

# IMPACT OF GROWTH ON JIT INVENTORY AND PRODUCTION IN THE EL PASO/JUAREZ REGION

*by*

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## **DISCLAIMER AND ACKNOWLEDGMENTS**

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The research team would like to thank Lic. Sarai Kuri, Dr. Chris Wilson, Dr. Erik Lee, Dr. F. Barry Lawrence, Dr. Esther Rodriguez-Silva, Mr. Garnet Fee, and Mr. Bob Cook for their expertise and assistance in the performance of this research effort.

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## EXECUTIVE SUMMARY

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The ultimate goal of any business is to make and increase profit. This holds true for manufacturers, shippers, and exporters. Many U.S. and Mexican companies choose to control their supply chain by using just-in-time (JIT) production and inventory processes to add security and save money.

Transportation/moving cargo is a key element in the JIT process in the El Paso/Juarez region, especially with goods sometimes crossing the U.S. and Mexican border multiple times before a product is complete. Supply chain security is a key element to ensuring legitimate shipments are expedited through border inspection agencies.

Unfortunately, there are a number of congestion problems associated with moving commercial cargo from Juarez to El Paso. Congestion at the bridges has a major impact on production plants and transportation companies' ability to timely deliver cargo. This congestion negatively impacts the JIT process, causing company production lines to slow down and sometimes disrupting manufacturing completely. Manufacturers need predictable and reliable transportation to ensure they can compete in today's business culture.

One of the overriding goals of the business community, on both sides of the border, is to keep the JIT inventory system viable. Without a high degree of confidence that cargo is going to be delivered in a timely manner, the supply chain will be disrupted and production will be impacted, thereby increasing costs and decreasing profits.

In addition, manufacturers and transportation companies look for security and reliability in their supply chain movements. Without these assurances that their cargo can move on a JIT schedule, new companies will not locate their plants in the El Paso/Juarez border corridor.

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## JUST-IN-TIME INVENTORY AND PRODUCTION

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The just-in-time process, first used by Henry Ford at the Ford Motor Company (1), is described as “a philosophy of manufacturing based on planned elimination of all waste and on continuous improvement of productivity” (2). It works by reducing inventory, ordering parts as needed, and shipping products quickly to avoid storage costs. In JIT, suppliers need to bring raw materials more often to the manufacturers, as manufacturers do not store supplies. The manufacturers in turn use the materials as soon as they arrive to create the specific number of products they need (3). Production is controlled from actual orders and connected to demand. Many manufacturers use planning software to track items and interact with suppliers and customers (4). Manufacturers know how long it takes shipments to arrive and can anticipate usage to reorder parts just in time without storing for extended periods (5).

### BENEFITS OF JUST-IN-TIME INVENTORY

Using the latest security and tracking technology increases the advantages of using JIT, which include:

- Better control over the entire manufacturing process.
- Increased supply chain security and reduced risk of diversion of conveyances.
- Tight inventory control, reducing the risk of cargo theft.
- Quick response to the needs of customers, making products more affordable (6).
- Efficient and competitive practices.
- Reduction in insurance requirements (7).
- Low inventory of materials and finished products, allowing for companies to be more responsive to customers’ changing levels of demand (4).
- Reduction in payroll if there is not a need for a certain product at a specific time; if employees do not have work, the owner does not have to pay them (2).
- Reduction in the cost of warehousing additional products.
- Reduction of tax liability, as products are kept moving and do not reside in specific taxing jurisdictions.
- Improved product quality.
- Reduction of production and delivery lead times (8).
- Improved profits and return on investment by reducing inventory levels and variability.
- Improved cash flow by freeing up resources (7).
- Avoidance of stock becoming obsolete.
- Minimized storage and taxes by shipping shortly after production (5).
- Eliminated or reduced warehouse costs (6).

## DISADVANTAGES OF JIT

There are also disadvantages to the JIT process for some manufacturers, which include:

- Total dependency on suppliers (7).
- Cooperation between manufacturer and supplier (9).
- Schedule delay costs for just-in-time cargo.
- High implementation cost.
- Cost of up-to-date security chain tracking and reporting systems are too much
- Possibility of internal issues that might lead single suppliers to be unable to fulfill orders, such as labor strikes (3).
- Having to pay employees to wait on parts or work overtime to get products to customers (7).
- Orders not shipping on time if a single component is delayed (4).
- Lost sales and missed opportunities where large unexpected orders cannot be fulfilled due to inadequate stock (5).
- Manufacturers and production facilities in the United States being significantly impacted by delays that their cargo carriers encounter at the border (8).
- A great deal of dedication and resources needed to control the supply chain, which involves many moving parts.
- Legal responsibility of the manufacturer no matter who the multiple vendors are and what they do as members of the supply chain.

## IMPACT OF BORDER WAIT TIME ON JIT

Border wait time (BWT) has always been in the forefront of cross-border transportation. Getting goods across the border in a timely manner is essential to the supply chain. Improved border crossing benefits manufacturers by eliminating disruptions, thus allowing for JIT processing and minimized risk to the production lines (10). The economic impact of increased border crossing times to shippers includes disruptions in the production lines, delays in production and delivery schedules, and most importantly, increased costs for JIT cargo (11). In addition to the problems for JIT, increased border crossing times contribute to environmental concerns through increased travel for suppliers, which causes them to use more fuel and waste time in traffic on the way to manufacturers (1). Border crossing times and the benefits of improved border crossing times to truck drivers, carriers, and manufacturers can be seen in Appendix A.

## IMPORTANCE OF BORDER WAIT

Border crossing times and security have both increased through trusted shipper programs such as the Customs-Trade Partnership Against Terrorism (C-TPAT), Free and Secure Trade (FAST), and Mexican Nuevo Esquema de Empresas Certificadas (NEEC). Companies that are members of these programs are prescreened and have a much better chance of avoiding additional inspections at the border. They are also allowed access to the FAST lane, which can significantly decrease their border crossing times.

Unfortunately, membership in these trusted shipper programs has grown stagnant over the past few years, even though membership has been proven to improve border crossing and wait times. In a 2012 Center for International Intelligent Transportation Research study, it was discovered that many companies perceived the cost of joining these programs and the required security improvements for membership to be too expensive when in fact many of the companies needed only minor improvements.

## **FUTURE OF BWT AND JIT**

As long as BWT remains stable, JIT inventory and production should continue to thrive. However, the future is doubtful, as major growth in the El Paso/Ciudad Juarez region is expected to continue. In addition to the growth of companies already in Mexico, new manufacturers are expected to move their plants from China to Mexico. Major reasons for these moves include:

- The cost of labor in China is rising compared to Mexico, where wages have leveled off and are somewhat stagnant (12).
- The ocean transportation cost for shipping goods across the Pacific is very expensive compared to the near-sourcing offered in Mexico (13).
- Mexican locations make JIT more feasible by eliminating the exorbitant cost of the tight-timeline shipping required in other regions (4).
- Moving JIT cargo across the border is much more cost effective than flying it from Asia or Europe.

Mexico also offers the following:

- A depressed peso as compared to the U.S. dollar (12).
- Tariff-free trade deals that make Mexico a better trading partner with the United States (14).
- A more skilled labor pool.
- The North American Free Trade Agreement (NAFTA), which offers protection to a number of manufacturers (15).
- Faster time to market (16).
- An experienced manufacturing workforce at a lower cost than U.S. workers (3).

Some of the companies adding to the growth of the region include:

- Mazda (17).
- Delphi.
- Bombardier.
- Hawer Beechcraft.
- Boeing (18).

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## EXPERTS AND JIT

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Bob Cook, owner of Cook Strategies Group, who is working for Ciudad Juarez as a public relations outreach specialist to bring new businesses into the region, offered the following information in a June 12, 2014, telephone conversation. Much of the information below is found in the El Paso/Juarez Market Overview found in Appendix B.

- Juarez is attempting to increase its manufacturing business base. Currently, it relies on an expanded business model of companies growing their operations while already located in Ciudad Juarez. For example, 80–85 percent of all new businesses in Juarez are expanded operations. Juarez is able to generate growth in 5 percent of new businesses but would like to expand the number of manufacturers moving to Mexico.
- One example of a company expanding its operations is the Canadian-based Bombardier Inc., which plans to build its very popular CAN-AM Spyder three-wheel motorcycle in Ciudad Juarez. Bombardier will add 8–10 new suppliers to its Mexico operations.
- Border crossing and border wait times are critical to keeping the supply chain moving as quickly and efficiently as possible.
- Bridge access to the FAST lanes for C-TPAT is crucial for not only maintaining supply chain efficiencies but also adding to the overall cargo security effort.
- Obtaining FAST lane access remains a problem in Mexico, and the solution requires city, state, and federal government cooperation.
- Bridge crossing saturation is somewhat alleviated by the new Customs Border Protection Act. Section 560 of the Act requests for the Reimbursable Services Act which permits the El Paso Bridge Authority to request additional officer staffing of primary booths during peak border crossing times. These officers time will be reimbursed by the city and a conglomerate of bridge users.
- The stated goal to expedite bridge crossings is for the Mexican government to open access to FAST lanes on its side of the border, and the U.S. government to staff primary inspection booths at 100 percent capacity during peak traffic times.
- The concerns are that BWT has not gotten shorter and that there is 10 percent less traffic than prior to the Great Recession of 2008, which leads to the conclusion that unless changes are made to cross-border processing, supply chains will grow longer when cross-border traffic returns to pre-recession levels.

In addition to Bob Cook’s expertise, input was garnered through a telephone conversation held on May 6, 2013, with Dr. Chris Wilson of the Mexico Institute of the Woodrow Wilson International Center for Scholars, and Mr. Erick Lee, executive director of the North American Research Partnership. Dr. Wilson and Mr. Lee, citing their study entitled “The State of Trade, Competitiveness and Economic Well-being in the U.S.–Mexico Border Region, 2012” and a report entitled “The State of the Border Report, May 2013,” offered their analysis of positive changes to border operations and explained that “extra staffing [of] Customs Border Protection (CBP) officers through the Section 560 authority is working out pretty well” and border crossing times have improved. Dr. Wilson noted that “the Paso Del Norte region comprised of El Paso, Texas, Ciudad Juarez, Chihuahua, and Las Cruces/Santa Teresa, New Mexico, is enormous in size and importance as a manufacturing platform. Indeed, Ciudad Juarez was the site of the first maquiladores, which has left it with a strong legacy and cluster of manufacturers” (19).

Dr. Wilson also noted that “the metro-area population growing quickly to the west across the Texas–New Mexico state line and the New Mexico–Chihuahua relationship institutionalized in the New Mexico–Chihuahua Commission [are] growing in strength and importance” (19).

An additional telephone interview was held on June 25, 2014, with experts Dr. Barry Lawrence, program director of the Industrial Distribution Program and Global Supply Chain Systems at Texas A&M University, and Dr. Esther Silva, project manager of the Latin America Engineering Technology and Industrial Distribution and Global Supply Chain Systems at Texas A&M University. The experts from Texas A&M discussed supply chain security and efficiencies, JIT inventory, trusted shipper programs, business cluster zones, labor clusters, transportation costs, and inventory control costs.

Drs. Lawrence and Silva stated that Mexico is well positioned to take advantage of a number of business issues affecting worldwide manufacturing including:

- Mexico is in close proximity to the United States, which provides manufacturers a shorter supply chain as well as a host country with a 20-plus-year history of manufacturing as a maquiladora industry (twin plant).
- Labor costs are going up in Asia, and many companies are moving away from chasing low-cost labor as a business model.
- Shorter supply chains reduce transportation costs from overseas manufacturers. Trans Pacific containers travel to the United States full and return empty, which adds considerably to transportation costs.
- NAFTA manufacturing rules of origin provide reduced tariff expenses for raw materials and finished products used by the maquiladora industry.

Dr. Lawrence also indicated that cluster zone manufacturing works well in the Mexican manufacturing community. Business clusters are geographic concentrations of interconnected businesses, suppliers, and associated institutions in a particular field. Clusters are considered to increase the productivity with which companies can compete, nationally and globally. Clusters are also very important aspects of strategic management (20).

Clusters take advantage of a number of factors that present themselves in Mexico including:

- The welcoming atmosphere of the host country.
- The ease of travel for U.S. manufacturers to visit their plants—a day trip versus a week to go and come from Asia.
- The high use of technology used in automated manufacturing.
- An educated workforce, including access to educators at all levels.
- Contained labor costs.

Most of the El Paso/Juarez manufacturing cluster is generating new growth from already-existing plant operations. There is a chance to grow new business in the trade corridor if a number of issues are addressed, including criminal cartel violence, which remains a problem and keeps new companies from being willing to locate in the area, and cross-border delays, which add to supply chain cost and are unattractive to new business.

New modes of disintermediate distribution impacting where manufacturers locate are coming online. Retailers such as Amazon have become distributors by building very large warehouses

and practicing a new way of doing business directly with the consumer. Wikipedia defines this new type of business as disintermediation. Disintermediation is “the removal of intermediates in a supply chain, or cutting out the middlemen.” Instead of going through the traditional distribution channels, companies may now deal with every customer directly, for example, via the Internet. One important factor is a drop in the cost of servicing customers directly.

Lastly, Dr. Lawrence stated the following:

- Business growth in the El Paso/Juarez trade corridor will continue to be impacted by a number of business and security issues inside Mexico, the United States, and overseas.
- The security of supply chains and the reliability of JIT shipments are critical to manufacturers and transportation companies.
- Assuring JIT deliveries will remain very important in the existing or new distribution business processes.
- Any border congestion impacting the supply chain is taken into serious consideration as a negative by any new manufacturers looking to move to or relocate resources to the area.
- Manufacturers now located along the border have taken extra security efforts to ensure that their shipments are not compromised by the criminal cartels. This includes joining trusted shipper programs such as C-TPAT, FAST, and NEEC.
- Enticing new manufacturers to locate to the border or relocate from overseas will require a great deal of effort to assure new businesses that the criminal activity has been expunged from the border.

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## MANUFACTURERS, TRUCKERS, AND JIT

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With the assistance of Licensea Sarai Kuri with the Coalicion Empressarial Pro Libre Comercio (CELC), a brief questionnaire was distributed to manufacturers and truckers who worked in the City of El Paso/Ciudad Juarez region for a six-week period from June 15 through July 31, 2014. Ms. Kuri works with companies and individuals to prepare them to become members of the trusted shipper programs C-TPAT and NEEC in the El Paso/Juarez region and meets with manufacturers and truckers on a daily basis. She graciously agreed to assist the Texas A&M Transportation Institute in this research effort.

The questionnaire, which can be found in Appendix C, contains five questions regarding use of JIT inventory control and supply chain logistics. Ms. Kuri was able to have 42 questionnaires completed for this research effort. Table 1 lists the different types of inventory systems used by the participating companies.

**Table 1. Inventory Control/Supply Logistic Systems.**

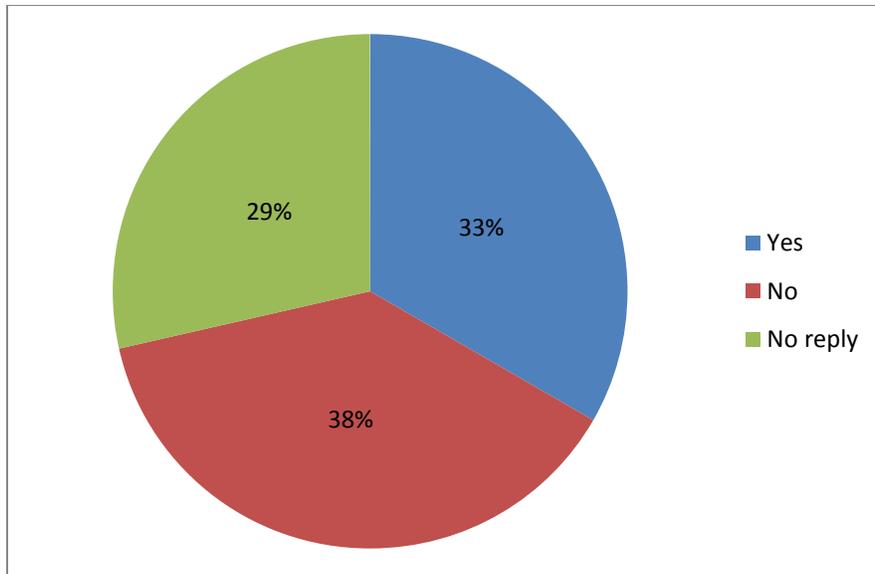
Type of Inventory Control/Supply Logistics System Used	Number of Companies Using System
AS 400	1
Central Administration System	1
Cyclic Inventory via Glovia	1
Code System, Cyclic Inventory	1
Continuous	1
Continuous and Intermittent	1
Customs and Manufacturers System	1
First In/First Out Inventory Control System	8
JD Edwards Inventory Control System	3
Just-in-Time Inventory System	8
Just-in-Time and Cyclic Systems	1
Lean Manufacturing System	2
Periodic Inventory	1
Physical and Software System	1
Physical and System Inventory	1
No Response	10

As shown in Table 1, there were 15 different types of inventory control/supply chain security systems used by the 42 questioned companies. Ten (24 percent) of the companies questioned offered no response regarding the type of system used. Nine (19 percent) of the participating companies who indicated use of the JIT inventory and supply chain system were asked to list the advantages and disadvantages of using this system. The advantages and disadvantages cited are shown in Table 2.

**Table 2. Advantages and Disadvantages of JIT Inventory Systems.**

Advantages of JIT Inventory System	Disadvantages of JIT Inventory System
<p>Everything is fast and in order.</p> <p>There is not much merchandise stored.</p> <p>Less warehouse space is required.</p> <p>There are no storage costs.</p> <p>No surplus inventory.</p> <p>There are savings in the warehouse.</p> <p>We need fewer employees.</p> <p>There is timely shipment of products.</p> <p>Pay less tax on products stored in warehouse.</p> <p>Delivery plan is known in advance.</p> <p>There are no stops in the line due to lack of material.</p>	<p>Logistic problems (held up at bridges).</p> <p>Sometimes merchandise is not counted.</p> <p>Fewer orders.</p> <p>Operating personnel or equipment failure can cause employees to work extra time with the company incurring the costs.</p> <p>Changes in the model can result in not having the correct materials for production causing delays and increased costs.</p> <p>Changes in delivery due to production problems can require employees to work extra time.</p> <p>Materials do not arrive or we run out and production and delivery comes to a halt.</p>

Border crossing times affect many aspects of transportation. JIT reply relies on timely shipments for manufacturing parts and delivering completed products across the border. Due to the necessity of timely shipments when using JIT, researchers were curious about the effect that border crossing times had on the choice of inventory control system used by companies in the El Paso/Juarez region. Figure 1 indicates that 33 percent of the participating companies are affected by border crossing times.



**Figure 1. Border Crossing Times' Effect on Choice of Inventory Control System.**

Companies were asked how they forecasted product demand in Question 5. There were a number of methods used, including the following:

- Product movement.
- Inventory control program and system.
- Request to provider.
- Order history.
- Cyclic counts.
- Electronic vendor identification numbers and email of purchase orders.

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## CONCLUSIONS

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This research indicates that economic growth along the El Paso/Juarez portion of the border corridor will continue to apply additional economic pressure to the manufacturers who utilize JIT inventory to find expedited methods to ensure predictability and reliability to their supply chain.

Shippers have a strong business desire to make the flow of their JIT cargo across the borders as secure and timely as possible so they can maintain a competitive edge and grow their business model.

There are currently a number of constraints to cargo flowing across the border in a timely fashion. Manufacturers are looking at methods to address these constraints to ensure that their supply chain will face minimal disruptions.

Border groups including manufacturers, shippers, transporters, brokers, and freight forwarders as well as federal inspection agencies are working together to apply BWT and border crossing time (BCT) electronic data collections to determine where bottlenecks occur in the supply chain. The collection of border crossing data is done differently by separate entities, which makes discussing resolution very difficult because there is not a standardized method to measure either BCT or BWT. The Department of Homeland Security (DHS) has a preliminary proposal to develop a standardized BCT and BWT model to ultimately be used by all border crossers.

DHS has proposed that the private and public sectors join in a cooperative research and development agreement process related to reusable electronic conveyance security devices. This pilot allows for the private and public sectors to work together to develop a better system for tracking containers as well as measuring wait times. It could provide the standardized collection measures that have been lacking along the border.

This pilot proposal involves private-sector companies who provide electronic tracking services joining with security companies who provide electronic wrapping of conveyances for shippers and includes companies who can provide electronic data integrator services to DHS and CBP electronic portals through the Automated Commercial Environment and the Automated Targeting System.

The goal of the DHS project is to substantiate that electronic tracking and security of conveyances can be done for a reasonable price to the shipping community and that the collected data can be used by the entire border crossing community to determine wait times and supply chain bottlenecks so corrective methods can be taken to insure JIT movements of imported cargo.

The survey conducted by CELC of the border crossers points out that the solution to ensuring border growth and the continuance of JIT cargo delivery is for all entities to join together to address bottlenecks and border congestion.

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**APPENDIX A**

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*Secure Border Trade Demonstration*

**Economic Development link to  
Secure Border Trade**

Scott Brosi

March 10th, 2014  
1:30PM CDT

THE COUNTY OF EL PASO  
TEXAS

*TRANSCORE.*

SecureOrigins ONASSET Celsi transtelco

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## Parallel Initiatives

During the time frame of the SBT project, 2 other initiatives emerged which provided complementary benefit to the overall goal of improved supply chain efficiencies.

- ▶ **Frontera-21 Lanes** were established in Mexico to segment trusted trade before reaching the Port of Entry such that these shipments could be handled separately and receive the benefits of both the C-TPAT and NEEC programs.
- ▶ **Project-21** evolved as a public private partnership between the Department of Homeland Security, the City of El Paso and SecureOrigins through a Memorandum of Agreement to promote both improved security and regional economic development.



## Frontera-21 Lanes

The Frontera-21 Lanes were established in Mexico to segment trusted trade before reaching the Port of Entry such that these shipments could be handled separately and receive the benefits of both the C-TPAT and NEEC programs.

**Without Lane Segmentation**

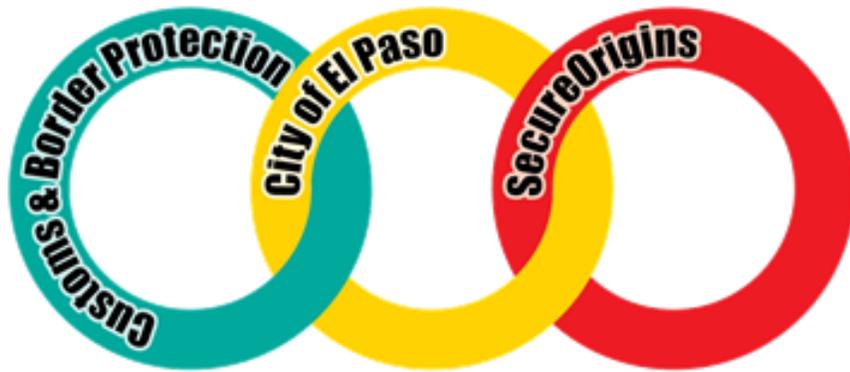


**With Lane Segmentation**

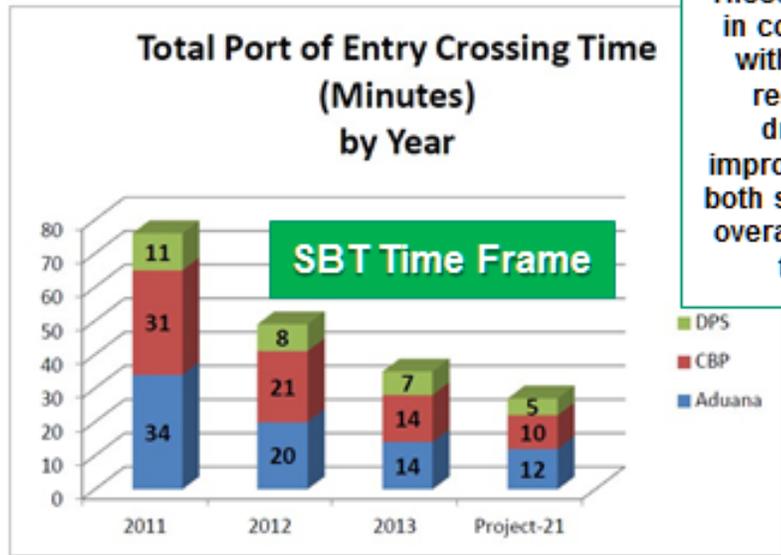


## Project-21: Public Private Partnership

Project-21 evolved as a public private partnership between the Department of Homeland Security, the City of El Paso and SecureOrigins. Project-21 shipments were established to designate the enhanced security provided by the SBT project and encourage 'self reporting' of anomalies and significant events to CBP prior to arrival at the port.



# Crossing Time Reductions



These initiatives, in combination with the SBT, resulted in dramatic improvements to both security and overall crossing times.



## SBT Economic Implications

- ▶ **Before the SBT Project, crossing times** for commercial shipments **averaged over 70 minutes.**
- ▶ **Following Frontera-21 Lanes and the initiation of Project-21, crossing times for participating *trusted trade partners* dropped over 40 minutes.**
- The economic implications of this project ripple from the foundation of cross-border supply chains to global competitiveness.



## Benefits to Truck Drivers

- ▶ **Improvements to crossing times dramatically reduce operational hours of 12 to 18 hours a day to a reasonable and safe 8 to 12 hours.**
- ▶ **Advanced security created a strong deterrent to potential threats to the driver and his family.**



## Benefits to Carriers

- ▶ **The transportation carriers increased the average roundtrips from roughly 1.5 to 2.5 roundtrips per day for each truck.**
- ▶ **Profits per individual truck increased from \$25 per day to \$200.**
- ▶ **Carriers are no longer subject to immediate suspension of C-TPAT certification due to self-reporting policy change.**



## Benefits to Manufacturers

- ▶ **For the primary manufacturer, reduced inspection rates directly translated into little or no shipment disruptions, eliminating these costly delays.**
- ▶ **Reduced variability in crossing times reduces resource requirements and inefficiencies.**
- ▶ **Elimination of disruptions, allows for Just-In-Time processing and minimizes the risk to production lines.**



# El Paso/Juarez Market Overview

Prepared for:



Prepared by:



June 4, 2014

Draft #2

## Overview

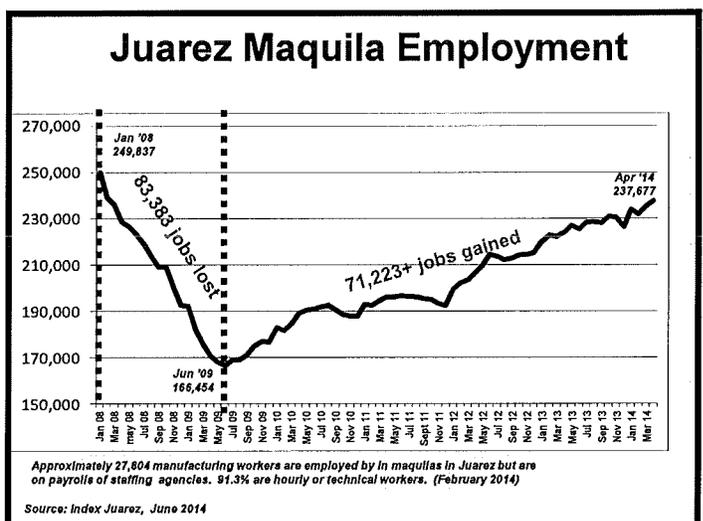
With an estimated 2.6 million population, the El Paso/Juarez metropolitan area, referred to as the “North American Borderplex”, is one of the most populated international border communities in the world. The market area includes Cd Juarez, San Jeronimo, El Paso, Las Cruces (NM), Santa Teresa (NM) and other communities in the metropolitan area. Since 2000, the US-side population has grown 22%, almost double the growth rate of the United States. The region is projected to grow an additional 5.8% from 2013 to 2018, more than 50% faster than the United States— ensuring that business and industry will have an ever increasing workforce. More importantly, this workforce is becoming increasingly educated, especially among those in the prime working age population (25-44 years). From 2000-2011, El Paso realized 23% growth in the number of persons in this age group which attained at least a high school diploma, compared to a national decline of 0.1%. El Paso now is almost equivalent to US norms with 84% of prime working age residents having achieved at least a high school education, compared to 88% nationally. Over the same timeframe, there was 46% growth in the number of prime working age El Pasoans who attained a bachelor's degree or higher, more than 3 times faster than the growth of college-educated workforce nationally in this age group. As of 2011, 23% of El Paso's prime working age population has at least a bachelor's degree, compared to 32% nationally.

## Opportunity

More than 251,000 production workers are employed in the region (over 90% in Cd Juarez), making it one of the seven largest manufacturing centers in North America. The largest manufacturing sectors in the region (by employment) include transportation equipment (automotive and aerospace); consumer electronics, electrical equipment (household and industrial) and medical devices.

Led by the maquila sector, about 60% of the Juarez economy is based on manufacturing. This sector has seen a significant recovery following the most recent global recession, having added more than 71,000 jobs since June 2009. At present, an estimated 350 maquila operations reside in Cd Juarez representing a broad cross-section of business and industry.

It is this industrial sector which provides the most significant opportunities for Freight Shuttle International, although there will certainly be domestic industrial opportunities presented to FSI as well.

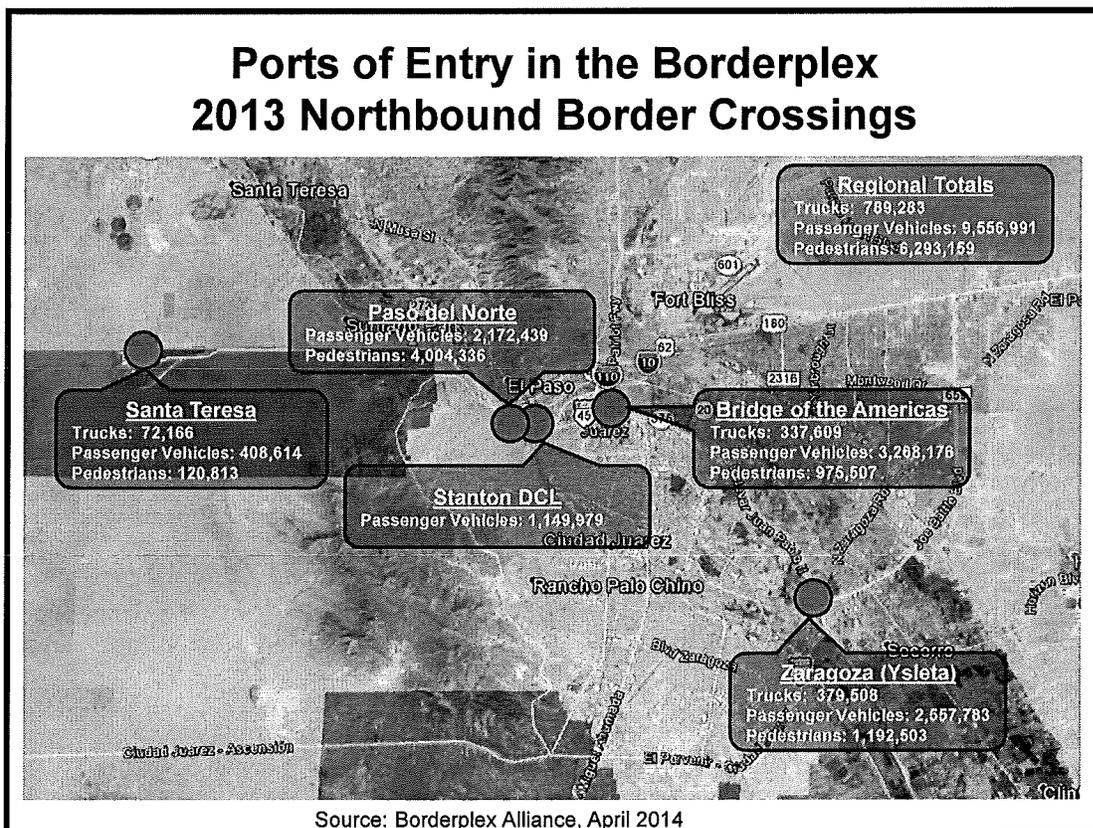
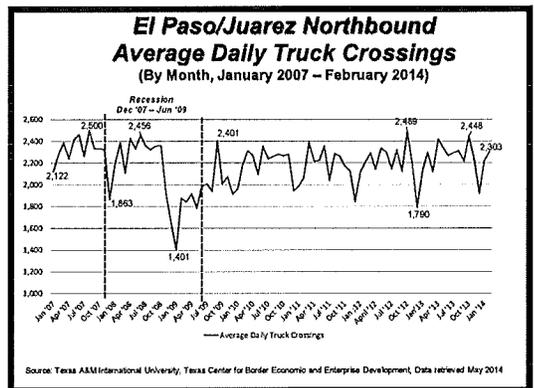
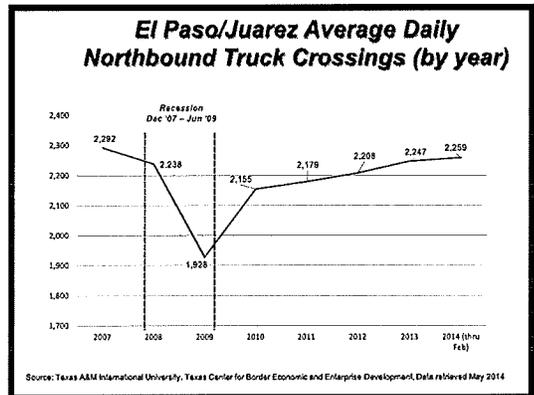


## Cross-Border Trade & Transportation

There are two indicators that underscore the market opportunity that exists for Freight Shuttle International (FSI) in the Borderplex—northbound truck crossings and volume of imports and exports that cross via the region’s ports of entry.

The top two charts at right demonstrate the average daily northbound truck shipments that cross via the ports of entry that link El Paso and Juarez. Average daily crossings bottomed out in January of 2009, when only 1,401 trucks per day crossed northbound thru the region’s ports. Since 2009—the presumed end of the global recession—average daily northbound crossings of commercial trucks have increased from just over 1,900 per day, having almost fully rebounded to pre-recession levels of over 2,250 per day. CBP officials indicate as much as 50% of southbound shipments are empty trailers.

As seen in the map below, the Zaragoza port of entry is the most significant commercial crossing in the Borderplex, handling almost half (48.1%) of all northbound truck traffic in 2013, or 1,040 trucks per day. Approximately 43% of these crossings occur at BOTA and 9% are utilizing the Santa Teresa port of entry which is located 12 miles west of El Paso in Dona Ana County, New Mexico. Given that both Juarez and El Paso are growing rapidly in an easterly direction, the Zaragoza port-of-entry should continue to experience healthy volume growth for the foreseeable future, making an FSS crossing in close proximity to this port the most viable option.

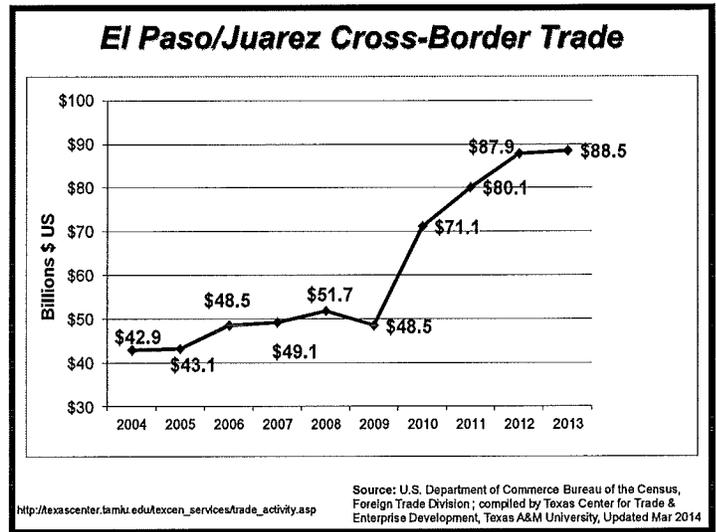


## International Bridge Revenues for the City of El Paso

The City of El Paso collects southbound tolls at two of the four ports of entry in the region— Zaragoza and Downtown. Zaragoza, however, is the only port from which the City collects tolls from commercial trucks. The Bridge of the Americas (BOTA) is owned by the federal governments of the US and Mexico and is toll-free. As can be seen in the chart below, the City collected more than \$4.4 in the last fiscal year and is budgeting only \$4.1 million in collections for the current fiscal year. Cook Strategies Group believes that once an economic impact analysis is concluded, FSI will be able to demonstrate a significantly positive revenue impact for the City of El Paso, even if the freight shuttle system causes a reduction in the more than \$4 million in commercial tolls currently collected at the Zaragoza POE.

<b>FEES</b>	FY'11	FY'12	FY'13	FY'14
Pedestrian	\$0.50	\$0.50	\$0.50	\$0.50
Passenger Vehicles	\$2.50	\$2.50	\$2.50	\$3.00
Trucks per Axle	\$3.50	\$3.50	\$3.50	\$4.00
Trucks-Empty	na	\$4.00 - \$7.50	\$4.00 - \$7.50	\$4.00 - \$7.50
<b>CROSSINGS--ANNUAL</b>				
Pedestrians	4,455,679	3,938,677	4,111,610	3,995,840
Passenger Vehicles	3,485,357	3,817,784	3,395,233	3,828,334
Trucks	323,608	356,567	368,630	369,690
<b>CROSSINGS--ANNUAL</b>				
Pedestrians	12,207	10,791	11,265	10,948
Passenger Vehicles	9,549	10,460	9,302	10,489
Trucks	887	977	1,010	1,013
<b>REVENUE BY CATEGORY</b>				
Pedestrians	\$2,227,840	\$1,969,339	\$2,055,805	\$1,997,920
Passenger Vehicles	\$9,863,560	\$10,804,329	\$9,608,509	\$10,834,185
Trucks	\$4,340,288	\$3,233,901	\$4,406,774	\$4,127,746
<i>Truck Revenue per Crossing</i>	<i>\$13.41</i>	<i>\$9.07</i>	<i>\$11.95</i>	<i>\$11.17</i>
<b>Total</b>	<b>\$16,431,688</b>	<b>\$16,007,568</b>	<b>\$16,071,088</b>	<b>\$16,959,851</b>

Since 2009—the presumed end of the global recession—the volume of international trade facilitated via the ports of entry in the El Paso/Juarez area grew more than 80% to \$88.5 B in 2013. By looking at more granular import-export data, we see a clear manufacturing correlation. For example—the largest industry segment in terms of export volumes crossing thru El Paso’s ports in 2012 were \$7.8 billion in electronic component parts and there was a corresponding import volume of \$13.1 billion in finished consumer electronics, primarily computers. We can point to similar relationships in sectors such as automotive, aerospace, medical devices and electrical products (household and electrical). Furthermore we know that of the 340 maquila operations in Juarez, there are at least 70 facilities in El Paso (primarily engaged in manufacturing and distribution) that are owned and operated by a subset of the same companies that own and operate the 340 maquila operations in Cd Juarez. Additionally, there are scores of third party logistics providers in the region which support manufacturing. Given these relationships, cross-border drayage services are extremely important to the efficiency of the region’s manufacturing operations.



It is instructive to look at two data points in combination (import volumes and northbound truck crossings) to gain insight into what is taking place in the region’s manufacturing sector. The data in the chart at right clearly tell us that manufacturing operations south of the border are seeing fairly substantial increases in the value of manufactured products. While all northbound shipments are not being transported by truck (I will clarify this in future drafts), the value per truck shipment has increased by almost two-thirds (64%) from 2007-2013. This suggests that manufacturers might tend to be more sensitive to security and speed than they are to costs when it comes to cross-border drayage.

	Import Volume (\$B-USD)	North-bound Truck Crossings	Value per Truck
2007	\$32.2	836,580	\$38,490
2008	\$30.5	819,108	\$37,236
2009	\$28.7	703,720	\$40,783
2010	\$41.9	786,575	\$53,269
2011	\$45.3	795,335	\$56,957
2012	\$49.6	808,128	\$61,376
2013	\$51.7	820,155	\$63,037

These and other data, provide a strong indicator that the Juarez/El Paso area will likely represent a solid, and growing market opportunity for Freight Shuttle International.

## **Input from the Region's Industrial Sector**

Cook Strategies Group is currently underway with interviews of manufacturers in the region in order to ascertain specific information that will be useful to FSI. Specifically:

- \* Cross-border drayage costs
- \* Cross-border drayage times
- \* Top priorities for cross-border drayage that the freight shuttle system may possibly address

As of this date, I have interviewed 7 manufacturing companies which in total incur about 107-117 northbound movements on a daily basis, approximately 5% of all daily movements in the region. *(Note: A matrix which provides a summary of each company interview appears on the next page)*

- \* Cross-border drayage costs (northbound) range from \$60 to \$115 per movement for drayage costs alone. The average is around \$100 to \$105 per move. In addition to these costs, bridge tolls, customs brokerage fees and related documentation costs will move total costs up to an average of \$180 to \$210 per movement.
- \* Typical crossing times are 1.5 to 2.0 hours, both northbound and southbound
- \* Priority issues mentioned by these companies pertaining to cross-border drayage, include:
  - ⇒ Cost
  - ⇒ Speed
  - ⇒ Security
  - ⇒ Predictability

## **Additional Thoughts**

In order to maximize opportunity in El Paso/Juarez, FSI must work closely with local drayage companies to provide seamless, transportation solutions from point-to-point (warehouse to factory to warehouse) within the El Paso/Juarez metro area. Companies I have interviewed indicate a preference to deal with a single service provider and make only one payment when undertaking a cross-border cargo movement, even though they understand that cargo shipments will be handed off from drayage companies to FSI and visa versa.

As would be expected, companies with higher volumes of shipments are able to negotiate better pricing with drayage companies. Additionally, companies which have demonstrated strong working relationships with CBP, typically experience shorter border crossing times.

Company Name	Company Overview	North-bound Shipments	South-bound Shipments	Cross-Border Drayage Costs	Average Fees	Total Fees	Point Costs on Same Side of Border	Average crossing time	Turns per day	Priorities	Notes
TECMA	Provider of shelter services in Juarez and other Mexican cities; largest in Juarez; owns 17 trucks, 19 drivers and 70 trailers; also own Secure Origins	13,000 per year (both north and south)		\$100 per movement	\$19.50 bridge tolls per movement northbound; add another \$49 to southbound shipments and \$78-\$88 northbound for customs brokerage fees and related documents	\$198-\$208	\$45 per movement	36.5 minutes (during April 2014)	2.2 and believes average is 1.6 to 1.7		Sees FSS as clearly viable, but Mexican drayage companies will be largest obstacle; indicates that less efficient drayage companies are dying
American Industries	Provider of shelter services in Juarez and other Mexican cities; largest in Chihuahua City; most significant player in aerospace	3-4 per day	20-24 per day	South-bound \$85-\$100; north-bound \$80-\$110			NA	1.5 to 2 hours			require carriers to have CTPAT and will ultimately require carriers to have NEEC which is Mexico's equivalent to CTPAT
BizLink	Taiwanese manufacturer of wire and cable	2 per week		\$100 - \$115		NA	NA	NA			
Wistron	Taiwanese manufacturer of consumer electronics; more than 5,000 employees	20 per day	20 per day	\$103	\$100 per trailer	\$203		2 hours		1. Cost	Would like a more economical alternative
Sumitomo	Japanese manufacturer of automotive wiring harnesses and systems	25-30 per day	20 per day	\$60 per movement	\$120 to \$150 per trailer	\$180-\$210		2 hours - 4 hours			In addition to movements mentioned at left, company has rail shipments from Long Beach come to Santa Teresa, offloaded and immediately transported to Juarez at average cost of \$280 per movement (9-11 per week)
Delphi	US-based manufacturer of electrical and electronic automotive components; more than 54,000 employees throughout Mexico	20-25 per day	20-25 per day	would not disclose	-	-	would not disclose	Typically under one hour, although containers with drayage companies require no more than 2 hours		1. Security 2. Transit time/reliability 3. Cost	Ship directly to 5 plants in Juarez and also ship sealed containers to a 3rd party carrier's terminal in Juarez, switch tractor and driver for shipments going to the interior of Mexico; Offered to host a roundtable session with brokers and carriers
MaximaTec	400+ employees	3 per day	3 per day	\$130 per trailer	Toll at Zaragoza POE is \$15 per trailer	\$145+	NA	2-3 hours typically; sometimes 6 hours if "red-lighted"	1	1. Speed 2. Cost	Lease 3 trailers and drivers at cost of \$160 each per month; Will soon obtain CTPAT certification

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## **APPENDIX C**

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### **ASSESSMENT OF JUST-IN-TIME (JIT) SUPPLY CHAIN SECURITY AND EFFICIENCIES FOR COMMERCIAL CARGO OPERATIONS IN EL PASO/JUAREZ**

#### **Questions for manufacturing companies in the El Paso/Juarez region**

1. What type of supply chain logistics/inventory control system does your company use?
2. If your company uses a just-in-time inventory system, what do you consider its advantages?
3. If your company uses a just-in-time inventory system, what do you consider its disadvantages?
4. Do border crossing times affect the type of inventory control system your company uses?
5. How does your company forecast product demand?