Reeve & Associates
Management and Economic Counsel

Analysis of the Potential Market for Short Sea Shipping Services over the Ports of Fall River and New Bedford

Prepared for:

Massachusetts Department of Business and Technology and Seaport Advisory Council

Prepared by:

Reeve & Associates with:
Global Insight
KKO and Associates

March 29, 2006

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I. Executive Summary

This reports contains the findings and conclusions from a project funded by the Massachusetts Department of Business and Technology and Seaport Advisory Council (MSAC) to assess the market potential for short sea shipping operations (coastal shipping) to connect the ports of Fall River and New Bedford (ports of Bristol County) with other U.S. ports that would provide a new mode of transportation for freight that is currently moving over the highway.

This report specifically addresses six key issues concerning the prospects for short-sea shipping services over the Bristol County ports:

- What is the status of the emerging short sea network and its outlook for the future?
- What is the potential impact of this network and the factors driving its development on the ports of Fall River and New Bedford?
- What is the potential cargo hinterland for the ports?
- What highway freight is currently moving into and out of this hinterland?
- What type of freight is moving on these lanes and who is carrying it?
- What is the likelihood of different segments of this highway freight market being diverted to short sea shipping through the two ports and the consequent prospects for the two ports becoming successful short sea shipping hubs for the region?

The following are the conclusions of the project team on each of these issues based on the research and analyses that is described in the following pages of this report:

Probability of Success for Bristol County Ports as Short-Sea Shipping Hubs

- Several factors point to a strong probability of success for short-sea shipping services being developed to serve the ports of Fall River and/or New Bedford:
  - There are substantial cargo volumes of truck traffic moving along the Atlantic seaboard with origins or destinations within the hinterland served by the Bristol County ports – options for such services include a short haul operation connecting with northern New Jersey and a longer haul operation connecting with ports in the South Atlantic such as Jacksonville, FL, Wilmington, NC, and/or Norfolk, VA.
  - Truckers, particularly truckload operators, are becoming increasingly aware of the short-sea shipping option, and view it as an additional intermodal opportunity that may offset constraints on their ability to continue to grow pure truck transportation services due to increasing highway congestion and driver shortages as well as limits on hours of driver operation and rising fuel costs.
  - The economics of short-sea shipping appear to be competitive with alternative modes, particularly on long haul lanes provided that "best in class" practices can be implemented in terms of vessel costs and manning levels as well as stevedoring operations that will enable short-sea shipping to achieve its full potential in terms of both cost and service efficiency.
  - The primary competition to the Bristol County ports as short-sea hubs will come from the Rhode Island ports of Providence and Davisville (Quonset Point). Although these

ports are well positioned in terms of physical facilities, they are at a greater distance from the central and northern New England hinterland that may potentially be served by the Bristol County ports.

- However, there are also a number of factors that need to be addressed in order for short-sea shipping operations to be effectively realized in the ports of Bristol County:
  - Current port capacity in both Fall River and New Bedford is limited in its ability to accommodate a major short-sea shipping operation such as envisioned in this project.
  - Fall River's State Pier could accommodate short-sea operations moving the equivalent of 140 trailers into and out of the port on a daily basis but that would entail adding more trailer parking area to that within the current State Pier footprint and also possibly displacing some current users of the facility – in addition, the large volume of truck traffic into and out of the facility projected for the short-sea operation must be balanced with the needs of the adjoining Battleship Cove tourist facilities and other planned recreation activities in the area.
  - New Bedford's current cargo facilities in terms of berth and yard capacity need to be improved to effectively support a short-sea service. In the long term, if the North Terminal is developed as a RoRo berth and adequate access to it is provided by reconstructing or relocating the Route 6 bridge, New Bedford would be an ideal location for a short-sea shipping operation.
  - In addition, factors that add to the cost of short-sea shipping such as Harbor Maintenance Tax (HMT) and the extremely high cost of commercial vessels built by U.S. shipyards must be addressed:
    - The elimination of HMT on coastal domestic shipping services may prove to be revenue neutral as any foregone tax may be offset by funds saved in highway construction and repair as trailers are removed from the highways by short-sea shipping services.
    - The high cost of U.S.-built commercial vessels may be addressed by increasing the percentage of such vessels that may be built overseas, by improved purchasing and sourcing practices by U.S. shipyards, by the application of modern vessel construction practices and technologies by the shipyards, and/or by a waiver of the U.S. Jones Act restriction on domestic operators using foreign-built vessels.

Status of the emerging short sea network and its future outlook

- Despite a number of efforts to develop short-sea shipping services along the U.S. coasts, there have been few successes to date – high costs on both the vessel and port side and slow acceptance of this alternative transport mode were primary factors that undercut these efforts.
- Most of these earlier short-sea initiatives were carried out prior to the current conflux of highway congestion, driver shortages, and high fuel costs that are creating a more favorable environment for short-sea shipping transport alternatives.
- Successful "short-sea" operations in the noncontiguous U.S. domestic trade lanes such as between the continental United States and Puerto Rico, Alaska, and Hawaii provide a business model that is applicable to coastal routes.

- There appears to be a significant opportunity that short-sea shipping services may be successfully launched in the near future if the cost issues are solved on the basis of current best practices within the U.S. and carefully planned partnerships between marine and ground transportation operators are developed to provide a true short-sea/land intermodal service option.

Potential Impact on the Ports of Fall River and New Bedford

- Both ports are well positioned to be significant players as short-sea shipping hubs although constraints on their capacity need to be addressed. The proximity of the two ports to each other may be a plus in terms of sharing labor and services.
- The total economic impact of the development of short-sea shipping services over the ports of Bristol County could be as high as $120 million, creating up to 800 jobs – at least fifty percent of this impact would occur in the immediate area of the Bristol County ports.

Potential Cargo Hinterland for the Ports of Bristol County

- The potential cargo hinterland for the ports of Bristol County extends a relatively short distance to the south by approximately 50-miles including much of Rhode Island, but a significant distance to the north and west to include most of central and northern New England up to 250-miles.

Volume of Highway Freight into and out of the Bristol County Ports' Hinterland

- A total of 1.9 million trailer loads of highway freight move to destinations within the Bristol County ports' hinterland annually from origins within 200-miles of a port along the U.S. Atlantic and Gulf Coasts seaboard – a total of 1.4 million trailer loads moves out of the Bristol County ports' hinterland to destinations within 200-miles of a port along the U.S. Atlantic and Gulf Coasts seaboard.
- The major port-pair partners for the Bristol County ports for short-sea shipping services appear to be Bayonne, NJ (total volume of 787,000 trailer loads) and Jacksonville, Florida (total volume of 418,000 trailer loads).

Type of Freight and Carriers on these Routes

- A broad assortment of manufactured goods, foodstuffs, and basic commodities move by highway freight on these potential short-sea shipping lanes.
- Truckload carriers play a predominant role in these potential markets and also appear to have the greatest interest in short-sea shipping as an alternative mode to direct over the road transport.

In summary, the ports of Bristol County appear to have a significant opportunity to become terminuses for short-sea shipping services. Focusing on implementation strategies that address both the positive and negative factors listed above should enable this opportunity to be achieved.

II. The Emerging Short Sea Network

Background

The highway transportation system of the United States is coming under increasing pressure as growth in over the road traffic is exceeding the growth of capacity at the same time as truck driver shortages, restrictions on driver hours of service, and rising fuel prices are increasing the cost of trucking services. Coincident with these developments, many American companies' supply chains have become more complex as they have internationalized much of their sourcing and reduced inventory levels through such strategies as "Just in Time" parts delivery to manufacturing plants. This has had the effect of increasing these companies' reliance on fast reliable freight transport. The resultant strain from growth in freight transport activity has impacted all modes of transport, but none more than trucking. Significantly increased highway congestion has come from the compound influences of the growth in freight and passenger traffic, especially in densely populated regions such as along the U.S. Atlantic Coast, particularly on the I-95 corridor.

Given the current limited plans for new highway construction and likely ongoing federal and state fiscal constraints, it is likely that congestion on U.S. highways will continue to increase. This will have the virtually inevitable effect of degrading the productivity of the nation's businesses in terms of their transportation and logistics performance. At the same time, the traveling public will be inconvenienced by further increases in traffic delays and the environment will be subject to additional damage from vehicle emissions (especially freight diesel emissions) that reduce air quality.

One potential avenue that offers to relieve some of this strain on the nation's transport infrastructure is the diversion of truck traffic from congested highways to the open sea – that is, to use what is termed "short-sea shipping" operations along the nation's coasts as well as on inland waterways to absorb a significant part of the projected growth in highway freight traffic. These short-sea shipping operations would move freight on an intermodal basis by combining a relatively short overland "drayage" move by truck to transport goods from their origin to a nearby port from which a vessel would carry the freight to another port where a second truck would transport the load over another relatively short distance to its ultimate destination. This short-sea model for domestic freight has already had some success through such operators as Osprey Lines in the U.S. Gulf and inland waterways. However, its application on the Atlantic Coast has been very limited and with no real success stories to date.

Nevertheless, with the recent significant shift in the nation's transportation equilibrium – highway capacity not keeping pace with the growth in demand, labor shortages for truck drivers becoming increasingly acute, and fuel prices rising dramatically – it is timely to take an objective and pragmatic look at whether short-sea shipping can provide a means to relieve some of the pressure on the nation's highways and provide new business for shipping services and ports such as Fall River and New Bedford in Massachusetts.

The Potential Market

The great majority of U.S. intercity truck freight travels only a relatively short distance, and is thus not conducive to an intermodal transportation mode such as short-sea shipping. Likewise, many freight movements occur in volumes and at frequencies not generally appropriate for intra or inter-coastal ocean service. Consequently, successful market penetration by short-sea shipping will be a function of two primary factors: (1) relative length of haul, and (2) the level of concentration of volume in specific traffic lanes. As the distance between freight origin and destination increases and lane volume (density) grows, intermodal services – such as short-sea shipping – become more competitive relative to highway transport, and their cost advantage increases. Where significant highway congestion exists, such as in the U.S. Northeast corridor, the distance at which short-sea shipping may be competitive with pure highway traffic may decrease. Consequently, analyzing the relative lengths-of-haul and lane densities of truck traffic moving into and out of various regions of the U.S. with access to coastal ports was the first step in quantifying transportation market prospects for short-sea shipping services that may utilize the ports of Fall River and New Bedford ("Bristol County ports").

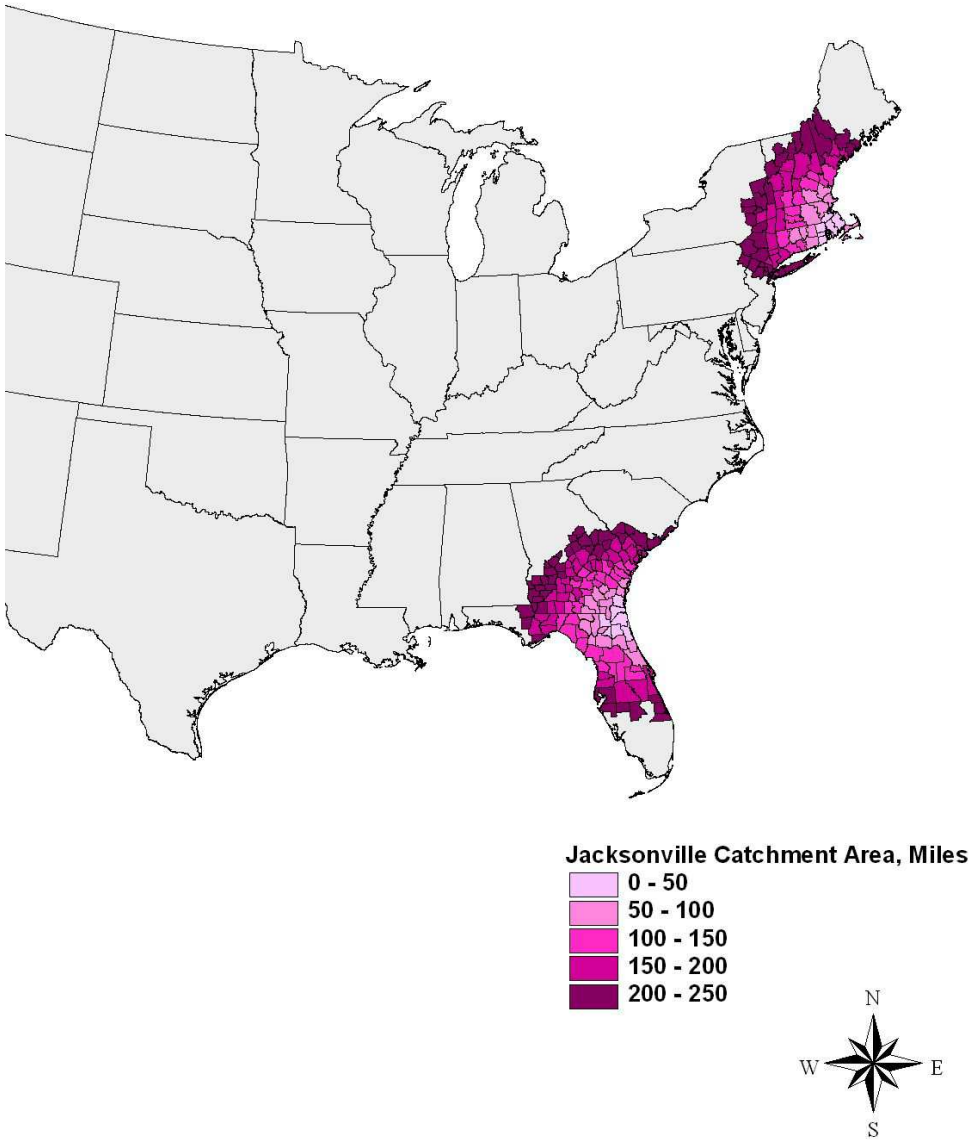
The key potential port partners of the Bristol County ports that were selected to be the focus of the market analysis were the following:

- Bayonne, NJ
- Norfolk, VA
- Wilmington, NC
- Charleston, SC
- Savannah, GA
- Jacksonville, FL
- Port Canaveral, FL
- Tampa, FL
- Pensacola, FL
- Mobile, AL
- New Orleans, LA
- Port Arthur, TX
- Galveston, TX
- Corpus Christi, TX

These ports were selected on an indicative basis only. Other neighboring ports (such as Fernandina Beach, Florida in the case of Jacksonville) that would have essentially the same cargo hinterland may be substituted for the selected port if so desired.

Cargo flows between the respective "hinterlands" of the various port-pairs were identified. The traffic flows were segmented at intervals of 50-miles as shown in the example of Exhibit II-1 below for traffic between the hinterlands of the Bristol County ports and the port of Jacksonville Florida. The analysis of potentially divertible traffic then focused on a "skewed" hinterland to reflect the key assumption that trucks would not backtrack very far to a port in the opposite direction of their desired direction of travel. Consequently, the scope of potentially divertible traffic was restricted to cargo moving between the respective port-pair hinterlands extending only 50-miles in the direction of travel (requiring a backtracking movement) and up to 250-miles in the opposite direction.

Exhibit II-1
Prospective Cargo Hinterlands for Short-Sea Shipping Traffic between Bristol County Ports and the Port of Jacksonville, Florida



Methodology

The purpose of the market-sizing task was to identify the U.S. East and Gulf Coast ports that, as trading partners of the ports of Fall River and New Bedford, may have the greatest potential for diverting current freight traffic from the highways to a short-sea shipping service between the respective port-pairs. Global Insight's TRANSEARCH ® database and ground freight analytical capabilities were used to size the potential short-sea shipping market for Bristol County ports.

TRANSEARCH is a commodity flow database that is produced annually from sample data provided by over 100 public and private data sources that is then subject to rigorous

economic modeling in order to develop an estimate of the total ground freight market on a county to county basis for North America. For this project, the starting point was truck traffic (truckload, private, less-than-truckload, and Canadian/Mexican movements) from the 2003 edition of county-level TRANSEARCH. A detailed description of TRANSEARCH and the methods used to create it is attached as Appendix 1. Traffic flow data from TRANSEARCH was analyzed for each port and its particular drayage hinterland, by direction for northbound and southbound traffic.

The key port-pair partners for the Bristol County ports were matched to corresponding Federal Information Processing Standards (FIPS) county definitions (as shown in Exhibit II-2 below). This geocoding process provided consistent geographic analysis regions for the various source data.

Exhibit II-2
Federal Information Processing Standards (FIPS) County Definitions for Selected Bristol County Port Partners

Port	State	FIPS
Bayonne	NJ	34017
Norfolk	VA	51710
Wilmington	NC	37129
Charleston	SC	45019
Savannah	GA	13051
Jacksonville	FL	12031
Port Canaveral	FL	12009
Tampa	FL	12057
Pensacola	FL	12033
Mobile	AL	1097
New Orleans	LA	22071
Port Arthur	TX	48245
Galveston	TX	48167
Corpus Christi	TX	48355

A sustainable short-sea shipping operation was assumed to provide a less expensive service alternative to other means of transportation, with the understanding that low costs may equate with longer cargo transit times. Reflecting this assumption, unique port catchment areas for a short-sea shipping service were determined using restrictions that take into account the characteristics of a short-sea shipping operation that must compete with the over the road transportation option.

The key assumption behind the determination of cargo hinterlands was that a viable short sea-shipping market may exist when sea/land intermodal transport is significantly cheaper than pure land transport. In our analysis, this was defined using the following criteria: a competitive market may exist when distance by land is greater than distance by sea (including land drayage) *and the unique aspects of sea/land intermodal transport are considered*. As mentioned, ocean transport is typically less expensive than truck transport. This means that, for the same price, goods transported by ship can travel

further than goods transported by truck. To capture these savings, the cost advantage accredited to sea travel is quantified by applying a factor of 0.6 to each port's Ocean Miles (i.e., the estimated transport miles by sea from each port to Bristol County, MA). Sea/land intermodal transportation may also have inherent disadvantages, such as additions to overall transit time due to marine terminal vessel loading and discharge and cargo receiving and delivery operations. In the potential market analysis, this disadvantage is accounted for by adding a 200-mile penalty (approximately four hours of drive time) to the calculated ocean miles for all ports except for Bayonne, which has a unique situation because of the highway congestion surrounding New York City. The application impact of quantifying these unique characteristics is shown in Exhibit II-3, in which Adjusted Ocean Miles are equal to 200 miles + (Ocean Miles × 0.6).

Exhibit II-3
Calculation of Adjusted Ocean Miles

Port	Ocean Miles	Adjusted Ocean Miles
Bayonne	223	134
Norfolk	408	445
Wilmington	644	586
Charleston	710	626
Savannah	784	670
Jacksonville	868	721
Port Canaveral	1,068	841
Tampa	1,477	1,086
Pensacola	1,682	1,209
Mobile	1,716	1,230
New Orleans	1,785	1,271
Port Arthur	1,945	1,367
Galveston	1,947	1,368
Corpus Christi	2,052	1,431

Under these restrictions, a county was included as part of a port's catchment area if the distance by truck to/from Bristol County, MA was greater than the distance of Adjusted Ocean Miles plus drayage distance (miles to/from port to ultimate origin/destination).

For each port catchment area, TRANSEARCH 2003 flow data for truck traffic, including origin, destination, mode, sub-mode, commodity, tons, and units, were extracted at the county level. The multiple layers of detail in the dataset provide the basis for a comprehensive analysis and for data and volume validations at a port-specific level. These extractions yielded a preliminary dataset of over one million records.

Once eligible flows were selected, flows that had a drayage distance of greater than 500-miles were eliminated, meaning if the flow originated or terminated within 500-miles of an eligible port, it was considered traffic available to that port. At this point, a commodity filter at the 2-digit Standard Transportation Commodity Code (STCC) level was applied to remove bulk commodities from the analysis. Specifically, STCCs 10, 11,

13, 14 representing Ores, Coal, Crude Oil, and Minerals were excluded, as those are not commodities likely to move in a short-sea shipping liner service and are likely to travel by water only in large bulk ships. In addition, traffic consisting of empty vehicles (STCC 4221) and secondary traffic (STCC 50) were also removed.

The database at this point contained "eligible flows," representing the traffic that could conceivably be captured by short-sea shipping services if certain other conditions were met. The other conditions, which were not analyzed in this assessment, would include scheduling concerns, transit time, commodity value, and other considerations.

Double-counting between port-pair flows was permitted, meaning one flow may be assigned as "available" to more than one port in the case where port hinterlands may overlap, for example between the ports of Jacksonville and Savannah, Georgia. This enables the comparison of traffic volumes between particular port-pair combinations in order to select those that may offer the greatest market. Of course, the port-pair combinations are not then additive if one were to seek to identify the total market.

A distinction should be drawn between the measurements of domestic truck volumes versus international container shipments. In the case of international traffic, volume is typically measured in Twenty-foot Equivalent Units (TEUs), which correspond to multiples of a standard twenty-foot ISO container. In contrast, domestic traffic is represented in truckloads as would be operated for a given commodity. For dry van traffic, this would typically be either a 48 or 53-foot long trailer. This difference in capacity must be taken into account when ship capacity requirements are examined. The traffic measures included in the market analysis in this report are in “truckloads.”

Findings on the Potential Market

The results of the port-pair traffic flow analysis are provided below in Exhibit II-4. Among the preselected prospective port partners, the largest single potential short-sea shipping market for the Bristol County ports is Bayonne, NJ followed by Jacksonville, FL and Corpus Christi, TX. It is noteworthy that traffic in all of the port-pairs is significantly imbalanced with northbound traffic invariably being the headhaul flow.

Exhibit II-4
Truckload Freight Movements between Bristol County Hinterland and Other Ports

	Southbound	Northbound	Total
Bayonne, NJ	190,342	596,972	787,314
Norfolk, VA	24,409	47,038	71,447
Wilmington, NC	20,909	91,637	112,546
Charleston, SC	41,517	222,536	264,053
Savannah, GA	66,267	218,970	285,237
Jacksonville, FL	140,773	277,086	417,859
Port Canaveral, FL	109,935	160,907	270,842
Tampa, FL	56,677	149,828	206,505
Pensacola, FL	24,711	113,975	138,686
Mobile, AL	70,539	307,285	377,824
New Orleans, LA	53,824	212,519	266,343
Port Arthur, TX	52,059	206,148	258,207
Galveston, TX	94,100	284,813	378,913
Corpus Christi, TX	158,594	258,382	416,976

Source: Global Insight Inc. TRANSEARCH database. See tables in the Appendix for supporting detail.

The TRANSEARCH data was also used to identify the type of commodities moving by truck on the selected Bristol County port-pairs. For example, as shown in Exhibit II-6 below, foodstuffs (no doubt, including large volumes of seafood) are the single largest commodity group moving from the Bristol County hinterland to the Jacksonville area.

Exhibit II-6
Commodities Shipped from Bristol County Hinterland to Jacksonville Hinterland

SOUTHBOUND

Port Name	Jacksonville

Loads	To South					
STCC 2	50 miles	100 miles	150 miles	200 miles	250 miles	Grand Total
Apparel Or Related Products	56	2	-	338	1,425	1,820
Chemicals Or Allied Products	90	658	1,959	3,385	5,764	11,856
Clay, Concrete,Glass Or Stone	156	1,078	555	1,502	5,957	9,248
Electrical Equipment	276	875	139	203	1,464	2,957
Fabricated Metal Products	712	697	2,870	2,641	4,368	11,288
Farm Products	4	8	4	-	31	47
Food Or Kindred Products	999	2,451	343	5,220	12,712	21,724
Forest Products	-	-	-	-	0	0
Fresh Fish Or Marine Products	-	-	-	-	83	83
Furniture Or Fixtures	20	378	10	82	2,117	2,607
Instrum, Photo Equip, Optical Eq	217	77	171	319	909	1,692
Leather Or Leather Products	64	92	80	146	130	513
Lumber Or Wood Products	3	49	2	500	2,565	3,119
Machinery	264	791	1,158	1,985	5,411	9,609
Misc Manufacturing Products	31	164	108	370	603	1,275
Petroleum Or Coal Products	3,162	11,288	14	2,564	1,099	18,127
Primary Metal Products	847	4,123	1,295	1,513	5,046	12,823
Printed Matter	1,866	584	43	1,821	1,515	5,830
Pulp, Paper Or Allied Products	172	2,286	333	3,121	5,817	11,729
Rubber Or Misc Plastics	965	4,228	2,173	3,626	863	11,855
Textile Mill Products	335	188	120	138	419	1,200
Transportation Equipment	6	49	120	15	1,179	1,368
Grand Total	10,243	30,066	11,497	29,488	59,479	140,773

Source: Global Insight Inc. TRANSEARCH database.

In the reverse "headhaul" direction, chemicals are the major single item moving from the Jacksonville hinterland to the Bristol County hinterland with foodstuffs (including citrus and beef) also accounting for a significant share as shown in Exhibit II-7 below.

Exhibit II-7
Commodities Shipped from Jacksonville Hinterland to Bristol County Hinterland

NORTHBOUND

Port Name	Jacksonville

Loads	To Bristol County					
STCC 2	50 miles	100 miles	150 miles	200 miles	250 miles	Grand Total
Apparel Or Related Products	1,085	1,051	731	254	3,441	6,563
Chemicals Or Allied Products	10,280	25,752	5,404	15,113	25,253	81,802
Clay, Concrete,Glass Or Stone	12,190	3,187	6,828	32,845	11,687	66,739
Electrical Equipment	238	1,013	583	349	757	2,940
Fabricated Metal Products	404	574	1,038	363	586	2,966
Farm Products	474	597	50	786	1,341	3,247
Food Or Kindred Products	8,043	9,421	3,720	5,531	9,093	35,808
Forest Products	-	-	-	-	6	6
Fresh Fish Or Marine Products	-	-	-	-	0	0
Furniture Or Fixtures	394	1,069	163	482	1,707	3,815
Instrum, Photo Equip, Optical Eq	117	253	317	1,025	220	1,932
Leather Or Leather Products	26	23	41	47	12	149
Lumber Or Wood Products	6,896	2,866	2,013	1,961	643	14,378
Machinery	669	1,978	1,178	1,174	1,393	6,392
Misc Manufacturing Products	117	505	91	24	673	1,410
Petroleum Or Coal Products	25	173	49	45	358	650
Primary Metal Products	562	524	382	439	2,668	4,575
Printed Matter	74	98	762	2,307	2,323	5,565
Pulp, Paper Or Allied Products	1,278	7,232	4,304	3,668	3,519	20,002
Rubber Or Misc Plastics	941	948	623	348	835	3,695
Textile Mill Products	725	1,182	246	168	875	3,196
Tobacco Products	5	-	-	-	-	5
Transportation Equipment	505	2,244	1,926	2,272	4,297	11,243
Waste Or Scrap Materials	-	-	-	-	9	9
Grand Total	45,050	60,690	30,449	69,202	71,695	277,086

Source: Global Insight Inc. TRANSEARCH database.

Given the type of commodities moving in the Bristol County/Jacksonville corridor, it is not surprising that tank and reefer trailers account for a significant share of the trailer loads in addition to the largest equipment type of dry vans as described in Exhibit II-8.

Exhibit II-8
Commodities Shipped from Jacksonville Hinterland to Bristol County Hinterland

SOUTHBOUND

Port Name	Jacksonville

Loads	To South					
Equipment Type	50 miles	100 miles	150 miles	200 miles	250 miles	Grand Total
Flat	724	2,499	1,623	2,675	6,993	14,513
Dry Van	6,151	16,031	8,274	21,141	44,716	96,313
Tank	2,793	10,817	1,200	3,728	3,092	21,630
Bulk	8	335	5	287	1,345	1,980
Reefer	568	384	395	1,656	3,333	6,336
Grand Total	10,243	30,066	11,497	29,488	59,479	140,773

NORTHBOUND

Port Name	Jacksonville

Loads	To Bristol County					
Equipment Type	50 miles	100 miles	150 miles	200 miles	250 miles	Grand Total
Flat	8,516	6,645	3,884	22,340	10,030	51,414
Dry Van	26,551	32,019	21,119	29,418	42,612	151,718
Tank	4,165	15,963	3,180	7,662	8,498	39,468
Bulk	1,390	2,046	758	6,622	2,640	13,456
Reefer	4,296	3,912	1,414	3,160	7,907	20,689
Auto	132	106	93	1	8	340
Grand Total	45,050	60,690	30,449	69,202	71,695	277,086

Source: Global Insight Inc. TRANSEARCH database.

Short-Sea Shipping Case Studies

Several recent examples of U.S. short-sea shipping operations were analyzed in order to identify key factors that contributed to their success or failure and their implications for the ports of Fall River and New Bedford. The examples are not intended to be a comprehensive listing of all recent short-sea shipping initiatives but were selected, rather, to reflect a range of type of operations and situations. The results of this analysis that was based on publicly available information as well as interviews with the companies involved are described in the following case studies.

Matson Navigation Company[1]

Background:

- Matson began operations in the U.S. mainland/Hawaii trade in 1882
- Matson has a major share of the U.S./Hawaii shipping market estimated at 70 percent
- Between 1994 and 1999 Matson ran a single surplus 2100 TEU container vessel on a Los Angeles/Seattle/Vancouver/Los Angeles weekly service
- Matson has recently taken delivery of two 2400 TEU U.S.-built container ships at a cost of $110 million each from Kvaerner Philadelphia Shipyard and another two 2400 TEU vessels on order at $140 million each from the same yard

Key Business Parameters:

- Service carried both international cargoes (as feeder vessel), empty containers requiring repositioning, and domestic loads (approximately 30 percent of total containers carried)
- Domestic loads increased from 25,000 to 45,000 annually between 1994 and 1997
- Service was priced at a discount to prevailing truck rates

Status:

- Service was discontinued in 1999 due to poor financial performance

Conclusions:

- Service failed primarily due to high stevedoring costs – ILWU was unwilling to provide concessions to enable the service to be economically viable
- Matson was able to gain a number of key accounts (e.g. Anheuser Busch)
- The service was difficult to sell to traffic managers – "required going further up the management chain"
- Matson was not successful in selling the service to truckers – many saw it as a "threat"

[1] Interview with Phil Grill, Vice President

Totem Ocean Trailer Express (TOTE)[2]

Background:

- Started roll-on/roll-off (RoRo) service between Tacoma, WA and Anchorage, AK in 1975
- Provides two sailings per week on 1,000-mile route
- Competes with AlCan Highway and container vessel and barge operators
- Took delivery of two new U.S.-built 600 trailer capacity RoRo vessels in 2003 at reported cost of $180 million each

Key Business Parameters:

- RoRo vessels complete cargo discharge and load (up to 1,200 trailer moves plus auto traffic) within eight hours at each port
- Primarily transports shipper-owned highway trailers

Status:

- Company has been consistently profitable
- Parent is also majority owner of Sea Star Line in U.S./Puerto Rico trade
- Possibly interested in other U.S. domestic shipping opportunities

Conclusions:

- Company gained strong market position by working closely with truckers and freight forwarders in the Alaska market
- RoRo operation provides truck-competitive transit times and costs for all types of cargo

Osprey Lines[3]

Background:

- Started business in 2000 as spin-off from Maersk's acquisition of Sea-Land in order to provide U.S. flag container feeder operation in the Gulf for mostly international cargoes
- Initially focused on shipping containers on barge between New Orleans and Houston
- Have recently expanded into domestic cargoes in containers – operating *Sea Trader* 13.5 knot 124 FEU containership (converted from an offshore service vessel) on weekly Houston/Tampa/ New Orleans deployment carrying a combination of domestic and international cargoes in containers

Status:

- Kirby Marine recently purchased majority holding in company – Osprey Lines founder has departed to form new company "Couch Lines"

[2] Interview with Bob Magee, CEO
[3] Interview with Rick Couch, CEO

- Couch reports he is currently working on a vessel newbuilding program with U.S. shipyards for four 125 FEU (13.5 knots) containerships and looking to enter new coastal markets on U.S. Gulf and East Coasts

Key Business Parameters:
- Loads/discharges containers in port using boom cranes
- Transported a total of 65,000 containers in 2004 (both international and domestic)

Conclusions:
- Domestic business built on incremental basis on top of international feeder loads
- Marketing focus on heavy and out of gauge cargoes – carry both in containers and as breakbulk
- Osprey seeks to control own terminals and trucking operations
- Sells service reliability and value – sees as more important than transit time
- However, believes still able to offer shippers truck-competitive transit time and significantly better transit time than rail intermodal

New England Fast Ferry[4]

Background:
- Operates passenger ferries (with limited cargo capacity) between New Bedford and Nantucket/Martha's Vineyard
- Subsidiary of Moran Towing
- Considering start-up of New Jersey (e.g. Bayonne)/New Bedford RoRo cargo service with medium speed vessels (catamaran hull design)

Key Business Parameters:
- Value proposition of new service is to provide truckers with overnight bypass of congested New York City/Connecticut area – e.g. depart New Jersey at 8 pm./ arrive New Bedford by 5 am next morning
- Two catamaran vessel designs under consideration
  - 260' RoRo with 24 trailer capacity at estimated capital cost of $25 million
  - 320' RoRo with 42 trailer capacity at estimated capital cost of $30 million
- Estimates economics of port to port move at $350 per trailer – key to holding down cost is using crew to load/discharge trailers

Status:
- Service still in planning stage

Conclusions:
- Looking for "cornerstone" contract with major trucker or truckers to provide base cargo volume
- Prefers New Bedford to Fall River as Massachusetts terminus due to perception of better highway access and terminal capacity at New Bedford (NEFF already operates over New Bedford's State Pier)

[4] Interview with James Barker, VP

- Proposed service offers opportunity for short-sea shipping start-up within relatively short term (2-3 years) if vessels are newbuilds in U.S. shipyard
- Service could build credibility with truckers before expanding into longer haul markets
- Question whether service economics can be achieved with small size of vessels – vessel with 150-trailer capacity may be able to operate at $300-350 per trailer load; smaller vessels may lack scale necessary to offset high fuel costs

Trailer Bridge[5]

Background:

- Runs both RoRo and LoLo container barges between U.S. mainland (New York and Jacksonville) and Puerto Rico
- Operated "Atlantic Highway" container barge service between Port Newark and Jacksonville from January to September, 1999 – service was terminated when hurricane delayed barge by four days leading to the loss of a major account (ToysRUs)

Key Business Parameters:

- Cargo on New York/Jacksonville service was entirely domestic
- Weekly capacity: 265 53' containers
- Major source of cargo was diversion from rail intermodal
- Pricing per container load was around $500
- New York/Jacksonville transit time was three days – comparable with rail intermodal but slower than truck
- Major southbound shippers included GM for cars relayed through Jacksonville to Puerto Rico
- Major northbound shippers included forest product shippers (packaging materials, lumber, and pulp)

Status:

- Service discontinued – no plans to restart

Conclusions:

- Service was sold primarily on price
- Relatively slow transit time was not a major disadvantage to a shipper such as Toys RUS but unreliability was
- Operating out of Port Newark added cost despite a "reasonable" deal with the ILA

The case studies lead to a number of important overall findings on the current state of short-sea shipping in the United States:

- Despite a number of recent efforts, domestic sort-sea shipping operations on the U.S. coasts have had only moderate success to date (e.g. Osprey Lines)
- Nevertheless, a number of major shippers have elected to support short-sea shipping services (e.g. ToysRUs, Anheuser Busch, General Motors)

[5] Interview with John McCown, CEO

- Osprey appears to have benefited from a dual marketing focus on selling domestic transportation to both shippers and truckers
- Truckers may be interested in the overall value proposition of adding short-sea shipping as an alternative mode, but they need to have the potential benefits clearly spelled out
- Close cooperation with trucking companies is essential in successfully developing and operating a short-sea service – a key asset is building base cargo support through commitments from major truckers on a particular route
- Schedule reliability may be at least as important a service factor in effectively marketing the service as door-to-door transit time
- Labor buy-in is critical to creating a cost-competitive short-sea service in terms of both vessel and marine terminal operations
- Short-sea shipping can be particularly competitive for heavy and/or hazardous shipments currently moving over the road such as chemicals
- Service frequency needs to be at least 2-3 sailings per week on relatively long haul routes – daily is probably not necessary except on short-haul routes (e.g. Bayonne/Bristol County)

In conclusion, there appear to be a number of factors that promote the emergence of a U.S. domestic coastal short-sea shipping network including increasing highway congestion (particularly in the Northeast), rising fuel costs, restrictions on truck driver hours of operation, and a shortage of drivers. In addition, there is a great deal of truck cargo moving to and from the Bristol County port hinterland along the Eastern seaboard, some of which may potentially be divertible to short-sea shipping services. However, despite the positive signs of a market opportunity, there is scant evidence of successful business plans being put in place to meet that market need. As both the Matson and Trailer Bridge attempts to put a short-sea service in place failed for economic reasons – primarily due to high costs – the next section of this report will analyze the economics of short-sea shipping, particularly as they relate to potential services utilizing the ports of Fall River and/or New Bedford.

The Economics of Short-Sea Shipping versus Alternative Modes

The market analysis of trucking movements into and out of the Bristol County ports' hinterland indicated that the prospective port partners of Bayonne, NJ and Jacksonville, FL had substantial potentially divertible traffic volumes. Consequently, an economic model was developed to calculate the cost to the shipper of moving a trailer load of freight on each of these corridors using a short-sea mode versus over the road trucking or rail intermodal where appropriate.

The economics of a short-sea shipping service include both direct vessel operating costs, capital costs, and other costs associated with the movement of a trailer-load of freight. Direct vessel operating costs include vessel manning, maintenance and repair, insurance (Hull & Machinery and P&I), capital, and vessel management costs, fuel and consumables, and port charges. These costs were developed based on information developed from ocean carrier and port operator interviews, and general industry knowledge of the project team.

Non-vessel operating costs for the short-sea shipping service include stevedoring and marine terminal operations, container, trailer, and chassis leasing and maintenance, drayage operations, and sales and general administrative overhead. These were developed from carrier and port operator interviews and the professional experience of the project team. In addition, the cost to shippers of Harbor Maintenance Tax (HMT) charged on shipments moving in and out of U.S. ports was also added as a line item in the model for short-sea shipping operations as would be applicable under the current U.S. tax regime.

The key assumptions concerning vessel operations for ships to be deployed on the short haul Bayonne potential service and the long haul Jacksonville service are summarized in the following Exhibit II-9.

Exhibit II-9
Key Assumptions on Potential Short-Sea Service Vessels

Vessel Operating Costs for Coastal Vessels

	Container Ship	RoRo Vessel	RoRo Ferry
Cargo capacity	200 Trailers	140 Trailers	40 Trailers
Key assumptions:			
Capital cost:	$38 million	$44 million	$30 million
Vessel speed:	25 knots	25 knots	20 knots
Fuel consumption:	30 TPD	30 TPD	4,300 gals MDO
Crew size:	10	10	8
Vessel expense per day			
Crew	$6,500	$6,500	$3,500
Maintenance & Repair	$875	$875	$700
Consumables	$600	$600	$250
Insurance & Other	$625	$625	$400
	$8,600	$8,600	$4,850
Depreciation	$4,164	$4,822	$3,288
Total	**$12,764**	**$13,422**	**$8,138**

*Assumes 25 years vessel life

The economics of the short-sea shipping option used in the transportation model are based on a theoretical level of costs that reflect some significant changes in current working practices that would need to be instituted by industry, labor, and government specifically for short-sea shipping but that are nevertheless reasonably achievable in the near term. The key areas for which such theoretical cost levels were used include vessel capital costs, vessel crew costs and manning levels, and port stevedoring costs. Although these cost levels are lower than those for most current Jones Act shipping operations, they should be attainable based on an analysis of current "best in class" industry practices within the U.S. today and U.S. and international benchmarks.

The following are the key assumptions made concerning the operations and costs for a prospective short-sea shipping service:

- Both RoRo trailer vessels and LoLo container vessels were tested for the long haul Jacksonville service but only a RoRo vessel was evaluated for the short haul Bayonne service given the relatively short steaming distance (less than 200-miles) and the consequent premium put on minimizing port time both for expediting vessel turnaround and cargo despatch
- Crew sizes of 10 for the larger container and RoRo vessels and 8 for the smaller RoRo vessel were based on the assumption that new manning agreements with the seafarer unions and the Coast Guard would be developed for a two-watch system for self-propelled vessels operating along the contiguous coasts of the U.S.
- Marine terminal loading and discharging costs are on an "all-in basis" and reflect current best practices that would require labor agreements specially designed for coastal short-sea shipping
- An average vessel operating speed of 25 knots was used for the Jacksonville service and 20 knots for the Bayonne service – this relatively high speed for conventional RoRo or container vessels on the Jacksonville service was deemed necessary to provide a "truck-competitive" transit time
- The vessel capital costs used are lower than current prices from U.S. shipyards but still substantially higher than international prices – the lower U.S. prices reflect the assumption that long vessel-building runs, more aggressive purchasing practices, and improved productivity by U.S. shipyards would bring down the cost of U.S.-built vessels

Similarly, the cost of trucking and rail intermodal operations on the respective Bayonne and Jacksonville corridors were also developed. For a truck operator, fully allocated cost data provided by a major motor carrier was used as the starting point in developing the truck economics. Truck operations were based on a single driver operating within current hours of service (HOS) restrictions. Future road congestion was not addressed – service and cost parameters are reflected as "current steady state". Additional highway cost data was developed using the TTS Blue Book of Trucking Companies (2004-2005 Edition) and allowed for the disaggregation of wages and benefits, equipment, insurance, fuel and other expenses. Global Insight's Intermodal Cost Analysis Model (ICAM) was used to prepare estimates of the rail intermodal door-to-door delivery costs for each of the pilot project corridors.

The key cost elements for motor carriers include pick-up and delivery, over the road vehicle operations, fuel, driver costs, dispatching, insurance, as well as other factors that would be directly affected by the choice of transport mode between the origin and destination markets in the particular lanes. Highway tolls are reflected as a separate cost item in the model, and are estimated based on average toll costs per mile and average toll miles adjusted for specific corridors. Sales and administrative overhead are also included. Source information was developed from public data, carrier interviews, and general industry knowledge of the project team.

Rail intermodal direct operating cost elements include locomotives and fuel, track and right-of-way, yard and terminal operations, lift-on and lift-off movements, railcar, crew, trailer/container, and drayage expense. Sales and administrative overhead are also included.

Again, this information was developed from public data, carrier interviews, and general industry knowledge of the project team.

The cost of repositioning trailers or containers in a particular corridor was also built into the model for each mode. Trucking and rail intermodal operations have an advantage in this area as they have greater latitude to search for return loads than the short-sea service that was assumed to be tied to a particular port-pair. In this case, the short-sea service was charged with the cost of vessel loading and discharging for all empty trailers/containers in the backhaul direction of each particular corridor.

A short-sea shipping carrier's cost of moving a trailer load of freight between Bristol County, MA and Jacksonville was calculated at approximately $1,100, as described in Exhibit II-10 below.

Exhibit II-10
Short-Sea Shipping Costs Between Bristol County and Jacksonville, Florida

US Coastal Liner Shipping Service Economic Model	Jacksonville/Bristol County				Jacksonville/Bristol County			
Origin:	Jacksonville, FL				Jacksonville, FL			
Destination:	Bristol County, MA				Bristol County, MA			
Ocean Transit (Nautical Miles):	993.00				993.00			
Vessel type:	RoRo				Container			
Vessel speed: (Knots)	25				25			
One Way Steaming Time (Hours)	40.0				40.0			
Frequency in R/T voyages per week:	3.00				3.00			
No. R/T voyages per year:	144				144			
R/T Ocean Transit Days:	3.50				3.50			
TTL Terminal Days:	1.50				1.50			
Total Ship Days	5.00				5.00			
TTL Drayage Days	2.00				2.00			
Total Container Days	7.00				7.00			
Total Volume of Lane Traffic (Truckloads):	Truckloads				Truckloads			
Northbound:	277,000				277,000			
Southbound:	141,000				141,000			
Share of Total Lane Traffic:	Base	Freq. Adj	Net Share		Base	Freq. Adj	Net Share	
Northbound:	7%	100%	7%		10.0%	100%	10.0%	
Southbound:	8%	100%	8%		11%	100%	11%	
Vessel Capacity (truckloads):	140				200			
NB capacity payload utilization:	96.2%				96.2%			
SB capacity payload utilization:	56.0%				53.9%			
	Per Unit	**Per Voyage**	**Per Year**	**Percent**	**Per Unit**	**Per Voyage**	**Per Year**	**Percent**
Freight Volumes (truckloads)								
Northbound Loads		135	19,390	50%		192	27,700	50%
Northbound Empties		-	-	0%		-	-	0%
Southbound Loads		78	11,280	29%		108	15,510	28%
Southbound Empties		56	8,110	21%		85	12,190	22%
Total Volumes		**269**	**38,780**	**100%**		**385**	**55,400**	**100%**
Service Economics								
Variable Costs								
Marine Terminal Cargo-Handling								
RoRo cost per unit (load & discharge): $100	$ 120	$ 32,317	$ 4,653,600		$ -	$ -	$ -	
LoLo cost per unit (load & discharge): $200	$ -	$ -			$ 200	$ 76,944	$ 11,080,000	
Mean terminal cargo handling cost per load	$ 152				$ 256			
Land Transportation								
Origin Dray	$ 193	$ 41,141	$ 5,924,290		$ 193	$ 57,962	$ 8,346,547	
Destination Dray	$ 228	$ 48,455	$ 6,977,549		$ 228	$ 68,267	$ 9,830,450	
Long haul drays	$ 70	$ 3,739	$ 538,374		$ 70	$ 5,267	$ 758,498	
Mean Truck Dray Expense	$ 438	$ 93,335	$ 13,440,213		$ 438	$ 131,496	$ 18,935,495	
Equipment Costs								
Container/Trailer	$51	$ 10,862	$ 1,564,170		$ 53	$ 15,904	$ 2,290,130	
Chassis	$ -	$ -	$ -		$ 18	$ 5,386	$ 775,600	
Mean Equipment Costs	$ 51	$ 10,862	$ 1,564,170		$ 71	$ 21,290	$ 3,065,730	
Total Variable Costs	**$ 641**	**$ 136,514**	**$ 19,657,983**		**$ 766**	**$ 229,731**	**$ 33,081,225**	
Fixed Costs								
Vessel	$ 315	$ 67,110	$ 9,663,840	28%	$ 213	$ 63,820	$ 9,190,080	20%
Vessel fuel*	$ 89	$ 18,900	$ 2,721,600	8%	$ 63	$ 18,900	$ 2,721,600	6%
Port Charges	$ 19	$ 4,000	$ 576,000	2%	$ 13	$ 4,000	$ 576,000	1%
Sales & Administration	$ 38	$ 8,000	$ 1,152,000	3%	$ 27	$ 8,000	$ 1,152,000	2%
Non-Vessel Depreciation	$ 5	$ 1,000	$ 144,000	0%	$ 3	$ 1,000	$ 144,000	0%
Total Fixed Costs	**$ 465**	**$ 99,010**	**$ 14,257,440**	**42%**	**$ 319**	**$ 95,720**	**$ 13,783,680**	**29%**
Total Operating Expenses	**$ 1,106**	**$ 235,524**	**$ 33,915,423**	**100%**	**$ 1,085**	**$ 325,451**	**$ 46,864,905**	**100%**
Operating Expense per Revenue Load:		**$ 1,106**				**$ 1,085**		

Operating Statistics	Jacksonville/Bristol County	Jacksonville/Bristol County
Number of Ships	2.00	2.00
Door-to-Door Transit (days)	6.00	6.00
Vessel Turns per Week	1.40	1.40

The cost of moving a trailer load of freight between Bristol County, MA and Northern New Jersey by short-sea shipping service was calculated at over $500 per trailer for a 40-trailer RoRo vessel and at around $260 for a 140-trailer RoRo vessel, similar to that tested for the Jacksonville run. The significant difference in the costs per trailer is due to the much greater scale economies that the larger vessel is able to achieve as well as its substantially greater fuel efficiency per unit of cargo. Given the volume of truck cargo moving in the Bayonne/Bristol County hinterlands corridor, the larger vessel would require a penetration rate of 7 percent of the total market versus 2 to 3.5 percent for the smaller vessel to achieve its projected cost per load as described in Exhibit II-11 below.

Exhibit II-11
Short-Sea Shipping Costs Between Bristol County and Bayonne, NJ

US Coastal Liner Shipping Service Economic Model	Bayonne, NJ/Bristol County Ocean Service Only				Bayonne, NJ/Bristol Larger Ship (140 Trailers)			
Origin:	Bayonne, NJ				Bayonne, NJ			
Destination:	Bristol County, MA				Bristol County, MA			
Ocean Transit (Nautical Miles):	178.00				178.00			
Vessel type:	RoRo				RoRo			
Vessel speed: (Knots)	21				21			
One Way Steaming Time (Hours)	8.5				8.5			
Frequency in R/T voyages per week:	7.00				7.00			
No. R/T voyages per year:	350				350			
R/T Ocean Transit Days:	0.70				0.70			
TTL Terminal Days:	0.30				0.30			
Total Ship Days	1.00				1.00			
TTL Drayage Days	2.00				2.00			
Total Container Days	3.00				3.00			
Total Volume of Lane Traffic (Truckloads):	**Truckloads**				**Truckloads**			
Northbound:	597,000				597,000			
Southbound:	190,000				190,000			
Share of Total Lane Traffic:	**Base**	**Freq. Adj**	**Net Share**		**Base**	**Freq. Adj**	**Net Share**	
Northbound:	2.0%	100%	2.0%		7.0%	100%	7.0%	
Southbound:	3.5%	100%	3.5%		7.0%	100%	7.0%	
Vessel Capacity (truckloads):	40				140			
NB capacity payload utilization:	85.3%				85.3%			
SB capacity payload utilization:	47.5%				27.1%			
	Per Unit	**Per Voyage**	**Per Year**	**Percent**	**Per Unit**	**Per Voyage**	**Per Year**	**Percent**
Freight Volumes (truckloads)								
Northbound Loads		34	11,940	64%		119	41,790	50%
Northbound Empties		-	-	0%		-	-	0%
Southbound Loads		19	6,650	36%		38	13,300	16%
Southbound Empties		-	-	0%		-	28,490	34%
Total Volumes		**53**	**18,590**	**100%**		**157**	**83,580**	**100%**
Service Economics								
Variable Costs								
Marine Terminal Cargo-Handling								
RoRo cost per unit (load & discharge): $100	$ 100	$ 5,311	$ 1,859,000		$ 100	$ 15,740	$ 5,509,000	
LoLo cost per unit (load & discharge): $200	$ -	$ -	$ -		$ -	$ -	$ -	
Mean terminal cargo handling cost per load	$ 100				$ 100			
Land Transportation								
Origin Dray		$ -	$ -		$ -	$ -	$ -	
Destination Dray		$ -	$ -		$ -	$ -	$ -	
Long haul drays		$ -	$ -		$ -	$ -	$ -	
Mean Truck Dray Expense	$ -	$ -	$ -		$ -	$ -	$ -	
Equipment Costs								
Container/Trailer	$ -	$ -	$ -		$ -	$ -	$ -	
Chassis	$ -	$ -	$ -		$ -	$ -	$ -	
Mean Equipment Costs	$ -	$ -	$ -		$ -	$ -	$ -	
Total Variable Costs	**$ 100**	**$ 5,311**	**$ 1,859,000**		**$ 100**	**$ 15,740**	**$ 5,509,000**	
Fixed Costs								
Vessel	$ 153	$ 8,138	$ 350	0%	$ 85	$ 13,422	$ 350	0%
Vessel fuel*	$ 154	$ 8,170	$ 2,859,500	41%	$ 25	$ 4,000	$ 1,400,000	15%
Port Charges	$ 19	$ 1,000	$ 350,000	5%	$ 10	$ 1,500	$ 525,000	6%
Sales & Administration	$ 94	$ 5,000	$ 1,750,000	25%	$ 32	$ 5,000	$ 1,750,000	19%
Non-Vessel Depreciation	$ 6	$ 300	$ 105,000	2%	$ 4	$ 600	$ 210,000	2%
Total Fixed Costs	**$ 426**	**$ 22,608**	**$ 5,064,850**	**73%**	**$ 156**	**$ 24,522**	**$ 3,885,350**	**41%**
Total Operating Expenses	**$ 526**	**$ 27,919**	**$ 6,923,850**	**100%**	**$ 256**	**$ 40,262**	**$ 9,394,350**	**100%**
Operating Expense per Revenue Load:		**$ 526**				**$ 256**		

Operating Statistics	Bayonne, NJ/Bristol County Ocean Service Only	Bayonne, NJ/Bristol County Full Service
Number of Ships	1.00	1.00
Door-to-Door Transit (days)	0.50	2.00
Vessel Turns per Week	7.00	7.00

In addition to the carrier's costs for the respective modes on each corridor, the total cost for moving a trailer-load of freight on the particular corridor that would be incurred by the shipper of that freight was also calculated. The cost to the shipper would include any "mark-up" or profit margin that the carrier would add to its costs as well as the incremental inventory carrying costs caused by the slower transit times of the rail intermodal and short-sea shipping service options versus trucking. In addition, Harbor Maintenance Tax (HMT) would apply to only the short-sea option. Carrier mark-ups were estimated based on current practices and conditions in the U.S. domestic freight markets for each of the modes.

As shown in Exhibit II-12 below, the short-sea shipping option on the Bristol County/Jacksonville Corridor is projected to achieve a significant cost advantage against both the truck and rail intermodal options, although with a longer transit time.[6]

Exhibit II-12
Comparative Performance of Short-Sea Shipping versus Alternative Modes on the Bristol County/Jacksonville Corridor

	Truck	Rail Intermodal	Short-Sea Shipping
Total miles (door to door)	1,183	1,340	1,342
Transit hours (door to door)	54.5	66.5	72.0
Carrier cost per highway mile	$1.59	$1.04	$0.90
Shipper cost per highway mile	$1.73	$1.26	$1.02
Differential versus Truck	--	-27%	-41%

In the case of the short haul Bayonne/Bristol County corridor, rail intermodal was not considered to be a viable option from a service viewpoint, so the service options were restricted to truck and short-sea shipping. A distance of 498 miles was used for the truck movement in order to represent traffic moving between the two port hinterlands, not simply between the ports. The impact of Harbor Maintenance Tax (HMT), an ad valorem duty, is immediately apparent when the short-sea costs for the Bayonne corridor are compared to truck as shown in Exhibit II-13 below. The cost advantage for short-sea service is increased from 17 percent to 31 percent with the simple exclusion of HMT.

[6] Details behind these calculations are included in Appendix VI-3.

Exhibit II-13
Comparative Performance of Short-Sea Shipping versus Alternative Modes on the Bristol County/Bayonne Corridor

	Truck	Short-Sea Shipping
Total miles (door to door)	498	558
Transit hours (door to door)	12	17.5
Carrier cost per highway mile	$1.49	$1.17
Shipper cost per highway mile	$1.62	$1.35
Shipper cost per highway mile (without HMT)	$1.62	$1.11
Differential versus Truck (with HMT)	--	-17%
Differential versus Truck (without HMT)	--	-31%

The results of the economic analysis demonstrate that short-sea shipping can be extremely competitive with other transportation options on key corridors into and out of the Bristol County ports' hinterland if certain key assumptions on vessel, crew, and stevedoring costs are met. This competitiveness is further enhanced by the waiving of HMT.

In order to further evaluate the commercial feasibility of short-sea shipping operations using the Bristol County ports, the competitiveness of short sea shipping economics and service levels versus alternative modes were tested in a number of interviews with prospective users. The results of this market research are described in the following chapter.

III. Market Feedback on Short-Sea Shipping Services over Bristol County Ports

Interviews were conducted in person and by phone with a total of seventeen prospective users of short-sea shipping services through the Bristol County ports that are described in Exhibit III-1. The interviewees consisted of twelve ground carriers (primarily truckers) and five shippers. The outline of the questionnaire as followed is included in Appendix VI-4. The output from the interviews is summarized in Exhibit III-2 (3 pages).

The following are the principal findings obtained from the interviews:

- All of the carriers interviewed, but only one of the shippers, professed some familiarity with short-sea shipping as a potential mode of transportation – a number of the carriers mentioned that they had been approached within the past year by groups looking for carrier support for a potential short-sea service start-up
- The potential level of possible support for a short-sea service over the ports of Bristol County varied widely – from a possible 150 trailer loads a day out of the Raritan Industrial Center (Raritan Central Railway) on the Bayonne/Bristol County overnight shuttle to a few trailers a week. In aggregate, however, the potential level of support based on this relatively small sample was very strong.
- In terms of the key requirements that a short-sea service must have in order to be considered a viable transportation option, the most frequently cited were the following:
  - Fast transit and reliable scheduling
  - Competitive price
  - Seamless service – "just like trucking…no port hang-ups"
- In probing on the issue of transit time for a short-sea service, the responses varied significantly
  - LTL operators tended to think that the multiple stages in a short-sea intermodal movement would not enable them to provide the "next day" delivery that their customers required, particularly on a regional basis
  - TL operators were less concerned over short-sea being able to match trucking transit times but required absolute schedule reliability and a competitive price – they tended to see short-sea as another intermodal option
  - The quoted transit times for both the Bayonne and Jacksonville short-sea prospective operations (10 hours port to port for Bayonne, 50 hours for Jacksonville) were generally acceptable to TL operators and most shippers
- Respondents' chief concerns varied widely
  - One carrier (US Express) that is well-informed on short-sea shipping felt that Jacksonville was not a good southern port partner and that Wilmington, NC or Norfolk, VA were better situated to service large volumes of truck freight from the Southeast, particularly Atlanta

Exhibit III-1
Commercial Feasibility of Short-Sea Shipping Interviewees

Ground Carriers

Company	Location	Person	Position	Phone
US Express Truckload operator	4080 Jenkins Road Chattanooga, TN 37421	Craig Fuller	President, Xpress Global Systems	(817) 829-5098
J.B. Hunt Truckload operator	615 J.B. Hunt Corporate Drv. Lowell, Arkansas 72745	Paul Bergant	EVP	(800) 643-3622
Schneider National Truckload & intermodal operator	3101 South Packerland Drive Green Bay, WI 54306	Brian Bowers	VP & GM of Intermodal Services	(920) 592-3584
Swift Transportation Co. Truckload operator	HQ in Phoenix, AZ	Mark Martin	EVP - East Coast	(602) 269-9700 ext. 17523
Wyatt Transfer Truckload operator	3035 Bells Road Richmond, VA 23234	Chick Rosemond	VP Sales	(804) 389-7299
Southeastern Freight Lines Primarily LTL operator	420 Davega Road Lexington, SC 29073	Bob Bullock	VP International Business & Partnerships	(704) 597-9828
Trimac Truckload bulk carrier	3663 N. Sam Houston Pkwy. Houston, TX 77032	David Perry	VP Business Development	(285) 981-0000
New England Motor Freight Regional LTL/TL carrier	1-71 North Avenue East Elizabeth, NJ 07201	John Karlberg	President & COO	(570) 386-4876
Werner Enterprises Truckload operator	14507 Frontier Road Omaha, NE 68138	Steve Phillips	SVP - Van Division	(800) 228-2240
DiSilva Transportation TL Specialist in Grocery Prod.	50 Middlesex Avenue Somerville, MA 02415	Tom DiSilva	CEO	(781) 229-6380
Heartland Express Regional TL operator	2777 Heartland Drive Coralville, IO 52241	Rich Meehan	VP Operations & Marketing	(800) 451-4621
Raritan Central Railway Short line RR & Warehouse operator	One Gateway Center Newton, MA 02458	Eyal Shapira	President	(617) 243-0137

Exhibit III-1
Commercial Feasibility of Short-Sea Shipping Interviewees

Shippers

Company	Location	Person	Position	Phone
Quaker Fabric	1082 Davoll Street	Mark Helwig	Supply Chain Manager	(508) 678-1951
Uphostlery fabric	Fall River, MA 02721			
Lightolier	631 Airport Road	Bill Torrens		(508) 679-8131
Lighting fixtures	Fall River, MA 02720	Bill Poole	Traffic Manager	(860) 886-2621
Titleist	333 Bridge Street	Jim Day	Footjoy Traffic Manager	(508) 979-2000
Golf equipment	Fairhaven, MA 02719			
Maritime International	276 MacArthur Drive	Pierre Bernier	Manager Shipping Ops	508 996-8500
Seafood	New Bedford, MA 02740		and Logistics	ext. 233
Weyerhaeuser	Federal Way, WA 98063	Craig Lawrence	CEO Westwood Shipping	(253) 924-4349
Forest Products		Mike Ocepek	Logistics Planner	

Exhibit III-2
Summary of Results from Market Research
Ground Carriers

Company	Familiarity with SSS	Volume of Potential Traffic	Key Requirements	Chief Concerns	Interest in Short-Haul Service	Interest in Long-Haul Service	Key Success Factors	Perceptions of Fall River/New Bedford
US Express TL operator	High	Most traffic from Wilmington NC/ Norfolk area to NE	Seamless service Excellent systems to track/manage freight	Jax may not be best southern port-does not serve Atlanta well	Very high-price is competitive, particularly on NB headhaul Maybe stop in Long Island	Also very high, although prefer service from NC or VA-weekly service with Friday NB departure would work	"Freight doesn't care about mode" - just make it work and SSS will succeed	No views
Swift Transportation Largest US TL operator (18,500 trucks)	High	Will not disclose	Most hauls less than 600 miles	Question feasibility "intermodal doesn't work well with short legs"	Low - too many handoffs	Low - don't have much longhaul freight	Focus on longer haul lanes-"intermodal doesn't work well with short legs"	No views
Wyatt Transfer Long distance TL operator	High	Low	Minimize trailer dwell time in port	Longer transit time with SSS	Low - sees cost about same	Higher - SSS cost is comp.	Make cost competitive	No views - thinks SSS will happen due to hwy congestion
Southeastern Freight Lines Primarily LTL operator with some TL as backhauls	High	Low Mostly shorthaul and limited in Atlantic corridor	Depends on customer requirements	Most of their traffic is LTL	Might work - need to minimize dray cost and time	Limited - little traffic with New England	Makes sense in NE due to congestion	No views
Raritan Central Railway Short line RR and warehouse/terminal operator	High	Possibly 150 TL's per day from Raritan Industrial Center	Reliable service Right economics	Availability of right vessels in Jones Act fleet	Very high-sees opportunity to cross-dock from NJ DC's to trailers run on overnight vessel SSS cost is comp. Working with truckers on concept	Medium-little freight in this lane Cost and transit time appear to be competitive Truck transit is 3 days and cost at $1.50/mile Rail intermodal cost is $1700 per TL	Need to get major truckers involved Deliver service at cost as estimated	Prefers FR location to NB - closer to NY and "less political" Has 10 acres site in Raritan for potential SSS terminal - next to Raritan Industrial Center
Werner Enterprises Truckload operator	Some familiarity	9,000 trucks Active in Atlantic corridor Started intermodal in 2004	Customer's needs for both transit time & reliability	Reliability is key - more important than transit time	Medium - price is in ballpark but does not offer major advantage	Higher - price is competitive Transit time is okay	"Absolute dependability" - then price advantage	No views
New England Motor Freight Regional LTL/TL carrier	Some familiarity	5 TLs/day in NE/Jax lane 40 TLs/night in NE/NY lane	Fast transit and absolute reliability necessary for LTL business	SSS may be most suitable for TL business, not LTL	Low-SSS cost is too high. NEMF does Pawtucket/ Plainfield NJ for $300/TL door to door Long Island service of more interest	Higher-cost and transit time are competitive Likes Jax as port-serve Puerto Rico	Focus on TL sector	No views
Heartland Express Short to medium haul TL carrier	Medium Feasible concept-depends on shipper's transit time requirements	86% freight is JIT - 30% volume is foodstuffs	Transit time	Driver shortage going to get worse	Low - likely to cost more	"Looks good on paper but may not work in practice" - concern about ILA slowing transit	Truck (single driver) costs need to rise by over 50% (from $1.45 per mile to $2.25) Mimimize port time Prove service reliability	No views

Exhibit III-2
Summary of Results from Market Research
Ground Carriers (continued)

DiSilva Transportation TL Grocery Specialist	High	25-30 trucks/ day to NY metro	Economics need to work	Increasing delays in CT and NY area	High-"very attractive" SSS cost and overnight transit are competitive	Lower-little freight in this lane Cost and transit time appear to be competitive Truck transit is 3 days and cost at $1.50/mile	Key is to be able to deliver service at costs as estimated	Both ports have good locations-fit well into current truck movements
Trimac Truckload bulk carrier	Very familiar	"Very active" along Eastern seaboard-currently not using intermodal	Competitive price and fast relaible transit	Increasing driver shortage Also concern that hazmat regs	Moderate-transit time okay but SSS price needs to be lower at $250-$300	No interest-very little chemical traffic from Jax hinterland	ISO containers may work for chemical traffic by SSS	No views
J.B. Hunt National truckload operator	Very familiar	High volumes of traffic along Eastern seaboard-currently major user of intermodal	Traffic density - ability to schedule and cost Consistency of service	Driver shortage Highway congestion - particularly on I-95	Pending review	Pending review	Motor carrier should play key role	No views

Exhibit III-2
Summary of Results from Market Research
Shippers

Company	Familiarity with SSS	Volume of Potential Traffic	Key Requirements	Chief Concerns	Interest in Short-Haul Svc	Interest in Long-Haul Svc	Key Success Factors	Perceptions of Fall River/New Bedford
Quaker Fabric Uphostelry fabric	Not familiar	Inbound: 10 TLs/wk from NC Outbound: Aprox same volume but consignee-controlled	Need service frequency 2-3/wk	Driver shortage Increasing hwy congestion	Limited interest-not much freight in the lane	High - but thinks Wilmington NC would be best port Price at $2200 roundtrip very competitive	Service must be door to door - sold by truckers	Prefers FR-good access from 195 and 24 Although NB a little further away, not a big difference
Lightolier Lighting fixtures	Not very	3-4 TLs/wk from CT to Fall River 90% of outbound from FR is LTL	Fast transit Safe handling Reliable service	Ocean may not be fast enough SSS does not fit well with LTL - too many handoffs	Cost sounds okay	Cost sounds okay Jax could serve all Florida	Ocean transits competitive with truck-adding any significant port time will kill competitiveness	Not sure ports have enough capacity
Maritime International Seafood processor Cold storage operator	Moderate	Ship total of 100 TLs/wk ex NB to all destinations ~5 TLs/day to NY ~1 TL/week to Fla	Need to make service operate just like trucking	Additional steps in process Costs of Jones Act vessels-need "proper vessel", not barge	High interest-use for Port Newark exports Useful for over-weight conts. Price okay-paying $800 NB and $550 SB	Also interested-price should work for drays up to 200 miles Service frequency of 3/wk is okay Good service for overweight TLs Jax is "good choice"	Get ships and port ops to function at competitive cost level	Either port okay Interested in participating in developing business-possibly in staging cargo or terminal ops
Weyerhaeuser Forest products	High - just implemented Canada/USWC short-sea service	Large vols lumber, pulp ex New Bern NC Also large vols lumber ex Valdosta GA Total traffic to NE region in area of 25-40 TLs per week	Match current intermodal service Service frequency of weekly for longhaul is okay	Lot of traffic controlled by major retailers (eg Home Depot)-need to integrate consol/ deconcolidation in service product	No real interest Not much traffic in this lane	Would consider-currently using rail intermodal and rates "not good" SSS price is very competitive Transit time is acceptable	Get major retailers to support-possibly by providing logistics services in addition to basic transportation	No views
Titleist Sports equipment	Not familiar	Inbound shipments are containerloads via Port Newark-ocean carriers arrange ground transport (18 TEU/wk)	Must be competitive with current service	All outbound shipments are LTL or parcel service-SSS may not be fast enough	No real interest	No real interest	Get ocean carriers to use from Port Newark	NB is convenient location

  - A number of interviewees believed that short-sea shipping services over Bristol County ports would be an important remedy to increasing road congestion in the New York and Connecticut metropolitan areas

- Although several of the carriers interviewed (primarily TL operators) voiced a strong interest in the Bayonne short haul service option, only one of the shippers (Maritime International, a seafood shipper) indicated a strong level of interest
  - Concerns over price competitiveness of the short-sea service (quoted at $300-$350 per trailer port to port) indicates that the service needs to be at the lower end of this range to be competitive with overnight truck prices
  - Late cut-offs and early deliveries will be important to make the short-sea service competitive – e.g. take deliveries up to 7pm in Bayonne, sail vessel at 8pm, arrive Bristol County at 5-6 am, commence deliveries at 7am
- For those with significant volumes of freight moving in the long haul Eastern seaboard truck market, the general feeling was that the economics of a Bristol County/Jacksonville short-sea service were very good ($1200 on a port to port basis)
- While daily frequency was considered necessary to be a credible player in the Bayonne short haul market, a frequency of 2 to 3 sailings a week was considered adequate in the long haul Jacksonville lane and two respondents (US Express and Weyerhaeuser) believed that one sailing per week, departing the South on a Friday evening in the headhaul direction, would be sufficient
- In terms of key success factors, several respondents noted that the service should be sold by truckers – that it was important to get the truckers involved at an early stage. The support of major retailer/shippers such as Home Depot and Stop and Shop was also noted as a potential major contributor to a successful launch, particularly if short-sea transportation operations could be effectively integrated with the shipper's total supply chain involving such steps as consolidation/ deconsolidation of loads at distribution centers at each end of the short-sea movement
- Of the interviewees that felt able to express an opinion between the ports of Fall River or New Bedford as a northern terminus of a short-sea service (over half the interviewees had no opinion between the two ports), the results were split fairly evenly
- Several interviewees expressed a strong interest in being involved in further steps on developing short-sea shipping services over the ports of Bristol County including US Express, Raritan Central Railway, DiSilva Transportation, and Maritime International

IV. Potential Impact on the Ports of Fall River and New Bedford

The short-sea potential market analysis, the economic analysis of short haul and long haul service options, and the market research with prospective service users, collectively demonstrate three key findings:

- There is substantial truck traffic they may be diverted to short-sea services over the Bristol County ports given the right economics and service levels
- The economics of long haul short-sea shipping operations over the Bristol County ports is very competitive with alternative modes and the short haul service economics are "in the ball park" of being competitive
- Service levels at least in terms of transit time are also within acceptable ranges of most of the prospective users interviewed, particularly among truckload carriers

Given these findings, it appears feasible that short-sea shipping services could be developed to operate over the Bristol County ports in the event that the contingency factors noted earlier in the economic analysis are effectively addressed, namely that vessels may be procured and manned on a cost-effective basis and that marine terminal operations are also carried out at a cost and productivity level consistent with high standards of performance currently being achieved at ports along the Atlantic seaboard.

Based on the findings of this project, the operational "footprint" of short-sea services over the ports of Bristol County would likely have the following characteristics:

- Short haul Bayonne RoRo shuttle service moving around 120 full trailers per voyage on average northbound and 40 full and 60 to 80 empty trailers southbound on a daily basis (may operate only 5-6 days per week depending on weekend demand)
- Long haul Jacksonville (or Wilmington NC/Norfolk VA depending on demand) RoRo service 2 to 3 times per week moving around 138 full trailers northbound and 78 full and 58 empty trailers southbound per voyage

The size of the vessels likely to be involved in such services would be similar with the following general characteristics:

- Length overall: 190-200 meters (623-656 feet)
- Beam: 24 meters (79 feet)
- Draft: 6.4 meters (21 feet)
- Deadweight: 12,000 DWT
- Road trailers: 140 –150 (primarily 48' and 53')
- Stern ramp or quarter ramp

Consequently, the key factors determining whether the ports of Fall River and New Bedford would be able to effectively handle one or more short-sea services as described above would be the following:

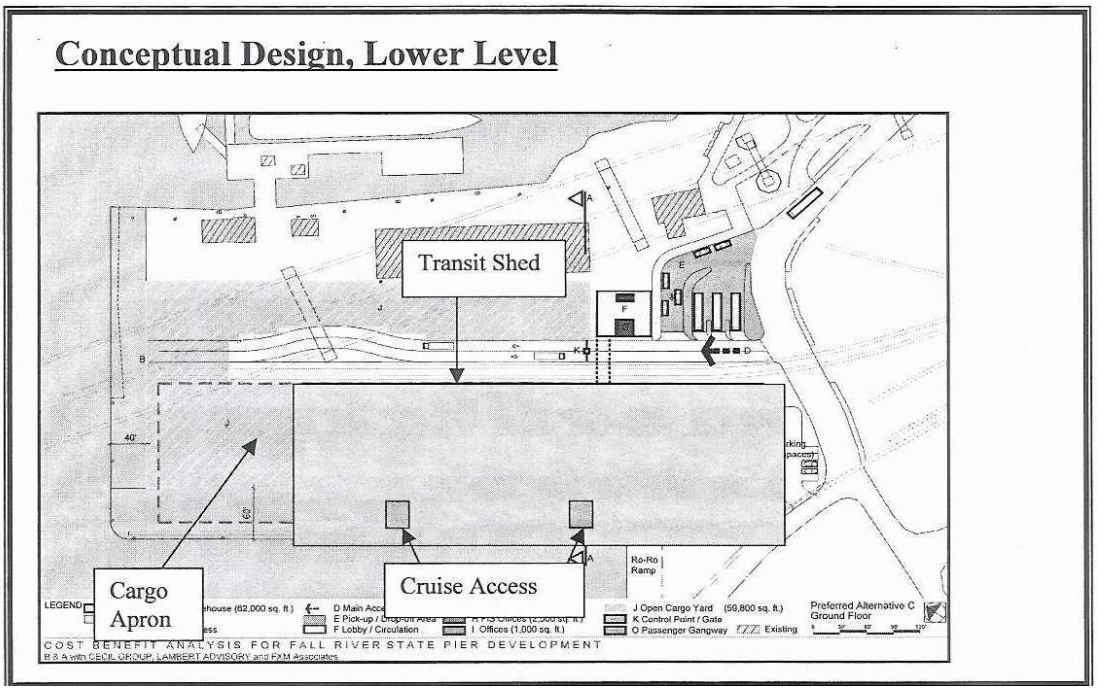
- Parking area for at least between 240 to 280 trailers requiring around 5.5 to 6.5 acres of open paved ground

- Local street access to the highway system that is able to accommodate a flow of up to 140 trailers into the terminal and out of the terminal (each direction) within a three to four hour period
- Vessel berthing facilities able to accommodate a RoRo vessel of the size noted above

The Port of Fall River

The primary facility being considered for use as a short-sea shipping facility within the port of Fall River is the State Pier. The current plans for the State Pier are for a multi-use facility combining marine cargo transportation, cruise ship visitation, and other public uses such as restaurants (see Exhibit IV-1 below). Proposed conversions to the State Pier facility that would convert current shed space into an open cargo apron and the available parking area within the existing marine terminal would provide approximately 2.5 acres of parking area for trailer staging. Use of the current CSX railroad area and Commonwealth of Massachusetts lots across Water Street would add close to another 2.5 acres of trailer parking area, bringing the Fall River facility close to the minimum requirement to handle one of the projected short-sea services. The space demands from either the short or long haul services would likely preclude the operation of other significant marine cargo businesses such as the current Atlantic Shipping tenant within the same facility.

Exhibit IV-1
Proposed Conversions to the Fall River State Pier



Source: Massachusetts Seaport Advisory Council

The South Berth appears to be suitable for RoRo vessel berthing and operations of the type projected, although the operational capability of the existing RoRo ramp is not known. However, high frequency/time sensitive calls of the type envisioned for a short-sea shipping operation may make it infeasible to berth cruise ships in the same location.[7]

Although access to Routes 195 and 24 is by local roads, the distance is relatively short at less than a mile. It is likely that the bulk of trailer traffic into and out of the marine terminal at Fall River would occur in the early morning (before 8:00 am) and/or in the evening (after 7:00 pm), so the disruption to local traffic should not be high despite the potentially large number of trailer movements into and out of the State Pier area.

The Port of New Bedford

Unlike Fall River, the port of New Bedford has extensive waterfront land that could potentially be used for a short-sea shipping terminal. However, use of this land in the near term (2-4 years) appears to be significantly inhibited by a number of factors:

- The existing State Pier facility is reportedly not in good condition,[8] and has minimal immediately adjacent RoRo trailer parking areas – the limited available parking areas are primarily required for current passenger and cargo ferry services (up to nine departures daily) to the Massachusetts Islands (see Exhibit IV-2 for a plan of the New Bedford State Pier)
- Substantial additional parking area is available in the North Terminal area of the port (future proposed Intermodal Transportation Center) but use of that facility would require trailers to be relayed over public roads approximately three-quarters of a mile, adding significantly to the cost of loading/discharging the vessels as well as road congestion
- There are substantial demands for existing port facilities from current users of the port including the fishing and fish processing industries as well as the ferry operators

The North Terminal itself appears to be an ideal long term solution as a short-sea shipping facility in view of its location in close proximity to Route 195 that could enable a direct roadway link to be built to carry trailer traffic removing the necessity of moving it over city streets – however, development of this facility as a major marine cargo terminal will require relocation of the current Route 6 swing bridge as the existing bridge openings are too narrow for vessels such as those considered for short-sea operation to safely pass through (see Exhibit IV-3).

[7] The reconfigured West Berth may be suitable for such a purpose.
[8] New Bedford/Fairhaven harbor Plan, 2002

Exhibit IV-2
New Bedford State Pier

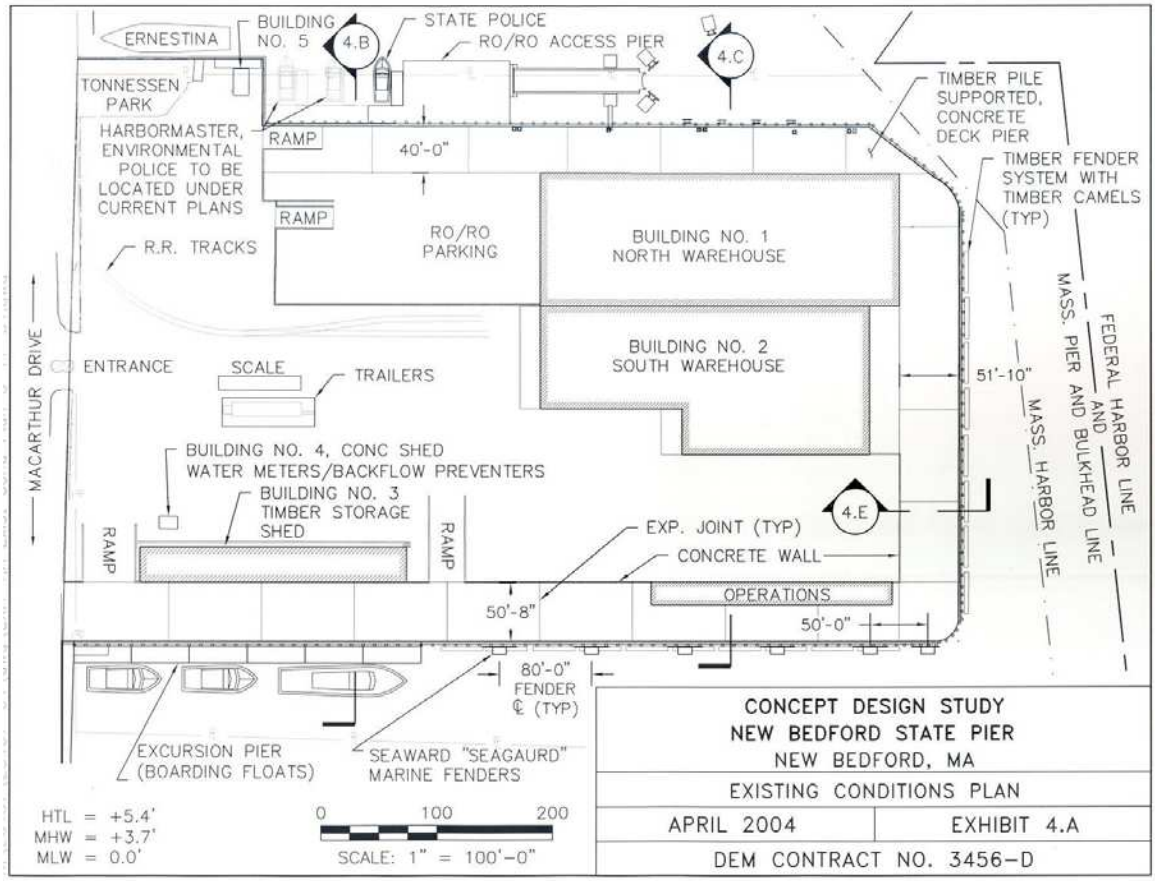
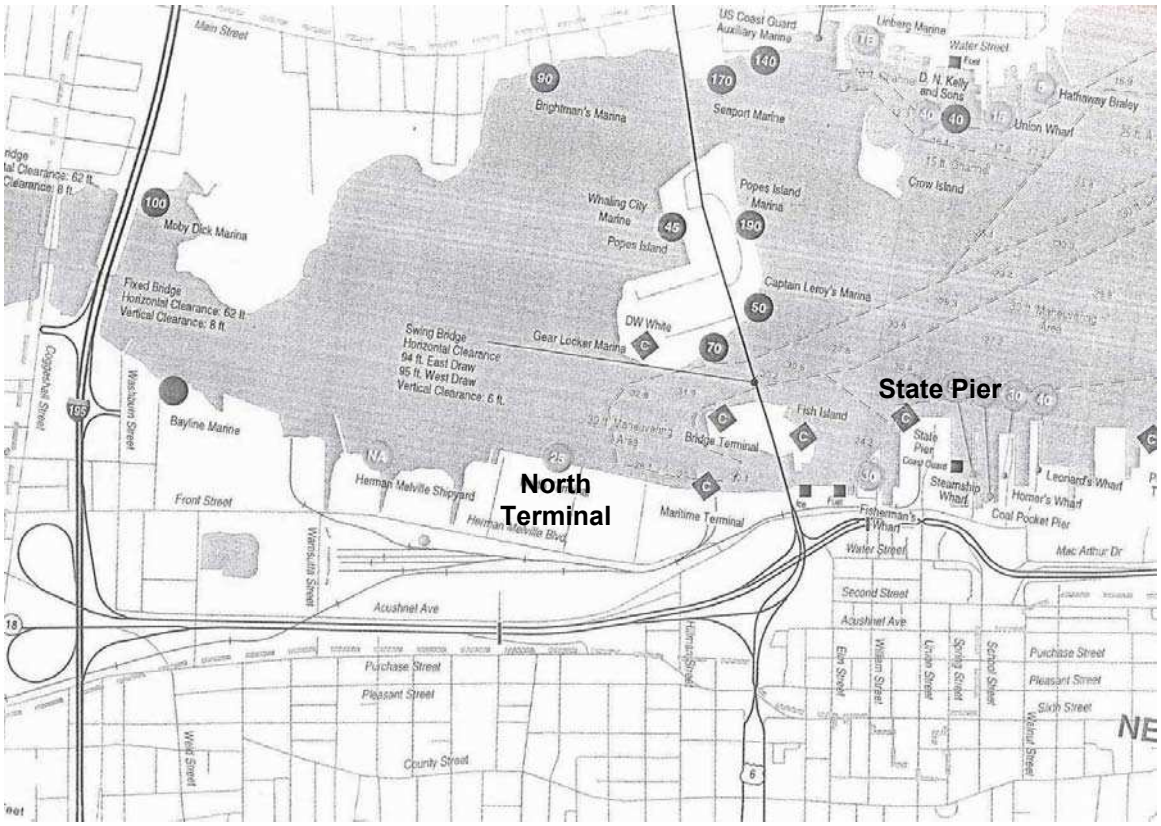


Exhibit IV-3
Inner New Bedford Harbor



Competitors to the Bristol County Ports

Although the Bristol County ports are well positioned geographically to serve the surrounding communities of greater Boston, Providence, and most of central and northern New England, neighboring ports in Rhode Island also have competitive locations and facilities:

- **Providence** is currently primarily a specialist in handling bulk and breakbulk cargoes – however, it has the basic infrastructure to serve as a short-sea terminus with six berths of 3,500 linear feet of berthing area and 20 acres of open paved storage area as well as onsite rail tracks. It also has good direct highway access to Routes 95 and 195.
- **Davisville/Quonset Point** is located at the entrance of Narragansett Bay and also offers deep-water cargo facilities. The port is currently handling large volumes of RoRo cargo (e.g. 80,000 automobiles per year) as well as bulk (e.g. quarried stone), and breakbulk general cargo. The port has three major piers with over 6,800 linear ft. of deep-water dockage with onsite rail tracks.

Further expansion of Davisville as a cargo facility faces major opposition from local environmentalists, which could inhibit the development of short-sea shipping operations at that port. There do not appear to be such limiting factors at Providence.

Ports further to the south in Connecticut such as New London, Bridgeport, and New Haven are potential short-sea terminuses as well, but they are better located to serve the southern New England market rather than the central and northern New England markets that are the natural hinterland of the ports of Bristol County. Longer highway times over the relatively highly congested roads of central Connecticut will substantially increase the drayage times and costs for short-sea cargoes moving over these ports to/from locations in central and northern New England

Economic Impact of Short-Sea Shipping Services over the Ports of Bristol County

The establishment of two short-sea shipping services operating over the ports of Bristol County as the northern terminus of (1) a daily short haul shuttle to a port in the northern New Jersey area, and (2) a twice weekly long haul service to ports in the South Atlantic such as Jacksonville or Wilmington, NC would have the following projected impact on local business activity and employment:

- The two short-sea services would generate an estimated total direct income of around $45 million per year – at least 50 percent of this would be generated within the Bristol County immediate area[9]
- Indirect income of $72 million would further be created by secondary spending by the companies and employees involved in short-sea shipping – at least 50 percent of this would be generated within the Bristol County immediate area.[10] Consequently, the total economic impact of the two short-sea services would be around $117 million per year, with at least 50 percent of this ($59-$60 million) generated within the Bristol County immediate area
- The creation of 300 jobs directly employed in short-sea shipping operations – at least 255 of these jobs would likely be in the Bristol County immediate area
  - 60 jobs manning the vessels (at least 50 percent within Bristol County region)
  - 30 jobs in shoreside and vessel management (at least 50 percent within Bristol County region)
  - 180 jobs in regional drayage operations as drivers and vehicle maintenance (100 percent within Bristol County region)
  - 30 jobs in longshore gangs (100 percent within Bristol County region)
- Another 500 jobs would be created in industries that provide goods and services to those directly involved in short-sea shipping – these additional jobs would include services such as shipbuilding and repair and financial services[11]
- Personal income for those directly employed in the short-sea shipping operations would be around $22.5 million and $35 million for those jobs that are indirectly created by the short-sea shipping operations[12]

[9] See details of economic analysis in the Appendix.
[10] Indirect economic multiplier for U.S. domestic shipping is 1.6 – source: Reeve & Associates, *Economic Impact of the U.S. Jones Act*, 2006
[11] Ibid
[12] Ibid

Of course, given that the intent of short-sea shipping is to remove trailers from the nation's highways, it can be argued that there will be a loss of jobs among long distance truck drivers that may partially offset the economic gains listed above. However, in view of the fact that there is an increasing shortage of long distance truck drivers within the U.S. and that trucking companies will be the primary marketers and operators of the overall door-to-door short-sea intermodal service, it is likely that any such job losses will be minimal, if they exist at all. In fact, it could rather be argued that the addition of transportation capacity through the provision of short-sea shipping traffic corridors will provide an economic stimulus by enabling the economy to continue to grow through the transport of goods that would otherwise be constrained by highway capacity limits.

V. Probability of Success of Short Sea Routes Serving Bristol County Ports

Several factors point to a strong probability of success for short-sea shipping services being developed to serve the ports of Fall River and/or New Bedford:

- There are substantial cargo volumes of truck traffic moving along the Atlantic seaboard with origins or destinations within the hinterland served by the Bristol County ports – options for such services include a short haul operation connecting with northern New Jersey and a longer haul operation connecting with ports in the South Atlantic such as Jacksonville or Wilmington, NC and Norfolk, VA
- Truckers, particularly truckload operators, are becoming increasingly aware of the short-sea shipping option, and view it as an additional intermodal opportunity that may offset constraints on their ability to continue to grow pure truck transportation services due to increasing highway congestion, increasing driver shortages and limits on hours of operation, and rising fuel costs
- The economics of short-sea shipping appear to be competitive with alternative modes, particularly on long haul lanes – provided that "best in class" practices can be implemented in terms of vessel costs and manning levels and stevedoring operations that will enable short-sea shipping to achieve its full potential in terms of cost and efficiency
- The primary competition to the Bristol County ports as short-sea hubs will come from the Rhode Island ports of Providence and Davisville (Quonset Point). Although these ports are well positioned in terms of physical facilities, they are at a greater distance from the central and northern New England hinterland that may potentially be served by the Bristol County ports.

However, there are also a number of factors that need to be addressed in order for short-sea shipping operations to be effectively realized in the ports of Bristol County:

- Current port capacity in both Fall River and New Bedford is limited in its ability to accommodate a major short-sea shipping operation such as envisioned in this project
  - Fall River's State Pier could accommodate a single short-sea operation but that would entail adding more trailer parking area to that within the current State Pier footprint and also possibly displacing some current users of the facility – in addition, the large volume of truck traffic into and out of the facility projected for the short-sea operation must be balanced with the needs of the adjoining Battleship Cove tourist facilities and other planned recreation activities in the area
  - New Bedford lacks berth and yard capacity to effectively support a short-sea service in its current configuration. In the long term, if the North Terminal is developed as a RoRo berth and adequate access to it is provided by reconstructing or relocating the Route 6 bridge, New Bedford would be an ideal location
- In addition, factors that add to the cost of short-sea shipping such as Harbor Maintenance Tax (HMT) and the extremely high cost of commercial vessels built by U.S. shipyards must be addressed

- The elimination of HMT on coastal domestic shipping services may prove to be revenue neutral as any foregone tax may be offset by funds saved in highway construction and repair as trailers are removed from the highways by short-sea shipping services
- The high cost of U.S.-built commercial vessels may be addressed by increasing the percentage of such vessels that may be built overseas, by improved purchasing and sourcing practices by U.S. shipyards, by the application of modern vessel construction practices and technologies by the shipyards, and/or by a waiver of the U.S. Jones Act restriction on domestic operators using foreign-built vessels

In summary, the ports of Bristol County appear to have a significant opportunity to become terminuses for short-sea shipping services. Focusing on implementation strategies that address both the positive and negative factors listed above should enable this opportunity to be achieved.

VI. Appendices

VI.1: Global Insight TRANSEARCH Methodology

VI.2: Port-Pair Truckload Volumes from TRANSEARCH

VI.3: Economic Analysis of Alternative Modes on the Jacksonville and Bayonne Lanes

VI.4: Market Research Questionnaire

VI.1: Global Insight TRANSEARCH Methodology

Transearch Database

Building from the original TRANSEARCH, the national database of freight traffic flows that Reebie Associates (and now Global Insight, Inc.) created and has maintained and provided to the transportation industry for 18 years and drawing on its experience with custom database development, the team researched information needs and data sources in the government and commercial markets and the capabilities of state-of-the-art software. The results of the effort have been to make available a national county-to-county and zip code-to-zip code data product. Key user needs like currency of the data, its reliability, flexibility in terms of seeing details of the traffic composition or relatively broad data summaries, and affordability can be satisfied.

Issued annually, the data can cover all modes and commodities, including empty truck movements, international shipping, and truck shipments of non-manufactured goods. Features like external trip ends, vehicle miles traveled, gross ton-miles, and forecasts can be provided, and traffic routed along major modal corridors can be displayed.

The database maps commodity flows (2, 3 and 4 digit STCC) in short tons between geographic entities (states, counties, BEAs) by mode (rail car, rail intermodal, truck load, less than truck load, private truck, air and water) for current year and forecast years. All volumes shown in tons are in short tons, for 2003.

A variety of data sources are used to compile the database ranging from government agencies to private sector industry associations and the carriers themselves, as shown in Figure A1.1.

The data sources vary by the different modes of transportation. The primary source for railroad data is the Carload Waybill Samples gathered from about 4% of total rail car traffic. Global Insight, Inc. sources this data from the Surface Transportation Board. This data is compiled to provide both volumes and patterns of flow.

The primary source for waterborne commodity flows is the Waterborne Commerce Statistics compiled by the Army Corps of Engineers. This data tracks the flow of commodities along domestic lakes, rivers and canals, and is used to develop both volumes and patterns of flow.

Figure A1.1
TRANSEARCH DATABASE DATA SOURCES

Mode	Data Source	Agency/Organization
Rail	– Carload Waybill Sample	– Surface Transportation Board
Water	– Waterborne Commerce Statistics	– U.S. Army Corps of Engineers
Air	– FAA Airport Originating Tonnages – Airport to Airport Flows – Commodity Flow Survey – TRANSEARCH	– Office of Airline Statistics (DOT Form 41) – BTS Office of Airline Information – Bureau of Transportation Statistics – Global Insight, Inc.
Truck	– Carrier Data Exchange Program – TRANSEARCH – Annual Survey of Manufactures – Freight Locater Data Service – General Statistics for Verification – Commodity Flow Survey	– Global Insight, Inc. – Global Insight, Inc. – U.S. Census Bureau – Global Insight, Inc. – Industry Associations – Bureau of Transportation Statistics

The air data is compiled from four major sources. The first is FAA (Federal Aviation Administration) airport originating tonnages primarily from Form 41 reports and compiled by the Office of Airline Statistics (Federal). This source establishes volume estimates at airports. The second source is airport-to-airport (ATA) flows compiled by the BTS Office of Airline information. These data are used to establish flow patterns. The third source is from Commodity Flow Survey (CFS) data, used to define the commodity types. The fourth source is Global Insight's TRANSEARCH Database, which supplements the CFS data.

The trucking data process is more complex and comes from a wide variety of sources developed over the course of 20 years. However, there are four primary sources. The first is a data exchange program Global Insight has with motor carriers, which is used to estimate patterns and volumes. The second source is a variety of industry associations (timber, plastics, chemical, automotive, etc.), which provide overall volume information for the respective industry sectors. The third major source is from the Annual Survey of Manufactures, primary employment and output data by industry, distributed at the state and local level. This data maps production and consumption of commodities and is used to calibrate the trucking flows. The Freight Locater data service is a database of industrial facilities and their exact location. This data supplements the previously mentioned sources to help calibrate the flows of goods between specific geographic entities.

TRANSEARCH Data Issues and Limitations – Reebie Associates recently developed a finer detailed version of its TRANSEARCH database in an FHWA sponsored project known as the Intermodal Freight Visual Database. It breaks down origin and destination market areas to the county level and is compatible with GIS applications. It has been incorporated into TRANSEARCH, with its most current base year as 2003.

For this study, TRANSEARCH data were identified at varying levels of detail. It is generally understood that large databases of this kind are never perfect, and TRANSEARCH is not an exception to the rule. It is, however, the best available source of its kind in the cognizance of the study team. TRANSEARCH is in use by virtually all major U.S. railroads and by more than a hundred motor carrier companies and several container shipping lines and air cargo carriers. State and federal planning agencies, as well as port authorities, equipment suppliers, investment banks and judicial and regulatory bodies also use it.

TRANSEARCH reports provide a broad picture of freight traffic movements in the United States. Various publicly available sources, as well as Global Insight's proprietary motor carrier data exchange information, are used in the development of the TRANSEARCH database. Understanding the nature of particular sources when using TRANSEARCH data is important to interpret the information correctly. The following guidelines should be helpful in gaining that understanding.

Freight Rehandled By Truck From Warehouse and Distribution Centers Is Identified as STCC 5010 and Referred to as Secondary Traffic at a 4-digit STCC level or STCC 50 at a 2-digit STCC level. Many of these types of facilities handle a wide range of different types of commodities, and outbound shipments may also be of mixed consists. For example, shipments from a supermarket chain distribution center are likely to contain a broad range of packaged food products and other consumer items.

The Truck Portion of Truck/Rail Intermodal Activity Is Shown as STCC 5020 at a 4-digit STCC level or STCC 50 at a 2-digit STCC level. This activity includes two segments: the truck shipment, by trailer or container, from true origin to the intermodal railhead, and from the intermodal railhead to final destination. The Rail Intermodal mode reveals the origin and destination points on the rail system, not the ultimate origin and destination.

STCC 5030 Is Used to Identify the Truck Drayage of Air Freight Traffic 5020 at a 4-digit STCC level or STCC 50 at a 2-digit STCC level. Both the true origin to airport, and airport to final destination are included. Origins and destination for movements classified in the air mode are airports. Volumes that are transloaded from one aircraft to another are not shown at the transloading point.

Large Portions of Today's Intermodal (TOFC or COFC) Traffic Are Reported In Non-Commodity Categories. Commercial arrangements in the railroad industry have fostered the use of "third parties" such as consolidators and forwarders. Such traffic typically is labeled as "Freight Forwarder Traffic", "FAK" (Freight: All Kinds), or "Miscellaneous Mixed Shipments". The specific commodities moving under these arrangements are not identified in the public use data sources.

Shipments Made Up Of Several Commodities Will Be Credited To The Dominant Commodity. This occasionally occurs in the commodity identification of rail shipments.

In these instances, the tonnage attributed to the predominant commodity is greater than it should be, and the other commodities in the shipment are understated.

To Provide Maximum Product Identification, Commodities Are Shown At the Greatest Level of STCC Detail For Each Code. Truck data is available and shown at the 4-digit level for the manufacturing sector. Rail data, however, can be shown at 5-digits. Because of the desire to include the greatest amount of detail possible, commodities in a traffic lane may be identified at different levels of detail for each mode. When this occurs, tonnages shown at the more detailed levels should be combined with those displayed at the more aggregate levels to gain a complete picture of modal share for the commodity. All freight traffic flow information in the study is expressed at the 4-digit STCC commodity code level, or consolidated to a 2-digit, or no commodity detail level.

Tonnage Data in Each Cell Should Be Used as an Indicator of Relative Value—since many of the sources for traffic flow information use sample data. Consequently, the more specific the definition of a particular flow, the greater its sampling variability. The more aggregated the definition of the Geography/Mode/ Commodity combination, the more reliable the results.

State-To-State Movements Of "Primary" Freight At The 2-Digit STCC (or SIC) Level Provide The Best Picture Of Primary Freight Moves In The Data Base. Analysts and planners, however, want and need more disaggregate pictures of the flow activity. Not all of the data used in TRANSEARCH comes into the process beneath the state level or with more than 2-digit commodity/industry classification.

VI.2: Port-Pair Truckload Volumes from TRANSEARCH

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Bayonne

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	Grand Total
50 miles	27,058	49,881	7,209	7,713	8,895	100,756
100 miles	9,751	9,745	803	1,845	4,604	26,747
150 miles	9,330	7,507	263	712	1,660	19,471
200 miles	4,112	8,155	1,029	1,224	1,795	16,315
250 miles	9,851	10,213	1,858	3,403	1,726	27,052
Grand Total	60,103	85,501	11,162	14,897	18,680	190,342

NORTHBOUND

Port Name	Bayonne

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	Grand Total
50 miles	78,780	87,694	94,587	18,218	12,463	291,741
100 miles	34,435	34,290	9,831	6,606	6,116	91,277
150 miles	39,426	30,490	2,271	5,474	4,047	81,707
200 miles	29,505	25,793	9,248	8,597	6,603	79,748
250 miles	13,667	23,370	4,919	5,245	5,298	52,499
Grand Total	195,813	201,637	120,856	44,141	34,526	596,972

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Charleston

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	255	1,138	490	164	443
100 miles	1,590	2,352	2,163	716	626
150 miles	1,922	2,769	5,393	1,411	1,405
200 miles	1,508	5,260	1,068	718	637
250 miles	2,650	3,224	939	773	1,903
Grand Total	7,925	14,743	10,053	3,783	5,014

NORTHBOUND

Port Name	Charleston

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	3,312	14,234	5,299	5,900	5,591
100 miles	8,680	10,087	4,823	1,195	2,875
150 miles	6,850	16,443	14,576	4,503	6,060
200 miles	17,535	15,386	14,750	9,328	8,260
250 miles	10,253	18,367	6,152	3,047	9,028
Grand Total	46,631	74,517	45,600	23,973	31,815

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Corpus Christi

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	227	327	457	2,650	1,365
100 miles	5,523	14,738	6,030	12,965	36,485
150 miles	3,802	5,600	3,682	6,084	23,459
200 miles	872	2,927	3,069	3,228	5,877
250 miles	1,154	4,974	2,408	6,389	4,301
Grand Total	11,579	28,565	15,647	31,316	71,488

NORTHBOUND

Port Name	Corpus Christi

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	3,924	2,954	1,909	5,220	12,145
100 miles	1,217	5,635	1,883	6,149	21,630
150 miles	3,315	6,267	3,830	92,475	12,764
200 miles	7,779	5,010	2,383	861	1,739
250 miles	15,536	20,657	13,540	4,829	4,730
Grand Total	31,771	40,523	23,546	109,535	53,008

Port-Pair Truckload Volumes from TRANSEARCH

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Galveston

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	428	2,826	1,325	2,058	7,893	
100 miles	1,231	3,608	1,525	1,130	5,772	
150 miles	2,157	2,241	899	2,494	7,166	
200 miles	4,721	2,796	3,408	3,058	6,434	
250 miles	2,219	8,946	3,854	6,833	9,079	
Grand Total	10,757	20,417	11,011	15,572	36,343	

NORTHBOUND

Port Name	Galveston

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	18,111	17,014	15,853	31,979	76,919	
100 miles	5,236	6,710	4,178	7,391	3,162	
150 miles	11,828	7,128	3,012	2,408	4,260	
200 miles	2,435	1,620	678	756	773	
250 miles	13,580	15,457	5,654	12,967	15,702	
Grand Total	51,191	47,930	29,376	55,501	100,816	

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Jacksonville

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	1,146	4,588	440	2,529	6,870	
100 miles	1,446	2,694	2,437	3,958	9,128	
150 miles	1,318	6,888	4,593	8,178	15,239	
200 miles	2,904	8,346	2,406	6,715	15,001	
250 miles	3,429	7,550	1,620	8,107	13,241	
Grand Total	10,243	30,066	11,497	29,488	59,479	

NORTHBOUND

Port Name	Jacksonville

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	2,117	5,137	4,119	35,471	10,267	
100 miles	3,472	1,088	1,446	2,066	7,143	
150 miles	7,609	25,837	7,351	12,158	21,574	
200 miles	16,206	13,398	12,195	7,146	16,634	
250 miles	15,647	15,229	5,337	12,362	16,077	
Grand Total	45,050	60,690	30,449	69,202	71,695	

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Mobile

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	184	245	26	18	10	
100 miles	364	581	60	332	331	
150 miles	955	1,223	293	347	83	
200 miles	1,380	5,878	1,138	12,839	101	
250 miles	4,999	3,530	14	264	77	
Grand Total	7,882	11,457	1,530	13,800	601	

NORTHBOUND

Port Name	Mobile

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	1,513	14,757	15,717	429	126	
100 miles	6,144	5,204	1,464	3,806	21	
150 miles	11,247	16,951	6,137	718	5,506	
200 miles	21,978	25,089	2,837	1,650	3,969	
250 miles	3,999	3,920	216	211	34	
Grand Total	44,881	65,921	26,371	6,814	9,656	

Port-Pair Truckload Volumes from TRANSEARCH

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	New Orleans

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	1,142	4,658	2,481	4,185	35	
100 miles	4,016	7,700	3,423	9,700	151	
150 miles	2,854	2,901	95	253	120	
200 miles	1,857	1,942	526	1,594	15	
250 miles	2,033	1,084	839	68	151	
Grand Total	11,903	18,285	7,364	15,801	471	

NORTHBOUND

Port Name	New Orleans

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	19,603	55,397	25,347	1,742	8,026	
100 miles	14,982	36,728	13,137	2,289	2,422	
150 miles	4,162	4,540	509	903	28	
200 miles	951	762	2,999	1,226	29	
250 miles	7,786	5,825	1,086	625	1,417	
Grand Total	47,483	103,251	43,078	6,786	11,921	

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Norfolk

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	1,532	1,568	1,559	1,136	634	
100 miles	1,387	1,643	422	292	227	
150 miles	1,316	1,016	579	297	356	
200 miles	1,017	2,751	500	1,254	982	
250 miles	641	1,428	309	792	772	
Grand Total	5,894	8,406	3,369	3,771	2,970	

NORTHBOUND

Port Name	Norfolk

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	7,511	3,957	328	1,771	1,422	
100 miles	1,391	2,437	158	100	138	
150 miles	2,422	2,194	694	1,415	208	
200 miles	2,813	2,191	954	1,429	735	
250 miles	6,104	4,337	1,019	943	365	
Grand Total	20,241	15,116	3,153	5,658	2,869	

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Pensacola

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	116	675	93	17	47	
100 miles	219	389	12	194	57	
150 miles	218	104	19	282	127	
200 miles	701	964	86	166	12	
250 miles	1,140	4,919	1,352	12,755	51	
Grand Total	2,394	7,049	1,562	13,414	293	

NORTHBOUND

Port Name	Pensacola

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	1,637	686	955	594	21	
100 miles	2,228	8,700	1,034	475	210	
150 miles	2,182	3,150	1,167	113	8	
200 miles	7,309	10,544	4,777	3,448	4,178	
250 miles	24,498	26,013	3,292	1,808	4,949	
Grand Total	37,854	49,094	11,225	6,438	9,364	

Port-Pair Truckload Volumes from TRANSEARCH

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Port Arthur

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	274	2,111	710	574	9
100 miles	3,653	2,422	1,708	1,228	847
150 miles	1,983	7,326	1,221	2,761	273
200 miles	3,016	4,059	2,020	1,711	92
250 miles	4,194	3,166	3,414	1,634	1,655
Grand Total	13,121	19,083	9,072	7,908	2,876

NORTHBOUND

Port Name	Port Arthur

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	4,604	4,791	2,649	2,840	1,448
100 miles	22,219	20,358	15,971	27,430	43,209
150 miles	10,529	7,005	3,072	6,507	2,823
200 miles	4,503	4,845	3,218	1,657	552
250 miles	6,760	3,547	1,655	1,615	2,340
Grand Total	48,615	40,546	26,565	40,049	50,372

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Port Canaveral

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	493	6,243	517	2,484	4,539
100 miles	1,705	2,638	3,293	7,753	9,715
150 miles	4,152	11,907	3,762	6,055	7,495
200 miles	2,247	5,632	1,622	7,740	14,150
250 miles	647	917	36	995	3,198
Grand Total	9,244	27,337	9,230	25,028	39,097

NORTHBOUND

Port Name	Port Canaveral

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	2,097	5,260	2,500	2,491	2,527
100 miles	8,355	21,636	6,078	6,000	12,384
150 miles	3,817	7,586	3,711	20,213	12,271
200 miles	6,465	8,212	8,613	4,269	10,143
250 miles	506	2,177	2,258	323	1,015
Grand Total	21,238	44,871	23,160	33,296	38,342

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Savannah

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	740	1,251	1,030	1,635	381
100 miles	626	1,986	1,552	759	1,295
150 miles	2,413	3,900	1,000	1,001	1,907
200 miles	2,363	7,944	5,605	3,600	3,926
250 miles	2,198	8,068	3,847	3,692	3,548
Grand Total	8,341	23,149	13,035	10,686	11,056

NORTHBOUND

Port Name	Savannah

Loads	Bristol County, MA Catchment				
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles
50 miles	6,659	11,858	2,603	3,869	4,776
100 miles	6,623	3,757	4,005	3,873	5,699
150 miles	13,063	26,692	19,027	12,635	16,227
200 miles	8,438	7,960	9,435	6,348	4,805
250 miles	11,957	9,971	7,324	4,430	6,935
Grand Total	46,740	60,238	42,395	31,155	38,443

Port-Pair Truckload Volumes from TRANSEARCH

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Tampa

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	739	5,932	1,705	1,272	904	
100 miles	2,100	2,681	816	538	386	
150 miles	1,580	3,145	203	216	558	
200 miles	2,077	956	84	179	43	
250 miles	370	1,127	307	72	349	
Grand Total	6,867	13,840	3,115	2,277	2,240	

NORTHBOUND

Port Name	Tampa

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	3,251	7,424	5,389	6,529	5,018	
100 miles	6,214	7,786	979	667	397	
150 miles	5,015	4,374	1,058	371	527	
200 miles	663	967	370	14	215	
250 miles	2,958	3,678	5,520	812	4,716	
Grand Total	18,101	24,230	13,317	8,392	10,873	

Truckload Volumes by Drayage Distance

SOUTHBOUND

Port Name	Wilmington, NC

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	418	1,012	114	172	277	
100 miles	915	1,631	297	382	652	
150 miles	1,569	863	176	117	484	
200 miles	832	2,019	156	410	834	
250 miles	1,485	1,656	3,092	637	709	
Grand Total	5,219	7,182	3,835	1,717	2,956	

NORTHBOUND

Port Name	Wilmington, NC

Loads	Bristol County, MA Catchment					
Southern Port Catchment	50 miles	100 miles	150 miles	200 miles	250 miles	
50 miles	2,801	2,382	635	462	172	
100 miles	2,900	4,026	951	1,038	395	
150 miles	3,154	5,756	1,749	927	2,417	
200 miles	7,728	22,572	6,245	3,709	2,822	
250 miles	7,229	8,460	754	1,016	1,336	
Grand Total	23,812	43,197	10,334	7,152	7,143	

VI.3: Economic Analysis of Alternative Modes on the Jacksonville/Bristol County Lane

Jacksonville, FL to Bristol County, MA

Truck			Rail Intermodal			Short Sea Shipping		
OPERATING STATISTICS			**OPERATING STATISTICS**			**OPERATING STATISTICS**		
Highway Miles		1182.6	Rail and Dray Miles		1340.2	Ocean and Dray Miles		1341.95
Transit Hours		26.5	Transit Hours		66.5	Transit Hours		72.0
Projected Door-to-Door Transit (Hours)		54.5	Projected Door-to-Door Transit (Hours)		66.5	Projected Door-to-Door Transit (Hours)		72.0
ESTIMATED OPERATING COSTS (Per Load)			**ESTIMATED OPERATING COSTS (Per Load)**			**ESTIMATED OPERATING COSTS (Per Load)**		
Driver - Wages & Benefits	$	738	Locomotives & Fuel	$	207	Vessel Costs	$	213
Equipment (Tractor & Trailer)	$	121	Track & R.O.W	$	144	Fuel Costs	$	63
Fuel - Tires - Oil - Maint.	$	435	Yard & Terminal / Lift On/Lift Off	$	129	Port Charges	$	13
Insurances	$	81	Railcar Costs	$	57	All Other	$	30
Repositioning	$	85	Crew & Other	$	108	Marine Terminal Costs	$	256
Tolls	$	71	Trailer/Container Costs	$	57	Trailer/Container Costs	$	51
All Other	$	251	Drayage Expense	$	421	Drayage Expense	$	438
Depreciation	$	99	Depreciation	$	112	Depreciation (included in vessel costs)	$	-
Total	$	1,881	Total	$	1,235	Total	$	1,065
Estimated Operating Cost per HWY Mile	$	1.59	Estimated Operating Cost per HWY Mile	$	1.04	Estimated Operating Cost per HWY Mile	$	0.90
Estimated Markup	$	0.14	Estimated Markup	$	0.21	Estimated Markup	$	0.09
SHIPPER COSTS			**SHIPPER COSTS**			**SHIPPER COSTS**		
			Incremental Inventory Carrying Cost	$	11	Shipper HMT Expense	$	24
						Incremental Inventory Carrying Cost	$	15
Total	$	-	Total	$	11	Total	$	40
Estimated Shipper Cost per HWY Mile	$	1.73	**Estimated Shipper Cost per HWY Mile**	$	1.26	**Estimated Shipper Cost per HWY Mile**	$	1.02
			Discount vs. Highway Transport		27%	**Discount vs. Highway Transport**		41%

Economic Analysis of Alternative Modes on the Bayonne/Bristol County Lane

Bayonne, NJ/Bristol County, MA

Truck			Short Sea Shipping		
OPERATING STATISTICS			**OPERATING STATISTICS**		
Highway Miles		498.4	Ocean and Dray Miles		558.00
Transit Hours		12.0	Transit Hours		17.5
Projected Door-to-Door Transit (Hours)		12.0	Projected Door-to-Door Transit (Hours)		17.5
ESTIMATED OPERATING COSTS (Per Load)			**ESTIMATED OPERATING COSTS (Per Load)**		
Driver - Wages & Benefits	$	334	Vessel Costs	$	85
Equipment (Tractor & Trailer)	$	55	Fuel Costs (25 TPD)	$	25
Fuel - Tires - Oil - Maint.	$	197	Port Charges	$	10
Insurances	$	37	All Other	$	32
Repositioning	$	30	Marine Terminal Costs	$	100
Tolls	$	20	Trailer/Container Costs	$	-
All Other	$	32	Drayage Expense	$	333
Depreciation	$	38	Depreciation (Vessel included in vessel costs)	$	4
Total	$	742	Total	$	585
Estimated Operating Cost per HWY Mile	$	1.49	Estimated Operating Cost per HWY Mile	$	1.17
Estimated Markup	$	0.13	Estimated Markup	$	0.12
Estimated Operating Margin		10%	Estimated Operating Margin		10%
SHIPPER COSTS			**SHIPPER COSTS**		
			Shipper HMT Expense	$	24
			Incremental Inventory Carrying Cost	$	5
Total	$	-	Total	$	29
Estimated Shipper Cost per HWY Mile	$	1.62	**Estimated Shipper Cost per HWY Mile**	$	1.35

VI.4: Market Research Questionnaire

Massachusetts Seaport Advisory Council:
Study of Potential Market for Domestic Coastal Shipping

Shipper/Carrier Interview Guide

Interviewer _____

Firm _____

Phone _____

Contact 1 _____

Contact 2 _____

Contact 3 _____

Cold Calling - Getting to the right person

For Shippers

Hello, my name is _____. I'm calling on behalf of the Massachusetts Seaport Council. We are conducting a study of freight transportation options in the Eastern United States and would like to speak for a few minutes with the manager of your firm that handles shipping decisions.

For Carriers

Hello, my name is _____. I'm calling on behalf of the Massachusetts Seaport Council. We are conducting a study of freight transportation options in the Eastern United States and would like to speak for a few minutes with the manager of your firm that develops and evaluates new services and market opportunities.

When you reach the key individual

Name, Title and Phone _____

Date and Time _____

Good Day, my name is _____
I am working on a project for the Massachusetts Department of Business and Technology and Seaport Council. The study is evaluating the market potential for **domestic coastal shipping** services that would connect ports in Massachusetts such as New Bedford and/or Fall River with other U.S. ports on the east coast that would provide a new mode of transportation for freight that is currently moving over the highway. I would like to discuss this opportunity with you and get your reaction to how your firm might use this type of service. I expect that the conversation might require 20-30 minutes of your time.

Background Information to be used as necessary to advance conversation and define terms

What is Short Sea Shipping? Many in the transportation industry are concerned that growing highway congestion will continue to increase the costs and reduce the reliability of shipping by truck. Short Sea Shipping provides an opportunity to relieve some of this strain on the nation's transport

infrastructure by diverting truck traffic from highways to the open sea. With "short sea shipping" operations along the nation's coasts portions of the projected growth in highway freight traffic would move via an "ocean highway" with consequent reduced demand for land highway capacity as well as drivers.

Short sea shipping operations would move freight on an intermodal basis by combining a relatively short overland "drayage" move by truck to transport goods from their origin to a nearby port from which a vessel would carry the freight to another port where a second truck would transport the load over another relatively short distance to its ultimate destination. This mode of operation for domestic freight has already had some success through such operators as Osprey Lines in the U.S. Gulf. However, its application on the Atlantic Coast has been very limited to date. We are working for the Massachusetts Seaport Council to explore how such a service may work for Massachusetts.

Begin the interview……..
All topics below should be addressed but as the interviews are expected to be with fairly senior people, the interview should be allowed to proceed on a fairly unstructured basis enabling the interviewee to provide as much of their perspective on an "unscripted" basis wherever possible.

1. **Basic familiarity with "short-sea shipping" concept:** Ask open question – probe on relative level of interest

2. **Background on interviewee's current freight operations:**

   - Determine volume of road and rail intermodal traffic (trailer loads and type of freight) that could potentially be moved by SSS

   - Identify key requirements in terms of cost and service levels (e.g. transit time, schedule reliability, safety, etc.)

3. **Concerns:** Probe on any concerns that they may have on being able to meet key shipping requirements (e.g. restrictions on driver hours, driver shortages, highway congestion, rising fuel costs, etc.)

4. **Opportunity for short-haul SSS:**

   - **Describe Short Haul Service –** Daily roll on/roll off (RoRo) service for truck trailers would be offered between a Northern New Jersey port (say, Bayonne) and a port on the Southeastern Coast of Massachusetts, say Fall River or New Bedford. Northbound service would depart New Jersey each afternoon at approximately 5 pm and arrive in Massachusetts at 2 am. Southbound service would depart Massachusetts for New Jersey at 6 am, arriving in New Jersey by 3 pm. Trailers could be dropped off at the port terminals up to one hour before vessel departure and would be ready for pick up within one hour of the vessel's arrival at the other end. Service would be by roll-on/roll-off vessel carrying standard highway trailers. It is anticipated that the charge for the service would be approximately **$300 - $350** per trailer on a port-to-port basis not including local truck transportation at both ends of the trip.

   - Probe on reaction to daily Bayonne/FR-NB service – type of service, frequency, points served, pricing, etc.

   - Preference for door-to-door service (ocean plus drayage) or ocean only

5. **Opportunity for long- haul SSS:**

   - **Describe Long Haul Service** – Three departures per week service between Northern Florida (say Jacksonville) and a port on the Southeastern Coast of Massachusetts, say Fall River or

New Bedford, is envisioned. The service would utilize roll-on/roll-off vessels that can handle any highway trailer. Northbound service would depart Florida on a Monday, Wednesday or Friday afternoon and arrive in Massachusetts two days (50 hours) later (e.g. Monday departure would arrive on Wednesday). Again, trailers could be dropped off at the port terminals up to one hour before vessel departure and would be ready for pick up within one hour of the vessel's arrival at the other end. It is anticipated that the charge for the service would be around **$1,200** on a port-to-port basis not including local truck transportation at both ends of the trip.

- Probe on reaction to Florida service or similar service to other East Coast ports (please specify any other preferences) – type of service, frequency, points served, pricing, etc.

- Preference for door-to-door service (ocean plus drayage) or ocean only

6. **Key factors for success and obstacles:**

   - What has to happen for SSS to be a real modal choice for their business?

7. **Massachusetts ports:**

   - Probe on perceptions of Fall River and New Bedford as prospective SSS gateways – advantages/disadvantages, respective strengths/weaknesses in terms of road access, port facilities, labor, etc.

8. **Close:**

Thank interviewee and determine if interested in participating in further analysis of the SSS opportunity