PORT TAMPA BAY

Mexico Market Service Opportunities

Final Technical Report

prepared for

Hillsborough MPO

&

Port Tampa Bay

prepared by

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Table of Contents

List of Tables

List of Figures

1.0 Introduction

1.1 Purpose

Port Tampa Bay is interested in evaluating new trade development opportunities. Mexico represents one of the key short term opportunities given the significant growth occurring in Mexico-U.S. trade. Near sourcing is one of the driving factors for this growth. Near shoring refers to the returning of manufacturing operations to a nearby or neighboring country and it has gained momentum as some of the most recognizable U.S. companies such as Apple, Ford, General Motors and Caterpillar have made significant investments in North American plants, especially in Mexico. As a result, growth in U.S. trade with Mexico is outpacing that of any other major trade partner. U.S. goods imports from Mexico totaled $277.7 billion in 2012, up 5.6% ($14.8 billion) from 2011, and up 106.3% from 2002. It is up 596% since 1993 (Pre-NAFTA). U.S. imports from Mexico accounted for 12.2% of overall U.S. imports in 2012. As of 2012, Florida ranked ninth in the U.S. in terms of the value of total trade with Mexico.

Port Tampa Bay could position to take advantage in this trend by providing more efficient transport of Mexican exports destined for Florida and other states along the eastern seaboard. Understanding this opportunity requires understanding what is moving, where it is moving to and from and how it is moving.

Potential traffic for a new liner service between Mexico and Port Tampa Bay is likely to come from two distinct sources:

- NAFTA traffic from Florida and nearby states that is currently moving either by highway or rail from Mexican origin through the U.S./Mexico border.
- International container traffic moving through Gulf and Atlantic ports. The traffic currently moving by vessel is dominated by petrochemical and agriculture goods but there has been a steady increase in container traffic in some lanes.

Each of these markets has been examined in accordance with their differing characteristics and varying likelihood of being captured by a new Mexico-Tampa container service.

1.2 Study Methodology

In order to evaluate these markets, the following activities were completed:

- **Compile Data on U.S.-Mexico Freight Traffic.** Data was acquired on freight volumes and transportation costs that are relevant to the markets that would be served by a Tampa liner service. This included: identification of domestic and NAFTA traffic; identification of current Tampa port traffic; and data specific to transportation pricing.
- **Competitive Assessment.** Potential issues were identified that may not be revealed simply in the analysis of the traffic data. This included: interviewing selected shippers,

liner services and motor carriers; and examination of intermodal service performance by markets that would be served by the new liner service.

- **Estimate Market Potential for Initial Commodities.** Utilizing the information gathered three commodities were identified to advance to a market assessment. For these commodities, a competitive analysis relative to current supply chain activities was completed to estimate market potential for Port Tampa Bay.

1.3 Organization of Report

The is report is organized as follows:

- **Section 2.0, Mexican Trade Flow Analysis.** This section provides on overview of Mexico's trade with markets in the Southeastern U.S. that may represent markets that can be served by Port Tampa Bay.

- **Section 3.0, Competitive Benchmarking.** This section provides and overview and analysis of fourth key supply chains that represent possible opportunities for Port Tampa Bay as well as provides an analysis of key service parameters including service time and rates.

- **Section 4.0, Conclusions.** This section provides and overview of our findings and conclusions.

2.0 Mexican Trade Flow Analysis

2.1 Overview

This study examines the market potential of intermodal container and roll-on/roll-off (RO/RO) ocean service between Mexico and Port of Tampa Bay (PTB). Three major industries in the U.S.-Mexico trade were analyzed: perishables, white goods, and automobiles and parts. The study team utilized U.S. Department of Transportation TransBorder Freight Data for 2013 imports and exports originating or terminating in Mexico, by truck, rail and vessel. The data provided the commodities imported and exported in Harmonized System (HS) 2-digit codes. Trade data corresponding to automobiles and parts are included in HS commodity group 87 – Vehicles Other than Railway, which in addition to autos includes other types of vehicles. Similarly, white goods are included in the HS commodity groups: 84 – Nuclear Reactors, Boilers, Machinery & Mechanical Appliances, Computers; and, 85 – Electrical Machinery Equipment and Parts. These commodity groups include other commodities in addition to autos and parts, and white goods, therefore the trade values reported in this report for these industries overstate the total value of goods moved.

The study team looked at the trade between Mexico and Florida as well as U.S. States near Florida and could potentially be served by truck or rail from PTB if ocean service between Mexico and PTB is operational. The following sections examine the surface and maritime Mexican trade flow between Mexico and Florida, Georgia, Alabama, South Carolina, North Carolina and Tennessee. An overview is provided of the major commodities moved across the border for perishables, white goods and automobiles and parts, as well as the top ports of entry/exit.

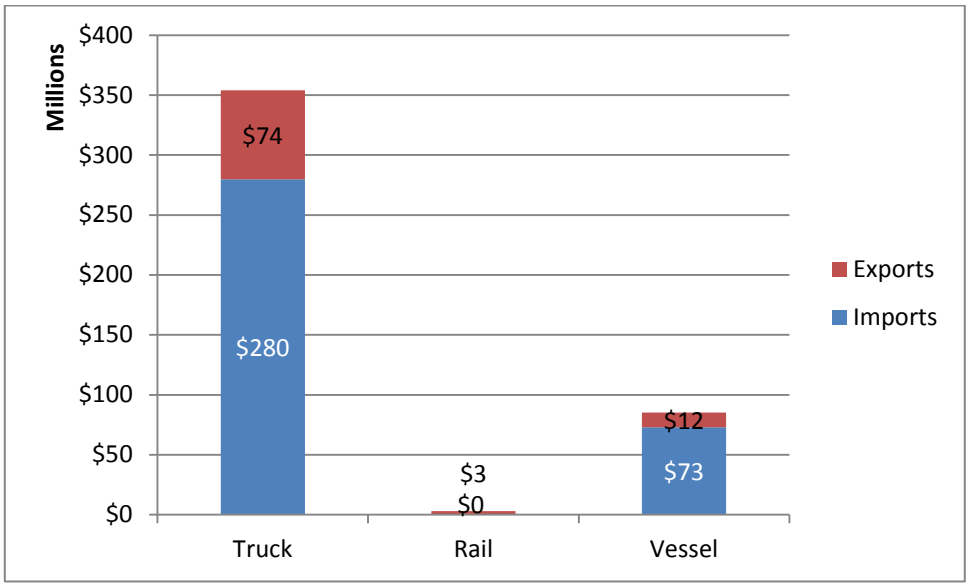
2.2 Florida

In 2013 imports and exports between Mexico and Florida by truck, rail and vessel were estimated at $5 billion. Four billion dollars were moved by truck, $237 million by rail and $928 million by water. By truck, imports constituted 75 percent of the trade and the rest was exported. By rail, imports constituted 56 percent of the trade; and by water the trade was more balanced and imports and exports had similar shares.

The top road border crossings for trade between Mexico and Florida are: Laredo TX, El Paso TX and Hidalgo TX. As for rail crossings the top ports are Laredo TX, El Paso TX, and Eagle Pass TX. The major maritime ports for trade between Mexico and Florida are Port of Tampa Bay, Port of Miami and Port Everglades.

Perishables commodities traded between Mexico and Florida include fresh produce, meats, fish, seafood, dairy products, and edible preparations of fruit, vegetables, fish and meat. These shipments totaled $442 million in 2013. Eighty percent was imported and the rest exported. Most of the perishable commodities move by truck (80 percent), secondly by vessel (19 percent), and lastly by rail (1 percent). Figure 2.1 graphically displays the imports and exports of perishable goods by truck, water and rail in 2013.

Figure 2.1 Mexico-Florida Imports and Exports – Perishable Goods, 2013



Machinery and electrical machinery, including white goods from/to Mexico and Florida, totaled $1.9 billion by truck, rail and water in 2013. Figure 2.2 presents the imports and exports by mode. Most of the trade (72 percent) is inbound from Mexico to Florida. Truck is the most popular mode of transport to ship these commodities accounting for 91 percent of the trade in 2013.

Figure 2.2 Mexico-Florida Imports and Exports – Machinery and Parts incl. White Goods, 2013

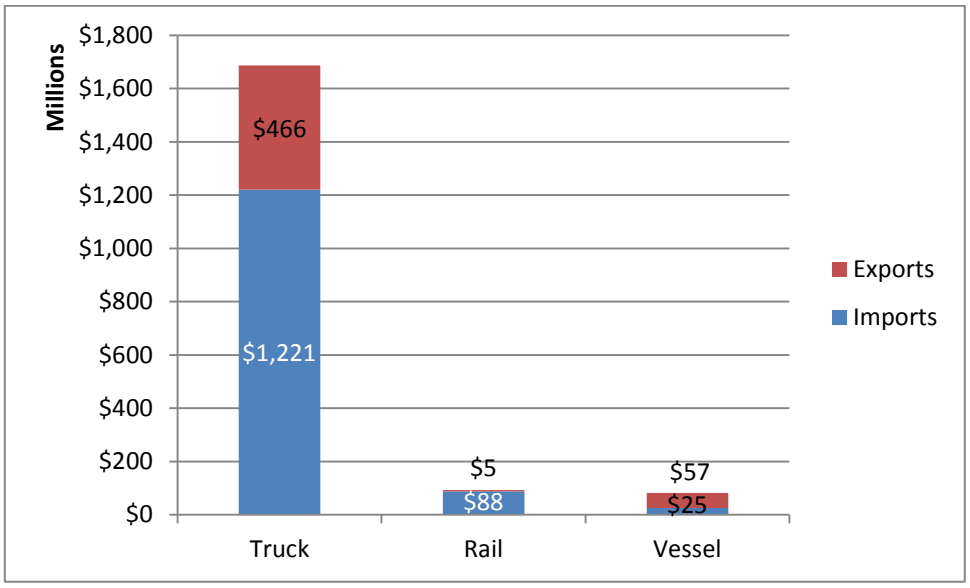
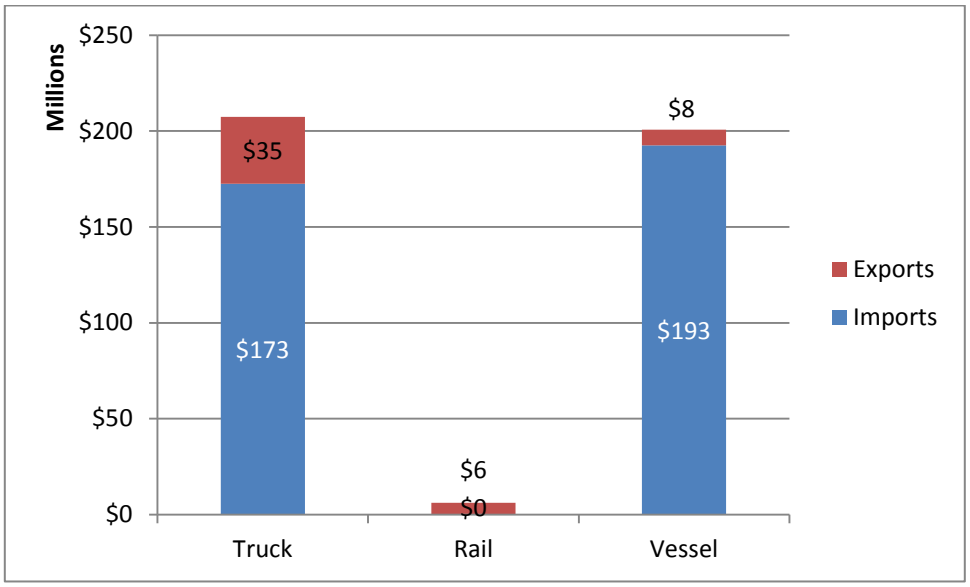


Figure 2.3 shows the imports and exports by mode for vehicles and parts between Florida and Mexico. Eighty-eight percent of the trade is inbound from Mexico to Florida. Truck and vessel are the top modal choices to ship vehicles and parts. Rail is mostly used in exports.

Figure 2.3 Mexico-Florida Imports and Exports – Vehicles and Parts, 2013



2.3 Georgia

In 2013, the import and export maritime and surface trade between Georgia and Mexico totaled $7.6 billion. Sixty-nine percent were imports and the remaining share exports. Trucks were used to move 75 percent of the value of the goods traded, 18 percent was moved by water, and 7 percent by rail. The top road crossings for the Mexico-Georgia truck moves are Laredo TX, Hidalgo TX, Calexico East CA and Otay Mesa CA. The top rail ports of entry/exit are Laredo TX, and Eagle Pass TX. The top U.S. seaports for the Mexico-Georgia trade are the Port of Savannah, Port of Tampa Bay, and Port of Charleston.

The trade of perishable goods between Mexico and Georgia totaled $211 million in 2013. Seventy-three percent of the perishable goods were exported to Mexico by truck. Figure 2.4 displays the imports and exports of perishable goods by mode between Georgia and Mexico.

In 2013, $2.5 billion of machinery and parts including white goods were traded between Mexico and Georgia. Figure 2.5 presents the value by mode of the imports and exports. Most of the shipments (75 percent or $1.9 billion) were moved inbound from Mexico to Georgia by truck. Twenty percent ($516 million) were truck exports from Georgia to Mexico.

Figure 2.4 Mexico-Georgia Imports and Exports – Perishable Goods, 2013

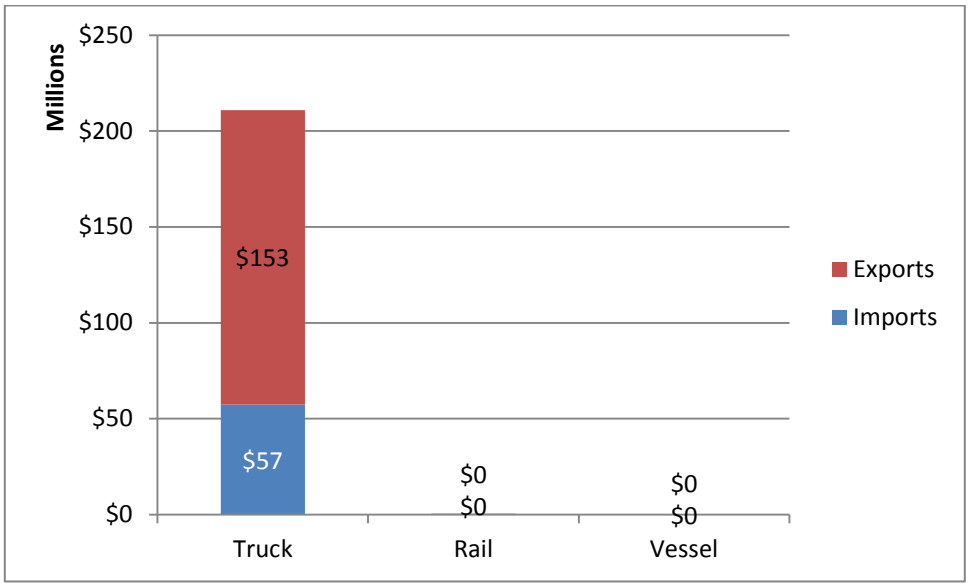
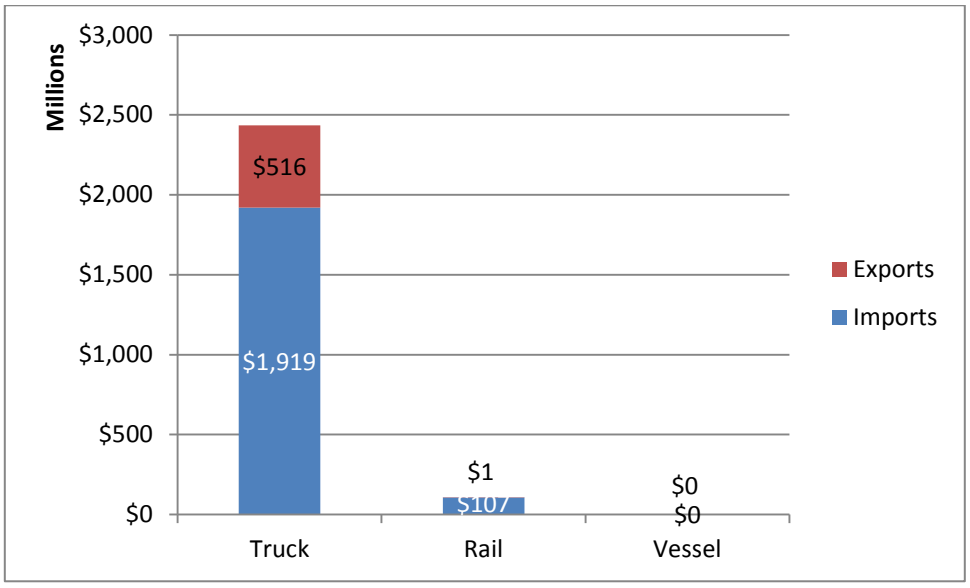
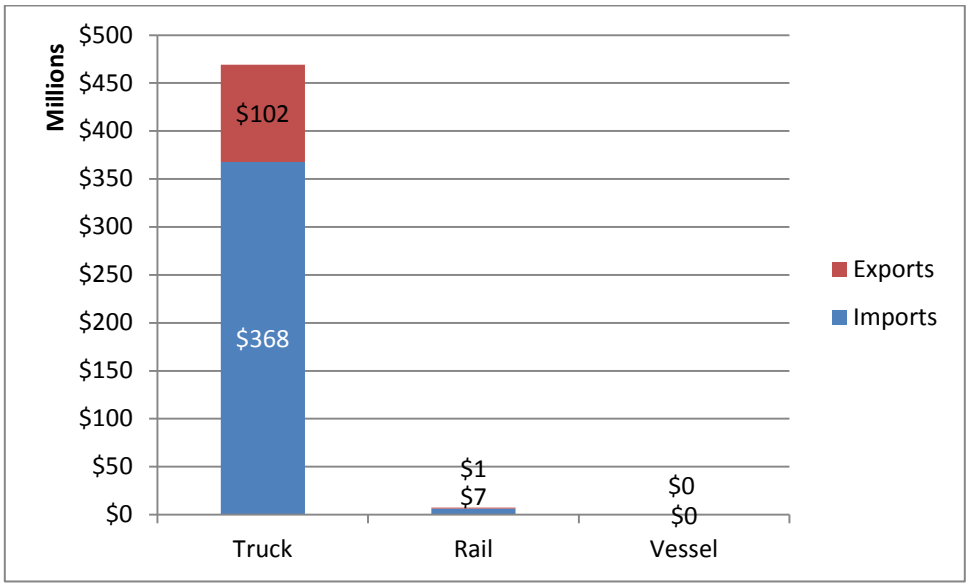


Figure 2.5 Mexico-Georgia Imports and Exports – Machinery and Parts incl. White Goods, 2013



The value of the vehicles and parts trade between Mexico and Georgia was $477 million in 2013. Seventy-nine percent was imported and the remaining share exported. Truck is dominant mode for these commodities. Truck imports accounted for 77 percent or $368 million, and truck exports represented 21 percent or $102 million (see Figure 2.6).

Figure 2.6 Mexico-Georgia Imports and Exports – Vehicles and Parts, 2013



2.4 Alabama

Imports and exports by truck, rail and water between Alabama and Mexico amounted to $3.6 billion in 2013. Ninety-one percent was moved by truck and the remaining share by rail and water. Sixty-one percent of the trade was outbound from Alabama to Mexico and the rest inbound from Mexico. The major road crossings for truck shipments are Laredo TX, and Hidalgo TX. The top rail crossings are El Paso TX, Eagle Pass TX, Brownsville TX, and Laredo TX. By water the major ports are Mobile AL, Port of Tampa Bay, and New Orleans LA.

Figures 2.7, 2.8 and 2.9 present the value of imports and exports by mode in 2013 for perishable goods, machinery and parts (including white goods), and vehicles and parts. In 2013, $51 million of perishable goods were traded between Mexico and Alabama. The majority of the perishable goods were exported to Mexico by truck.

Machinery and parts (including white goods) accounted for $764 million in 2013. The leading mode to ship these commodities was truck in 2013. This trade was very balanced – similar shares were imported and exported.

Vehicles and parts accounted for $827 million in 2013. Sixty-four percent was moved by truck, 30 percent by rail, and 6 percent by water. Two thirds ($378 million) of the trade by truck was inbound from Mexico to Alabama. Rail was exclusively used for exports. Eighty-six percent ($42 million) of the maritime trade were exports.

Figure 2.7 Mexico-Alabama Imports and Exports – Perishable Goods, 2013

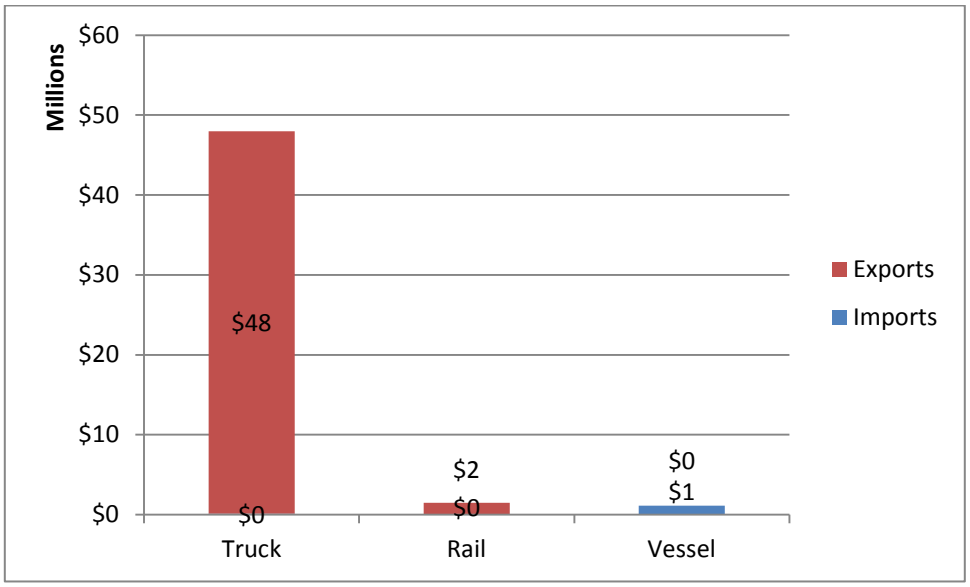


Figure 2.8 Mexico-Alabama Imports and Exports – Machinery and Parts incl. White Goods, 2013

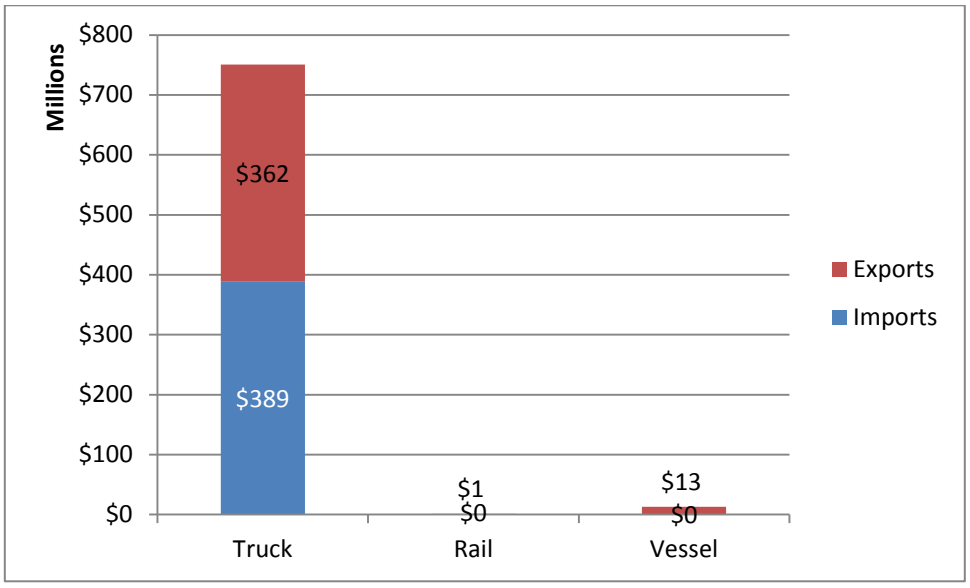
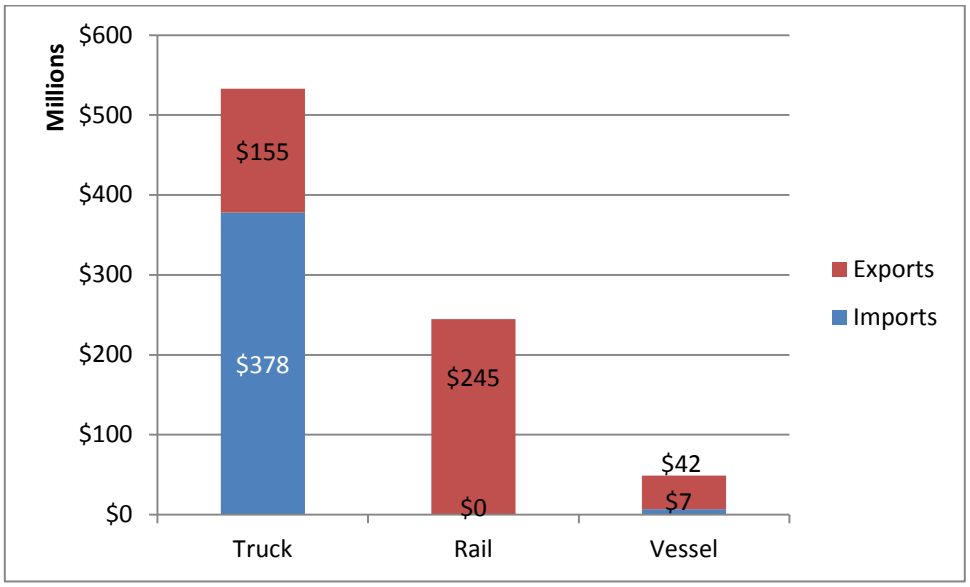


Figure 2.9 Mexico-Alabama Imports and Exports – Vehicles and Parts, 2013



2.5 South Carolina

Imports and exports between South Carolina and Mexico totaled $3.4 billion in 2013. The majority of the shipments were transported by truck. Overall, imports represented 51 percent of the total trade. The major road border crossings were Laredo TX, Hidalgo TX, Brownsville TX, and El Paso TX. The top rail crossings were Laredo TX and El Paso TX. The top U.S. ports utilized for the maritime trade between South Carolina and Mexico were Port of Tampa Bay, Charleston SC, and Mobile AL.

Figure 2.10 graphically displays the value of the imports and exports of perishable goods by mode in 2013. Eighteen million dollars worth of perishable goods were traded between Mexico and South Carolina in 2013. Sixty-four percent were shipped by truck and the rest by rail. Seventy-three percent ($13 million) was exported to Mexico.

In 2013, $1 billion worth of machinery and parts was traded between South Carolina and Mexico (see Figure 2.11 for modal breakdown of imports and exports). Ninety-seven percent was shipped by truck. Sixty-seven percent ($674 million) was imported and 33 percent ($335 million) was exported).

Figure 2.10 Mexico-South Carolina Imports and Exports – Perishable Goods, 2013

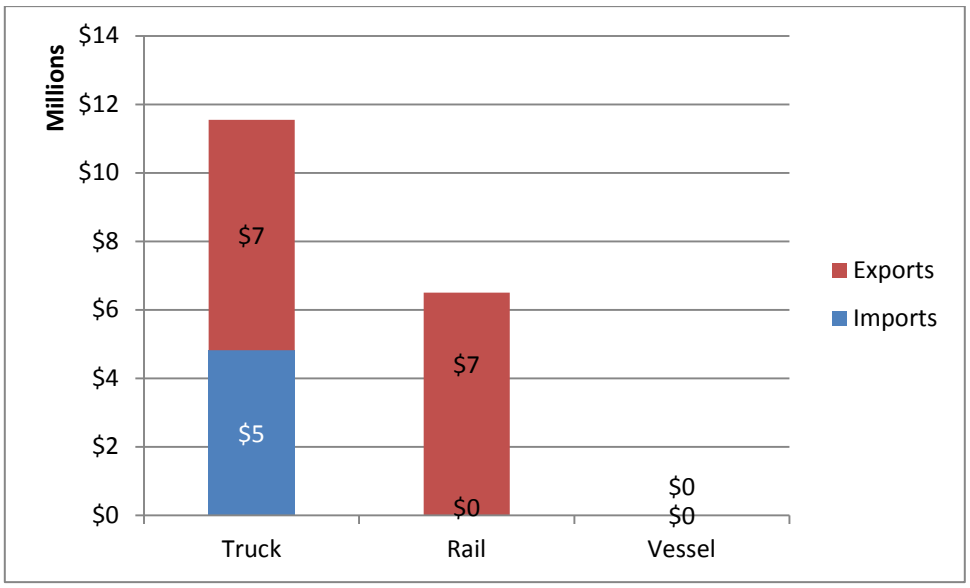
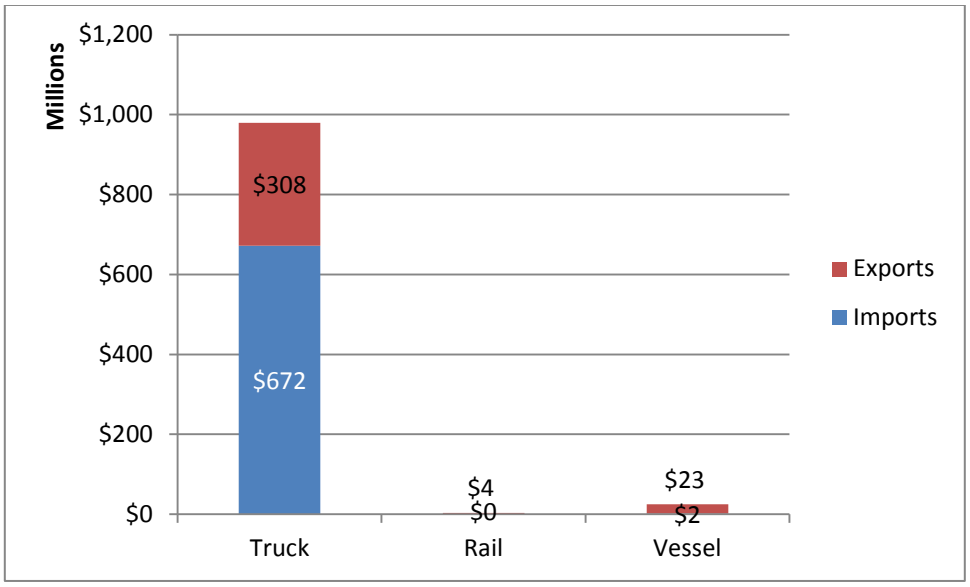
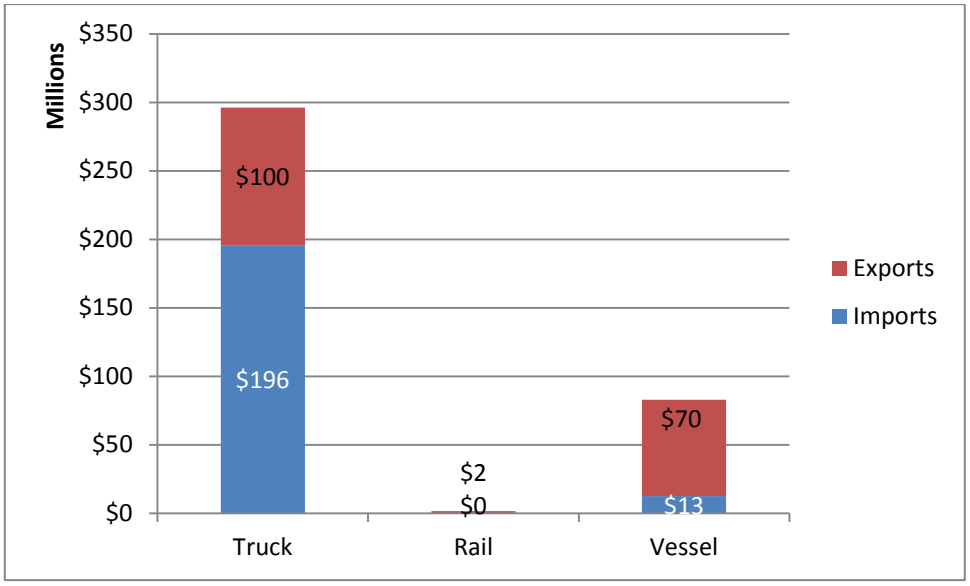


Figure 2.11 Mexico-South Carolina Imports and Exports – Machinery and Parts incl. White Goods, 2013



Vehicles and parts constituted $381 million of the Mexico-South Carolina trade in 2013 (see Figure 2.12). Fifty-five percent of this trade were imports and the rest exports. Trucks moved $296 million (78 percent) and ships moved $83 million (22 percent).

Figure 2.12 Mexico-South Carolina Imports and Exports – Vehicles and Parts, 2013



2.6 North Carolina

In 2013 imports and exports between Mexico and North Carolina by truck, rail and water were estimated at $7 billion. Six billion dollars were moved by truck, $208 million by rail and $376 million by water. Imports constituted 65 percent of the trade and the rest was exported. The top road border crossing for trade between Mexico and North Carolina is Laredo TX. As for rail crossings the top ports are Laredo TX and Eagle Pass TX. The major U.S. seaports are Port of Tampa Bay and Norfolk VA.

Perishables commodities traded between Mexico and North Carolina totaled $34 million in 2013. Seventy-seven percent was imported and the rest exported. Most of the perishable commodities move by truck (98 percent) and secondly by rail (2 percent). Figure 2.13 graphically displays the imports and exports of perishable goods by mode in 2013.

Machinery, electrical machinery and parts, including white goods from/to Mexico and North Carolina, totaled $2.7 billion by truck, rail and water in 2013. Figure 2.14 presents the imports and exports by mode. Most of the trade (85 percent) is inbound from Mexico to North Carolina. Truck is the most popular mode of transport to ship these commodities accounting for 99 percent of the trade in 2013. Rail and vessel are mostly used in exports.

Figure 2.13 Mexico-North Carolina Imports and Exports – Perishable Goods, 2013

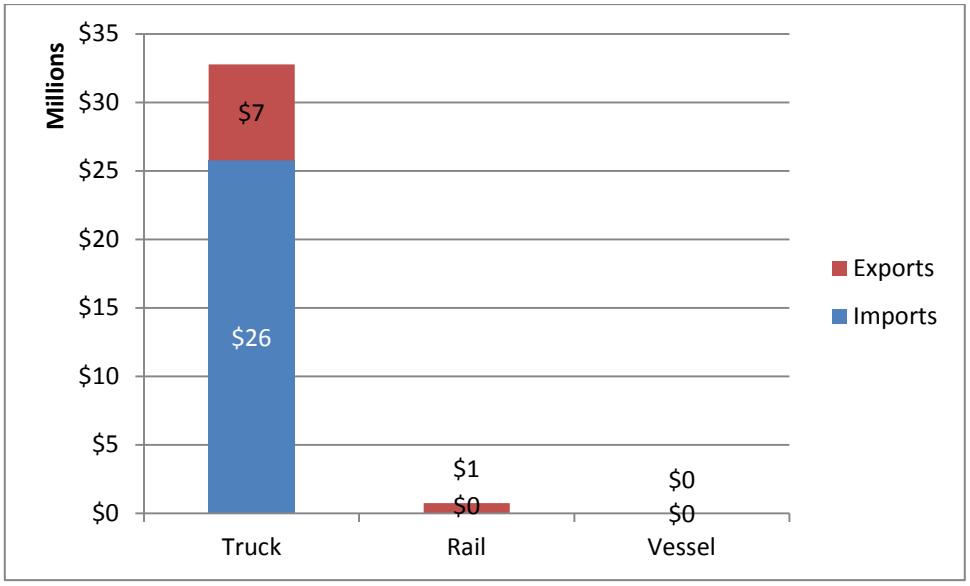


Figure 2.14 Mexico-North Carolina Imports and Exports – Machinery and Parts incl. White Goods, 2013

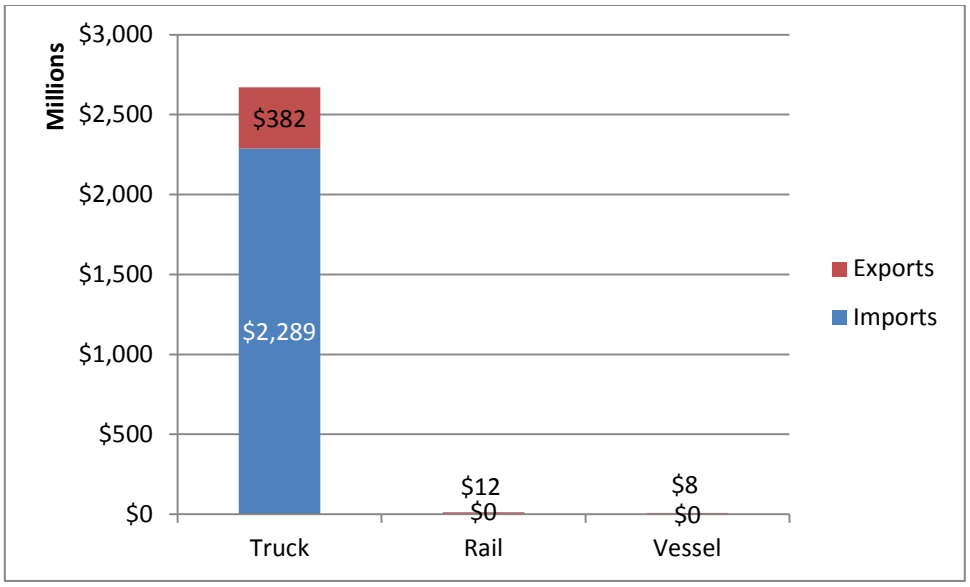
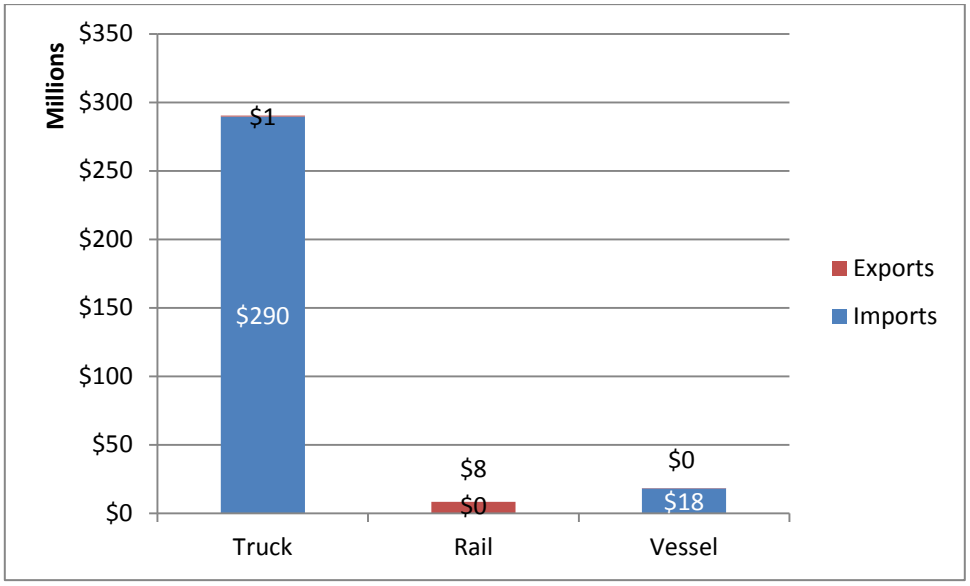


Figure 2.15 shows the imports and exports by mode for vehicles and parts between North Carolina and Mexico. In 2013, $317 million were moved by truck, rail and water. Ninety-seven percent of the trade was inbound from Mexico to North Carolina. Truck is the top modal choice to ship vehicles and parts, followed by vessel and rail.

Figure 2.15 Mexico-North Carolina Imports and Exports – Vehicles and Parts, 2013



2.7 Tennessee

In 2013, the import and export maritime and surface trade between Tennessee and Mexico totaled $9.2 billion. Fifty-five percent were imports and the remaining share exports. Trucks were used for 88 percent of the value of the goods traded, 11 percent was moved by rail, and 1 percent by vessel. The top road crossing for the Mexico-Tennessee truck moves is Laredo TX. The top rail ports of entry/exit are Laredo TX, and Eagle Pass TX. The top U.S. seaports for are New Orleans LA, Port of Tampa Bay, and Mobile AL.

The trade of perishable goods between Mexico and Tennessee totaled $33 million in 2013. Sixty-eight percent ($23 million) of the perishable goods were exported to Mexico by truck. Twenty-nine percent ($10 million) were imported by truck. Figure 2.16 displays the imports and exports of perishable goods by mode between Tennessee and Mexico.

In 2013, $3.3 billion of machinery and parts including white goods were traded between Mexico and Tennessee. Figure 2.17 presents the value by mode of the imports and exports. Sixty-five percent of the shipments ($2.2 billion) were moved inbound from Mexico to Tennessee by truck. Thirty-four percent ($1.1 billion) were truck exports from Tennessee to Mexico.

Figure 2.16 Mexico-Tennessee Imports and Exports – Perishable Goods, 2013

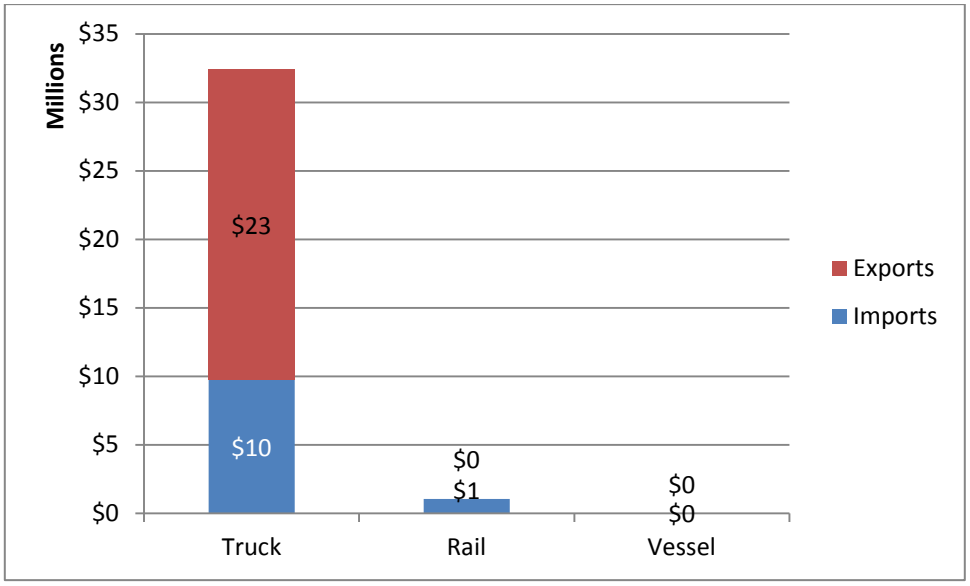
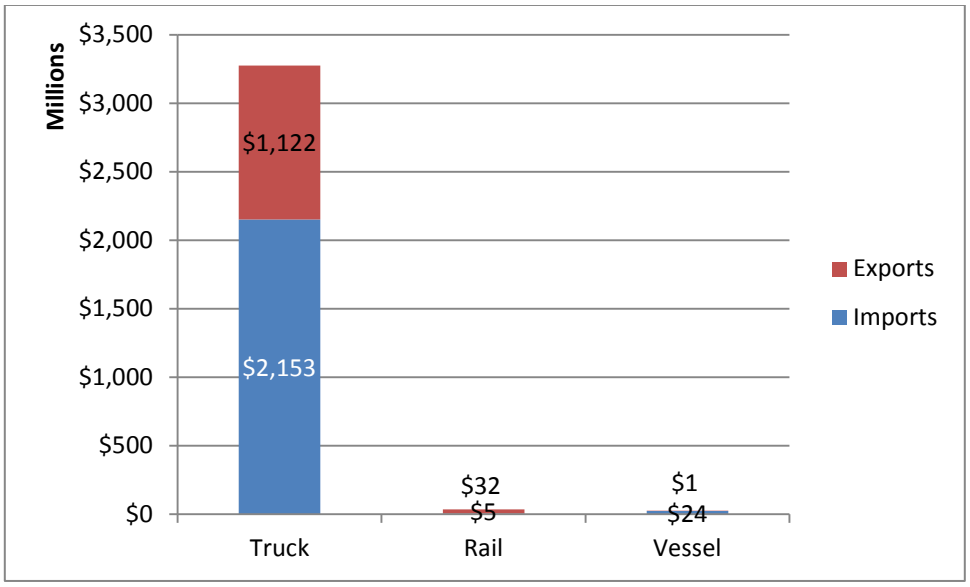
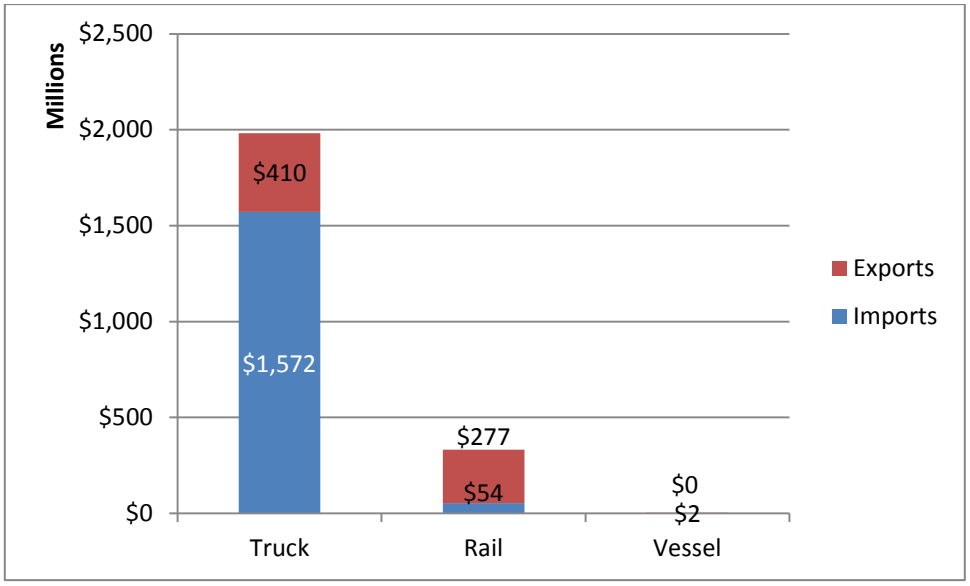


Figure 2.17 Mexico-Tennessee Imports and Exports – Machinery and Parts incl. White Goods, 2013



The value of the vehicles and parts trade between Mexico and Tennessee was $2.3 billion in 2013. Seventy percent was imported and the remaining share exported. Truck moved 86 percent ($2 billion) of these commodities ad rail moved 14 percent (332 million) (see Figure 2.18).

Figure 2.18 Mexico-Tennessee Imports and Exports – Vehicles and Parts, 2013



3.0 Competitive Benchmarking

3.1 Supply Chain Analysis for Key Commodities

Stakeholder Interviews

A concerted effort was made to interview containerized ocean carriers that call on East Coast Mexico ports. We attempted contact with CMA CGM, Hapag Lloyd, Hamburg Sud, Med Shipping (MSC), Maersk and Zim. The Maersk representative declined to participate in the study since Maersk recently spun off and rebranded its Latin America services under the name Sealand. Since the new service profile is under development, the company views all information as strategic and proprietary at this time. The representative at Hapag Lloyd indicated his company was unable to participate in the study. The others were reluctant to share information.

We were successful in interviewing three 3PL logistics service providers that handle sizable volumes of produce from Mexico. They were CH Robinson, Atlantic Overseas Express, and Advance Customs Brokers. Details of these interviews can be found in the Fresh Produce supply chain section below. We are collecting contacts at other 3PLs active in the Florida market for future interviews. As far as motor carriers are concerned, CH Robinson also provides trucking services, and we are identifying other motor carriers to interview. We interviewed a logistics expert from grocer, Publix. Details of that interview are in the Fresh Produce supply chain section below. Using PIERS data, we are identifying other beneficial cargo owners (BCO) in the top commodity sectors to further explore with them potential opportunities for PTB.

Trends in Near-shoring to Mexico

As labor rates in China continue to increase, more companies engaged in wholesale and retail trades are considering or have already shifted some portion of their sourcing closer to the U.S. consumer market, particularly to Mexican factories. Mexico appears to have the most to gain in terms of garnering the lion's share of near-shoring activity in the near-term. Besides attractive labor rates and proximity to the U.S., the technical skill levels and education of Mexico's workforce have improved dramatically. The country encourages international trade; it has signed more free and preferential trade agreements – 12 with 44 nations[1] – than any other country in the world. By comparison, the U.S. has signed only 20 agreements. Mexico's federal and state governments provide incentives to attract foreign direct investment and "in recent years, macroeconomic stability and economic growth have spurred domestic consumption."[2] Industry clusters have emerged in various areas across the country, the most

[1] ProMexico, www.promexico.gob.mx

[2] "Mexico's Evolving Sweet Spot in the Globalization Landscape," The Boston Consulting Group, April 2008

prominent being vehicles, automotive parts, aerospace components, white goods (washers, dryers, refrigerators, etc.), electronics (cell phones and other small electronic devices), medical devices, and pharmaceuticals. Production in Mexico improves speed-to-market, reduces transportation costs, and enables the importer to take advantage of Mexico's low labor rates. "Since 2007, the competitive landscape for outsourcing has shifted significantly to favor Mexico, some locations in Europe, and several locations in Asia other than China."[3] Alix Partners in its *2011 Manufacturing-Outsourcing Cost Index* indicated that Mexico had the lowest landed costs for U.S. customers, of which labor is only one component.

In early 2011, Alix Partners conducted a survey of 80 C-level and senior executives in international, manufacturing-oriented companies in over 15 industries that sell into the U.S. market about their thoughts about near-shoring. The results were published in the *Alix Partners Executives' Perspectives on Manufacturing Near-shoring* report. 42 percent of respondents indicated they are either already near-shoring or intend to do so by 2014. Mexico was selected as the top choice for near-shoring by 43 percent of respondents. The main reasons were "lower freight costs, lower inventory (in-transit) costs, and improved speed-to-market."

Implications for Port Tampa Bay (PTB)

Clearly, Mexico has benefited from the near-shoring trend, and industry experts believe the trend will continue to gain traction as long as labor rates and other manufacturing cost elements continue to increase in China and those same elements remain stable or rise at a slower rate in Mexico. This trend presents opportunities for PTB if additional ocean carriers can be enticed to offer service between ports on Mexico's East Coast and PTB.

To understand potential demand for ocean services by BCOs engaged in the Mexico-U.S. trade lane, we researched the characteristics of four representative, high volume commodities – fresh produce, white goods, and automotive parts and autos – that are grown or manufactured in Mexico and transported to Florida and elsewhere in the U.S. Typical supply chains are described below as well as perspectives provided on whether PTB might potentially capture business from BCO in these commodity sectors if containerized and roll-on/roll-off (RO/RO) ocean service from Mexico to PTB were available.

3.1.1 Automotive

According to PIERS data, at least six U.S. East Coast and Florida ports serve as gateways for the import of containerized auto parts and automobiles manufactured in Mexico that have final destinations in Florida. The statistics are displayed in Table 3.1 below. We speculate that the balance of auto parts are transported via truck or rail; and autos are moved either over-the-road on car carrier trucks or via rail to auto processing warehouses or auto dealerships, or on RO/RO vessels to ports with specialized RO/RO docks.

[3] "Costs and Complexity – Will China Remain the Low-cost Country of Choice?", Alix Partners LLP, 2011

Table 3.1 PIERS Data from 2013 – Imports of Auto Parts and Autos from Mexico to Florida Final Destinations via U.S. East Coast and Florida Ports (in TEUs)

Commodity	Jacksonville, FL	Miami, FL	Everglades, FL	Panama City, FL	Baltimore, MD
Autos, trucks, tires, and tubes	4	3	20		2
Autos		10	33	14	
Auto parts		10	9		
Batteries		90			
Engines, motors, and parts		2	2		

Automotive Parts Industry Profile

The production of auto parts in Mexico has increased dramatically in the past decade, largely because the automotive manufacturers in Mexico have encouraged and often required their suppliers to locate proximate to their auto assembly plants to facilitate just-in-time (JIT) production processes. Table 3.2 below provides relevant statistics of this industry.

Table 3.2 Main Indicators of the Auto Parts Industry in Mexico 2012 (md = million dollars)

Production of auto parts in Mexico 74,795 md Source: Industria Nacional de Autopartes (INA) and INEGI	Consumption of auto parts in Mexico 59,156 md Source: ProMexico with data by Global Trade Atlas and Global Insight
Foreign direct investment in the auto parts industry, 2006- 2012 9,687 md Source: ProMexico with data by the General Directorate of the National Registry of Foreign Direct Investment, Ministry of Economy	Number of Jobs in the auto parts industry, as of December 2012 583,706 Source: INA and INEGI
Mexico's exports from the auto parts industry, 2012 51,872 md Source: ProMexico with data by Global Trade Atlas and INA	Mexico's imports to the auto parts industry, 2012 36,233 md Source: ProMexico with data by Global Trade Atlas and INA
Economic units	Clusters of the auto parts industry, 2012 -

2,559 Source: ProMexico with data by National Statistics Directory of Economic Units, INEGI	Northeastern, Northwestern, Southeastern and Central- Bajio region Source: ProMexico
5th Largest exporter of auto parts worldwide Source: ProMexico with data by Global Trade Atlas and INA	5th Largest producer of auto parts worldwide Source: ProMexico with data by Global Insight Source: Industria Nacional de Autopartes (INA) and INEGI

"In Mexico, the auto parts industry follows the same trend as the automotive industry as a whole. This has a positive impact, because in 2012, light vehicle production reached a new historic record of 2.8 million units, 12.8% more than what was recorded in 2011. The automotive industry is expected to continue growing in the future and Mexico will produce more than 3.7 million light vehicles by the end of 2016, which will mean an increase of 28.5% compared to production levels reported in 2012. The growth of the automotive industry benefits the auto parts industry because the market will demand a wide range of products for assembly companies' production lines, while the number of vehicles sold will increase the demand from the aftermarket or spare parts market segments. In 2012, Mexican auto parts exports amounted to 51,872 md and recorded an average annual growth of 11% in the last decade. Imports reached 36,233 md, recording a 9% average annual growth rate in the last decade. The main destination for Mexican exports from the auto parts industry was the United States, with 90% share. It is worth mentioning that one third of the value of imported auto parts in the United States comes from Mexico, making it the main supplier to this market."[4]

"Auto parts manufacturers in Mexico are located in four regions:

1. Northeastern region - includes 198 plants distributed across Chihuahua, Nuevo León, Coahuila and Tamaulipas. Production in this region focuses on air conditioning systems, automotive systems, plastic parts, electric system parts and engine and machined parts.

2. Northwestern region - includes 70 plants in the states of Baja California Norte, Baja California Sur, Sinaloa, Sonora and Durango. This region produces mainly air conditioning and heating systems, interior components, accessories and electric systems for cars.

3. Southeastern region - includes 101 plants distributed across Tlaxcala, Puebla, Tlaxcala, the State of Mexico, Morelos, Hidalgo and Mexico City. Production in the area focuses on seats, air conditioning, hydraulic bottle jacks, interior components, engine parts, electric systems, stampings and suspensions.

[4] "The Auto Parts Industry," Research and analysis: Juan Carlos Ávila Pompa, SE Ministry of Economy, PROMEXICO, Business Intelligence Unit, Trade and Investment, May 2013

4. Center region - includes 142 plants in the states of Jalisco, Guanajuato, Querétaro, Aguascalientes and San Luis Potosí. Production in this region focuses on stampings, electric components, brakes and their parts, rubber products, engine parts and trans- missions for cars."[5]

We are attempting to identify appropriate contacts at several auto parts manufacturers who would agree to be interviewed to enable a better understanding of their supply chains from Mexico. From our research, it appears auto parts manufacturers located in the Northeastern and Southeastern sections of Mexico are in a position to easily move container cargo through the ports of Veracruz and Altamira and up to PTB.

Auto Industry Profile

"As a result of the 'automotive boom' in Mexico, several vehicle manufacturing companies have decided to invest in the country to participate in the growth of the industry, which promises to strengthen even further in the future. An example of this is the number of important investments announced by companies such as Audi, Honda and Mazda, the latter in a strategic alliance with Sumitomo and Toyota. To understand the positive impact that these projects have on the country, it is necessary to analyze the effects triggered by this type of investment in terms of supplier attraction and the development of national suppliers. Honda decided to invest 800 million dollars in Celaya, Guanajuato to open a new plant that will begin operating during the first quarter of 2014, to produce the subcompact Honda Fit. At maximum capacity, the plant is estimated to produce 200 thousand units per year, generating 3,200 jobs. Mazda, in Alliance with Sumitomo, decided to invest 500 million dollars in Salamanca, Guanajuato, to open a new plant that will begin operating during the first quarter of 2014, to manufacture the Mazda 2 and Mazda 3 models, known as Demio and Mazda."[6] BMW is in the process of selecting a suitable site in Mexico for a factory as well. Table 3.3 below depicts the magnitude of recent investments by automotive manufacturers in Mexico.

Table 3.3 Mexican Auto Investments (2011 – 2012)

Operation	Location	Investment	Jobs
Audi New Plant	Puebla, PU, MEX	$1.3 B	N/A
Ford Plant Expansion	Hermosillo, SO, MEX	$1.3 B	1,000
GM Expansions	San Luis Potosi, SL, MEX & Silao, GJ, MEX	$420 M	1,000
Honda New Plant	Guanajuato, GJ, MEX	$800 M	3,200
Nissan New Plant	Aguascalientes, AG, MEX	$2 B	3,000

Source: "A Driving Force: Texas-Mexico Automotive SuperCluster (TMASC)," David Marquez, Executive Director, Bexar County Economic Development, August 21, 2013

[5] Ibid.

[6] Ibid.

Automakers continue to view Mexico as an excellent place in which to assemble vehicles, as demonstrated by the statistics in Table 3.4 below. Labor rates are low and holding steady. Employee skills are improving rapidly. The work ethic of the work force is solid. Other costs such as land and construction are economical.

Table 3.4 Foreign Direct Investment in Mexico by Automaker, 2007-20012 (in millions of dollars)

Company	2007-09	2010	2011	2012	Accumulated
Daimler Trucks	871				871
General Motors	3,870	435	540	420	5,265
Volkswagen	1,053	1,020			2,073
Ford	3,000			1,300	4,300
Fiat/Chrysler		550	620		1,170
Nissan		600		2,000	2,600
Honda			800		800
Mazda			500		500
Audi				1,300	1,300
Total	8,794	2,605	2,460	5,020	18,879

Source: ProMexico based on media information

Nearly all the major automotive manufacturers have factories clustered in several areas in Mexico as depicted in Figure 3.1 below. This clustering provide synergies and benefits to these assemblers.

Figure 3.1 Location of Light Vehicle Manufacturing Plants in Mexico

Source: "Growth Perspectives and Opportunities in the Automaking and Automotive Parts Industries," Secretaria de Economia ProMexico, Unidad de Inteligencia de Negocios, 2013

Though we don't have statistics readily available and are still trying to identify appropriate contacts at the auto assemblers to interview, we suspect that the vast majority of finished automobiles travel from Mexico to Florida and other U.S. markets via RO/RO vessels.

With its specialty berth, PTB is positioned to attract additional RO/RO carrier services to increase its share of the Mexico automotive market. Volumes of autos moving to the U.S. should grow rapidly and steadily over the next decade and beyond as a result of the sizable foreign direct investment.

3.1.2 Perishable Foods

Fresh Produce Industry Profile

A wide variety of fresh produce is harvested in Mexico for the U.S. market. To understand the general context of the fruit and vegetable market, we interviewed representatives from three 3PL logistics service provider/customs brokerage firms that are specialists in that sector. The first was CH Robinson, a 3PL that arranges transportation of produce from Mexico to the U.S.

and customs brokerage for numerous BCOs. We learned that many types of produce are grown in both Florida and Mexico, so the two are in competition for consumers. The Tampa region fresh produce consumer base is not as substantial relative to other large consumer markets like Philadelphia, Pennsylvania, Atlanta, Georgia, or the Midwest. Therefore, BCOs and 3PLs focus more on these higher density markets.

The main land border crossings for fresh produce are McAllen, Texas; Nogales, Arizona and Otay Mesa, California. Yuma, Arizona and Calexico, California are secondary crossings. McAllen is attractive because from McAllen, all markets in the U.S. can efficiently be served by truck. For example, CH Robinson can dispatch a truck from McAllen to Boston, Massachusetts in four days. Moreover, fresh produce handling facilities in McAllen remain open till midnight and operate flexibly to cater to the special requirements of these growers, BCOs and 3PLs.

The least expensive portion of the transit from Mexico to Tampa is the in-Mexico truck portion. Most produce is shipped from Mexico to border crossings in full truckloads. At border crossings like McAllen, cold storage warehouses, retailers and wholesalers break down the full truckloads and distribute the pallets of produce per the BCO's orders.

The second 3PL was Atlantic Overseas Express, which arranges transportation and brokerage of produce shipment from Guatemala and Colombia to South Florida ports, but not from Mexico. The third was Advance Customs Brokers. The representative from this firm advised that 95 percent of the fresh produce grown in Mexico is moved to South Florida by truck and 5 percent by ocean to Port Panama City. She indicated that Mexican growers have efficient supply chains dominated by truck and warehouses at the border where re-bagging and other value-added activities are performed.

To better understand how BCOs purchase produce from Mexico, we interviewed a logistics expert from grocer, Publix. Publix tends to purchase more Mexican grown produce in the winter when less is available in Florida. Publix does not import any produce directly from Mexico, but rather, buys domestically from a produce broker in the U.S. Publix places orders with the produce broker, who in turn, instructs the Mexican grower when to harvest. The Mexican grower trucks the produce under temperature control to a cold storage warehouse in McAllen or Brownsville, Texas where the truck's contents are unloaded. Transit time from field to the cold storage warehouse is one to two days.

Publix arranges for motor carriers to pick up the produce from the cold storage warehouse and truck the shipments under temperature control to its three refrigerated distribution centers in Florida; a fourth one will open in October 2014. Transit time from McAllen or Brownsville to the distribution centers is two to three days. Total transit time from field to distribution center ranges from three to five days.

Some containerized fresh produce does travel by water from Mexico to final destinations in Florida via U.S. East Coast ports. PIERS data from 2013 shows that Port Panama City and Port Everglades are the primary gateways for Florida destinations. Table 3.5 provides relevant statistics.

Table 3.5 PIERS Data from 2013 – Imports of Produce from Mexico to Florida Final Destinations via U.S. East Coast and Florida Ports (in TEUs)

Commodity	Miami, FL	Panama City, FL	Everglades, FL	Norfolk, VA	Wilmington, DE
Vegetables	14	66	185		
Citrus	9	2	4		
Fruit		310	56	28	
Bananas			18		
Pineapples			2		20

Florida Perishables Trade Coalition (FPTC) is advocating for more fresh produce to be imported through Florida ports. Its objective is to authorize importation of cold treatment products in Florida "to bring trade and distribution of potentially millions of dollars of perishable products to Florida ports by addressing the 'cold treatment' requirements which currently prohibit importation at any Florida airport or seaport. Florida ports will not be eligible to compete for this trade unless federal regulations (7 CFR 319.56-2d), designed to protect US (and primarily Florida's) agriculture industry, are amended to permit importation at those ports."[7]

The cold treatment process performed on produce entails keeping the produce in containers, surrounded by insect-proof nets, for about two weeks under sustained refrigeration at near-freezing temperatures sufficient to kill pests like fruit flies associated with imported fruits and vegetables. A new pilot program, kicked off October 1, 2013, "now allows for the clearance of cold-treatment perishables, such as blueberries and grapes from Peru and Uruguay, through South Fla. as an alternative to congested Northeast ports."[8] Port Miami and Port Everglades have been receiving such shipments since late 2013. Port Miami has a cold treatment center necessary to properly process these products. The containers of Peruvian grapes being imported into Port Everglades are being transshipped in the country of Panama by ocean carriers to allow the containers to complete a two-week cold treatment process required by USDA before arriving at Port Everglades. The transit time from Peru to Port Everglades is approximately 15 days, versus a transit of 21 days to Port of Philadelphia, the typical offloading point on the East Coast. Ocean service to South Florida ports also eliminates the transit time to move the produce from a Northeastern port like Philadelphia to Florida by truck.

When queried about the attractiveness of potential ocean service from Mexico to PTB, the Publix representative responded that in order for ocean service from Mexico to PTB to be attractive for Publix, it would have to be transit time and cost competitive to the current routing by truck. Publix could place orders in full ocean container quantities for certain types

[7] http://www.floridaptc.org

[8] Ibid.

of produce for each of its distribution centers, but if lesser quantities are required, the full container would need to be offloaded at a cold storage warehouse in Tampa and orders pulled from there per Publix's requirements. This would likely add time to the overall transit, making this routing less attractive. Under an ocean routing scenario, Publix would continue purchasing from a produce broker rather than directly from the Mexican grower.

According to the CH Robinson representative, the consumer market in Florida for Mexican grown fresh produce is not captive, which makes ocean service between Mexican ports and PTB less viable, since the same products can generally be purchased from Florida suppliers. Containerized ocean service from Mexico to PTB would not be a game changer in the trade because it would not deliver enough of a value proposition from a cost and transit time perspective. Every time CH Robinson staff have evaluated ocean service from Mexico to South Florida, they have determined that the time and cost savings to be gained were insufficient to prompt a shift from truck. The primary reasons are:

- The distance from East Coast Mexico ports to Tampa is not very far, and this makes serving the Tampa region by truck more efficient from a transit time perspective. Time on the water is not the issue; rather time in port at origin and destination are where the supply chain bogs down because of the complexity of port operations and the inflexibility of longshore work hours and rules.

- In over-the-road truck moves, the most expensive miles are the first miles because of the labor involved in loading and unloading versus simply driving. Short hauls (such as drays from a Florida port to a Florida distribution center) are not cost-effective relative to long distance hauls (such as from Mexico to Florida).

- Containerized ocean service from Mexico to PTB makes sense only for a limited number of fresh produce products such as limes, pineapples, broccoli, lemons and onions. It would be hard to attract enough of this cargo to fill a good portion of a vessel.

According to the representative at Advance Customs Brokers, because their supply chains are so ingrained, it is highly doubtful ocean service to PTB would be attractive to Mexican growers. Fresh produce from Mexico will continue to move by truck for the foreseeable future. Because the U.S. Northeast has such a huge population base, it makes more sense for Mexican grown fresh produce to move by ocean to ports like Philadelphia rather than South Florida, which has a much smaller local consumer market. Critical mass and density are the main drivers that hold down costs.

If federal regulation 7 CFR 319.56-2d can be amended, PTB has the potential to capture a share of the fresh produce market from Latin America. Based on the input from Publix and the 3PLs regarding the efficiency of moving produce from Mexico to Florida by truck, we speculate that it is more likely that these commodities will come to PTB from Latin America, rather than Mexico.

3.1.3 White Goods

White Goods Industry Profile

For decades, manufacturers along the Mexican side of the border – maquiladoras – have produced white goods for the American consumer and commercial markets. Products include refrigerators, washers, dryers, air conditioners, stoves, microwaves, etc. This sector is distinct from consumer electronics such as cell phones, computers, and televisions.

PIERS data from 2013 provides a limited view of the volume of containerized white goods that are manufactured in Mexico for the Florida market and imported through Florida ports. Table 3.6 presents the data. It can be surmised from the small volume contained in this table that the majority of the white goods imported from Mexico via water for the Florida markets enters the U.S. through non-Florida ports.

Table 3.6 PIERS Data from 2013 – Imports of White Goods from Mexico to Florida Final Destinations via Florida Ports (in TEUs)

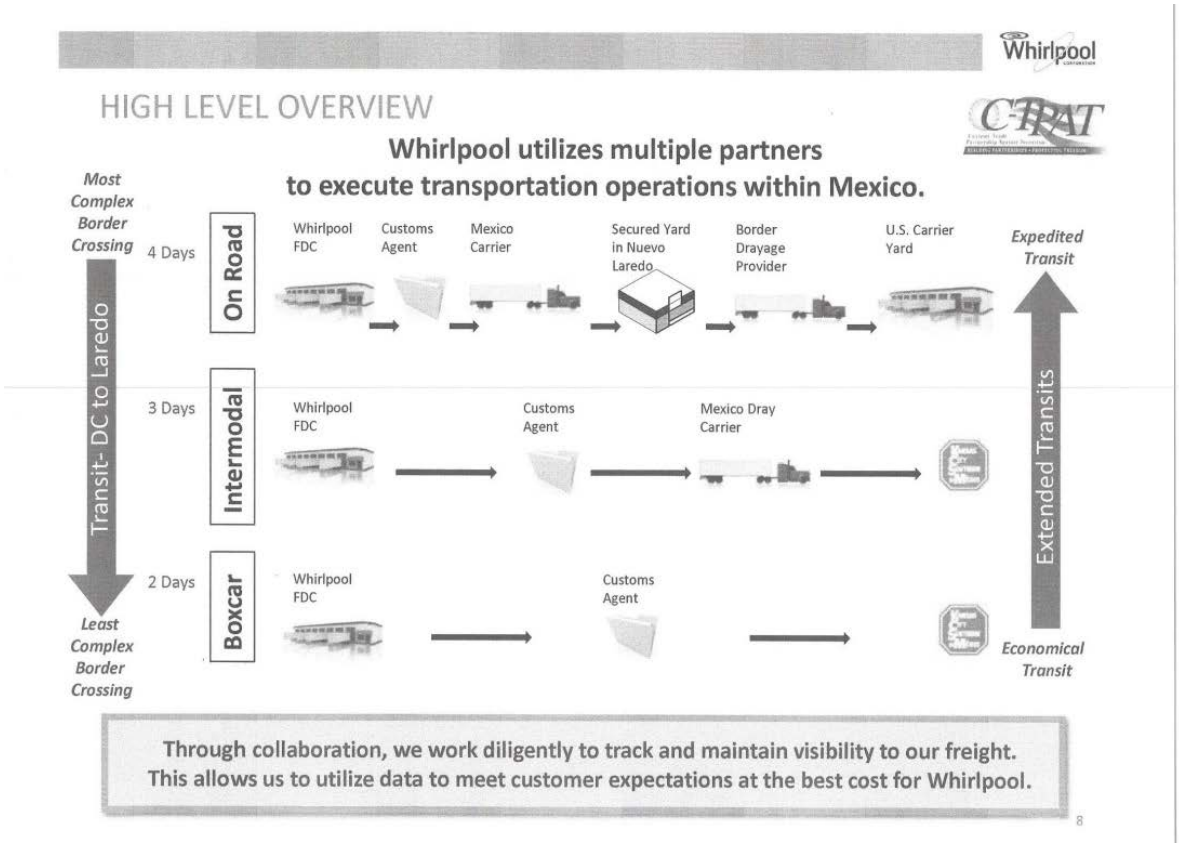
Commodity	Miami, FL	Everglades, FL	Panama City, FL
Air conditioners	4	14	
Appliances, miscellaneous	2		
Household appliances	1		
Laundry machines	6		
Refrigeration equipment	17		`

To better understand how white goods move from Mexico to the U.S., we reviewed a PowerPoint presentation furnished by a representative from Whirlpool in which information on the company's strategy of sourcing in Mexico and its excellent working relationships with Kansas City Southern and Schneider National were highlighted.

The company is the number one appliance maker in the world and sells its products in the U.S. under the Whirlpool, Maytag, Kitchen Aid, Jenn-Air and Amana labels. Approximately 15 percent of the products sold and distributed in the U.S. are made in Mexico; the balance is manufactured in U.S. factories. Whirlpool utilizes truck, intermodal rail and boxcar rail modes of transportation and purchases from 30 different suppliers out of Mexico. Apparently, the company does not use ocean as a mode of transport from Mexico to the U.S. Whirlpool executes direct to customer, inbound parts to manufacturing, and stock shipments from Mexico. When shipping from Mexico, the company considers the following elements: transportation equipment capacity, cost, supply chain risk, competitive transit, and border crossing/customs clearance process. When these elements align, a positive cost/benefit proposition is achieved.

Whirlpool's Mexico-to-U.S. supply chains are depicted in Figure 3.2. Boxcar rail represents the mode with the lowest cost and least complex border crossing process, but longest transit of the three modes. Over-the-road trucking has the most complex border crossing process, fastest transit, but highest cost. Intermodal rail falls in the middle.

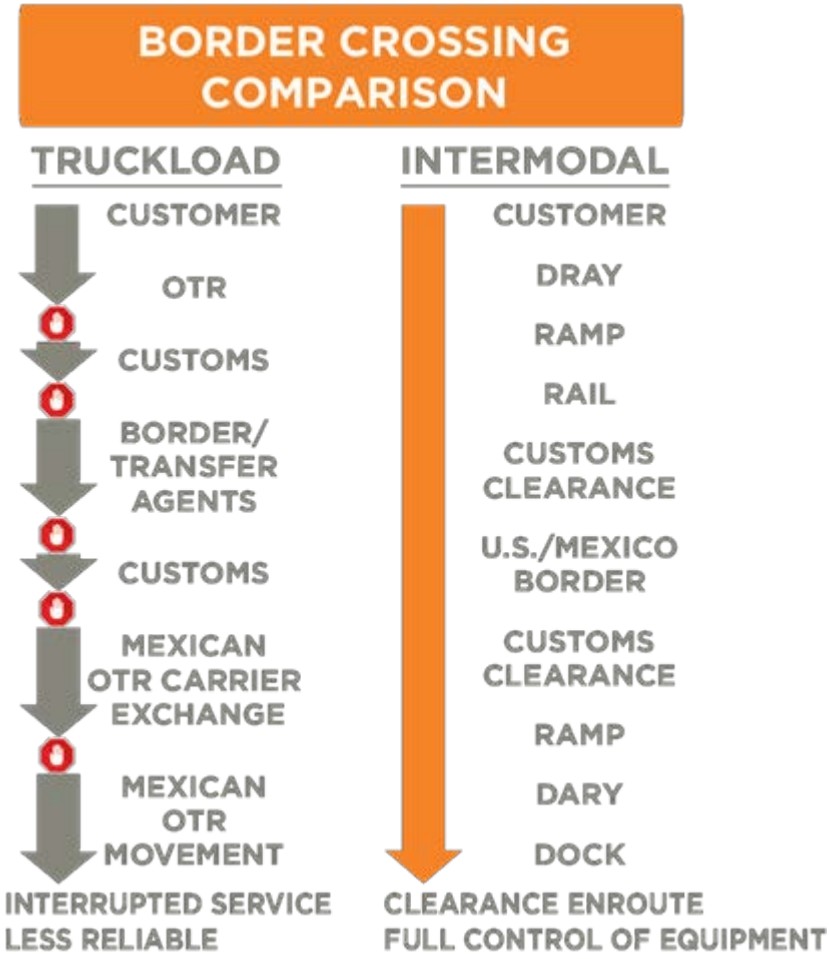
Figure 3.2 Whirlpool's Mexico to U.S. Supply Chain



Whirlpool provided a comparison of moving cargo northbound by truck versus intermodal rail. The qualitative and quantitative cost elements by truck include: U.S. line haul, higher fuel surcharge, Mexican customs broker and U.S. freight forwarder fees, bridge transfer and border handlings, Mexican line haul, Mexican tolls and fuel, and higher security costs and risks. For intermodal rail they include: one line haul (door-to-door), lower Mexican customs broker and U.S. freight forwarding fees, and lower fuel surcharge. Clearly, intermodal rail offers tangible benefits that Whirlpool enjoys.

Beyond costs, the risks of supply chain disruption are fewer with intermodal rail as shown in Figure 3.3 below. Each red hand sign on the left in the truckload column indicates a point at which the cargo stops in transit, and therefore, is subject to the risk of damage, theft or delay, and potentially extra costs. For intermodal rail, there is no transloading, transfer of carriers, waiting for available equipment capacity at the border, unnecessary handling at border, inspections, and delays.

Figure 3.3 Comparison of Supply Chain Risks by Truck and Intermodal Rail



Although we were not able to interview a person from Whirlpool directly, from the detailed information in the PowerPoint presentation, we can conclude that its supply chains by rail and truck from Mexico to the U.S. are well-established and function quite satisfactorily. Based on the PIERS statistics, it is likely other white goods manufacturers use ocean as a mode of transport to a lesser degree, and like Whirlpool, instead rely on truck and rail, at least into the Florida market. Whether Whirlpool or other white goods retailers or manufacturers would entertain using an ocean service from Mexico to PTB is subject to speculation. Certainly, the transit time, freight rates, and service parameters by water would have to be competitive with rail and truck, if not better, to prompt even an incremental shift.

3.2 Logistics Cost Analysis

3.2.1 Transit times

A key part of the assessment was identifying the current service times for each of the U.S. markets analyzed, as well as the potential service times if these markets would be served via PTB. These times helped determine the level at which PTB would be competitive with existing service offerings by truck and rail directly from/to Mexico. Shown in Table 3.7, the service list

is separated into two categories, current service times by truck and rail via the Mexican border, and potential service times if the ocean service between Mexico and PTB is operational and truck or rail is used to move the shipments between PTB and the U.S. market. In the potential alternative via PTB the transit times for the ocean service between Mexico and PTB based on best case assumptions will add 5 days to the transit time.[9] Looking specifically at the Orlando, FL market, truck only service from Mexico would range from 3.1 to 4.1 days; rail service from Mexico would be 6 to 7 days; ocean service to PTB with truck service could be as low as 5.1 days; and ocean service to PTB with rail service could be as low as 7 to 8 days.

Table 3.7 Service Times for Key U.S. Markets (in days)

Market	Via Mexico-U.S. Border (Current)				Via PTB (Alternative)		
	Border-Market Hwy Dist. (mi)	Truck (in MEX)	Truck (in US)	Rail (in US)	Tampa-Market Hwy Dist. (mi)	Truck (in US)	Rail (in US)
Import from Mexico							
Jacksonville, FL[1]	1,181	1-2	1.7	5-6	199	0.3	1
Miami, FL[1]	1,495	1-2	2.1	6-7	277	0.4	2-3
Orlando, FL[1]	1,273	1-2	1.8	6	84	0.1	2-3
Atlanta, GA[1]	1,104	1-2	1.6	4-5	456	0.6	3
Savannah, GA[1]	1,275	1-2	1.9	6-7	335	0.5	2
Birmingham, AL[1]	978	1-2	1.4	4-5	542	0.8	2
Charleston, SC[1]	1,396	1-2	2.0	7	435	0.7	3-4
Charlotte, NC[1]	1,348	1-2	2.0	6-8	580	0.9	4
Raleigh, NC[1]	1,509	1-2	2.2	7	650	0.9	3
Nashville, TN[2]	1,298	1-2	1.8	5-6	705	1	3
Export to Mexico							
Jacksonville, FL[1]	1,181	1-2	1.7	6	199	0.3	1
Miami, FL[1]	1,495	1-2	2.1	8-9	277	0.4	3
Orlando, FL[1]	1,273	1-2	1.8	7-8	84	0.1	4
Atlanta, GA[1]	1,104	1-2	1.6	4	456	0.6	2-4
Savannah, GA[1]	1,275	1-2	1.9	6-7	335	0.5	2-3

[9] Ocean service transit time was estimated based on a best case operation consisting of: 1.5 days at port of origin including local drayage move; 1.5 days at port of destination, including customs processing; and 2 days at sea traveling approximately 900 nautical miles at 20 knots/hour. Note repeated attempts were made to acquire service data from existing steam ship lines; estimates have been developed based on industry knowledge and professional judgment.

Birmingham, AL[1]	978	1-2	1.4	4-5	542	0.8	3
Charleston, SC[1]	1,396	1-2	2.0	7-8	435	0.7	2-4
Charlotte, NC[1]	1,348	1-2	2.0	6-7	580	1	3
Raleigh, NC[1]	1,509	1-2	2.2	N/A	650	1	3
Nashville, TN[2]	1,298	1-2	1.8	6-7	705	1	3

Source: Rail service times were extracted from the freight railroads websites. Truck service times were calculated assuming 10 hours driving per day utilizing single drivers.

Notes: 1 Assumed Laredo, TX as border crossing
2 Assumed El Paso, TX as border crossing

3.2.2 Costs

Recent truck rates for dry van by lane and direction were estimated using proprietary industry sources. Rail rates were estimated using the Surface Transportation Board (STB) 2012 Public Use Carload Waybill Sample. The truck and rail rates were examined to provide an indication of the rate levels that are prevalent in the markets that could be served by PTB. The U.S. truck rates by lane and direction are summarized in Table 3.8. The average truck rates per mile include fuel surcharge, additionally total accessorial costs are shown next to the truck rate per mile. Table 3.9 presents the rail rates per mile by lane and commodity for the current and alternative scenario. These rates illustrate the difference in length of haul, direction of trade, geographic location, and commodity type. The costs associated with the ocean move between Mexico and Tampa have been estimated based on an industry freight rate calculator.[10]

The comparison of rates suggests that an ocean service between Mexico and Tampa would be most competitive for Florida markets and less competitive for more distant Southeaster U.S. markets where the highway/rail savings is minimized. For example, a 40-foot container movement from Mexico to Orlando via truck from Mexico could cost close to $4,000 while the same container moving via ocean vessel to Tampa and then by truck could range from $3,000 to $4,500 based on type of commodity and equipment type (e.g., fresh produce in refrigerated unit). Using the same assumptions for a movement from Mexico to Atlanta, the truck rate from Mexico is $3,500 versus $3,500 to $5,000, again based on commodity type. The question then becomes is there a large enough market in Florida, where the advantage may exist, to justify a new service. The same general pattern will hold true for the rail service given the difference in rates.

[10] Existing steam ship lines were unable or unwilling to quote a price for a movement between Mexico and Tampa. The following freight calculator was used to estimate and order of magnitude cost until better data become available. http://worldfreightrates.com/en/freight#

Table 3.8 Average Dry Van Rates per Mile by Market

Market	Via Mexico-U.S. Border (Current)		Via PTB (Alternative)
	Truck (in MEX)	Truck (in US)	Truck (in US)
Import from Mexico			
Jacksonville, FL	$1.65	$2.28/mi + $105	$3.06/mi + $87
Miami, FL	$1.65	$2.28/mi + $105	$3.97/mi + $141
Orlando, FL	$1.65	$2.28/mi + $105	$5.73/mi + $81
Atlanta, GA	$1.65	$2.28/mi + $105	$1.65/mi + $242
Savannah, GA	$1.65	$2.28/mi + $105	$3.71/mi + $150
Birmingham, AL	$1.65	$2.28/mi + $105	$2.87/mi + $420
Charleston, SC	$1.65	$2.28/mi + $105	$1.77/mi + $174
Charlotte, NC	$1.65	$2.28/mi + $105	$2.50/mi + $289
Raleigh, NC	$1.65	$2.28/mi + $105	$1.29/mi + $289
Nashville, TN	$1.65	$2.28/mi + $105	$1.26/mi + $288
Export to Mexico			
Jacksonville, FL	$1.81	$1.83/mi + $105	$3.06/mi + $139
Miami, FL	$1.81	$1.83/mi + $105	$2.51/mi + $121
Orlando, FL	$1.81	$1.83/mi + $105	$5.40/mi + $70
Atlanta, GA	$1.81	$1.83/mi + $105	$2.59/mi + $254
Savannah, GA	$1.81	$1.83/mi + $105	$2.25/mi + $159
Birmingham, AL	$1.81	$1.83/mi + $105	$3.00/mi + $346
Charleston, SC	$1.81	$1.83/mi + $105	$3.29/mi + $223
Charlotte, NC	$1.81	$1.83/mi + $105	$2.83/mi + $333
Raleigh, NC	$1.81	$1.83/mi + $105	$2.86/mi + $322
Nashville, TN	$1.81	$1.83/mi + $105	$2.97/mi + $419

Source: Estimated average rates from proprietary industry data.

Table 3.9 Average Rail Rate per Mile by Market

Market	Via Mexico-U.S. Border (Current)			Via PTB (Alternative)		
	Perishables - Rail	White Goods - Rail	Auto - Rail	Perishables - Rail	White Goods - Rail	Auto - Rail
Import from Mexico						
Jacksonville, FL	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Miami, FL	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Orlando, FL	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Atlanta, GA	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Savannah, GA	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Birmingham, AL	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Charleston, SC	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Charlotte, NC	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Raleigh, NC	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Nashville, TN	$4.34	$1.20	$3.22	$7.56	$1.40	$6.66
Export to Mexico						
Jacksonville, FL	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Miami, FL	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Orlando, FL	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Atlanta, GA	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Savannah, GA	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Birmingham, AL	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Charleston, SC	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Charlotte, NC	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Raleigh, NC	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66
Nashville, TN	$5.60	$1.16	$5.93	$7.56	$1.40	$6.66

Source: STB Public Use Carload Waybill Sample 2012 using freight rate territory as origin-destination.

4.0 Findings and Conclusions

4.1 Summary

Based on the research conducted for this study, we provide the following general conclusions about potential demand for northbound ocean services between Mexican ports and PTB:

- Fresh produce will likely continue to move via truck from Mexican growers to the Florida market due to their time-sensitive, perishable nature and deeply engrained supply chains that favor truck.
- There may be potential to attract some white goods to containerized ocean services as these products generally are not as time-sensitive in nature as fresh produce or as prone to quick obsolescence as trend-driven products like cell phones or apparel.
- Auto parts appear to be a good target for PTB. Volumes are growing and manufacturers already use ocean as a mode of transport.
- Autos also look like a promising target because of the steady growth in Mexican manufacturing as long as additional RO/RO carriers can be enticed to serve PTB and the RO/RO berth has adequate capacity to handle more autos.
- The Southeast U.S. trades significant volumes of these commodities with Mexico, representing possible opportunities for PTB; with almost 20 million as a population base and nearly 100 million annual visitors, the pull for these commodities in Florida could help position PTB for future growth.
- Competitiveness of service and rates will likely be driven by the size of the Florida market as it relates to demand for Mexican products as well as the ability of steam ship lines to develop a balanced rotation.

Table 4.1 provides a matrix of our conclusions about how products in these four industry sectors currently are transported from Mexico to Florida, what conditions need to be present at PTB to capture cargo, the impediments PTB faces in cargo attraction, and the opportunities upon which PTB might capitalize.

Table 4.1 General Supply Chain Analysis Conclusions

	Fresh Produce	White Goods	Auto Parts	Autos
Current Supply Chains – Mexico to Florida	Grocer places order with U.S. produce broker. Broker issues order to Mexican grower with timing for harvest. Mexican grower or broker arranges truck transport to cold storage warehouse on U.S. side of border crossing, often McAllen, TX. Warehouse operator unloads and enters products into inventory. Grocer issues allocation order to cold storage warehouse operator. Grocer takes ownership at that point and arranges for motor carrier to transport cargo to grocer's temperature controlled distribution center in Florida.	BOC places order with its own maquiladora or a contract manufacturer. Once production is complete, the factory or BCO arranges for transportation to the BCO's Florida distribution center via truck, intermodal rail, or boxcar rail.	U.S. auto assembler (i.e. BMW, Honda, Toyota, et al) places order with Mexican auto parts manufacturer. Once order is complete, auto assembler takes possession and arranges for transport to the auto assembler's U.S. plant or 3PL warehouse by ocean, rail or truck, or combination thereof, depending upon time-sensitivity and other factors. Airfreight is used when a critical order must be expedited to meet the auto production schedule.	U.S. auto assembler on behalf of its dealerships places order with Mexican auto manufacturer. Once complete, auto assembler arranges for transport from the Mexican assembly plant to auto processing warehouses or dealerships in Florida via specialized car carrier trucks, rail, or on RO/RO vessels. RO/RO vessel is the predominant mode because of the ease of driving the autos on and off the vessel and economics of transport by water versus other modes.
Conditions Necessary to Shift Routing to Ocean Via PTB	Rates must be competitive with truck. Transit time must be competitive in length with truck. Transits must be reliable and consistent.	Rates must be competitive with truck and rail. Transit time must be competitive with truck and rail.	Rates must be competitive with truck and rail. Transit time must be competitive with truck and rail. Transits must be reliable and consistent due to the JIT nature of auto manufacturing.	PTB needs adequate space at its RO/RO berth to handle additional vessel volume.

			A sufficient number of ocean carriers need to call at PTB to offer enough variety of sailings and service terms for the auto assembler.	
Obstacles for PTB	It is unlikely that transit via water can be as swift or reliable as truck. Truck mode works efficiently. Grocer's relationships with cold storage warehouses at the border are strong. Grocer would have to establish relationships with a cold storage warehouse(s) in Tampa for instances when its distribution center is unable to accept a full container.	Truck and rail work well and existing supply chains are entrenched. Containerized ocean carriers call at other major Florida ports and compete for this cargo.	Containerized ocean carriers call at other major Florida ports and compete for this cargo. South Atlantic and Gulf Coast ports (i.e. Charleston, Savannah, et al) are closer to major auto assembly plants in the South and are in a better position to capture the lion's share of this product sector.	PTB competes with other Florida, Gulf Coast and South Atlantic ports that have RO/RO berths and RP/RO carriers. RO/RO carriers that do not call at PTB may be reluctant to add vessel calls at PTB.
Opportunities for PTB	The volume of fresh produce grown in Mexico is substantial. There may be certain types of less time-sensitive produce that could bear the longer transit by ocean.	Production volume in Mexico is large and product mix is considerable. Some white goods already move via ocean. Certain BCOs may be willing to test shipping some products by water via PTB.	Port Miami, in particular, handles some of this cargo, which indicates auto assemblers have not ruled out using Florida ports as gateways. The volume of auto parts being manufactured in Mexico is growing at a healthy rate. Auto parts manufacturers in	Mexico's production of autos continues to grow, so there is a greater pool of cargo from which PTB can draw.

		Mexico's Northeastern and Southeastern regions appear to be the optimal targets for business development efforts. Besides auto assembly, as a result of Florida's population growth, the demand for auto parts used for maintenance and repair will increase.

4.2 Things to Consider and Next Steps

The data and analyses presented in the technical report represent the best available information at this time for a select number of industry supply chains, recognizing the unwillingness of many private partners to share specific market and rate information. Looking forward, PTB may wish to continue working to better understand the private sector's willingness to engage in discussions of shifts in established supply chains, particularly as the Florida economy continues to strengthen and diversity. New investments in manufacturing may create opportunities for balanced trade, particularly as Mexico's economy continues to strengthen, increasing deposable income and demand for U.S. products. Next steps may also include detailed analysis of other commodities imported into Florida from Mexico such as: beer and spirits, juice, fish, and ceramic and mosaic tiles.

The products researched all move northbound from Mexico to Florida and other parts of the U.S. For containerized ocean services to be successful for ocean carriers, the trade should be as balanced as possible to avoid costly empty container repositioning. It will be important in the future to also study the characteristics of products that move southbound form Florida and neighboring states to Mexico. This will help determine how balanced the trade might be. Products for study could include: agricultural machinery, construction equipment, electronics, synthetic resins and plastics, and furniture.