (short tons; FI = Foreign Import)

The following is a breakdown of foreign import commodities handled for 2008 in the port. The table compares the foreign import tonnages to total cargo handled in New Bedford for 2008 and excludes domestic cargos.

Commodity	Note	Total-Short Tons
TOTAL PORT TONNAGE	All	345,423
Total International		28,000
Petroleum	1	0
Chemicals	2	3,000
Crude Materials	3	0
Manufactured Goods	4	0
Food-Farm Products	5	23,000
Machinery	6	0
Other	7	2,000

Notes: 1. Gasoline, Kerosene, Distillate Fuel Oil 2. Sodium Hydroxide 3. Sand and Gravel 4. Smelted Products 5. Fish (not shellfish), Vegetables, Fruits, Nuts, Food Products 6. Machinery, Manufactured Wood Products 7. Unknown or not classified

Figure 13 Port of New Bedford Import Tonnage by Commodity 2008

Similar to exports, a profile for the imports passing through the Port of Boston provides a profile of commodities that are moving into the New England region. Unique to Boston is the large amount of containerized cargo handled on multiple direct call ocean carrier services from Asia and Europe; mostly, but not exclusively, at Massachusetts Port Authority (Massport) facilities.

Containerized Cargo	Units	Volume
Containerized Imports	Metric Tons	1,000,000
Containerized Exports	Metric Tons	540,500
TOTAL CONTAINERIZED TONNAGE	Metric Tons	1,540,500
Containerized Imports	TEU Loaded	100,000
Containerized Exports	TEU Loaded	60,500
Empty Containers		43,500
TOTAL CONTAINERS	TEU Loaded/Empty	204,000

Figure 14 Port of Boston Container Volume 2008

The Port of Boston has a wider range of bulk and neo-bulk import commodities that it handles at multiple facilities including those owned by Massport. Non-containerized bulk and neo-bulk commodities accounted for over 13.5 million tons of the total port tonnage, or nearly 85% of the cargo handled in Boston.

Cargo Type	Type/Unit	Volume Short Tons
Automobiles	27,000 Units Processed	32,000
Cement	Liquid Bulk	162,000
Petroleum	Liquid Bulk	7,500,000
Liquefied Natural Gas	Liquid Bulk	2,750,000
Salt	Dry Bulk	760,000
Gypsum	Dry Bulk	31,000
Other	Various	2,300,000
Total Non-Containerized Cargo	**Import**	**13,535,000**

Figure 15 Port of Boston Import Volume 2008

New Bedford Cargo Volumes in 2009

The charts and values below represent a comprehensive breakdown of New Bedford's marine freight for 2009, meant to provide a constructive comparison to the figures for 2008 provided above. It should be noted that the fruit and agricultural imports increased significantly (58%) from 20,300 short tons in 2008 to more than 35,000 short tons in 2009. The significance of this particular opportunity must be seen in relation to what efforts might be undertaken in order to take advantage of these cargoes to expand port volumes. Repositioning the port to modify its shipment mythology could allow New Bedford to capture more inbound refrigerated freight, which in turn would allow it to develop more of the outbound market of refrigerated/frozen seafood. This effort would focus on having the majority of agricultural imports arrive in reefer boxes on a container vessel, rather than by reefer ships themselves. This would then potentially position empty reefer boxes in New Bedford for the seafood market thus allowing for a potential two-way freight.

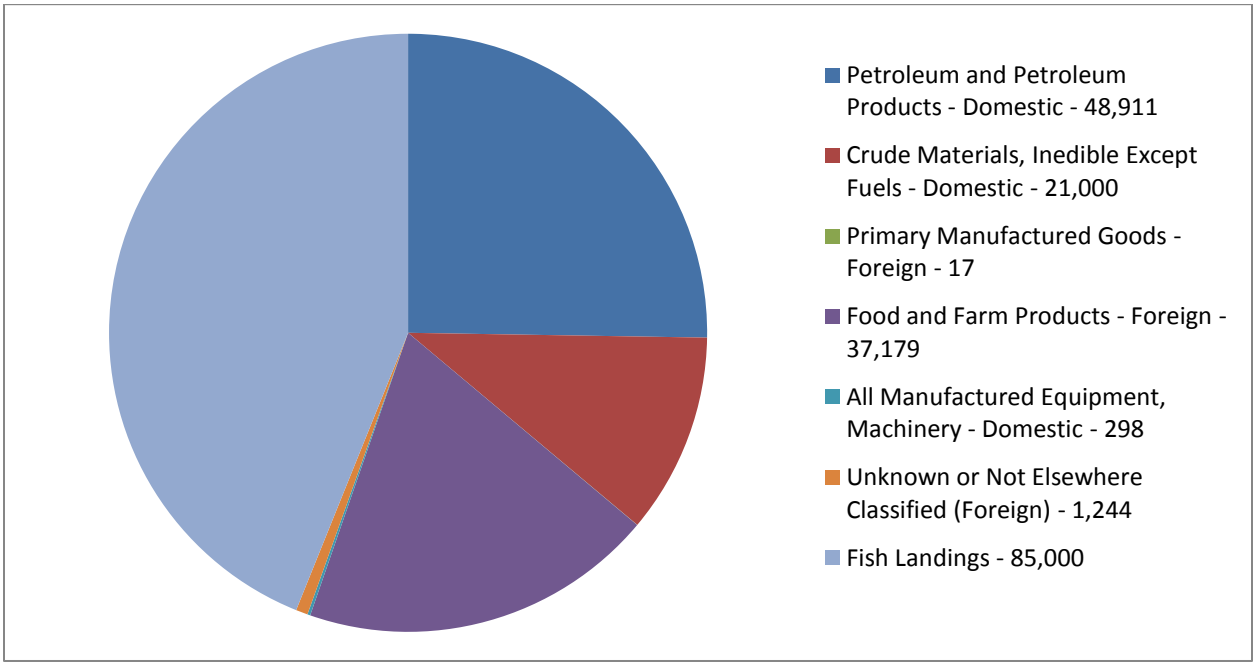

Figure 16 New Bedford Total Freight 2009 (USACE & NOAA)

Figure 17 explains the breakdown of all freight moving through the Port of New Bedford, with the exception of Fish Landings. It is significant to note that the domestic traffic in and out of New Bedford is significantly greater than international moves at the port. The next two charts describe the breakdown of all inbound and outbound freight, once again with the exception of the fish landings.

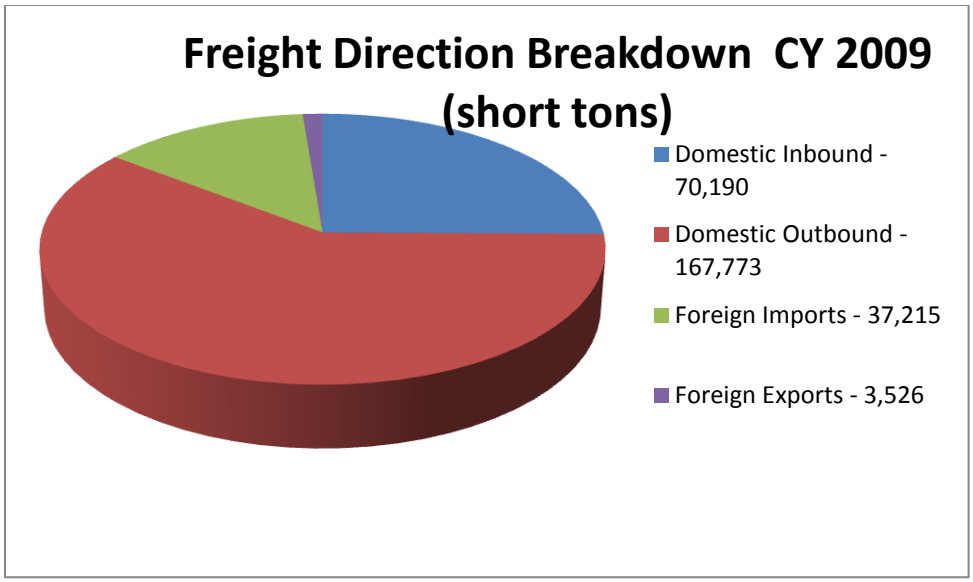

Figure 17 Freight Direction Breakdown – CY 2009 (USACE)

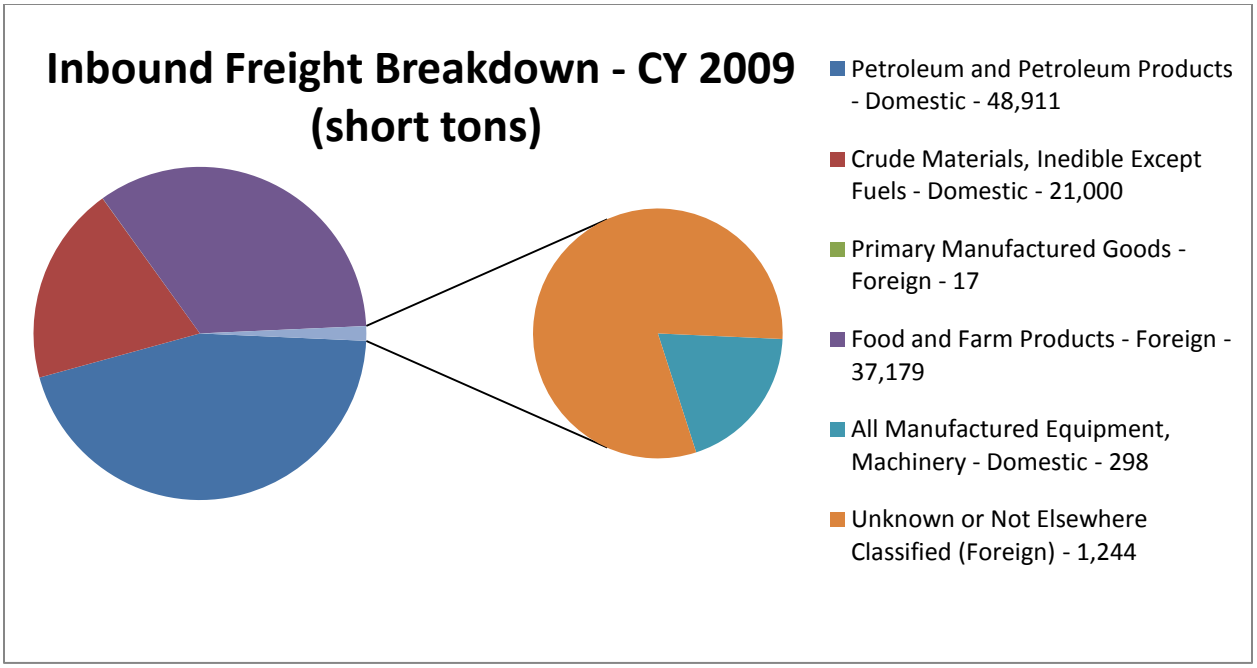

Figure 18 New Bedford Inbound Freight Breakdown – (USACE)

The titles displayed in these charts are the U.S. Army Corps of Engineers derivations of the Standard International Trade Classification Codes. As petroleum is the largest inbound product, food and farm products is a more relevant focus area. As stated previously in this report, the lion's share of this line item is made up of imported foreign fruits and nuts. These are being imported primarily on reefer ships, and present an opportunity to transition to reefer containers, which can then be filled with seafood for outbound traffic.

Figure 19 illustrates that the vast majority of outbound freight from New Bedford is under the "crude materials" category. In New Bedford's case, this entire category is comprised of sand and gravel. This does not present an opportunity for containerization as sand and gravel are almost always exclusively shipped in bulk.

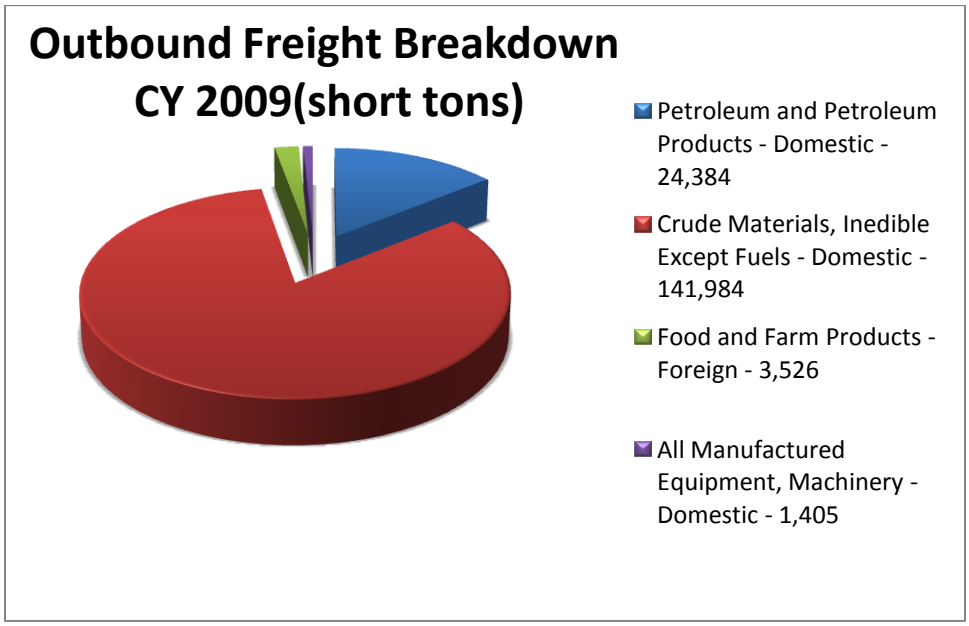

Figure 19 Outbound Freight Breakdown - CY 2009 (USACE)

The effort by the port could be to increase foreign outbound in the "food and farm products" category (3,526 short tons 2009), which is entirely made up of outbound fish (not shellfish). This may require working closely with seafood processors in order to increase the volumes of outbound fish for export from the Port of New Bedford.

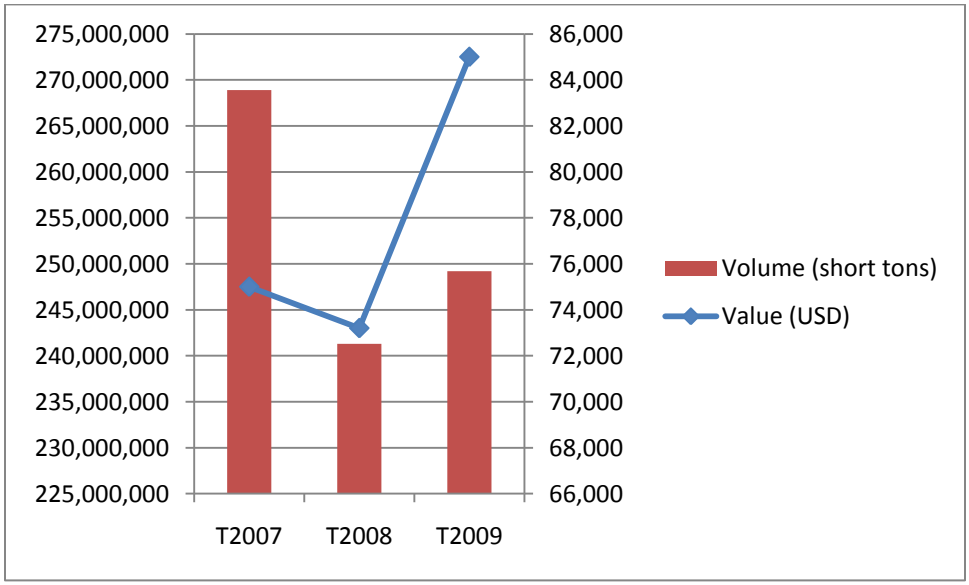

Figure 20 New Bedford Fish Landing Volumes and Values (NOAA)

NOAA aggregates and provides the data for commercial marine fisheries. Specific data on the types of fish is not provided in the data. The difference in value versus volume in the above chart would indicate that New Bedford's catch fluctuates from year to year in terms of what fish are caught and their sales value. Working with New Bedford seafood processors would help to clarify what fish they primarily deal with and what opportunities exist for containerized or bulk fish outbound.

New Bedford Ship and Freight Summary

New Bedford developed in the same manner as many ports in the United States and in particular in a similar manner as most of the rest of the ports in New England. Historically, cargo flow developed around the natural resources available in the local region and expanded as more demand for international commodities began to increase. New Bedford is most noted for its whaling industry and the processing and export of whale-based products beginning in the 18th century. In addition, fish landings and fish product exports were a substantial part of the growth of the port and the local economy. Historic records indicate the transportation of agricultural and general non-specific commodities through the port during this same period. The most significant change in commodity flow occurred in the late 19th century when petroleum replaced whale oil as a lighting and cooking product.

Cargo commodity type remained consistent through the transition from sail to steam, with the addition of manufactured goods in the later part of the 19th century. The port saw a wide range of consumer products and manufactured goods imported and exported during the first half of the 20th century. The port developed new facilities to accommodate larger steam powered ships during that same period with increased cargo activity taking place during the first and second world wars.

Time Range	Industry	Inbound	Outbound	Notes
1780 - 1925	Whaling	Whale Oil	Refined oil & Candles	Decline began when Petroleum began to rise in 1860's
1780 - Current	Fishing	Landed Fish		Highest Catch Value in U.S. by Port, 1996 began to decline
1845 - Current	Petroleum	Crude		First Petroleum Fuel Refinery in U.S. (1845)
1881 - 1940	Textiles	Cotton	Mfg Goods	

Figure 21 New Bedford Historical Overview

Cargo activity, mostly break-bulk based, remain fairly consistent through the 1960's and 1970's when the impacts of containerization began to affect cargo flows in New Bedford and hundreds of other small ports throughout the world. Containerized freight shifted to larger ports where deep water facilities and advanced handling equipment were available and cargo could be distributed by truck and rail to regional destinations. That trend continues today with the largest amount of cargo from Southeast New England, estimated at 80%, handled through the Port of New York and New Jersey. Southeast New England container traffic alone passing through the Port of New York and New Jersey is estimated at between 48,000 and 50,000 TEU's per year.

The Port of New Bedford has remained a connection point for bulk commodities including aggregates and petroleum. It has also remained a substantial fishing port in New England, although most fish and fish product exports now move through other seaports, such as Boston or New York/New Jersey.

Critical Recent Years, 1996-2009

The critical period for commodity by vessel analysis has been the period beginning in the mid-1990's through the current time frame. This data is most relevant for several key reasons. First, it reflects the changes in the post-initial containerization period when commodity movement began a shift into niche port areas. Second, it reflects the development of modern and accurate data collection and reporting methods. This data includes information on commodity movements, freight volumes, and vessel type. The primary source of information is the U.S. Army Corps of Engineers (USACE) who developed the databases in cooperation with U.S. Customs and other federal agencies. Data on freight correlated to vessel activity was not available prior to 1996; however, the data used for this report for 1996-2009 is comprehensive and reliable.

In order for consistent trends to be visible and accurate, a consistent and reliable source of data must be used, which was not available prior to the reporting period. So long as the data is consistent, such trends can indicate the rise and fall of ship calls and cargo volumes in a given port. Since 1922, the USACE Waterborne Commerce Statistics Center has been collecting vessel trip and cargo data for the sole purpose of exploring the feasibility of new projects and prioritizing the maintenance and/or expansion of existing maritime projects. In many cases, this data was used by USACE to make decisions regarding dredging projects. As such, the focus of vessel data is draft size. Federal agencies that collect this type of data are also not obligated to disclose specifics regarding movements of individual companies. The data is therefore aggregated by port, and must be reverse-constructed for comparison to elucidate trends in ship calls and cargo flows. Once in this form, certain assumptions can be made. For example, it is fair to assume that, for New Bedford, ships with a draft of under five feet are typically fishing vessels. Trends in the corresponding data point (ships under five feet) could then be generalized to fishing vessels.

As previously mentioned, New Bedford has one of the most significant fishing and whaling histories among ports in the United States. This tradition carries over into modern times, where New Bedford stands alone as one of the largest fishing communities on the U.S. East Coast and is leading the nation in the "highest value of catch" category. This trend is reflected in the data, where the majority of vessels calling on New Bedford since 1996 had a draft smaller than 12 feet. Many of these vessels make up the vast fishing fleet that New Bedford is home to. This small draft constituency is also comprised of the tugs and barges that serve the petroleum or the sand and gravel industries.

Since 1996 New Bedford's total ship calls have declined substantially starting at 6,295 and ending up at 2,173 in 2009 (a drop of about 65.5%). 95% of these were vessels with a draft less than 12 feet. Some of this is reflective of larger vessel sizes with increased cargo capacity. The dramatic reduction in small vessel traffic is largely attributed to the federal fishing amendments, passed in 1996, to the Magnuson Stevens Act, more commonly known now as the "Sustainable Fisheries Act." As a result of this legislation, the fishing fleet out of New Bedford and other New England ports has declined steadily since the amendments came into effect. Fleets have consolidated and shifted among ports, which to a certain extent has mitigated the decline of fleet size in New Bedford.

Most of the vessel calls for New Bedford were domestic traffic with a draft under 12 feet. USACE does not provide data on which ship is linked with which commodity. As a result, some assumptions must be made. The Army Corps vessel information is broken down into five main categories:

1. Self-Propelled Vessels – Passenger & Dry Cargo (Fishing Boats, Ferries, Cruise Ships, Container Ships, Reefer Ships Break Bulk, etc.)

2. Self-Propelled Vessels – Tanker (Oil Tanker, Chemical Tanker, Liquid Bulk, etc.)
3. Self-Propelled Vessels – Tow or Tug (Tug Boats)
4. Non Self-Propelled Vessels – Dry Cargo (Container Barge, Deck Barge, etc.)
5. Non Self-Propelled Vessels – Tanker (Petroleum Barge, Chemical Tanker Barge, etc.)

The categories are then broken down into draft sizes (depth of the hull below the waterline) and whether the vessel was "Inbound" or "Outbound", "Foreign" or "Domestic". This provides a range of vessel size and which trade they were involved in. The data is referenced to the cargo volumes recorded by the USACE for the same years and correlations developed.

The data was organized by annual totals, to give a picture of trends, and aggregated to produce 14-year averages. A review of numerous federal and related government data sources showed that the Army Corps provides the most complete data on freight movements for the Port of New Bedford. The data, however, is not exhaustive, and their methods of data recording do not permit a high level of accuracy in estimating the draft size of vessels passing through New Bedford. This is because the low end of the draft sizes is grouped into a large category (0-5 ft. or 0-12 ft. depending on the year). Commodity data from 1996-2004 do not give figures for volumes under 1,000 short tons aggregated per annum. This creates some degree of estimation variation, so commodity figures should be assumed to have a 5% margin of error.

Regardless, the data does provide a good analysis of trends in commodity movement and the size of vessels passing through New Bedford. Data is complete for 1996-2009. Data from before 1996 and data for 2010 are not available at this time.

In 1998 and 2001, the data indicated which of New Bedford's foreign imports were from Canada and which were from further abroad. This data indicated that the majority of foreign inbound freight originated in Canada. This was mostly petroleum and non-metallic minerals and usually constituted between 50,000 and 100,000 short tons of freight for each given year. This represents the only point in the data where the origin or destination of freight is displayed.

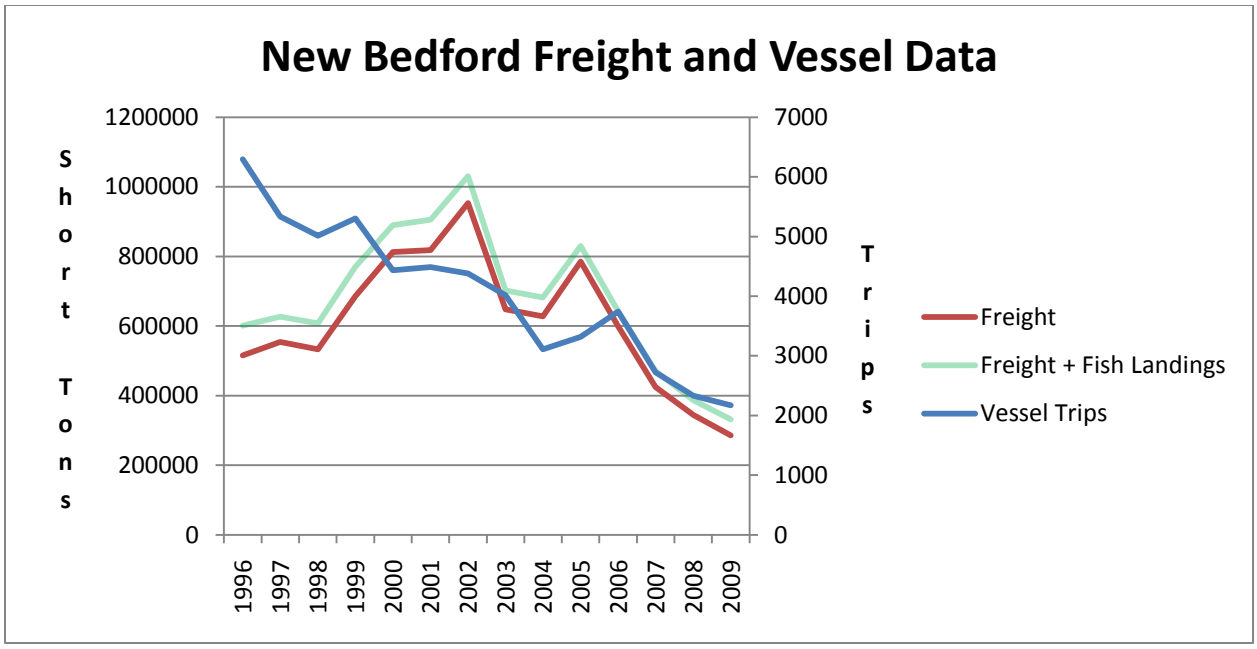

Figure 22 New Bedford Freight and Vessel Data

The graph above provides an overview of the trends in New Bedford's freight and vessel traffic for the 14 years examined. Note that the freight (red line) starts proportionally lower than the number of vessel trips (blue line), meaning that the ships were smaller and carrying less than in later years. Again, this is largely due to the much larger size of the fishing fleet in 1996. (For clarity, the left y-axis, "short tons," applies only to the red and green lines. The right y-axis, "trips," applies only to the blue line. The two are matched up in order to efficiently display New Bedford's overall data, and to allow a sense of the trend in vessel size/load. Where the blue line is below the red, the vessels are larger or loaded more fully).

This graph also displays a major jump in freight from 2000-2002. In 2000 and 2001 this freight jump owed primarily to a large increase in the volume of domestic sand and gravel outbound freight. In 2002, the sand and gravel volumes returned to roughly where they had been, but there was a large jump in foreign oil imports (accounting for most of the increase in freight volume). A significant decline in freight volumes began in 2005, and the number of vessel trips steadily declined from 1996-2009.

The green line (freight and fish landings) has been included to show where the total freight for New Bedford might actually be. Fish landings are not noted by USACE because they are not passing from one port to another. This data was accessed from additional sources. Fish landings are significant because they greatly contribute to the small vessel traffic for New Bedford, and are largely not being moved by water to destination areas.

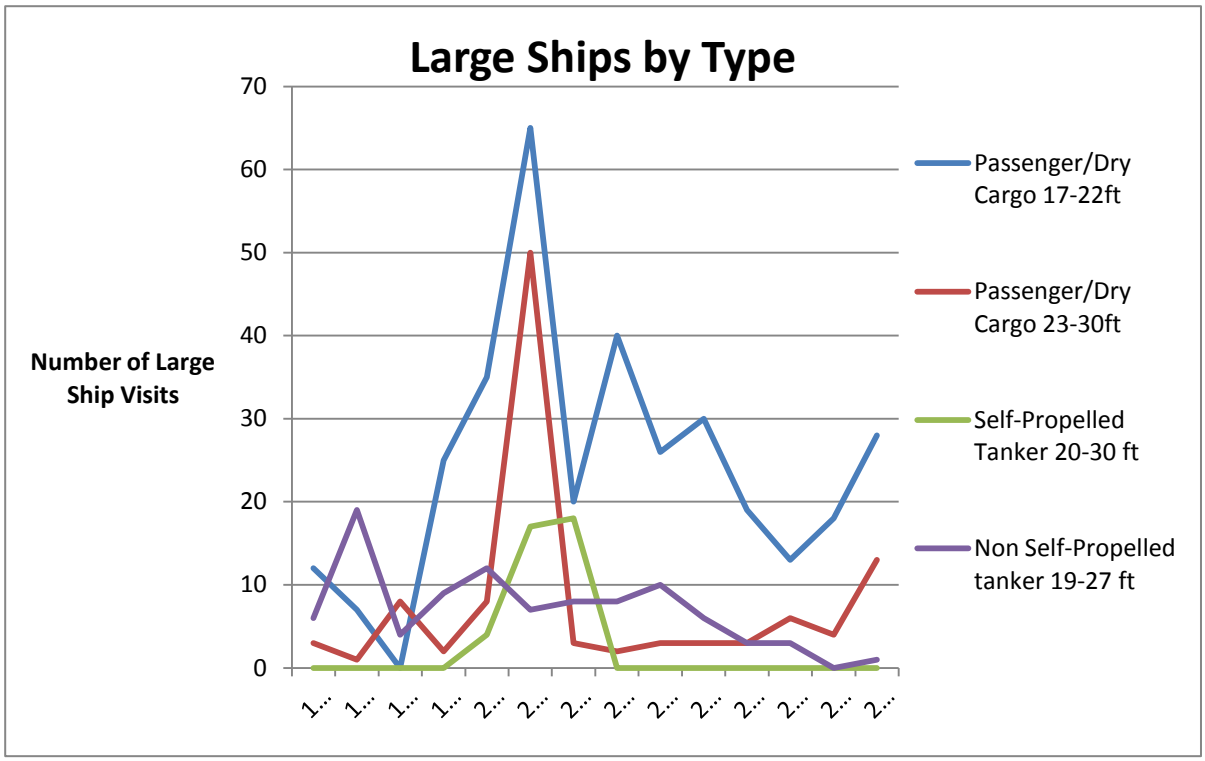

Figure 23 Large Vessel Calls

This graph displays visits by large vessels over the period in question. This shows how many visits were made by large vessels in each of three categories. In order to avoid skewing the graph, passenger and dry cargo vessels were split into 2 size categories: 17-22 feet (blue line) and 23-30 feet (red line). The biggest thing to note from this graph is that the two biggest years for sand and gravel, 2000 and 2001, saw the largest number of large (dry cargo) vessels call on New Bedford. Another point of interest is that there is a jump in large self-propelled tanker calls in 2001-2002. This corresponds to an increase in foreign petroleum imports.

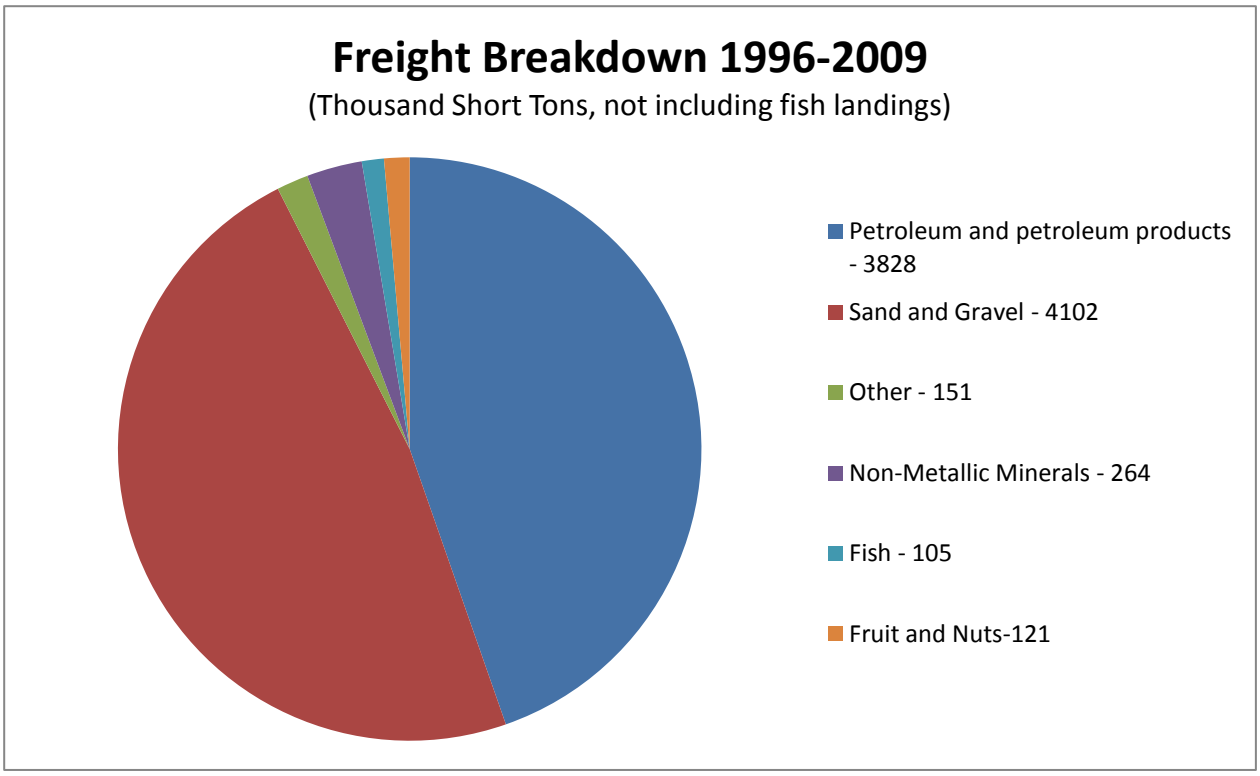

Figure 24 Overall Freight Breakdown by Commodity (Does not include fish landings from NOAA)

The above graph gives a breakdown of the total freight passing through New Bedford from 1996-2009. The two largest commodities, as the graph displays, are petroleum and petroleum products and sand and gravel. The former is primarily inbound, which is overwhelming domestic in origin (except in 2001-2002, when there was a spike in foreign petroleum imports), and the latter is primarily domestic outbound freight. These two commodities make up 92.5% of New Bedford's freight volumes for 1996-2009. The remaining 7.5% is made up of non-metallic minerals (3.1%), fruit and nuts (1.4%), fish (1.2%), and other commodities (wood products, iron and steel scrap, manufactured wood products, and others – 1.8%).

USACE data does not fully incorporate fish landings into their data set, instead keeping track of fishing vessel calls in a port. This data was available from NOAA's department of Marine Fisheries, which keeps aggregate totals for each port's fish landings and value of the cumulative landings.

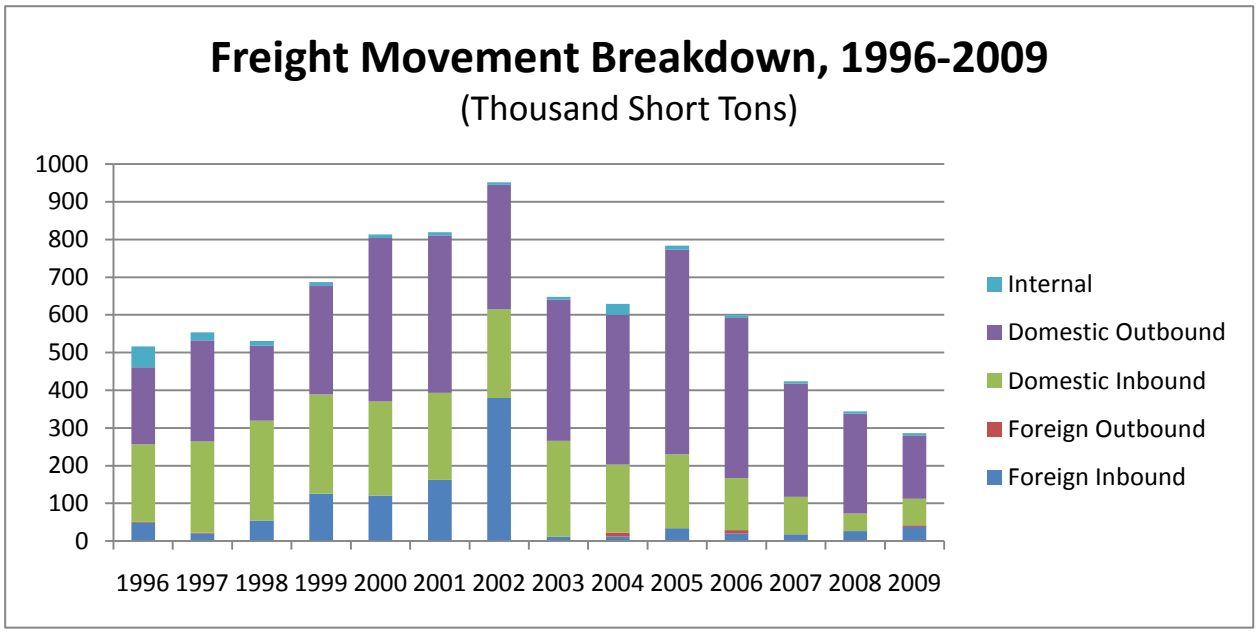

Figure 25 Freight Direction Breakdown

The above graph gives a look at the general point of origin and direction of freight moving through New Bedford for the 14 years in question. Proportionally, this graph demonstrates that New Bedford's largest freight amounts are bound for other U.S. ports (purple bar - this freight is comprised primarily of sand and gravel). For most years, the second largest freight amount came from freight originating in U.S. ports bound for New Bedford (green bar - comprised primarily of petroleum and petroleum products). The spike in foreign inbound freight (blue bar) in 2002 was comprised almost entirely of residual fuel oil. This graph also shows the overall trend in New Bedford's freight volumes with a spike in 2000-2002 and a steady decline from 2005-2009. Foreign outbound freight (red bar) and internal freight (teal bar) comprise very little of New Bedford's total freight volume.

In the last 5 years, a significant growth point for New Bedford has been in the refrigerator or reefer ship category, which handles fruits and nuts (as classified by the Army Corps). This is significant because it is a unique niche adding value to the region. While the tonnages are small—37,000 short tons in 2009—it increases the large ship category, 17 feet of draft and higher, and creates a new opportunity for growth. If the 37,000 short tons of refrigerated freight were to be containerized, it could essentially lead to 4,000 TEU of annual containerized traffic, which would justify a bi-weekly service of a containerized vessel. If this were to happen, those containers could potentially be returned to the port for an outbound freight of either processed or frozen fish. If the trade were fully balanced, 4000 TEU in and 4000 TEU out, it could potentially justify a weekly service as refrigerated containers carry premium rates and would attract carriers. Based on current projections of potential cargo for barge or ship-based feeder services, this would be approximately one third of the estimated 400-450 weekly containers the port could handle on a weekly feeder service, based on an annual estimate of 24,000 potential TEU's for a key feeder port in Southeast New England.

It should be noted that a feeder service would compete with trucking services, which for New Bedford to and from New York is estimated at between $600 and $800 per trucking move for an export or import load. This would be equivalent

estimated comparable cost for a round trip by water. The aggregate cost of water transportation could be reduced by volume per trip. This is the largest potential growth area for vessel calls in the port.

Historic Freight and Vessel Call Data

Port calls over the indicated period by freight category are broken down in the following table.

Freight Breakdown in Thousands of Short Tons								
	Tons	Foreign		Domestic			Internal	
Year	Total	Imports	Exports	Total	Receipts	Shipments	Receipts	Intraport
1996	**516**	49	2	**466**	206	204	37	18
1997	**554**	20	2	**532**	242	268	x	22
1998	**533**	55	x	**477**	264	199	x	13
1999	**686**	126	x	**298**	263	289	x	9
2000	**813**	121	x	**692**	249	434	x	9
2001	**818**	162	x	**656**	231	418	x	8
2002	**953**	380	x	**572**	235	330	x	7
2003	**648**	12	x	**636**	254	374	x	8
2004	**628**	12	10	**607**	181	397	18	11
2005	**785**	34	0	**751**	196	543	x	11
2006	**599**	21	8	**570**	138	425	x	7
2007	**425**	18	0	**407**	99	301	x	6
2008	**345**	27	0	**318**	46	265	x	6
2009	**286**	38	4	**244**	70	168	x	6

X=No commodity listed, 0= Less than 1,000 tons

Table 1 New Bedford Freight Breakdown

The table reflects a general decline in commodity flow in both domestic and international shipments. All values are in 1000 short tons; any values that are listed as "x" have no value, any values listed as "0" were less than 1000 short tons for the year, which is how the USACE data is categorized. Domestic values list inbound freight as "receipts" and outbound freight as "shipments" and internal values are values that were local: "intraport" is freight values moved between terminals within a port and "receipts", in this category represents freight movement on an inland waterway as "classified by the USACE".

The following table provides a breakdown of vessel calls by draft for the inclusive period. The vessels are categorized by draft and type, as well as means of propulsion including self-propelled (ships and boats) and non-self propelled (barge) vessels. Tugs are categorized under self-propelled but do not account for any on vessel cargo carriage. All non-self propelled vessels are assumed to be moved by tug, inclusive in the total tug-towing vessel numbers.

	Vessel Trip Breakdown By Draft												
		Self-Propelled Vessels							Non Self-Propelled Vessels				
	Type	Pass & Dry Cargo			Tanker		Tug-Towing		Dry Cargo		Tanker		
YR	Total	≤ 16 ft	17 - 22 ft	23-30 ft	< 20 ft	20-30 ft	≤ 12 ft	13-17 ft	≤ 12 ft	13-17 ft	≤ 12 ft	13-18 ft	19-27 ft
96	6295	1601	12	3	0	0	2210	186	327	16	1892	44	6
97	5335	1464	7	1	2	0	1879	56	304	19	1558	26	19
98	5016	1502	0	8	8	0	1690	73	336	10	1361	24	4
99	5304	1264	25	2	8	0	1941	79	375	30	1546	25	9
00	4435	792	35	8	0	4	1638	151	420	61	1288	26	12
01	4486	1331	65	50	2	17	1345	132	428	39	1042	28	7
02	4381	1482	20	3	0	18	1247	104	417	49	1015	18	8
03	4018	1135	40	2	0	0	1213	92	481	23	991	33	8
04	3109	138	26	3	0	0	1252	85	490	66	1014	25	10
05	3317	385	30	3	0	0	1086	84	585	71	1041	26	6
06	3745	326	19	3	0	0	1575	87	496	84	1127	25	3
07	2722	5	13	6	3	0	1208	69	366	75	959	15	3
08	2332	12	18	4	0	0	1008	33	219	34	994	10	0
09	2173	5	28	13	0	0	983	55	150	54	878	6	1

Table 2 New Bedford Vessel Call Breakdown 1996-2009

Port Cost Comparison

Most decisions made by shippers or ocean carriers on behalf of shippers are based primarily on cost. Among smaller niche ports in New England, there does not exist a great deal of variation in final cost to the shipper. Terminal costs, vessel fees including dockage and pilotage, labor costs, and port taxes are relatively consistent throughout New England except for Boston, where labor costs can be higher due to work rules and contract stipulations. The shipper always pays the final cost of transportation of cargo regardless of who is charging it. Ocean carriers, who develop all inclusive per unit, or per ton rates, build all of the final costs into the shipper's rate. These costs include:

- Terminal fees including wharfage, usage, service and gate fees
- Cargo demurrage, storage and free time provisions
- Vessel fees including dockage, pilotage, tug fees and line handling
- Fuel surcharges
- Labor rates including straight time and overtime differentials

- Security fees
- Government fees and taxes
- Truck and rail transportation rates including intermodal handling charges, per ton or per unit rates and equipment repositioning charges

The table below shows the various costing methods and labor rates for selected ports in New England.

PORT Charge	Portland, ME	Portsmouth, NH	Boston, MA	Fall River, MA	Davisville, RI	Providence RI	New Bedford
Dockage p/day	$2 per foot	$.29 per NRT	$.34 NRT*	$600	$.20 NRT	$.33 NRT	$100-$600 per day
Wharfage/ton	$5.00	$.85	$2.75	$1.95	$1.00	$2.00	$1.00
Labor p/hr	$800	$1,360	$1,184	$1,450	$2,250	$2,250	$1,550
Overtime p/h Differential	$240	$200	$416	$550	$750	$750	$600
Crane Hire	$350	$400	$400	$400	$400	$400	$400
Security p/day	$1,000	$100	$1,200	$600	$1600	12% Dkage	$1,220
Accessorial Charges	$1 per ton per day demurrage		$.56 per 100 lbs. demurr. Per day			$.22 per 100 lbs. demurr. Per day	$.10 per 100 lbs. demurr. Per day

*Net Registered Tonnage

Table 3 New England Port Cost Comparison

Overall, ports can only control the costs of services they provide. Competitive port costs must take into account the total cost to the shipper. Port costs may be low in a region, but can be offset by high vessel fees or the cost of landside transportation.

Freight Rail Connections

One of the most critical elements that differentiate small to medium niche ports from each other in the competitive regional market is their ability to offer a wide range of cost-effective and efficient land-based transportation services. This includes competitive truck and rail service providers, efficient road access and freight rail with efficient connections to the national rail system. Larger ports because of higher volume throughputs, and subsequent higher revenues, are able to maintain and improve these services because of the capability to handle large amounts of cargo cost-effectively to and from waterfront facilities. Smaller ports face pressure to redevelop rail properties as communities abandon port activities in favor of less-industrial economic development. Many ports have seen the erosion of freight rail infrastructure in favor of commercial development, recreational use of right-of-ways for trails or the development of commuter services. This erosion of freight rail infrastructure has contributed to the loss of port activity and opened the door to increased gentrification around marine facilities. This has reduced the competitive opportunities for several commercially viable seaports.

New Bedford has freight rail access and a pending rail improvement project that should benefit the local economy. The New Bedford Freight Rail Yard and proposed Transportation Center collectively constitute the primary rail facilities in the Port district of New Bedford. The Massachusetts Bay Transportation Authority (MBTA) has plans to develop the western side of the current New Bedford Rail Yard site as a passenger station and layover yard for MBTA commuter trains as part of the MBTA's South Coast Rail project, which entails the extension of commuter rail to New Bedford and Fall River. The passenger facility is sometimes referred to as the "Whales Tooth" facility. In addition to the station, the MBTA intends to create an adjacent parking lot.

The Commonwealth recently completed the "First Taking" segment of a transaction between the Commonwealth of Massachusetts and freight railroad CSX. In that transaction, certain property along the eastern side of the current yard has been designated for freight purposes. The designated properties include serving yard tracks and connections to:

- The Team Track site owned by the City of New Bedford,
- The Environmental Protection Agency's (EPA) dredged material handling site along Herman Melville Blvd.,
- Rail access to the former Revere Copper facility,
- Rail access to the Maritime Terminals, and
- Developable property along Herman Melville Blvd., retained by CSX.

In addition to the designated freight-only facilities in New Bedford Yard, the serving freight railroad (Massachusetts Coastal Railroad, or "Mass Coastal") can access customers at and around Nash Road, and the New Bedford Industrial Park off Braley Road. While the New Bedford Yard site is key to assessing port development potential, the other sites mentioned above may provide additional opportunity for freight rail traffic. In aggregate, New Bedford has access to more rail facilities than many similar sized ports.

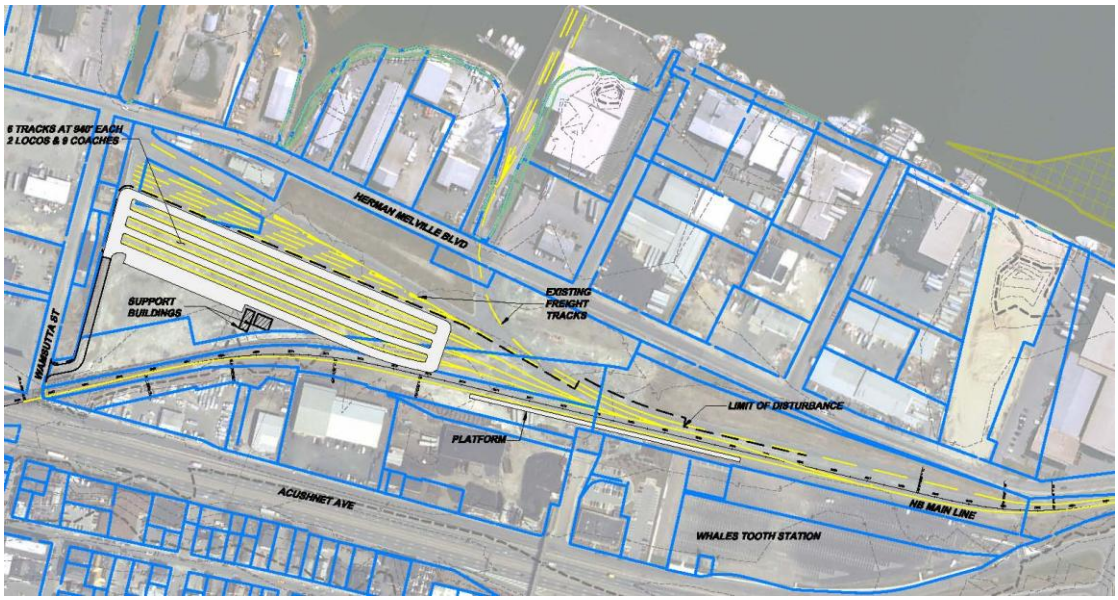

Figure 26 Proposed New Bedford Freight and Commuter Rail Facility

Role of Rail in Development of Small to Medium Size Ports

Rail is increasingly becoming a critical component of port development in small to medium sized ports throughout the United States and Canada. Ports that have allowed this infrastructure to erode have seen decreased port capacity for handling freight, shifting cargo moves to higher cost, lower volume methods, such as truck, making some ports less competitive.

Ports that retain good rail and highway connections have found success in attracting freight and cargo from larger ports that have, in many instances, become more specialized and expensive. Smaller ports often have the ability to be more aggressive in labor costs and terminal pricing, but must retain the flexibility to handle a wide range of cargos and adapt to changing market conditions. Essential to this is the ability to handle cargo movements between various transportation modes (vessels, rail and trucks). Terminal and freight yards must be maintained and operated in an efficient manner. In addition, value added services such as Customs port of entry designation, free trade zones, cargo processing and warehousing all contribute to port competitiveness in regard to providing for a full range of services.

There are certain elements that are necessary for freight rail infrastructure to provide proper support to a port. These elements include a local serving yard, transloading capabilities and warehouse and/or cross-dock capabilities. While on-dock rail capabilities make movement of certain materials easier, on-dock rail is not an essential element. Additionally, specific operating capabilities and clearance restrictions play heavily into the mix.

Rail access allows a port to carve a niche not available to non-rail-served ports. The universe of ports on the East Coast with active rail connections is limited. The Port of New York and New Jersey, Halifax, Norfolk, Savannah, Jacksonville and Miami have developed extensive rail-port infrastructure, which has allowed them to develop as significant container ports. Smaller less specialized ports with rail infrastructure have developed as neo-bulk, break bulk or bulk handling ports. The commodities moved through these ports vary. Some examples include Norfolk, which also handles large volumes of coal; Philadelphia, which moves significant amounts of steel and ingots; and New London, which handles large volumes of lumber. The lumber moving through the Port of New London is almost exclusively brought in by rail, stored at the port for distribution and then distributed to local retailers by truck. Other ports handle and process frozen fish as well as pulp and paper, which can be brought into port areas in larger shipments by rail that exceed over the road transportation limits.

Rail Components Required for Efficient Marine/Rail Interface

Having a local serving railyard of adequate size is critical to a port's freight handling capability. The serving yard needs to have sufficient tracks to switch inbound trains and build outbound trains while holding cars, both loaded and empty, for local customers. The yard tracks and switching leads should be of such length to support the longest train contemplated. The current yard at New Bedford meets this requirement. In addition to the existing infrastructure, New Bedford contains a property adjacent to the rail line (shown in red hash-marks in the figure below) that was retained by CSX and is available for development as a transload (or related) facility.

Figure 27 MBTA Sale Exclusion Sites

Rail-served ports also need to have transload capabilities, which are critical to the intermodal supply chain. This provides the port with the capability to unload product from, or load product onto railcars. This includes facilities such as the team track facility, which was constructed by the City near the corner of Wamsutta and Herman Melville Blvd. This facility, with the paved area between tracks allowing trucks, forklifts and cranes, as needed, to access rail cars in loading and unloading operations. This transload infrastructure and capability allows New Bedford to support both the surrounding port area, and the general Southeast Massachusetts region. Additionally, the EPA-funded site on Herman Melville Blvd., currently utilized in connection with the New Bedford Harbor clean-up project, provides an additional transload capability, including direct rail to barge, or barge to rail capability. As discussed below, having both near-dock and on-dock capabilities provide a competitive advantage to New Bedford.

Another element to consider in assessing rail-served capabilities is rail-served warehouse and transfer facilities. The EPA-funded site offers a number of future capabilities once the New Bedford Harbor clean-up project is completed. The Maritime Terminals facilities were also historically rail-served and served as a transfer point or in-transit facility between rail and ship. To be able to compete in certain markets such as in the handling of food and beverage products, finished goods, seafood or project cargoes, having warehouse and in-transit capacity capability is critical.

New Bedford Connections to the National Rail Network

The Mass Coastal Railroad is a short-line railroad based in Hyannis, Massachusetts that serves the city of New Bedford for freight rail purposes. Mass Coastal took over the New Bedford switching operations in early 2010, replacing CSXT, which had served New Bedford since the purchase of Conrail.

Mass Coastal in turn interchanges with CSXT, one of two major (Class One) railroads on the U.S. East Coast. Interchange between Mass Coastal and CSXT occurs at Cotley Junction in East Taunton, Massachusetts near the intersection of Route 140 with Route 24. CSX has a rail network that operates from Florida to the northern border of the U.S., as shown in Figure 29 below. The company, which is headquartered in Jacksonville, Florida, owns approximately 22,000 route miles in the United States. It is one of the three Class I railroads serving most of the U.S. East Coast, along with Norfolk

Southern Railway and Canadian Pacific Railway. From Cotley Junction, CSXT can also access other Class One railroads (such as Norfolk Southern, Canadian Pacific and Union Pacific) across the U.S. as well as regional/short line rail operations in New England. Several short-line railroads in Massachusetts have existing bulk transload and commodity distribution facilities (or have proposed these facilities) that could potentially be linked to New Bedford for import and export of cargoes. In addition, the Free Trade Zone in New Bedford is an attractive feature for developing partnerships with inland rail and facility operators. Figure 28 below shows the freight rail network in Massachusetts and surrounding states.

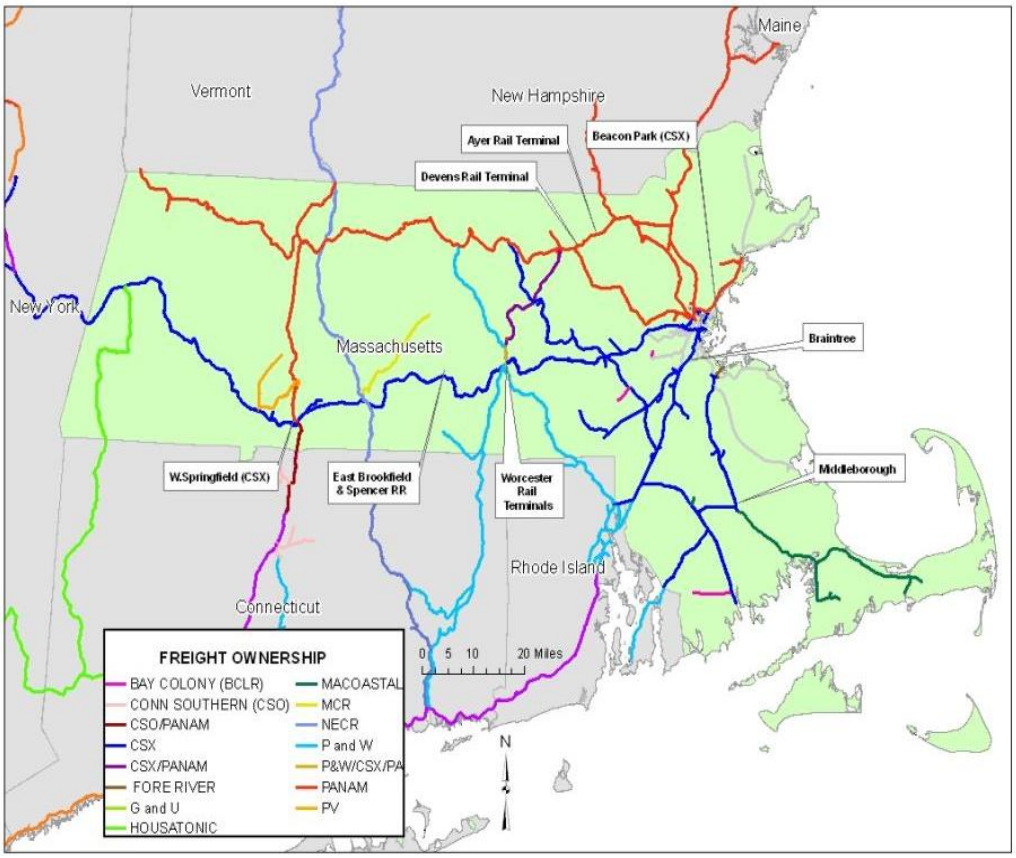

Figure 28 Freight Rail Ownership in Massachusetts

Figure 29 CSX System Map

The actual rail right-of-way into New Bedford is owned by the Commonwealth of Massachusetts and, upon completion of the South Coast Rail passenger project, will be maintained and controlled by the MBTA. Impacts of the MBTA project on potential freight rail in the area are generally positive. While commuter trains will occupy rush hour windows, currently anticipated passenger train operations will still allow daylight operations and daylight switching at New Bedford. The South Coast Rail project will also result in improved track conditions allowing for the safe and efficient handling of rail cars into the port.

The Port of New Bedford has the potential to service several inland areas through rail connections that currently handle bulk, neo-bulk, and container cargo. This provides the port with the opportunity to develop an inland port connection. Inland ports are successful when they have a variety of transportation options including connections to seaports. Several smaller ports in New England have developed niche markets, which have been enhanced through effective rail connections, such as Portland, ME and Quonset Point-Davisville, RI.

The study identified at least one short line railroad, the Mass Central Railroad that expressed interest in working with the port to develop marine transportation connections and take advantage of a foreign trade zone. The Mass Central Railroad (MCER) is a 26-mile railroad that connects with the CSX Railroad in Palmer and extends rail service as far as South Barre, MA. The railroad handles both domestic and international cargo, including commodities shipped to and

from Canada and Mexico as well as overseas shipments originating in South America that pass through the Port of New York.

In 2009 the railroad moved 2,032 railcars handling approximately 200,000 tons, equivalent to 8,000 truck loads outbound. In 2010 as of June 30, the railroad moved 3,000 railcars handling 300,000 tons equivalent to 12,000 truck loads outbound. The railroad has a capacity to handle 10,000 railcars or 1 million tons equivalent to 40,000 truck loads outbound. There is also a large amount of available outdoor and indoor storage located in various facilities including 20 acres of outside storage with an additional 100 acres under option. The railroad has 100,000 square feet of indoor storage.

The primary commodities that are handled by Mass Central include lumber, laminated veneer wood products, plastic, steel including large unit sizes for bridge construction, structural steel parts, rebar, pipe, paper including large rolls of news print, boxed consumer products, paper products, utility poles, electrical parts including transformers, bagged agricultural products, bagged animal feed products, large consumer products including appliances, railroad ties, fencing materials,, construction materials including bagged sand, cement and cement mixes, plumbing and electrical parts, marble, granite, limestone panels, bulk aggregate stone and or sand, auto parts including engines, transaxles and auto body and trim parts, truck parts including stackable truck bodies, engines and transmissions. The railroad also handles rock salt in bulk for use on municipal roadways.

In addition to bulk products, the railroad also handles a variety of packaged food items including canned vegetables, canned specialty products such as ketchup, milk products, spices, herbs, coffee flavorings (Domestic and International), specialty pastas, canned cookies, bulk candies, bulk nuts, canned and bottled olive oil and vegetable oil, beverages including water, beer, formulated drinks, bagged flour, sugar and salt. Commercial and consumer goods include furniture, office equipment, janitorial products including 55 gallon packaged cleaning products, lawn mowers, snow blowers, lawn tractors, recreational equipment including recreational ski vehicles, water craft, consumer products including clothing, shoes, boots and kitchen wares.

Most commodities handled by the railroad move domestically with origin and destination points throughout the United States; however, they also handle a number of products with O/D points in Canada and Mexico. Overseas bulk, neo-bulk and containerized freight is transshipped through U.S., Canadian and Mexican ports and includes specialty wood products shipped via container and originating in South America.

Figure 30 New Mass Central Salt Shed Near Palmer, MA

The railroad has planned a series of new infrastructure improvements over the next several years for the handling of various commodities. This includes additional inside storage, which will be planned to be added in a 2011 design to provide 40,000 square feet of storage capable of 3 pallet stacking under open span roof structures. Also planned for 2012 is an additional 40,000 square feet also designed for 3 pallet stacking under open span structures. The railroad is

promoting the development of an intermodal container facility with the capacity to handle 9,000 inbound and outbound trucks per week planned for construction for servicing several retail firms in 2012.

In relation to the Port of New Bedford, the combined capabilities of CSX, Mass Coastal and the Mass Central, in addition to the other inland rail connections through Palmer, provide the port with a reasonable inland port capability that can provide efficient and cost-effective connections for higher volume cargos. This would make the port comparable to other New England ports, such as New Haven and New London, CT; Providence or Quonset Point-Davisville, RI. The ability to connect to outlying facilities provides both the railroad and the port a wide variety of price competitive services with potential Marine Highway connections to ports such as Norfolk, New York/New Jersey, and Halifax.

Rail Right of Way Clearances

The route from the general U.S. rail network to New Bedford has certain restrictions both in terms of the dimensions of a railcar that can be moved over the route and the weight of the cars and lading that can be handled. Rail clearances are primarily dictated by geometry and geography, and are further impacted by structures adjacent to or above the railroad. In that regard, it should be noted that certain main line tracks will have a larger clearance envelope than secondary lines. The lines in southeastern Massachusetts connect ultimately to the CSX main line running between Boston, MA and Albany, NY. Commodities traveling on this main line are varied, and the railcars carrying these commodities cannot exceed 19'6" above the rail and have a maximum weight restriction of 315,000 pounds per railcar.

The railcars that traverse the lines into and out of New Bedford cannot exceed 15'6" above the rail and are restricted to no more than 263,000 pounds per railcar. These clearance restrictions are primarily dictated by physical impediments related to Amtrak and MBTA operations. Amtrak operates over the line between New York City and Boston known as the North East Corridor. This line is electrified and the overhead wires, called catenary wires, restrict the allowed height of railcars along this corridor. Cars moving between Mansfield, MA and Attleboro, MA are therefore restricted to a height that will fit below the catenary wires. Additionally, over dimensioned railcars cannot clear the various station platforms between Mansfield, MA and New Bedford, which includes current platforms or proposed platforms. The clearance restrictions may impact the ability to attract extreme over-dimensioned loads to this location; however, most typical "high and wide" commodities, such as power production equipment, heavy machinery and wind turbine components will be able to move through this corridor safely and efficiently.

The restriction on these lines to loads not exceeding 263,000 pounds is primarily a restriction dictated by two elements, track condition on CSX-owned lines between Framingham, MA and Mansfield, MA and timetable restrictions over MBTA and Amtrak controlled properties. While the lines from Taunton, MA to New Bedford are in poor condition, it is anticipated that the MBTA South Coast Rail project will make these lines on par with other MBTA-owned and operated properties. When that occurs, the restrictions, other than the portion on CSX-owned property between Framingham and Mansfield, as noted, will be restricted only "by timetable". This means that while the track structure may indeed be capable of handling heavier cars, there is an administrative restriction precluding such movement. This issue, and a path towards addressing it, is discussed in depth in the *Massachusetts State Freight and Rail Plan*.

Beyond capacity constraints, there are operating restrictions that impact freight movements to and from New Bedford. These are primarily related to passenger rail movements over the various lines between Framingham and New Bedford. The net result of these restrictions is that movements into and out of southeast Massachusetts occurs in the overnight timeframe, and therefore movements into and out of New Bedford would likely occur during daylight hours, after the morning commute time and before the afternoon commuter window. While current freight service patterns result in 2 to 3 day a week service to New Bedford, there are no operating restrictions that would preclude 5 day a week service for this area (the 2-3 days per week is driven by demand) . Such service would be Monday through Friday, as the CSX trains to and from southeast Massachusetts operate on such schedule.

Economic Impacts of Freight Railyard Operations in New Bedford

Maintaining and improving the current railyard, between Route 18 and Herman Melville Blvd. and south of Wamsutta Street in New Bedford, will benefit the City of New Bedford and improve intermodal freight connections throughout the region. The location of the existing railyard, adjacent to the Port of New Bedford will allow for heavy bulk commodity shipments to travel to and from the port via rail, reducing the number of trucks on such arterials as I-195 and Routes 140 and 24.

Strategic investments to the freight rail system connections in New Bedford are underway, as funding has been awarded through the first round of competitive transportation stimulus funds, or Transportation Investment Generating Economic Recovery (TIGER) grants, for the Fast Track New Bedford Project. This $20 million transportation grant allows the Commonwealth to rehabilitate five (5) rail bridges (along with station improvements) in New Bedford enabling rail freight flows to continue throughout the region, increasing train speeds, and reducing travel time. According to the application, these improvements will enable future freight flows of up to 1,800 carloads per year, including shipments of PCB dredge material to be moved out of the New Bedford harbor superfund site.

The existence of the railyard is crucial as an economic driver. Access to the railyard can leverage additional investment at the port and provide economic development opportunities resulting in additional job growth. The railyard's close proximity to the port can enable operations at the south terminal to utilize rail, expanding operations, and create up to 51 direct new jobs, and up to 76 indirect and induced new jobs – see Figure 31 below. Transload and distribution facilities will also benefit from additional rail infrastructure and freight diversion to rail. For example, a new warehousing and transload facility of 20,000 square feet could have as many as 18 to 22 new direct jobs.

	Facility	Direct Jobs	Indirect & Induced Jobs
	Railyard	5	11
Potential	Transload	18	30
Potential	Marine terminal - containers	16	20
Potential	Marine terminal	12	15
	Total	51	76

*Based on IMPLAN model and job multiplier analysis

Figure 31 Potential Job Creation

In addition to these economic benefits, an additional benefit is the reduction of trucks on Massachusetts highways. Fewer trucks will in turn reduce highway maintenance costs, accidents, greenhouse gas emissions, roadway congestion, and shipper costs. According to the TIGER Grant analysis for Fast Track New Bedford, the rail improvements will reduce truck traffic significantly saving as much as 292,000 gallons of diesel fuel per year. This could reduce GHG emissions by an average of 110 tons per year. Therefore, the benefits of preserving and maintaining freight rail connections will have significant long-lasting impacts statewide by driving down costs, reducing congestion, and providing several positive social and economic impacts.

Development Potential

Freight rail service to southeast Massachusetts will improve due to the improvements in track structure resulting from the MBTA South Coast Rail project, and from the introduction of a new, local, freight rail provider, Mass Coastal Railroad. Within the restrictions discussed above, there is significant opportunity to develop rail business to the Port of

New Bedford and to develop distribution type traffic to and from locations throughout southeastern Massachusetts, including at the New Bedford Industrial Park.

Both port rail development and distribution development will have some of the characteristics of what are sometimes referred to as "freight villages," which are areas where freight can move easily and efficiently between transportation modes and out to the end-users. A "freight village" is composed of a broadly defined intermodal facility at its core. In this context, "intermodal" means any commodity that transfers from one mode of transportation to another, whether that would be rail to ship, ship (or barge) to rail, or ship to truck, rail to truck or truck to ship or rail. There is also a potential for the transfer of containerized freight if coastal feeder services as part of the Marine Highway can be developed. The intermodal facility is the catalyst for economic development by companies that store, distribute or provide services in the logistics chain moving consumer products. A typical freight village consists of freight production and distribution facilities and related infrastructure, such as manufacturing facilities, warehousing, cross-dock facilities, repair facilities and office space.

A freight village serves two primary goals:

- It brings together the flow of freight transport managed by transportation and logistics companies to reduce costs and increase productivity; and
- It draws transportation and distribution-related activity to the area because of the consumer-related nature of intermodal freight.

The intermodal terminal within a freight village serves as a magnet, spurring economic development by companies that store, distribute or offer services in the logistics chain movement of consumer products. One such service is the, so-called "stuffing" of containers for the export market. Heavy loads, such as paper and pulp products, could be transloaded into containers in New Bedford and then put on coastal feeder services to larger ports for international export. Performing this service in a designated port area would allow the containers to be loaded to a heavier tare than containers that would have to be transported over State roads. New Bedford is in a position to handle the transload from railcars to containers much more cost-effectively than similar facilities in larger ports where labor and overhead costs are often more expensive. New Bedford is also closer to major export centers such as the Port of New York and New Jersey, Delaware River Ports and the Ports of Norfolk and Baltimore than ports further north such as Portland, Maine which until recently had a successful pulp and paper export feeder service operation. All-water services can also be less expensive to the shipper as they avoid labor assessments for over the road containers in major ports, the terms of which are included in master union labor contracts. Additionally, New Bedford is not subject to the Harbor Maintenance Tax because of its designation as an EPA cleanup site.

Freight villages are often Public-Private Partnerships that, when located appropriately, provide significant benefits to the local community, regional economy, transportation providers, shippers and support service providers. New Bedford could develop this type of facility, which would provide the port with a full service cargo capability. Companies involved in the transportation and distribution of goods often find many benefits in locating within a freight village, including:

- The presence of existing or shared infrastructure, which minimizes the need for an individual company to expend its capital to develop costly, capital-intensive infrastructure;
- The potential to share resources such as security, maintenance, management and other support services;
- The potential for cost-savings for shipment of goods, due to the opportunity for companies to combine shipments with others in the freight village, and therefore to ship products in highly efficient and lower-cost units;
- Synergistic business opportunities with other companies located within the freight village; and

- The existence of the latest support technologies (software, radio frequency identification systems, real time communication network) and management skills that can be shared among multiple companies.

Freight villages also benefit the public in a variety of ways, including:

- Supporting and enabling trade;
- Environmental benefits (including congestion relief, reduced Vehicle Miles Traveled, and lower energy use);
- Job creation; and
- Restoration of lands to tax roles.

By sharing or consolidating resources and infrastructure, a freight village also minimizes the potential for redundant and or under-utilized infrastructure to be built by either the public or the private sector.

In addition to the direct benefits to the public and private companies directly involved in the supply chain, freight villages also spur long-term indirect and induced economic development in vehicle service, repair, leasing facilities, hotels, restaurants, training facilities, employment agencies, insurance companies and communications companies located throughout the local community.

Demand for Rail Freight Infrastructure in New Bedford

There are several commodities that are described in this Report that are currently transported to/from the Port via truck; there may be opportunities in the future to transport these commodities via rail. One example of this is the fresh fruit that arrives from North Africa on vessels that require approximately 100 to 150 truckloads to transport the fruit from New Bedford to their final destinations in the U.S. or Canada. There is a potential to transport fresh fruit by rail from the Port of New Bedford to inland destinations. Given that these vessels transport an average of approximately 135 truckloads, or approximately 45 railcar loads, there may be a need in the future for staging approximately 50 railcars in New Bedford in order to have the capability of transporting the fruit, or other commodities, via rail.

In addition to the existing commodities and cargo being transported through the Port, there are future potential opportunities that need to be taken into consideration when contemplating the rail freight needs of the Port. These include:

- **Wind Energy Components**: Given that the Port of New Bedford has been identified as the port that will provide infrastructure to support the construction of the Cape Wind project in Nantucket Sound, consideration must be given to the potential for some of the wind energy components to be transported to the Port via rail. If this were to occur, the Port would benefit from having the capability to receive and stage railcars as well as additional areas for transloading and storage of these wind energy components

- **Containerized Refuse and Related Materials:** There is a potential to receive containerized refuse and related materials from Martha's Vineyard. Currently, the waste generated on Martha's Vineyard is primarily transported via trucks, which travel on the Steamship Authority ferries. The waste is then trucked to an Energy-from-Waste facility in Rochester, MA. There may be significant cost savings to Martha's Vineyard if this waste could be transported via container through New Bedford and on to railcars for disposal at landfills or Energy-from-Waste facilities.

- **Short Sea Shipping:** There is a potential for New Bedford to attract Short Sea Shipping opportunities. One such proposed opportunity, Jersey Harborside Railroad, would involve transload of containers from barges to railcars and/or trucks at the Port of New Bedford. In discussions with Jersey Harborside Railroad, there is the potential for 1,000 to 3,000 containers per week. Assuming four containers per railcar, this equates to approximately 250 to 750 railcars per week. However, assuming that this service did become operational, the rail haul would have to be competitive against a truck haul of these containers. At current transportation costs, truck transportation is typically more cost-effective than rail transportation for hauls under approximately 300-400 miles.

- **Restoration of Waterfront Sidings: Th**ere is the potential to restore the rail sidings that historically had served the waterfront facilities at the Port. There is the potential for rail freight needs from facilities such as the seafood processing facilities, sand and gravel facilities and the Maritime Terminal. If these rail sidings were to be restored, these facilities could generate several railcar loads (inbound and outbound) per week.

As mentioned previously, there is an existing rail-served facility at the Port of New Bedford, which is currently dedicated to the staging of railcars for the transport of dredge materials removed from the Harbor. According to the EPA, as of November of 2010, it is expected that this dredging activity will continue for over 40 years. This is based on EPA's current operation of hydraulic dredging, de-sanding, dewatering and off-site disposal and assumes an annual funding amount of $15 million per year. Additionally, the railroad stores empty cars awaiting dredge material at the city-owned railyard on Wamsutta Street. Given that the EPA facility and a significant portion of the city-owned railyard will be dedicated to the EPA dredging project for the foreseeable future, we believe that it would be beneficial to the Port to identify an additional area that would be able to accommodate additional staging capacity to support potential growth in rail activity at the Port.

There are freight rail operations constraints inherent in the current configuration of the main line track and yard leads at New Bedford. The length of the tail track (the track south of the switch into the freight yard) is the controlling length for outbound freight trains. Additionally, the run-around track, which is located on the freight lead, acts as a control or limit to train length. Both the tail-track and the run-around track are fully adequate to meet current rail demands in New Bedford, and collectively accommodate a train length of approximately 16 railcars. However, if the city wishes to position itself to encourage growth beyond that which a 16-car train can handle, some accommodation must be made. Potential engineering solutions to the above constraint are discussed below.

Based on our analysis of potential rail freight opportunities and rail/maritime operations in the Port, the Port of New Bedford would be well served in addressing several elements to ensure an ability to grow rail business, as discussed above. The elements are:

1. Restoring rail connections to former rail-served customers (for example, Maritime Terminal or American Seafood);

2. Restoring the track south of the currently proposed end of track in order to reach the State Pier with rail; and

3. Reconfigure the main line tracks at and north of the proposed station to accommodate a second track. The reason for this recommendation is two-fold and explained further below.

Extending a second main track from below the station north towards the Wye Track at Nash Road would have three effects, as follows:

a. This additional track would relieve the train length constraint caused by the short tail track and short run-around track at the Yard in New Bedford (as discussed above);

b. If designed with a mid-point crossover, could provide an alternative location to store empty cars for the EPA project, freeing up a significant portion of the railyard for other business opportunities; and

c. This track would simplify serving the State Pier, obviating the need to move pier traffic into the railyard and then out again before moving to or from the pier.

If for operating or engineering reasons a second track between the station and Nash Road were deemed not acceptable, adding an additional track(s) at a suitable location north of Nash Road, while creating certain other inefficiencies, could relieve a majority of the concerns raised above If neither approach described above is feasible, some accommodations at the layover facility could be considered, but at this time we do not think this will be necessary given that it appears likely that at least one, if not both, of the approaches described above should be feasible.

Commodity Handling Potential

A review of common cargoes handled in New England that utilize rail for intermodal moves presents a wide range of potential handling opportunities for the Port of New Bedford. The list below summarizes the range of commodities that could be handled on an intermodal basis through the port:

- Manufactured goods
- Minerals, including sand and gravel
- Equipment and machinery
- Chemicals
- Fuels
- Automobiles
- Pulp and paper
- Agricultural products
- Seafood
- Lumber
- Metals, including copper and steel

In addition, the port has the capability to handle project cargo and specialty cargo such as wind turbine components. Most of the commodities can be handled by rail in large quantities. Commodities are more often handled by truck in smaller quantities or if the origin/destination point is near the port. The higher the volume, and the further the O/D point is from the port, the more rail becomes a viable and cost-effective option.

Linking port and rail infrastructure improvements will give New Bedford a differentiating element compared to other regional ports of similar size. Such linked improvements allow the port to offer services and achieve market reach that few small to medium-sized ports can offer. Harbor improvements such as continued dredging, proposed and existing terminal improvements, and bridge work will make New Bedford more attractive to shippers and receivers. Such land-side improvements undertaken at the same time will leverage the improvements and give New Bedford an infrastructure based competitive advantage in the region. The analysis summarized previously in this report identified a positive economic impact based on job creation related to railyard development. It also identified a number of

commodities, which can be handled by rail allowing the port to access areas outside of its immediate service area. For the port to remain successful and sustainable, it must be able to reach beyond the local service area. The development of all water connections to various key North American hub ports such as Halifax and New York/New Jersey, as well as connections to complimentary niche ports worldwide would provide New Bedford with substantive and wide ranging international connections.

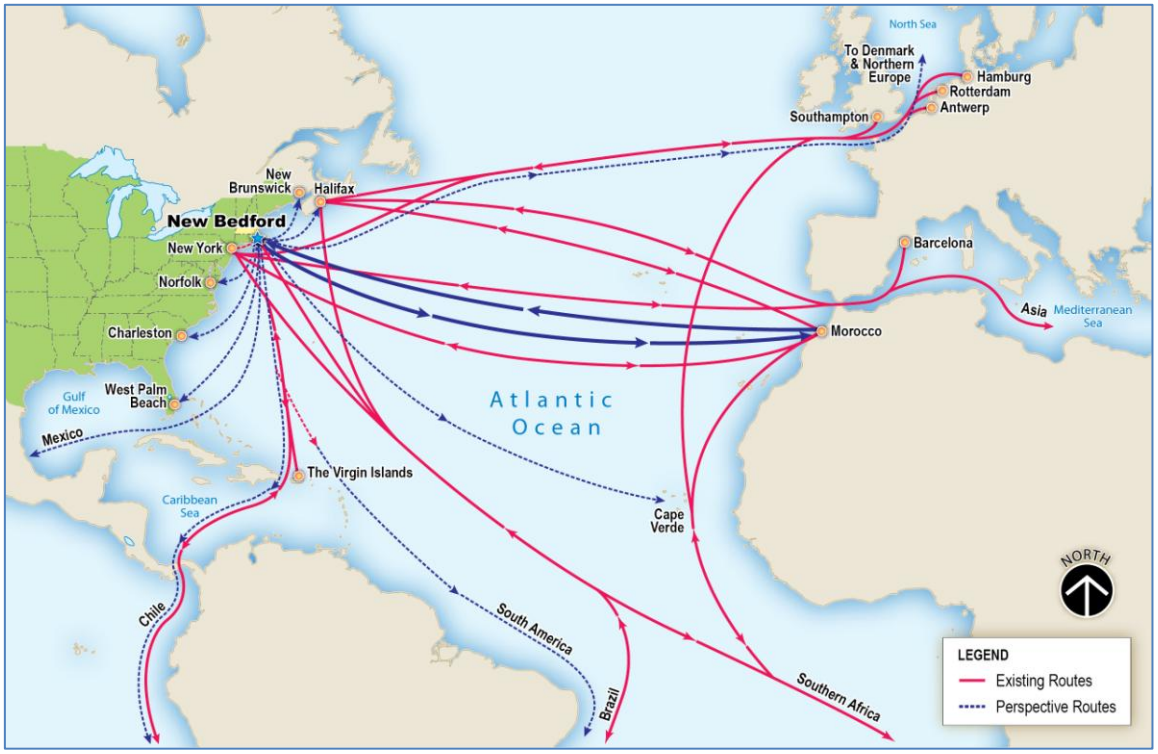

Figure 32 World Map and Connections

An effective rail connection allows the port to develop higher cargo volumes and optimizes terminal utilization, which will reduce per unit or per ton handling costs. In addition, it provides the port with a diverse cargo base, which compensates for market cycles that affect revenue. This provides shippers with multiple service options and cost-competitive transportation alternatives.

Port Opportunity Analysis

The analysis completed for this study focused on the potential development for commercial commodity flow that the port can take advantage of. The Port of New Bedford has several advantages and some disadvantages when looking to develop new port business.

Commodity	Source	Handling	Flow
Manufactured Goods	International/Domestic	Container, Truck, Rail	Import/Export
Minerals	International/Domestic	Bulk Ship, Rail, Truck	Import/Export
Equipment/Machines	International/Domestic	Container	Import/Export
Chemicals	Domestic	Barge, Rail, Truck	Import/Export
Fuels	Domestic	Barge, Rail, Truck	Import
Automobiles	International/Domestic	Neo-Bulk Ship, Truck	Export
Pulp/Paper	Domestic	Container, Rail	Export
Agricultural Products	International/Domestic	Bulk Ship, Container, Rail, Truck	Import
Seafood Products	International/Domestic	Container, Rail, Truck	Export
Lumber	International	Bulk Ship, Container, Rail, Truck	Import/Export
Metals	International/Domestic	Bulk Ship, Container, Rail, Truck	Export
Project/Specialty	International/Domestic	Ship, Barge, Rail, Truck	Import
Bulk Water	International	Container, Bulk Ship	Import
Organic Material	Domestic	Bulk Ship	Export

Figure 33 Potential Cargo Profile for New Bedford

Below is a summary of the commodities that we believe are worth further exploration by the port. We have ranked the order of these opportunities as "Top Tier", i.e., significant potential opportunity, "Mid Tier", i.e., some opportunity, "Lower Tier", i.e., potential opportunity, but not as significant as other opportunities.

Top Tier Opportunities

1. **Pulp and Paper** - The processing of pulp and paper products is a good fit for the Port of New Bedford. Since the discontinuation of the feeder service between Portland, ME and the Port of New York and New Jersey, these products are moved by rail to New Jersey transload facilities and reloaded into containers for export. The cost of transloading is higher in the New York-New Jersey area because of higher labor rates. New Bedford has the ability to perform the same services at lower cost and could provide shippers with ocean carrier access through the Ports of New York and New Jersey or Halifax depending on which service could be

developed. An estimated equivalent of 80,000 truck loads, or 4 million tons, moves out of Maine alone. This containerized export product would provide a needed commodity balance in the port, support the feeder service and could be cost-effective because of lower transload rates and all water connections from the port. New market opportunities could also be identified in North Africa for some of this product providing a backhaul opportunity for the fruit ships. Currently, most New England paper exports are destined for Japan, Korea, China and most New England pulp exports are destined for China with other pulp exports destined for Turkey. Waste paper is also a common export for backhaul of empties. Most waste paper out of New England is destined for Northern Europe.

2. **Manufactured Goods** -Manufactured goods are primarily moved in containers and New Bedford is within close proximity to Boston where the potential for development of substantial quantities of container traffic is limited. Boston has attracted lower cost direct call container service through Mediterranean Shipping Company (MSC), which has provided an efficient and cost-effective option for local shippers. As direct call volume has increased, the requirement for container feeder services has decreased and earlier in 2010, Columbia Coastal, which provided weekly service to the Port of New York and New Jersey, suspended operations into Boston. Columbia Coastal also provided service to Portland, Maine which had generated an increasing export volume, but had cost challenges because of the need to reposition empties into the port. The port had worked with several importers in an attempt to balance the import/export load, but was not able to attract sufficient volume before the service was suspended. Prior to that, both Boston and Portland were serviced by a feeder ship connecting through Halifax. Direct call service into Boston, however, is limited to a single carrier with weekly service to Northern European and Asia ports, as well as service to Caribbean ports serviced by MSC. Feeder service to the Port of New York and New Jersey, as well as Halifax, provided shippers with lower unit costs and a wider variety of options and markets. The Boston container services reach a large market, including origin and destination points in and around New Bedford. This, however, does not preclude additional Marine Highway-based feeder services from attracting cargo that currently have shifted to truck or rail and originate in or are destined for New England. The Port of New Bedford has the opportunity to partner with other small niche ports such as New London CT, Davisville and Providence RI, Portsmouth, NH and Portland, ME to develop sufficient cargo volume and commodity balance to develop a successful feeder service to either the Port of New York and New Jersey or the Port of Halifax, Nova Scotia. Both hub ports offer a larger range of competitive carrier services and wide array of international market access that would provide shippers with transportation alternatives in comparison to trucking. Container cargo represents the highest value (ad valorem) and most sustainable cargo opportunity and container freight should list the port on the Bill of Lading as the destination point.
3. **Equipment and Machines** -The movement of equipment and machinery is either on a case by case basis or as containerized freight. Larger equipment and machinery move on a project cargo basis. The attraction of this type of cargo is dependent upon either a regular container service or the availability of appropriate facilities and equipment.
4. **Agricultural Products** - New Bedford handles a large quantity of fruits and nuts on break bulk ships, mostly from Northern Africa. The empty return capacity is significant and efforts could concentrate on identifying export commodities consistent with vessel routes and capabilities. Exports of commodities such as cranberries or grains may provide such a backhaul if appropriate markets can be identified.

5. **Project and Specialty** - Project and specialty cargoes are generally handled on an occasional basis depending on the source or destination requirement. Theses commodities are unit-based and include power transmission and generation equipment, manufacturing components and particular to New Bedford, the project wind turbine components. Although in most cases occasional, a port's ability to handle these cargos benefits both the port and the region. In most cases, such cargo requires heavy weight crane capacity, which can be purchased by the port in the form of a mobile harbor crane or can be leased from a number of firms readily available to the port.
6. **Seafood Products** - New Bedford processes a large quantity of fresh and frozen fish and shellfish products. It is one of the highest value fishing ports in North America. The port has developed a substantial processing business, particularly in relation to shellfish. Processed fish for export is trucked to Boston for overseas distribution. Processed fish and shellfish products could be directly exported from New Bedford if a feeder service is developed. Containers could also be loaded to heavier European and Asia standards reducing per unit-tonnage shipping costs.
7. **Organic Materials** - Peat moss has also been identified as an export commodity for the port. Peat moss originating in New England can be processed and bagged and pelletized for export in large quantities by the shipload or in containers. The port can provide a backload commodity for vessels delivering fruit and can develop containerized exports as part of a feeder service.
8. **Refuse and Related Materials** - The port has the capability to handle containerized trash domestically from offshore island communities, in particular Martha's Vineyard. This opportunity could provide the port with a steady revenue base at handling facilities, which can be multipurpose.

Mid Tier Opportunities

1. **Minerals** - Sand and gravel represent a significant portion of the tonnage moving out of New Bedford. This material generally produces lower revenue and occupies large parcels of valuable land that might be better suited for other higher value commodities. It also produces a large amount of heavy weight truck moves for service of local markets. Minerals are a niche opportunity for smaller ports and the focus for New Bedford should be the development of a balance of bulk import trade. This opportunity can best be optimized through an inland port partnership providing access to bulk commodities such as road salt as an alternative to all rail movements.
2. **Chemicals** - The primary chemical commodity handled in New Bedford is sodium hydroxide used in the paper and textile industries. This commodity is attracted on a niche basis and expansion is based upon the need of the dependent industries. Particular attention should be paid to the provision of adequate hazardous cargo handling and storage infrastructure to meet demand.
3. **Lumber** - Most New England lumber exports are destined for European and Asia markets, and in addition to container, can be moved under charter on contracted vessels. These consist of mainly manufactured wood products and construction material. Specialty manufactured lumber products are normally shipped in containers and could take advantage of a local container service. Lumber for construction could be shipped as a return cargo for vessel handling imported fruit.
4. **Bulk Water** - Iceland water importation and processing was identified as potential import and export cargo for New Bedford. Bulk water is shipped in twenty-foot containers, and transported in bladders installed within the container. Once delivered, the water is transloaded by pipe into smaller retail units for

distribution. The company handling the product identified New Bedford as one of several ideal ports in New England for handling of this commodity because of the strong potential retail market, availability of warehouse and transload space, and adequate port facilities. In addition, product could be moved inland by truck or rail for processing and distribution. Bulk water can also be exported as a backhaul to the Mediterranean and North Africa regions aboard the current vessels used for importing fruit. Projected annual volumes into the New England market were estimated as follows:

Containerized Product	2011	2012	2013
Bottled (TEU's)	375	1,907	2,852
Medium Bulk Product (TEU's)	251	4,936	7,946
TOTAL (TEU's)	625	6,843	10,798

Figure 34 Estimated Containerized Volumes by TEU - Bottled and Bulk Water

Lower Tier Opportunities

1. **Fuels** - The movement of fuel is dependant upon local market supply and demand. Fuels and other petroleum products are generally shipper controlled through private facilities. Unless the commodity is handled over public facilities where per ton or barrel assessments can be attached, the realized benefit is generally only to the cargo/facility owner. For the benefit of the public, this commodity should be accommodated including the on-going need for harbor dredging.
2. **Automobiles** -The import and processing of automobiles is a specialized industry dependent upon attracting a manufacturer interested in handling the vehicles. Basic port requirements would include adequate land mass for vehicle storage based on a formula of 100-150 cars per acre depending on the storage method; 35,000 to 50,000 square feet of processing space depending upon the anticipated volume; and work rules with organized labor that accommodate the handling of vehicles. Car carriers can on the average accommodate 4,000 to 6,000 vehicles per voyage and can also handle wheeled equipment as well. These vessels have shallower drafts than similarly sized container or bulk ships but have very high sail areas, which make them prone to significant impacts from environmental forces such as wind. Facilities do not require specialized equipment for loading or off-loading vehicles and need only provide a pier area with wide apron suited for the anticipated size vessel. New Bedford would compete with Boston, MA and Quonset Point, RI that have established industries. Automobile exports from New England are generally limited to the handling of used automobiles in niche markets. New Bedford already has a niche export trade for household goods and similar commodities and could expand into this type of cargo based on the demands in those markets. Volumes would most likely be limited to small market demand and the vehicles would most likely be best shipped in the form of general cargo. The auto industry often uses free trade zones in ports to attract processors. This allows manufacturers to consolidate processing efforts and export vehicles with value added services without Customs duties to international markets. Utilization of a free trade zone enhances a port's attractiveness for vehicle handling.
3. **Metals** - Most New England metal handling is export based and consists of processed scrap metal. The handling of this type of cargo requires specialized handling capability, large handling facilities and exceptional environmental controls. Terminal revenue is low because of the nature of the commodity and

most metal exports are handled by a small number of private firms. This special cargo is not recommended for ports with limited available space and limited deep water access.

GLOSSARY

ACCESSORIAL CHARGE – A charge assessed in addition to ocean freight (charges), e.g., stuffing charges, loose cargo charge, terminal charge.

ACCESSORIAL SERVICES – Service rendered by a terminal operator or carrier which is subordinate to the principal function of transportation or movement of freight across a terminal (including weighing, packing and warehousing).

AD VALOREM – According to value. Usually applied to a Customs duty charged upon the value only of goods that are dutiable. Abbreviated ADVAL.

ALL WATER – A shipment made exclusively by water.

APRON – The part of the pier or quay, which is between the enclosed structure and the edge upon which cargo is unloaded. A reinforcing timber bolted to the after side of the stem. Also, the top surface of a pier or dock; the area along the waterfront edge of a wharf or pier.

BASIN – A large slip or dock partially surrounded by quays.

BASIN TURNING – An area of water or enlargement of a channel used for turning around of vessels.

BAY – (1) An area in a transit shed or warehouse between posts and columns or the area between lateral ceiling beams or trusses projected downward to wharf or warehouse floor; the beams, trusses, columns, or posts are numbered or lettered and used to designate the location of goods on wharf in warehouse. (2) A full athwartship section of a containership designed for the carriage of containers.

BILL OF LADING (B/L) – A contract between a shipper and a carrier that provides proof that the merchandise was transferred from the shipper to the consignee and that the carrier has assumed responsibility for the cargo until it is delivered. It serves as a document of title, a contract of carriage and a receipt for goods.

CARGO – Merchandise or goods accepted for transportation by ship or other type of vessels. The commodities or goods that are transported in commercial enterprise, domestic trade or international trade by a common carrier.

AD VALORUM – High value cargo that usually has an additional freight charged to this type of cargo usually at a rate, based upon a percent on the declared value of the goods.

BREAK-BULK CARGO – Heterogeneous items of general cargo, packaged and moved as single parcels or assembled together on pallet boards and wire or rope cargo slings as a means of lifting on and off a vessel by ship's gear or by wharf cranes.

DRY BULK CARGO – Cargo which may be either loose, granular, free-flowing or solid but is not shipped in package form, such as grain, coal, ore and the like, and is usually handled by specialized mechanical handling equipment at specially designed dry bulk terminals.

LIQUID BULK CARGO – Any form or liquid cargo such as petroleum products, chemicals, water or slurry that is carried in large quantities in tank vessels and handled through pumps and piping.

NEO-BULK – Cargoes carried on specialized vessels that are not carried in containerized, bulk, or break-bulk form. Typical neo-bulk cargoes include automobiles, steel, logs, lumber, or scrap carried on wood products carriers and steel cargoes.

CARGO CLASSIFICATION – Cargo either domestic or international, which is loaded for export or outbound or received as import or inbound.

INBOUND CARGO – Cargo that is being imported into a country engaged in international trade or is received from a domestic source.

OUTBOUND CARGO – Cargo that is being exported from a country engaged in international trade or is loaded for a domestic destination.

CHARTER – The leasing or renting of an entire vessel, or part of its space, for a particular trip or period of time.

CHARTER PARTY – A written contract between the owner of a vessel and the person desiring to employ the vessel (charterer) for the carriage of goods or hire of a vessel for a period of time; sets forth the terms of the arrangement such as duration of agreement, freight rate and ports involved in the trip.

CHARTERED SHIP – A vessel under lease by its owner to others.

CONTAINER – A large standard size protective box into which cargo may be packed for shipment aboard specially configured oceangoing containerships and designed to be easily interchangeable between the three basic modes of transportation--ship, truck, and rail. The transfer unit is the container rather than the cargo contained therein. Container dimensions are usually (in feet) 8 x 8 x 40 or 8 x 8 x 20. 40 footers are called forty foot equivalent units (FEU), 20 footers are twenty foot equivalent units (TEU). Also, a truck trailer body that can be detached from the chassis for loading into a vessel, a rail car or stacked in a container depot. Containers may be ventilated, insulated, refrigerated, flat rack, vehicle rack, open top, bulk liquid or equipped with interior devices. A container may be 20 feet, 40 feet, 45 feet, 48 feet or 53 feet in length, 8’0” or 8’6” in width, and 8’6” or 9’6” in height. There are generally 5 types of containers (1) General Dry Cargo Container; (2) “Reefer” Refrigerator or Temperature Controlled Container; (3) Half High Container or Bin (flat with removable sides); (4) Tank Container; and (5) Collapsible Steel Flat. Containers can be transported intermodally by road and rail carriers and in certain sizes by air carriers.

CONTAINER EQUIVALENTS (FEU/TEU) – The conversion of the various sizes (lengths) of containers in service into container equivalents (40-foot equivalents, 20-foot equivalents) to provide a common basis for comparison (20-foot equivalents are the internationally recognized standard comparison).

CONTAINER-ON-FLATCAR (COFC) – Carriage of intermodal containers (detached from their highway chassis and bogie) on rail flatcars.

CONTAINER SERVICE – Service performed at loading port in receiving and loading cargo into containers at the container freight station and transporting such containers from the CFS to the container yard (CY).

CRANE, CARGO – A crane especially adapted to the transferring of cargo between a vessel’s hold and a wharf or lighter.

CRANE, FITTING-OUT – A crane located and especially arranged for shipyard use to place equipment in a ship after it is in the water.

CRANE, FIXED – A crane whose principal structure is mounted on permanent or semi-permanent foundations.

CRANE, FLOATING – A crane mounted on a barge or pontoon which can be towed or self-propelled from place to place.

CRANE, GANTRY – A crane or hoisting machine mounted on a frame or structure spanning an intervening space and designed to handle containers into and out of a ship. It can be mounted on the ship as a semi-permanent part of the vessel.

CRANE, LUFFING – A crane in which the load may be moved radially, or to or from the center of the crane, horizontally.

CRANE, PORTAL – A type of gantry crane with vertical legs of sufficient height and width to permit passage of vehicles, railroad equipment, or oversize cargo beneath the lifting mechanism.

CRANE, SEMI-PORTAL – A type of gantry crane with one support on the pier or wharf and the other on shed roof.

CRANE, WHARF – Any crane located on a wharf or pier accessible to the hold of a vessel alongside.

CUSTOMS DUTY – Tax assessed against all merchandise imported into the U.S., unless specifically exempted. Rates of duties are classified as ad valorem, specific, or compound, and vary according to commodity.

DEMURRAGE – *In Charter Parties:* Excess time taken for loading or unloading of a vessel not caused by the vessel operator, but due to the acts of a charterer or shipper. A penalty charge against shippers or consignees for delaying the carrier's equipment beyond the allowed free time provision of the tariff at the rail ramp. *In International Transportation*: A storage charge to shippers which starts accruing after a container or cargo is discharged from a vessel. The charge varies according to rules of the appropriate tariff.

DOCK – A shoreside facility designed to moor vessels, technically one in which the water may flow below the apron area. A cargo handling area parallel to the shoreline. Wet docks are utilized for the loading and unloading of ships. Dry docks are utilized for the construction or repair of ships. A place such as a wharf or platform, for the loading and unloading of materials form ships. The part of a carrier's building where freight is sorted, loaded and unloaded from vehicles.

DOCKAGE – A fee charged to a vessel for using a pier or wharf.

DRAY – The short haul truck move from one terminal or mode of transportation to another terminal or mode of transportation.

DRY FREIGHT – Non-liquefied cargo not requiring controlled temperature protections.

GATE FEE – Same as a terminal fee and charged when the cargo enters or leaves the terminal gate.

INLAND PORTS – Port facilities that have direct rail or truck connections to a port but are located a far distance from the port.

OCEAN CARRIER – Ship or its owners undertaking to carry cargo for financial considerations.

OVERALL WEIGHT – Maximum weight of a container or chassis, including all fittings and dunnage.

PALLETIZED CARGO – Individual items of cargo loaded on a pallet.

PIER – The location in a seaport at which cargo arrives or departs. A shoreside facility to which a ship is secured. A structure used for loading and unloading vessels, which projects into the water. Piers extending at right angles to the shore line are called finger piers.

ROLL ON / ROLL OFF – A dry cargo vessel which loads and discharges wheeled cargo via ramps from the side or stern. Also known as Ro/Ro.

SAIL AREA – The collective portion of the hull and superstructure above the waterline most subject to wind effect that affects vessel maneuvering.

SEMI-CONTAINERSHIP – A conventional freighter carrying break-bulk cargo and a limited number of containers on deck, in hatch squares or in hatches fitted with cell guides.

SHIPPING – A quantity of goods physically tendered by a shipper at one point of origin at one time on one shipping document, for a consignee at one point of destination.

SODIUM HYDROXIDE (NaOH) – Also known as lye and caustic soda, is a caustic metallic base chemical used in numerous industries. Its primary use is as a strong chemical base in the manufacture of pulp and paper, textiles, drinking water, soaps, detergents and corrosives such as a drain cleaner. Pure sodium hydroxide is a white solid shipped in pellets, flakes, granules, and as a 50% saturated solution. It is hygroscopic and readily absorbs water from the air, so it is normally stored in an airtight container. It is very soluble in water and also dissolves in ethanol and methanol.

TERMINAL HANDLING FEE – Charge assessed to a unit of freight for handling at the terminal prior to loading or after discharge from a vessel.

TONNAGE – Generally refers to units of freight handled equal to **Short***:* 2000 lbs. **Long***:* 2240 lbs. **Metric:** 2204.6 lbs.

TONNAGE TYPES – The various types of measurements associated with vessels.

> GROSS TONNAGE – A measure of the internal volume of spaces, within a vessel in which 100 cu ft is 1 ton. Gross tons includes a ship's internal volume, excluding such spaces as the double bottom, peak or deep tanks used only for water ballast, open-ended poop, bridge or forecastle, certain light and air spaces, sky lights, anchor and steering gears spaces, the wheelhouse, toilets, and certain passenger spaces. Net tonnage is the gross tonnage less certain additional spaces such as officer and crew spaces, chart room and percentage of the propelling machinery spaces.
>
> LIGHTWEIGHT TONS (lwt) – Actual weight of the empty ship.

NET TONNAGE – The internal cubic capacity of a vessel which remains after the capacities of certain specified spaces have been conducted from the gross tonnage. Tonnage should not be confused with displacement. This differs from gross tonnage in that certain additional spaces have been deducted, such as crew's spaces, etc.

TRANSLOAD FACILITY – Intermodal facility designed to provide the loading or discharging of cargo from one form of transportation to another.

WHARF – A shoreside facility which extends out into deeper water to which ships secure to. Place for loading or unloading vessels. The term is also used specifically for a berthing structure of open piling construction, aligned parallel with the shoreline and referred to as a marginal wharf.

WHARF DEMURRAGE – Penalty charge assessed against merchandise which remains on the wharf premises beyond the specified free time.

WHARF STORAGE – The charge assessed against freight after expiration of free time, when it has been declared and accepted for storage.

WHARFAGE – Charge assessed by a pier or dock owner against freight handled over the pier or dock or against a steamship company using the pier or dock.