

**INTERMODAL TRANSPORTATION SYSTEM FOR ASIAN GOODS TO U.S.
VIA MEXICO: AN ANALYSIS**

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Current Challenges

Capacity constraints of the port

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Intermodal Transportation system for Asian goods to U.S. via Mexico: An analysis

Introduction

U.S. shares more than 2000 miles of international border with Mexico. In Fig. 1 we present the major border ports on either side of the U.S. Mexico border and it can be seen that Texas has more number of border crossing ports than any other state in the U.S.

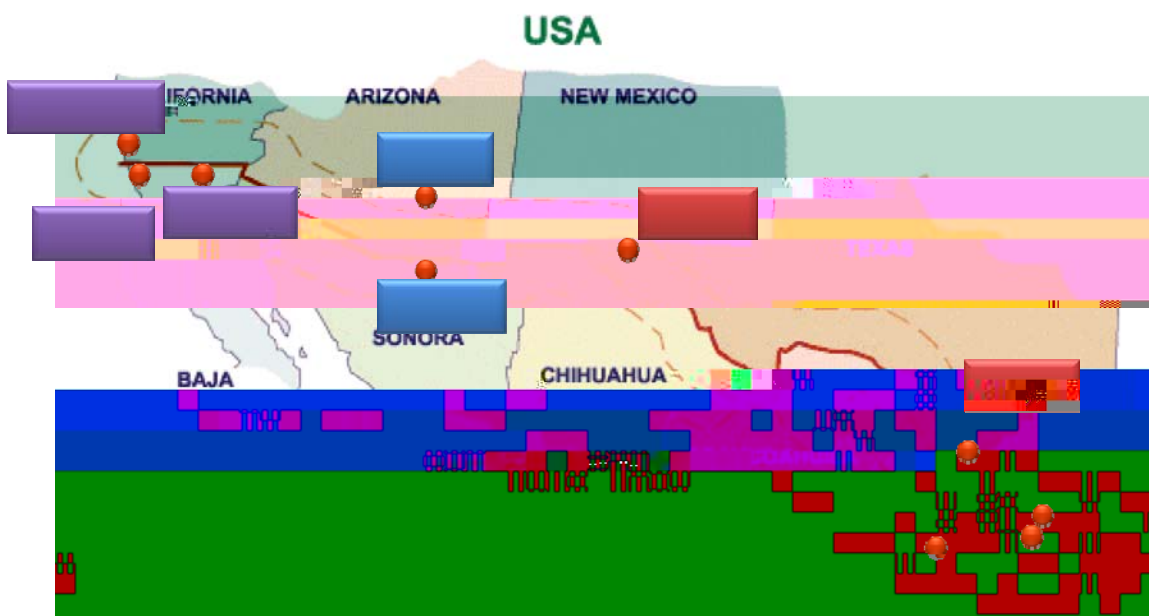


Fig. 1 : Major port of entries along U.S. Mexico

Trade Data

The total trade along these major crossing points is presented below in Fig. 2 which indicates a 33% increase in amount of trade along these ports during a period of four years from 2003 to 2007. At the same time Fig. 3 shows the amount of trade along the U.S.-West coast ports of Los Angeles, Long Beach, and Seattle have dropped or reached a saturation point. These data prove the significance of the trade route through Texas.

Fig. 2 : Trade data for major ports in U.S. Mexico border

The transit time for the goods to reach the U.S. west coast from Asia is around 12.3 days and the west coast alone handles 75% of the goods from Asia [1] . The major ports of entries to the U.S. in the west coast are Los Angeles/ Long Beach

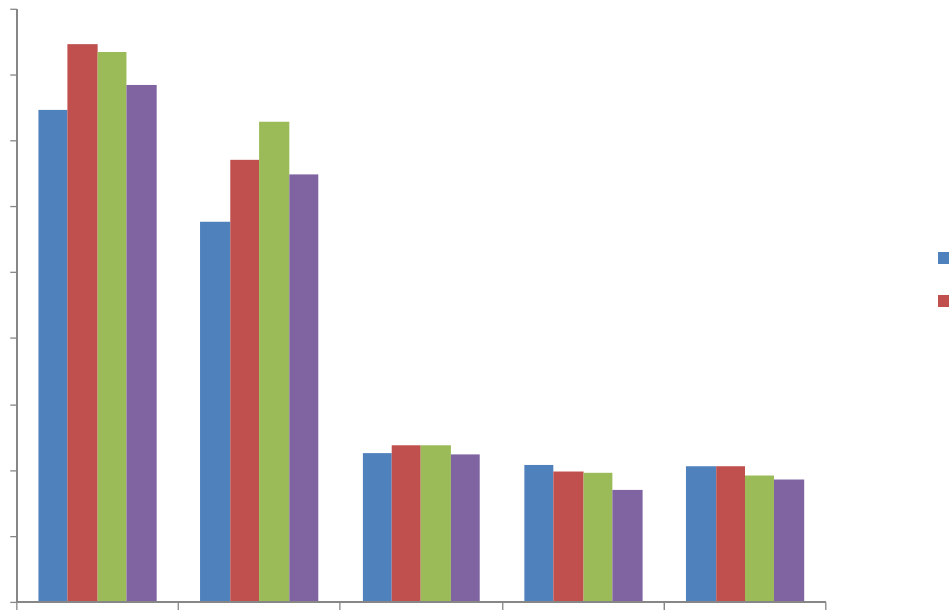


Fig. 3 : Trade data for major ports in U.S. West Coast

Mexico, the NAFTA partner of the U.S. is one of its major trading partners and in terms of trade with the U.S. it is currently ranked third behind Canada and China. The U.S. imports constitute 60% of the total trade between the nations and Mexico accounts for the rest of the imports, roughly an even split between the two trading partners. Part of the goods from China bound to the U.S. is shipped to Mexico and then by road/rail they reach the U.S. Out of this, three fourth of the goods coming from Mexico reach the U.S. border by trucks [1]. Almost 65% of this trade takes place via the land routes [1] and since 2003, the number of commercial containers passing through the U.S.-Mexico border has increased by almost 20% as shown below in Fig. 4. The amount of truck tonnage flowing through Texas is expected to increase from 1.2 billion in 1998 to 2.4 billion in 2020 [2].

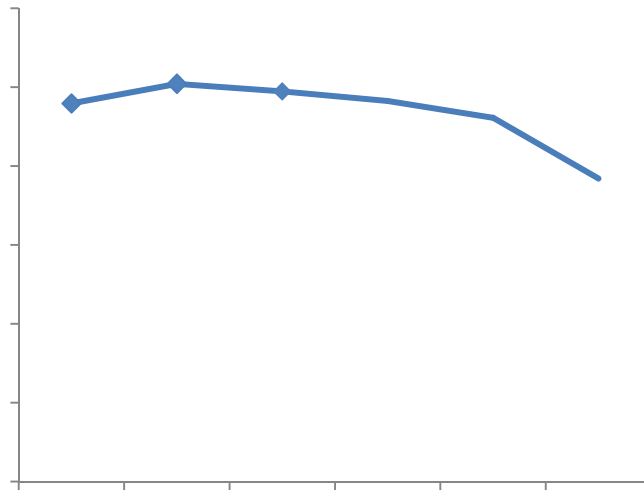


Fig. 4 : Truck container data

Below we analyze the logistical infrastructure such as road, rail and sea in U.S. Mexico trade and the intermodal capabilities.

Road infrastructure:

The estimated daily truck flow along U.S.-Mexico border clearly shows the choke points in the region. The amount of truck tonnage flowing through Texas is expected to increase from 1.2 billion in 1998 to 2.4 billion in 2020 [2]. This projection unambiguously underscores the need for infrastructure investment in this region. Some of the infrastructure plans in this region still in the active stage include the I 69 corridor [3] (current status: Environmental Impact study), Ports to Plain corridor [3] (Laredo portion almost complete) and the La entrada al pacific [3] (Current status: Feasibility study). The Texas Trans corridor was also one of the major infrastructure initiatives for this region, but it was later dropped during the Fourth Annual Texas Transportation Forum held in January 2009 in Austin, Texas [3].

Fig. 5: Truck Flow data U.S. Mexico

There are 14 main corridors covering a distance of around 11547 miles [8], which run along the length and breadth of the country as shown in Fig. 6 below:

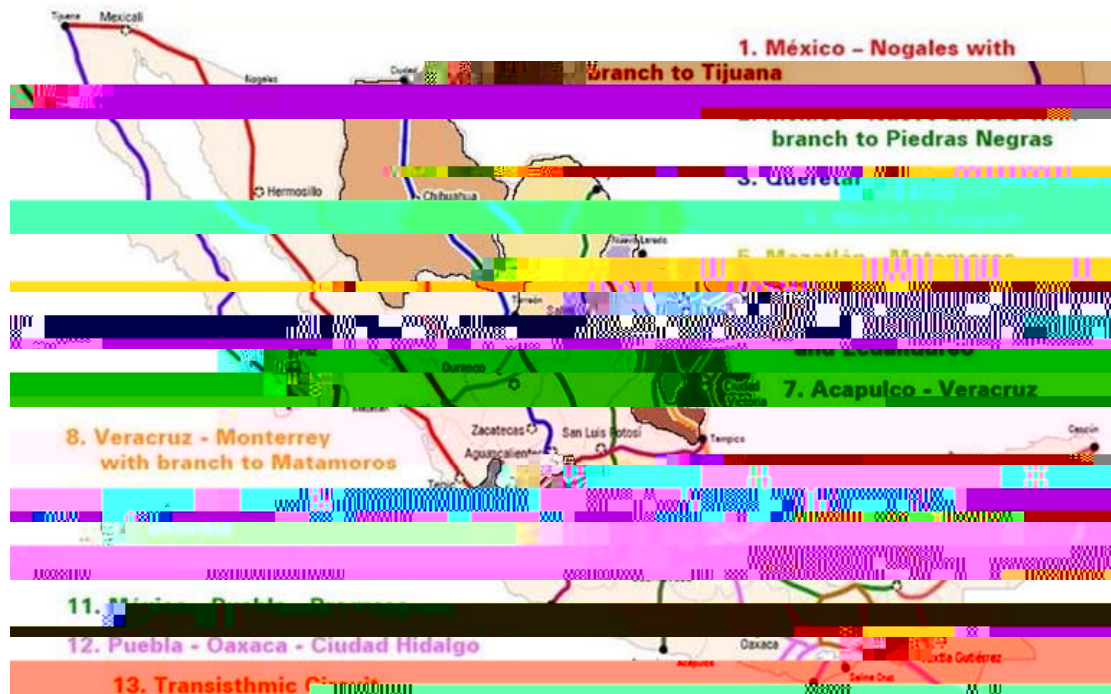


Fig. 6: National Highway Corridor in Mexico

Ranking the Highway Corridor road networks:

As of late 2009, because of the lack of funding, this NIP is put on hold. The infrastructure projects would start when the economy is back in track, at that time it would be prudent for the Mexican government to concentrate on the most important corridors, rather than the entire 14 corridors. We look at these proposed 14 corridors and evaluate them on their importance. Each of these 14 road networks was ranked to understand the importance of growth of the trade between Texas and Mexico. The ranking is based on the total value of imports from Texas to each state in Mexico. It is found that 90% of the total imports from Texas goes to these 6 states; Chihuahua, Tamaulipas, Estado de Mexico, Distrito Federal, Coahuila, Nuevo Leon and Jalisco [1]. The states through which the roads in the highway project pass through are then identified. This is done to each of the 14 road networks in the National highway corridor. The value of

goods each state in Mexico imports from Texas is divided by the total value of goods that flow southbound from Texas to Mexico to get the percentage of imports for each Mexican state. Then for each road network the total percentage of goods flowing through them is found by adding the values from the individual states in that network. The roads are then ranked based on the percentage of the total amount of goods each state imports from Texas. The top 6 road networks as per the above ranking methodology are shown in the Fig. 7 below.

An example of state initiatives towards infrastructure development

Apart from the federal initiatives, the state governments also have funded highway projects. One among them is the State of Nuevo Leon's Colombia-Monterrey highway project shown in Fig. 8. The proposed highway when completed will reduce the travel time between these two cities by 2 hours. This will help to increase the flow of commercial vehicles through the Colombia Solidarity Bridge; easing the border crossing process at Laredo by reducing the number of trucks passing through the World Trade Bridge. In the current state, the World Trade Bridge is congested because of the bulk (75%) of 12,000 trucks crossing into Laredo goes through this bridge, whereas the Columbia Solidarity Bridge is operating at 25% capacity.

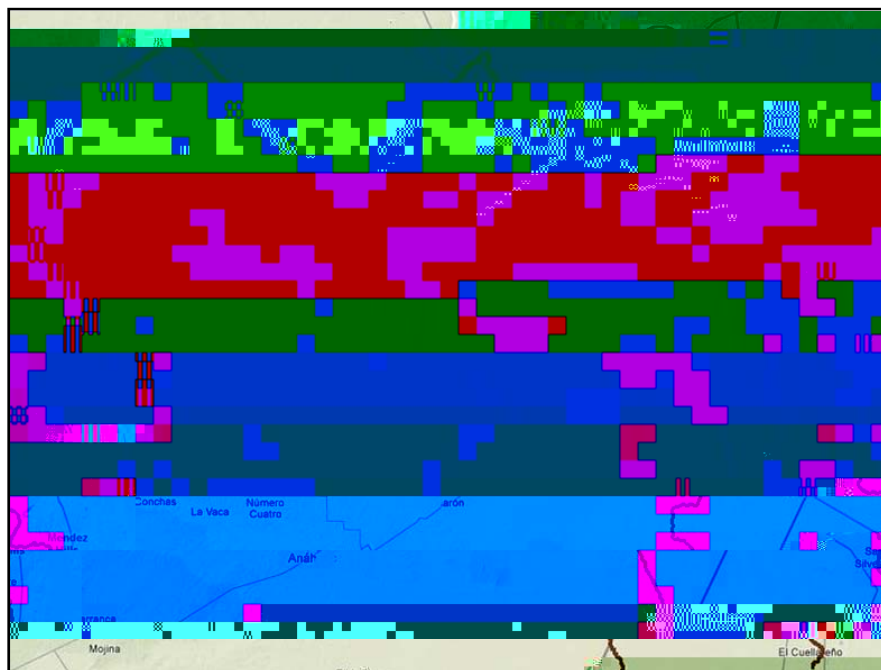


Fig. 8: Initiatives by State Government

Investments in infrastructure are essential to improve the trade between Texas and Mexico. In Mexico 53% of the weight is transported by road, prior to 2006 the Mexican government invested only 2% of its GDP for road infrastructure. In the last few years, the Mexican Government has been making huge investments in construction, maintenance and modernization of roads in the country. The recent global economic downturn has forced Mexico to put a temporary hold on the national highway corridor project.

Rail infrastructure:

The railroad is the second most preferred mode of transportation along this region. The rail network in Mexico has seen a 100% increase in goods movement since NAFTA inception. Since mid 1990s most of the railroads in Mexico were privatized, and now there are three major rail networks in the country, namely Kansas City Southern Mexico (a wholly owned subsidiary of Kansas City Southern (KCS)), Ferromex (partly owned by Union Pacific (UP)) and FerroSur.

operate only by trackage rights along the Texas-Mexico borde

Fig. 12: Major Commodities imported from China

Intermodal Facilities

The rapid increase in the trade has resulted in increased flow of goods in Mexico. In the last few years there has been a huge growth in the traffic of goods in Mexico whose final destination is U.S. So far we had seen the logistical infrastructure capabilities in Mexico. We now look at some of the intermodal facilities in Mexico.

Although Mexico has seen an increase in the goods movement by railroad since the inception of NAFTA, there is lot of potential for further increase in rail traffic. The three major rail networks discussed earlier are in the process of continuously expanding the intermodal terminals. Mexico has 64 intermodal rail terminals and it has been targeted to increase the rail road transportation in Mexico by 18-20 percent by 2012. [9].

Some of the major intermodal terminals in Mexico operated through the rail network of Kansas City Southern Mexico (KSCM) are Contrimodal, El Cayacal, Encantada, Lazaro Cardenas, LIT terminal, logistics terminal, multimodal Amigo, Pantaco Mexico City, Port Altamira, Puerta Mexico, Queretaro, Rojas Ramp, Salinas Victoria, San Luis Potosi, Silao and Veracruz.[10]

additional facilities. These ports would play a major role in offering an alternative to the congested ports of Los Angeles / Long Beach in U.S.

The National Infrastructure Plan (NIP) in Mexico has initiatives for development and modernization of sea ports, construction and modernization of highways and rail network in the country. There are also initiatives to develop 10 new multimodal corridors and construction of 12

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Port of Manatee:

Port Manatee, one of the largest ports in Florida is located on the Tampa Bay and is the closest U.S. deepwater seaport to the Panama Canal. The port provides intermodal connectivity and it offers thousands of acres of vacant land available for growth and development. The port has good highway and interstate connections with access to Interstate 75 and Interstate 275. The major commodities traded are fresh produce, forestry products, petroleum products, citrus juice products, fertilizer, steel, aluminum, automobiles and cement.

Market opportunities:

There is no single rail network in the U.S. that connects the east and the west, the Sea Bridge Freight offers a unique alternative for the transportation of goods to the east coast of the U.S. which benefits these two large growing markets of Mexico/South Texas and the Southeast/Eastern seaboard. The major customers who are benefitted in this chain include the third party logistics companies (3PLs), intermodal carriers, customs brokers and the manufacturing companies.

The dominant market in this network is the movement of goods from south Texas/Mexico to the port of Manatee. The major commodities that flow through include steel, tile, manufactured products and beverages. There is also a significant flow of goods that are transported back through the ships to the port of Brownsville. The commodities that top the goods flowing in this direction are paper, base raw materials and chemicals.

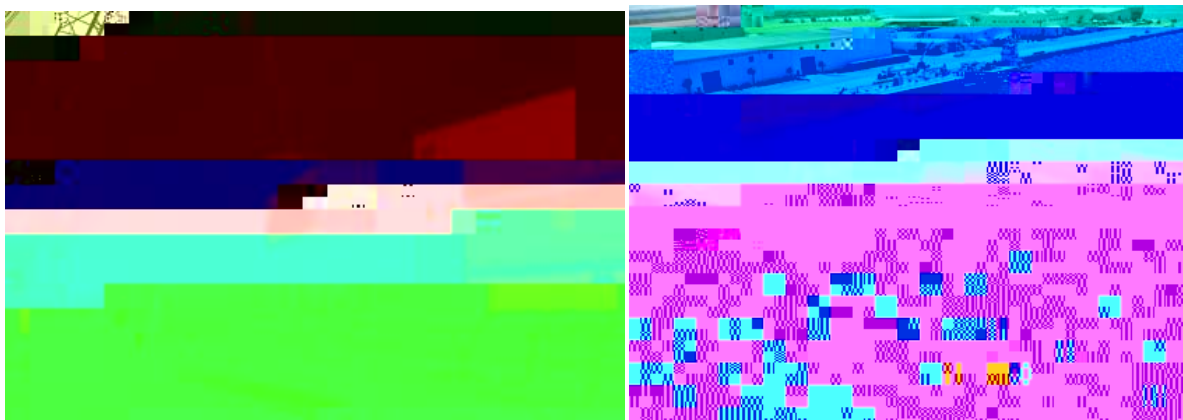


Fig. 14 : Operations at Port of Brownsville and Port Manatee

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CHALLENGES FACING SUPPLY CHAINS THROUGH PORTS OF LOS ANGELES / LONG BEACH

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Abstract

With the increase in U.S. trade with Asian countries, ports in the western United States are becoming busier. The ports of Los Angeles/Long Beach, major port in California, handle the majority of the imports and exports of the United States. This research looks at the current situation of the Ports of Los Angeles/Long Beach. We look at port capabilities and list some challenges to efficient port operations due to the rapid growth. Some of the major challenges are

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time, transloading time and customs clearance time, intermodal transportation capabilities, distance and time in shipping goods to their destinations, processing of unfinished products are required. The complex interaction between these factors makes this an intricate and interesting study.

Los Angeles/Long Beach ports are facing problems relating to overburdened capacity in terms of equipment and labor, which leads to increased waiting times, road traffic, rail congestion, etc. The focus of our research is to evaluate the present situation, identify main factors contributing the issues and suggest alternate methods of bringing in goods into the United States. These, when deployed, will improve overall operating efficiency and also provide enormous benefits to industries that are using ports of Los Angeles/Long Beach to bring in their cargo.

Information for this study is collected through personal interviews with Port personnel. Additional statistical information is obtained from books and other internet sources. The effect of

According to the U.S. Census Bureau, the change in imports of goods from October 2007 to October 2008 reflected increases in industrial supplies and materials (\$10.0 billion); consumer goods (\$0.7 billion); foods, feeds, and beverages (\$0.8 billion); and other goods (\$0.2 billion). A decrease occurred in automotive vehicles, parts, and engines (\$4.6 billion). The growth rate has slowed somewhat, but it's still significant. According to data from PIERIS Global Intelligence Solutions, the port of Los Angeles, for example, saw 18 percent growth in containerized traffic through November 2006 (Quinn 2007). The future imports will be more demanding and because of this growing importance of imports it is worthwhile to study the present scenario.

Current Situation

gauge (distance between crane legs), and the availability of cranes. Based on this information a

Port expansion is the major challenge the LA/LB ports are working at. The ports' long-term development program began in the mid-1980s and extends to the year 2020. Since 1991, however, the two ports have pursued different expansion strategies. Long Beach is redeveloping existing properties, such as the Navy station and former Wilmington oil field (Erie, Brackman, and Rauch 1996).

The volume of trade flowing through these ports has surged in recent years and is expected to at least triple over the next twenty years, but only if the port have adequate trade infrastructure capacity. However, Southern California is rapidly running out of trade infrastructure capacity (Kyser, undated). Intermodal rail yards are close to capacity already; and freight railways will see significant goods movement delays within five years. Highway congestion, already legendary, will only worsen.

Traffic congestion at the port

As tariffs and other political barriers to trade continue to shrink or disappear, the ability to transport goods efficiently has become an increasingly important consideration in international trade. Firms rely on fast, flexible, and reliable shipping to link far-flung plants, and transportation breakdowns and congestion can idle entire global production networks. As a result, the capacity and efficiency of seaports, airports, and multimodal linkages have become critical factors in global trade.

Congestion caused before unloading is due to insufficient on-dock capacities at the port. Increased container traffic leads to waiting time before the ship reaches the dock thereby increasing the lead times. This also increases the total transportation costs.

Intermodal Transportation

Congestion during Intermodal Transportation is the major challenge faced by cities like Los Angeles. After the goods are unloaded then the process of intermodal transportation starts. The increase in the importance of co-operation between different modes of transport like, air, water, rail, road, is required (Siggerud 2006).

ports of LA/LB by the lawmakers in California, with the sayings “California children shouldn’t breathe soot so people across the country can buy cheap televisions” show the severity of the problem.

Labor costs

Another important part of the overall cost of transportation is the labor costs. US have a comparatively higher labor costs. Labor costs arises not only in the operations in the port, but also the finishing operations which may be required for certain imported goods like petroleum, plastics, electronics, etc. Also the labor unions pose a great challenge to the port, the execution of clean truck program for example faced friction with the labor unions.

Destination Centers

The places of destination are the main consideration of supply chain logistics. The port of Los Angeles suffers the drawback of not so optimal distributor in terms of distances from the port to destination in different part of US. Much of the trade passing through California’s global gateways either originates in or is destined for use in other states. In 2000, for example, California serviced \$297 billion in trade for other states.

Conclusion

The continuous increase of port congestion in the San Pedro Bay is pushing every day more importers to relocate the port of entry of their goods. The solutions for these problems include new development projects, and the mundane but effective approach of making more productive use of existing space and capabilities. Making the most of what they already have has allowed a number of ports to increase existing container capacity and to cut back the amount of time containers remain at dockside. Key to augmenting container-stacking density is more powerful loading equipment.

Ports near the Destination Centers can improve the efficiency of transportation; also the economy prevailing at these ports can be utilized. Also that, imports from Asia are expected to continue to grow at a significant rate and since areas of extension are rare in the San Pedro Bay, a relocation decision seems to be inevitable.

The possible alternate ports can be identified according to the following requirements:

1. Sea transportation, taking into account the effects of the shipping lines available at the port.

2. Port and area infrastructure, which assess the facilities and services required.
3. Lead-time, from China (major importer for these ports) to terminal dispatch.
4. Labor costs etc.

Three different areas where the imports can enter the continent are the Northwest Coast, the secondary ports of California, and Mexico. In California, being fairly close to Los Angeles-Long Beach ports, Oakland and San Diego are natural alternatives to be considered. The switching costs may be smaller than relocating to the Northwest, and the move relatively easy. But, Mexican ports are increasingly being considered as real alternatives to Los Angeles port congestion. Still a relatively small port, Ensenada is expected to grow significantly, being “at the door” of the United States. The largest Mexican Pacific port, Manzanillo, although being further provides good equipment and services. Mexican ports have many potential advantages like, lower transportation costs, lower labor costs, efficient intermodal transportation, etc.

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