

**CITY OF EL PASO, TEXAS
AGENDA ITEM
DEPARTMENT HEAD'S SUMMARY FORM**

DEPARTMENT: City Manager

AGENDA DATE: May 31, 2011

CONTACT PERSON NAME AND PHONE NUMBER: Jane Shang, Deputy City Manager

DISTRICT(S) AFFECTED: All

SUBJECT:

Discussion and action regarding the adoption of the El Paso Regional Ports of Entry Operations Plan as presented by James Brogan of Cambridge Systematics.

BACKGROUND / DISCUSSION:

n/a

PRIOR COUNCIL ACTION:

n/a

AMOUNT AND SOURCE OF FUNDING:

n/a

BOARD / COMMISSION ACTION:

Enter appropriate comments or N/A

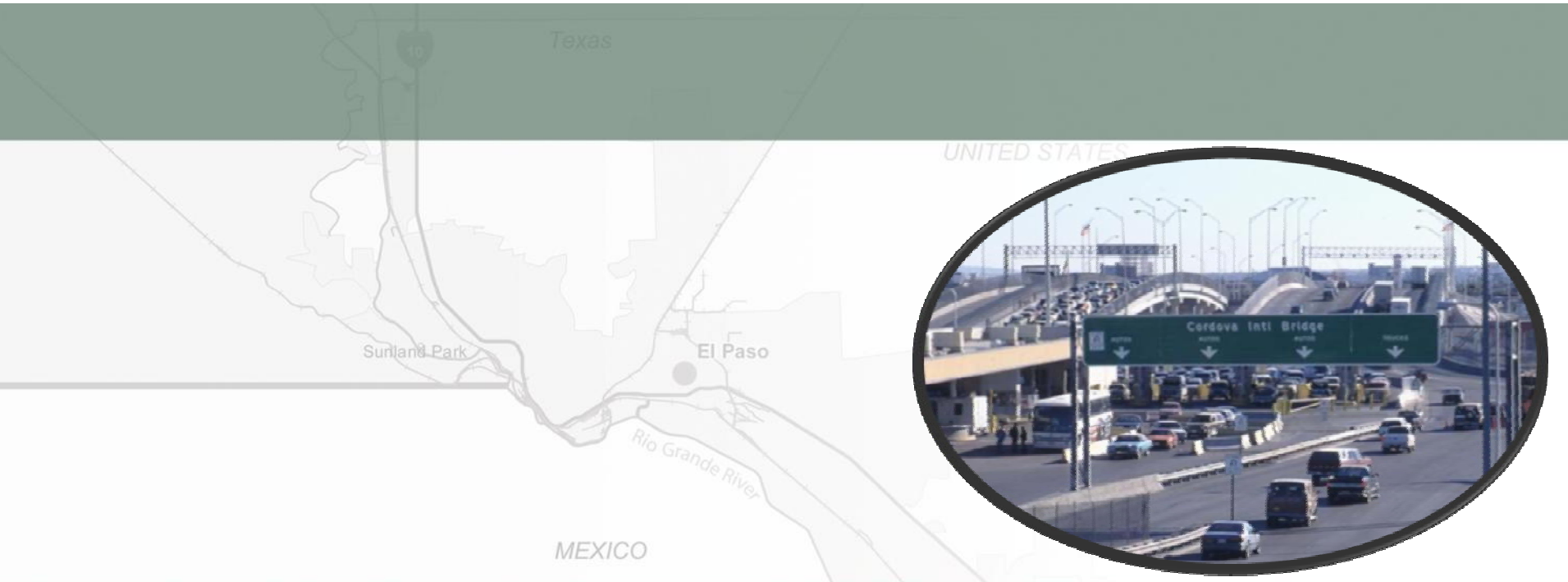
*****REQUIRED AUTHORIZATION*****

DEPARTMENT HEAD:

(If Department Head Summary Form is initiated by Purchasing, client department should sign also)

Information copy to appropriate Deputy City Manager

El Paso Regional POE Operations Plan



**El Paso City Council
May 31, 2011**



El Paso Regional POE Operations Plan

Today's Agenda

- **Summary of Stakeholder & Public Outreach Activities**
- **Plan Adoption and Next Steps**
- **Development of Regional Master Plan**





El Paso Regional POE Operations Plan

Stakeholder Outreach Activities

- Chambers of Commerce
- Southwest Maquila Association
- Foreign Trade Association
- Paso del Norte Group
- Model Border Ports Committee
- Committee on Border Relations
- U.S. CBP & Aduana
- Mexico & U.S. Consulate
- GSA
- CAPUFE
- INDAABIN
- IBWC





El Paso Regional POE Operations Plan

Stakeholder Outreach Activities (cont.)

- Congressman Reyes & staff
- Senator Udall staff
- State elected officials & staff
- EP County Commissioners
- EP City Representatives
- Ysleta ISD
- CRRMA Board and staff
- El Paso MPO & IMIP
- TxDOT El Paso District
- NMDOT District 1
- NM Border Authority



El Paso Regional POE Operations Plan Public Outreach Activities

- Seven public meetings conducted



- Over 200 attendees, with significant print, radio, and TV coverage
- Comments focused primarily on need and location of new infrastructure





El Paso Regional POE Operations Plan

Plan Adoption & Next Steps

- **Operations Plan adopted unanimously by Advisory Committee on May 19th**
 - » **Some minor revisions and clarifications necessary to address stakeholder and public comments**
- **Finalizing Project Report, data and tools for delivery to region by June 30, 2011.**





El Paso Regional POE Operations Plan

Master Plan Development

- **Consensus-based Regional Master Plan is critical element of accessing Federal funds**
 - » **This Operations Plan represents ~85% of what a regional master plan should include**
- **Development of a Regional Master Plan should focus on:**
 - » **More detailed assessment of pedestrian issues and strategies**
 - » **“Inside the gate” improvements at ports of entry to improve overall flows**
 - » **Assessment of cross-border transit options and links to regional system**
 - » **Feasibility assessment of other, non-operational strategies to address POE issues**



El Paso Regional POE Operations Plan

Questions?



El Paso Regional Ports of Entry Operations Plan



Draft

prepared for

Texas Department of Transportation

prepared by

Cambridge Systematics, Inc.

with

HNTB Corporation

KPMG, LLC

Harris Interactive Services Bureau

May 2011



draft report

El Paso Regional Ports of Entry Operations Plan

prepared for

Texas Department of Transportation

prepared by

Cambridge Systematics, Inc.
9015 Mountain Ridge Drive, Suite 210
Austin, TX 78759

with

HNTB Corporation
KPMG, LLC
Harris Interactive Services Bureau

date

May 2011

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1.0 Introduction and Background

The El Paso/Juárez region's international border crossings are a system of regional, statewide, and national significance. This system provides a critical link between maquiladora factories, primarily located in Ciudad Juárez, and distribution centers and consumer markets located in metropolitan El Paso, Texas and New Mexico, and beyond. All told, more than \$69.4 billion in U.S.-Mexico trade crossed through the region's ports of entry in 2010, a 47 percent increase from 2009. This represents nearly 18 percent of total trade between the U.S. and Mexico – making the El Paso gateway the second-busiest land port of entry in the U.S. by total trade value.

In addition to facilitating trade, this system also provides access to schools and businesses and contributes to a shared regional culture and lifestyle. In 2010, over 60,000 passenger cars and nearly 22,000 pedestrians used these crossings each day. Overall, border-dependent businesses and travelers contributed over \$1 billion to the regional economy and supported nearly 700,000 jobs on both sides of the border. Clearly, this system is a key contributor to the overall health and competitiveness of the El Paso, Juárez, and Texas economies, linking the two communities, fostering international trade, and creating and supporting high-paying, attractive jobs for the region's residents.

However, this vital system is being stressed by continued growth in traffic, trade, and pedestrian volumes, driven by the growing populations and economies of Texas, in general, and the El Paso/Juárez region, in particular. Even though traffic and pedestrian volumes declined in the midst of the 2007-2009 global recession and security crisis in Northern Mexico, these volumes already are growing from their 2009 lows and are expected to grow significantly between now and 2035, driven by expected growth (to 3.4 million) of the regional population. These growth patterns will exacerbate existing wait times at the border – which already have increased more than 60 percent over the last six years – and cause congestion along critical access routes. Trip times and costs for travelers will increase, service reliability for freight shippers and carriers will decrease, and the ability of the system to recover from emergencies and service disruptions will become severely taxed. Layered on top of these concerns is the increasing challenge of balancing mobility needs with social, financial, environmental, and security concerns; rapidly rising infrastructure investment and maintenance costs; and a recognition that neither the public nor private sectors – acting independently – have the necessary resources to fully address rising system demands. Individually or collectively, these issues may erode the efficiency and productivity of the El Paso border crossing system, leading to economic implications that will reverberate locally, regionally, nationally, and internationally.

Although many regional stakeholders, agencies, and entities have examined these and other border issues – and in many cases have brought forward their own ideas about how they should be addressed – until now there has been no systemwide examination of the region's border crossings as an integrated whole.

There also has not been an assessment of operational strategies that could be employed to make the existing system of crossings more efficient. A system-wide, operationally focused approach is critical, because without a clear understanding of how existing capacity and systems can be maximized, it will be very difficult to build regional political, financial, or institutional support and momentum for new capacity investments, if needed.

Completion of this Operations Master Plan presents a new approach focused on identifying and implementing operational strategies (i.e., staffing, system management, technological, and policy improvements) to:

- Maximize the use of the El Paso's existing system of border crossings;
- Recognize and integrate the various needs, perspectives, and sensitivities of all the different users of the crossings as well as the agencies and entities that are responsible for planning, managing, and securing it; and
- Provide the region with the information needed to work with statewide, national, and international transportation and security policy-makers, the private sector freight and manufacturing communities, and local, regional, and national partners to more effectively and comprehensively plan for the future.

1.1 OUR CHARGE

We were charged with assessing the current and future operations of the region's six international border crossings, from Santa Teresa, New Mexico, to the planned Tornillo-Guadalupe port of entry. Our focus was on identifying operational improvements to improve the current performance of this existing system and determining whether or not these improvements would allow it to absorb future demand.

We were guided in our work by a set of principles, described below, that we used as a touchstone to ensure that our approach, analysis, and final recommendations met the most important transportation, industry, economic, and quality-of-life needs and issues identified by regional stakeholders and interest groups.

El Paso Regional Ports of Entry Plan Guiding Principles

- Focus on strategies that optimize the use of existing infrastructure.
- Focus on strategies that reduce crossing times without sacrificing security and enforcement or creating bottlenecks elsewhere on the system.
- Consider logical combinations of operational, policy, and traffic engineering solutions, leveraging technology where feasible.
- Ensure that final potential solutions minimize impacts to the health, safety, function, and character of surrounding neighborhoods.
- Include a mix of immediate, short-, mid-, and long-term solutions.
- Ensure solutions provide economic, environmental, and/or trade facilitation benefits on a regional scale.

The following sections describe the current conditions at the region's existing ports of entry, the issues and challenges that are impacting their condition and performance, and a series of operational and policy recommendations for regional stakeholders and leadership to consider. The companion to this report, the *Project Summary Report*, provides comprehensive documentation of all the technical and outreach activities conducted to support our conclusions.

2.0 The Setting

2.1 THE EL PASO/JUÁREZ BORDER CROSSINGS REPRESENT A SYSTEM OF REGIONAL, NATIONAL, AND INTERNATIONAL SIGNIFICANCE

The El Paso-Juárez region's border crossings, shown in Figure 2.1, are the glue that keeps one of North America's largest cross-border metropolitan areas – and one of its most important manufacturing platforms – connected and operational. All told, the region's border crossings constitute a system of regional, statewide, national, and international significance. The region's manufacturing, services, educational, and retail sectors are tightly linked and their continued cohesiveness is crucial to present and future economic vitality both within the region and beyond.

Located along a 45-mile stretch of the U.S.-Mexico border, the six crossings in the region include:

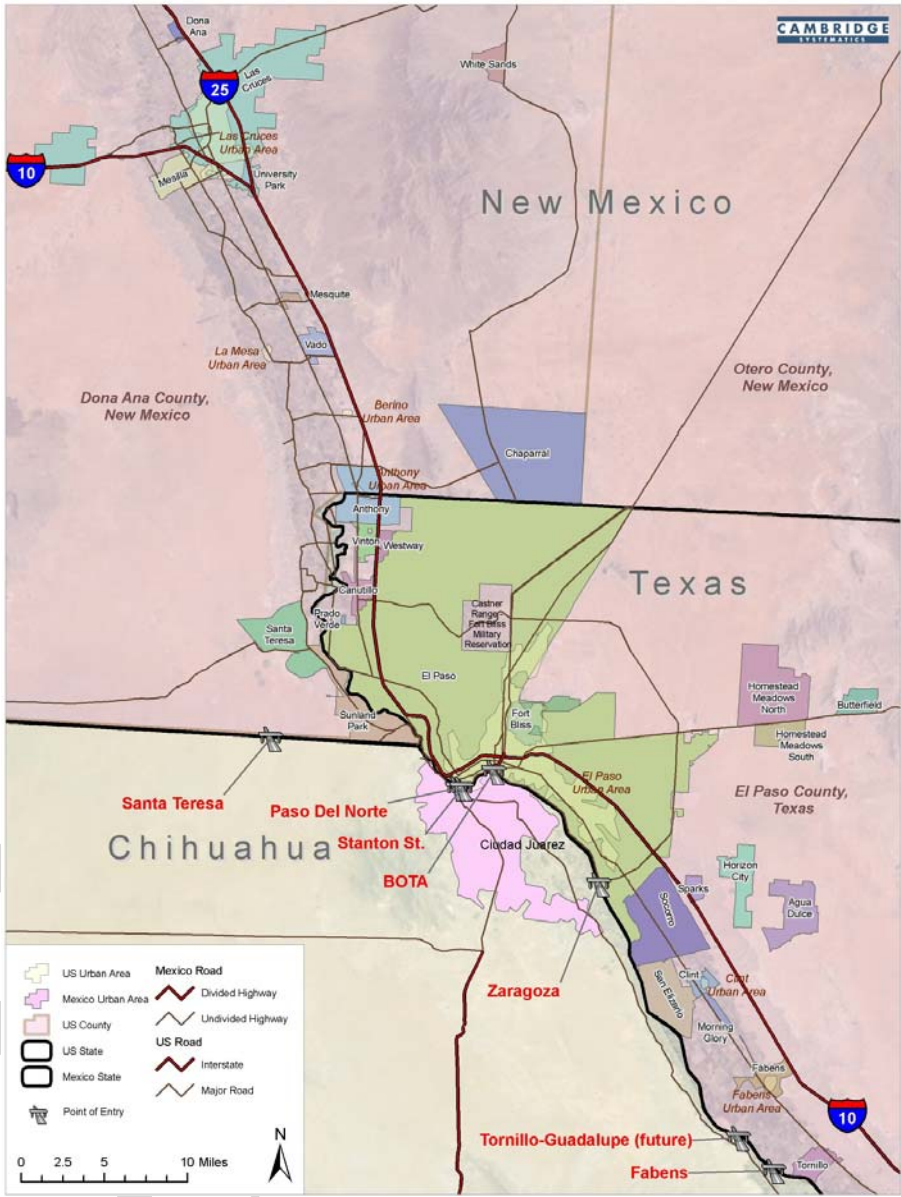
- **Santa Teresa**, located in Doña Ana County, NM just west of Sunland Park. The port of entry is connected to I-10 via the Pete Domenici Highway. Santa Teresa is a non-tolled facility.
- **Paso del Norte International Bridge (PDN)** handles northbound automobile traffic and northbound and southbound pedestrian traffic. It connects to U.S. 85 via El Paso Street and Santa Fe Street. Southbound pedestrians are tolled at \$0.50. Northbound tolls are 23 pesos for passenger vehicles and 3 pesos for pedestrians.
- **Stanton Street Bridge** lies just east of the Paso del Norte Bridge. It handles mostly southbound vehicular traffic but has one northbound Dedicated Commuter Lane (DCL). Southbound passenger vehicles are tolled at \$2.50 and pedestrians at \$0.50. Drivers using the northbound DCL lane pay an annual toll of 3,850 pesos in addition to the “trusted traveler” (SENTRI) enrollment fee charged by Customs and Border Protection (CBP) every five years.
- **Bridge of the Americas (BOTA)** is the primary port of entry in the El Paso region, handling more than half of all international crossing traffic (passenger and commercial).¹ The bridge connects to U.S. 62 (Paisano Drive) and I-10 via I-110. BOTA is a non-tolled facility.

¹ Texas Department of Transportation and RJ Rivera Associates, *Border Crossing Travel Time Study*, June 2008.

-
- **Ysleta-Zaragoza (Zaragoza)** is located in eastern El Paso. It connects to I-10 via State Highway 375 (North Americas Avenue). Southbound passenger vehicles are tolled at \$2.50, commercial vehicles at \$3.50 per axle, and pedestrians at \$0.50. Northbound tolls are 23 pesos for passenger vehicles, 137 pesos for commercial vehicles (five axles), and 5 pesos for pedestrians. Similar to the Stanton crossing, a northbound DCL booth is available at Zaragoza. Drivers pay 24 pesos per DCL crossing in addition to CBP's five-year SENTRI enrollment fee.
 - **Fabens-Caseta International Bridge** is a small, light-duty bridge originally constructed in 1938. It connects to I-10 via FM 1109, Texas 20, FM 76, and FM 793.²

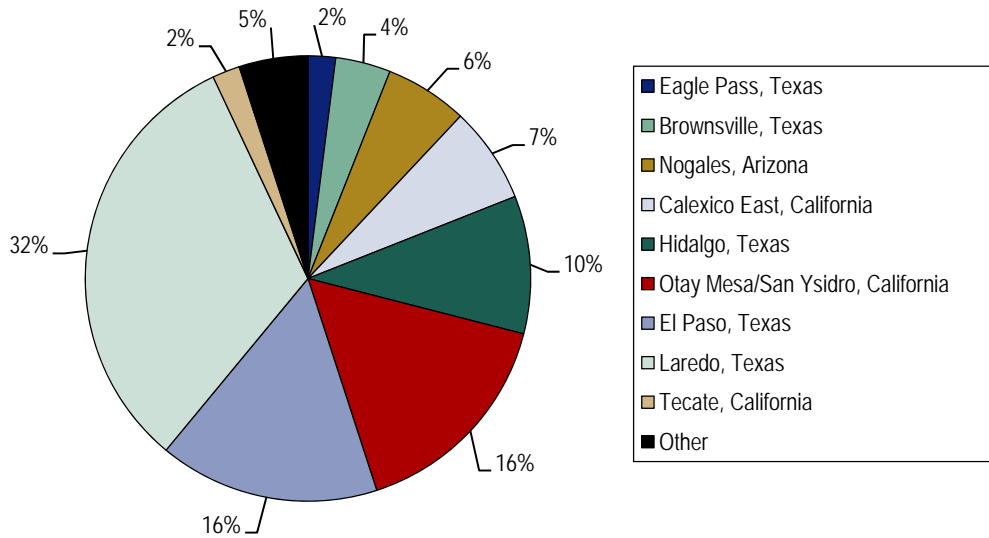
² A replacement bridge is currently under construction in Tornillo and is expected to be complete by 2012. The new crossing will be a fully tolled facility and, once complete, the existing Fabens-Caseta International Bridge will be demolished.

Figure 2.1 El Paso Regional Border Crossings



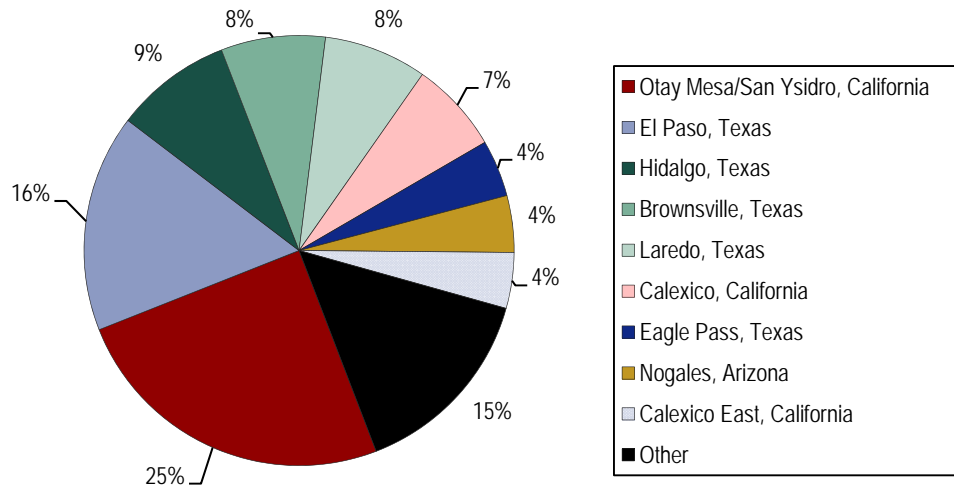
Collectively, the region’s six ports of entry handle the second-largest volumes of trucks and passenger vehicles along the entire southern U.S. border, as shown in Figures 2.2 and 2.3. These trucks account for approximately 16 percent of total U.S.-Mexico trade, as shown in Table 2.1.

Figure 2.2 Truck Volumes at Southern Border Crossings
2009



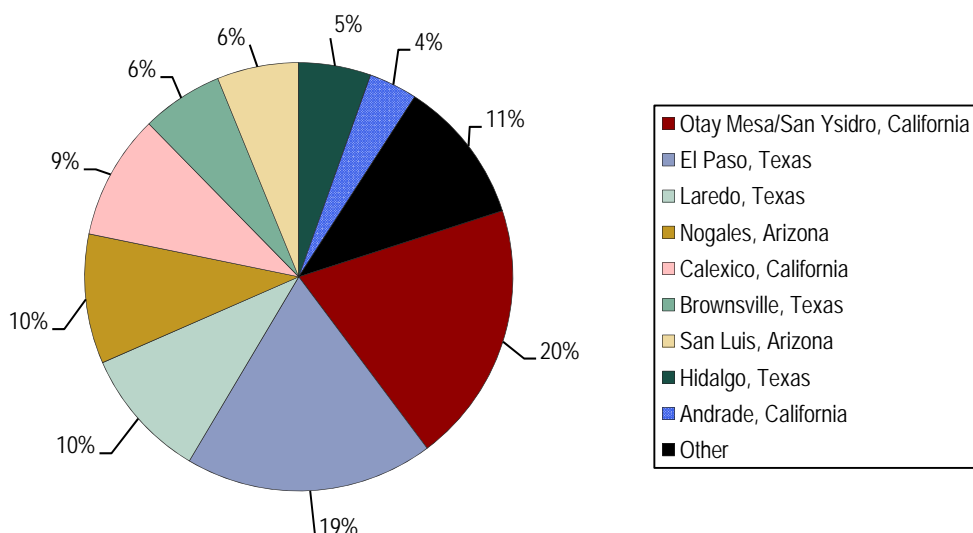
Source: U.S. Bureau of Transportation Statistics.

Figure 2.3 Passenger Vehicle Volumes at Southern Border Crossings
2009



Source: U.S. Bureau of Transportation Statistics.

Figure 2.4 Pedestrian Volumes at Southern Border Crossings
2009



Source: U.S. Bureau of Transportation Statistics.

Table 2.1 Top Five Ports by Percent Share of U.S.-Mexico Trade by Value
Millions of U.S. Dollars

Port	2001	2002	2003	2004	2005	2006	2007	2008
Laredo, Texas	41.2%	41.1%	40.5%	41.0%	40.2%	39.4%	39.7%	40.8%
El Paso, Texas	18.8%	19.3%	19.8%	19.5%	18.5%	17.7%	17.6%	16.9%
Otay Mesa, California	10.0%	10.6%	10.1%	10.2%	10.5%	10.8%	11.0%	11.2%
Hidalgo, Texas	6.4%	6.6%	7.4%	7.3%	7.8%	7.6%	7.9%	7.8%
Nogales, Arizona	6.5%	5.6%	5.3%	5.5%	6.0%	7.2%	6.5%	6.7%

Source: U.S. Department of Transportation TransBorder Freight Data.

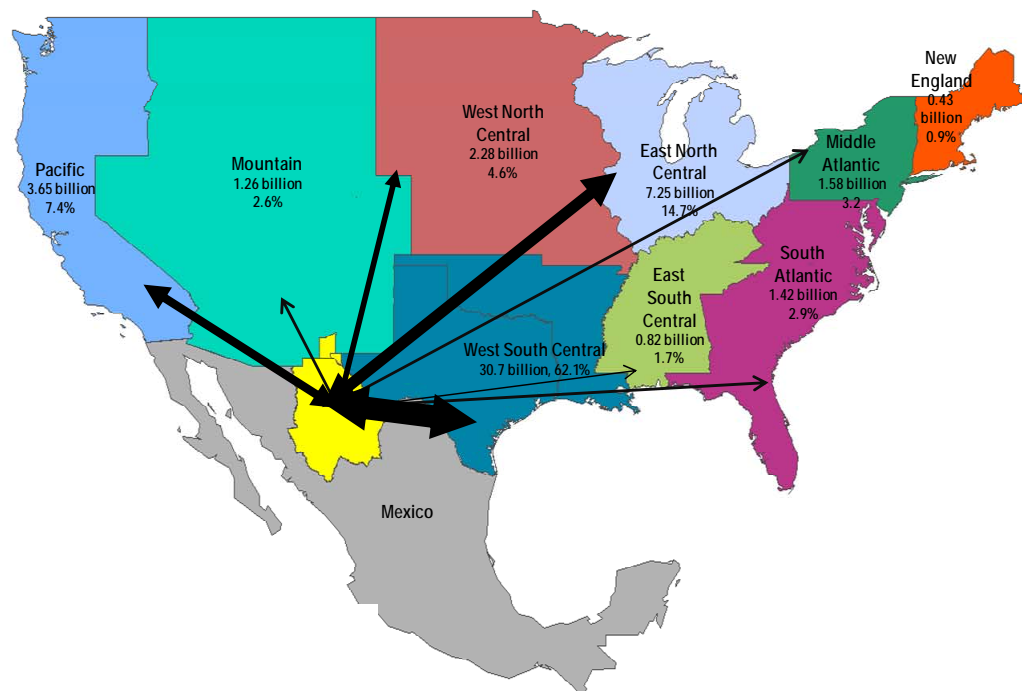
These regional movements support industries not only in the greater El Paso/Juárez region, but across the nation. Inputs to manufacturing activities in Juárez or finished products destined for the Mexican market have origins throughout the United States. The northbound movement of finished goods is just as important, as products manufactured or assembled in Mexico cross the border to reach markets in the United States and Canada. Figure 2.5 shows trade distribution patterns of goods (based on value) that come to/from El Paso from/to different regions of the U.S. The three regions with the highest value trade volumes flows include:

- **The West South Central region** (Texas, Arkansas, Louisiana, and Oklahoma), which dominates overall flows through the El Paso ports of entry due to the heavy volume of cross-border maquiladora activity taking place

within the El Paso-Juárez area, as well as geographic proximity to large population centers like Dallas-Fort Worth and Houston.

- **The East North Central region** (Illinois, Indiana, Michigan, Ohio, and Wisconsin), which has the next largest share (nearly 15 percent of the total, or \$7.3 billion), reflecting the Midwest's role as the traditional manufacturing heartland of the nation. For this reason, El Paso-Juárez has significant trading relationships with Midwestern manufacturers who maintain twin plants in Juárez.
- **The Pacific region** (California, Oregon, and Washington), which makes up the next largest share at \$3.7 billion (7.4 percent of the total), reflecting large consuming markets along the West Coast.

Figure 2.5 Trade Flows by Region of Goods Crossing El Paso and Santa Teresa Ports of Entry
2008



Source: TRANSEARCH Commodity Flow Data, 2008

2.2 THE REGIONAL ECONOMIES ARE TIGHTLY LINKED

Movements of both passengers and goods across the border also contribute significantly to the regional economy, both in terms of jobs and gross regional product (GRP). Industries reliant on the border crossings account for about 115,000 direct jobs in El Paso County, 559,000 direct jobs in Chihuahua, and 19,000 direct jobs in Doña Ana County, as shown in Table 2.2.

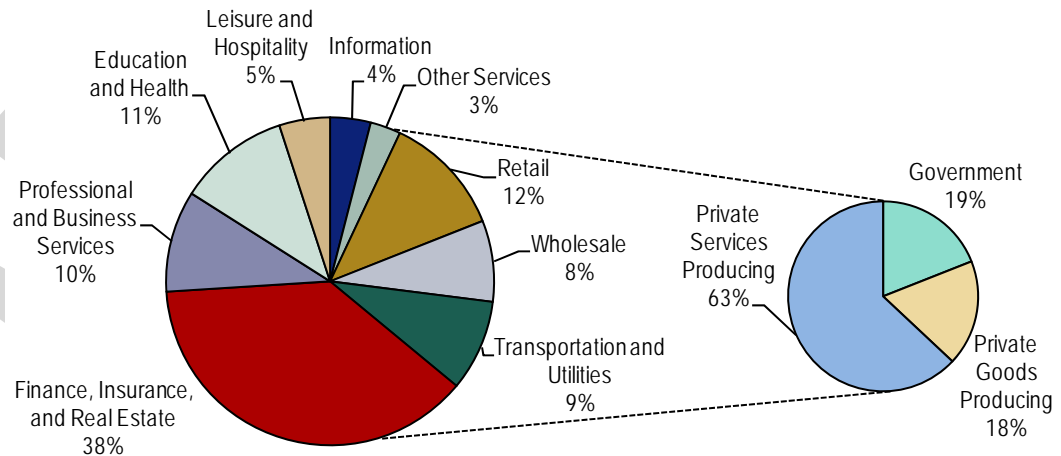
**Table 2.2 Direct Employment of Border Dependent Sectors
2008**

Sector	El Paso	Chihuahua	Dona Ana	Total
Manufacturing ^a	14,576	302,863	1,961	319,400
Retail and Wholesale Trades	58,400	177,210	10,833	246,443
Financial Services	27,244	7,213	4,899	39,356
Transportation and Warehousing	14,441	71,393	1,011	86,845
Total	114,661	558,679	18,677	692,017

^a This refers to only border dependent manufacturing subsectors.

These industries also contribute significantly to the strength of the regional economy. In El Paso, output for service-oriented businesses, many of which directly or indirectly support the maquiladora industry, represents nearly two-thirds of GRP, as shown in Figure 2.6. Manufacturing (or “goods producing”) activities themselves were responsible for \$2.5 billion of El Paso’s economic output, or approximately 18 percent of El Paso’s GRP.

**Figure 2.6 El Paso Economic Structure
Industry Shares of Gross Product, 2007**



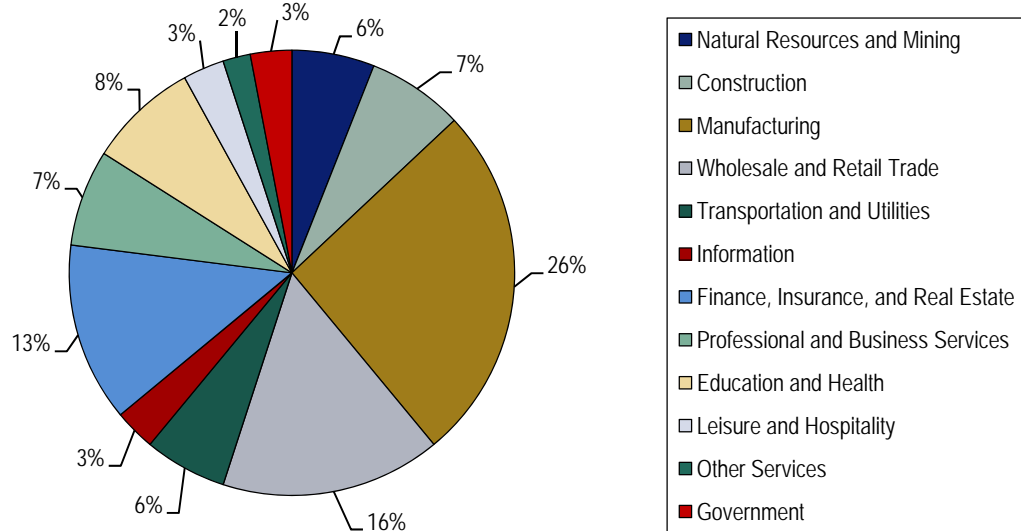
Source: U.S. Bureau of Economic Analysis.

Note: GDP data available through 2007 only. The difference between 2007 and 2008, the year used for the economic analysis, is not expected to impact the conclusion in this report.

The Juárez economy also is similarly dependent on services-providing industries. However, the goods-producing industries (manufacturing, natural resources, and construction) account for a much greater share of the Ciudad Juárez economy, largely due to the concentration of manufacturing-oriented maquiladoras in the city and surrounding area. Manufacturing alone accounts for over one-quarter of the Juárez economy. Although the City’s economic structure is diversifying to

include more services-oriented activities, including back-office functions such as coupon sorting, manufacturing remains and will likely remain its mainstay.

Figure 2.7 Ciudad Juárez Economic Structure
Industry Shares of Gross Product, 2008



Source: University of Texas at El Paso.

These GRP figures underline the comparative advantages of the two economies – El Paso in services and transportation and Ciudad Juárez in manufacturing. The degree to which these two economies are linked cannot be emphasized enough. Table 2.3 shows that most of the inputs required by the maquiladoras are supplied from El Paso locations. For each of the 10 most significant maquiladora industries shown in the table, between 14 and 18 of their top 20 suppliers are located in El Paso. This further underlines the complementary linkages between the manufacturing sector in El Paso and the maquiladoras in Ciudad Juárez.

Table 2.3 Supplier Relationships Between Ciudad Juárez Maquiladoras and El Paso Suppliers

Juárez Demand for Inputs	Supply of Inputs to Juárez from El Paso	Top Two Supplies
Motor Vehicle Parts Manufacturing	17 of the top 20 suppliers operate in El Paso	Motor vehicle parts; iron and steel mills and ferroalloy
Semiconductor and Other Electric Parts Manufacturing	17 of the top 20 suppliers operate in El Paso	Semiconductor and related device, printed circuit (electronic) assembly
Electrical Equipment Manufacturing	16 of the top 20 suppliers operate in El Paso	Relay and industrial control, iron and steel mills and ferroalloy

Juárez Demand for Inputs	Supply of Inputs to Juárez from El Paso	Top Two Supplies
Medical Equipment and Supplies Manufacturing	15 of the top 20 suppliers operate in El Paso	Surgical and medical instrument, surgical appliance and supplies, and advertising and related services
Communications Equipment Manufacturing	17 of the top 20 suppliers operate in El Paso	Broadcast and wireless communication equipment, semiconductor and related services, software publishers
Printing Ink Manufacturing	14 of the top 20 suppliers operate in El Paso	Synthetic dye and pigment, paint and coating manufacturing
Navigational, Measuring, Electromedical, and Control Instruments	16 of the top 20 suppliers operate in El Paso	Software publishers, scientific R&D services
Audio and Video Equipment Manufacturing	18 of the top 20 suppliers operate in El Paso	Electron tube manufacturing, printed circuit (electronic) assembly manufacturing
Plastics and Product Manufacturing	15 of the top 20 suppliers operate in El Paso	Plastics material and resin manufacturing, plastics packaging materials, and unlaminated film and sheet
Household Appliances Manufacturing	18 of the top 20 suppliers operate in El Paso	Plastics packaging materials and unlaminated film and sheet, other plastics product manufacturing

Source: C. Juárez Manufacturing and El Paso Industry Linkages, Institute for Policy and Economic Development.

El Paso also is a significant draw for shoppers and visitors from Juárez for a number of reasons. Reportedly, these travelers favor the quality, selection, and price of products in the U.S. (although price has become less of a factor than it had been in the past) and enjoy the shopping experience in the U.S. Shopping and entertainment in the U.S. have also become even more attractive given the current circumstances in Juárez. The El Paso Regional Economic Development Corporation estimates that spending by Mexican nationals accounts for about 20 percent of total retail sales in El Paso. The ease by which Mexican shoppers can cross the border is clearly crucial to the health and growth of El Paso's large retail sector.

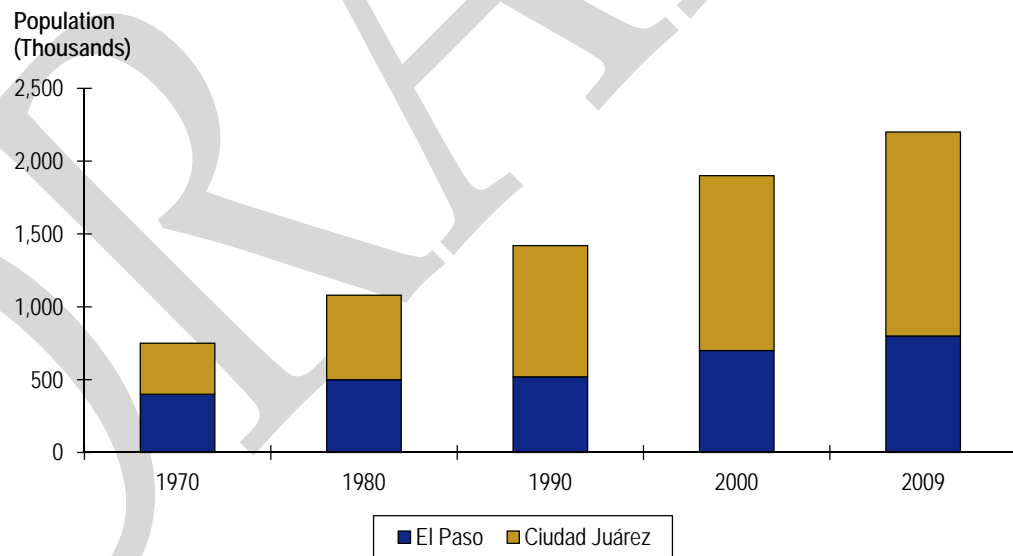
Together, El Paso and Ciudad Juárez form a cohesive economy that provides jobs to the region's residents, revenue to local governments, and effectively competes on a global basis by capitalizing on specific strengths on each side of the border. In order for this economy to act as a functioning unit, however, the region's border crossings need to work efficiently in terms of timeliness and their ability to handle large volumes of freight and people.

2.3 REGIONAL POPULATION IS LARGE AND GROWING

The El Paso-Juárez region had an estimated population of 2.1 million in 2009, about the same number of people as the City of Houston, currently the nation's fourth-largest city.³ This makes the region the second largest metropolitan area on the U.S.-Mexico border, following San Diego-Tijuana.

Population in El Paso County⁴ and Ciudad Juárez has been growing steadily for the past several decades. The population of this border region grew from approximately 785,000 in 1970 to 2.1 million in 2009, representing a 175 percent increase (Figure 2.8). The intensive development of the maquiladora industry in Ciudad Juárez began in the 1970s and has since attracted a steady flow of domestic migrants from the central and southern regions of Mexico to take advantage of the jobs and income opportunities provided by the maquiladoras. Since the advent of the maquiladoras, Ciudad Juárez has surpassed El Paso in population size. As discussed above, El Paso has become an important supplier of materials and services to Juárez's maquiladoras, and international migration, primarily from Mexico, has been a strong factor in El Paso's population growth since 1970.

Figure 2.8 El Paso and Ciudad Juárez Population
1970 to 2009



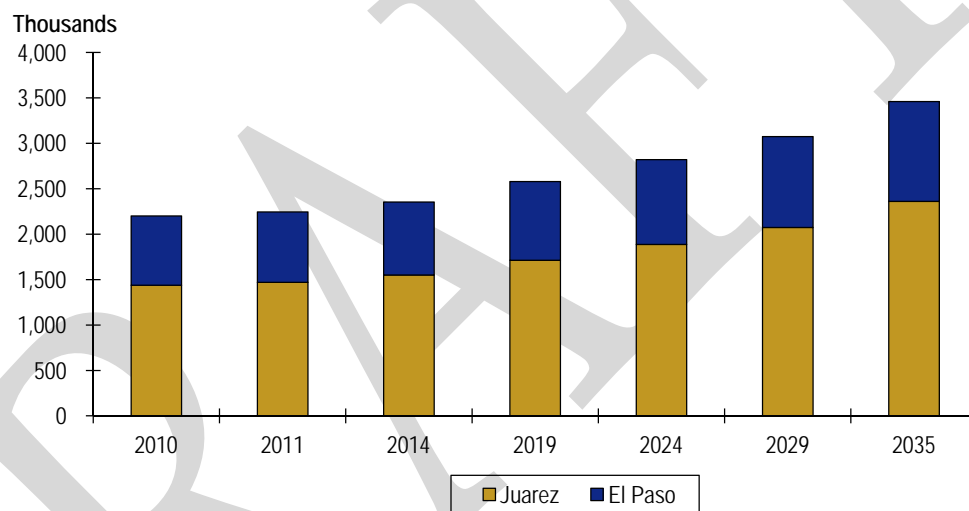
Source: UTEP Border Region Modeling Project.

³ University of Texas El Paso, Borderplex Economic Outlook: 2009-2011, December 2009.

⁴ In this document, unless otherwise specified, the term El Paso refers to El Paso County, rather than the City of El Paso or the El Paso Urbanized Area.

Although the 2007-2009 global recession, coupled with the security crisis in Northern Mexico, has tempered population growth in the short-term, population levels in the region are expected to continue climbing over the long term, as shown in Figure 2.9. The population of El Paso is forecast to expand by 1.4 percent annually on average, reaching nearly 1 million people by 2035.⁵ Driven by its attractiveness as a gateway to the United States and the economic opportunities afforded by the maquiladora industry, Ciudad Juárez is forecast to grow at a more robust two percent annual rate, and is expected to reach about 2.1 million by 2035. All told, nearly 3.4 million people (about the size of present-day Minneapolis-St. Paul) will reside in the El Paso-Juárez region within the next two decades.

Figure 2.9 El Paso and Ciudad Juárez Population Forecasts
2010 to 2035, in Thousands



Source: UTEP, *Borderplex Long-Term Economic Trends to 2029*, April 2010 with Cambridge Systematics extrapolation from 2029-2035.

This growth will be driven by natural increase as well as positive net migration due to what is expected to be a healthy labor market and regional economic growth. The expansion of Fort Bliss, a major beneficiary of the Base Realignment and Closure (BRAC) process, also will contribute to population growth. Between 2006 and 2013, Fort Bliss will realize an increase of about 27,000 active duty personnel who are expected to bring about 36,800 family members.⁶ The importance of El Paso as a regional center serving a vast area, its role as an international gateway, and the

⁵ University of Texas at El Paso, *Borderplex Long-term Economic Trends to 2029*, April 2010 with Cambridge Systematics extrapolation from 2029-2035.

⁶ El Paso Regional Economic Development Corporation, *El Paso Military and Defense*. <http://www.elpasoredco.org/TargetInd-MilitaryDefense.aspx>. Accessed 9/13/2010.

major expansion of Fort Bliss are factors that are expected to contribute to strong population growth in El Paso County in coming years.

Strong regional population growth in El Paso-Juárez will translate into a significantly larger consuming market in the coming years. This, in turn, will generate an increase in freight demand to supply that market with consumer goods, energy, and construction materials and will stimulate additional cross-border trips for shopping, education, recreational activities, and other services.

2.4 THE REGION’S BORDER CROSSINGS HAVE UNIQUE OPERATIONAL CHARACTERISTICS

The El Paso/Juárez border crossings have a number of unique operational characteristics, particularly compared to other regions in Texas and the rest of the Southern U.S. border. First, the region includes six major passenger and commercial crossings, which is significantly more than many other major cross-border urban areas and manufacturing centers. San Diego, the busiest regional port of entry along the southern border for passenger vehicles and pedestrians, has only two crossings (San Ysidro and Otay Mesa), while Laredo, the busiest commercial port of entry, has four individual crossings. Although the El Paso ports of entry, in combination, provide a comparable number of inspection lanes as those in San Diego and Laredo (Table 2.4), the higher number of crossings in the El Paso region – and the choices they provide for travelers – is a unique and significant asset to the region.

Table 2.4 Comparison of Maximum Existing Lane Capacity at Southern Border Ports of Entry

Border Region	Total Inspection Lanes		
	Commercial Vehicles	Passenger Vehicles	Pedestrians
El Paso (6 ports of entry)	17	44	21
Laredo (4 ports of entry)	26	21	5
San Diego (2 ports of entry)	10	43	20

Source: Customs and Border Protection, <http://apps.cbp.gov/bwt/>.

Second, the crossings serve a very large and dense population. As noted earlier, the combined population of the region, already above two million, is expected to grow significantly over the next several decades. One key feature of the El Paso/Juárez region is the density of this population. Like many border crossing regions, the economies, industries, and communities within the El Paso/Juárez region are tightly linked. Unlike many other regions, however, the ports of entry connecting El Paso and Juárez connect two dense and active central business districts and many residents commute across the border daily to shop, receive medical services, attend school, or work.

As a result, the vast majority of the traffic served by the region's crossings, particularly the downtown crossings (PDN, Stanton, and BOTA), are passenger vehicles and pedestrians. In fact, these crossings serve a tremendous number of pedestrians (over 7.5 million in 2009), buses (over 20,000 in 2009), and bus passengers (over 300,000 in 2009⁷), many of whom are crossing back and forth during peak travel hours in the morning and evening to meet work or school schedules (see the example of a typical morning commute below). Although this volume has dropped somewhat over the last several years, as a result of the 2007-2009 global recession and security situation in Northern Mexico, this still represents a tremendous volume of cross-border "commuter" traffic.

A Typical Morning Commute

Passenger movements across the Paso del Norte Bridge north to El Paso starts early in the morning, often before dawn. While many travelers are students, either attending grades K-12 or college at the University of Texas at El Paso (UTEP), others travel for shopping or work. The trip into El Paso differs based on type of traveler. On the right side of the bridge, in a line with up to two hour wait times, are Mexican citizens, including those with border crossing cards. On the left, with shorter waits, are American citizens, and students who go to schools in El Paso.

Travelers on a typical morning include:

- High school student – one of many carrying book bags on the bridge. All 25 of her classmates at a Methodist school in El Paso also live in Ciudad Juárez.
- A mother on her way to buy special milk and medicine for a child with a severe stomach illness.
- A commuter crossing to get to work at a hospital in El Paso.

Serving as a connector between shopping districts and a combined population of approximately two million, travel on the region's bridges in both directions is routine for many. It is apparent that providing access to El Paso for Mexican residents, students, shoppers, and employees has a significant impact on not only the regional economy, but the quality of life of individuals on both sides of the border.

Adapted from *Bridging a Gap Between Fear and Peace* by Damien Cave for the New York Times, February 14, 2011.

A final characteristic of the region's crossings – and one that influences travel demand for both passengers and commercial movements – is the fact that BOTA is a non-tolled facility, an arrangement protected by the Chamizal Treaty of 1964. BOTA is the only free bridge within the El Paso/Ciudad Juárez city limits and any change to the treaty would require a new agreement between the U.S. Congress and the Mexican Federal government. As a result of its location and its standing as

⁷ U.S. Bureau of Transportation Statistics.

a toll-free bridge, BOTA has several key impacts on travel patterns in the region, as described below:

- Original construction of BOTA was completed in 1967 (four replacement bridges were completed in 1998). As a result, much of the region's manufacturing and industrial infrastructure has developed in and around this crossing. Although several bridge options exist in the region, many travel choices (both commercial and passenger) are made based on proximity – and BOTA often presents the shortest path between origins and destinations in the region.
- BOTA, as a toll free bridge, also has a price advantage over all of its competitors in the region, for both commercial and passenger traffic. Many travelers, particularly those on the low end of the socioeconomic spectrum (for passengers) or with increasingly tight profit margins (for commercial), choose to use this free bridge over other tolled options.
- BOTA is truly situated at the crossroads of the region, with proximity to downtown El Paso and Juárez; I-10 (east and west), U.S. 62 (Paisano Drive), and U.S. 54 (north) in El Paso; and Mexico 45 (south) and Avenue H. C, Militar (east and west) in Juárez. As a result, this crossing is attractive to travelers with origins and destinations across the region.

For these and other reasons, BOTA remains a powerful draw for cross-border travelers and remains the busiest crossing in the region.

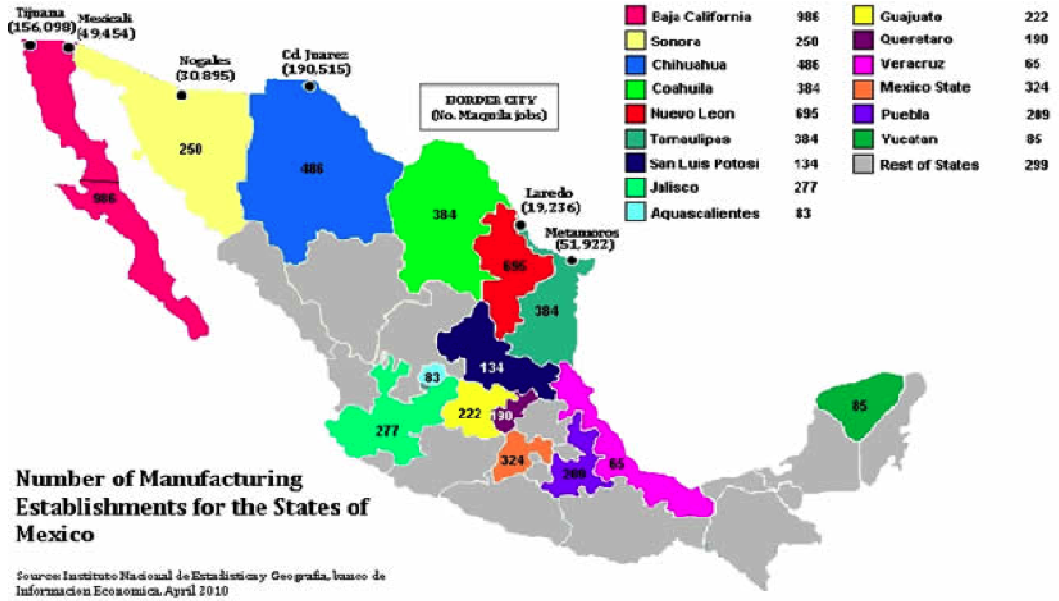
Maquiladoras and Commercial Operations

Another unique characteristic of the region's border crossings is their importance to the region's manufacturing base. As noted earlier, Juárez-based maquiladoras are a main engine of the El Paso-Juárez economy and require distribution facilities, administrative offices and legal, accounting, and financial services, much of which are sourced from businesses located in El Paso. Juárez maquiladoras are also provided with components and inputs from manufacturers, often subsidiaries of Midwestern and internationally-owned companies, on the El Paso side of the border. In addition, El Paso's hotels and restaurants cater to off-site maquiladora management, personnel representing domestic and international suppliers, and other visitors.

This broad range of linkages stimulates employment in diverse economic sectors and provides jobs for area residents. Indeed, the success of the maquiladoras is a binational operation. Businesses on both sides of the border depend on the crossings to efficiently link these firms. An advantageous combination of labor, location, distribution facilities, transportation connections, market proximity, and technological capabilities make the El Paso-Juárez industrial complex a favored destination for global manufacturing. In fact, the State of Chihuahua has nearly 500 maquiladoras, the third highest

among Mexican states, and there are more maquiladora jobs in Juárez (over 190,000) than any other border city, as shown in Figure 2.10.⁸

Figure 2.10 Maquiladora Locations and Employment

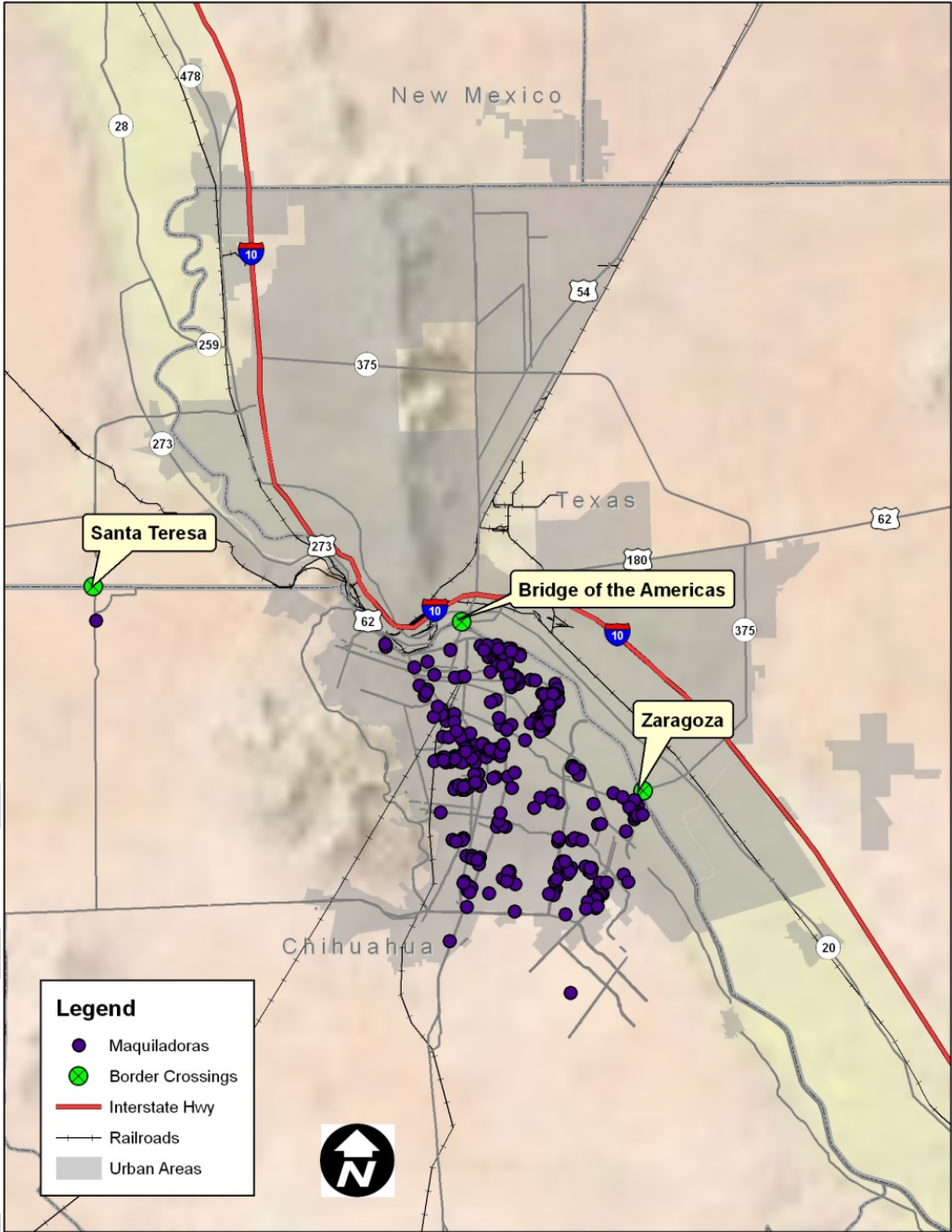


Source: El Paso Regional Economic Development Corporation (REDCo).

Although maquiladora locations are located throughout Ciudad Juárez, these plants are concentrated most heavily in designated industrial zones which are generally bounded by the BOTA and Zaragoza crossings, as shown in Figure 2.11.

⁸ El Paso Regional Economic Development Corporation.

Figure 2.11 Maquiladoras in Ciudad Juárez



Source: Paso del Norte Mapa, <http://www.pdnmapa.org/pdnmapa/index.htm>

When the North American Free Trade Agreement (NAFTA) went into effect in 1994, one of its key provisions was the establishment of a border commercial zone along the U.S.-Mexico border by 1995. Figure 2.12 shows a map of the border commercial zone. In the El Paso region, the commercial zone includes the area within 20 miles of the El Paso ports of entry and all of Doña Ana County.

Mexican trucks are permitted to operate within this zone to facilitate efficient cross-border freight movement.

Figure 2.12 U.S.-Mexico Border Commercial Zone



Source: Federal Motor Carrier Safety Administration.

All of these characteristics impact the operations at the region's crossings, particularly for commercial vehicles. As opposed to many border regions, cross-border truck moves between Juárez and El Paso are typically accomplished using short-haul drayage operators. Dray trucks are hired to transport loaded trailers across the border where long-haul trucks pick them up for final delivery to inland markets.

Maquiladora operations typically require constant back-and-forth deliveries across the border for supplies and finished product. Typical cross-border trucks make four to six individual crossings (two to three round trips, otherwise known as "turns") per day, often using more than one crossing on inbound and outbound trips. This reliance on dray fleets has important implications for border commerce, and therefore port of entry operations. In particular, the number of truck turns (pickups and deliveries) per day is critical for both shippers and truck operators. Delays at border crossings translate into fewer truck turns and therefore potentially lost revenue. The intensive use of drayage also adds to congestion, increases transportation costs, and can threaten the reliability of shipments (e.g., missed deliveries due to border crossing delays). These issues can erode the competitiveness of the industries that rely on cross-border commerce, potentially jeopardizing the overall strength of the El Paso-Juárez economy.

Conversely, improving border crossing operational efficiency may make it possible for companies to make more deliveries each day, thereby increasing productivity. The number of turns per day also is crucial for drayage truck drivers since they are typically paid on a per load basis rather than by the hour. Additionally, maquiladoras practice just-in-time inventory management techniques, making timely deliveries a crucial part of the production process. Inventory sitting idly at border crossings is a cost and a missed delivery can slow production or bring it to a stop. The following case study of a typical truck crossing describes relevant border crossing experiences in the region.

A Typical Truck Crossing

Hundreds of drayage trucks carry products between manufacturing and distribution facilities on opposite sides of the border each day. Some companies make 1,000 border crossings per week between El Paso and Juárez.

A typical day for a truck consists of the following activities:

- The driver inspects his rig, which has been parked overnight at a truck terminal in Juárez, when he arrives in the morning;
- Dispatch provides the driver with his routes for that day, which are planned out a week in advance;
- The driver arrives at a Mexican plant, goes through security, obtains the appropriate Customs paperwork, and picks up his load;
- The driver proceeds to the appropriate border crossing and waits to clear Customs;
- Typically, the truck is already approved to cross via the FAST program, though some trucks do get randomly inspected;
- Once the truck has cleared Customs, it proceeds to the Texas Department of Public Safety booth for a safety inspection; and
- The driver proceeds to the cargo drop-off point on the U.S. side, picks up a load bound for Juárez, and then repeats the process, until a shift change occurs or the commercial ports of entry close for the night.

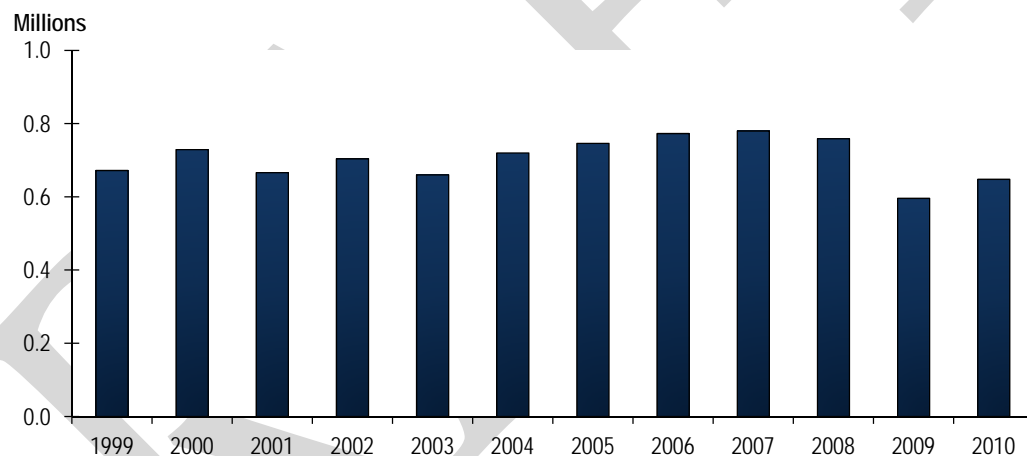
Most carriers complete five to six trips per day, or about three turns total. Anything more than six trips is considered to be a good day; less than five is a bad day. Common causes of delay include accidents, manufacturing rushes to meet holiday demand, limited number of open inspection lanes, bomb threats, drug busts, and computer system problems at CBP or the Aduana (Mexican Customs).

Source: Cambridge Systematics interviews with shippers and carriers in the El Paso/Juárez region, 2010

2.5 VOLUMES AND DELAYS ON THE SYSTEM ARE SIGNIFICANT AND ARE IMPACTING PERFORMANCE

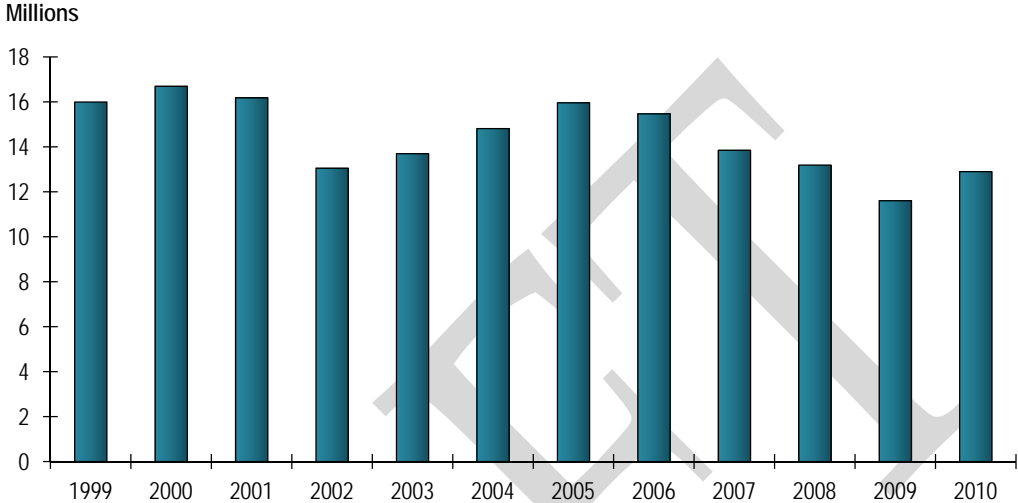
As described above, the region's crossings represent a system of regional, national, and international significance, and play a critical role in supporting regional businesses, generating significant economic impacts, and contributing to a shared sense of culture and lifestyle. However, this system is being stressed by the high volume of passenger and commercial vehicles crossing the border – both north and southbound. As shown in Figures 2.13 and 2.14, after declining in 2009 due to the global economic crisis, both northbound commercial and passenger volumes are beginning to grow and regional growth projections indicate that this trend will continue.

Figure 2.13 Northbound Commercial Vehicle Border Crossings
1999 to 2010, in Millions



Source: UTEP Border Region Modeling Project.

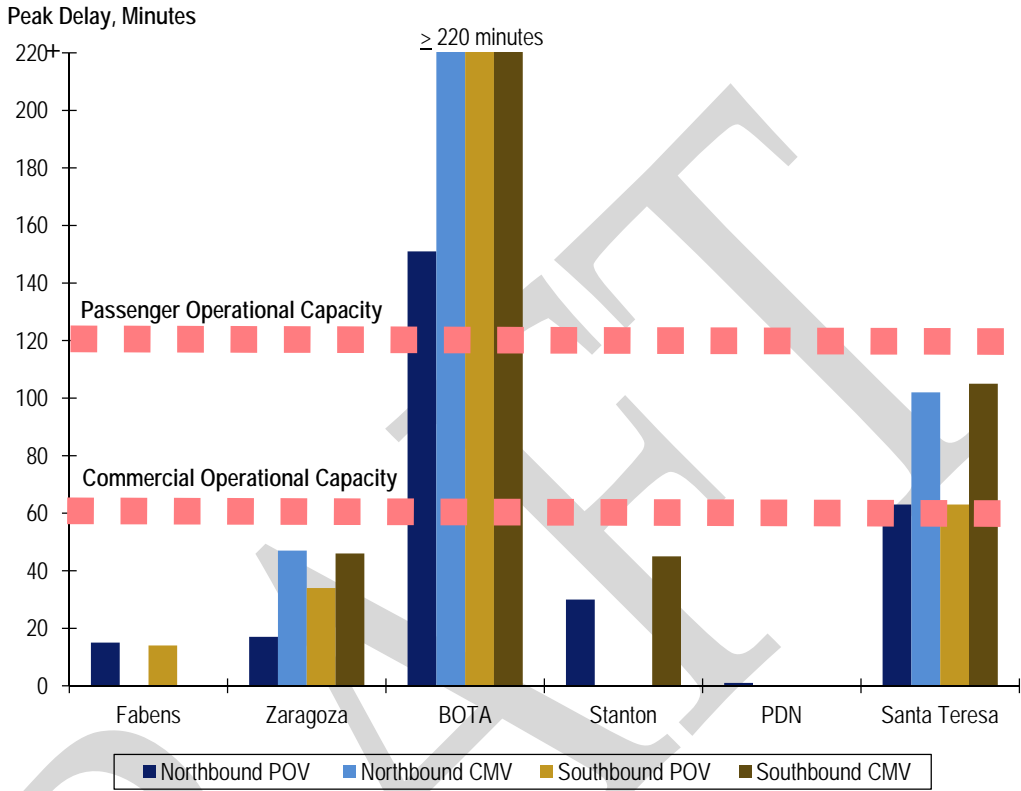
Figure 2.14 Northbound Passenger Vehicle Border Crossings
1999 to 2010, in Millions



Source: UTEP Border Region Modeling Project.

These volumes are beginning to impact wait times at the border, some of which already are significantly high. For example, typical “peak period” wait times at BOTA already exceed two hours for passenger traffic and one hour for commercial vehicles during average days, as shown in Figure 2.15. And on busy days, wait times can be even longer. Wait times at these levels indicate “operational capacity,” or the point at which the crossing can no longer efficiently handle travel demand. Failure to address these operational capacity issues can have significant regional economic, business, and lifestyle implications.

Figure 2.15 Peak Delay Times by Crossings
Passenger and Commercial, 2011



Source: Cambridge Systematics, operational model output.

3.0 The Challenge

The El Paso/Juárez border crossing system is a critical regional, statewide, and national resource, representing the second busiest land port of entry in the U.S. (by total trade value), providing access to schools and businesses, and contributing to a shared regional culture and lifestyle. However, this vital system is being stressed by continued growth in traffic, trade, and pedestrian volumes, increasingly fragile and prone to significant congestion and delays, and slow to recover from service disruptions or incidents on the bridges themselves or along key regional corridors and approach networks.

Layered on top of these concerns is the challenge of managing growth in population, employment, and cross-border travel and the corresponding challenge of balancing mobility and economic needs with social, environmental, and security considerations. Individually or collectively, these issues may erode the efficiency and productivity of the region's border crossing system, leading to economic implications that will reverberate locally, regionally, nationally, and internationally. This section describes several key trends and describes their implications for the efficiency of the El Paso/Juárez border crossing system.

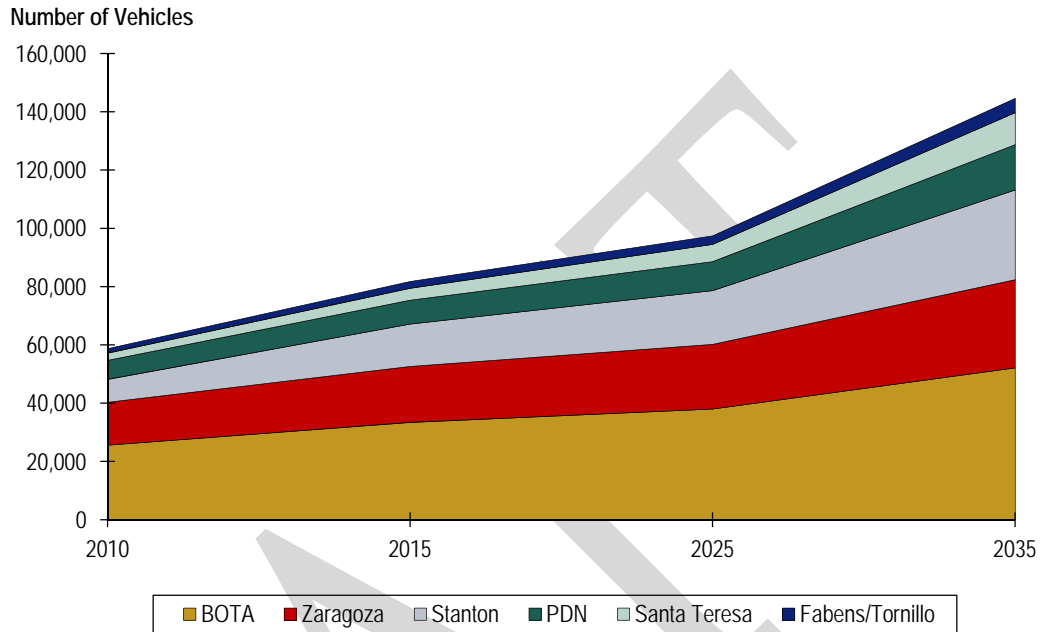
3.1 DEMAND ON THE SYSTEM IS GROWING

As described in Section 2.0, the El Paso/Juárez region already is the largest metropolitan area on the U.S./Mexico border, with a combined population of approximately 2 million, and is expected to grow by 57 percent to more than 3.4 million by 2035. This will translate into significant additional passenger and freight demand on the region's border crossings, as well as the corridors that serve them.

Passenger Movements

Even though passenger traffic and pedestrian volumes declined in the midst of the 2007-2009 global recession and continuing security crisis in Northern Mexico, these volumes are expected to grow significantly between now and 2035. In fact, overall passenger vehicle movements are expected to grow by 146 percent between now and 2035, as shown below in Figure 3.1.

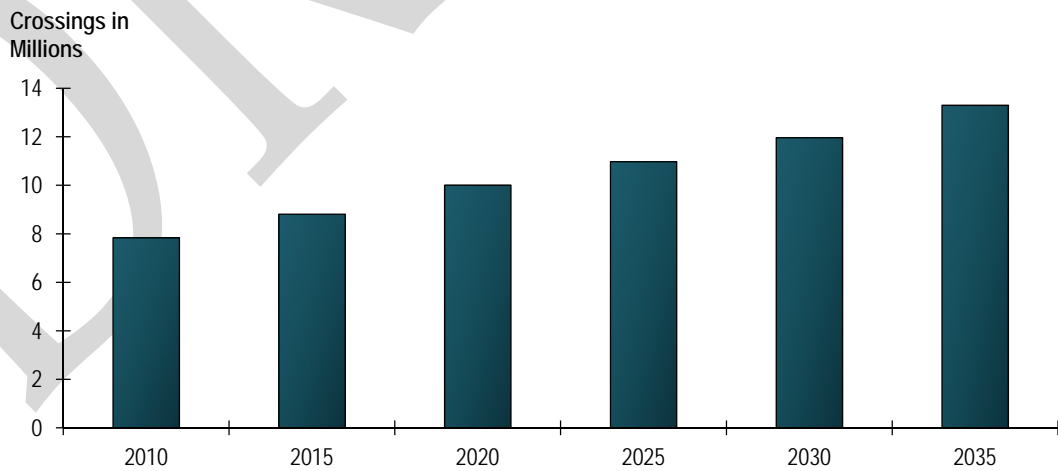
Figure 3.1 Anticipated Daily North and Southbound Passenger Volumes
2010 to 2035



Source: U.S. Customs and Border Protection (2010 counts), UTEP Border Region Modeling Project (forecast years through 2029) with Cambridge Systematics extrapolation from 2029-2035.

Pedestrian traffic is expected to grow significantly, as well, reaching 13 million annually (northbound) by 2035, as shown in Figure 3.2.

Figure 3.2 Annual Northbound Pedestrian Volumes
2010 to 2035, in Millions

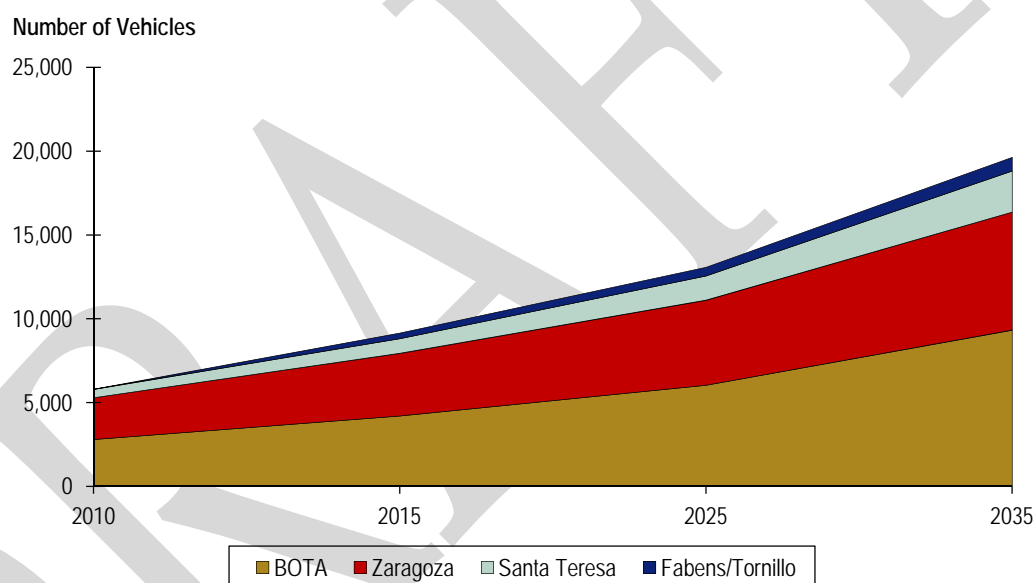


Source: UTEP Border Region Modeling Project with Cambridge Systematics extrapolation from 2029-2035.

Freight Movements

Total cross-border freight volumes are expected to increase by more than 75 percent by 2035, to a total of 25.5 million tons with a value of \$111.0 billion. Nearly all of this volume (78 percent by weight, 90 percent by value) will be transported by truck, adding significant truck movements to the region's commercial crossings, connections to warehousing and distribution facilities, and to the region's major trade corridors (primarily I-10 and U.S. 54). This growth will be realized most intensely at the region's ports of entry, where total commercial movements are expected to grow to more than 20,000 crossings per day in 2035 (see Figure 3.3).

Figure 3.3 Anticipated Daily North and Southbound Commercial Volumes
2010 to 2035



Source: U.S. Customs and Border Protection (2010 counts), UTEP Border Region Modeling Project (forecast 1 years through 2029) with Cambridge Systematics extrapolation from 2029-2035.

3.2 INCREASING BORDER WAIT TIMES ARE LEADING TO OPERATIONAL FAILURE

As described above, many portions of the region’s existing border crossing system already are at or approaching “operational capacity,” defined here as having average peak wait times⁹ of 60 minutes (for commercial vehicles) or 120 minutes (for passenger vehicles). These wait times are realized most acutely at the region’s busiest crossings, BOTA and Zaragoza, which already are at or near this operational capacity threshold, as earlier shown in 2.14.

Without operational improvements and as cross-border traffic volumes are expected to increase between 2010 and 2035, these existing wait times will grow significantly at all crossings and all lane types (Table 3.1). As a result, nearly all lane types at all crossings within the region will reach operational capacity by 2035, some much earlier, as shown in Table 3.2. The only exception is select “trusted traveler” lanes, such as SENTRI and FAST, which will continue to operate just below the operational capacity threshold.

⁹ “Operational Capacity” thresholds are based on *peak delay for average daily traffic*, which represents the maximum or highest delay reported for an average day within an hour. On days where traffic volumes exceed average daily volumes, travelers are likely to experience wait times that exceed these peak delays.

Table 3.1 Peak Delay by Crossing and Lane Type

Direction	Lane Type	Delay, in Minutes ^a			
Northbound	POV	2011	2015	2025	2035
	Fabens/Tornillo ^b	< 60	< 60	60-120	360+
	Zaragoza	< 60	< 60	120-240	360+
	Zaragoza (DCL)	< 60	< 60	< 60	< 60
	BOTA	120-240	360+	360+	360+
	Stanton (DCL Only)	< 60	120-240	360+	360+
	PDN	< 60	< 60	< 60	360+
	Santa Teresa ^c	60-120	< 60	360+	360+
Northbound	Commercial	2011	2015	2025	2035
	Tornillo ^b	N/A	< 30	<30	60-120
	Zaragoza	< 30	120-240	240+	240+
	BOTA	120-240	240+	240+	240+
	Santa Teresa ^c	60-120	< 30	60-120	240+
Southbound	POV	2011	2015	2025	2035
	Fabens/Tornillo ^b	< 60	<60	60-120	360+
	Zaragoza	< 60	60-120	240-360	360+
	BOTA	240-360	360+	360+	360+
	Stanton	< 60	< 60	< 60	360+
	Santa Teresa	60-120	240-360	360+	360+
Southbound	Commercial	2011	2015	2025	2035
	Tornillo ^b	N/A	< 30	30-60	240+
	Zaragoza	< 30	120-240	240+	240+
	BOTA	120-240	240+	240+	240+
	Santa Teresa	60-120	240+	240+	240+

Source: Cambridge Systematics, operational model output.

^a Delay projections based on unconstrained demand forecasts through 2035. Assessment reflects existing southbound (outbound) U.S. inspection processes.

^b Assumes that the new Tornillo port of entry will replace the Fabens crossing by 2015.

^c Assumes the ARRA capacity improvements planned for the northbound lanes at the Santa Teresa crossing will be completed by 2015.

Rating Key:

	Acceptable	Marginal	Exceeds Operational Capacity		
Commercial Crossings	< 30	30-60	60-120	120-240	240+
Passenger Crossings	< 60	60-120	120-240	240-360	360+

Table 3.2 Anticipated “Operational Capacity” Year by Lane Type

Port of Entry	Lane Type	Anticipated “Operational Capacity” Year	
		Southbound	Northbound
Fabens/Tornillo ^a	Passenger Vehicle	2026	2027
	Commercial	2026	2032
	FAST	>2035	>2035
Zaragoza	Passenger Vehicle	2016	2021
	SENTRI	>2035	>2035
	Commercial	2012	2012
	FAST	2017	2017
BOTA	Passenger Vehicle	2010	2011
	Commercial	2011	2011
	FAST	2013	2013
Stanton	Passenger Vehicle	2028	N/A
	SENTRI	N/A	2015
PDN	Passenger Vehicle	N/A	2028
Santa Teresa ^b	Passenger Vehicle	2012	2017
	Commercial	2011	2020
	FAST	>2035	>2035

Source: Cambridge Systematics, operational model output.

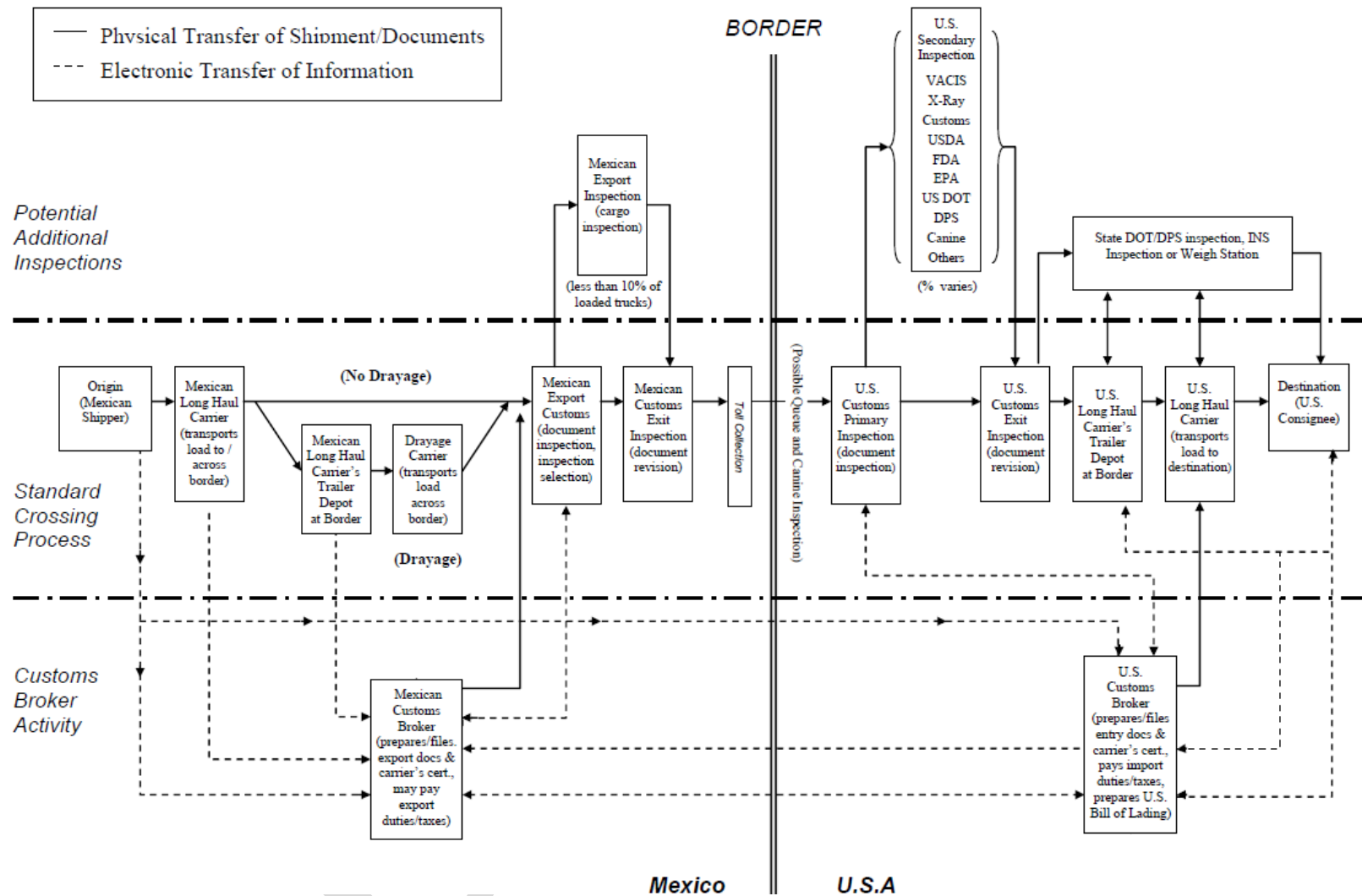
^a Assumes that the new port of entry in Tornillo will replace the Fabens crossing by 2015.

^b Assumes the ARRA capacity improvements planned for the northbound lanes at the Santa Teresa crossing will be completed by 2015.

There are a number of processes and inspections that take place at the border, as shown in Figure 3.4, all of which serve a critical security, trade, and duty/tax function. And U.S. Customs and Border Protection (CBP) recognizes that “trade is the key to the economic prosperity in the U.S., and securing the flow of people and cargo is Customs’ integrated mission.”¹⁰

¹⁰ Edmonson, R.G. “Bersin Pushes Security, Trade Integration.” *The Journal of Commerce*, June 22, 2010. <http://www.joc.com/government-regulation/bersin-pushes-security-trade-integration>.

Figure 3.4 Schematic Flowchart of Northbound Commercial Border Crossing Process



Source: Texas Transportation Institute, Truck Transportation through Border Ports of Entry: Analysis of Coordination Systems, TxDOT Final Report, November 2002.

Southbound Inspections

In 2009, CBP reestablished more prevalent southbound inspections at the ports of entry in an effort to curb the flow of illegal weapons and money from the U.S. into Mexico. While these inspections do not take place at all crossings at all times, seizures of illegal contraband have increased over the last two years.¹¹ However, southbound inspections have caused some negative impacts, particularly on mobility, since none of the infrastructure at the ports of entry themselves - or on their approach networks - were designed with southbound inspections in mind. Without adequate infrastructure to accommodate vehicle queuing, like the storage lanes in place for the northbound inspection facilities, southbound inspections create traffic bottlenecks that cause backups and delays on the roadways approaching the ports of entry. If southbound inspections become a more prominent and permanent fixture of Federal border law enforcement, as is being called for by some Federal and state decision-makers, they will exacerbate delays further and hinder cross-border economic activity.

3.3 NOT ADDRESSING THESE WAIT TIMES WILL AFFECT THE REGIONAL ECONOMY

As described previously, trade and travel across the U.S. and Mexico border is a key contributor to the economic health of both countries. However, growing traffic volumes between the two countries, coupled with enhanced security procedures at the ports of entry, has resulted in increased congestion and delays at the border. Long and unpredictable border delay at the crossings adversely impact cross-border commerce as well as the economic health of the region. If left unchecked through 2035, forecasted congestion and delay at the border is expected to contract the economy by \$54 billion or 21.8 percent of regional economic activity, and cause a net job loss of about 850,000 (or 17.4 percent).¹² While Juárez/Chihuahua would suffer the majority (72 percent) of this regional economic contraction and 77 percent of the associated job loss, economic activity and employment in El Paso would also decline.

Loss of business competitiveness due to cross-border freight delay will likely result in either relocation of businesses in the region or a potential cut-back in goods production. Similarly, this economic contraction is expected to result in a net migration of 1.8 million residents from the region to seek other economic opportunities (pop-

¹¹ Hicks, Nolan. "Southbound Checkpoints are Pushed." *San Antonio Express News*, April 6, 2011. <http://www.mysanantonio.com/default/article/Bill-would-create-southbound-inspection-1324194.php>.

¹² Cambridge Systematics analysis based on REMI simulation. These economic impacts are based on an unconstrained demand forecast through 2035.

ulation and job shifts).¹³ This migration away from the El Paso-Juárez region would affect the long-term economic growth of the region since over 50 percent of this migrating population would be of critical working-age (20-44).

While construction and manufacturing industries are the major industries in Juárez/Chihuahua affected by cross-border delay, wholesale and retail trades, healthcare, accommodation and food services, and manufacturing industries in El Paso would also decline. While cross-border delay associated with commute trips is shown to have marginal impact on the regional economy today, it is expected to adversely affect El Paso's economy in future. By 2035, work-related delay is expected to cause 2.6 percent loss in El Paso's economic activity, compared to 0.5 percent and 0.2 percent in Juárez/Chihuahua and Dona Ana County, respectively.

3.4 ADDING CAPACITY TO THE SYSTEM IS CHALLENGING

Agency and business leaders in the El Paso/Juárez region understand the importance of investing in the border crossing system and have made a number of investments to expand the physical capacity of its ports of entry over the last two decades. Major improvements were made at BOTA in 1998; additional commercial lanes were added to Zaragoza in 2008; both automobile and pedestrian inspection lanes at PDN were increased in 2009. In the next several years, Santa Teresa will be expanding passenger vehicle lanes, adding another commercial inspection lane, expanding passenger and commercial vehicle queuing, and expanding pedestrian inspection areas; Promofront is making investments along the approaches to Zaragoza (on the Mexican side); and the new Tornillo-Guadalupe port of entry (six-lane bridge to replace Fabens located 650 yards downstream) is expected to be operational in 2012.

Despite these investments, however, growth in travel demand using the crossings has outpaced the investments in infrastructure – and adding additional capacity can be challenging for a number of reasons. Many of the region's border crossings are "land-locked" and face an acute shortage of land suitable for development, either because of surrounding land uses or ecological, historical, or cultural sensitivity in and around the existing bridges. As a result, physical expansion can have significant financial and environmental costs. Of particular concern are environmental justice issues, as neighborhoods adjacent to existing crossings and those that are located along approach networks and major highway trade corridors are often those that house the poorest citizens in the community. And regional population growth anticipated in the future on both sides of the border will result in even greater future limitations to infrastructure expansion.

¹³ Net migration based on unconstrained demand forecast through 2035.

In addition, there are a variety of state, Federal, and local agencies involved in the planning and approval of border crossing improvements. Infrastructure improvements spanning the border of two countries require a different and more complex process than that for other improvements, and can take many years. A Presidential Permit must be secured for construction of international bridges. This process, led by the Department of State, involves the collaboration of at least 10 Federal and multiple Texas agencies and may take several years due to environmental and other issues involved. The Mexican approval process for constructing international bridges is similar to that of the United States. However, any proposed project for a new port of entry must be evaluated based on an established set of priorities under the advisement of the Bridges and Border Crossings Interagency Group (Grupo Intersecretarial de Puentes y Cruces Fronterizos). The proposed project must be presented for consideration to the interagency group chaired by the Ministry of Foreign Relations, and in which the Ministry of Communications and Transportation participates.¹⁴ These and other interlocking requirements for coordination among Federal, state, and local agencies, along with permit and environmental approvals, can significantly expand the time required to plan and implement expansion projects, often driving up the cost of a project significantly. Although these reviews and approvals serve an essential function, the costs of the reviews themselves, in dollars, time to complete, and uncertainty, can be substantial.¹⁵

Customs Staffing

Nearly as challenging as adding physical capacity to the system is the recruitment, training, and retention of Customs and Border Protection (CBP) personnel to staff inspection booths at existing crossings. CBP is responsible for protecting the nation's borders with a priority mission of preventing terrorists and terrorist weapons from entering the United States, while also facilitating the flow of legitimate trade and travel. It implements several U.S. laws and regulations, and is made up of law enforcement professionals, trade specialists, intelligence analysts, agricultural scientists, and other employees with a wide range of backgrounds.

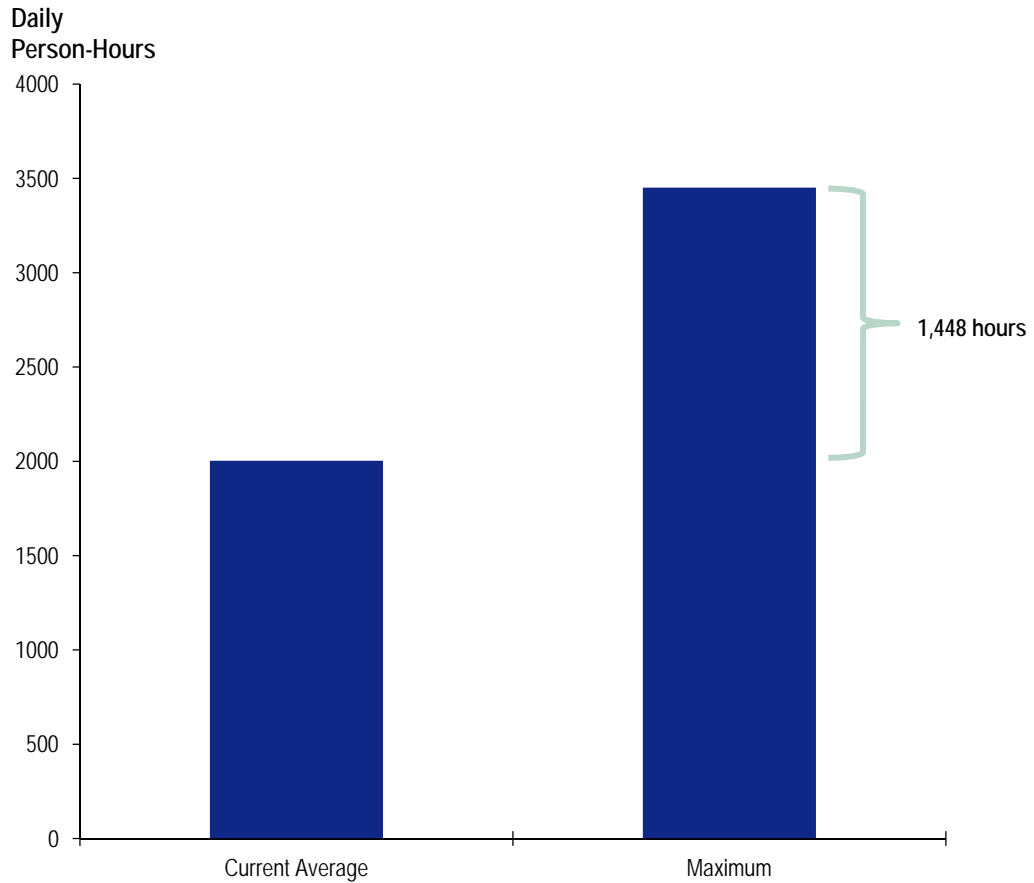
Despite the importance of CBP staff in protecting the border and facilitating trade, many of the region's existing inspection booths are not fully staffed, particularly at Zaragoza and PDN. While the Obama Administration's FY 2012 budget includes a request for 21,186 CBP Officer positions to staff all of the nation's ports of entry— an increase of 409 over FY 2011 – that is still 108 officers below the FY 2009 level of 21,294 CBP Officer positions. Overall, CBP has had a net

¹⁴ 2010 Texas-Mexico International Bridges and Border Crossings Existing and Proposed, TxDOT.

¹⁵ Transportation Research Board, *Freight Capacity for the 21st Century*.

decrease of over 500 CBP Officer positions between 2009 and 2011.¹⁶ Figure 3.5 shows the gap between current staff levels and what would be required to fully staff the inspection booths at the region’s six existing ports of entry.

Figure 3.5 Existing versus “Fully Staffed” CBP Levels



Note: The difference between current average staffing and the maximum reflects the number of additional person-hours required to staff all existing booths at all hours the crossing is open. This is an illustrative example only – existing travel demand does not warrant the need to staff all booths during all operating hours.

Source: U.S. Customs and Border Protection, Cambridge Systematics observations and operational model output.

¹⁶ National Treasury Employee Union testimony to the U.S. House of Representatives, Homeland Security Committee, Subcommittee on Border and Maritime Security, April 5, 2011.

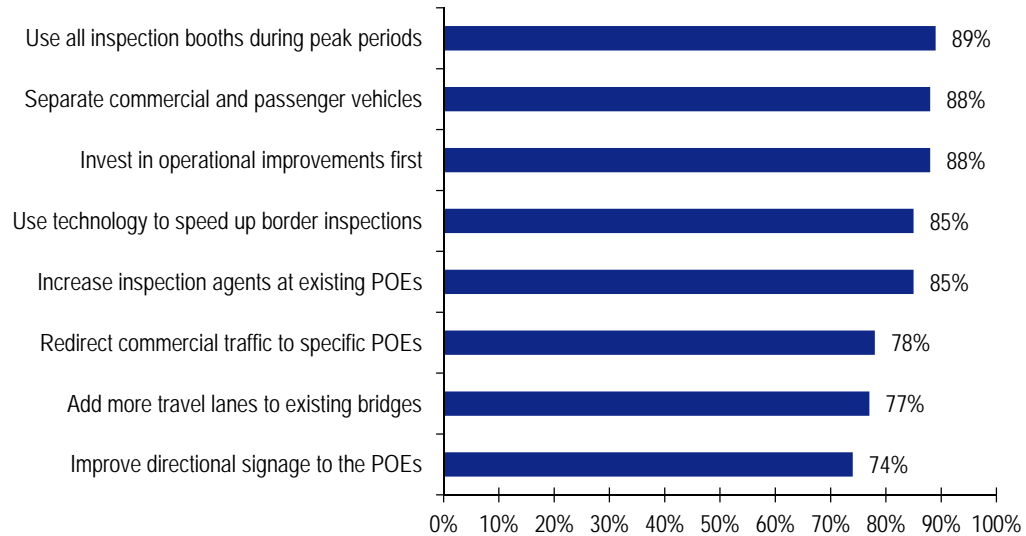
3.5 OPERATIONAL IMPROVEMENTS WILL IMPROVE EXISTING PERFORMANCE BUT MAY NOT ALLOW THE SYSTEM TO ABSORB FUTURE DEMAND

Operational improvements implemented at a regional level have the potential to help address these challenges by spreading travel demand across available capacity throughout the day and/or among the ports of entry in the region. Potential operational improvement strategies include:

- **Staffing and Management** – Solutions that address the institutional, policy, or regulatory environment that governs the management of the region’s cross-border network, including CBP staffing levels and bridge hours of operation;
- **Pricing** – Solutions that would modify existing toll rates, propose tolls on bridges that currently are free, or implement pricing strategies based on time of day or congestion levels;
- **Technology** – Solutions that leverage existing technology or implement new technology applications to improve the efficiency of cross-border movements, inspections, or information available to passengers, carriers, or shippers; and
- **Traffic Engineering and Infrastructure** – Solutions that relate to the condition or physical capacity of the port of entry infrastructure or approach network, as well as operational solutions that relate to how the system is being utilized.

These types of strategies have broad support in the region. As shown below, 88 percent of respondents agree that the region should invest in operational improvements first to make existing ports of entry more efficient. And making more efficient use of inspection booths, increasing CBP staff, and enhancing technology applications enjoy strong local support.

Figure 3.6 Support for Operational Improvement Strategies
Respondents in Agreement or Strong Agreement



Source: Cambridge Systematics analysis of 1,000 survey responses collected by Harris Interactive Service Bureau from residents within the El Paso/Las Cruces/Ciudad Juárez region, April/May 2010.

Subsequent sections describe the degree to which these types of improvements would (or would not) improve the existing performance of the system and allow it to more effectively absorb anticipated growth in demand. However, it is important to note that while operational improvements will help maximize the use of available cross-border capacity in the region, they are not a cure-all. Given anticipated growth in population, employment, and cross-border travel demand, it is unlikely that operational improvements alone will completely solve all the performance issues at the ports of entry in the future.

4.0 Addressing These Challenges

Working closely with regional stakeholders and the general public, we have identified and evaluated a number of operational, technology, and policy strategies that would best improve the operations of the region’s existing border crossings. And while these operational improvements alone will not completely solve all the performance issues at the ports of entry – particularly as regional population and travel demand continues to grow – they will allow the existing system to more effectively serve the demands currently being placed on it.

It is important to note that the region is not sitting idly by waiting for these recommendations in order to take action on or around the region’s ports of entry. Rather, many stakeholder groups in the region already are developing and implementing strategies to improve the condition and performance of the region’s border crossings. The recommendations presented later on in this section are designed to complement and enhance these existing regional efforts, which are described below.

4.1 EXISTING REGIONAL EFFORTS

Paso del Norte Group

The Paso del Norte Group is a private organization of business and civic leaders from El Paso, Juárez, and southern New Mexico. As part of its Model Port Initiative, the Paso del Norte Group is working with CBP to develop and implement a series of recommendations to streamline trade and reduce the total cost of doing business for the private sector.¹⁷ These include:

- **Expanding trusted traveler programs**, such as Customs-Trade Partnership Against Terrorism (C-TPAT) and the Secure Electronic Network for Travelers Rapid Inspection (SENTRI);
- **Implementing technology** to enhance security and increase efficiency, by supporting technology pilot programs; and
- **Streamlining commercial documents and inspections**, by consolidating entry/export documents for shippers.

¹⁷ The Paso del Norte Group, *Vision for the Paso del Norte Region*, Model Port Brief, August 2010.

RFID Pilot Test Program

FHWA-funded research has demonstrated that radio-frequency identification systems (RFID) are one of the most cost-effective and practical ways of measuring commercial vehicle border crossing time. The Texas Transportation Institute (TTI) developed and implemented a prototype Border Crossing Information System (BCIS) to provide travelers and freight operators a wide range of real-time pretrip travel information related to border crossings, including information on road network conditions, border crossing information, incidents, and weather. Following this successful test, TTI currently is managing an ongoing pilot at the Zaragoza port of entry that is showing promising results.

“Ready Lane” Pilot Program

In December, 2010, CBP initiated a “ready lane” pilot program at Zaragoza. Travelers entering the U.S. with approved Western Hemisphere Travel Initiative (WHTI)-compliant, RFID-enabled travel documents (such as a U.S. passport card, enhanced driver’s license, or SENTRI/FAST card) may use the dedicated inspection lane. The pilot program will help CBP determine the efficiency and effectiveness of a more permanent dedicated RFID lane for those travelers at this and other crossings.

El Paso County Secure Border Trade Project

The County of El Paso recently received FHWA funding for the “Secure Border Trade” project to equip 30 trucks and trailers with technology to enable real-time monitoring of cross-border cargo traffic and monitor shipments through the supply chain from origin to destination. The Secure Border Trade Project, being implemented by SecureOrigins, under contract to TransCore, will utilize state-of-the-art technology with the ability to inform a shipper if a truck is opened, if a driver goes off of a specified route or out of a route envelope, or if a driver opens his or her door or leaves the truck. The project will also use sensors to monitor other conditions such as temperature, radiation, and leakages. Webcams will be located at loading points, where tracking begins. Intelligent software will enable real-time monitoring, interpretation, analysis, and evaluation of appropriate courses of action for customers. The technology will integrate GIS, Relational Database Management Systems (RDBMS), GPS, webcams, RFID systems and sensors creating a shared platform to ensure the interoperability of all applied systems.

This work is also related to an ongoing CBP-approved test program currently in operation that SecureOrigins has initiated with several maquiladoras. This test program is supporting enhanced visibility of cargo moved by truck from Juárez origins to El Paso destinations, and involves swifter transit of trucks across the border through the use of a dedicated truck gate/lane (at the test location crossing) in cooperation with CBP.

CBP and City of El Paso Pedestrian Amenity Improvements

CBP initiated construction on improvements to the pedestrian facilities at PDN in December of 2010. These improvements will improve flow at the pedestrian crossing and will lead to PDN being a model for all pedestrian areas along the Southern border. Construction is expected to last eight months. Among the improvements are the construction of three revolving doors to enter the facility, several 52-inch television screens offering tips and directing travelers, and radio frequency readers that will be able to scan border-crossing cards before CBP processing.

In addition, the City of El Paso is currently completing a \$13 million project to improve pedestrian amenities at the Stanton and PDN bridges. The amenities will consist of pedestrian corridor shade canopies, bridge canopies, landscaping, seating areas, drinking fountains, free automated public toilets, public art, pedestrian malls, enhanced lighting, and television monitors offering tips, news, and regional tourism and cultural information.

City of El Paso International Bridges Public-Private Partnership

The City of El Paso recently sought information and interest about Public Private Partnerships (PPPs) that may be available as management strategies for the international bridges. A PPP is an alternative model for delivering public services and funding infrastructure created through a cooperative venture between the public and private sectors. In this context, the term “partnership” is not intended to imply a legal partnership, but rather a symbiotic relationship of two or more entities to achieve a common goal. The arrangement is designed to leverage the expertise of all parties in meeting a public need by appropriately allocating risks, resources, rewards, and responsibilities. The private sector’s incentive to generate a return means that they are constantly looking for ways to improve the services offered to customers and are more likely to come up with innovative ideas that provide better value to users. A PPP allows the public sector to take advantage of the innovation and refined processes that may be implemented by the private sector to deliver a level of service prescribed and enforced by the public sector. In doing so, the public sector improves their value for money by receiving a premium public service while staying within their available resources.

These agreements are very common in Europe and South America and have started to make their way to North America, particularly Canada. However, there have only been a handful of roadway concessions in the U.S., and only two such structured deals for leasing existing assets. The first was for the long-term (99 year) lease of the Chicago Skyway bridge which occurred in 2004; the second was the lease of the Indiana Toll Road in 2006.

The City of El Paso requested PPP-related information within four areas:

- **Capital resources**, i.e., the ability to raise financing;
- **Capital infrastructure**, including recommendations to improve capacity and operations at the City-owned crossings;

- **Contract models and entities**, i.e., different ownership arrangements and strategies; and
- **Contract terms and conditions** that are normally used in these sorts of arrangements.

The information collected will be used to assist the City in its planning process and to identify vendors that may be interested in participating in any future procurement.¹⁸

4.2 SCENARIO DEVELOPMENT AND TESTING

The individual projects and initiatives described above have the potential to make some improvements in the condition and performance of the existing border crossing system. When coupled with other targeted operational improvements, these have the potential to have even more meaningful impacts and maximize the capacity and performance of the system.

To identify those operational improvements that had the most promise in addressing border crossing issues in the El Paso region, we developed a process to identify, screen, and evaluate a wide range of potential operational improvement strategies.¹⁹ From among a list of more than 150 alternative solutions identified, we identified 22 scenarios that, individually or collectively, would have the most significant impact on system performance and were most consistent with the guiding principles of the Plan (see Section 1.0). These 22 scenarios, listed in Table 4.1, fell within the four categories described in the previous section:

- **Staffing and management**, e.g., allocating additional inspection staff or extending hours of operation at one or more crossings;
- **Pricing**, e.g., modifying existing toll rates or proposing new tolls as a way to smooth demand across the system of crossings;
- **Technology**, e.g., implementing wait time/queue monitoring technology and traveler information systems; and
- **Traffic engineering and infrastructure**, e.g., expanding the number of designated commuter lanes and FAST lanes, improving approach lanes, or changing the operational focus of one or more crossings to handle specific types of traffic (commercial or passenger).

¹⁸ It is important to note that the City's information collection effort does not constitute a Request for Qualifications (RFQ), a Request for Proposals (RFP), or other solicitation document, nor does it represent an intention to issue an RFQ or an RFP in the future.

¹⁹ Details on the screening criteria and scenario development process are provided in the *Project Summary Report*.

Using a suite of calibrated and validated analytical tools,²⁰ we evaluated the effectiveness of each scenario in achieving two primary outcomes, as compared to the “do-nothing” alternative, i.e., make no changes to current infrastructure, operations, or processes:

- **Reducing wait times at individual crossings**, i.e., did the scenario improve wait times, worsen them, or have no significant impact; and
- **Improving performance across the system of crossings**, i.e., did the scenario improve conditions at other bridges, worsen them, or have no significant impact.

Table 4.1 summarizes the results of each scenario. A detailed analysis of each scenario is documented in the *Project Summary Report*.

²⁰ We developed a series of analytical tools for use in scenario evaluation. These tools were calibrated and validated to current FHWA standards. A detailed description of these tools, the calibration and validation process, and how they were used in the analysis is provided in the *Project Summary Report*.

Table 4.1 Summary of Modeling Results

	Wait Times at Individual Crossings	System Performance	Notes	
Staffing and Management Scenarios				
1	Extend hours of operation at all commercial POEs	●	●	Applicable at Santa Teresa, BOTA, and Ysleta-Zaragoza
2	Extend commercial hours of operation at Zaragoza only	–	–	Currently operates on an 18-hour schedule; extending hours of operation by 2 hours has limited impact
3	Extend commercial hours of operation at Santa Teresa only	●	●	Currently operates 12 hours per day, Monday to Friday
4	Extend commercial hours of operation at BOTA only	●	●	Currently operates 12 hours per day, Monday to Friday
5	Staff all booths at all crossings during periods of high demand	●	●	Needs vary by port of entry, but less than 60 percent of the booths at Zaragoza and PDN are staffed on average
6	Streamline Federal and state (TX) safety inspection processes	–	–	Both standard safety inspections take 30 minutes on average
Pricing Scenarios				
7	Toll BOTA at same rate as Ysleta-Zaragoza (\$2.50 per passenger vehicle, \$3.50 per truck axle)	●	○	Wait times drop at BOTA, but increase significantly at all other crossings
8	Increase tolls during peak periods at PDN, Stanton, and Zaragoza	–	–	Traffic levels are relatively flat by time of day; little elasticity by time of day or port of entry
9	Dynamically adjust tolls based on real-time traffic flows at PDN, Stanton, and Zaragoza	–	–	Traffic levels are relatively flat by time of day; little elasticity by time of day or port of entry
10	Toll empty trucks at BOTA	–	–	Assumed no policy change to allow southbound empty trucks at Zaragoza
Technology Scenarios				
11	Install ITS devices, including queue monitoring technology, on bridges and approaches	●	●	Similar systems have shown three to five percent improvements in delay times for all vehicle types

Table 4.1 Summary of Modeling Results (continued)

	Wait Times at Individual Crossings	System Performance	Notes	
Traffic Engineering and Infrastructure Scenarios				
12	Provide designated commuter lanes (DCL) at all ports of entry within existing footprint	◐	○	No new capacity (i.e., assumes repurposing existing general purpose lanes)
13	Increase the number of FAST lanes at commercial ports of entry within existing footprint	◐	○	No new capacity (i.e., assumes repurposing existing general purpose lanes)
14	Limit commercial vehicles at BOTA to empties southbound and FAST northbound	◐	○	Empty trucks comprise 80 percent of BOTA’s southbound commercial volume
15	Route all southbound commercial traffic through BOTA and northbound commercial traffic through Zaragoza	◐	○	Entails significant redesign of BOTA while providing southbound commercial inspection facility
16 ^a	Establish Ysleta-Zaragoza as a <i>commercial-focused</i> ^b port of entry and allow southbound empty trucks	●	●	Significant benefits for commercial vehicles at BOTA and Zaragoza while retaining existing passenger service
17	Route all northbound commercial traffic through BOTA and southbound commercial traffic through Zaragoza	○	○	Significant truck delays at both BOTA and Zaragoza with no room to expand NB inspection capacity
18	Construct grade-separations between Santa Teresa port of entry and I-10 (Aircraft Road)	○	◐	Wait times increase at Santa Teresa
19	Improve loop road that connects Stanton/PDN, BOTA, and Ysleta-Zaragoza POEs	○	◐	Improved connection between crossings attracts additional traffic to BOTA
20	Add an additional left-turn lane on the LP 375 westbound frontage road (Zaragoza port of entry)	–	●	No impact on queue lengths or wait times, but does move truck queue out of the general traffic stream to lessen impact on POV traffic
21	Reconfigure southbound-lane assignments/traffic circulation patterns on BOTA approach (Paisano, U.S. 54, and IH-110)	–	●	No impact on queue lengths or wait times, but mitigates merging and weaving issues
22	Complete BOTA bridge infill between the northbound and southbound spans to add two travel lanes in each direction	–	–	No impact on wait times; provides additional queue storage capacity only

^a Scenario 16 was modified from its original description which evaluated Ysleta-Zaragoza as a “commercial-only” port of entry. Revised as a “commercially focused” port of entry, modified Scenario 16 retains all existing passenger vehicle service at Ysleta-Zaragoza, while enhancing commercial/FAST capacity.

Rating Key:

- Conditions improve
- ◐ Mixed Impact
- Conditions worsen
- Negligible Change

Summary of Testing Results

1. **Staffing and management solutions showed significant promise.** Extending hours of operation, increasing inspection staff levels, and consolidating safety inspection activities all have the opportunity to improve wait times at individual crossings – particularly those that have restricted hours of operation and/or are traditionally understaffed – and have positive system impacts.
2. **Pricing options did not yield significant operational benefits** (in terms of improving travel times and delays) for all the crossings and many have negative system impacts. Our analysis found that pricing scenarios alone would not result in operational benefits at the ports of entry for three key reasons. First, there is very little elasticity by time of day or port of entry.²¹ That is, it is highly unlikely that drivers would change their time of travel or which port of entry they use relative to reasonable daily toll rate escalations. Second, traffic levels at the crossings are relatively flat by time of day (when compared to corridors that apply pricing strategies – particularly variable pricing strategies). As a result, the available capacity is utilized consistently throughout the day, making it difficult to attract travelers to different crossings using pricing alone. Finally, fluctuating the toll rates at the ports of entry alone will not drastically improve traffic conditions because the inspection processes at the ports of entry ultimately influence maximum throughput.
3. **Technology applications and small infrastructure and traffic engineering solutions were shown to have both crossing and systemwide impacts.** Relatively minor improvements to approach networks at some crossings have the ability to improve crossing times and have positive system impacts by eliminating merging and weaving activity between trucks and cars, providing additional storage capacity to minimize queues and mainline traffic flows, and enhancing inspection capacity.

4.3 RECOMMENDATIONS

This report highlights the need for the region to improve the operations of its crossings in three categories – staffing and management activities, technology applications, and infrastructure and traffic engineering activities. Each recommendation, presented below, is supported by an initial assessment of timeframe, estimated cost, and agency involvement, as described below:

- **Timeframe**, i.e., short (zero to three years), medium (three to eight years), or long-term (greater than eight years);

²¹ *Tolls, Exchange Rates, and Borderplex International Bridge Traffic*, International Journal of Transport Economics, Vol. XXXVI, No.2, June 2009.

- **Estimated cost**, i.e., low (less than \$2 million), medium (\$2 to 5 million), and large (greater than \$5 million); and
- **Lead and supporting agencies**, i.e., which agency or entity should lead implementation efforts and which should be called upon to support.

Staffing and Management Recommendations

Recommended staffing and management solutions aim to reduce wait times in one of two ways - extending hours of operation disperses demand throughout the day, while fully staffing existing inspection booths increases throughput during peak periods. As shown in Table 4.2 and described in more detail below, these staffing and management solutions can be implemented in the short-term for low to moderate costs.

Table 4.2 Summary of Staffing and Management Recommendations

Recommendation	Timeframe			Cost			Agencies/Entities	
	Short	Mid	Long	Low	Mid	High	Lead	Supporting
Extend commercial hours of operation at BOTA and Santa Teresa	X			X			CBP	NM Border Authority, City of El Paso, Aduana, Paso del Norte Group
Add CBP inspection staff at Zaragoza, Paso del Norte, and Santa Teresa	X				X		City of El Paso, New Mexico Border Authority	Paso del Norte Group, CBP
Consolidate FMCSA and DPS Commercial Vehicle Inspections	X			X			City of El Paso	TxDOT, DPS

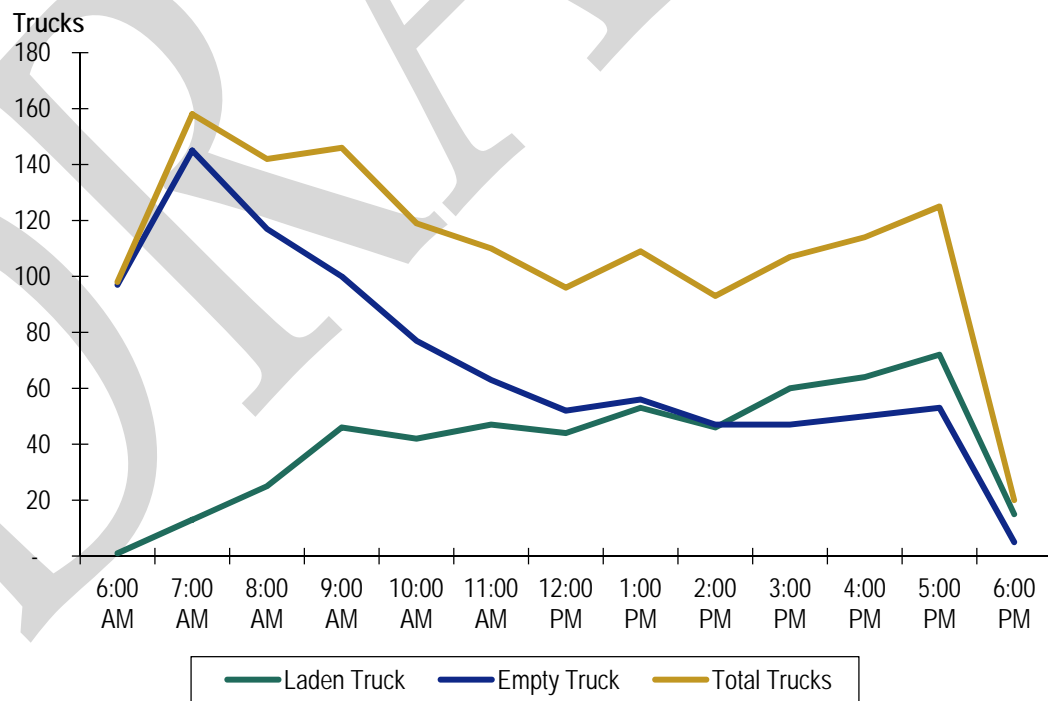
Recommendation #1: Extend Commercial Hours of Operation at BOTA and Santa Teresa

Although the region is home to six ports of entry, only three (BOTA, Zaragoza, and Santa Teresa) are capable of handling commercial vehicles (Table 4.3). BOTA and Zaragoza are the two most popular commercial crossings, handling approximately 90 percent of the daily commercial traffic in the region. However, limited hours of commercial operation at BOTA, coupled with the fact that it is a free bridge, often causes “bubbles” of demand in the morning and the afternoon (at BOTA), as drivers want to make sure they can maximize the number of crossings, or “turns” they can complete in a day. Although the overall volume of commercial vehicles at Santa Teresa is much lower, that crossing suffers from similar a “bubble,” particularly during the midday period. This phenomenon is shown in Figures 4.1 and 4.2.

Table 4.3 Existing Commercial Hours of Operation
Monday through Friday

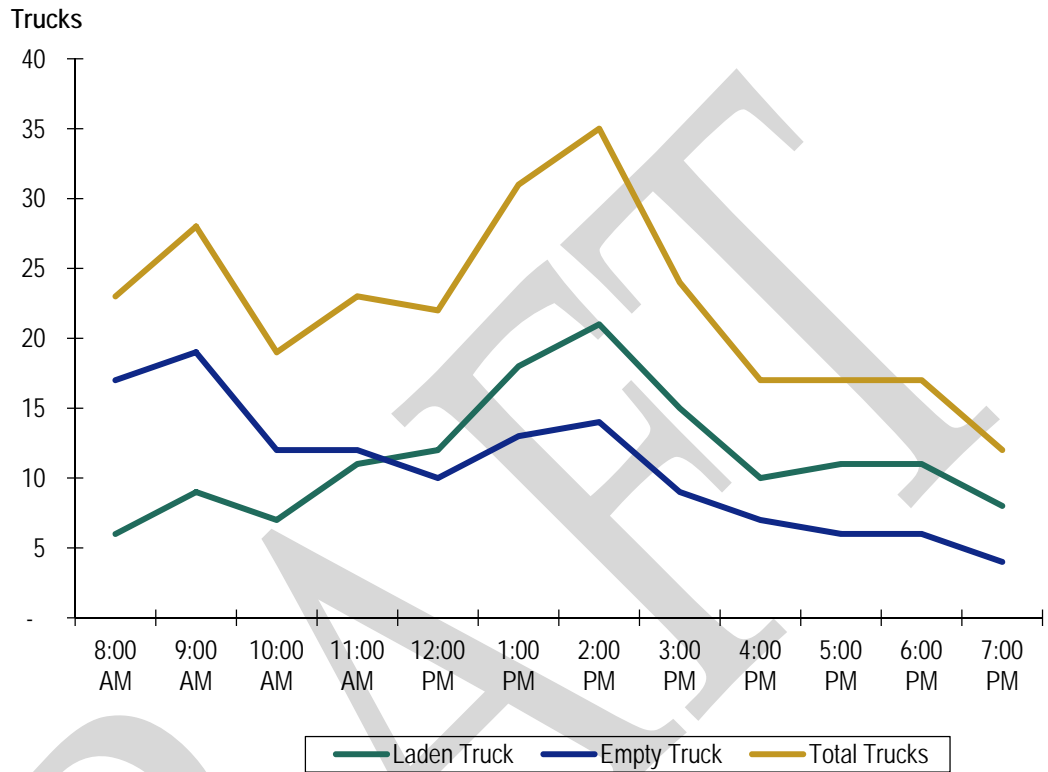
Port of Entry	Northbound	Southbound
Santa Teresa	Monday through Friday 8:00 a.m. – 8:00 p.m. Saturday 9:00 a.m. – 2:00 p.m.	8:00 a.m. – 8:00 p.m.
BOTA	Monday through Friday 6:00 a.m. – 6:00 p.m. Saturday 9:00 a.m. – 2:00 p.m.	Cargo: 8:00 a.m. – 8:00 p.m. Empties: 8:00 a.m. – 11:00 p.m.
Ysleta-Zaragoza	Monday through Friday 6:00 a.m. – 12:00 p.m. Saturday 8:00 a.m. – 4:00 p.m.	6:00 a.m. – 11:00 p.m.

Figure 4.1 BOTA Northbound Commercial Truck Volumes
Time of Day, 2010



Source: U.S. Customs and Border Protection.

Figure 4.2 Santa Teresa Northbound Commercial Truck Volumes
 Time of Day, 2010



Source: U.S. Customs and Border Protection.

Extending commercial hours of operation at BOTA and Santa Teresa to a 20-hour day (6 a.m. to 2 a.m.) will improve operations by allowing trucks to spread their arrivals over a larger portion of the day. This results in shorter wait times and queues during the peak period when compared to the “do nothing” option. For example, keeping BOTA open for an additional eight hours in the evening has the potential to reduce northbound and southbound peak delay by an average of seven percent and nine percent, respectively, through 2035. In addition, because both passenger and commercial vehicles arrive in mixed traffic (in the southbound direction), extending commercial hours of operation will result in slightly better operations for southbound passenger vehicles, as well (approximately 15 minutes per vehicle throughout the day). At Santa Teresa, extending hours of operation is estimated to save approximately 50 minutes per commercial vehicle northbound and about one hour per commercial vehicle southbound in 2035.

Recommendation #2: Work with Texas and New Mexico Congressional Delegations and CBP Leadership and Staff to Add Inspection Staff at Zaragoza, Paso del Norte, and Santa Teresa

As discussed in Section 3, many of the region’s existing inspection booths are not fully staffed during peak periods, most noticeably at Zaragoza and PDN where less than 60 percent of the booths are open on average. As shown in Table 4.4, nearly all lane types at nearly all of the crossings have some unused booth capacity during an average peak period. The exceptions are BOTA and Santa Teresa that currently are operating near maximum capacity throughout the day.

Table 4.4 Average Unused Peak Period Booth Capacity by Lane Type 2010

Port of Entry	Unused Booth Capacity (Total Available Booths)			
	Truck	FAST	POV	DCL
Santa Teresa	1 (2 total) ^a	Fully staffed (1 total)	Fully staffed (2 total) ^a	N/A
PDN	N/A	N/A	5 (11 total)	N/A
Stanton	N/A	N/A	N/A	2 (3 total)
BOTA	Fully staffed (4 total)	1 (2 total)	1 (14 total)	N/A
Zaragoza	2 (6 total)	1 (2 total)	4 (10 total)	1 (2 total)
Fabens	N/A	N/A	1 (2 total)	N/A

Source: U.S. Customs and Border Protection and Cambridge Systematics observations.

^a A planned expansion at Santa Teresa, expected to be begin in 2011, will add one commercial booth and three additional passenger vehicle booths.

Ensuring that front-line booths are fully functional, particularly during periods of highest demand, will improve operations significantly when compared to the “do-nothing” option:

- At Zaragoza, fully staffing all booths would result in an immediate decrease in peak wait times to under 10 minutes for all vehicles, effectively eliminating the queues. This would postpone the northbound passenger vehicle lanes from reaching the 120-minute operational capacity threshold by five to six years.
- Assuming the additional passenger and commercial booths planned for Santa Teresa will be fully staffed, the additional booth capacity would extend the port of entry from reaching operational capacity by 8 to 10 years.
- Drivers at PDN will save between 30 to 40 minutes of delay per vehicle in 2035.

While understaffing at the ports of entry is one of the fundamental issues preventing full utilization of existing capacity, acquiring the funding to support the

hiring and training of additional CBP officers requires a coordinated effort among Texas and New Mexico Congressional delegations and CBP leadership.

Recommendation #3: Work with the Texas Congressional delegation and the Department of Public Safety to Combine and Colocate Federal and State Commercial Vehicle Safety Inspections

The current border crossing process for northbound traffic entering the Texas from Mexico can include separate, but similar, safety inspections. Federal inspections, carried out by the Federal Motor Carrier Safety Administration (FMCSA), sometimes include a detailed evaluation the condition of the vehicle, the carrier's safety history, and the date of the tractor's last Commercial Vehicle Safety Alliance (CVSA) inspection. The items inspected under a CVSA inspection are brake system, coupling devices, head lamps, lamps on projecting loads, safe loading, steering mechanism, suspension, tires, van and open-top trailer bodies, wheels and rims, and windshield wipers.

For haulers who passed secondary inspections or were able to bypass the secondary inspections, the next step is passing through the State facility. Within the State facility are Texas Department of Public Safety (DPS) Commercial Vehicle officers. These officers perform duties almost identical to the FMCSA inspectors in the Federal compound with a few important differences. Unlike the FMCSA inspectors, DPS officers can enforce Texas weight statutes, and are able to issue citations, fines, and impound vehicles. DPS officers at the State compound perform the same basic visual scan and select vehicles for CVSA inspections. All vehicles that pass through the Federal compound must pass through the state compound, including those inspected by the FMCSA for safety compliance. For vehicles passing inspections by the DPS and those not subject to inspection, they exit the facility into the U.S.

Clearly, there is the potential for duplication of effort in this process, as a carrier could be subject to a CVSA-level inspection by both Federal and state agencies. Although it is DPS policy not to perform a CVSA inspection on a vehicle that already has been inspected by FMCSA, it can happen nonetheless if communication is insufficient. Another scenario in which there is an inefficient use of resources is in weight enforcement. Since Federal inspectors cannot enforce Texas weight statutes, they cannot include that in their inspection process. Therefore it is up to the DPS to check vehicles that were just inspected for safety issues by FMCSA for weight. This results in a driver having to stop twice, once for being inspected and once for being weighed.

To address this issue, regional stakeholders should work with its Legislative delegation to consolidate these Federal and state-level inspections while enhancing DPS/FMCSA communications. One feasible option is for Texas DPS to perform the safety inspections, as they have the authority to enforce Texas weight statutes and issue fines. Since the DPS uses the same CVSA inspection process as the FMCSA, this change would reduce the number of potential stops required for trucks crossing the border without causing a dropoff in truck safety.

Technology Recommendations

As discussed earlier, leveraging existing technology and implementing new technology applications have the potential to improve the efficiency of cross border movements in several different ways. Queue and wait time monitoring technology at the ports of entry provides Customs inspection officers with information on which to base front-line staff allocation decisions. Communicating this same information to travelers, as well as alerts related to lane openings/closures, lane assignments, and traffic conditions on the approach network, helps drivers make more informed routing decisions well before reaching the border. In combination, technology solutions can shave some delay at the border and across the regional transportation system, for both cross-border traffic and general travelers alike.

Table 4.5 Summary of Technology Recommendations

Recommendation	Timeframe			Cost			Agencies/Entities	
	Short	Mid	Long	Low	Mid	High	Lead	Supporting
Implement the Border Traveler and Cargo Information System	X				X		City of El Paso, New Mexico Border Authority	CBP, TxDOT, Aduana, City of Juárez

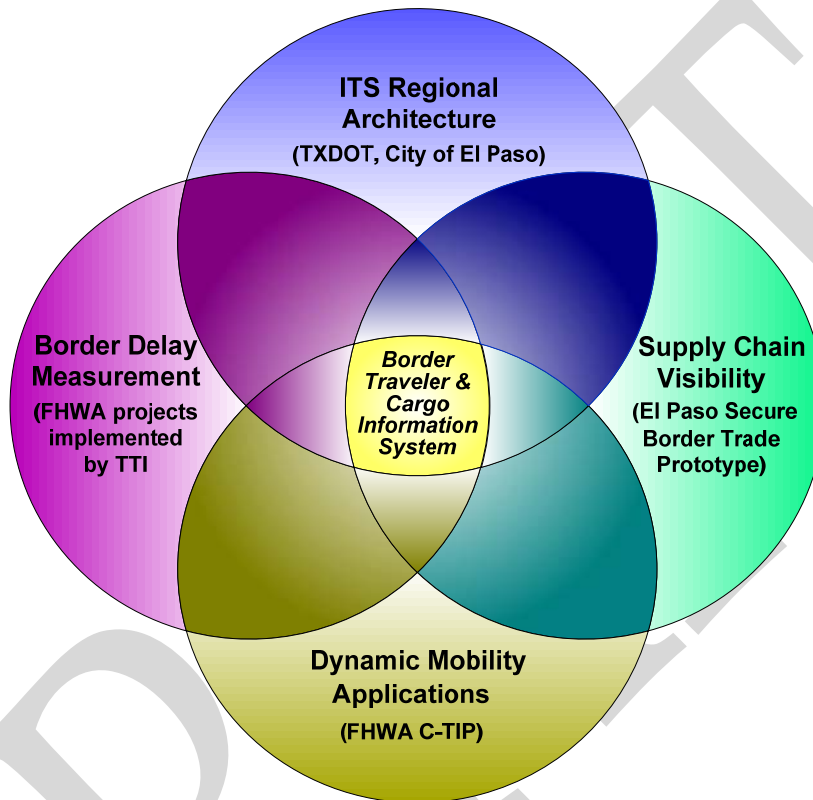
Recommendation #4: Implement the Border Traveler and Cargo Information System

The Border Freight Traveler and Cargo Information System integrates four program/technology elements, shown in Figure 4.3, to provide border freight information to commercial vehicles, fleet managers, manufactures, maquiladoras and others. Key functions and components of these programs would be integrated to form a “system of systems” approach for achieving a near-term capability for the El Paso region to support reductions in commercial vehicle travel time and improved supply chain efficiency for cross-border freight transportation logistics.

The advantage of this approach is that these projects can leverage the technologies currently being developed and deployed by the public and private sectors, including the El Paso Regional ITS, several related border travel time information projects sponsored by FHWA (under FHWA’s Border Time Measurement Program) and implemented by TTI, and the emerging border logistics information technologies being developed by the U.S. DOT-funded El Paso County Secure Border Trade Project (and encompassing the related SecureOrigins maquiladora security/logistics test program discussed previously). When combined with RFID tags on trucks that measure travel times, along with DMS and TxDOT 511 systems, these systems can be integrated to form a system that can successfully provide information to truckers well in advance of the key decisions they make concerning travel decisions and routing, potentially resulting in decreases in border congestion and improvement in air

quality. Furthermore, when FHWA’s C-TIP dynamic mobility technologies are integrated into this system, additional benefits in travel-time reduction and associated benefits can be realized.

Figure 4.3 Concept for the Border Traveler and Cargo Information System



The primary expected benefits of this Border Traveler and Cargo Information System would be largely three-fold:

- Travel-time reductions through improved information available well upstream of key driver decision points (e.g., drivers could divert to another crossing to avoid congestion²²) through multiple sources, including dynamic message signs, cell phone alerts, Smartphone Application alerts, and Internet alerts (e.g., accessed by dispatchers). Additional benefits of improved travel-time reliability, and “customer satisfaction” benefits of drivers being provided highly accurate estimates of border delay times at each crossing.
- Further travel-time reductions through the implementation of cutting-edge dynamic mobility applications (DMA) technologies. These technologies, which can reside on Smart Phones or in-vehicle devices, would allow for real-

²² Commercial drivers may be subject to manifest restrictions, however.

time rerouting of trips for passenger and commercial vehicle drivers based on real-time congestion information.

- Greater supply chain efficiency in terms of cross-border freight movements for maquiladoras and others. For example, for a warehouse receiving goods, the ability to obtain in real-time the location, cargo information, and predicted time-of-arrival of cross-border freight shipments could greatly aid in scheduling and planning for avoidance of loading dock and facility truck queues.

Table 4.6 provides a high-level roadmap for the implementation approach, and the recommended steps and actions that would be necessary to facilitate implementation of this technology solution.

Table 4.6 Border Traveler and Cargo Information Implementation Plan Overview

	General Program Elements	Implementation Approach	Recommended Actions to Facilitate Implementation
Phase I 2011 to 2013	<ul style="list-style-type: none"> • Alert and diversion information provide on Dynamic Message Signs, TxDOT 511 and Highway Advisory Radio • Assess reliability and accuracy of commercially available travel-time information • Expand RFID-based truck tracking for travel-time measurement – deploy at all three commercial crossings • Deploy Integrated border travel-time and mobility information system • Market research and implementation on expanded traveler information to cover more areas • Conduct supply chain testing using a real-time tracking system and fusing of cargo information 	<ul style="list-style-type: none"> • Integrate three distinct systems to achieve an operational capability for a Border Freight Traveler and Cargo Information System: <ul style="list-style-type: none"> – El Paso Regional ITS (including city of El Paso and TxDOT elements) – FHWA-TTI RFID Border Delay System (currently under development) – Secure Origins Supply Chain Information (based on elements of current FHWA/City of El Paso Secure Border Trade Operational Test) 	<ul style="list-style-type: none"> • Develop a Steering Committee in early 2011 that includes the key public and private stakeholders and champions of the three distinct systems • Work with border industry partners to develop appropriate supply chain information output from the system • Assess, develop, and implement and integration approach: • Develop an overall Concept of Operations • May require some significant technical changes to the three projects • Will likely require an additional funding source • Develop Business Plan and guidance for long-term operations, maintenance, and upgrades to the system

	General Program Elements	Implementation Approach	Recommended Actions to Facilitate Implementation
Phase II 2013 to 2015	<ul style="list-style-type: none"> Evaluation of Dynamic Route Guidance (DRG) technologies Develop DRG and wireless technology algorithms that can facilitate border crossing DRG applications 	<ul style="list-style-type: none"> Expand the Border Traveler and Cargo Information System to include Dynamic Route Guidance Applications: <ul style="list-style-type: none"> Based on FHWA-developed C-TIP Applications and Software (C-TIP Operational Test currently underway in Kansas City) 	<ul style="list-style-type: none"> Work with FHWA to develop a C-TIP Dynamic Mobility Application (DMA) test project for El Paso region covering border-specific dynamic routing <ul style="list-style-type: none"> Based on FHWA-developed C-TIP Applications and Software package (available in 2012) Apply for U.S. DOT DMA funding under IntelliDrive Program Deploy DMA prototype in 2013; expand and operationalize across the El Paso border region in 2014-2015

Infrastructure and Traffic Engineering Recommendations

As discussed earlier, relatively minor improvements to approach networks at some crossings have the ability to improve crossing times and have positive system impacts in the midterm. Listed in Table 4.7, traffic engineering adjustments on the approaches to BOTA and Zaragoza improve accessibility for passenger and commercial vehicles, while system improvements at Zaragoza make use of available expansion opportunities to enhance commercial operations.

Table 4.7 Summary of Infrastructure and Traffic Engineering Recommendations

Recommendation	Timeframe			Cost			Agencies/Entities	
	Short	Mid	Long	Low	Mid	High	Lead	Supporting
Reconfigure southbound-lane assignments at BOTA approach	X				X		TxDOT	GSA, City of El Paso, El Paso MPO
Implement system improvements at Zaragoza to enhance commercial operations		X				X	City of El Paso	TxDOT, GSA, El Paso MPO

Recommendation #5: Reconfigure Southbound-Lane Assignments at BOTA Approach

As noted earlier, southbound approaches to BOTA, along I-110, U.S. 54, and Paisano Drive, involve significant merging and weaving activity, as passenger vehicles and trucks try to position themselves appropriately to access the crossing (trucks trying to move right, cars left). Reconfiguring southbound-lane

assignments as shown in Figure 4.4 would eliminate this merging and weaving, and have important system benefits.

Figure 4.4 Proposed Southbound-Lane Assignments at BOTA Approach



Source: El Paso Metropolitan Planning Organization, El Paso Bridge of the Americas Port Improvement Project Proposal Report, October 8, 2008.

Recommendation #6: Implement System Improvements at Zaragoza to Enhance Commercial Operations

Unlike the other ports of entry within the El Paso/Juárez city limits, Zaragoza has some room available within its 61-acre footprint to expand inspection capacity on both sides of the border. Recognizing this and given Zaragoza's proximity to the concentration of industrial facilities, enhancing commercial operations at Zaragoza provides the best opportunity for expanded infrastructure investment. Taking advantage of available capacity to make Zaragoza a "commercially focused" crossing will have system benefits as well by helping to relieve congestion at the other crossings, most notably BOTA.

There are two key components of this improvement, as shown in Figure 4.5:

1. **Add left-turn lane on the LP 375 westbound frontage road.** The addition of this left-turn lane, which would connect the Zaragoza cargo facility to Loop 375, removes the commercial vehicle queue away from the general traffic

stream, thereby allowing passenger vehicles to operate more efficiently. Relocating the concrete traffic barrier will regain the third lane on the frontage road, allowing for a left-turn lane into the commercial inspection facility and a left-through option middle lane.

2. **Add inspection capacity for commercial vehicles.** There is sufficient room available within the existing footprint of the Zaragoza port of entry to expand the northbound primary inspection booth plaza.

Targeted investments at Zaragoza have the opportunity to improve commercial traffic and passenger traffic at that crossing, particularly compared to the “do-nothing” alternative. In fact, incrementally adding (and fully staffing) up to six commercial/FAST lanes for northbound traffic has the potential to postpone Zaragoza from reaching operational capacity by 15 years, essentially keeping wait times at their current levels through 2025 despite a projected 150 percent increase in traffic.

Improvements to the commercial facility at Zaragoza also benefit operations at BOTA by diverting away approximately 35 percent of BOTA’s forecasted commercial traffic. This results in an immediate and significant reduction in northbound peak delay at BOTA (saving a minimum of 45 minutes to one hour per vehicle) and postponing BOTA from reaching the 60-minute operational capacity threshold by seven to eight years (2019 instead of 2011).

Figure 4.5 Ysleta-Zaragoza as a “Commercially Focused” Port of Entry



Estimating the Combined Effects of the Recommendations on Operational Capacity

Singularly or in combination, the recommended operational improvement strategies have the potential to make the best use of available capacity at the region's existing ports of entry. Compared to the "do nothing" scenario as shown in Table 4.8, these recommendations in combination can help to reduce wait times at many of the crossings, in essence pushing back the year in which each lane type reaches "operational capacity." However, even with these improvements, significant delays will remain for passenger and commercial movements, particularly at BOTA.

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Table 4.8 Estimating the Combined Effects of the Recommendations on Operational Capacity

Port of Entry	Lane Type	Anticipated “Operational Capacity” Year			
		“Do Nothing” Scenario		All Recommendations Combined	
		Southbound	Northbound	Southbound	Northbound
Fabens/Tornillo	Passenger Vehicle	2026	2027	2026	2027
	Commercial	2026	2032	2026	>2035
	FAST	>2035	>2035	>2035	>2035
Zaragoza	Passenger Vehicle	2016	2021	2024	2021
	SENTRI	>2035	>2035	>2035	>2035
	Commercial	2012	2012	2013	2029
	FAST	2017	2017	2017	>2035
BOTA	Passenger Vehicle	2010	2011	2010	2012
	Commercial	2011	2011	2011	2011
	FAST	2013	2013	2026	>2035
Stanton	Passenger Vehicle	2028	N/A	2028	N/A
	SENTRI	N/A	2015	N/A	2015
PDN	Passenger Vehicle	N/A	2028	N/A	2028
Santa Teresa	Passenger Vehicle	2012	2017	>2035	2027
	Commercial	2011	2020	>2035	>2035
	FAST	>2035	>2035	>2035	>2035

Source: Cambridge Systematics, operational model output.

4.4 IMPLEMENTING THESE RECOMMENDATIONS

It is clear that the El Paso/Juárez border crossing system represents a nationally and internationally significant asset. And while operational strategies alone will not completely solve all the issues at and around the crossings, it is critical that stakeholders in the region – on both sides of the border – undertake a concerted, cooperative effort to implement these recommendations.

Implementation will require a new approach – one that recognizes and integrates the various needs, perspectives, and sensitivities of all the different users of the crossings as well as the agencies and entities that are responsible for planning, managing, and securing them. Undertaking the following strategies will be critical in ensuring the recommendations described above are implemented quickly and with the interests of all regional stakeholders in mind. Collectively the strategies described below also provide a vehicle that the region can use to work with statewide, national, and international transportation and security policy-makers, the private sector freight and manufacturing communities, and local, regional, and national partners to more effectively and comprehensively plan for future demands in the region.

1. Continue to Investigate Innovative Financing Mechanisms

There is continued uncertainty in the future of both the Federal and state transportation funding streams that could be used to implement many of the recommendations described above. Nationally, the estimated shortfall between transportation infrastructure needs and funding in the United States is estimated at \$1 trillion through 2015.²³ In Texas alone, this gap is expected to reach approximately \$170 billion by 2030.²⁴ This is due to a number of factors, including reduced gas tax revenues that have been the result of the rise in popularity of more fuel-efficient vehicles and reductions in overall vehicle-miles traveled.

As yet, there is no consensus on a funding strategy. The most obvious option – to increase the gas tax – is unpopular with the Texas Legislature, the U.S. Congress, and the Obama Administration. And while the gas tax could be both increased and indexed to keep pace with future inflation, the revenue yield from motor fuel taxes generally is expected to taper off and perhaps decrease over the next decade as fuel-efficient hybrid vehicles and untaxed alternative biofuels account for larger shares of the vehicle and fuel markets, respectively.

Although some other funding avenues exist, including Coordinated Border Infrastructure (CBI) funding and traditional bank loans, in this funding environment, many states and local governments have turned to public-private

²³ National Conference of State Legislatures.

²⁴ Texas Department of Transportation, 2030 Committee.

partnerships (PPP) as a way to address this funding shortfall and free up capital for making operational and infrastructure investments. PPPs are alternative models for delivering public services and funding infrastructure created through a cooperative venture between the public and private sectors. In this context, the term “partnership” is not intended to imply a legal partnership, but rather a symbiotic relationship of two or more entities to achieve a common goal. The arrangement is designed to leverage the expertise of all parties in meeting a public need by appropriately allocating risks, resources, rewards and responsibilities.

The system of bridges currently owned and operated by the City of El Paso generates significant positive cash flows for the City with the majority of these revenues being transferred to the City’s General Fund for other purposes. By entering into a public-private partnership for the operations and maintenance of the City-owned crossings, El Paso can transfer the risk of revenues, cost overruns, and missed or deferred maintenance schedules to the private sector. The City could private sector funding to implement some of the recommendations described above or make other regional investments. There are two methods by which the City can be paid under a PPP arrangement:

- **Upfront concession fee**, which would constitute a lump sum payment from the private sector partner to the City at the start of the contract to compensate the City for the present value of expected future cash flows and any residual value the assets may have at the time of executing the agreement.
- **Annual payments**, based on a dollar cap or a percentage of revenues that the City would receive from the private party. The annual payments would basically function as a deferral of an upfront concession fee, to ensure the City is receiving positive annual cash flows rather than a single upfront payment amount.

In the first case, the City could expect a concession fee of approximately \$250 million (for the City-owned crossings). In the second case (annual payments), the City could expect to receive revenues totaling approximately \$250 million in Net Present Value terms apportioned over the life of the concession term (i.e. between now and 2060 when assuming a 50-year term).²⁵

As noted earlier, the City already has sought information and interest about PPPs that may be available as management strategies for its international bridges and should consider continuing to investigate the feasibility of entering into a PPP for one or more of its bridges as a way to generate capital for making other improvements.

²⁵ These results are indicative only. If the City requires a more detailed analysis, staff may wish to consider contracting with technical advisors to develop more precise cost schedules for both the public ownership and PPP models. The marketability of the capital structure assumed in this analysis will be dependent on future market conditions.

2. Create an Operations Plan Implementation Task Force

As described earlier, there is a “constellation” of Federal, state, and regional agencies with responsibility in planning, managing, securing, and investing in the region’s border crossing system. As a result, many of the recommendations described above cross jurisdictional and agency responsibility boundaries. To ensure that implementation efforts are coordinated – and that all the needs and perspectives of border crossing stakeholders are represented and reflected – the region should convene an Operations Plan Implementation Task Force.

This Task Force could be developed as a subcommittee of the City’s existing Committee on Border Relations, which is charged with “considering issues and projects affecting the development or relations between the two communities, and the border and in proximity to El Paso, and making recommendations to the City Council on programs or projects to enhance and benefit the relations between the two communities,” and which already includes members and participants from a wide range of border stakeholders, including the Paso del Norte group, the maquiladora community, local citizens, and CBP staff. This Committee could be supplemented with members from the El Paso MPO’s International Bridge Study Task Force.

An Operations Plan Implementation Task Force would provide two key benefits to the region. First, it would help ensure that the recommendations described here are acted upon in a way that reflects the interests of all regional stakeholders – shippers, carriers, students, commuters, pedestrians, and security professionals. In addition, this group would be an effective vehicle for the region in its attempt to work with statewide, national, and international transportation and security policy-makers, the private sector freight and manufacturing communities, and local, regional, and national partners not only to implement these recommendations, but also to comprehensively plan for future cross-border demands in the region.