

# **EFFECTIVENESS OF THE REIMBURSABLE FEE AGREEMENT BETWEEN THE CITY OF EL PASO AND U.S. CUSTOMS AND BORDER PROTECTION**

Under

Section 560 of the *Consolidated and Further Continuing Appropriations Act, 2013* and  
Section 559 of the *Consolidated Appropriations Act, 2014*

by

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## EXECUTIVE SUMMARY

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This Center for International Intelligent Transportation Research Center (CIITR) research project focused on one of the first-of-its-kind public-private partnership (P3) between the City of El Paso and U.S. Customs and Border Protection (CBP). This project is the culmination of two years of research at the Port of El Paso focusing on border crossings managed by the City of El Paso International Bridges Department including the Ysleta-Zaragoza, Paso Del Norte (PDN), and Stanton Street crossings. This project did not look at the other main passenger and cargo crossing at the Bridge of the Americas (a facility managed by the U.S. General Services Administration).

The U.S. Congress authorized the Department of Homeland Security (DHS) to establish through its agencies P3s with the private sector and state and local governments. The objectives of these P3s were to provide additional CBP officer (CBPO) staffing at primary inspection lanes during agreed-upon peak traffic times. The goal of adding extra CBPOs was to reduce border wait time (BWT) as the El Paso border crossing traffic continued to grow after recovery from the economic downturn.

Traditionally, the addition of CBP staffing struggled to keep pace with the rapid increase in cargo and passenger crossing traffic. Congress authorizes and appropriates funding in the national budget for additional staffing at ports of entry (POEs). However, to address the lag in staffing, Congress agreed with the requests from localities such as international airports, seaports, and border crossings to provide funds used directly for additional CBPOs when and where needed. The additional staffing was provided through the use of overtime and did not require hiring additional full-time employees. This staffing-to-workload flexibility worked well for both the city and CBP and added to the success of the P3 project.

The P3 in El Paso between the city and CBP moved forward at a deliberated pace. The city was able to increase bridge crossing tolls at specific times and at specific rates to fund the additional CBPOs. The city established metrics to ensure that the P3 was providing a positive cost-benefit ratio. The city's recent publications state that it has realized economic gain that demonstrates reductions in BWT and cost for commercial shippers while the additional staffing is deployed.

Establishing agreed-upon metrics has always been one of the most difficult parts of measuring BWT. This metrics-agreement breakthrough has been sought by all entities crossing the border. Technology has added to the ease of gathering cross-border traffic data, and the development of new software analytical tools has helped to clarify information that decision makers can use to streamline border crossings.

Based on the findings presented in this report, the City appears to be using the expertise from lessons learned with its CBP partners to fine-tune the scheduling of additional CBPOs in order to reduce BWT and speed up cross-border traffic. The city has extended its agreement with CBP and is currently sharing what it has learned with other POEs in the United States and Mexico.

Research further points out that this P3 is working as designed and is providing economic benefit. The P3 has also encouraged closer working relationships with CBP through the use of mutually agreed-upon real-time data sharing, metrics, and objectives.

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## CHAPTER 1: INTRODUCTION

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Since 1789, U.S. POEs have served as the primary gateway for people and goods to enter the United States lawfully. Current federal law designates CBP as the agency responsible for enforcing immigration laws and assuring trade and agriculture compliance—while facilitating the lawful trade and travel critical to the U.S. economy. Safeguarding the American homeland is an increasingly complex task. Human and narcotic smuggling and increased security measures after the September 11, 2001, terrorist attacks have had a direct impact on BWTs and border crossing times (BCTs). Moreover, federal budget constraints, like sequestration, add burdens to CBP’s administration of staff and other limited resources. Current operational models do not allow CBP to provide sufficient numbers of CBPOs, resulting in border backups and causing negative impacts to the overall economy (1). Border backups and delays are a challenge for shippers and carriers when planning for not only their transportation costs but also their overall supply chain (e.g., production rates, labor, inventory). In addition, increases in BWTs directly damage the environment by increasing greenhouse gas emissions as a result of the thousands of vehicles idling at the border.

To address these challenges, Congress ordered DHS and CBP to work with federal, state, and local governments and the private sector to identify solutions to bring more security and efficiency to the border crossing process (2). One outcome of this effort is a provision to create a public-private partnership (P3) pilot program with CBP. This provision, contained in the *Consolidated and Further Continuing Appropriations Act, 2013* and expanded a year later, authorizes CBP to enter into agreements with eligible governments and private partners to meet specific POE needs (3). One of the five pilot projects authorized by Congress is a partnership between CBP and the City of El Paso, Texas, for facilities along the U.S.-Mexico border. Given the strategic importance of efficient POE operations for the movement of people and international trade and the overall U.S. economy, it is necessary to know if the implementation of the P3 program between the City of El Paso and CBP has been successful and to what extent.

### 1.1 OBJECTIVE

The objective of this research was to determine the effectiveness of the reimbursable service agreement (RSA) between the City of El Paso and CBP to facilitate the lawful movement of trade and people while reducing BWTs. To achieve this objective, the research team:

- Documented the current P3 contracting models implemented as a result of the 2013, 2014, and 2015 Appropriations Acts.
- Examined the economic rationales of P3s at U.S. POEs.
- Assessed the overall benefits and costs before and after implementation of the pilot program qualitatively by interviewing trade brokers, freight carriers, and manufacturers.
- Compiled results from a pilot cost-benefit assessment and developed options for how this method could be used for other RSAs elsewhere.
- Summarized empirical findings from studies conducted by the City of El Paso, the El Paso Customs and Border Protection Bureau, and others.

This report is aimed at helping policy makers, bridge officials, and CBP officials better understand the reported benefits and limitations of this P3 pilot program. In addition, this report provides lessons learned and identifies opportunities for agreements between CBP and other POEs in the future.

## **1.2 BENEFITS AND LIMITATIONS OF THIS RESEARCH**

From the outset, the objective for this research project was to conduct a review of the RSA between the City of El Paso and CBP. Texas A&M Transportation Institute (TTI) researchers originally sought to collect data from CBP to assess whether the objectives outlined in the agreement were met. During the course of the research study, TTI researchers discovered that most of this analysis was already underway by the City of El Paso. Therefore, the scope of this project focused instead on the legislative basis and motivation for this program and perceptions from El Paso border stakeholders. The border wait times reported in this report were based on analysis conducted by the City of El Paso. The benefit of this approach, then, is that no research work conducted by TTI duplicated analysis already performed by the City of El Paso. Rather, TTI sought to provide a qualitative analysis that complemented the City of El Paso's quantitative assessment. Further research may be needed to better assess the long-term benefits of this program to stakeholders.

## **1.3 STRUCTURE OF THE REPORT**

This report is organized into five chapters with key findings. First, Chapter 2 presents the study background and relevant legislation. Chapter 3 provides a brief review of relevant academic literature. Chapter 4 documents a conceptual flow diagram of the P3 contracting model as adopted by the City of El Paso and CBP and compares it to other pilot programs. Finally, Chapter 5 presents the conclusions of the assessment of the City of El Paso/CBP P3 Program and its economic effectiveness, offers potential recommendations for use of P3 funding to improve BWT and cross-border traffic flow in the El Paso region, and suggests future research needs. Appendix A provides relevant information concerning the border user survey methodology. Appendix B explains the PDN pilot cost-benefit analysis. Finally, Appendix C discusses the general border inspection process.

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## CHAPTER 2: BACKGROUND

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In recent years, several non-federal border stakeholders have called for increased flexibility for partnering with CBP in the provision of border services. As a result, there are several new laws that broaden CBP’s authority for entering into partnerships with non-federal border stakeholders. For example, the *Cross-Border Trade Enhancement Act of 2013* authorizes the DHS Secretary to enter into agreements with persons for CBP to provide customs and immigration services at a land border POE, subject to payment of a fee to reimburse CBP for providing such services (4). The act defines the term *person* as an individual, corporation, partnership, trust, association, or any other public or private entity, including a state or local government. CBP is pursuing alternative sources of funding through P3 opportunities under its Reimbursable Services Program and the Donation Acceptance Program. Both programs are possible under Section 560 of the *Consolidated and Further Continuing Appropriations Act, 2013* (3) and Section 559 of the *Consolidated Appropriations Act, 2014* (5), respectively. The City of El Paso embarked upon a new bill in an effort to enter into a Section 560 RSA with CBP. This agreement was signed by both entities in December 2013. Table 1 provides an overview of this relevant legislation.

**Table 1. Summary of Relevant Legislative Actions, 2012–2015.**

<i>Year</i>	<i>Legislative Action</i>	<i>Key Provisions</i>
2012	The Cross-Border Trade Enhancement Act of 2013* (Not enacted into law)	Formalizes mechanism for CBP and other federal agencies to enter into agreements with local government and private-sector stakeholders. Stipulates an evaluation process for DHS to use in evaluating alternative financing arrangements for construction and maintenance of infrastructure at land border points of entry.
2013	Section 560—Consolidated and Further Continuing Appropriations Act, 2013	Authorizes the DHS Secretary to explore new methods for funding additional salaries and personnel, “which includes funding from outside sources.” Authorizes five ports of entry, including the El Paso POE, to become a part of a new partnership program.
2014	Section 559—Consolidated Appropriations Act, 2014	Expands the list of agreements for CBP to provide new or enhanced services that could be reimbursed.
2015	Senate Bill 461 (2015)** (Failed to be enacted into law)	Proposes legislation that would allow CBP to enter into any cost-sharing or reimbursement agreements with any sub-federal agency.

\* The Cross-Border Trade Enhancement Act of 2013 (H.R. 1108) was never formally enacted into law.

\*\* On February 11, 2015, Senate Bill 461 was referred to the Committee on Homeland Security and Government Affairs. This bill did not advance out of committee.

### 2.1 CROSS-BORDER TRADE ENHANCEMENT ACT OF 2013

The enactment of the P3 pilot program (via the *Consolidated and Further Continuing Appropriations Act, 2013*) formalized a mechanism whereby CBP and other federal agencies could enter into agreements with local government and private-sector stakeholders. Specifically, this legislation authorized DHS to enter into agreements with state or local governments or the

private sector to provide CBPOs at a surface POE. For example, Section 3 of H.R. 1108 granted the DHS Secretary the “authority to Enter into Agreements for the Provision of Certain Services at Land Border Ports of Entry.” This section stipulates that the DHS Secretary may “during the 10-year period beginning on the date of this Act and upon the request of any person, enter into an agreement with that person under which (A) CBP will provide services described...at a land border POE; and (B) that person will pay a fee imposed under subsection (b) to reimburse CBP for the costs incurred in providing such services” (4). Furthermore, this section outlines the provisions of this legislation, stipulating that services described in the legislation refer to “services related to customs and immigration matters provided by an employee or contractor of U.S. Customs and Border Protection at land border ports of entry” (4). This legislation would have authorized any entity, public or private, to fund CBP in order to enhance the flow of goods at a border point of entry and would have expanded the current authorities available to DHS for partnering with outside partners (4). The *Consolidated and Further Continuing Appropriations Act, 2013* (3) adopts most of these provisions into law.

Furthermore, if enacted, H.R. 1108 would have stipulated how DHS would evaluate these different financing proposals. Under Section 4, a provision stipulating the evaluation process for alternative financing arrangements for construction and maintenance of infrastructure at land border POEs, “the Administrator shall establish procedures for evaluating a proposal submitted by any person to (1) enter into a cost-sharing or reimbursement agreement with the Administration to facilitate the construction or maintenance of a facility of other infrastructure at a land border port of entry; or (2) provide to the Administration an unconditional gift of property pursuant to section 3175 of title 40, United States Code, to be used in the construction or maintenance of a facility or other infrastructure at a land border port of entry” (4). This requirement would have allowed cost sharing, cost reimbursement, or even a gift from an outside entity to DHS to improve trade flow at the land border POE. However, this legislation would still have put into place several requirements for evaluating such proposals. Section 4(b) establishes that “no later than 90 days after receiving the proposal pursuant to subsection (a) with respect to the construction or maintenance of a facility or other infrastructure at a land border port of entry, the Administrator shall (A) make a determination with respect to whether or not to approve the proposal; and (B) notify the person that submitted that proposal of (i) the determination; and (ii) if the Administrator did not approve the proposal, the reasons for the determination...” (4).

Finally, the legislation would have established criteria for the administrator to evaluate each proposal by an external agency or partner. Section 4(b)(2) stipulates that “in determining whether or not to approve the proposal, the Administrator shall consider (A) the impact of the proposal on reducing wait times at that port of entry and other ports of entry on the same border; (B) the potential of the proposal to increase trade and travel efficiency through added capacity; and (C) the potential of the proposal to enhance the security of the port of entry” (4). These criteria would have been used to evaluate proposals, placing higher value on proposals that improve the efficiency, capacity, and security of U.S. POEs. While H.R. 1108 was not enacted into law, key elements of this legislation were included in the *Consolidated and Further Continuing Appropriations Act, 2013* (3).

## **2.2 SECTION 560—CONSOLIDATED AND FURTHER CONTINUING APPROPRIATIONS ACT, 2013**

This law established the legislative framework for creating a border POE pilot program. Specifically, Title II, on salaries and expenses associated with the U.S. CBP, stipulates the following: “For fiscal year 2013, the overtime limitation prescribed in section 5(c)(1) of the Act of February 13, 2011 shall be \$35,000; and notwithstanding any other provision of the law, none of the funds appropriated by this Act shall be available to compensate any employee of U.S. CBP for overtime, from whatever source, in an amount that exceeds such limitation, except in individual cases determined by the Secretary of Homeland Security, to be necessary for national security purposes, to prevent excessive costs, or in cases of immigration agencies: provided further, that the Border Patrol shall maintain an active duty presence of not less than 21,370 full-time equivalent agents protecting the borders of the United States in the fiscal year...” (3). This legislation essentially allowed the DHS Secretary to explore new methods for funding additional salaries and personnel, which includes funding from outside sources. In addition to salaries, this legislation made changes to how CBP facilities should be built. Specifically, this legislation stipulates that “for necessary expenses to plan, acquire, construct, renovate, equip, furnish, operate, manage, and maintain buildings, facilities, and related infrastructure necessary for the administration and enforcement of the laws relating to customs, immigration, and border security, \$233,563,000, to remain available until September 30, 2017: Provided, that the Commissioners of U.S. Customs and Border Protection shall submit to the Committees on Appropriations of the Senate and the House of Representatives, at the time that the President’s budget proposal is submitted pursuant to the requirements of section 1105(a) of title 31, United States Code, an inventory of the real property of U.S. Customs and Border Protection and a plan for each activity and project proposed for funding under this heading that includes the full cost of each activity and project underway in fiscal year 2014” (3).

As part of this legislation, along with the international bridge assets in El Paso, four POEs were selected to become part of this program: (a) South Texas Assets Consortium (a consortium of assets that includes international bridges in Laredo, Cameron County, Pharr, McAllen, and Rio Grande City); (b) Houston George Bush Intercontinental Airport (IAH); (c) Dallas–Fort Worth (DFW) International Airport; and (d) Miami International Airport (MIA)/Port of Miami. Along with El Paso, these four POEs were granted authority to enter into partnerships with the private sector to fund personnel and salary overtime costs.

## **2.3 SECTION 559—CONSOLIDATED APPROPRIATIONS ACT, 2014**

Based in part on the success realized under the 2013 pilot program, Congress enacted Section 559 of the *Consolidated Appropriations Act, 2014* (5). This law expanded the list of agreements for CBP to provide new or enhanced services that could be reimbursed. This list includes customs, agriculture processing, border security services, and immigration inspection-related services. According to CBP, entities that were tentatively selected for this program include (5):

- Los Angeles World Airport.
- San Francisco International Airport.

- Greater Orlando Aviation Authority.
- Las Vegas/McCarran International Airport.
- Denver International Airport.
- Philadelphia:
  - Penn Terminals Inc.
  - Independent Container Line Ltd.
  - Network Shipping Ltd.
  - Greenwich Terminals LLC.
  - Gloucester Terminals LLC.
  - Turbana Corporation.
  - Interoceanica Agency Inc.
- Port of Wilmington, Delaware/Diamond State Port Corporation.
- Port of Houston Authority.
- Broward County, Florida.
- South Texas Assets Consortium.

In addition to recent legislative proposals, CBP also adopted various policies and procedures to enable better policies aimed at maximizing current and future resources at U.S. border POEs. In April 2013, DHS issued a report entitled *Resource Optimization at U.S. Ports of Entry* (6). As part of the department’s long-term strategy, officials recommended changes in reimbursement authority to ensure long-term funding. Specifically, this report suggested that Congress seek to authorize CBP to “receive reimbursement from private sector organizations for border services in the air, land, and sea environments at both domestic and foreign locations; receive reimbursement at international and landing rights airports that already receive inspection services; and define reimbursable expenses including salaries, benefits, temporary duty costs, relocation, and, as applicable, housing, infrastructure, equipment, and training.” However, this report stipulated that reimbursement “will be for only costs incurred above and beyond any user fees collected in association with the service provided to avoid double payment” (6). These recommendations were eventually enacted into law through the congressional actions noted previously.

Partly in response to the spirit of this legislative proposal, in January 2014, the City of El Paso initiated a five-year, \$1.5 million deal with DHS to increase the number of officers at the POEs and reduce BWTs. Revenue generated from bridge toll increases will help cover the \$1.5 million needed. Further discussion regarding this deal is provided later in this report.

## **2.4 LEGISLATIVE DIRECTION MOVING FORWARD**

As discussed previously, recent federal authorizations broadened the ability for CBP to enter into agreements with local and private entities with the goal of reducing BWTs, thereby establishing a framework for a new P3 pilot program to emerge. Recent changes now make it possible for CBP to receive these donations. Two changes in 2013 and 2014 enabled local officials to contribute toward the provision of certain resources to CBP. Section 560, authorized in the fiscal year (FY) 2013 Appropriations Act, allowed CBP to evaluate proposals from local stakeholders. Specifically, Section 560 brought about the following key changes: (6):

- Authorized CBP to enter into a total of five reimbursable service agreements by December 31, 2013, for certain CBP inspectional services.
- Authorized reimbursement for customs and immigration inspectional services only.
- Limited reimbursement for payment of overtime only at existing CBP-serviced air POEs.
- Allowed agreements to last up to, but not exceed, five years.
- Prohibited agreements that “unduly and permanently impact” existing services from being approved.
- Restricted CBP to partnerships at domestic locations only.

Section 559, authorized in the FY 2014 Appropriations Act, expanded on Section 560 provisions by bringing about the following key changes (5):

- Allowed an unlimited number of agreements for sea and land ports to be authorized but imposed a limit of five agreements per year for airports for each year of the five-year pilot program.
- Authorized reimbursements for customs, agricultural processing, border security, and immigration inspection-related services at POEs.
- Limited reimbursements to the payments of overtime only at new or existing CBP-serviced air POEs.
- Removed the five-year maximum agreement duration restriction established in previous legislative acts.

Future legislative proposals suggest Congress’s continued support for the CBP reimbursable services agreement model. In 2015, U.S. Senator John Cornyn introduced legislation seeking to expand the ability of CBP to consider private partners as part of its land border POEs (7). This legislation, officially filed as Senate Bill 461, *Cross-Border Trade Enhancement Act of 2015*, seeks to provide alternative financing arrangements for the provision of construction and maintenance of infrastructure at land border POEs. Notably, this proposed legislation would allow CBP to enter into any cost-sharing or reimbursement agreements with any sub-federal agency. This legislation would also allow for sub-federal agreements to fund land acquisition and the construction of certain facilities as well as authorize the reimbursement of federal CBP staff. While it is currently unclear whether this bill will ultimately be enacted into law, it does help show continued commitment and support by Congress for the reimbursable cost agreement program.

In July 2015, U.S. Sen. John Hoeven introduced SB 1619 (otherwise known as the Department of Homeland Security Appropriations Bill, 2016) (8). Among other actions, this bill provided recommendations for FY 2016 appropriations for CBP. While SB 1619 failed to advance out of committee, a report that accompanied this legislation (known as Senate Report 114-068) outlined several recommendations for CBP from Congress regarding the RSA program. Specifically, this report noted the initial success of CBP’s Section 559 Reimbursable Services Program and included statutory language to expand the program from five to 10 air POE pilots per year to “address the unmet demand for the program.” This committee recognized that CBP “has clearly illustrated the framework for private entities to submit offers of service and equipment donation.” However, the committee also noted that the agency should “more clearly articulate the [RSA] program’s goals to the public and identify selection factors, including those

expanded authorities under Section 559 of Public Law 113-76, to request donations of services or equipment from the private sector” (8).

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## CHAPTER 3: LITERATURE REVIEW

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The negative impacts from BWT delays have been well documented in the literature: burdens to the maquiladora trade, increased costs for transportation and security industries, air pollution, and negative impacts on toll bridge collections for the City of El Paso (1). Nationally, a recent analysis by Bloomberg Government found that BWT delays at the U.S.-Mexico border, resulting from inadequate staffing levels and inadequate infrastructure, cost the U.S. economy \$7.8 billion in 2011 (9). Sabeen and Jones conducted a survey of BWT technology and identified three primary categories: queue length measurement (e.g., inductive loop detectors, ranging radar detectors), fixed-point vehicle re-identification (e.g., radio frequency identification [RFID], license plate recognition), and dynamic vehicle tracking (e.g., cell phone tracking, global positioning systems) (10). Roberts et al. calculated the economic impacts associated with decreases in wait times at selected U.S. land POEs (11). Examining these border crossings, Roberts et al. found that an additional CBP staff member at each of 17 major land crossing POEs, 12 major freight crossing POEs, and four major passenger airport POEs would result in a \$65.8 million total increase in gross domestic product (GDP), \$21.2 million total in value of time savings, and 1,094 annual jobs added, as summarized in Table 2 (11).

**Table 2. Impacts of Wait Time Decreases at Selected U.S. Land and Air POEs.**

Type of Travel	Impact of Wait Time	GDP (million 2011\$)	Value of Time Saved (million 2011\$)	Employment (jobs)
Ground Passenger Travel	Value of lowered wait time for U.S. residents	n/a	\$17.0	n/a
	Net impact on port region and U.S. GDP and employment	\$61.8	n/a	1,053
Air Passenger Travel	Value of lowered wait time for U.S. residents	n/a	\$4.2	n/a
Truck Freight Transportation	Net impact on U.S. GDP and employment	\$4.0	n/a	41
<b>Total U.S.</b>		<b>\$65.8</b>	<b>\$21.2</b>	<b>1,094</b>

Note: For reference, the passenger land crossings analyzed in this study included the following: Calexico/East, Calexico West, Ysleta, PDN, Bridge of the Americas (BOTA), Lincoln-Juárez, Convent Street, Mariposa, Deconcini, San Ysidro, Rainbow Bridge, Lewiston Bridge, Peace Bridge, Peace Arch, Pacific Highway, Windsor Tunnel, and Ambassador Bridge. The truck land border crossings included the following: Calexico/East, Ysleta, BOTA, Columbia Solidarity, World Trade Bridge, Mariposa, Otay Mesa, Pacific Highway, Lewiston Bridge, Peace Bridge, Windsor Tunnel, and Ambassador Bridge. The air POEs included the following: Chicago/O'Hare, New York/John F. Kennedy, Los Angeles/Los Angeles International, and Miami/Miami International. Finally, the study included one CBP Primary Inspection Office at each U.S. POE for a total of 33 CBPOs. Source: (11).

### 3.1 REVIEW OF SCHOLARLY LITERATURE

While the scholarly literature supports the benefits associated with additional CBP officials as an effective means of reducing wait times, what is not clear is the wisdom of using a P3 as a way to meet this need. Results regarding the efficacy of P3s as tools to deliver infrastructure or other government services are mixed. For example, Hodge and Greve, after looking at the long-term infrastructure contract, found that the results are unclear with respect to their effectiveness

and recommended that governments should take greater care in conducting independent evaluations of these types of proposals (12). Liu et al. reviewed the effectiveness of current ex-post evaluations of P3 projects and found that this evaluation approach is not robust enough to measure the performance of P3 projects (13).

CBP has decided to move forward with pursuing the P3 approach. Operationalized, this new strategy is referred to by CBP as the *resource optimization strategy*. This strategy includes three components: (a) optimize current business processes, (b) identify staffing requirements accurately, and (c) explore alternative funding strategies to increase revenue sources supporting staffing. With respect to business transformation initiatives, CBP plans to update its current business strategy through incorporating advanced technologies (and reducing manpower requirements), streamlining core processes, and expanding operational best practices, among other efforts. This first strategy is likely to involve mostly internal CBP practices and might involve little private participation.

However, identification of staffing requirements based on a revised staffing model may be different. CBP’s workforce staffing model (WSM) generally refers to the primary tool for developing staffing decisions that are necessary. The WSM is based on a methodology that helps assist with assessing and determining staffing requirements. As shown in Table 3, the basis for calculations that determine staffing involve volume, processing times, available hours, percentage increases in facility and technology coverage, and future requirements (6).

**Table 3. CBP WSM Elements.**

<i>Element</i>	<i>Description</i>
<b>Volume</b>	The annualized counts of the mutually exclusive and collectively exhaustive CBPO activities at each location where these activities are performed.
<b>Processing Times</b>	Each activity has an associated processing time, representing the level of effort (in minutes or hours) a CBPO expends each time he or she carries out the activity.
<b>Available Hours</b>	The number of annual work hours for a full-time equivalent CBPO, net of time away for holidays, vacation, sick leave, training, administrative and mission support responsibilities, and temporary duty assignments.
<b>Percentage Increases</b>	Factors that account for supervisors and dedicated teams, such as passenger analytical units and advanced targeting units. These are responsibilities that tend to be driven by overall volume, for which there are no countable transactions that drive the workload.
<b>Facility and Technology Coverage</b>	Some CBPO responsibilities exist independently of traffic volume levels. Low-volume ports require minimum staffing levels to keep the ports operational. Equipment or particular locations require dedicated staffing regardless of usage rates. The complexity of a POE (i.e., multiple crossings, multiple terminals) adds to the staffing burden.
<b>Future Requirements</b>	Program offices provide estimates of future staffing requirements for new or expanded facilities and technology requirements.

Source: (6, p. 13).

Other literature has found the process of quantifying the benefits associated with what CBP provides exceedingly difficult. A recent Congressional Research Service report reviewed border enhancement efforts over a 25-year period since the *Immigration Reform and Control Act* (IRCA, P.L. 99-603) was enacted into law in 1986 (14). This analysis concluded that the United States has “focused an unprecedented amount of resources along its land borders to control

illegal migration since the 1980s,” noting, “Congressional appropriations for the U.S. Border Patrol have increased 750 percent since 1989.” This report further concludes that “even with better measures of border outcomes, however, the immigration system remains highly complex,” suggesting that this “makes it impossible to draw conclusions about the relative importance of these factors in explaining recent patterns, or to predict how illegal immigration flows will be affected” in the future (14).

There have been several attempts to develop comprehensive processes and procedures for measuring passenger vehicle wait times at U.S. border POEs. For example, Banks tested and reviewed several BWT measurement techniques at the San Ysidro POE in California, some of which deserved further study (15). However, Banks recommended that continued enhancement of BWTs will be important economically in the future because of several factors. For example, Banks noted that “as border communities grow and become more integrated economically, the ability to measure queuing delays for personal vehicles at border crossings” will be important. Furthermore, Banks noted that the ability to measure delays “is crucial to traffic management at border crossings because information about wait times provides feedback about traffic management operations” and that this information can be a “potentially important public relations tool that can influence demand patterns and improve public acceptance” (15).

### 3.2 SUMMARY

Several key findings emerged as a result of the literature scan, legislative analysis, and stakeholder interviews:

- CBP has a dual function of protecting the borders for security and processing travelers, conveyances, and cargo for lawful entry into the United States. CBP’s mission is to protect against terrorists and their instruments of terror and enforce laws and foster economic strength through lawful international trade and travel.
- This process of screening low-risk border crossing traffic versus high-risk traffic can be labor intensive.
- Border communities rely on the smooth and predictable flow of travelers and conveyances. BWT is impacted as border security is increased because there are more pre-primary (roving K-9 team) enforcement examinations, more examinations of travelers’ documents or conveyance searches at primary inspection booths, and more referrals to secondary inspection for further non-intrusive inspection technology or intensive personal or conveyance searches.
- There are only so many things that a border community can do to affect change that may cause a reduction in BWT. Building new bridges and access roads and expanding facilities are very expensive propositions, and often, traffic flow expands to use the new crossings faster than they can be built. This can be seen in El Paso by looking at free bridge use (Bridge of the Americas) versus toll bridge use (i.e., Zaragoza-Ysleta).
- Because the federal government’s funding for new bridge construction and additional staffing has been reduced over the last several budget cycles, and it looks like this trend will continue for the future, specific border communities, airports, and seaports that want to expand their share of international trade and travel have been authorized by the P3

process to pay for additional CBPO services. This P3 funding is on top of user fees that most commercial conveyances—air and seaports—are already paying for CBP services.

- The question is whether the financial investment of the City of El Paso to acquire additional CBPO services will reduce BWT and provide economic benefits to the travel and trade communities. Due to a number of variables impacting BWT, it is difficult to say with a high degree of certainty that any single action will speed up border crossings. However, over a number of years, CBP has equated additional staffing with reducing BWT and possibly growth in the commercial sector, such as additional manufacturing plants in Juárez and El Paso.

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## CHAPTER 4: REIMBURSABLE FEE AGREEMENT PROGRAM

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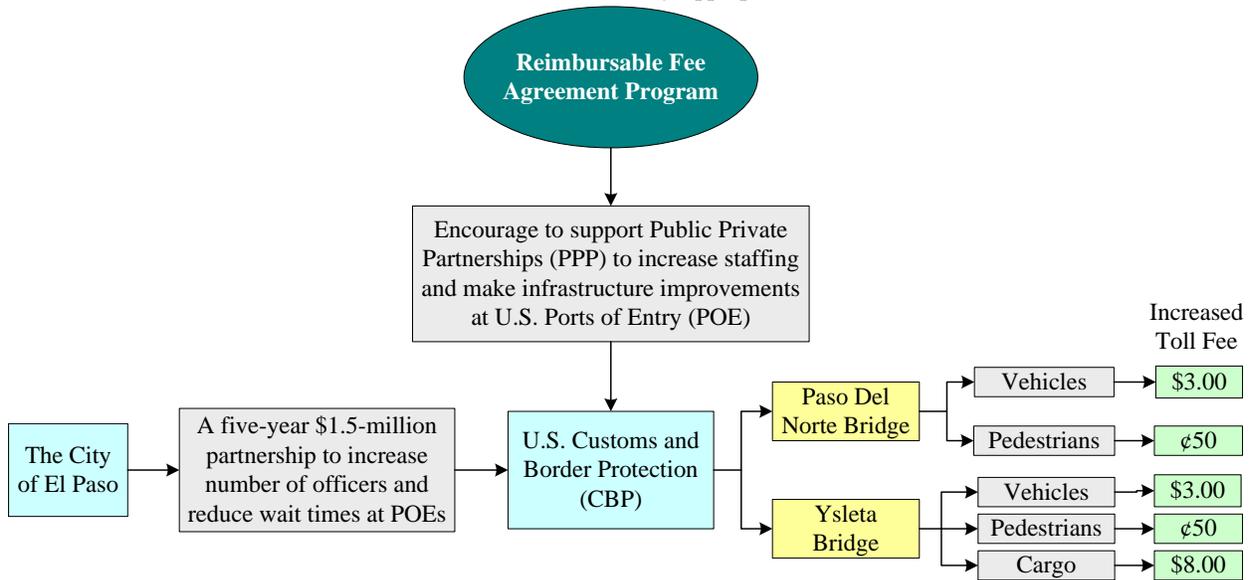
This chapter documents a conceptual flow diagram of the current RSA program between the City of El Paso and CBP with respect to Section 560 and compares it to the four other pilot programs authorized under the *Consolidated and Further Continuing Appropriations Act, 2013*.

### 4.1 CITY OF EL PASO REIMBURSABLE FEE AGREEMENT WITH CBP

As discussed previously, in 2013, Congress enacted the *Consolidated and Further Continuing Appropriations Act*, which states under Section 560 that, upon the request of non-federal stakeholders, CBP may enter into RSAs for a period of up to five years (3). The five P3 programs selected for the program were (a) DFW International Airport; (b) the City of El Paso, Texas; (c) South Texas Assets Consortium; (d) the City of Houston Airport System; and (e) Miami-Dade County. On January 2014, the City of El Paso and CBP signed a \$1.5 million partnership. The five-year RSA between the two institutions is intended to reduce the BWTs at El Paso POEs by providing enhanced services, which include expanding the inspection services at the PDN and Ysleta bridges. In order to reduce the BWTs, CBP has increased the number of officers, as well as the inspection lanes available, during holidays and peak hours (16).

The motivation for this agreement dates back to 2011, where in response to very long BWTs, El Paso City Council authorized increasing Ysleta bridge tolls by \$0.50 in order to fund additional CBPOs. Later that year, the city sent a formal letter asking for the toll rate increase to help fund additional CBP staffing hours; however, CBP denied this request. During 2012 and 2013, the City of El Paso worked with federal lawmakers in order to approve legislation allowing outside sources to pay for additional CBP staffing hours. This request eventually led to the creation of a P3 pilot program, formally authorized as part of the *Consolidated and Further Continuing Appropriations Act, 2013*. In May 2013, the city submitted a formal P3 request for additional CBP staffing hours, and a few months later, it was selected as one of five pilot programs. In August 2013, the city authorized tolls to be increased by \$0.50 in order to fund the CBP agreement.

In the past, state and local governments, as well as private-sector stakeholders, could not provide direct funding to CBP. The responsibility for funding border security came directly from the federal government in the form of direct congressional appropriations. Funds were appropriated to the nation's entire border POEs, including Ysleta and PDN in El Paso. Today, with the implementation of the RSA program, El Paso POEs are funded not only by the federal government but also by the local government and private sector. As shown in Figure 1, the City of El Paso has contributed to funding with a \$1.5 million partnership with CBP in an effort to alleviate the prolonged BWTs, which have become a substantial issue for cross-border travelers. The investment made by the City of El Paso comes from the revenue generated from a bridge toll increase. With the \$0.50 toll increase, passenger vehicles have to pay a fee of \$3.00 and cargo trucks a fee of \$8.00. The toll increase does not affect pedestrians (15).



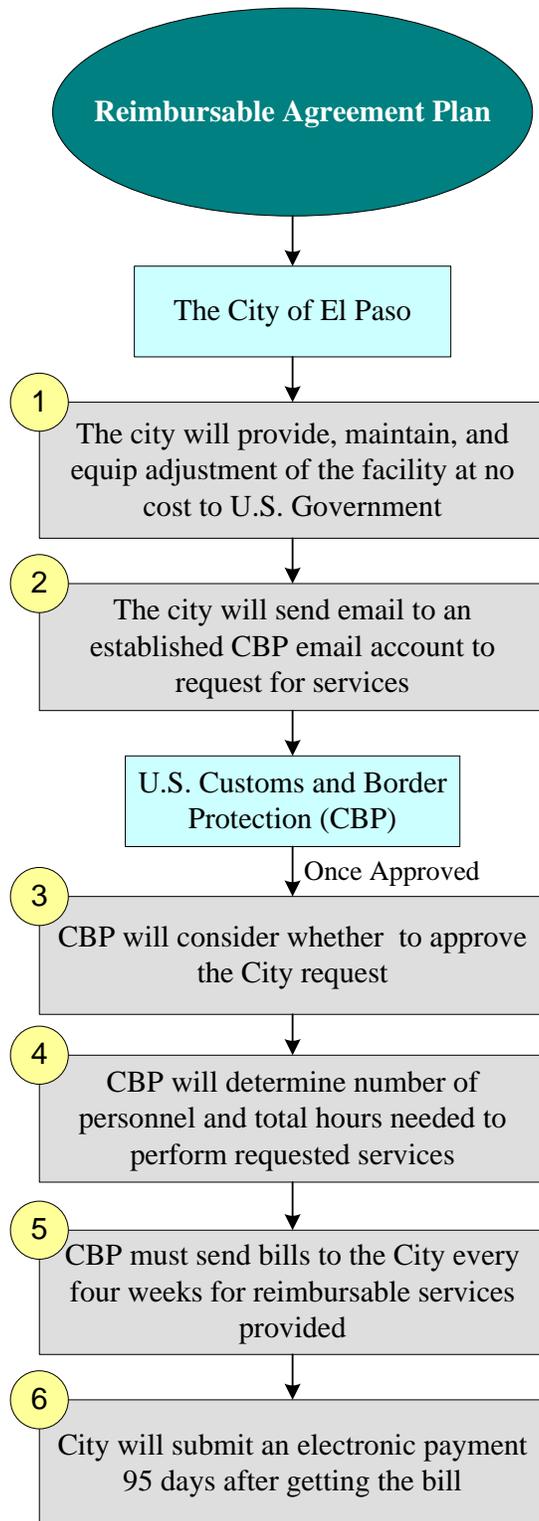
**Figure 1. CBP Funding System.**

The provisions of Section 560 of the *Consolidated and Further Continuing Appropriations Act, 2013* established a number of key elements that describe the process of the reimbursable fee agreement. For facility requirements, the City of El Paso must provide and maintain the necessary equipment for CBP to improve and expand its facilities. The services for which CBP will be reimbursed include primary inspections processing, secondary inspections processing, baggage control, and enforcement. Regarding the CBP responsibilities, CBP must consult with the city on the requested work assignment plan, and it must send a bill every four weeks to get the reimbursement for all the services provided. The City of El Paso is responsible for reimbursing CBP for all requested services by sending electronic payments. The city is also responsible for agreeing to the terms of a non-disclosure agreement related to operational reporting data and metrics provided by CBP. In the case of an event that might have an impact on the established agreement, either party has the right to request a consultation at any time. Last, the City of El Paso may transfer, assign, or sell its rights under the stated agreement to a third party upon CBP’s advanced written approval. Table 4 summarizes key elements of this agreement (16).

**Table 4. CBP Section 560 Reimbursable Services Agreement.**

<i>Key Agreement Element</i>	<i>Summary</i>
<b>Facility Requirements</b>	The City of El Paso will “provide, maintain, and equip any necessary alteration or expansion of the facility” as a result of additional CBP staffing.
<b>CBP Services to Be Reimbursed</b>	Additional services for which CBP may be reimbursed include primary inspections processing, secondary inspections processing, baggage control, and any enforcement or administrative functions necessary. Additionally, CBP is prohibited by law from approving any request that would “unduly and permanently impact services” provided for by appropriations.
<b>CBP Responsibilities</b>	CBP is responsible for consulting with the city to establish a work assignment plan and for sending bills to the city every four weeks for all reimbursable services provided.
<b>City of El Paso Responsibilities</b>	The city is responsible for remitting payments electronically to CBP as they become due. Further, the city agrees to adhere to non-disclosure agreements concerning operational reporting data and metrics.
<b>Consultation Process</b>	In the event of a dispute, either party may request consultations at any time.
<b>Assignment, Sale, Transfer</b>	Only upon CBP’s advanced written approval, the city may transfer, assign, or sell its rights to a third party. The new party will be required to fulfill all requirements outlined in this agreement.

Source: (16).



**Figure 2. El Paso RSA Agreement.**

As shown in Figure 2, several steps must be completed in order for the city to provide the resources for the expanded services at the POEs and for CBP to get the reimbursement. First, the

City of El Paso must send an email to CBP requesting services. Then, CBP must decide whether to approve the city’s request. If the request is approved, CBP must determine the total personnel and number of hours needed to perform the requested services. Once a service report is determined, CBP must send a bill to the city every four weeks for the reimbursement of services provided. Last, the city must submit an electronic payment approximately 15 days after receiving the bill from CBP (16).

In addition to the 560 model agreement, an annex supplements the signed P3 agreement and explains specific requirements and staffing commitments. This annex, signed and officially approved on December 2013, outlines the specific services and responsibilities provided by the city and CBP. Specifically, this agreement calls for CBP to increase its current services for overtime pay of CBP officials. This was completed through the extension of enhanced operational capabilities for pedestrian and vehicular lanes at PDN and vehicular lanes at Ysleta during several days of the week with high volumes. Table 5 summarizes the proposed enhanced operational requirements for passenger services at the PDN and Ysleta POEs; furthermore, it shows the estimated total number of hours that will provide a faster service to POE users by expanding the number of operational hours per day and adding more inspection lanes (16).

This agreement also calls for the creation of a committee of representatives that has oversight authority over specific provisions of this agreement. This committee is charged with reviewing wait times, services, and additional service requests. The agreement mandates that this committee meet at least once each month, with additional meetings to be scheduled on an as-needed basis. Notably, as Table 6 shows, this committee establishes BWT reduction goals for CBP to meet.

**Table 5. Enhanced Passenger Operational Capabilities for El Paso POEs.**

Service Type	POE	Lane Type	Day	Time	Additional Hours/Day	Additional Lanes	Hours/Year
Passenger	PDN	Pedestrian	Monday	10 a.m.–12 p.m.	2	7	728
			Holiday	10 a.m.–4 p.m.	6	7	630
		Vehicular	Saturday	2 p.m.–6 p.m.	4	6	1,248
			Sunday	10 p.m.–12 a.m.	2	6	624
			Holiday	11 a.m.–2 p.m. 7 p.m.–10 p.m.	6	6	540
	Ysleta	Vehicular	Saturday	2 p.m.–6 p.m.	4	6	1,248
			Sunday	2 p.m.–6 p.m.	2	6	624
			Holiday	2 p.m.–6 p.m.	4	6	360
	Cargo	Ysleta	Vehicular	Wednesday	12 p.m.–2 p.m.	2	1
Friday				12 p.m.–2 p.m.	2	1	104
Saturday				12 p.m.–2 p.m.	2	1	104

Source: (16).

**Table 6. Border Wait Time Reduction Goals.**

<i>Facility</i>	<i>BWT Reduction Goal</i>
PDN (Pedestrians)	24–30 minutes to 12–15 minutes
PDN (Vehicles)	30 minutes to 15 minutes
Ysleta (Vehicles)	24 minutes to 12 minutes
Ysleta (Cargo)	Keep processing within 19 minutes or less

Source: (16).

This agreement also summarizes the estimated benefits and costs at El Paso pedestrian and vehicle border crossing facilities. As Table 7 shows, a total cost of \$1.4 million annually is expected for this program. The total salary figures presented in the table are based on the following assumptions: (a) an hourly cost of \$119.43 per officer, which was the estimated overtime rate for a GS-12 employee; and (b) two officers needed to open one lane for one hour (16).

For this \$1.4 million, the City of El Paso is expected to receive the following benefits. Forecasts suggest that 122,220 additional pedestrian inspections and 123,012 additional vehicle inspections will take place at PDN. In addition, 113,832 personal occupancy vehicle inspections are projected for the first year of this agreement (see Table 8). These total figures take the following assumptions into account: (a) a pedestrian crossing time of 40 seconds, which results in 90 crossings per hour; (b) a vehicle processing time of 70 seconds per vehicle (51 per hour); and (c) the wait time goals presented in Table 6 (16).

**Table 7. Estimated Pedestrian and Vehicle Cost at POEs.**

<i>Facility</i>	<i>Day</i>	<i>Time</i>	<i>Lane Type</i>	<i>Number of Lanes</i>	<i>Estimated Cost</i>
PDN	Monday	2 hr	Pedestrian	7	\$173,890
	Holiday	6 hr	Pedestrian	7	\$150,482
	Saturday	4 hr	Vehicle	6	\$298,097
	Sunday	2 hr	Vehicle	6	\$149,049
	Holiday	6 hr	Vehicle	6	\$128,984
<b>PDN Bridge Subtotal</b>					<b>\$900,502</b>
Ysleta Bridge	Saturday	4 hr	Vehicle	6	\$298,097
	Sunday	2 hr	Vehicle	6	\$149,049
	Saturday	4 hr	Vehicle	6	\$85,990
<b>Ysleta Bridge Subtotal</b>					<b>\$533,136</b>
<b>Projected Total Cost</b>					<b>\$1,433,638</b>

Source: (16).

**Table 8. Estimated Pedestrian and Vehicle Benefits at POEs.**

<i>Facility</i>	<i>Day</i>	<i>Time</i>	<i>Lane Type</i>	<i>Number of Lanes</i>	<i>Estimated Additional Annual Inspections</i>
<b>PDN</b>	Monday	2 hr	Pedestrian	7	65,520
	Holiday	6 hr	Pedestrian	7	56,700
	<b>Projected Increase in Pedestrian Inspections</b>				<b>122,220</b>
	Saturday	4 hr	Vehicle	6	63,648
	Sunday	2 hr	Vehicle	6	31,824
	Holiday	6 hr	Vehicle	6	27,540
	<b>Projected Increase in Vehicle Inspections</b>				<b>123,012</b>
<b>Ysleta</b>	Saturday	4 hr	Vehicle	6	63,648
	Sunday	2 hr	Vehicle	6	31,824
	Saturday	4 hr	Vehicle	6	18,360
	<b>Projected Increase in Vehicle Inspections</b>				<b>113,832</b>

Source: (16).

## 4.2 OTHER PILOT PROGRAMS

In addition to the City of El Paso, four other case studies participated in the Section 560 RSA. These programs include three agencies in Texas (DFW International Airport, IAH, and South Texas Assets Consortium) and one in Florida (MIA). Due to time and budget constraints, researchers were not able to obtain the RSAs from the other four P3 pilot case study examples. However, researchers were able to obtain information on the estimated reimbursement amount and some of the broad goals for each agreement.

As shown in Table 9, only one other pilot P3 program is a land border POE, while the other three case study examples are airport ports of entry. The annual amount of reimbursement and the expected outcomes varied.

**Table 9. Pilot P3 Programs under the Section 560 Reimbursable Services Agreement.**

<i>Local Partner Agency</i>	<i>2014 RSA Reimbursement to CBP (est.)</i>	<i>Agreement Goals</i>
<b>City of El Paso</b>	\$1,433,638	Reduce land POE wait times
<b>DFW International Airport</b>	n/a	Reduce airport inspection wait times
<b>Houston Airport System</b>	n/a	Reduce airport inspection wait times
<b>South Texas Assets Consortium</b>	n/a	Reduce land POE wait times
<b>Miami-Dade County International Airport</b>	\$6,000,000	Reduce airport inspection wait times

Sources: (16, 17, 18, 19).

As noted, according to a recent presentation by DFW International Airport executive staff, early indications suggest that the 560 RSA has resulted in a decrease in overall passenger wait times. As shown in Table 10, from June 29 to July 26, 2014, the 560 RSA directly resulted in a 50 percent reduction in wait times despite an 8 percent increase in air passengers and a 4 percent increase in the total number of flights (17).

**Table 10. DFW Airport 560 Agreement Overview Metrics.**

<i>Overview Metrics</i>	<i>July 2014*</i>	<i>July 2013</i>	<i>% Change</i>
<b>Total Flights</b>	2,319	2,235	+4%
<b>Air Passengers</b>	309,317	286,229	+8%
<b>Section 560 Passengers</b>	35,393	0	+100%
<b>Average Wait Time (min)</b>	15.0	30.0	-50%

\* Period from June 29, 2014–July 26, 2014.

Source: (17).

Similar to DFW Airport, in January 2014, Houston Airport System officials finalized their Section 560 reimbursable services P3 agreement for the stated purpose of “support[ing] growing international travel with expanded services on a reimbursable basis” (18). MIA was the only agency participating in the program that was not located in Texas. According to a congressional request letter to the Secretary of DHS from the Miami-Dade Congressional Delegation, this agreement expects to leverage \$6 million in order to reimburse CBP for overtime costs associated with inspection services beyond currently authorized levels (19).

On January 2015, CBP released a report on how the South Texas ports facilitated significant amounts of passenger, commercial traffic, and trade imports in FY 2014, which began in October 2013 and ended in September 2014. According to David P. Higgerson, director of field operations at the Laredo Field Office, CBPOs at South Texas POEs facilitated a record \$162 billion in trade imports during the 2014 fiscal year. He also noted that the use of Trusted Traveler Programs such as the Secure Electronic Network for Travelers Rapid Inspection (SENTRI) program and the Free and Secure Trade (FAST) program, the use of Ready Lanes, and the increase in inspection officers during peak hours have significantly helped to facilitate trade and travel in the Laredo region (20).

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## CHAPTER 5: STUDY RESULTS AND LESSONS LEARNED

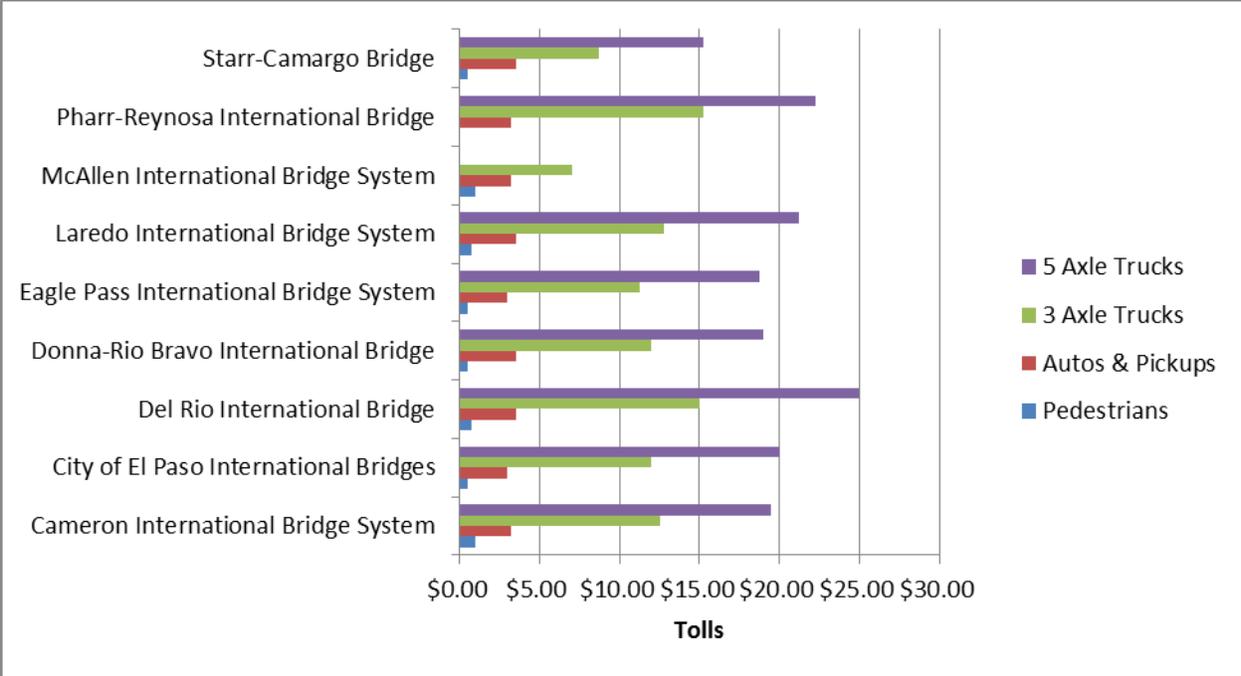
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This chapter summarizes the results of this research effort. The chapter is organized into four subsections. First, results of the first three years of the RSA program implemented in El Paso are presented; these results suggest that (a) the program revenues are exceeding expenses, and (b) the program appears to be achieving its goal of reducing border wait times during peak hours. Second, the results from a survey of border users are discussed and suggest a prevailing perception that border wait times are increasing. However, this could likely be due to an overall substantial increase in border traffic and not necessarily related directly to the RSA program. Next, augmenting this research is a demonstration example of one possible method for performing a cost-benefit analysis of saved time experienced at the border. This method seeks to provide a tenable technique for quantifying environmental and economic benefits of reducing border wait times at the PDN border crossing. Future work that expands on this approach for future RSA agreement programs implemented elsewhere could be conducted. A summary of the major conclusions and opportunities for future research are then summarized.

### 5.1 RSA PROGRAM RESULTS

At the beginning of this project, TTI researchers sought to conduct an independent analysis of border wait times in order to discern best practices for implementation elsewhere. TTI researchers were interested in the El Paso agreement primarily because it was one of the first RSA agreements implemented in the United States. However, TTI researchers faced challenges that precluded them from conducting an accurate analysis for two reasons. First, researchers found it difficult to conduct an analysis that compared metrics before the RSA program was implemented to after it was in place. In 2010, TTI began implementation of an RFID program that aimed to measure truck crossing times along the border. However, the recent implementation of this program presented challenges. Few data were available to develop a statistically tenable baseline to conduct a proper before-and-after comparison. Also during the course of this project, City of El Paso officials added an economics research team to the International Bridges Department that, along with an outside consultant, conducted an internal analysis of their program. With this in mind, the aim of this project changed from a quantitative assessment to a qualitative reporting of lessons learned. The data presented below provide a summary of the RSA agreement results as reported by the City of El Paso.

As discussed previously in this report, the RSA agreement between CBP and the City of El Paso was approved by the City of El Paso City Council on December 3, 2013, and the program officially began on January 26, 2014. This program was renewed on September 23, 2014, and again on September 22, 2015. This program receives funding through a \$0.50 increase in tolls for passenger automobiles and a \$0.50 increase per axle for cargo vehicles. As shown in Figure 3, based on data provided by the City of El Paso, even with this toll increase, the El Paso border crossing facilities are still competitive with other Texas ports of entry (21).



**Figure 3. City of El Paso International Bridges Fare Comparison with Other Texas POEs.**

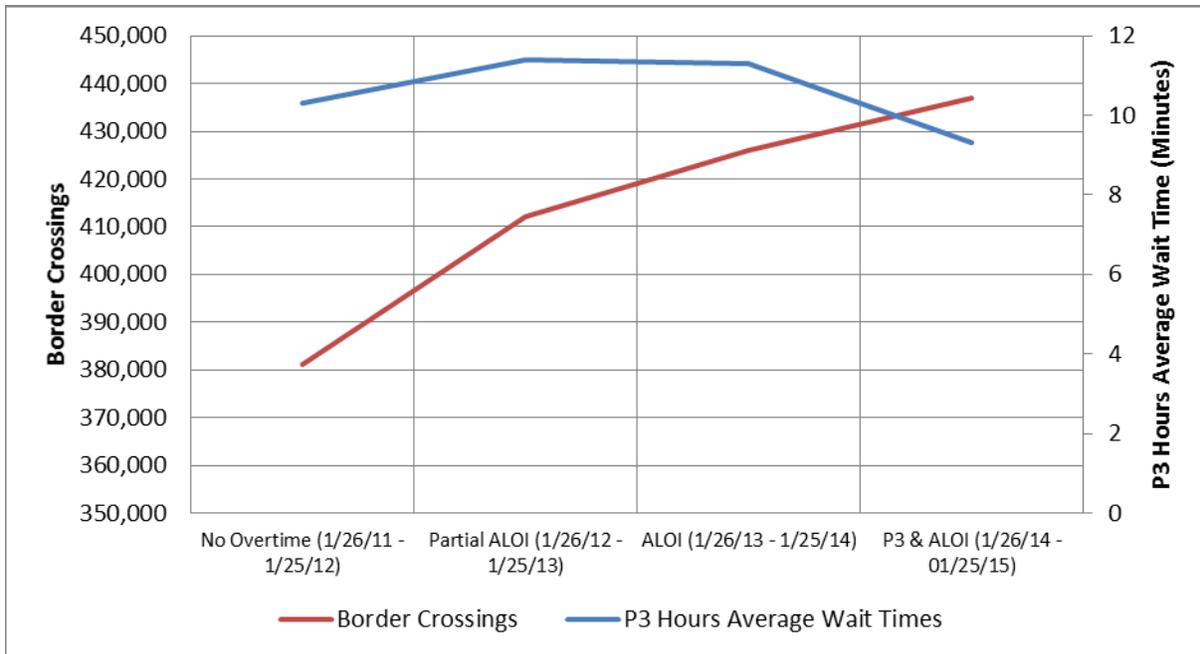
Furthermore, according to data provided by the City of El Paso, the P3 program has been net revenue positive since it began in early 2014. Table 11 illustrates the program revenues and expenses for FY 2014–2016.

**Table 11. P3 Program Revenues and Expenses, FY 2014–FY 2016.**

<i>Fiscal Year</i>	<i>Date Range</i>	<i>Revenues</i>	<i>Expenses</i>
2014	January 2014–August 2014	\$1,672,000	\$533,000
2015	September 2014–August 2015	\$2,821,000	\$1,382,000
2016	September 2015–December 2015	\$961,000	\$331,000

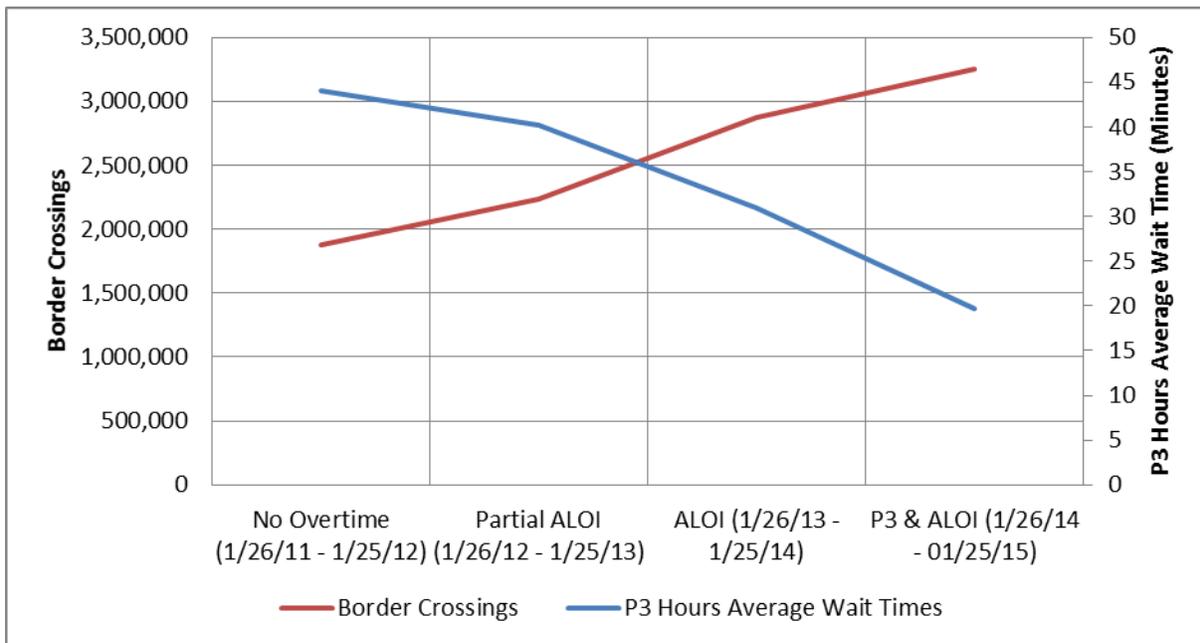
Source: (21).

Cargo crossings (and toll revenues) have risen since the Great Recession. Also noteworthy is that City of El Paso data show that the P3 program, together with the All Lanes Open Initiative (ALOI), is helping to reduce wait times during peak-hour travel. As shown in Figures 4–7, at the Ysleta bridge facility, average border wait times have decreased one minute for cargo trucks and 24.4 minutes for passenger vehicles. For the PDN bridge facility, a similar drop has occurred, with a reduction of 22.3 minutes and 31.7 minutes in average wait times for pedestrian and passenger vehicles, respectively.



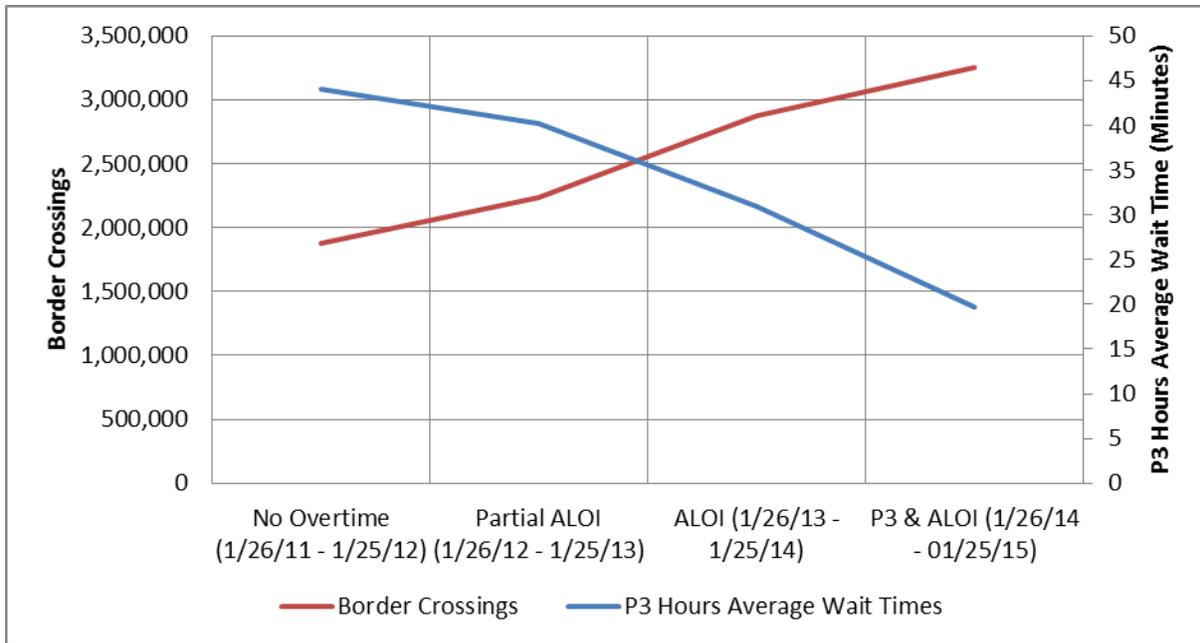
Source: (21)

**Figure 4. Ysleta Cargo Truck Border Crossings and P3 Hours Average Wait Times.**



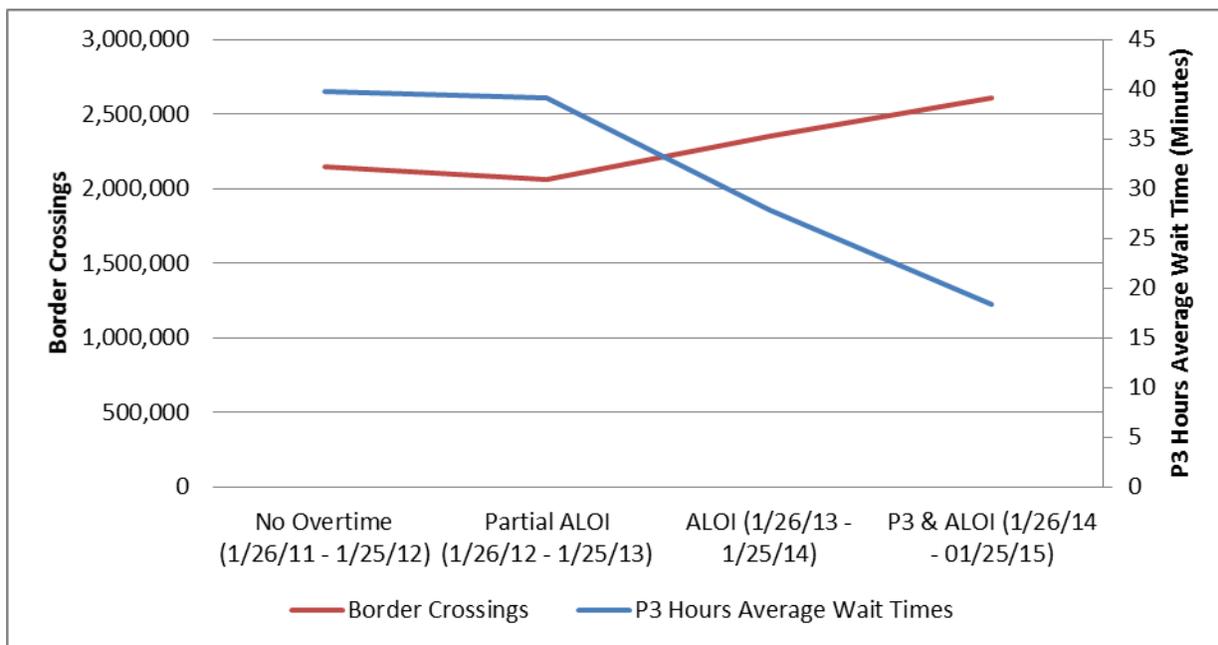
Source: (21)

**Figure 5. Ysleta Passenger Vehicle Border Crossings and P3 Hours Average Wait Times.**



Source: (21)

**Figure 6. PDN Pedestrian Border Crossings and P3 Hours Average Wait Times.**



Source: (21)

**Figure 7. PDN Passenger Vehicle Border Crossings and P3 Hours Average Wait Times.**

## 5.2 BORDER USER SURVEY RESULTS

Also as part of this study, the Coalición Empresarial Pro-Libre Comercio (CELC) administered a border user survey at its sponsored events in the El Paso/Ciudad Juárez region. Participants at these events included representatives such as trade brokers, freight carriers, and manufacturers. These participants represent a small cross-section of commercial border crossers in the El Paso/Juárez region who frequently use the border crossing at Ysleta. All of the completed surveys were done in Spanish, suggesting most of the participants represented businesses from the Mexican side of the border. Information regarding the survey questions and methodology is provided in Appendix A.

Overall, these results indicate that the survey participants perceived that BWTs have not improved but have actually increased significantly over the last year, particularly over the last three months. Although the number of CBPOs at the border crossings has increased due to the P3, one must take into account the growth in number of vehicles crossing the border. There has been an overall increase in border crossing traffic at both the PDN POE for non-commercial vehicles (autos) and the Ysleta POE (Zaragoza) for non-commercial vehicles (autos) and commercial vehicles (trucks). Commercial truck traffic at Zaragoza has shown a steady increase since 2011, as illustrated in Table 12 (22).

**Table 12. Commercial Truck Traffic at Ysleta POE.**

<i>Year</i>	<i>Vehicles Crossing Border</i>
2009	284,993
2010	331,970
2011	330,949
2012	353,555
2013	361,560
2014	374,177

Source: (22).

A border crossing and wait time information system (<http://bcis.tamu.edu>) has been developed by TTI, in conjunction with the Federal Highway Administration (FHWA) and the Texas Department of Transportation (TxDOT), and displays both real-time and historic crossing data. In addition, the City of El Paso's website describes the narrow focus of the P3 project to expand service at specific times and locations. This narrow focus may contribute to why the survey participants did not notice reduced BCT (total time to cross the border from the Mexican shipping point through FHWA and TxDOT safety inspections) nor BWT (time from CBP primary booth to exit the inspection lot) (23). The hours of expanded service are targeted, and much of the work is being done in the vehicle primary processing lanes versus in the commercial truck lanes.

Also, the City of El Paso's P3 agreement with CBP manages two of the major northbound bridges in the area. The other major El Paso border crossing, BOTA (or Free Bridge), is operated by the U.S. General Services Administration. The El Paso BOTA POE carries as much traffic as

both PDN and Ysleta and is not part of the P3 agreement. The survey participants may not have realized that the extra staffing is not at the BOTA bridge. The survey participants were not asked to identify which crossing they used. In addition to the P3, CBP introduced on its website (<http://cbp.gov>) the ALOI at the Port of El Paso in 2013. Under this successful initiative, CBP normally staffs all vehicle and pedestrian lanes between 6 a.m. and 10 a.m. Monday through Friday. All lanes are open Saturdays from 10 a.m. until 2 p.m. and on Sundays from 2 p.m. until 6 p.m., although during the Sunday of the survey, the hours were adjusted and expanded to meet anticipated demand earlier in the day. The CBP ALOI works in conjunction with the City of El Paso’s P3 agreement to lessen BWT. BCTs and BWTs are also tracked on the city’s website (<http://elpasotexas.gov/international-bridges>).

### 5.3 PASO DEL NORTE COST-BENEFIT ANALYSIS CASE STUDY

In order to determine the impact of additional CBPOs at the PDN POE, a cost-benefit analysis was developed. The research team analyzed and quantified the effect of the northbound traffic on PDN by developing a dynamic traffic assignment microsimulation model in VISSIM 7.0. Additional information concerning the research process and methodology is provided in Appendix B.

Two scenarios were developed for this study:

- Scenario 1: Base Model—before the P3 program was implemented (2013).
- Scenario 2: Post Program Model—after the P3 program was implemented (2014).

The PDN simulation model results showed that having additional open inspection lanes available made an impact on the amount of fuel consumed and emissions produced. Table 13 shows the results obtained for each scenario.

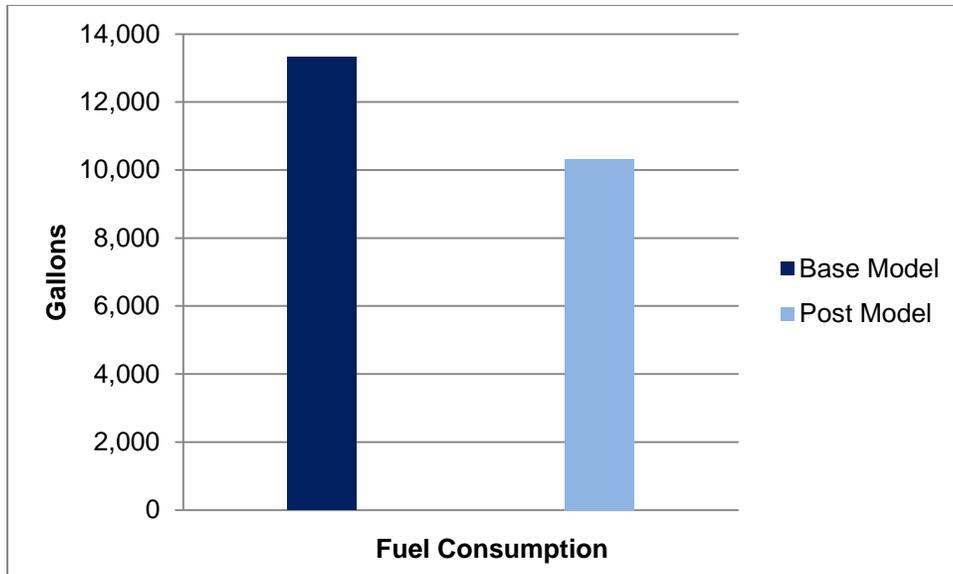
**Table 13. PDN Simulation Analysis Results.**

<i>Model</i>	<i>Fuel Consumption (gallons)</i>	<i>Emissions CO (grams)</i>	<i>Emissions NO<sub>x</sub> (grams)</i>	<i>Emissions VOC (grams)</i>
<b>Base</b>	13,331	931,845	181,303	215,964
<b>Post</b>	10,333	722,252	140,524	167,389

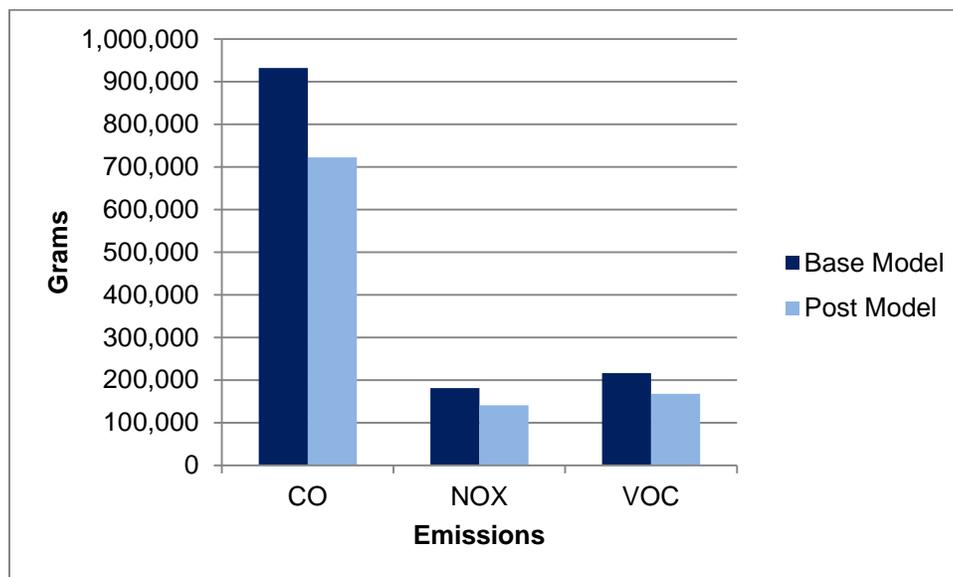
Note: CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxide; VOC = volatile organic compound.

Figure 8 shows a comparison of fuel consumed at PDN for passenger vehicles. The amount of fuel saved by having additional inspection lanes reached approximately 3,000 gallons per simulation period (i.e., 17 hours). Likewise, the total emissions produced at the PDN significantly decreased when additional inspection lanes were operating as needed throughout the day (see Figure 9).

Overall, the simulation results showed an approximate 22 percent improvement in terms of vehicle fuel consumption and emission production. The shown improvement during a typical day at PDN was the result of additional CBPOs during peak times. This finding suggests that the more lanes opened at rush hours, the lesser the wait time for passenger vehicle border commuters.



**Figure 8. Fuel Consumption at PDN.**



**Figure 9. Emissions Produced at PDN.**

#### 5.4 RESEARCH FINDINGS AND LESSONS LEARNED

Ultimately, the impacts of the RSA program and the ALOI on BWTs led researchers to conclude the following:

- The P3 effort to enhance CBP staffing at very specific times and locations has had an impact on service and reduced BWT.** The results presented in this report suggest that, in the aggregate, the number of border crossings has increased significantly. A number of macro-economic factors could be at work to explain this, including an improving U.S. economy and maquiladora-induced cross-border trade between the

United States and Mexico. Interviews with CBP management and City of El Paso International Bridges Department officials indicate that the P3 effort has been successful. Additionally, research conducted by Secure Origins Inc. found that using existing officers who are trained and experienced to bolster capacity during peak-period times has proven to be an effective use of CBP resources.

- **There is ever-increasing growth in commercial truck traffic at the Zaragoza-Ysleta crossing.** Again, based on evidence presented in Figure 4, there has been a large increase in commercial truck traffic at the Zaragoza-Ysleta crossing. This increase jumped from 380,000 average border crossings before the P3 program was in place to approximately 435,000, representing an approximately 14 percent increase.
- **The P3 effort has produced a noticeable difference in service.** Data presented in this report provide unequivocal evidence of a significant drop in BWTs after the P3 program was implemented as compared to before the program was put in place. This is true despite an overall increase in border crossings.
- **The perceived trip times and actual trip times may need additional research to see if the two track the same.** There appear to be differences between border wait time perceptions and what is actually occurring, especially with regard to the times the P3 program is in place. While results from the survey conducted for this project suggest that many business leaders perceive BWTs to be increasing, that increase could be because of actions outside of CBP's control. For example, wait times in the Mexican Customs (Aduana) export lot have increased and impact overall BCT and BWT. An overall increase in border crossing traffic could also have contributed to the perception that wait times are increasing. Additional research that examines this perception further might be helpful.
- **Finally, new technology is currently being developed that adds to the research capabilities of CBP and non-federal RSA partners.** For example, both TTI and Secure Origins Inc. have been successful in developing cost-effective methods to monitor commercial border wait times at commercial POEs that could be considered for future initiatives. Additional information can be found at the following website:  
<http://tti.tamu.edu/group/randi/groups/san-antonio-el-paso/el-paso/>.

Building on these findings, the following lessons have been learned through the El Paso RSA program implementation that could be instructive for other entities seeking to implement an RSA agreement at their POE:

- **Regular communication between all RSA parties is a key factor for addressing problems early.** These agreements can be complex, requiring close coordination by multiple agencies that are not normally accustomed to working together. In the early days of RSA program implementation, officials at the City of El Paso set up regular meetings with CBP officials to address problems that arose. As a result, issues were addressed early in the process. Regular communication between all parties helps ensure that if any changes or problems arise, they are addressed quickly.
- **Real-time data sharing is essential.** Perhaps just as critical is the ability to share critical information on border crossings. Upon implementation of the program in 2013, City of El Paso officials established border wait time performance goals. This allowed the City of El Paso to keep track of progress and work through solutions if these performance

objectives were not met. Accurate and timely data sharing helps to understand the challenges, assess and prioritize innovative approaches, and monitor improvements.

- **When communicating the results of the RSA program to elected officials and the public, it is best to under-promise and over-deliver.** City of El Paso officials were careful not to suggest that the RSA program would reduce *overall* border wait times, just help reduce pressure during peak-period times. While a disconnect between perceptions by the public and reality still persists, the data presented in this report suggest that so far, the RSA program has met its stated goal from when it was implemented in 2013.

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## REFERENCES

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- 1 Walke, A., and T. Fullerton. “Freight Transportation Costs and the Thickening of the US-Mexico Border.” *Applied Economics* (Taylor & Francis Journals) 46, no. 11 (2014): 1248–1258.
- 2 Owens, B. “Opinion: Upgrade Border Ports of Entry | Transport Topics Online | Trucking, Freight Transportation and Logistics News.” n.d.
- 3 Rogers, H. *H.R. 933—113th Congress (2013–2014): Consolidated and Further Continuing Appropriations Act, 2013*. March 2013.
- 4 Cuellar, H. *H.R. 1108—113th Congress (2013–2014): Cross-Border Trade Enhancement Act of 2013*. April 2013.
- 5 Smith, L. *H.R. 3547—113th Congress (2013–2014): Consolidated Appropriations Act, 2014*. January 2014.
- 6 U.S. Department of Homeland Security. “Resource Optimization at U.S. Ports of Entry.” 2013.
- 7 Cornyn, J. *461—114th Congress (2015–2016): Cross-Border Trade Enhancement Act of 2015*. February 2015.
- 8 Department of Homeland Security Appropriations Bill, 2016. (U.S. Senate Committee Report 114-068.) [http://thomas.loc.gov/cgi-bin/cpquery/?&dbname=cp114&sid=cp114j6TvZ&refer=&r\\_n=sr068.114&item=&&&sel=TOC\\_115883&](http://thomas.loc.gov/cgi-bin/cpquery/?&dbname=cp114&sid=cp114j6TvZ&refer=&r_n=sr068.114&item=&&&sel=TOC_115883&).
- 9 Crawford, A. “Border Delays Cost U.S. \$7.8 Billion as Fence is Focus.” Bloomberg Technology, 2013. <http://www.bloomberg.com/news/articles/2013-05-15/border-delays-cost-u-s-7-8-billion-as-fence-is-focus>.
- 10 Sabean, J., and C. Jones. “Inventory of Current Programs for Measuring Wait Times at Land Border Crossings.” 2008. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.511.694&rep=rep1&type=pdf>.
- 11 Roberts, B., A. Rose, N. Heatwole, M. Avetisyan, D. Wei, O. Chan, and I. Maya. “The Impact on the US Economy of Changes in Wait Times at Ports of Entry.” *Transport Policy* 35 (2014): 162–175.
- 12 Hodge, G., and C. Greve. “Public-Private Partnerships: An International Performance Review.” *Public Administration Review* 67, no. 3 (2007): 545–558.

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- 13 Liu, J., P. Love, J. Smith, M. Regan, and M. Sutrisna. "Public-Private Partnerships: A Review of Theory and Practice of Performance Measurement." *International Journal of Productivity and Performance Management* 63, no. 4 (2014): pp. 499–512.
  - 14 Rosenblum, M. *Border Security: Immigration Enforcement Between Ports of Entry*. 2012.
  - 15 Banks, J. "Measurement of Passenger Vehicle Wait Times at San Ysidro, California, Port of Entry." *Transportation Research Record* 1777, no. 1 (2001): 138–145.
  - 16 City of El Paso. Annex to the "Section 560" Reimbursable Fee Agreement Between U.S. Customs and Border Protection and the City of El Paso, Texas. December 3, 2013. [http://legacy.elpasotexas.gov/muni\\_clerk/agenda/12-03-13/12031309A.pdf](http://legacy.elpasotexas.gov/muni_clerk/agenda/12-03-13/12031309A.pdf).
  - 17 Dallas–Fort Worth International Airport. Customs and Border Protection, Transborder and Facilitation Issues. 2014.
  - 18 "Houston Airports Partner with CBP." Houston Airport System, 2015.
  - 19 Ros-Lehtinen, I. "Letter to Hon. Jeh Johnson from Members of the Miami-Dade Congressional Delegation." n.d.
  - 20 U.S. Customs and Protection. CBP Officers at South Texas Ports Facilitate Significant Amounts of Passenger, Commercial Traffic, Trade Imports in FY 2014. January 23, 2015. <http://www.cbp.gov/newsroom/local-media-release/2015-01-23-000000/cbp-officers-south-texas-ports-facilitate-significant> (accessed March 2015).
  - 21 City of El Paso's International Bridges Department Update Presentation to Border Stakeholders. February 2016. [Presentation Not Available Online.]
  - 22 City of El Paso. International Bridges: Traffic Volume. <https://www.elpasotexas.gov/international-bridges/traffic-volume>.
  - 23 City of El Paso. International Bridges: Enhanced Inspection Services. <https://www.elpasotexas.gov/international-bridges>.

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## APPENDIX A: BORDER USER SURVEY RESULTS

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This appendix presents the qualitative assessment for the implementation of the P3 agreement between the City of El Paso and CBP at the Ysleta (Zaragoza) and PDN POEs. With the assistance of CELC, TTI conducted a survey to assist in determining the effectiveness of the P3 agreement between the City of El Paso and CBP. The P3 agreement enabled funding for the overtime of officers at border crossings between El Paso and Ciudad Juárez with the hope of reducing BCTs and BWTs between the cities. CELC distributed surveys at two events in the El Paso/Juárez region in March and April 2015. These events were sponsored by CELC to promote safe, efficient, and free trade through participation in international trade and security programs (1).

### METHODOLOGY

The survey instrument utilized was designed to determine the participants' perceptions of trip times after implementation of the P3 program between the City of El Paso and CBP. The survey, available in English and Spanish, consisted of 11 questions concerning trip origin, traffic queues, and perceived changes in BCTs and BWTs.

### STAKEHOLDERS AND SURVEY PARTICIPANTS

CELC administered the survey at its sponsored events in the El Paso/Ciudad Juárez region. Participants at these events included representatives such as trade brokers, freight carriers, and manufacturers. Table 14 shows a breakdown of participants. These participants represent a small cross-section of commercial border crossers in the El Paso/Juárez region who frequently use the border crossing at Ysleta. All of the completed surveys were done in Spanish, suggesting most of the participants represented businesses from the Mexican side of the border.

**Table 14. Businesses Represented by Survey Participants.**

<i>Business Type</i>	<i>Number of Participants</i>	<i>Percentage of Participants</i>
Trade Brokers	2	7%
Freight Carriers	8	30%
Manufacturers	17	63%
<b>TOTAL</b>	27	100%

### ANALYSIS AND RESULTS

#### The Point of Miles from Origin to First Border Inspection

To determine where survey participants began their trip, Question 1 asked, "How many miles did you travel from your point of origin to the first border crossing inspection station?" Sixty-three percent of survey participants responded to this question. Table 15 shows the results. Of

those surveyed, there were no participants that traveled more than 50 miles to arrive at the first border inspection station.

**Table 15. Trip Miles from Point of Origin to First Border Crossing Inspection Station.**

<i>Miles</i>	<i>Number of Participants</i>	<i>Percentage of Participants</i>
Fewer than 5 miles	0	0%
5 to 10 miles	2	12%
10 to 20 miles	7	41%
20 to 40 miles	6	35%
40 to 50 miles	2	12%
More than 50 miles	0	0%
<b>TOTAL</b>	<b>17</b>	<b>100%</b>

### **A Complete Stop in Traffic during Trip**

Another question asked about stops made during trips. Sixteen survey participants—eight carriers and eight manufacturers—responded to the question. Table 16 shows the complete results.

**Table 16. Survey Participants Indicating a Complete Stop in Traffic during Trip.**

<i>Response</i>	<i>Number of Participants</i>
Traffic <u>Never</u> Comes to a Complete Stop	5
Traffic <u>Almost Never</u> Comes to a Complete Stop	3
Traffic <u>Sometimes</u> Comes to a Complete Stop	4
Traffic <u>Almost Always</u> Comes to a Complete Stop	2
Traffic <u>Always</u> Comes to a Complete Stop	2

### **First Queue in Traffic**

Survey participants were next asked where they first encountered a queue in traffic during their trip. Table 17 shows the responses.

**Table 17. First Queue in Traffic.**

<i>Location of First Queue</i>	<i>Number of Participants</i>
CBP Primary Inspection Booth	2
Department of Public Safety (DPS) Lot	0
Mexican Aduana Export Lot	12
Other	1

### **Perceived Change in BWT**

When asked if they perceived a change in BWT, 88 percent of survey participants responded that they did perceive a change in BWT, as shown in Table 18.

**Table 18. Perceived Change in BWT.**

<i>Response</i>	<i>Responding Participants</i>
Perceived Change in BWT	88%
Did Not Perceive Change in BWT	12%

### **Perceived Improvement in BWT**

In addition to perceived change in BWT, survey participants were asked if they perceived an improvement in BWT. Responses indicate that only 24 percent perceived an improvement in BWT, as shown in Table 19.

**Table 19. Perceived Improvement in BWT.**

<i>Response</i>	<i>Responding Participants</i>
Perceived Improvement in BWT	24%
Did Not Perceive Improvement in BWT	76%

### **Perceived Cause of Trip Delays**

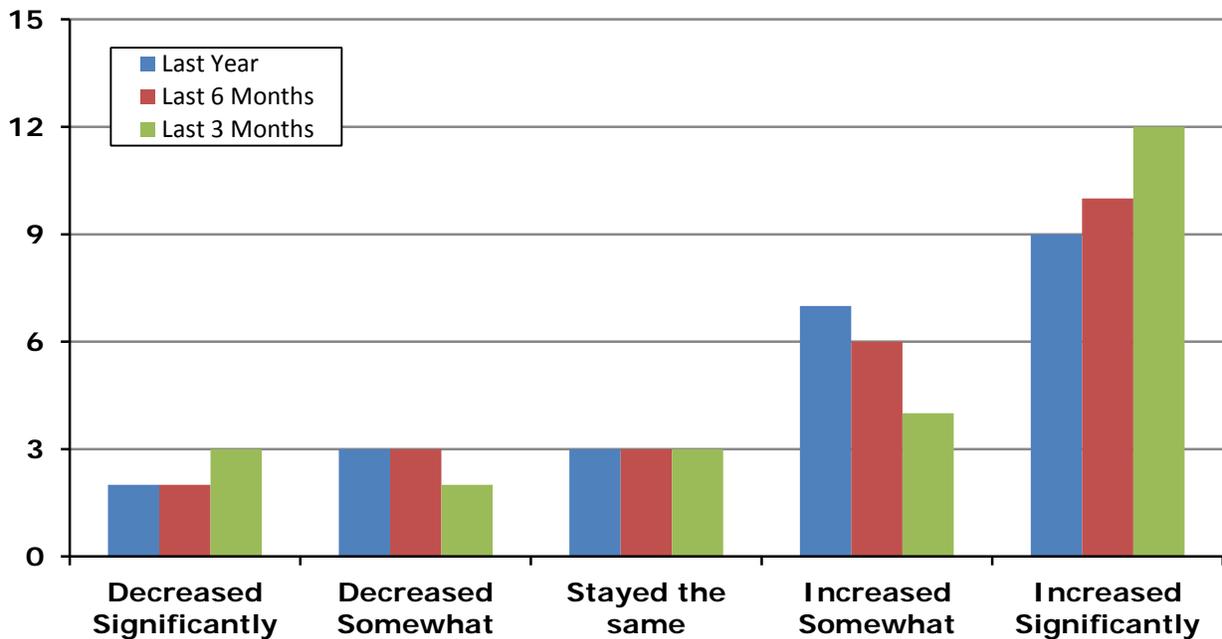
Table 20 shows perceived causes for delays during trips. Only 67 percent of the survey participants responded to this question. Of those, 33 percent responded that having too many vehicles on the roadway is the major cause for trip delays.

**Table 20. Cause of Trip Delays.**

<i>Response</i>	<i>Number of Participants</i>
Too many vehicles on roadway	9
Not enough CBP staff	5
Not enough DPS staff	0
Inadequate communication	2
Other	2

**Comparison of Perceived Trip Times**

Trip time perception was measured in Questions 9, 10, and 11. Question 9 asked participants to consider trip times during the last year, Question 10 asked participants to consider trip times during the last six months, and Question 11 asked them to consider trip times during the last three months. Eighty-nine percent of the survey participants responded to these questions. Figure 10 shows responses.



**Figure 10. Comparison of Perceived Trip Time.**

## REFERENCE

- 1 Trotter, R.S., and B.K. Manak. *Assessment of Commuting Crossing Cost at El Paso-Ciudad Juarez International Bridge of the Americas*. Center for International Intelligent Transportation Research, Texas A&M Transportation Institute, August 2013.

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## APPENDIX B: PASO DEL NORTE COST-BENEFIT ANALYSIS

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This appendix presents the cost-benefit analysis for the implementation of the P3 agreement between the City of El Paso and CBP at the PDN POE. First, there is a description of the methodology and the evaluation criteria for the P3 agreement. Next, the analysis for the base case scenario is presented; this scenario considers the case where all the performance measures outlined in the RSA program are met optimally (i.e., the benefits outlined in the P3 agreement are maximized). Subsequently, the cost-benefit analyses measuring BWT performance are detailed, first using historical data as reported by CBP and second using RFID data collected by the TTI readers installed at the POE. Finally, this appendix presents the conclusions in the form of cost-benefit ratios and estimation of net benefits, as well as the study limitations.

### METHODOLOGY

The PDN POE is one of the busiest cross-border pathways along the U.S.-Mexico border. Throughout the years, long queues and wait times have become a substantial issue for cross-border travelers. The prolonged wait time causes include increasing population, commercial trade and daily commuter demand, and limited resources available for POEs. In an effort to improve the BWTs and support the local and national economies, the number of available officers at POEs has increased during periods of highest demand. This increase allows CBP to have better flexibility in terms of the number of inspection lanes available during peak hours, holidays, and special events.

In order to determine the impact of additional CBPOs at the PDN POE, the research team developed a cost-benefit analysis. The research team analyzed and quantified the effect of the northbound traffic on PDN by developing a dynamic traffic assignment microsimulation model in VISSIM 7.0.

Two scenarios were developed:

- Scenario 1: Base Model—before the P3 program was implemented (2013).
- Scenario 2: Post Program Model—after P3 program was implemented (2014).

The base model represented traffic conditions at the PDN bridge during 2013. This included the average number of lanes open at each hour of interest, inspection times, hourly volumes, and overall geometry of the PDN. The hourly origin-destination vehicle demand matrices covered a total simulation period of 17 hours, from 5 a.m. to 10 p.m. Table 21 is an example of a demand table. The time interval shown in Table 21 represents the first hour of the simulation, which was from 5:00 a.m. to 6:00 a.m. Scenario 1 was used as the basis to construct Scenario 2 afterwards.

### SIMULATION MODEL DATA

Due to time constraints, the booth inspection data used to develop the PDN base model were obtained from a previous study done by TTI at the BOTA POE called *Assessment of Commuting Crossing Cost at El Paso-Ciudad Juarez International Bridge of the Americas (I)*.

**Table 21. Example of Demand Table for VISSIM Dynamic Traffic Assignment.**

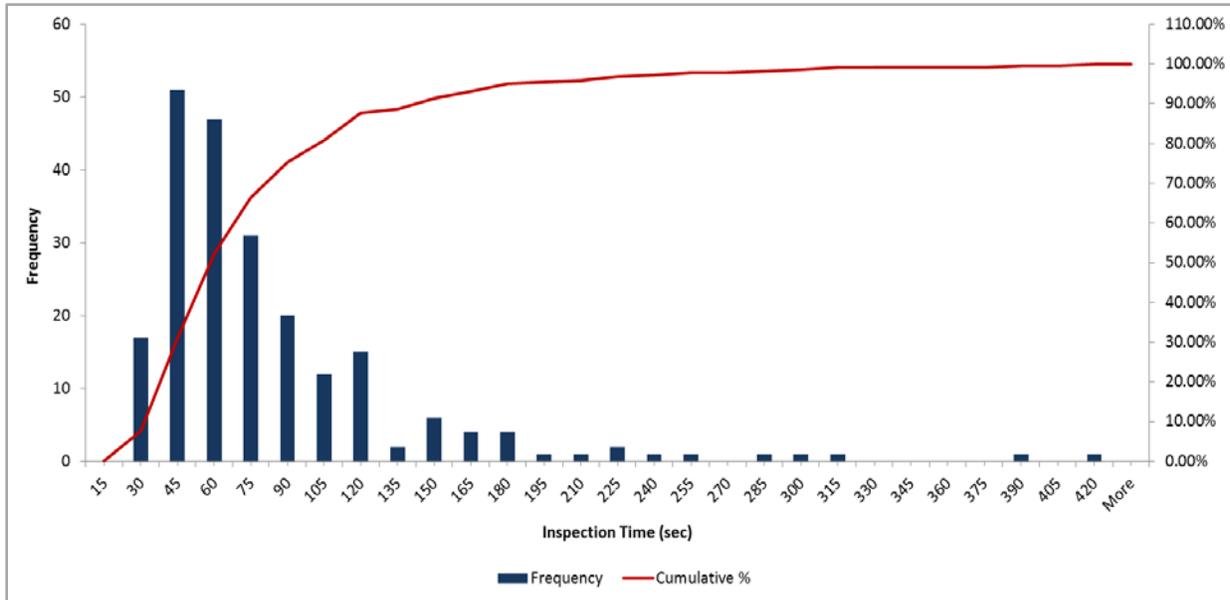
<i>*time interval [hh.mm]</i>
0.0 1.0
<i>*scaling factor</i>
1
<i>*number of zones</i>
2
<i>*zones</i>
1 2
<i>*number of trips between zones</i>
0 252
0 0

### Paso Del Norte Booth Inspection Time

The booth inspection times at PDN were coded into the model based on a sample size of 220 observations. The descriptive statistics analysis showed that the inspection time ranged from 17 seconds up to 417 seconds, with an average of 76 seconds. Table 22 shows the descriptive statistics for the PDN inspection time. Figure 11 shows a probability distribution function. Most of the readings were below the three-minute mark, with the majority of the readings being between 45 to 60 seconds.

**Table 22. Booth Inspection Time Statistics.**

<i>Statistic</i>	<i>Booth Inspection Time (sec)</i>
Mean	76.810
Standard Error	3.912
Median	58.100
Mode	44.000
Standard Deviation	58.028
Sample Variance	3367.251
Kurtosis	10.136
Skewness	2.761
Range	400.300
Minimum	17.000
Maximum	417.300
Sum	16,898.300
Count	220.000
Confidence Level (95.0%)	7.710



**Figure 11. Booth Inspection Time Probability Distribution Function.**

### Paso Del Norte Operating Booths

The researchers used the data available for the year 2013 (i.e., November and December) and extracted it into a database. The data contained the hourly number of booths operating and the recorded waiting time. The descriptive statistics for the number of booths operating at the PDN POE were obtained. The data analysis showed that the PDN had on average three open inspection lanes for passenger vehicles throughout the period of interest. Table 23 shows an example of the resulting descriptive statistics for the time between 2:00 p.m. to 3:00 p.m. This analysis was completed to determine the number of lanes open with the highest frequency during each hour of the day for all sample days in the database.

Table 24 shows the number of open lanes available per hour in each model. The information for the post model was gathered from the City of El Paso International Bridges website.

### Paso Del Norte Vehicle Volumes

Passenger vehicle volumes crossing the border (to El Paso) at PDN during 2013 were obtained from Caminos Y Puentes Federales. A daily average crossing volume was calculated and adjusted accordingly to represent only the 17-hour period simulated in the micromodel. For this study, researchers assumed that the volume remained constant before and after the P3 program was implemented for comparison purposes. Table 25 shows the resulting hourly volume.

**Table 23. Number of Open Lanes per Model.**

No.	Time	Open Lanes	
		Base Model	Post Model
1	5:00 a.m.–6:00 a.m.	1	1
2	6:00 a.m.–7:00 a.m.	6	6
3	7:00 a.m.–8:00 a.m.	6	6
4	8:00 a.m.–9:00 a.m.	6	6
5	9:00 a.m.–10:00 a.m.	6	6
6	10:00 a.m.–11:00 a.m.	3	6
7	11:00 a.m.–12:00 p.m.	3	6
8	12:00 p.m.–1:00 p.m.	3	6
9	1:00 p.m.–2:00 p.m.	3	6
10	2:00 p.m.–3:00 p.m.	3	6
11	3:00 p.m.–4:00 p.m.	4	6
12	4:00 p.m.–5:00 p.m.	3	6
13	5:00 p.m.–6:00 p.m.	3	6
14	6:00 p.m.–7:00 p.m.	6	6
15	7:00 p.m.–8:00 p.m.	6	6
16	8:00 p.m.–9:00 p.m.	6	6
17	9:00 p.m.–10:00 p.m.	6	6

**Table 24. Descriptive Statistics for PDN Operating Booths—2:00 p.m. to 3:00 p.m.**

<i>PDN Operating Booth Statistics</i>	<i>Hourly Totals</i>
Mean	3.66
Standard Error	0.27
Median	3.00
Mode	3.00
Standard Deviation	1.45
Sample Variance	2.09
Kurtosis	1.09
Skewness	0.43
Range	7.00
Minimum	0.00
Maximum	7.00
Sum	106.00
Count	29.00
Confidence Level (95.0%)	0.55

**Table 25. Hourly Passenger Vehicle Volumes.**

<i>Time</i>	<i>Total Passenger Vehicles per Interval</i>
05:00 a.m.–06:00 a.m.	252
06:00 a.m.–07:00 a.m.	341
07:00 a.m.–08:00 a.m.	465
08:00 a.m.–09:00 a.m.	410
09:00 a.m.–10:00 a.m.	358
10:00 a.m.–11:00 a.m.	332
11:00 a.m.–12:00 p.m.	319
12:00 p.m.–01:00 p.m.	331
01:00 p.m.–02:00 p.m.	352
02:00 p.m.–03:00 p.m.	340
03:00 p.m.–04:00 p.m.	349
04:00 p.m.–05:00 p.m.	349
05:00 p.m.–06:00 p.m.	282
06:00 p.m.–07:00 p.m.	257
07:00 p.m.–08:00 p.m.	241
08:00 p.m.–09:00 p.m.	251
09:00 p.m.–10:00 p.m.	221
<b>Total</b>	<b>5,450</b>

## **NETWORK CONSTRUCTION**

The PDN POE model was developed using the microscopic software platform VISSIM 7.0. The international bridge network was coded with only one main entry point, as seen in Figure 12. The southern inbound link of the network was extended given that the queue usually goes past the tollbooth point (i.e., Zone 4 in the network) during the peak hours. The network included one origin node and one destination node past the primary inspection booths. Speed limits, reduction speed areas, and vehicle inputs were all coded as needed based on the processed data.

Stop signs were coded into the network to replicate the primary inspection booths. Based on the PDF obtained from the inspection time statistics, a dwell time cumulative distribution was assigned to each stop sign (shown in Figure 13). All of the measures of effectiveness parameters, such as travel time, fuel consumption, and vehicle delay, were specified in the model for further analysis.

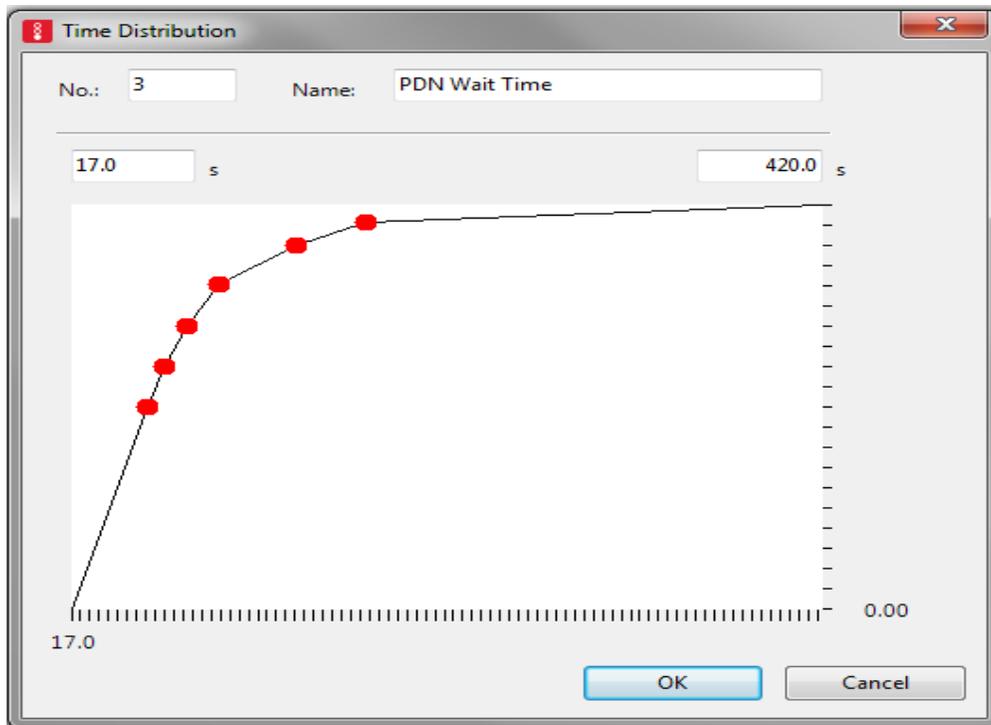
## **OPERATIONAL MODELING**

Typically, VISSIM assigns simulated vehicles through routes in the network that are manually defined by the user (called static assignment). This system assumes that there will be no changes to the travel demand or in the road network itself. However, a POE such as PDN can have changes in capacity because of the number of inspection booths operating throughout the day (e.g., three booths open during morning peak hours and six during the afternoon period). As a result, the research team decided to assign the vehicles in VISSIM via dynamic traffic assignment. However, one of the limitations of the microsimulation software platform utilized is the inability to open/close vehicle lanes at random times throughout the simulation period. In order to overcome this issue, the research team developed a Python script that allowed the

dynamic closure of booths throughout the day as needed. The added feature helped represent the dynamics of the available CBPOs through off-peak and peak periods.



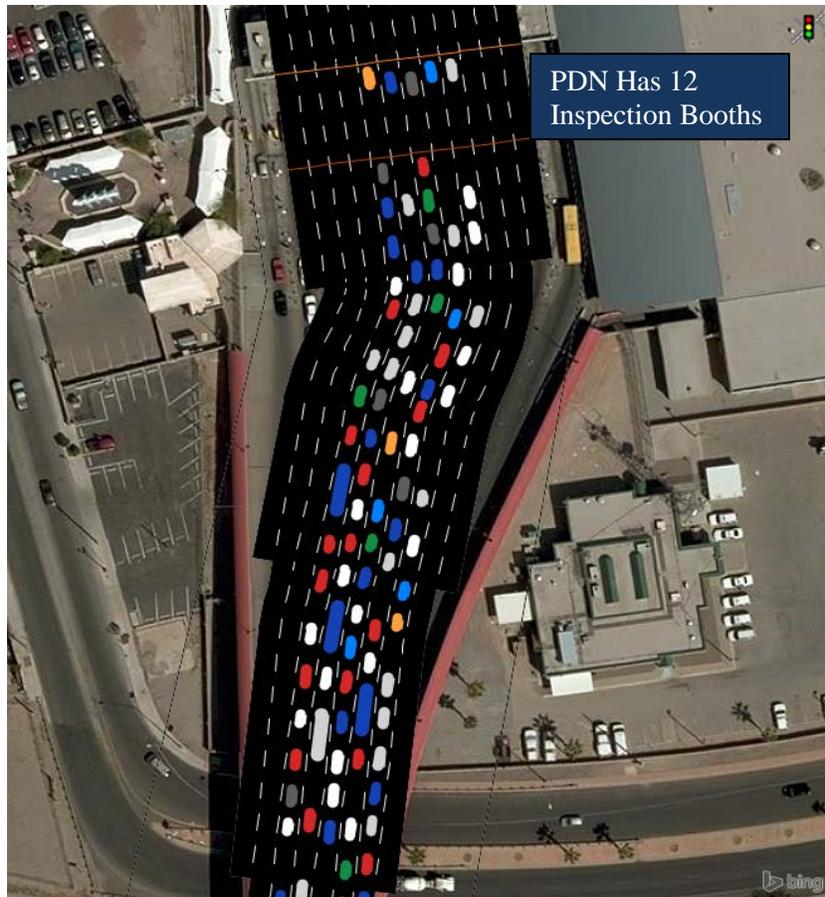
Figure 12. VISSIM Network at PDN POE.



**Figure 13. VISSIM Dwell Time Distribution for Inspection Booths.**

The two scenarios modeled allowed the research team to quantify the various benefits of having a different number of lanes available for the PDN traffic (see Figure 14). The scenarios simulated for this study were:

- PDN with a maximum of 12 lanes available (base model, before implementation of the P3 program).
- PDN with a maximum of 12 lanes available (post model, after implementation of the P3 program in January 2014).



**Figure 14. PDN VISSIM Base Model with Five Lanes Open and 12 Booths Operating.**

## **MODEL CALIBRATION AND VALIDATION**

The base model was simulated with dynamic traffic assignment until the user-specified convergence criterion was met (i.e., difference of travel time on paths between iterations less than 15 percent). Once convergence was achieved, the hourly volumes from the simulation were compared to those obtained from the Caminos Y Puentes Federales database. Small adjustments were made to the individual origin-destination matrices to represent 2013 conditions at PDN given the randomness factor of using dynamic traffic assignment in the micromodel.

Throughout the calibration process, the research team observed the queuing behavior in the model to ensure no errors or discrepancies were present (e.g., stuck vehicles). Once the base model was fully calibrated and validated, the second scenario was developed with a different number of open lanes available per hour. The second scenario was simulated under the same methodology as Scenario 1. The measures of effectiveness for each scenario were then tabulated for further analysis.

## REFERENCE

- 1 Trotter, R.S., and B.K. Manak. *Assessment of Commuting Crossing Cost at El Paso-Ciudad Juarez International Bridge of the Americas*. Center for International Intelligent Transportation Research, Texas A&M Transportation Institute, August 2013.

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## APPENDIX C: BORDER INSPECTION PROCESS

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The key points that goods must go through in moving through the border from Mexico to the United States are documented in detail by Sabean and Jones (*I*). First, goods are stored at a warehouse awaiting transport. Next, products wait in a Mexican export lot. While in this lot, documents are verified and inspected at an inspection station. If required, additional screening is conducted. Then, goods are transported across to the U.S. side, where cargo is brought in via a CBP inspection station in a U.S. federal compound. Here, goods are inspected, and officials determine whether they comply with the necessary and proper federal guidelines. If additional screening is required, goods will then receive a secondary inspection before clearing the screening process. All goods are scanned using non-intrusive inspection devices, such as the mobile Vehicle and Container Imaging System (VACIS<sup>®</sup>) or high-power X-radiation screening of the cargo and commercial vehicle transporting of the goods. From this point, cargo and commercial vehicles are then transferred to a state safety inspection facility, where a visual vehicle safety inspection is performed. When necessary, a detailed state truck safety inspection is conducted. Finally, from that point, trucks are allowed to proceed to a warehouse or be directly transported throughout the country.

In some instances, these multiple scanning iterations can take considerable time. Recent technological advancements, however, now make it possible to track overall wait times through RFID transponders. Again, Sabean and Jones (*I*) provide useful guidance on this new technology, explaining that for participants that have elected to participate in this program, data are collected at every step in the process. Readers that hang in gantries above the inspection locations record the time that has elapsed in each inspection location. Data from these readers are fed to a traffic management center, where the data can be processed and analyzed over a period of time. It is worth noting that El Paso has a consolidated program to measure border crossing times. Recently, El Paso officials installed RFID technology readers at the beginning of the queue on the Mexico side of the border and at the end of the Border Safety Inspection Facility in the United States. This system reads RFID tags embedded in cards and helps determine total wait time data.

The SENTRI program expedites CBP processing for pre-approved, low-risk travelers. In order for travelers to qualify for participation in the SENTRI program, they must voluntarily undergo a background check, a 10-fingerprint law enforcement check, and a personal interview with a CBP officer. The FAST program for commercial vehicles is a clearance program for low-risk shipments entering the United States from Canada and Mexico. The program provides a faster processing service to commercial vehicles that have qualified according to the program's eligibility requirements. The FAST program is open to truck drivers from the United States, Canada, and Mexico. Ready Lanes are passenger vehicle lanes dedicated for travelers who are entering the United States at land border ports of entry and are using RFID. The purpose of the Ready Lanes is the same as the programs previously mentioned; passengers who travel with RFID-enabled cards help to accelerate the inspection process while crossing the border (as shown in Figure 15) (2).



**Figure 15. Trusted Traveler Programs Implemented at Ports of Entry.**

## REFERENCES

- 1 Sabeen, J., and C. Jones. "Inventory of Current Programs for Measuring Wait Times at Land Border Crossings." 2008.  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.511.694&rep=rep1&type=pdf>
- 2 U.S. Customs and Protection. CBP Officers at South Texas Ports Facilitate Significant Amounts of Passenger, Commercial Traffic, Trade Imports in FY 2014. January 23, 2015.  
<http://www.cbp.gov/newsroom/local-media-release/2015-01-23-000000/cbp-officers-south-texas-ports-facilitate-significant> (accessed March 2015).